


I.B (P.G) COLLEGE

1.2.1 Number of Add on /Certificate/Value added programs offered and online MOOC programs like SWAYAM, NPTEL etc. where the students of the institution have benefitted during the last five years)


1.2.2 Percentage of students enrolled in Certificate/ Add-on/Value added programs and also completed online MOOC programs like SWAYAM, NPTEL etc.as against the total number of students during the last five years

Year 1 (2021-22)

Name of Add on /Certificate /Value added programs offered and online MOOC programs like SWAYAM, NPTEL etc. programs offered	Course Code (if any)	Year of offering	No. of times offered during the same year	Duration of course	Number of students enrolled in the year	Number of Students completing the course in the year
Computer Awareness	CA-21	2021	1	Full Year	334	334
NUTRITIOUS CUISINE	NS-21	2021	1	30 Hrs.	30	17
FASHION DESIGNING	CCFD-21	2021	1	30 Hrs.	30	24
"EMPLOYABILITY SKILLS" UNDER	CCES-21	2021	1	18 Hrs.	88	88
TALLY ESSENTIAL	CCTE-21	2021	1	One Month	35	35
ONLINE COURSE ON DIGITAL MARKETING	DM-21	2021	1	30 Hrs.	32	32
Certificate Course in Internet of Things	CCIoT-21	2021	1	40 Hrs.	20	20
Certificate Course in Web Designing	CCWD-21	2021	1	40 Hrs.	19	19
Certificate Course in Digital Marketing	CCDMW1-21	2021	1	40 Hrs.	22	22
Certificate Course in Stress Management By	CCSMBY-21	2021	1	40 Hrs.	35	35
Certificate Course in Account Executive	CCAE-21	2021	1	40 Hrs.	20	20
Certificate Course in Computer Hardware &	AOCCHM-21	2021	1	40 Hrs.	19	19
Certificate Course in Web Designing & Office	AOCWDOA-21	2021	1	40 Hrs.	21	21
Certificate Course in Yogasana and	AOCCYM-21	2021	1	40 Hrs.	35	35
Certificate Course in Accounting & Tax	AOCATP-21	2021	1	40 Hrs.	21	21
Certificate Course in Python Programming	CCPP21	2021	1	40 Hrs.	20	20
Certificate Course in Artificial Intelligence &	CCAIML21	2021	1	40 Hrs.	22	22
Certificate Course in Cloud Computing	CCCC21	2021	1	40 Hrs.	20	20
Advance Excel and Powerpoint	CCAEP-22	2022	1	30 Hrs.	32	32
ENGLISH COMMUNICATION &	ECSS-22	2022	1	30 Hrs.	37	37
Certificate Course in Desktop Publishing	CCDP-22	2022	1	40 Hrs.	18	18
Certificate Course in CCTV Installation	CCCCTVI-22	2022	1	40 Hrs.	21	21
Certificate Course in Programming C/C++	CCPCCPP22	2022	1	40 Hrs.	21	21
Certificate Course in Yoga and Diet	AOCCYDM-22	2022	1	40 Hrs.	30	30
Certificate Course in Accounting on	AOCAC22	2022	1	40 Hrs.	22	22
Certificate Course in Android Development	CCAD22	2022	1	40 Hrs.	19	19
Certificate Course in Shatkarma, Pranayam	AOCCSPM-22	2022	1	40 Hrs.	35	35
Certificate Course in Java Script	CCJS22	2022	1	40 Hrs.	20	20


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Certificate Course in Bhav Sangeet	CCBS-22	2022	1	50 Hrs.	23	23
Certificate Course in Web Development	CCWDPHP22	2022	1	40 Hrs.	19	19
Certificate Course in Network Security	CCNS22	2022	1	40 Hrs.	20	20
Certificate Course on Universal Human	CCUHVPE-22	2022	1	40 Hrs.	28	28
Career Advancement Bootcamp	CAB	2021-22	7	30 Hrs.	190	190
					Total	1339
Year 2 (2020-21)						
Name of Add on /Certificate /Value added programs offered and online MOOC programs like SWAYAM, NPTEL etc. programs offered	Course Code (if any)	Year of offering	No. of times offered during the same year	Duration of course	Number of students enrolled in the year	Number of Students completing the course in the year
Computer Awareness	CA-20	2020	1	Full Year	492	492
ARTIFICIAL INTELLIGENCE &	CCAIPP20	2020	1	30 Hrs.	36	36
TALLY ACE CERTIFICATION ON	CCTERP20	2020		30 Hrs.	33	33
ENGLISH COMMUNICATION &	ECSS-21	2021	1	30 Hrs.	45	45
Certificate Course in Bhav Sangeet	CCBS-21	2021	1	50 Hrs.	20	20
					Total	626
Year 3 (2019-20)						
Name of Add on /Certificate /Value added programs offered and online MOOC programs like SWAYAM, NPTEL etc. programs offered	Course Code (if any)	Year of offering	No. of times offered during the same year	Duration of course	Number of students enrolled in the year	Number of Students completing the course in the year
Computer Awareness	CA-19	2019	1	Full Year	878	878
Communication Skills Development	CCCSD19	2019-20	1	30 Hrs.	30	30
					Total	908
Year 4 (2018-19)						
Name of Add on /Certificate /Value added programs offered and online MOOC programs like SWAYAM, NPTEL etc. programs offered	Course Code (if any)	Year of offering	No. of times offered during the same year	Duration of course	Number of students enrolled in the year	Number of Students completing the course in the year
Computer Awareness	CA-18	2018	1	Full Year	408	408
Communication Skills Development	CCCSD18	2018-19	1	30 Hrs.	30	30
					Total	438
Year 5 (2017-18)						
Name of Add on /Certificate /Value added programs offered and online MOOC programs like SWAYAM, NPTEL etc. programs offered	Course Code (if any)	Year of offering	No. of times offered during the same year	Duration of course	Number of students enrolled in the year	Number of Students completing the course in the year
Computer Awareness	CA-17	2017	1	Full Year	430	430


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List of Students of certificate course in Computer Awareness 2017-22

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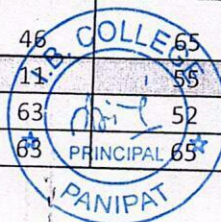
RESULT OF B.A. I

SUBJECT : BASICS OF COMPUTER (Qualifying Exam)

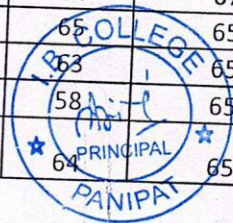
SESSION : 2017-2018

S.NO. COLLEGE UNIV. ROLL REG. NO. STUDENT'S FATHER'S THEORY PRACTICAL TOTAL % R
NO. NO. NAME NAME MARKS MARKS

S.NO.	COLLEGE NO.	UNIV. NO.	ROLL REG. NO.	STUDENT'S NAME	FATHER'S NAME	THEORY MARKS	PRACTICAL MARKS	TOTAL	%	R
1	1544510008	170080401	17-IP-120	ASHISH Ashish	DHARAMPAL	62	65	127	64	
2	1544510007	170080402	17-IP-967	DEEPAK SHARMA Deepak	KALIRAM	57	70	127	64	
3	1544520144	170080403	17-IP-979	VAISHALI Vaishali	NARENDER	47	60	107	54	
4	1544510076	170080404	17-IP-185	ASHISH GORIA Ashish	RAJESH GORIA	64	60	124	62	
5	1544510197	170080405	17-IP-286	SUSHIL Sushil	JAGBIR	61	59	120	60	
6	1544520049	170080406	17-AP-45	YASHIKA Yashika	RANBIR SINGH	50	60	110	55	
7	1544510136	170080407	17-IP-237	SHIVAM Shivam	PALE RAM	58	60	118	59	
8	1544510198	170080408	17-IP-287	SAHIL Sahil	MUKESH	73	65	138	69	
9	1544510075	170080410	17-IP-184	DEEPAK Deepak	BALKISHAN	57	63	130	65	
10	1544520099	170080411	17-IP-87	SAKSHI Sakshi	SHER SINGH	75	66	141	71	
11	1544520093	170080413	17-IP-319	SANJALI Sanjali	RAMESHWAR DASS	58	65	123	62	
12	1544510024	170080415	17-IP-135	RAVINDER KUMAR Ravinder	BALKAR SINGH	72	66	138	69	
13	1544510043	170080416	17-IP-153	SOURAV JANGRA Sourav	SATISH KUMAR	58	66	124	62	
14	1544510061	170080418	17-IP-170	RAHUL Rahul	LILU RAM	69	66	135	68	
15	1544510029	170080420	17-IP-140	DEEPAK Deepak	ROHTASH	70	70	140	70	
16	1544510058	170080421	17-IP-167	ABHISHEK Abhishek	ROHTAS CHOHAN	59	69	128	64	
17	1544510031	170080423	17-IP-142	BITTU Bittu	JAIKARAN	70	59	129	65	
18	1544510118	170080424	17-IP-222	OJASVI Ojasvi	DINESH	62	66	128	64	
19	1544520079	170080428	17-IP-71	KOMAL Komal	MUKESH KAPOOR	60	66	126	63	
20	1544520113	170080429	17-IP-95	KAJAL SHARMA Kajal	BALRAM SHARMA	80	65	145	73	
21	1544510138	170080430	17-IP-238	ANOOP Anoop	RANBIR SINGH	78	63	141	71	
22	1544510137	170080432	17-IP-335	KARAN Karan	KISHAN	56	55	111	56	
23	1544510109	170080433	17-IP-215	GAURAV Gaurav	BREM CHAND	70	66	136	68	
24	1544510001	170080434	17-IP-116	GHANSHYAM Ghanshyam	RAMBABU	65	63	128	64	
25	1544520004	170080435	17-IP-4	KAJAL Kajal	SATISH	61	56	117	59	
26	1544510129	170080436	17-IP-230	RAHUL Rahul	SATPAL	20	50	70	35	FA
27	1544510013	170080437	17-IP-125	SUDHIR Sudhir	RAJBIR	62	50	112	56	
28	1544510084	170080438	17-IP-331	AMANDEEP MALIK Amandeep	SURESH MALIK	62	55	117	59	
29	1544510060	170080439	17-IP-169	NITESH KUMAR Nitesh	RAJ KUMAR	57	58	115	58	
30	1544510048	170080440	17-IP-158	VISHAVJEET Vishavjeet	RAJKUMAR	67	66	133	67	
31	1544510020	170080443	17-IP-131	DEEPAK Deepak	SATBIR	50	55	105	53	
32	1544520020	170080444	17-IP-17	SONIA Sonia	JITENDER	63	65	128	64	
33	1544520098	170080445	17-IP-86	REENA Reena	SATPAL	67	66	133	67	
34	1544520137	170080446	17-IP-112	MENKA Menka	DHANPAT	80	65	145	73	
35	1544520006	170080451	17-IP-5	BHAWNA Bhawna	NARESH KUMAR	62	66	128	64	
36	1544510221	170080452	17-IP-306	PARMOD KUMAR Parmod	ROHTAS	46	65	111	56	
37	1544510064	170080454	17-IP-173	GOURAV Gourav	MANJEET	11	55	66	33	FA
38	1544510026	170080455	17-IP-137	SANDEEP Sandeep	MANGERAM	63	52	115	58	
39	1544510016	170080457	17-IP-128	HARISH Harish	SATBIR	63	65	128	64	

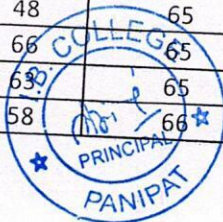


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41	1544510046	170080462	17-IP-246	AMIT	RAJENDER SINGH	70	45	115	58										
42	1544510070	170080463	17-IP-179	ANKUR	RAVINDER	64	66	130	65										
43	1544520064	170080465	17-IP-314	RADHIKA	MUKESH SINGH	22	51	73	37										
44	1544520145	170080467	17-IP-939	NEHA	PAWAN	61	55	116	58										
45	1544520068	170080469	17-IP-62	DEEPA TIWARI	SATAN TIWARI	73	77	150	75										
46	1544510006	170080470	17-IP-948	JATIN KUMAR	DILBAG	74	65	139	70										
47	1544510207	170080471	17-IP-338	MANMOHAN	RAJBIR SINGH	65	65	130	65										
48	1544510022	170080472	17-IP-133	ANKIT	RAJESH	46	60	106	53										
49	1544510141	170080473	17-IP-241	JITENDER	BIR SHING	49	62	111	56										
50	1544510112	170080474	17-ip-216	SAHIL	KULDEEP SINGH	66	65	131	66										
51	1544510126	170080475	17-IP-228	SACHIN	SURESH	47	63	110	55										
52	1544510193	170080476	17-IP-282	SACHIN	ROHTASH	57	64	121	61										
53	1544510132	170080478	17-IP-233	NIKET	BIJENDER SINGH	13	50	63	32										
54	1544510206	170080479	17-IP-294	PARDEEP KUMAR	MUKESH KUMAR	61	56	117	59										
55	1544520108	170080480	17-IP-969	ANVEET	VIJAY KUMAR	18	50	68	34										
56	1544520091	170080482	17-IP-318	ANJALI	KASHMIRI LAL	48	55	103	52										
57	1544520114	170080483	17-IP-96	POOJA	RANBIR SINGH	58	68	126	63										
58	1544520141	170080484	17-IP-324	SANJANA	RAJESH KUMAR	68	68	136	68										
59	1544520027	170080486	17-IP-24	SAKSHI	NARESH KUMAR	63	65	128	64										
60	1544520013	170080487	17-IP-11	SUMIT	HAM CHANDER	49	65	114	57										
61	1544520037	170080488	17-IP-33	JYOTI	SATISH KASHYAP	43	65	108	54										
62	1544520030	170080489	17-IP-26	KIRTI	SHAMSHER	37	55	92	46										
63	1544510151	170080490	17-IP-949	SACHIN	RAMESH	66	55	121	61										
64	1544520031	170080491	17-IP-27	KAJAL	RAJENDER SHARMA	45	65	110	55										
65	1544510086	170080493	17-IP-192	LALIT	SURESH	61	65	126	63										
66	1544510170	170080494	17-IP-266	ANKIT KHARB	UDAY SINGH	68	67	135	68										
67	1544510162	170080495	17-IP-260	AJAY SHARMA	SURESH SHARMA	65	62	127	64										
68	1544520090	170080496	17-IP-81	MANISHA DEVI	SATBIR SHARMA	66	65	131	66										
69	1544520092	170080498	17-IP-82	PREETI DEVI	SURESH KUMAR	46	61	107	54										
70	1544520140	170080500	17-IP-115	SAPNA	SUMER SINGH	55	62	117	59										
71	1544520111	170080501	17-IP-964	PREETI DEVI	MOKHAM SINGH	51	65	116	58										
72	1544510025	170080503	17-IP-136	AAKASH	KIRPA RAM	51	63	114	57										
73	1544520106	170080504	17-IP-92	NISHA	SATYANARAYAN	69	65	134	67										
74	1544520061	170080505	17-IP-57	POOJA	SATISH KASHYAP	44	64	108	54										
75	1544510146	170080506	17-IP-246	VICKY SAINI	SITARAM SAINI	42	65	107	54										
76	1544520016	170080507	17-IP-14	ANCHAL	BETHPAL	62	63	125	63										
77	1544520003	170080508	17-IP-3	KAMINI	SHYAM SINGH	68	65	133	67										
78	1544520017	170080509	17-IP-15	RITU	SHER SINGH	63	65	128	64										
79	1544520010	170080510	17-IP-8	AARJU SAINI	NAFE SINGH	64	67	131	66										
80	1544520029	170080511	17-ip-25	AMAN SHARMA	SATNARAYAN	65	65	130	65										
81	1544510062	170080514	17-IP-171	MAHESH	RAVINDER	65	65	128	64										
82	1544510065	170080516	17-IP-174	SHARUKH ANSARI	MURSHID ANSARI	64	65	123	62										

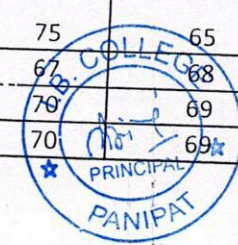


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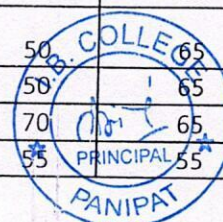
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84	1544510131	170080518	17-IP-232	VIKAS	VINOD KUMAR	60	64	124	62	B
85	1544520022	170080522	17-IP-19	AARTI	RAJESH	63	55	118	59	C
86	1544520095	170080523	17-IP-84	JYOTI	SANJAY	74	78	152	76	A
87	1544510145	170080524	17-IP-245	SHUBHAM	BALRAM					
88	1544510123	170080526	17-IP-227	VAISHISHTH	VAISHISHTH	62	65	127	64	B
89	1544520048	170080528	17-IP-44	AJAY	RAJ SINGH	47	62	109	55	C
90	1544510189	170080529	17-IP-280	SHIVANI	ANIL KUMAR	75	55	130	65	B
91	1544520080	170080530	17-IP-317	MOHIT	JAGDISH	59	66	125	63	B
92	1544510186	170080531	17-IP-277	AMAN MALIK	MAHABIR SINGH					
93	1544520132	170080532	17-IP-108	SIDDHANT	RAVINDER	56	66	122	61	B
94	1544510183	170080533	17-IP-977	SWEETY	BIJENDER	66	66	132	66	B
95	1544510053	170080534	17-IP-163	RAHUL	BIJENDER	60	65	125	63	B
96	1544510099	170080535	17-IP-205	AMIT	RAJBIR	65	65	130	65	B
97	1544510174	170080538	17-IP-974	ROHIT KUMAR	SATPAL SINGH	11	50	61	31	FAIL
98	1544510222	170080539	17-IP-307	RAVI	BIJENDER RATHI	51	60	111	56	C
99	1544510220	170080540	17-IP-340	SAGAR	DEEPAK KUMAR	49	54	103	52	C
00	1544520056	170080542	17-IP-52	DEEPAK KUMAR	DAYA SINGH	19	50	69	35	FAIL
01	1544510045	170080543	17-IP-155	RENU	RANBIR SINGH	45	55	100	50	C
02	1544510069	170080545	17-IP-178	VIKASH	ANGREJ SINGH	58	62	120	60	B
03	1544510166	170080548	17-IP-262	SAHIL	HARPAL	50	62	112	56	C
04	1544520011	170080549	17-IP-9	CHARANJEET SINGH	JOGINDER SINGH	56	65	121	61	B
05	1544520120	170080550	17-IP-965	ANJALI	DHARAMBIR SINGH	45	60	105	53	C
06	1544520112	170080551	17-IP-94	RENU	RAJESH	65	68	133	67	B
07	1544510003	170080552	17-IP-117	ANNU	SUBHASH	68	65	133	67	B
08	1544510209	170080554	17-IP-339	RINKU	SATYAWAN	69	65	134	67	B
09	1544520088	170080555	17-IP-79	PARDEEP	KARAN SINGH	53	62	115	58	C
10	1544520075	170080556	17-IP-316	KIRAN	SATISH KUMAR	66	66	132	66	B
11	1544520136	170080558	17-IP-111	POOJA	RAJ KUMAR	66	56	132	66	B
12	1544510040	170080560	17-IP-150	SAPNA RANI	KARAN SINGH	61	67	128	64	B
13	1544510038	170080563	17-IP-328	ANKIT	SUSHIL	57	69	126	63	B
14	1544510177	170080564	17-IP-271	MOHIT	GULAB SINGH	60	65	125	63	B
15	1544510059	170080565	17-IP-168	SAGAR	NARESH RAWAL	63	55	118	59	C
16	1544520078	170080567	17-IP-70	AJAY	SURESH KUMAR	53	65	118	59	C
17	1544520018	170080568	17-IP-16	NEHA SHARMA	AADESH SHARMA	60	68	128	64	B
18	1544510182	170080569	17-IP-275	KOMAL	SARVER SINGH	59	68	127	64	B
19	1544510039	170080570	17-IP-149	ROHIT	BUDH RAM	61	66	127	64	B
20	1544520036	170080571	17-IP-32	AAKASH	SUSHIL	48	68	116	58	C
21	1544510165	170080572	17-IP-973	SEEMA DEVI	JAGDISH KAUSHIK	59	68	127	64	B
22	1544510140	170080573	17-IP-240	AJAY KUMAR	ASHOK KUMAR	59	56	115	58	C
23	1544520039	170080575	17-IP-35	ANUJ	SATNAM	66	65	131	66	B
24	1544510187	170080576	17-IP-278	RITA RANI	PHOOL SINGH	46	65	111	56	C
25	1544520143	170080578	17-IP-325	SAWARYAB ALI	KANWARYAB ALI	52	56	108	54	C
26	1544520024	170080579	17-IP-21	SONAL	BIJENDER	48	65	113	57	C
27	1544510173	170080583		ARADHANA	HARI MOHAN	66	65	131	66	B
				ASHISH	SATWAN	63	65	128	64	B
						58	66	124	62	B



128	1544520082	170080585	17-IP-73	SHALU <i>Shalu</i>	JAI BHAGWAN	57	62	119	60	C
129	1544520009	170080588	17-IP-7	KHUSHBOO SAINI <i>Khushboo</i>	NAFE SINGH	60	65	125	63	B
130	1544510212	170080589	17-IP-298	RAMAN <i>Raman</i>	JAGBIR	49	63	112	56	C
131	1544510127	170080591	17-IP-229	KULDEEP <i>Kuldeep</i>	MAHAVIR	62	55	117	59	C
132	1544510034	170080592	17-IP-145	SUNNY <i>Sunny</i>	BALJEET	50	66	116	58	C
133	1544510167	170080593	17-IP-263	AMAN <i>aman</i>	JAGBIR	52	65	117	59	C
134	1544510179	170080595	17-IP-272	MOHIT KUMAR <i>Mohit</i>	DALBIR SINGH	57	65	122	61	B
135	1544510116	170080597	17-IP-220	SAHIL MANN <i>Sahil</i>	BUPINDER SINGH	45	55	100	50	C
136	1544510168	170080599	17-IP-264	AJAY <i>Ajay</i>	TEJBIR	63	56	119	60	C
137	1544510042	170080600	17-IP-152	YOGESH <i>Yogesh</i>	NATHURAM	59	54	113	57	C
138	1544520015	170080601	17-IP-13	MANSI <i>Mansi</i>	GANESH	51	54	105	53	C
139	1544520133	170080602	17-IP-323	ANJALI <i>Anjali</i>	MEHAR SINGH	61	55	116	58	C
140	1544510228	170080607	17-IP-312	TARUN <i>Tarun</i>	PARGAT SINGH	60	60	120	60	B
141	1544510169	170080608	17-IP-265	ANKIT <i>ankit</i>	KASHMIR SINGH	17	60	77	39	FAIL
142	1544520125	170080609	17-IP-971	ANTIM <i>Antim</i>	ASHOK	63	64	127	64	B
143	1544510094	170080611	17-IP-200	NIKHIL <i>Nikhil</i>	RAJENDER SINGH	58	65	123	62	B
144	1544520034	170080614	17-IP-30	RITU <i>Ritu</i>	RAMMEHAR	57	65	122	61	B
145	1544510229	170080615	17-IP-940	JAVED <i>Javed</i>	ALIYAS	23	50	73	37	FAIL
146	1544510119	170080617	17-IP-223	VIJAY KUMAR <i>Vijay</i>	KRISHAN KUMAR	46	66	112	56	C
147	1544510204	170080618	17-IP-292	SANJAY <i>Sanjay</i>	SUBASH	55	68	123	62	B
148	1544520129	170080619	17-IP-106	KIRTI AHLAWAT <i>Kirti</i>	SATYAWAN AHLAWAT	58	66	124	62	B
149	1544510178	170080620	17-IP-976	FIROJ <i>Firoj</i>	YAMIN	60	69	129	65	B
150	1544520073	170080622	17-IP-66	PRITI <i>Priti</i>	RAJENDER	77	70	147	74	B
151	1544520124	170080623	17-IP-103	RAKHI <i>Rakhi</i>	SATISH KUMAR	45	66	111	56	C
152	1544520033	170080625	17-IP-29	POOJA <i>Pooja</i>	PRETAM SINGH	53	65	118	59	C
153	1544520130	170080626	17-IP-107	RENU <i>Renu</i>	SATBIR SINGH	59	59	118	59	C
154	1544510130	170080627	17-IP-231	SAJAN <i>Sajan</i>	VIJAY KUMAR	59	55	114	57	C
155	1544510172	170080628	17-IP-268	SAHIL <i>Sahil</i>	KARMBIR	44	56	100	50	C
156	1544510135	170080631	17-IP-236	VICKY <i>vicky</i>	GANESH	38	55	93	47	D
157	1544510041	170080632	17-IP-151	ASHU TYAGI <i>Ashu</i>	RISHIPAL TYAGI	62	55	117	59	C
158	1544520023	170080633	17-IP-20	SHEETAL <i>Sheetal</i>	SURESH KUMAR	57	56	113	57	C
159	1544520109	170080637	17-IP-93	JYOTI SAINI <i>Jyoti</i>	DHARMBEER	63	68	131	66	B
160	1544520110	170080638	17-IP-970	JYOTI SHARMA <i>Jyoti</i>	GHANSHYAM	61	66	127	64	B
161	1544520042	170080639	17-IP-38	NEETU <i>Neetu</i>	AJAY KUMAR	54	65	119	60	C
162	1544510037	170080641	17-IP-148	SACHIN <i>Sachin</i>	UDAY VEER	73	65	138	69	B
163	1544520001	170080643	17-IP-1	MANISHA <i>Manisha</i>	BRAHAM PARKASH	24	66	90	45	FAIL
164	1544510226	170080644	17-IP-310	SOMVEER <i>Somveer</i>	SUBHASH	59	65	124	62	B
165	1544520021	170080646	17-IP-18	SAMPREET KAUR <i>Sampreet</i>	SAROOP SINGH	66	61	127	64	B
166	1544510071	170080648	17-IP-180	ANKIT <i>Ankit</i>	KRISHAN MANN	65	61	126	63	B
167	1544520103	170080649	17-IP-90	KAJAL <i>Kajal</i>	KULDEEP	80	66	146	73	B
168	1544520147	170080650	17-IP-937	JASLEEN KAUR <i>Jasleen</i>	GULZAR SINGH	60	65	125	63	B
169	1544510199	170080651	17-IP-288	AAKASH <i>akash</i>	KARAMBIR	39	65	104	52	C
170	1544520026	170080652	17-ip-23	SUNAINAG <i>Sunaina</i>	KRISHAN KUMAR	75	65	140	70	B
171	1544520071	170080653	17-IP-65	JYOTI <i>Jyoti</i>	DILBAG	67	68	135	68	B
172	1544520084	170080654	17-IP-477	SUMAN <i>Suman</i>	KRISHAN	70	69	139	70	B
173	1544520084	170080654	17-IP-75	SUMAN <i>Suman</i>	KRISHAN	70	69	139	70	B



174	1544520012	170080655	17-IP-10	SUMAN	BJENDER	67	69	136	68	E
175	1544520100	170080656	17-IP-88	RIYA	AMARNATH	57	65	122	61	E
176	1544520089	170080657	17-IP-80	RUBY	AKBAR	64	66	130	65	E
177	1544520067	170080658	17-IP-61	POOJA DEVI	PYARA SINGH	61	68	129	65	B
178	1544520135	170080660	17-IP-110	SONIA ROHILA	SATPAL ROHILA	61	66	127	64	B
179	1544520076	170080661	17-IP-68	NEHA SHARMA	ANIL SHARMA	55	68	123	62	B
180	1544520107	170080662	17-IP-321	NAZRANA	MAMUDEEN	55	69	124	62	B
181	1544510083	170080664	17-IP-190	AJAY KUMAR	SHWAR SINGH	45	55	100	50	C
182	1544520051	170080666	17-IP-47	NEELAM	SHAMSHER	65	65	130	65	B
183	1544520126	170080667	17-IP-966	VANDANA	HARI OM	61	66	127	64	B
184	1544520094	170080669	17-IP-83	PRIYANKA	OM KUMAR	55	65	120	60	B
185	1544520083	170080670	17-IP-74	POONAM	CHIRANJI LAL	65	55	120	60	B
186	1544520065	170080671	17-IP-315	NITIKA	DHANPAL					
187	1544520043	170080672	17-IP-39	NEHA	KATARIA	35	56	91	46	D
188	1544520054	170080673	17-IP-50	RAKHI	UPENDER					
189	1544520045	170080674	17-IP-41	POONAM	GUPTA	45	55	101	51	C
190	1544520115	170080676	17-IP-97	JYOTI KHURANA	JASBIR	60	55	115	58	C
191	1544520047	170080677	17-IP-43	ANNU	ISHWAR SINGH	15	50	65	33	FA
192	1544520123	170080679	17-IP-102	SONIA	MOHAN LAL	53	55	108	54	C
193	1544520025	170080680	17-AP-22	RIYA MALIK	ROHTASH	69	61	130	65	B
194	1544520074	170080681	17-IP-67	MANSI	BALA RAM	71	63	134	67	B
195	1544520062	170080682	17-IP-58	KUSUM SHARMA	BAJINDER MALIK	76	65	141	71	B
196	1544520040	170080683	17-IP-477	PRIYA	RAJ KUMAR	65	66	131	66	B
197	1544520038	170080684	17-IP-60	ANKITA	RAJINDER	65	65	130	65	B
198	1544520069	170080686	17-IP-63	PREETI	SHARMA	65	65	130	65	B
199	1544520028	170080687	17-IP-313	RENUKA DEVI	BALRAJ	55	66	121	61	B
200	1544520097	170080689	17-IP-320	SONAM	SURNAM	67	63	130	65	B
201	1544520087	170080690	17-IP-78	KOMAL SHARMA	KARTAR CHAND	71	66	137	69	B
202	1544520085	170080691	17-IP-76	SAVITA RAM	GANGWANI	71	66	137	69	B
203	1544510057	170080692	17-IP-166	USMAN	NARESH	80	80	160	80	A
204	1544520070	170080693	17-IP-64	ANJU	RAMKISHAN	50	71	121	61	B
205	1544520055	170080694	17-IP-51	NISHU	RAM AVATAR	70	66	136	68	B
206	1544520014	170080695	17-IP-12	AANCHAL	RAM PAL	45	55	100	50	C
207	1544510175	170080696	17-IP-975	SAHIL HANS	USMAN	45	66	111	56	C
208	1544520057	170080697	17-ip-53	NEHA TYAGI	GAYUR	45	66	111	56	C
209	1544520032	170080699	17-IP-28	KAJAL	SURAT SINGH	70	55	125	63	B
210	1544510098	170080700	17-IP-204	PANKAJ	JANESHWAR	65	66	131	66	B
211	1544510158	170080701	17-IP-256	MOHIT	JANESHWAR	65	66	131	66	B
212	1544520138	170080703	17-IP-113	MAHAK	ANUBHASH	65	65	130	65	B
213	1544520127	170080704	17-IP-104	MANISHA	GULSHAN	45	66	111	56	C
214	1544510047	170080708	17-IP-157	ARVIND SANA	KUMAR	45	66	111	56	C
215	1544520041	170080709	17-IP-37	URMI SHARMA	NEERAJ SINGH	60	66	126	63	B
216	1544510184	170080710	17-IP-978	ANKUSH SHARMA	NEERAJ KUMAR	68	56	124	62	B
217	1544520002	170080712	17-IP-2	MOHINA	PAAMESH	62	66	128	64	B
218	1544520046	170080713	17-IP-42	PREETI	(RANDHIR SINGH	47	67	114	57	C
219	1544520117	170080714	17-IP-99	ARCHNA	TILAK RAJ	45	66	111	56	C
					RAJESH	80	80	160	80	A
					RAMKISHAN	50	71	121	61	B
					RAM AVATAR	70	66	136	68	B
					RAM PAL	45	55	100	50	C
					USMAN	45	66	111	56	C
					ANJU	70	55	125	63	B
					NISHU	65	66	131	66	B
					AANCHAL	65	65	130	65	B
					SAHIL HANS	45	66	111	56	C
					NEHA TYAGI	60	66	126	63	B
					KAJAL	68	56	124	62	B
					PANKAJ	62	66	128	64	B
					MOHIT	47	67	114	57	C
					MAHAK	45	66	111	56	C
					MANISHA	70	69	139	70	B
					ARVIND SANA	65	69	134	67	B
					URMI SHARMA	55	66	121	61	B
					ANKUSH SHARMA	55	66	121	61	B
					MOHINA	50	65	115	58	C
					PREETI	50	65	115	58	C
					ARCHNA	70	65	135	68	B
						55	55	110	55	C



220	1544510157	170080716	17-IP-255	AJAY	RAMESH	50	60	110	55	
221	1544510148	170080717	17-IP-248	MANOJ KUMAR	KADYAN	52	66	118	59	
222	1544520060	170080721	17-IP-56	MANJU	VED SINGH					
223	1544520066	170080725	17-IP-60	NEELAM	RANDHIR SINGH	55	66	121	61	
224	1544520050	170080726	17-IP-46	NISHA	RAMMEHAR	61	66	127	64	
225	1544510105	170080729	17-IP-211	PANKAJ	SATNARAYAN SINGH	53	69	122	61	
226	1544510074	170080734	17-ip-183	SUMIT	AJAY	54	66	120	60	
227	1544510073	170080735	17-IP-182	SUBHAM	PREM SINGH	65	55	120	60	
228	1544510017	170080738	17-IP-129	ASHISH	SURAJPARKASH	42	55	97	49	
ng hons						55	61	116	58	
1.	1544620016	170149701	17-IP-365	SAKSHI MUNDRA	SURESH					
2	1544620010	170149702	17-ip-350	KOMAL	MUNDRA	63	66	129	65	
3	1544620009	170149705	17-IP-364	RIYA	MANOJ KUMAR	59	69	138	69	
4	1544620006	170149706	17-IP-362	SRISHTI SHARMA	SUBHASH	60	66	126	63	
5	1544610002	170149707	17-IP-357	SHUBHAM MALIK	RAJESH SHARMA	70	68	138	69	
6	1544610004	170149708	17-IP-358	RAHUL	RAM KANWAR MALIK	74	66	140	70	
7	1544610008	170149709	17-IP-344	AKSHAY	SUSHIL KUMAR JHA	60	65	125	63	
8	1544620020	170149710	16-pcd-78615	MEGHNA	AAZAD SINGH	12	50	62	31	FA
9	1544610006	170149712	17-IP-343	MANNU BENIWAL	SURESH KUMAR	54	50	104	52	C
10	1544620014	170149713	17-IP-353	JYOTI	RAKESH KUMAR	24	50	74	37	FA
11	1544620011	170149714	17-IP-351	MONIKA PAUL	SURESH KUMAR	60	60	120	60	B
12	1544620005	170149715	17-IP-349	KIRTI	SUBHASH CHANDER	55	66	121	61	B
13	1544620013	170149717	17-IP-352	BARKHA	GYANESHWAR	45	55	100	50	C
14	1544610005	170149721	17-IP-342	ANUJ	AMAR NATH	60	66	126	63	B
15	1544620007	170149723	17-IP-363	MEENAKSHI	RAVINDER	60	66	126	63	B
16	1544620017	170149724	17-IP-355	SHWETA	JAGDISH	57	69	126	63	B
					MANOHAR LAL	52	55	107	54	C

Principal
I.B. College, Panipat

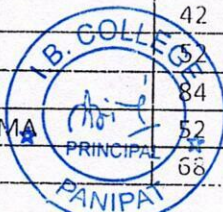


KURUKSHETRA UNIVERSITY, KUK

B.A./BSC

2020

S.N.	ROLL NO	REG. NO.	NAME	FATHER'S NAME	TM	PM	TOTAL	%	Grade
1	170045191	17-IP-986	NEETU <i>Neetu</i>	VEDPAL	72	75	147	73.5	B
2	170045224	17-IP-774	KRIKA <i>Kriika</i>	RAM PHAL	72	80	152	76	A
3	170045244	17-IP-722	KIRAN <i>Kiran</i>	RAJ KUMAR	76	75	151	75.5	A
4	170045252	17-IP-723	MANISHA <i>Manisha</i>	RAJ KUMAR	58	75	133	66.5	B
5	170071524	17-DWK-184	KAJAL SAINI <i>Kajal</i>	REHTU LAL	78	68	146	73	B
6	170080417	17-IP-132	ANKIT <i>Ankit</i>	SUBHASH	72	68	140	70	B
7	170080426	17-IP-281	SHUBHAM <i>Shubham</i>	KAWAR PAL <i>Sheloh</i>	72	68	140	70	B
8	170080427	17-IP-226	MANOJ KHARB <i>Manoj</i>	JAI BIR KHARB <i>Manoj</i>	72	70	142	71	B
13	170080459	17-IP-326	ANKIT CHAUHAN <i>Ankit</i>	DALBIR SINGH <i>Ankit</i>	66	70	136	68	B
14	170080460	17-IP-301	JASBIR <i>Jasbir</i>	SATBIR SINGH	68	70	138	69	B
15	170080463	17-IP-179	ANKUR <i>Ankur</i>	RAVINDER	76	75	151	75.5	A
16	170080464	17-IP-160	AJAY <i>Ajay</i>	SATYAWAN	58	70	128	64	B
17	170080466	17-IP-161	BADAL <i>Badal</i>	RAJINDER KUMAR	64	70	134	67	B
18	170080468	17-IP-327	JASKIRAT SINGH <i>Jaskirat</i>	JAGJEET SINGH	52	72	124	62	B
19	170080476	17-IP-282	SACHIN <i>Sachin</i>	ROHTASH	68	74	142	71	B
20	170080479	17-IP-294	PARDEEP KUMAR <i>Pardeep</i>	MUKESH KUMAR	78	72	150	75	A
21	170080519	17-IP-134	KULDEEP <i>Kuldeep</i>	DHARMPAL	72	72	144	72	B
22	170080527	17-IP-122	CHIRAG <i>Chirag</i>	RAMKISHAN <i>Chirag</i>	80	70	150	75	A
23	170080534	17-IP-163	AMIT <i>Amit</i>	RAJ BIR	72	78	150	75	A
24	170080541	17-IP-308	SACHIN <i>Sachin</i>	DILBAG SINGH	64	80	144	72	B
25	170080544	17-IP-304	TAHIL <i>Tahil</i>	GULAB SINGH	82	75	157	78.5	A
26	170080553	17-IP-130	ANKUSH <i>Ankush</i>	BIRHAM SINGH	68	75	143	76.5	A
27	170080566	17-IP-214	HIMANSHU RAWAL	HAWA SINGH RAWAL <i>Himanshu</i>	86	75	161	80.5	A
28	170080570	17-IP-149	AAKASH <i>Aakash</i>	SUSHIL	72	75	147	73.5	B
29	170080574	17-IP-203	NAVEEN <i>NAVEEN</i>	RAMESH	64	75	139	69.5	B
30	170080577	17-IP-253	SAHIL <i>Sahil</i>	ROOPENDER	56	75	131	65.5	B
31	170080584	17-IP-289	DHANKESH KUMAR	DAYA RAM <i>Dhankesh</i>	60	75	135	67.5	B
32	170080590	17-IP-124	ANKUSH <i>Ankush</i>	RAKESH	76	71	147	73.5	B
33	170080604	17-IP-337	AMIT <i>AMIT</i>	RANDHIR SINGH	72	72	144	72	B
34	170080606	17-IP-202	AMIT <i>Amit</i>	RAJKUMAR	54	69	123	61.5	B
35	170080612	17-IP-209	PANKAJ <i>Pankaj</i>	SATYAWAN	80	80	160	80	A
36	170080615	17-IP-940	JAVED <i>Javed</i>	ALIYAS	50	75	125	62.5	B
37	170080621	17-IP-303	PARVEEN <i>Parveen</i>	VIJAY	66	75	141	70.5	B
38	170080628	17-IP-268	SAHIL <i>Sahil</i>	KARMBIR	74	75	149	74.5	B
39	170080629	17-IP-972	MANISH KUMAR <i>Manish</i>	SURESH	84	72	156	78	A
40	170080630	17-IP-267	SANJAY KHARB <i>Sanjay</i>	MEHAR SINGH	80	78	158	79	A
41	170080635	17-IP-336	SOURABH <i>Sourabh</i>	SUNIL KUMAR	44	85	129	64.5	B
42	170080642	17-IP-176	VIPIN <i>Vipin</i>	SURENDER	76	70	146	73	B
43	170080647	17-IP-322	KAJAL PANNU <i>Kajal</i>	SUKHDEV PANNU	76	70	146	73	B
44	170080659	17-IP-329	VISHAL SINGH PANNU <i>Vishal</i>	WAZIR SINGH PANNU	76	70	146	73	B
45	170080671	17-IP-315	NITIKA <i>Nitika</i>	DHANPAL KATARIA	90	80	170	85	A
46	170080675	17-IP-224	SURJEET <i>Surjeet</i>	KRISHAN	72	71	143	71.5	B
47	170080685	17-IP-177	GOURAV <i>Gourav</i>	VIJAY	66	71	137	68.5	B
48	170080698	17-IP-40	DEEPTI <i>Deepthi</i>	DHARMPAL	72	71	143	71.5	B
49	170080702	17-IP-311	PRASHANT <i>Prashant</i>	MANOJ KUMAR	80	72	152	76	A
50	170080705	17-IP-261	VIJAY KUMAR <i>Vijay</i>	ZILE SINGH	42	80	122	61	B
51	170080715	17-IP-109	RAKHI <i>Rakhi</i>	ANAND	71	71	142	71	B
52	170080719	17-IP-197	DEEPAK <i>Deepak</i>	JOGINDER	84	72	156	78	A
53	170080722	17-IP-191	MOHIT SHARMA <i>Mohit</i>	RAJ BIR SHARMA	52	70	122	61	B
54	170080724	17-IP-59	PINKI <i>Pinki</i>	RAJ BIR SHARMA	68	70	138	69	B



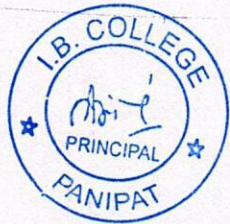
ROLL NO	REG NO.	NAME	FATHER'S NAME	TM	PM	TOTAL	%	Grade
17080737	17-IP-1007	PALLAVI <i>Pallavi</i>	ASHOK	84	75	159	79.5	A
170149709	17-IP-344	AKSHAY <i>Akshay</i>	AAZAD SINGH	50	70	120	60	B
170149712	17-IP-343	MANNU BENIWAL	RAKESH KUMAR <i>Manu</i>	90	79	169	84.5	A
180040421	18-IP-479	NANCY MITTAL <i>Nancy</i>	RAJEEV MITTAL	60	81	141	70.5	B
180071907	18-IP-124	KAMAL VERMA	JOGINDER VERMA <i>Kamla</i>	62	80	142	71	B
180071935	18-IP-275	ARTI <i>Arti</i>	RAJENDER	56	78	134	67	B
180071948	18-IP-225	GURDEEP	SUBHASH <i>Gurdeep</i>	44	79	123	61.5	B
180071956	18-IP-365	SUDHANSHU CHAUHA	VEDPAL <i>Sudhan</i>	54	72	126	63	B
180071985	18-IP-251	SONALI RANI <i>Sonali</i>	MADAN MOHAN	68	80	148	74	B
180072022	18-IP-222	DHARMBIR <i>Dhmb</i>	SURJEET	36	80	116	58	C
180072029	18-IP-380	RISHAV TYAGI	RAMESH TYAGI <i>Rishav</i>	76	74	150	75	A
180072030	18-IP-218	NAVNEET <i>Navneet</i>	RHOLKUMAR	40	80	120	60	B
180072033	18-IP-382	HARSHIT MOURYA <i>Harshit</i>	SUNIL MOURYA	94	70	164	82	A
180072037	18-IP-299	PANKAJ <i>Pankaj</i>	LICHHMAN	40	80	120	60	B
180072047	18-IP-125	SAHIL <i>Sahil</i>	MAHBOOB	92	75	167	83.5	A
180072056	18-IP-185	ANKIT <i>Ankit</i>	VIKRAM	80	75	155	77.5	A
180072073	18-IP-74	SADHNA	RAM TIRATH <i>Sadma</i>	60	78	138	69	B
180072091	18-IP-270	RITU <i>Ritu</i>	SHAB SINGH	70	70	140	70	B
180072107	18-IP-247	NISHA <i>Nisha</i>	PARALHAD	58	70	128	64	B
180072117	18-IP-283	GARIMA <i>Garima</i>	JASWANT	56	72	128	64	B
180072124	18-IP-111	TANNU <i>Tannu</i>	MANOJ	72	77	149	74.5	B
180072131	18-IP-362	GAURAV NANDAL <i>Gaurav</i>	DEVENDER SINGH	56	72	128	64	B
180072148	18-IP-354	ASHISH ROHILLA <i>Ashish</i>	MR RISHIPAL ROHILLA	54	75	129	64.5	B
180072170	18-IP-118	DEEPALI <i>Deepali</i>	ANIL	68	70	138	69	B
180072176	18-IP-117	SHIVANI <i>Shivani</i>	PAWAN	60	70	130	65	B
180072185	18-IP-376	SOURABH SINGH <i>Sourabh</i>	RAJDIR SINGH	70	70	140	70	B
180072199	18-IP-112	BHUMIKA <i>Bhumika</i>	RAVINDER KUMAR	56	75	131	65.5	B
180072201	18-IP-90	MANISHA SHARMA <i>Manisha</i>	SHRI RAM SHARMA	72	77	149	74.5	B
180072205	18-IP-372	DEEPALI <i>Deepali</i>	NANDLAL <i>Deepali</i>	64	70	134	67	B
180072216	18-IP-286	SAHIL KHATRI <i>Sahil</i>	SUKHI RAM	68	72	140	70	B
180072240	18-IP-122	MEGHA TYAGI <i>Megha</i>	SURESH TYAGI	64	76	140	70	B
180072246	18-IP-265	SHIVANI <i>Shivani</i>	NARESH	84	76	160	80	A
180072253	18-IP-249	RIYA SHARMA <i>Riya</i>	KRISHAN LAL	64	75	139	69.5	B
180140607	18-IP-418	SIMRAN KAPOOR <i>Simran</i>	RAJU KAPOOR	64	73	137	68.5	B
180140612	18-IP-388	SACHIN <i>Sachin</i>	RAJ KUMAR	68	73	141	70.5	B
180140614	18-IP-401	ANKIT KUMAR <i>Ankit</i>	SATISH KUMAR	52	70	122	61	B
180140618	18-IP-422	SAGAR <i>Sagar</i>	RAMKISHAN	60	70	130	65	B
180140626	18-IP-424	VISHAL BENIWAL <i>Vishal</i>	RAMESH BENIWAL	60	70	130	65	B
180140634	18-IP-425	ANSHUL KUMAR <i>Anshul</i>	MUKESH	72	72	144	72	B
180140649	18-IP-426	MANAV SHARMA <i>Manav</i>	SHRI BHAGWAN	60	72	132	66	B

180140612

SACHIN

RAJ KUMAR

Anshul
Manav



180072201

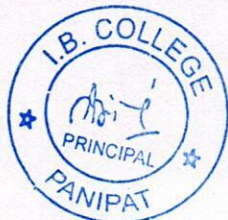
Manisha. Shri Ram
Sharma.

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RESULT OF BA /B.SC. 2nd year & Final
BASICS OF COMPUTER (Qualifying Exam)
SESSION : 2018-2019

SUBJECT :

S.NO.	COLLEGE NO.	UNIV. ROLL NO.	REGISTRATION NO.	STUDENT'S NAME	FATHER'S NAME	THEORY MARKS	PRACTICAL MARKS	TOTAL	%	Result	
BA-II											
1	9628	6316520	16-IP-759	SUNIL	BALRAJ	37	55	92	46	D	Sunil
	9629	6316521	16-IP-760	SANDEEP	DHANRAJ	35	55	90	45	D	Sandeep
B.SC. II											
	4251	6359340	16-IP-399	ANJALI PHO	MAHEND SINGH	60	60	120	60	B	Anjali
	4530	6359475	16-IP-1037	PAYAL	SATISH KUMAR	70	65	135	67.5	B	Payal
BA-III											
	9219	5316019	15-IP-702	MONU	JAI PAL	52	55	107	53.5	C	Monu
		5316021	15-IP-704	DEEPAK SHARMA	RAJENDER SHARMA	64	66	130	65	B	Deepak
	9247	5316043	15-IP-727	CHANDAN PASWAN	ASHOK PASWAN	51	65	116	58	C	Chandan
	9275	5316068	15-IP-752	SHIV KUMAR	SATNARA YAN	51	51	102	51	C	Shiv Kumar
	9292	5316084	15-IP-768	SACHIN	RAJENDER	60	60	120	60	B	Sachin
	9319	5316110	15-IP-792	ANKIT	RAM MEHAR	66	66	132	66	B	Ankit
	9321	5316112	15-IP-794	GORAV	RAM KARAN	38	50	88	44	D	Gorav
	9331	5316121	15-IP-1007	RAVI CHHOC	JAGBIR SINGH	75	70	145	72.5	B	Ravi
	9385	5316175	15-IP-1015	RAJAT	BAJEET SINGH	60	60	120	60	B	Rajat
	5312	5316270	15-IP-917	MANJU	VAJEER SINGH	67	60	127	63.5	B	Manju
	5313	5316271	15-IP-918	MANISHA	PREM SHAU	58	65	123	61.5	B	Manisha
		5359104	15-IP-545	MAHINDER SHARMA	RAMROO P	56	60	116	58	C	MAHINDER
		5359148	15-IP-567	AMAN RAN	CHAND SINGH	49	59	108	54	C	Amn
		5359322	15-IP-1158	GARIMA	SATISH KUMAR	61	65	126	63	B	Garima
		5359339	15-IP-559	KANCHAN	MAHENDE R KUMAR	62	65	127	63.5	B	Kanchan
BA FINAL											
		RNO									
		5316130	15-IP-1050	BHARAT	RAMESH K	38	58	96	48	D	Bharat

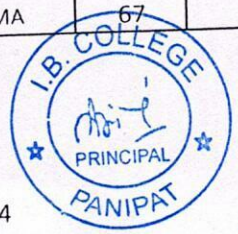


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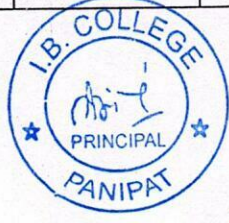
RESULT OF B.SC. I (MED/NON-MED/BIO-TECH)
BASICS OF COMPUTER (Qualifying Exam)
SESSION : 2018-2019

SUBJECT :

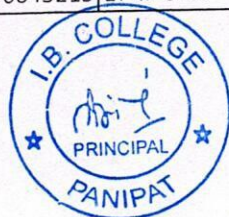
S.NO.	COLLEGE NO.	UNIV. ROLL NO.	REGISTRATION NO.	STUDENT'S NAME	FATHER'S NAME	THEORY MARKS	PRACTICAL MARKS	TOTAL	%	Result
1	1545010007	170045101	17-IP-721	GOURAV NARWAL	RAM SHARAN	43	65	108	54	Gourav C
2	1545010008	170045102	17-IP-941	VISHNU GOSWAMI	ASHOK KUMAR GOSWAMI	64	70	134	67	Nishu B
3	1545010002	170045104	17-IP-983	ANUJ KUMAR	JOGINDER	62	63	125	63	As B
4	1545210005	170045105	17-IP-836	ASHISH	SUNIL KUMAR	58	65	123	62	As B
5	1545020025	170045106	17-IP-736	LAAVANYA VASHISTHA	B. D. VASHISTHA	56	72	128	64	Leela B
6	1545010006	170045108	17-IP-725	ABHISHEK	DHARAMBIR SINGH	52	79	131	66	Abhis B
7	1545120006	170045109	17-IP-775	DIKSHA	ANIL	61	69	130	65	Diya B
8	1545110046	170045110	17-IP-763	MOHIT	SATBIR	52	59	111	56	Mohit B
9	1545120014	170045111	17-IP-781	JYOTI	MAHENDER SINGH	70	71	141	71	Jyoti B
10	1545210006	170045113	17-IP-834	SAHIL	AAZAD SINGH	0	60	60	30	Sahil FAIL
11	1545110001	170045114	17-IP-803	ANSHUL VERMA	SATISH KUMAR	65	70	135	68	Anshul B
12	1545120026	170045115	17-IP-788	KAJAL	RAVINDER	66	85	151	76	Kajal B
13	1545120028	170045116	17-IP-790	ANKUR	RAJBIR	61	65	126	63	Ankur B
14	1545110007	170045117	17-IP-742	PANKAJ	SHEKHER CHANDER	52	64	116	58	Pankaj B
15	1545110050	170045118	17-IP-765	ANKIT	RAJESH SHARMA	56	63	119	60	Ankit B
16	1545110012	170045119	17-IP-805	VISHAL SINGH LAMBA	VIJAY SINGH	46	69	115	58	Vishal B
17	1545110023	170045120	17-IP-751	PARVESH	MOHAN LAL	47	71	118	59	Parvesh B
18	1545110027	170045121	17-IP-812	PARVESH KUMAR	KARAM SINGH	66	75	141	71	Parvesh B
19	1545010001	170045122	17-IP-724	ANKIT MALIK	MAHINDER MALIK	55	65	120	60	Ankit B
20	1545120002	170045123	17-IP-816	RITIKA	RAJESH KUMAR	61	68	129	65	Ritika B
21	1545020006	170045124	17-IP-712	EKTA RANI	BALBIR SINGH	63	69	132	66	Ekta B
22	1545210001	170045127	17-IP-835	HIMANSHU	SANJEEV KUMAR	51	65	116	58	Himanshu C
23	1545020017	170045128	17-IP-734	SANGAM	KUSHAL PAL	57	67	124	62	Sangam B
24	1545110043	170045131	17-IP-761	GOURAV	ANIL	57	57	114	57	Gourav B
25	1545110033	170045132	17-IP-813	ROHIT	MAHENDER SINGH	61	67	128	64	Rohit B
26	1545020010	170045133	17-IP-984	JYOTI SHARMA	SUNIL SHARMA	67	66	133	67	Jyoti B



27	1545120007	170045136	17-IP-776	NIDHT <i>Nidh</i>	JAIPAL SINGH	60	66	126	63	B
28	1545120018	170045137	17-IP-783	BHAWANA <i>Bhawn</i>	RAVINDER	55	68	123	62	B
29	1545110059	170045138	17-IP-772	NEERAL KUMAR <i>Neera</i>	KRISHAN KUMAR	61	68	129	65	B
30	1545120029	170045139	17-IP-820	ANJALI <i>Anjali</i>	NARESH	63	65	128	64	B
31	1545120017	170045140	17-IP-782	PREETI <i>Preeti</i>	SUKHBIR	60	61	121	61	B
32	1545120003	170045141	17-IP-817	PRATIBHA <i>Pratibha</i>	JAI KUMAR	59	59	118	59	C
33	1545120047	170045142	17-IT-988	UMA BHARTI <i>Uma</i>	SURESH KUMAR	64	66	130	65	B
34	1545110041	170045144	17-IP-759	SUMESH KUMAR <i>Suresh</i>	JITENDER	65	66	131	66	B
35	1545120023	170045145	17-IP-785	HEMA <i>Hema</i>	SOMESH	62	65	127	64	B
36	1545120036	170045146	17-IP-824	KIRAN <i>Kiran</i>	RANBIR SINGH SEHRAWAT	67	64	131	66	B
37	1545120043	170045147	17-IP-796	SHIWANI <i>Shivani</i>	SESHAR	55	68	123	62	B
38	1545120022	170045148	17-IP-819	HIMANSHI	SURESH SAINI	67	65	132	66	B
39	1545120046	170045149	17-IP-828	GUDIYA <i>Gudiya</i>	BIR SINGH	68	65	133	67	B
40	1545120038	170045150	17-IP-793	SHIVANI <i>Shivani</i>	BALWAN	47	63	110	55	C
41	1545120054	170045151	17-IP-829	KOMAL NARWAL <i>Komal</i>	SURESH NARWAL	68	63	131	66	B
42	1545120033	170045152	17-IP-829	BHAWANA <i>Bhawn</i>	KAMAL SINGH	60	59	119	60	C
43	1545120035	170045154	17-IP-792	PRACHI <i>Prachi</i>	SHIV CHARAN	64	60	124	62	B
44	1545120050	170045155	17-IP-799	ANJALI <i>Anjali</i>	SATPAL TYAGI	61	60	121	61	B
45	1545110008	170045156	17-IP-743	ANISH <i>Anish</i>	PHOOL SINGH	48	61	109	55	C
46	1545110036	170045157	17-IP-756	SHOURAY <i>Shouray</i>	SURENDER SHARMA	45	61	106	53	C
47	1545110047	170045158	17-IP-764	MANJEET <i>Manjeet</i>	MOHAN	50	62	112	56	C
48	1545120037	170045160	17-IP-825	KAMANNA <i>Kamanna</i>	VINOD KUMAR	45	68	113	57	C
49	1545110015	170045164	17-IP-807	ANURAG <i>Anurag</i>	RAJ KUMAR	61	65	126	63	B
50	1545020004	170045165	17-IP-728	SWATI CHAUHAN <i>Swati</i>	VEDPAL	50	60	110	55	C
51	1545110052	170045166	17-IP-767	AKSHAY BHARDWAJ <i>Akshay</i>	SANJEEV BHARDWAJ	39	55	94	47	D
52	1545120053	170045167	17-IP-801	PRIYA <i>Priya</i>	RAJESH	54	55	109	55	C
53	1545120053	170045167		PRIYA <i>Priya</i>	RAJESH	63	59	122	61	B
54	1545110020	170045170	17-IP-748	ROHIT <i>Rohit</i>	ANIL	49	61	110	55	C
55	1545110057	170045171	17-IP-771	VISHU <i>Vishu</i>	DEVENDER RANA	55	62	117	59	C
56	1545120042	170045172	17-IP-795	NANCY <i>Nancy</i>	ASHOK SHARMA	52	63	115	58	C
57	1545020027	170045174	17-IP-1018	KOMAL <i>Komal</i>	HARIOM	49	63	112	56	C



58	1545020014	170045175	17-IP-732	Nidhi NIDHI	NARESH KUMAR	53	64	117	59	C
59	1545020019	170045176	17-IP-717	Sonia SONIA	RAM KARAN	62	62	124	62	B
60	1545110025	170045177	17-IP-810	Gourav MALIK	SATPAL SINGH	39	55	94	47	D
61	1545120030	170045178	17-IP-821	Sonia SONIA	AVTAR	69	61	130	65	B
62	1545110004	170045180	17-ip-740	Jasvinder JASVINDER	ANIL KUMAR	48	55	103	52	C
63	1545110003	170045181	17-IP-739	Ajay Kumar AJAY KUMAR	ANIL KUMAR	39	58	97	49	D
64	1545110055	170045182	17-IP-770	Vikash VIKASH	SATBIR SINGH	53	55	108	54	C
65	1545010003	170045184	17-IP-710	Anuj ANUJ	SANJAY	39	55	94	47	D
66	1545020021	170045185	17-IP-718	Kiran KIRAN	NARESH KUMAR	48	56	104	52	C
67	1545020003	170045186	17-IP-727	Aarchi AARCHI	SURENDER KUMAR	37	57	94	47	D
68	1545120051	170045187	17-IP-987	Alka ALKA	RAJESH KUMAR	35	55	90	45	D
69	1545020012	170045188	17-IP-714	Seema SEEMA	SATPAL	65	57	122	61	B
70	1545020022	170045189	17-ip-719	Mamta MAMTA	BALKAR	54	58	112	56	C
71	1545020018	170045190	17-IP-716	Kajal KAJAL	RAMESH	54	59	113	57	C
72	1545120056	170045191	17-IP-986	Neetu NEETU	VEDPAL	52	60	112	56	C
73	1545110024	170045193	17-IP-809	Sumit SUMIT	SURESH KUMAR	60	60	120	60	B
74	1545110010	170045194	17-IP-744	Somdutt SOMDUTT	BALVINDER	54	61	115	58	C
75	1545110026	170045195	17-IP-811	Dhruv MADAAN	JAGDISH KUMAR	60	63	123	62	B
76	1545120027	170045197	17-IP-789	Kirti KIRTI SHARMA	JITENDER KUMAR	57	63	120	60	B
77	1545110056	170045198	17-IP-773	Ankush ANKUSH	SATBIR	39	65	104	52	C
78	1545120008	170045203	17-IP-777	Ritu RITU	JAI KISHAN	72	55	127	64	B
79	1545110018	170045204	17-IP-808	Nikhil NIKHIL	RAM SWAROOP	57	65	122	61	B
80	1545110037	170045205	17-IP-757	Sandeep SANDEEP SINGH	LATE SWARN SINGH	51	65	116	58	C
81	1545120040	170045206	17-IP-794	Shalu SHALU	BIJENDER	41	65	106	53	C
82	1545120009	170045208	17-IP-778	Aanchal AANCHAL	JAIKISHAN	76	56	132	66	B
83	1545120034	170045211	17-IP-823	Sakshi SHARMA	ANOD SHARMA	75	68	143	72	B
84	1545120032	170045212	17-IP-822	Rani Arora RANI ARORA	SUBHASH CHANDER	70	65	135	68	B
85	1545210004	170045213	17-IP-832	Abdul Salam ABDUL SALAM	ABDUL AAHAD	35	65	100	50	C
86	1545120049	170045214	17-IP-798	Renu RENU	SUMER	62	65	127	64	B
87	1545110058	170045215	17-IP-942	Mohit MOHIT KUMAR	JASMER	49	55	104	52	C



88	1545220001	170045216	17-IP-837	RITU <i>Ritu</i>	JASBIR SINGH	57	70	127	64	B
89	1545120024	170045219	17-IP-786	NEHA <i>Nehe</i>	PRAVEEN SURENDER	59	65	124	62	B
90	1545120048	170045220	17-IP-797	ASHA <i>Asha</i>	KUMAR	35	55	90	45	D
91	1545020020	170045221	17-IP-735	<i>Shivani</i> TWINKLE RANI	RAJESH SHARMA	59	55	114	57	C
92	1545120012	170045222	17-IP-780	SHIWANI	SURENDER KUMAR	53	70	123	62	B
93	1545110054	170045223		YASHPAL <i>Yashpal</i>	ALBAG	67	70	137	69	B
94	1545220003	170045225	17-IP-833	PREETI <i>Preeti</i>	RANBIR	60	70	130	65	B
95	1545020029	170045227	17-IP-738	<i>Aransha</i> AKANSHA	BHUSHAN CHHABRA	51	64	115	58	C
96	1545120039	170045228	17-IP-826	<i>Himanshi</i> HIMANSHI	JAMNA PARSHAD	68	62	130	65	B
97	1545020009	170045229	17-IP-731	SAKSHI <i>Sakshi</i>	SUNIL KUMAR	38	63	101	51	C
98	1545120015	170045233	17-ip-818	SNEHA <i>Sneha</i>	SUSHIL RATTAN	41	55	96	48	D
99	1545020016	170045235	17-IP-715	JYOTI <i>Jyoti</i>	SINGH	59	65	124	62	B
100	1545020015	170045236	17-IP-733	MANJU <i>Manju</i>	UMED	59	62	121	61	B
101	1545110006	170045241	17-IP-804	ANKIT <i>Ankit</i>	RAJESH	48	63	111	56	C
102	1545120055	170045243	17-IP-802	NEHA <i>Nehe</i>	PARAMJEET	57	63	120	60	B
103	1545110031	170045246	17-IP-755	NILESH <i>Nilesh</i>	SATYARAM NARENDER	72	65	137	69	B
104	1545210002	170045247	17-IP-830	AKHILESH <i>Akhilesh</i>	KUMAR	50	65	115	58	C
105	1545020002	170045249	17-IP-726	ASHU <i>Ashu</i>	SURESH MALIK	55	56	111	56	C
106	1545020011	170045251	17-IP-713	KUSUM <i>Kusum</i>	MADAN SHARMA	61	55	116	58	C
107	1545110053	170045254	17-IP-768	PRINCE <i>Prince</i>	MAMCHAND	51	55	106	53	C

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16-IP-902 Bhupender Bijender Dangi

Ravi 60 60 120 60 'B'
Avish 60 60 120 60 'B'
Ajay Choudhary 60 70 130 65 'B'
Rinku Nanda Khush Nanda 60 70 130 65 'B'

[Signature]
Principal
I.B. College, Panipat



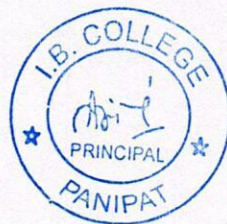
NEW

B.A & B.A HONS. & B.SC 4TH SEM

Don

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SR.NO	REGISTRATION NO.	UNIVERSITY ROLL NO.	STUDENT NAME	FATHER NAME	THEORY MARKS	PRACTICAL MARKS	TOTAL MARKS	%	GRADE
1	17-IP-159	170080442	JEEVAN LAL ✓	BHAJAN LAL	56	76	132	66%	B Jeevan Lal
2	18-IP-475	180040417	DIKSHA KAPOOR ✓	SURAJ KAPOOR	89	79	168	84%	A Diksha Kapoor
3	18-KMP-496	180060128	ISHITA ✓	RAVINDER KUMAR	90	80	170	85%	A Ishita
4	18-DSK-274	180062888	AVIRAJ ✓	RAMESH CHANDER	80	70	150	75%	A Aviraj
5	18-IP-298	180071951	PANKAJ ✓	NARENDER	73	83	156	78%	A Pankaj
6	18-IP-365	180071956	SUDHANSHU CHAUHAN ✓	VEDPAL	40	60	100	50%	C Sudhanshu Chauhan
7	18-IP-351	180072013	LOCHAN PALIWAL ✓	MANOJ PALIWAL	88	78	166	83%	A Lochan Paliwal
8	18-IP-155	180072041	MOHIT ✓	VISHNU	69	89	158	79%	A Mohit
9	18-IP-220	180072043	USMAN ✓	JULFKKAR	40	60	100	50%	C Usman
10	18-IP-236	180072054	RAHUL ✓	RAMESH	40	60	100	50%	C Rahul
11	18-IP-183	180072109	NAVEEN ✓	RAMESH	80	70	150	75%	A Naveen
12	18-IP-362	180072131	GAURAV NANDAL ✓	DEVENDER SINGH	50	70	120	60%	B Gaurav Nandal
13	18-IP-62	180072138	KAJAL ✓	MUKESH KUMAR	80	70	150	75%	A Kajal
14	18-IP-244	180072152	ANJU ✓	RAM NIWAS	80	70	150	75%	A Anju
15	18-IP-204	180072157	GHANSHYAM ✓	DARA SINGH	70	80	150	75%	A Ghanshyam
16	18-IP-191	180072175	SAHIL ✓	BALBIR	69	89	158	79%	A Sahil
17	18-IP-127	180072179	ANUJ ✓	MAHABIR SINGH	52	72	124	62%	B Anuj
18	18-IP-119	180072180	ASHU ✓	MAHESH KUMAR	90	80	170	85%	A Ashu
19	18-IP-376	180072185	SOURABH SINGH ✓	RAJBIR SINGH	60	80	140	70%	B Sourabh Singh
20	18-IP-229	180072186	VIKRAM ✓	ISHAM SINGH	70	80	150	75%	A Vikram
21	18-IP-369	180072187	VIKAS ✓	RAJESH KUMAR	69	89	158	79%	A Vikas
22	18-IP-238	180072194	NAVEEN ✓	NARENDER KUMAR	90	80	170	85%	A Naveen
23	18-IP-286	180072216	SAHIL KHATRI ✓	SUKHI RAM	40	60	100	50%	C Sahil Khatri
24	18-IP-880	180072247	NEHA ✓	DEVRAJ	70	80	150	75%	A Neha
25	18-IP-195	180072251	MOHIT DHIMAN ✓	ROSHAN LAL	80	70	150	75%	A Mohit Dhiman
26	18-IP-431	180140609	YASHMEEN SIDHU ✓	GURJANT SINGH	80	70	150	75%	A Yashmeen Sidhu
27	18-IP-419	180140611	SHALU RANI ✓	VINOD KUMAR	89	79	168	84%	A Shalu Rani
28	18-IP-428	180140619	ANURADHA KUMARI ✓	MUNNA LAL	80	70	150	75%	A Anuradha Kumari
29	18-IP-390	180140621	MUSKAN ✓	OMPARKASH	80	70	150	75%	A Muskan
30	18-IP-836	180140631	NAINA ✓	ASHOK KUMAR	80	70	150	75%	A Naina
31	18-IP-413	180140643	NARESH ✓	DAYA RAM	81	71	152	76%	A Naresh
32	15-IP-860		KOMAL ✓	RAJU	52	72	124	62%	B Komal

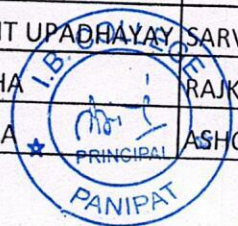


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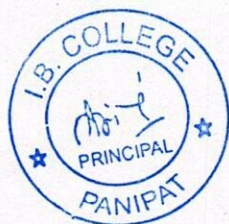
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SR.NO	REGISTRATIO N NO.	UNIVERSITY ROLL NO.	STUDENT NAME	FATHER NAME	THOERY MARKS	PRACTIC AL MARKS	TOTAL MARK S	%	GRADE
1	19-IP-711	191041602	SUJAL	DINDYAL	92	82	174	87%	A
2	19-IP-766	191041603	SHREYA	KANWAR BHAN	89	79	168	84%	A
3	19-IP-684	191041604	ANSHUL	BALBIR	80	70	150	75%	A
4	19-IP-701	191041605	ABHISHEK	AWDRESH	80	70	150	75%	A
5	19-IP-693	191041606	VIPIN KUMAR	KRISHAN LAL	87	77	164	82%	A
6	19-IP-683	191041607	SHASHIKANT	SATISH	92	82	174	87%	A
7	19-IP-682	191041608	SUMIT	PALE RAM	88	78	166	83%	A
8	19-IP-700	191041609	SHIVAM KUMAR	OM PAL	89	79	168	84%	A
9	19-IP-676	191041610	PARTIBHA	BRHAM DUTT	92	82	174	87%	A
10	19-IP-673	191041611	DIVYA SHARMA	VINOD SHARMA	89	79	168	84%	A
11	19-IP-698	191041612	MOHIT	NARENDER KUMAR	80	70	150	75%	A
12	19-IP-686	191041613	SANJEEV	SUKHBIR	93	83	176	88%	A
13	19-IP-675	191041614	KAFI	BIJENDER SINGH	90	80	170	85%	A
14	19-IP-674	191041616	DIKSHA	BRIJ MOHAN	80	70	150	75%	A
15	19-IP-699	191041617	NIKHIL CHANDEL	KARAMCHAND	80	70	150	75%	A
16	19-IP-677	191041618	SAKSHI	RAMESH	90	80	170	85%	A
17	19-IP-705	191041620	SHALINI SINGH	SINGH	90	80	170	85%	A
18	19-IP-729	191041621	BHAWNA	SANJEEV KUMAR	89	79	168	84%	A
19	19-IP-695	191041622	SONAL	SATISH KUMAR	93	83	176	88%	A
20	19-IP-688	191041623	REENU	NARSINGH	89	79	168	84%	A
21	19-IP-681	191041624	MINAXI	SHIVKUMAR	88	78	166	83%	A
22	19-IP-679	191041625	TANNU	RAKESH	93	83	176	88%	A
23	19-IP-692	191041626	RISHU	OM SHARMA	93	83	176	88%	A
24	19-IP-694	191041627	DIVYANSHI	AJAY KUMAR	88	78	166	83%	A
25	19-IP-797	191041628	MUSKAN	JOGINDER	89	79	168	84%	A
26	19-IP-691	191041629	MUSKAN	SANJAY	80	70	150	75%	A
27	19-IP-687	191041630	JYOTI	OMSINGH	90	80	170	85%	A
28	19-IP-685	191041631	SAGAR	PREM	90	80	170	85%	A
29	19-IP-704	191041632	NANCY	KRISHAN KUMAR	90	80	170	85%	A
30	19-IP-847	191041633	MANJU	SURENDER	91	81	172	86%	A
31	19-IP-706	191041634	ANKIT UPADHAYAY	SARVESH	91	81	172	86%	A
32		191041636	REKHA	RAJKUMAR	74	84	158	79%	A
33	19-IP-798	191041637	SONIA	ASHOK KUMAR	80	70	150	75%	A



34	19-IP-696	191041638	URVASHI	GULSHAN KUMAR	89	79	168	84%	A	Urvashi
35	19-IP-720	191041640	NANCY VERMA	SANJAY VERMA	87	77	164	82%	A	Nancy
36	19-IP-713	191041641	MONIKA	ROHTASH	89	79	168	84%	A	Monika
37	19-IP-724	191041642	ISHIKA	SUNIL KUMAR	80	70	150	75%	A	Ishika
38	19-IP-680	191041644	SONIA SAIFEE	MOMIN SAIFEE	60	80	140	70%	B	Sonia
39	19-IP-725	191041646	KAJAL DEVI	MUKESH KUMAR	90	80	170	85%	A	Kajal
40	19-IP-716	191041647	DIMPAL	AZAD	89	79	168	84%	A	Dimpal
41	19-IP-727	191041648	ANSHIKA	LATE RAJIV	89	79	168	84%	A	Anshika
42	19-IP-795	191041650	SHALU	OMPRAKASH	88	78	166	83%	A	Shalu
43	19-IP-796	191041653	SIMRAN	VIJAY KUMAR	80	70	150	75%	A	Simran
44	19-IP-719	191041656	SWATI TYAGI	JASRAJ TYAGI	87	77	164	82%	A	Swati
45	19-IP-728	191041657	RITU	ASHOK KUMAR	90	80	170	85%	A	Ritu
46	19-IP-846	191041658	SANJANA	MUKESH	90	80	170	85%	A	Sanjana
47	19-IP-717	191041659	YASHIKA	PREM	89	79	168	84%	A	Yashika
48	19-IP-723	191041664	KHUSHI	RAJENDER	89	79	168	84%	A	Khushi
49	19-IP-845	191041669	SHIWANI	ANUP SINGH	86	76	162	81%	A	Shiwani
50	19-IP-765	191041670	YUKTA CHADHA	PUNEET CHADHA	82	72	154	77%	A	Yukta
51	19-IP-838	191041672	MONIKA	MUNESH KUMAR	92	82	174	87%	A	Monika
52	19-IP-708	191041676	KOYANA	MANOJ KUMAR	91	81	172	86%	A	Koyana
53	19-IP-709	191041678	SHALLU KUMARI	SHARVAN KUMAR	90	80	170	85%	A	Shallu
54	19-IP-794	191041680	POOJA	BHOPAL SINGH	87	77	164	82%	A	Pooja
55	19-IP-690	191041681	KIRAN	JAGBIR	80	70	150	75%	A	Kiran
56	19-IP-834	191041685	SANJU SHARMA	MAHENDER SHARMA	89	79	168	84%	A	Sanju
57	19-IP-712	191041687	SHIVANI	RAJESH	90	80	170	85%	A	Shivani
58	18-IP-526	180040339	ANIL KUMAR	MUKESH KAUSHIK	59	79	138	69%	B	Anil
59	18-IP-525	180040367	ANKIT SAROHA	BALJEET SINGH	56	76	132	66%	B	Deepanshu
60	18-IP-520	180040352	DEEPANSHU	VEDPAL SINGH	54	74	128	64%	B	Akshay
61	18-IP-532	180040344	AKSHAY KUMAR	SURENDER	59	79	138	69%	B	Akshay
62	18-IP-488	180040355	PRIYA	SUBHASH SHARMA	58	78	136	68%	B	Priya
63	18-IP-504	180040349	NANCY	RAJBINDER GAHLYAN	60	80	140	70%	B	Nancy
64	18-IP-510	180040350	DIVYA GAHLYAN	ANIL KUMAR	57	77	134	67%	B	Divya
65	18-IP-530	180040366	REENA	BIJENDER SINGH	58	78	136	68%	B	Reena
66	18-IP-531	180040396	KAJAL GAUTAM	ROHTASH	59	79	138	69%	B	Kajal
67	18-IP-503	180040398	PRACHI	SOMDUTT	60	80	140	70%	B	Prachi

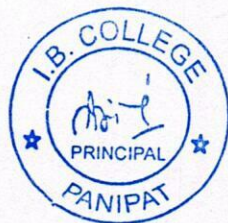


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SR.N O	KUK REGISTRATION NO.	UNIVERSITY ROLL NO.	STUDENT NAME	FATHER NAME	THOERY MARKS	PRACTICA L MARKS	TOTAL MARKS	%	GRADE	
1	19-IP-440	191138401	RAJAT TYAGI	DEEPAK TYAGI	80	70	150	75%	A	Deepak
2	19-IP-434	191138403	NEHA MAAN	DINESH MAAN	78	88	166	83%	A	Neha
3	19-IP-416	191138407	PRAYAG	GOPAL	80	70	150	75%	A	Prayag
4	19-IP-824	191138408	DEEPAK SHARMA	SATNARYAN	80	70	150	75%	A	Deepak
5	19-IP-409	191138412	SHIWANGI	MANGE RAM	90	80	170	85%	A	Shiwangi
6	19-IP-444	191138413	PURNIMA SHARMA	ASHWANI KUMAR	90	80	170	85%	A	Purnima
7	19-IP-410	191138414	KIRTI	RAJESH	89	79	168	84%	A	Kirti
8	19-IP-415	191138415	SHAHID	MD AESHAN	90	80	170	85%	A	Shahid
9	19-IP-427	191138416	RIDHIMA	KAVINDER SHARMA	90	80	170	85%	A	Ridhima
10	19-IP-447	191138417	ANJALI	BHAWAR	90	80	170	85%	A	Anjali
11	19-IP-408	191138418	AANCHAL	NARESH	90	80	170	85%	A	Aanchal
12	19-IP-811	191138420	ALISHA	SAMSHER ALI	89	79	168	84%	A	Alisha
13	19-IP-412	191138421	REENA	PAWAN KUMAR	89	79	168	84%	A	Reena
14	19-IP-436	191138422	MUSKAAN	RAJINDER SONI	88	78	166	83%	A	Muskan
15	19-IP-429	191138423	CHESTA	RAJESH	88	78	166	83%	A	Chesta
16	19-IP-443	191138424	TANNU PRIYA	ROY	88	78	166	83%	A	Tannu
17	19-IP-433	191138425	RITIKA	ASHOK	89	79	168	84%	A	Ritika
18	19-IP-425	191138426	MANISH	RAJENDER	60	80	140	70%	B	Manish
19	19-IP-445	191138427	SAHIB SINGH	SUKHWINDER SINGH	80	70	150	75%	A	Rajender
20	19-IP-438	191138429	MOHIT	RAJBIR SINGH	88	78	166	83%	A	Mohit
21	19-IP-423	191138430	VISHAL TYAGI	SIYANAND TYAGI	60	80	140	70%	B	Vishal
22	19-IP-424	191138433	SHUBHAM	SANTRAM SHARMA	60	80	140	70%	B	Shubham
23	19-IP-431	191138435	KASHISH	BHARAT BHUSHAN	70	80	150	75%	A	Kashish
24	19-IP-428	191138436	SAIJAL	RAKESH GULATI	80	70	150	75%	A	Saijal
25	19-IP-430	191138437	MITALI	BHARAT BHUSHAN	88	78	166	83%	A	Mitali
26	19-IP-432	191138438	NIKEETA KUMARI	PRASAD	85	75	160	80%	A	Nikeeta
27	19-IP-830	191138440	SACHIN KUMAR	RAMESH CHANDER	84	74	158	79%	A	Sachin



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SR.NO.	REGISTRATION NO.	UNIVERSITY ROLL NO.	STUDENT NAME	FATHER NAME	MARKS	PRACTICAL MARKS	TOTAL MARKS	%	GRAD
1	20-IP-116	201134401	TAMANNA ✓ Taman	RAVINDER KUMAR	89	79	168	84%	A
2	20-IP-128	201134403	VAANYA ✓ Va	AJAY SAXENA	90	80	170	85%	A
3	20-IP-117	201134404	SAKSHI ✓ Sak	VIJAY PAL	80	70	150	75%	A
4	20-IP-796	201134405	NANCY ✓ Nancy	VINOD KUMAR	90	80	170	85%	A
5	20-IP-118	201134406	SUSHMA RANI ✓ Sush	KRISHAN LAL	89	79	168	84%	A
6	20-IP-115	201134407	RASHIDA ✓ Rash	ALI HASAN	89	79	168	84%	A
7	20-IP-121	201134408	ANKUSH ✓ Anku	SURENDER	80	70	150	75%	A
8	20-IP-715	201134409	JATIN ✓ Jatin	SUBHASH	90	80	170	85%	A
9	20-IP-120	201134411	ARYAN VATS ✓ Aryan	RISHI PARKASH	70	80	150	75%	A
10	20-IP-126	201134412	VINAY ✓ Vinay	SUBHASH CHANDER	80	70	150	75%	A
11	20-IP-123	201134413	HARSH ✓ Harsh	NARESH	60	80	140	70%	B
12	20-IP-119	201134415	RAVINA ✓ Ravi	VIKRAM SINGH	60	80	140	70%	B
13	20-IP-711	201134416	RAHUL ✓ Rahul	RANDHIR SINGH	89	79	168	84%	A
14	20-IP-713	201134417	SAHIL KUMAR ✓ Sahil	INDERJEET	80	70	150	75%	A
15	20-IP-717	201134418	TISHA MIDDHA ✓ Tisha	LALIT MIDDHA	88	78	166	83%	A
16	20-IP-127	201134419	PRINCE ✓ Prince	SATPAL	80	70	150	75%	A
17	20-IP-716	201134421	SIMRAN ✓ Simran	SURENDER KUMAR	90	80	170	85%	A
18	20-IP-723	201134422	DEEPANSHI ✓ Deep	SANGEET KUMAR	90	80	170	85%	A
19	20-IP-83	201134423	BADAL ✓ Badal	RAVINDER KUMAR	80	70	150	75%	A
20	20-IP-133	201134424	DRISHTI ✓ Drish	YOGESH KUMAR	80	70	150	75%	A
21	20-IP-38	201134425	TANNU ✓ Tannu	NARESH SINGH	80	70	150	75%	A
22	20-IP-718	201134426	SHIVANI ✓ Shiv	AIMER	90	80	170	85%	A
23	20-IP-114	201134427	RIYA ✓ Riya	ROSHAN	80	70	150	75%	A
24	20-IP-823	201134428	SAKSHI SHARMA ✓ Sak	MANGAT RAM	80	70	150	75%	A
25	20-IP-130	201134429	KHUSHI ✓ Khushi	PRAVEEN GARG	90	80	170	85%	A
26	20-IP-714	201134430	KOMAL DEVI ✓ Komal	RAVINDER KUMAR	80	70	150	75%	A
27	20-IP-129	201134431	SONAM ✓ Sonam	SANJAY KUMAR	90	80	170	85%	A
28	20-IP-738	201134434	MANJEET ✓ Manj	SHAMSHER SINGH	90	80	170	85%	A



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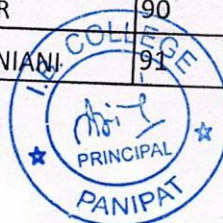
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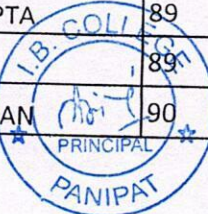
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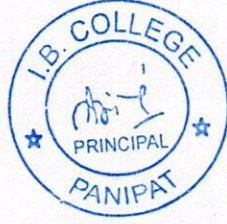
SR. NO.	REGISTRATION NO.	UNIVERSITY ROLL NO.	STUDENT NAME	FATHER NAME	THEORY MARKS	PRACTICAL MARKS	TOTAL MARKS	%	GRADE
1	20-IP-510	201039302	NISCHAL Nisch	RAJEEV KUMAR	90	80	170	85%	A
2	20-IP-329	201039304	AMIT Amit	RAM AWADH	80	70	150	75%	A
3	20-IP-307	201039307	VISHAL Vishal	SUNDER SINGH	90	80	170	85%	A
4	20-IP-286	201039308	ASHWANI Ashwani	BHUVINDER	89	79	168	84%	A
5	20-IP-282	201039311	SHAKTI Shakti	SATYANARAYAN	88	78	166	83%	A
6	20-IP-280	201039312	RITIK Ritik	VINOD	89	90	179	90%	A
7	20-IP-285	201039313	MANISH Manish	MANOJ KUMAR	80	70	150	75%	A
8	20-IP-281	201039314	SACHIN Sachin	SUBHASH	80	70	150	75%	A
9	20-IP-270	201039315	TAMANNA Tamanna	DHARMBIR	88	78	166	83%	A
10	20-IP-299	201039316	PRACHI Prachi	DALBIR SINGH	88	78	166	83%	A
11	20-IP-284	201039317	NILESH Nilesh	MANOJ KUMAR	89	79	168	84%	A
12	20-IP-301	201039318	PRIYANKA Priyanka	YASHPAL SINGH	87	77	164	82%	A
13	20-IP-344	201039319	KUMAR Kumar	HARISH KUMAR	87	77	164	82%	A
14	20-IP-345	201039321	AAKASH Aakash	GULSHAN KUMAR	94	84	178	89%	A
15	20-IP-1268	201039322	AMAN KUMAR	KRISHAN KUMAR	89	79	168	84%	A Aman Kumar
16	20-IP-328	201039324	VISHAL Vishal	KRISHAN	89	79	168	84%	A Aman Kumar
17	20-IP-308	201039325	ROBIN Robin	NARENDER KUMAR	90	80	170	85%	A
18	20-IP-320	201039326	NEETU Neetu	ASHOK KUMAR	91	81	172	86%	A
19	20-IP-704	201039327	SEEMA Seema	DHANI RAM	91	81	172	86%	A
20	20-IP-706	201039328	ANKIT Ankit	RAMESH	80	70	150	75%	A
21	20-IP-341	201039329	HIMANI Himani	DESRAJ	91	81	172	86%	A
22	20-IP-335	201039330	PRAKRITI Prakriti	BHAVINDER KUMAR	80	70	150	75%	A
23	20-IP-343	201039331	MONA Mona	TEK BAHADUR	89	79	168	84%	A
24	20-IP-342	201039332	MANST Manst	BIJENDER SINGH	88	78	166	83%	A
25	20-IP-331	201039333	NIDHI Nidhi	PARDEEP SHARMA	89	79	168	84%	A
26	20-IP-332	201039334	RANI Rani	BIJENDER	91	81	172	86%	A
27	20-IP-340	201039335	BHAWNA Bhawna	GULSHAN KUMAR	90	80	170	85%	A
28	20-IP-339	201039336	SHEETAL Sheetal	SHRI RAM	90	80	170	85%	A
29	20-IP-309	201039337	VIPUL Vipul	RAKESH KUMAR	88	78	166	83%	A
30	20-IP-324	201039338	RANI Rani	SEWA SINGH	89	79	168	84%	A
31	20-IP-336	201039339	ANJALI Anjali	JOGINDER	89	79	168	84%	A
32	20-IP-824	201039340	KIRTI RANI Kirti	DHARAMBIR	90	80	170	85%	A
33	20-IP-268	201039341	TAMANNA Tamanna	RAKESH PUNIANI	91	81	172	86%	A



34	20-IP-269	201039342	PRIYA <i>Priya</i>	RAJINDER SINGH SAINI	74	84	158	79%	A
35	20-IP-334	201039343	VANSHIKA SAINI <i>Vanisha</i>	RAJINDER SINGH SAINI	91	81	172	86%	A
36	20-IP-338	201039344	GARIMA <i>Garima</i>	BHARAT BHUSHAN	92	82	174	87%	A
37	20-IP-333	201039345	KRITIKA <i>Kritika</i>	RAJINDER SINGH SAINI	90	80	170	85%	A
38	20-IP-337	201039346	NEHA KAUSHIK <i>Neha</i>	DEVENDER	92	82	174	87%	A
39	20-IP-346	201039348	SACHIN GUPTA <i>Sachin</i>	AMAR NATH GUPTA	90	80	170	85%	A
40	20-IP-322	201039349	TANVI <i>Tanvi</i>	ANJAY	80	70	150	75%	A
41	20-IP-303	201039350	SIMRAN <i>Simran</i>	SANDEEP	71	81	152	76%	A
42	20-IP-302	201039351	ISHITA SAINI <i>Ishita</i>	KULDEEP SAINI	89	79	168	84%	A
43	20-IP-272	201039352	VIVEK DIWAKER <i>Vivek</i>	PAWAN KUMAR	93	83	176	88%	A
44	20-IP-312	201039353	SAHIL RANA <i>Sahil</i>	KULDEEP	90	80	170	85%	A
45	20-IP-277	201039354	SHARDA <i>Sharda</i>	RAJENDRA SAINI	90	80	170	85%	A
46	20-IP-278	201039355	KOMAL <i>Komal</i>	PARDEEP	91	81	172	86%	A
47	20-IP-290	201039357	SINGH <i>Singh</i>	MAHENDER SINGH	90	80	170	85%	A
48		201039358	MEGHA <i>Megha</i>	SHIV KUMAR	89	79	168	84%	A
49	20-IP-310	201039359	VARUN MALIK <i>Varun</i>	VED SINGH	66	86	152	76%	A
50	20-IP-313	201039361	ANKIT <i>Ankit</i>	HAMSHER	85	75	160	80%	A
51	20-IP-348	201039370	KUMAR <i>Kumar</i>	INDER SINGH	85	75	160	80%	A
52	20-IP-325	201039371	ANIKET VATS <i>Aniket</i>	SUSHIL KUMAR	89	79	168	84%	A
53	20-IP-273	201039373	NIKKI <i>Nikki</i>	SURENDER SINGH	90	80	170	85%	A
54	20-IP-347	201039374	ANJU <i>Anju</i>	RAJ KUMAR	89	79	168	84%	A
55	20-IP-323	201039376	KOMAL <i>Komal</i>	RAMCHANDER	91	81	172	86%	A
56	20-IP-296	201039377	ANURAG <i>Anurag</i>	SAHAB SINGH	82	72	154	77%	A
57	20-IP-318	201039378	AKASH <i>Akash</i>	RMSINGH	89	79	168	84%	A
58	20-IP-321	201039380	REKHA <i>Rekha</i>	BIJENDER	90	80	170	85%	A
59	20-IP-825	201039381	KOMAL <i>Komal</i>	CHAURASIYA	90	80	170	85%	A
60	20-IP-275	201039382	MANSI <i>Mansi</i>	RAJBIR	89	79	168	84%	A
61	20-IP-830	201039383	GEETANJALI <i>Geetanjali</i>	SATISH KUMAR	91	81	172	86%	A
62	20-IP-827	201039384	PUMMY <i>Pummy</i>	TILAKRAJ	89	79	168	84%	A
63	20-IP-271	201039385	TANISHA <i>Tanisha</i>	NARENDER	90	80	170	85%	A
64	20-IP-279	201039386	MEENAKSHI <i>Meenakshi</i>	JASBEER SHARMA	78	88	166	83%	A
65	20-IP-828	201039387	SANJANA <i>Sanjana</i>	HARPAL	80	70	150	75%	A
66	20-IP-315	201039388	PARTH <i>Parth</i>	SUBHASH SHARMA	90	80	170	85%	A
67	20-IP-274	201039389	SIMRAN <i>Simran</i>	SUKHVINDER	91	81	172	86%	A
68	20-IP-300	201039390	CHANDNI <i>Chandni</i>	IMAL GUPTA	89	79	168	84%	A
69	20-IP-703	201039392	KIRTI <i>Kirti</i>	VIKRAM	89	79	168	84%	A
70	20-IP-319	201039395	ANSHIKA <i>Anshika</i>	SAT NARAYAN	90	80	170	85%	A



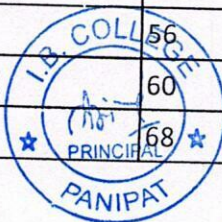
71	19-VS-193	201039396	RITIKA <i>Ritika</i>	RAJ SINGH	90	80	170	85% A
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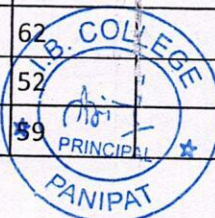
B.A IIND YEAR
SUBJECT -COMPUTER AWARENESS
SUBJECT-2020-2021

New

SR NO	KUK REGISTRAION	UNIVERSITY ROLL NO.	STUDENT NAME	FATHER NAME	THEORY MARKS	PRACTICAL MARKS	TOTAL MARKS	%	GRADE
1	18-IP-364	180072169	GOURAV SHARMA	ASHOK	65	85	150	75%	A
2	19-IP-26	191074802	DEVI	BHAGAT SINGH	82	72	154	77%	A
3	19-IP-82	191074803	CHARU	RAMESH NAGPAL	63	83	146	73%	B
4	19-IP-284	191074804	MONU	ISHWER SINGH	56	76	132	66%	B
5	19-IP-204	191074806	BALINDER	MAHABIR	72	82	154	77%	A
6	18-IP-358	191074807	VIVEK POSWAL	BISHAMBER SINGH	45	65	110	55%	C
7	19-IP-251	191074808	VIJAY MEHRA	SHAMSHER	50	70	120	60%	B
8	19-IP-183	191074809	SHEETAL KUMAR	RANDHIR SINGH	68	88	156	78%	A
9	19-IP-357	191074811	JYOTI KARPOOR	VIPAN KAPOOR	84	74	158	79%	A
10	19-IP-234	191074813	ROBIN SHARMA	SHARMA	54	74	128	64%	B
11	19-IP-233	191074814	ANUJ	PARMOD SINGH	60	80	140	70%	B
12	19-IP-22	191074816	MANJU	JOGINDER	64	84	148	74%	B
13	19-IP-377	191074817	MONTOO MALIK	DALBIR SINGH	82	72	154	77%	A
14	19-IP-376	191074818	AKSHAY	JAIVIR SINGH	66	86	152	76%	A
15	19-IP-369	191074819	DEEPAK KUMAR	OMPRAKASH	44	64	108	54%	C
16	19-IP-315	191074821	NIKHIL BALIYAN	PANKAJ BALIYAN	68	88	156	78%	A
17	19-IP-123	191074824	MANISHA PANDEY	OM PRAKASH PANDEY	47	67	114	57%	C
18	19-IP-5	191074826	ASRIYA	RAJESH	67	87	154	77%	A
19	19-IP-1	191074827	DIVYA	SURJEET	77	87	164	82%	A
20	19-IP-19	191074828	MANMEET KAUR	VAZIR SINGH	57	77	134	67%	B
21	19-IP-31	191074829	REKHA	BALJEET	76	86	162	81%	A
22	19-IP-337	191074830	NEHA	SATBIR SINGH	74	84	158	79%	A
23	19-IP-34	191074831	ANJALI	RAJESH KUMAR	76	86	162	81%	A
24	19-IP-16	191074834	PARUL	AJAY JAIN	58	78	136	68%	B
25	19-IP-15	191074835	POONAM	DHARAMVEER	66	86	152	76%	A
26	19-IP-773	191074836	ASHISH	DHARAMBIR SINGH	74	84	158	79%	A
27	19-IP-341	191074837	DEESHA SONI	SANJEEV SONI	86	76	162	81%	A
28	19-IP-343	191074838	POOJA	RAJESH PAPREJA	72	82	154	77%	A
29	19-IP-4	191074839	ANJU	BABULAL	74	84	158	79%	A
30	19-IP-28	191074840	ALSHA	MHO AHSAN	64	84	148	74%	B
31	19-IP-14	191074841	NEHA	ANIL KUMAR	58	78	136	68%	B
32	19-IP-9	191074842	KOMAL SAINI	NARSI	60	76	132	66%	B
33	19-IP-20	191074843	MONIKA	AJIT SINGH	60	80	140	70%	B
34	19-IP-11	191074844	ANSHU	RAVINDER	68	88	156	78%	A

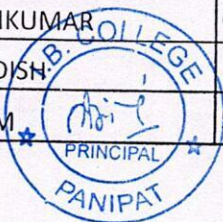


72	19-IP-59	191074887	HIMANSHI <i>Himanshi</i>	SHIV KUMAR	78	88	166	83%	A
73	19-IP-38	191074888	KOMAL <i>Komal</i>	MEVA SINGH	65	85	150	75%	A
74	19-IP-49	191074889	JYOTI <i>Jyoti</i>	SOMNATH	64	84	148	74%	B
75	19-IP-37	191074890	KAJAL <i>Kajal</i>	RAMKISHAN	60	80	140	70%	B
76	19-IP-57	191074891	NANCY <i>Nancy</i>	DHARMVIR	66	86	152	76%	A
77	19-IP-56	191074893	CHANDNA <i>Chandna</i>	BANARSI LAL VIJAY	80	70	150	75%	A
78	19-IP-60	191074894	PIRYANKA <i>Piryanka</i>	RAM GOPAI	82	72	154	77%	A
79	19-IP-41	191074895	NEETU <i>Neetu</i>	TARA SINGH	66	86	152	76%	A
80	19-IP-779	191074896	REETU <i>Reetu</i>	BAJINDER KUMAR	68	88	156	78%	A
81	19-IP-44	191074897	SHIVANI <i>Shivani</i>	BHALE RAM	74	84	158	79%	A
82	19-IP-48	191074898	PREETI <i>Preeti</i>	SHIV KUMAR	74	84	158	79%	A
83	19-IP-76	191074899	SWATI <i>Swati</i>	RAKESH GOSWAMI	64	84	148	74%	B
84	19-IP-131	191074900	POOJA <i>Pooja</i>	OM PARKASH	76	86	162	81%	A
85	19-IP-89	191074901	TANYA <i>Tanya</i>	JITENDER SINGH	75	85	160	80%	A
86	19-IP-108	191074902	TAMNNA <i>Tamnna</i>	PARVEEN TYAGI	50	70	120	60%	B
87	19-IP-77	191074903	NEERU BALA <i>Neeru</i>	RAMCHANDER	62	82	144	72%	B
88	19-IP-775	191074904	RIHA DEVI <i>Riha</i>	SATNARAYAN	76	86	162	81%	A
90	19-IP-367	191074906	DEEPAK <i>Deepak</i>	SATISH KUMAR	64	84	148	74%	B
91	19-IP-79	191074907	PREETI <i>Preeti</i>	GOPI RAM	82	72	154	77%	A
92	19-IP-104	191074908	SHASHI <i>Shashi</i>	VEER SINGH	70	80	150	75%	A
94	19-IP-122	191074910	ANAM <i>Anam</i>	MUSHRRAF	84	74	158	79%	A
95	19-IP-351	191074911	KIRAN <i>Kiran</i>	RAJESH	88	78	166	83%	A
96	19-IP-65	191074912	ANITA <i>Anita</i>	BACHCHA LAL	74	84	158	79%	A
97	19-IP-88	191074913	PARMILA <i>Parmila</i>	GULAB SINGH	72	82	154	77%	A
98	19-IP-64	191074914	KAVITA <i>Kavita</i>	RAVINDER KUMAR	70	80	150	75%	A
99	19-IP-97	191074915	SAKSHI <i>Sakshi</i>	RAJINDER KUMAR	70	80	150	75%	A
101	19-IP-73	191074917	SHALU <i>Shalu</i>	SUSHIL KUMAR	50	70	120	60%	B
102	19-IP-72	191074918	TWINKLE ARORA <i>Twinkle</i>	VIVY ARORA	62	82	144	72%	B
104	19-IP-780	191074920	AARTI <i>Aarti</i>	VINOD KUMAR	65	85	150	75%	A
105	19-IP-788	191074921	ANU SHARMA <i>Anu</i>	NARESH	76	86	162	81%	A
106	19-IP-110	191074922	RASHMI <i>Rashmi</i>	HEMANT KUMAR	60	80	140	70%	B
107	19-IP-69	191074923	KAJAL <i>Kajal</i>	KRISHAN	66	86	152	76%	A
108	19-IP-71	191074924	DEEPAKSHI <i>Deepakshi</i>	PAWAN SHARMA	68	88	156	78%	A
109	19-IP-91	191074925	VERSHA <i>Versha</i>	VINOD KUMAR	80	70	150	75%	A
110	19-IP-129	191074926	ANJALI <i>Anjali</i>	RAMESHWAR DASS	62	82	144	72%	B
111	19-IP-94	191074927	PREETI SHARMA <i>Preeti</i>	RAMJUARI SHARMA	52	72	124	62%	B
113	19-IP-121	191074929	POOJA DEVI <i>Pooja</i>	RISHIPAL	59	79	138	69%	B

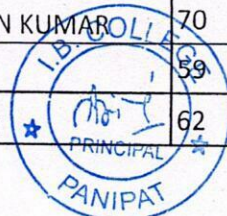


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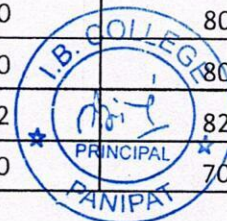
114	19-IP-84	191074930	REKHA	JAI BHGWAN	64	84	148	74%	B	Rekha
115	19-IP-362	191074931	NAVEEN	SHAMBHU NATH	70	80	150	75%	A	Naveen
118	19-IP-157	191074934	SAKSHI	RAKESH	58	78	136	68%	B	Sakshi
119	19-IP-101	191074935	SHIVANI शिवनी	JOGINDER	63	83	146	73%	B	Shivani
120	19-IP-114	191074936	RITIKA KATHAIT	VIRENDER KATHAIT	76	86	162	81%	A	Ritika
121	19-IP-113	191074937	KHUSHBU	BHAGWAT	68	88	156	78%	A	Khushbu
122	19-IP-132	191074938	SHIVANI	JAGATRAM	76	86	162	81%	A	Shivani
123	19-IP-81	191074939	SAVITA	RAKESH	60	80	140	70%	B	Savita
125	19-IP-119	191074941	SALONI	RANBIR ROHILLA		20	20	10%	D	Saloni
126	19-IP-332	191074942	RAHEMEEN	KAFEEL AHMAD	70	80	150	75%	A	Rahmeen
127	19-IP-127	191074943	KM RASHI	SUNIL KUMAR	80	70	150	75%	A	K.M. Rashi
128	19-IP-99	191074944	AARTI	JAGMOHAN	60	80	140	70%	B	Aarti
129	19-IP-115	191074945	TRIPTI	SATBIR	82	72	154	77%	A	Tripti
130	19-IP-406	191074946	ISHU	PYARE LAL	74	84	158	79%	A	Ishu
132	19-IP-98	191074948	NISHA	ISHWAR SINGH	82	72	154	77%	A	Nisha
133	19-IP-111	191074949	PRIYA	JAGDISH KAUSHIK	68	88	156	78%	A	Priya
134	19-IP-355	191074950	LOVELY	DEVRAJ	80	70	150	75%	A	Lovely
135	19-IP-147	191074952	PREETI	RAJKUMAR	51	71	122	61%	B	Preeti
136	19-IP-103	191074953	RADHIKA	SUBHASH	73	83	156	78%	A	Radhika
137	19-IP-349	191074954	HIMANSHI	KRISHAN LAL	56	76	132	66%	B	Himanshi
138	19-IP-100	191074956	ALKA MISHRA	KAMLESH MISHRA	70	80	150	75%	A	Alka
139	19-IP-63	191074957	TANNU	JAI KUMAR		20	20	10%	D	Tannu
140	19-IP-107	191074958	SADHNA	PURAN LAL	64	84	148	74%	B	Sadhna
141	19-IP-68	191074959	TANNU	PARVEEN	75	85	160	80%	A	Tannu
142	19-IP-167	191074960	RITU	SOMLAL	60	80	140	70%	B	Ritu
143	19-IP-70	191074961	KAJAL	BALWAN SINGH	80	70	150	75%	A	Kajal
144	19-IP-112	191074962	KAJAL	VINOD KUMAR	44	64	108	54%	C	Kajal
145	19-IP-353	191074963	LEEZA	INDERJEET VERMA	70	80	150	75%	A	Leeza
146	19-IP-405	191074964	AASHU	BALBIR	58	78	136	68%	B	Aashu
147	19-IP-102	191074965	KHUSHBOO	ROSHAN LAL	80	70	150	75%	A	Khushbu
148	19-IP-120	191074967	KAJAL	HARENDER	72	82	154	77%	A	Kajal
149	19-IP-125	191074968	SAMIKSHA	VIPIN SHARMA	76	86	162	81%	A	Samiksha
150	19-IP-106	191074969	SHALLU	HARI BABU		20	20	10%	D	Shallu
151	19-IP-404	191074970	VIDHI	MEHAR SINGH	45	65	110	55%	C	Vidhi
152	19-IP-136	191074972	SEEMA DEVI	RAMKUMAR	66	86	152	76%	A	Seema
153	19-IP-135	191074974	TANNU	JAGDISH		20	20	10%	D	Tannu
154	19-IP-149	191074975	KUSUM	PREM	54	74	128	64%	B	Kusum



155	19-IP-138	191074976	DIVYA (Divya)	ANIL KUMAR	68	88	156	78%	A
156	19-IP-116	191074977	RIMJHIM (Rimjhim)	PAPPU RAM	60	80	140	70%	B
157	19-IP-150	191074978	RINKI (Rinki)	KAPTAN	63	83	146	73%	B
158	19-IP-165	191074980	SAKSHI (Sakshi)	HAWA SINGH	44	64	108	54%	C
159	19-IP-323	191074981	SIMRAN (Simran)	SHOKENDER	71	81	152	76%	A
160	19-IP-142	191074982	SIMRAN (Simran)	RAMPAL	70	80	150	75%	A
161	19-IP-407	191074983	TANNU (Tanu)	JAGPAL	84	74	158	79%	A
162	19-IP-137	191074984	KAJAL (Kajal)	JAGDISH SINGH	76	86	162	81%	A
163	19-IP-140	191074985	AARTI (Aarti)	ROHTAS	74	84	158	79%	A
164	19-IP-319	191074986	MANISHA (Manish)	SUBHASH	68	88	156	78%	A
165	19-IP-159	191074987	MANISHA (Manish)	GHANTOLI	74	84	158	79%	A
166	19-IP-402	191074988	ANSHIKA (Anshika)	NARESH KUMAR	66	86	152	76%	A
167	19-IP-789	191074989	KAJAL (Kajal)	RAM KUMAR		20	20	10%	D
168	19-IP-154	191074990	NEERAJ (Neeraj)	BRAHMPAL	58	78	136	68%	B
169		191074991	SIMRAN (Simran)	SATISH KUMAR	58	78	136	68%	B
170		191074992	PREETI (Preeti)	SAJJAN SINGH	76	86	162	81%	A
171	19-IP-139	191074993	NIKITA (Nikita)	SULTAN SINGH	60	80	140	70%	B
172	19-IP-117	191074994	MANJEET (Manjeet)	SUKHDEV KUMAR	63	83	146	73%	B
173	19-IP-320	191074995	PRIYNKA (Priyanka)	SHAMBHU GUPTA	80	70	150	75%	A
174	19-IP-144	191074996	NEHA RANI (Neha)	VINOD KUMAR	65	85	150	75%	A
175	19-IP-815	191074997	AMRITA (Amrita)	SUDHIR PASWAN	80	70	150	75%	A
176	19-IP-322	191074998	ANU (Anu)	JAGBIR	74	84	158	79%	A
177	19-IP-359	191075001	VISHALI RANI (Vishali)	SUNDER PAL	66	86	152	76%	A
178	19-IP-146	191075003	ALPANA (Alpana)	RAMASHEESH	70	80	150	75%	A
179	19-IP-143	191075004	POOJA (Pooja)	ISHWER	74	84	158	79%	A
180	19-IP-156	191075005	ANNU (Annu)	BRAHMPAL	68	88	156	78%	A
181	19-IP-835	191075006	RIYA (Riya)	NARESH KUMAR	78	88	166	83%	A
182	19-IP-158	191075008	RAKHI RANA (Rakhi)	PAWAN RANA	81	71	152	76%	A
183	19-IP-783	191075009	BHARTI (Bharti)	PHOOL CHAND	78	88	166	83%	A
184	19-IP-207	191075010	DEEPAK KUMAR (Deepak)	RAJENDER SINGH	80	70	150	75%	A
185	19-IP-829	191075011	MUSKAN (Muskan)	GULAB	58	78	136	68%	B
186	19-IP-162	191075012	MANISHA (Manish)	KRISHAN DEV	68	88	156	78%	A
187	19-IP-151	191075013	MANISHA (Manish)	SHIVBHAWAN	58	78	136	68%	B
188	19-IP-148	191075014	KOMAL (Komal)	SANJAY	62	82	144	72%	B
189	16-AP-826	191075015	JIGYASA NANDWANI (Jigyasa)	PARVEEN KUMAR	70	80	150	75%	A
190	19-IP-331	191075016	SONIA (Sonia)	JAGPAL	59	79	138	69%	B
191	19-IP-155	191075017	DIKSHA (Diksha)	JAGDISH	62	82	144	72%	B



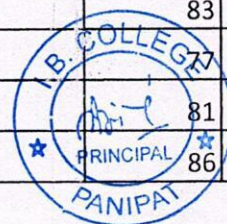
192	19-IP-153	191075018	SANJANA SONI <i>Sanjana</i>	ASHOK	53	73	126	63%	B
193	19-IP-145	191075019	TAMANNA <i>Tamanna</i>	MADANLAL	69	89	158	79%	A
194	19-IP-160	191075020	KOMAL <i>Komal</i>	DHARMBER	64	84	148	74%	B
195	19-IP-164	191075022	MITALI <i>Mitali</i>	VINOD KUMAR	80	70	150	75%	A
196	19-IP-134	191075023	RITU <i>Ritu</i>	KAILASH SHARMA	65	85	150	75%	A
197	19-IP-785	191075024	KAJAL RANI <i>Kajal</i>	BALWAN SINGH	49	69	118	59%	C
198	19-IP-790	191075025	SHIVANI GUPTA <i>Shivani</i>	VIJAY KUMAR	74	84	158	79%	A
199	19-IP-126	191075027	BHAWNA <i>Bhavana</i>	SUBHASH	74	84	158	79%	A
200	19-IP-75	191075028	DIVYA TYAGI <i>Divya</i>	PRITAM SINGH	64	84	148	74%	B
201	19-IP-781	191075029	KOMAL <i>Komal</i>	DAYANAND	64	84	148	74%	B
202	19-IP-93	191075030	ANJALI <i>Anjali</i>	RAJKUMAR	72	82	154	77%	A
203	19-IP-96	191075031	RAVINA <i>Ravina</i>	INDERPAL	62	82	144	72%	B
204	19-IP-352	191075032	SHAKSHI SINGH <i>Shakshi</i>	SINGH	84	74	158	79%	A
205	19-IP-843	191075033	BHARTI <i>Bharti</i>	SUBHASH	56	76	132	66%	B
206	19-IP-387	191075034	VIPIN <i>Vipin</i>	JITENDER	71	81	152	76%	A
207	19-IP-74	191075035	SAMINA <i>Samina</i>	MUSTAKIM	75	85	160	80%	A
208	19-IP-86	191075036	NEHA <i>Neha</i>	BABBAN	64	84	148	74%	B
209	19-IP-767	191075037	GOURAV <i>Gourav</i>	RAJBIR	49	69	118	59%	C
210	19-IP-174	191075038	SAHIL <i>Sahil</i>	KRISHAN	64	84	148	74%	B
211	19-IP-360	191075040	ASHISH MALIK <i>Ashish</i>	BALWAN SINGH	82	72	154	77%	A
212	19-IP-173	191075042	HARSH <i>Harsh</i>	CHAND PAL	62	82	144	72%	B
213	19-IP-172	191075043	VISHU <i>Vishu</i>	RAJBIR	68	88	156	78%	A
214	19-IP-180	191075044	KARTIK <i>Kartik</i>	ANOOP SHARMA	84	74	158	79%	A
215	19-IP-178	191075045	VISHU SHARMA	MUKESH SHARMA	68	88	156	78%	A
216	19-IP-179	191075046	NITESH <i>Nitesh</i>	DINESH RAI	57	77	134	67%	B
217	19-IP-170	191075051	RAVI KUMAR <i>Ravi</i>	RAMMEHAR	80	70	150	75%	A
218	19-IP-175	191075052	VINIT <i>Vinit</i>	VINOD KUMAR	73	83	156	78%	A
219	19-IP-187	191075056	YOGESH <i>Yogesh</i>	JAI PARKASH	72	82	154	77%	A
220	19-IP-200	191075057	VISHAL SAINI <i>Vishal</i>	RAJPAL	62	82	144	72%	B
221	19-IP-190	191075058	SAHIL SAROHA <i>Sahil</i>	KRISHAN KUMAR	90	80	170	85%	A
222	19-IP-363	191075059	RAMAN <i>Raman</i>	MANOJ KUMAR	88	78	166	83%	A
223	19-IP-189	191075060	RAVINDER <i>Ravinder</i>	RAMMEHAR	92	82	174	87%	A
224	19-IP-813	191075061	SOURAV KUMAR <i>Sourav</i>	RANJEET YADAV	85	75	160	80%	A
225	19-IP-195	191075063	ABHISHEK <i>Abhishek</i>	SANJAY	60	80	140	70%	B
226	19-IP-199	191075064	ASHISH <i>Ashish</i>	RANBIR SINGH	90	80	170	85%	A
227	19-IP-196	191075065	MONU <i>Monu</i>	MAHENDER	62	82	144	72%	B
228	19-IP-198	191075066	SHIVAM KUMAR <i>Shivam</i>	PARVEEN KUMAR	80	70	150	75%	A



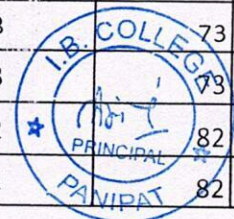
229	19-IP-347	191075068	RAJNI AHLAWAT <i>Rajni</i>	DILAWAR SINGH	74	84	158	79%	A
230	19-IP-192	191075069	YOGESH <i>Yogesh</i>	RINKU KUMAR	80	70	150	75%	A
231	19-IP-208	191075073	VEENIT <i>Veenit</i>	MUKESH KUMAR	60	80	140	70%	B
232	19-IP-768	191075074	RAVI KUMAR <i>Ravi</i>	RAJESH	86	76	162	81%	A
233	19-IP-201	191075075	SAHIL <i>Sahil</i>	JASHMER	87	77	164	82%	A
234	19-IP-203	191075076	ABHISHEK <i>Abhishek</i>	ARVIND	90	80	170	85%	A
235	19-IP-205	191075079	MOHIT <i>Mohit</i>	RAMNIWAS	92	82	174	87%	A
236	19-IP-202	191075080	AKASH <i>Akash</i>	ANIL	93	83	176	88%	A
237	19-IP-210	191075083	NIKHIL KUMAR <i>Nikhil</i>	MUKESH KUMAR	89	79	168	84%	A
238	19-IP-209	191075084	MONU <i>Monu</i>	RAMDHARI	85	75	160	80%	A
239	19-IP-214	191075085	SACHIN <i>Sachin</i>	SANJAY	86	76	162	81%	A
240	19-IP-184	191075086	ASHISH <i>Ashish</i>	RAMMEHAR	89	79	168	84%	A
241	19-IP-371	191075087	AMIT KUMAR <i>Amit</i>	ROHTASH	79	89	168	84%	A
242	19-IP-278	191075088	DILJEET <i>Diljeet</i>	JASVIR	80	70	150	75%	A
243	19-IP-276	191075089	ANKIT <i>Ankit</i>	RAVINDER KUMAR	87	77	164	82%	A
244	19-IP-261	191075090	YOGESH <i>Yogesh</i>	SURENDER	89	79	168	84%	A
245	19-IP-274	191075091	PARVEEN KUMAR <i>Parveen</i>	DARBARA	88	78	166	83%	A
246	19-IP-262	191075092	AJAY <i>Ajay</i>	SATYAWAN	80	70	150	75%	A
247	19-IP-272	191075093	SUNIL <i>Sunil</i>	DHARAMBIR	90	80	170	85%	A
248	19-IP-266	191075094	ROHIT <i>Rohit</i>	SHRI RAM	80	70	150	75%	A
249	19-IP-238	191075095	PAWAN KUMAR <i>Pawan</i>	OMPARKASH ANEJA	89	79	168	84%	A
250	19-IP-194	191075096	VINAY <i>Vinay</i>	SATISH	88	78	166	83%	A
251	19-IP-273	191075097	ARIF ALI <i>Arif</i>	JAHUR HASAN	88	78	166	83%	A
252	19-IP-267	191075098	KASIM ALI <i>Kasim</i>	HAMID ALI	89	79	168	84%	A
253	19-IP-256	191075100	ROHIT <i>Rohit</i>	ANIL KUMAR	90	80	170	85%	A
254	19-IP-236	191075101	RAJAN <i>Rajan</i>	UMAKANT	82	72	154	77%	A
255	19-IP-358	191075103	SONIA <i>Sonia</i>	SATPAL GEHLOT	67	87	154	77%	A
256	19-IP-215	191075104	ROHIT KUMAR <i>Rohit</i>	PAWAN KUMAR	81	71	152	76%	A
257	19-IP-197	191075105	ASHISH <i>Ashish</i>	KARAMBIR	80	70	150	75%	A
258	19-IP-368	191075106	DINESH <i>Dinesh</i>	RAMPARSHAD	92	82	174	87%	A
259	19-IP-54	191075107	MEENU <i>Meenu</i>	JAGDISH	70	80	150	75%	A
260	19-IP-396	191075108	SAGAR BHARDWAJ	MUKESH BHARDWAJ	70	80	150	75%	A
261	19-IP-333	191075109	SONALI <i>Sonali</i>	PARMOD KUMAR	80	70	150	75%	A
262	19-IP-95	191075110	MANISHA <i>Manisha</i>	SUKHBIR	62	82	144	72%	B
263	19-IP-305	191075111	DHOUNCHAK <i>Dhounchak</i>	VIRENDER SINGH	80	70	150	75%	A
264	19-IP-260	191075114	VIKAS <i>Vikas</i>	PARTAP SINGH	88	78	166	83%	A
265	19-IP-271	191075115	GULFAM <i>Gulfam</i>	MUNNA ALI	82	72	154	77%	A



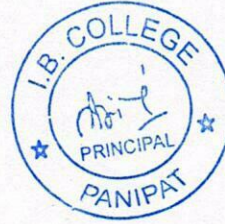
236	18-NNSS-8	191075116	NAVEEN <i>Naveen</i>	SUMAN KUMAR	80	70	150	75%	A
267	19-IP-66	191075117	HIMANSHI <i>Himanshi</i>	RAJKUMAR	80	70	150	75%	A
268	19-IP-330	191075118	GAYATRI <i>Gayatri</i>	GOPAL	91	81	172	86%	A
269	19-IP-784	191075119	AANCHAL <i>Aanchal</i>	RAJESH	80	70	150	75%	A
270	19-IP-239	191075121	ABHISHEK <i>Abhishek</i>	SURESH	80	70	150	75%	A
271	19-IP-243	191075122	SAHIL <i>Sahil</i>	KULDEEP	90	80	170	85%	A
272	19-IP-247	191075123	AAKASH <i>Aakash</i>	KRISHAN SINGH	90	80	170	85%	A
273	19-IP-246	191075125	ANKIT KUMAR <i>Ankit</i>	RAM NIWAS	89	79	168	84%	A
274	19-IP-259	191075126	HARSH <i>Harsh</i>	SUSHIL	86	76	162	81%	A
275	19-IP-283	191075127	KARAMPAL <i>Karampal</i>	SURENDER	72	82	154	77%	A
276	19-IP-252	191075128	DHANANJAY KUMAR <i>Dhananjay</i>	VINOD KUMAR	70	80	150	75%	A
277	19-IP-277	191075130	SANJEEV KUMAR <i>Sanjeev</i>	RAJENDER SINGH	78	88	166	83%	A
278	19-IP-231	191075131	VIJAY <i>Vijay</i>	RAJENDER	74	84	158	79%	A
279	19-IP-230	191075132	DEEPAK <i>Deepak</i>	BAHADUR SINGH	57	77	134	67%	B
280	19-IP-217	191075136	ROHIT <i>Rohit</i>	ROSHAN LAL	90	80	170	85%	A
281	19-IP-381	191075138	SHREY <i>Shrey</i>	RAJIV	88	78	166	83%	A
282	19-IP-270	191075141	TUSHAR <i>Tushar</i>	NARESH KUMAR	77	87	164	82%	A
283	19-IP-372	191075145	PRINCE <i>Prince</i>	MUKESH KUMAR	81	71	152	76%	A
284	19-IP-782	191075147	SAPNA <i>Sapna</i>	SUNIL YAMGAR	91	81	172	86%	A
285	19-IP-282	191075150	RAVI <i>Ravi</i>	RAJKUMAR	88	78	166	83%	A
286	19-IP-245	191075152	RAVI <i>Ravi</i>	RAJKUMAR	89	79	168	84%	A
287	19-IP-240	191075153	GAURAV <i>Gaurav</i>	RAMKARAN	71	81	152	76%	A
288	19-IP-772	191075154	AKSHAY <i>Akshay</i>	RAJENDER	91	81	172	86%	A
289	19-IP-820	191075155	DEEPAK SHARMA <i>Deepak</i>	VED PARKASH	67	87	154	77%	A
290	19-IP-288	191075156	RAMU <i>Ramu</i>	SUBHASH	55	75	130	65%	B
291	19-IP-389	191075157	PARVESH <i>Parvesh</i>	SAMRAT	90	80	170	85%	A
292	19-IP-787	191075158	ARUN PATEL <i>Arun</i>	ASHOK PATEL	56	76	132	66%	B
293	19-IP-338	191075159	SONU <i>Sonu</i>	RAMESH KUMAR	88	78	166	83%	A
294	19-IP-386	191075162	OSAMA <i>Osama</i>	KOUSAR	81	71	152	76%	A
295	19-IP-774	191075163	SAHIL BAJAJ <i>Sahil</i>	SATBIR BAJAJ	88	78	166	83%	A
296	19-IP-384	191075164	RITIK <i>Ritik</i>	KRISHAN KALRA	89	79	168	84%	A
297	19-IP-388	191075166	RITIK GOSWAMI <i>Ritik</i>	GOSWAMI	74	84	158	79%	A
298	19-IP-287	191075168	RAHUL KASHYAP <i>Rahul</i>	MAHIPAL KASHYAP	70	80	150	75%	A
299	19-IP-399	191075170	ANKUSH KUMAR <i>Ankush</i>	SURESH KUMAR	73	83	156	78%	A
300	19-IP-318	191075171	AKSHITIZ <i>Akshitez</i>	JAGBIR	87	81	164	82%	A
301	19-IP-301	191075172	ANIKET <i>Aniket</i>	SANJAY	91	81	172	86%	A
302	19-IP-326	191075173	DEEPAK <i>Deepak</i>	DHARAMPAL	66	86	152	76%	A



303	19-IP-265	191075176	SAWAN <i>Sawan</i>	SKINDER SINGH	72	82	154	77%	A
304	19-IP-328	191075177	NIKHIL KUMAR <i>Nikhil</i>	SOHAN	70	80	150	75%	A
305	19-IP-316	191075178	SHUBHAM <i>Shubham</i>	JAIPAL	66	86	152	76%	A
306	19-IP-397	191075180	GURUSEWAK SINGH <i>Gurusewak</i>	SUKHWANT SINGH	92	82	174	87%	A
307	19-IP-398	191075181	RIMPI <i>Rimpi</i>	MUKESH	90	80	170	85%	A
308	19-IP-837	191075182	RAHUL <i>Rahul</i>	SATNARAYAN	65	85	150	75%	A
309	19-IP-771	191075183	UJJWAL <i>Ujjwal</i>	RAMNIWAS	72	82	154	77%	A
310	19-IP-310	191075184	ASHWANI <i>Ashwani</i>	NANDLAL	88	78	166	83%	A
311	19-IP-339	191075185	NITESH <i>Nitesh</i>	RAMKUWAR	56	76	132	66%	B
312	19-IP-298	191075187	RINKU <i>Rinku</i>	SURESH	90	80	170	85%	A
313	19-IP-325	191075189	MOHIT BHARDWAL <i>Mohit</i>	MUKESH KUMAR	92	82	174	87%	A
314	19-IP-311	191075190	RAVINDER KUMAR <i>Ravinder</i>	ISHWAR SINGH	92	82	174	87%	A
315	19-IP-291	191075192	MOHIT <i>Mohit</i>	KRISHAN	62	82	144	72%	B
316	19-IP-255	191075193	SAGAR <i>Sagar</i>	VINOD KUMAR	93	83	176	88%	A
317	19-IP-258	191075194	ROHIT <i>Rohit</i>	RAJENDER	55	75	130	65%	B
318	19-IP-382	191075195	MUKESH KUMAR <i>Mukesh</i>	RADHESHYAM	74	84	158	79%	A
319	19-IP-227	191075196	SAHDEV <i>Sahdev</i>	ROHTAS	88	78	166	83%	A
320	19-IP-222	191075201	VISHAL ROHILLA <i>Vishal</i>	SATISH KUMAR	88	78	166	83%	A
321	19-IP-294	191075202	SAHIL <i>Sahil</i>	NARESH	91	81	172	86%	A
322	19-IP-232	191075203	AJAY <i>Ajay</i>	SHEETAL DASS	73	83	156	78%	A
323	19-IP-229	191075204	HARIOM <i>Hariom</i>	ANIL KUMAR	88	78	166	83%	A
324	19-IP-281	191075206	BITTU <i>Bittu</i>	MOHAN	75	85	160	80%	A
325	19-IP-218	191075207	RAHUL <i>Rahul</i>	RAJENDER	91	81	172	86%	A
326	19-IP-327	191075208	SOURAV <i>Sourav</i>	SALEK	90	80	170	85%	A
327	19-IP-221	191075212	HIMANSHU <i>Himanshu</i>	RAMPAL	74	84	158	79%	A
328	19-IP-213	191075213	ASHISH <i>Ashish</i>	RAJBIR SINGH	45	65	110	55%	C
329	19-IP-212	191075214	ARCHISH <i>Archish</i>	JAIBHAGWAN	40	60	100	50%	C
330	19-IP-293	191075216	SAHIL CHHOKER <i>Sahil</i>	RAMESH	60	80	140	70%	B
331	19-IP-279	191075217	NAVEEN <i>Naveen</i>	JAGBIR	64	84	148	74%	B -
332	19-IP-825	191075219	ANKUSH <i>Ankush</i>	PAWAN	73	83	156	78%	A
333	19-IP-206	191075222	AMANJOT <i>Amanjot</i>	KRISHAN LAL	75	85	160	80%	A
334	19-IP-317	191075224	AASHISH <i>Aashish</i>	KRISHAN PAL	93	83	176	88%	A
335	19-IP-219	191075225	SAHIL <i>Sahil</i>	RAJESH	73	83	156	78%	A
336	19-IP-365	191075226	PRINCE <i>Prince</i>	RAJESH	83	73	156	78%	A
337	19-IP-380	191075227	NISHANT <i>Nishant</i>	MOHINDER SINGH	83	73	156	78%	A
338	19-IP-342	191075229	MEHAK GULATI <i>Mehak</i>	SATISH GULATI	72	82	154	77%	A
339	19-IP-80	191075235	PREETI <i>Preeti</i>	OM PARKASH	92	82	174	87%	A



340	19-IP-334	191075236	SACHIN <i>Sachin</i>	DILAWAR ✓	83	73	156	78%	A
341	19-IP-296	191075238	ADITYA <i>Aditya</i>	KRISHAN LAL ✓	69	89	158	79%	A
342	19-IP-400	191075239	RITIK <i>Ritik</i>	NARESH ✓	89	79	168	84%	A
343	19-IP-78	191075240	PRIYANKA <i>Priyanka</i>	OM PARKASH	76	86	162	81%	A
344	19-IP-769	191075243	RAHUL <i>Rahul</i>	SURESH	64	84	148	74%	B
345		191138406			76	86	162	81%	A
346	19-IP-249	191074825	SACHIN <i>Sachin</i>	RAMESH KUMAR	69	89	158	79%	A
347	19-IP-308	191074820	AAKASH <i>Aakash</i>	RAM BHAGAT	86	76	162	81%	A
348	19-IP-74	191075035	SAMINA <i>Samina</i>	MUSTAKIM	87	77	164	82%	A
349		171074976			85	75	160	80%	A



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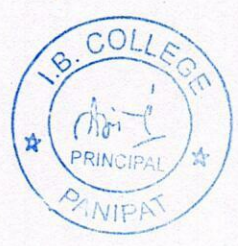
NO.	REG. NO	UNIV ROLL NO	NAME	FATHERS NAME	THEC	PRAC	TOTA	%	RESUL	
1	18-IP-348	180071902	JYOTI PUNDIR	BHARAT BHUSHAN PUNDIR	54	75	129	65	B	Jyoti
2	18-IP-35	180071903	MANISHA	BALRAM	49	75	124	62	B	Manisha
3	18-IP-36	180071904	SAPNA	RAJENDER	50	70	120	60	B	Sapna
4	18-IP-141	180071906	RITIK	RAJESH	42	75	117	59	C	Ritik
5	18-IP-124	180071907	KAMAL VERMA	JOGINDER VERMA	40	72	112	56	C	Kamal
6	18-IP-383	180071909	VINAY	RAJESH KUMAR	40	65	105	53	C	Vinay
7	18-IP-317	180071913	SACHIN	SUBHASH CHANDER	66	60	126	63	B	Sachin
8	18-IP-235	180071914	RAHUL	RAJPAL	41	60	101	51	C	Rahul
9	18-IP-54	180071915	VARSHA	SANJAY	58	70	128	64	B	Varsha
10	18-IP-357	180071921	SAHIL	SHAKTI SINGH	60	79	139	70	B	Sahil
11	18-IP-138	180071924	ANKUSH	RAJBIR SINGH	40	70	110	55	C	Ankush
12	18-IP-137	180071926	VISHAL	PARTAP SINGH	48	70	118	59	C	Vishal
13	18-IP-126	180071927	RAJNISH	SURENDER	56	70	126	63	B	Rajnish
14	18-IP-311	180071928	VISHAL	RAMESH	54	77	131	66	B	Vishal
15	18-IP-284	180071929	ANKUSH SHARMA	BALKISHAN	60	77	137	69	B	Ankush
16	18-IP-161	180071931	ROHIT	DILAWAR SINGH	42	65	107	54	C	Rohit
17	18-IP-316	180071932	SIDHARATH	RAJNISH SHARMA	56	65	121	61	B	Sidharath
18	18-IP-128	180071933	SAHIL	JAKISHAN	60	70	130	65	B	Sahil
19	18-IP-373	180071934	SAWAN KUMAR	HARIRAM	48	71	119	60	C	Sawan
20	18-IP-197	180071936	KHUSHAL	HARIRAM	58	70	128	64	B	Khushal
21	18-IP-154	180071941	SAGAR	RAVINDER KUMAR SHARMA	58	70	128	64	B	Sagar
22	18-IP-132	180071942	AMIT KUMAR	GULSHAN	44	71	115	58	C	Amit
23	18-IP-312	180071943	SAGAR	PARTAP SINGH RAWAL	41	78	119	60	C	Sagar
24	18-IP-312	180071944	ARJUN	SHAMSHER SINGH	45	75	120	60	B	Arjun
25	18-IP-315	180071946	ADITYA	RAMPHAL	44	75	119	60	C	Aditya
26	18-IP-106	180071947	ANJALI	PREM SINGH	48	60	108	54	C	Anjali
27	18-IP-60	180071949	NISHA	MANOJ	39	50	89	45	D	Nisha
28	18-IP-193	180071953	ADITYA SHARMA	NARESH	26	78	104	52	C	Aditya
29	18-IP-313	180071954	RAHUL	HARI OM	44	79	123	62	B	Rahul
30	18-IP-76	180071955	ADITI	RAJ KUMAR	47	70	117	59	C	Aditi
31	18-IP-64	180071957	ANKITA	VED PARKASH	53	72	125	63	B	Ankita
32	18-IP-113	180071958	NISHA	SURENDER	38	70	108	54	C	Nisha
33	18-IP-110	180071959	JYOTI	SHRINIWAS PATEL	57	65	122	61	B	Jyoti
34	18-IP-826	180071960	VANSHIKA	RAMCHANDER	51	75	126	63	B	Vanshika
35	18-IP-310	180071961	ANUJ SHARMA	JITENDER	53	79	132	66	B	Anuj
36	18-IP-260	180071965	SHIVANI	ASHOK KUMAR	56	75	131	66	B	Shivani
37	18-IP-38	180071966	MANJU	KHEM LAL	56	75	131	66	B	Manju
38	18-IP-102	180071967	DIKSHA RANI	SOMDUIT	53	70	123	62	B	Diksha
39	18-IP-97	180071970	DEEPA	SATISH KUMAR	43	71	114	57	C	Deepa
40	18-IP-78	180071971	KAJAL	CHUPAD SINGH	51	75	126	63	B	Kajal
41	18-IP-66	180071972	KOMAL	PAWAN KUMAR	47	61	108	54	C	Komal
42	18-IP-245	180071973	RACHNA	JITENDER	54	78	132	66	B	Rachna
43	18-IP-104	180071974	RITIKA	DHRAMVEER	55	70	125	63	B	Ritika
44	18-IP-46	180071976	NIRMALA	DEVENDER SINGH	45	62	107	54	C	Nirmala
45	18-IP-45	180071978	SUSHMA	DINDAYAL	53	70	123	62	B	Sushma
46	18-IP-98	180071979	SAPNA	SHRI KANT	37	70	107	54	C	Sapna
47	18-IP-50	180071980	JYOTI	PAPPU RAM	63	70	133	67	B	Jyoti
48	18-IP-109	180071981	POOJA	RAMKUMAR	64	75	139	70	B	Pooja
49	18-IP-95	180071982	RAVEENA	SUBHASH	57	71	128	64	B	Raveena
50	18-IP-864	180071983	KIRAN	MOH RAFAEK AHMAD	60	70	130	65	B	Kiran
51	18-IP-251	180071985	SONALI RANI	THAKUR DASS	35	60	95	48	D	Sonali
52	18-IP-237	180071986	SUMIT	MADAN MOHAN	45	79	124	62	B	Sumit
53	18-IP-67	180071987	ANNU	RAJBEER	51	70	121	61	B	Annu
54	18-IP-360	180071988	CHIRAG PARJAPATI	VIKRAM SINGH	50	70	120	60	B	Chirag
55	18-IP-207	180071990	ASHISH	RAJBIR SINGH	45	71	116	58	C	Ashish
56	18-IP-65	180071991	ANJALI	SURENDER	65	71	136	68	B	Anjali
57	18-IP-172	180071994	MANOJ KUMAR	SH VINOD KUMAR	55	70	125	63	B	Manoj Kumar
58	18-IP-297	180071996	SHAHBAJ	JAIRAM SINGH	37	55	92	46	D	Shahbaaj
59	18-IP-43	180071997	RINKI	SHAHDUL	75	73	148	74	B	Rinki
60	18-IP-219	180071998	MANISH	DESH RAJ	52	65	117	59	C	Manish
61	18-IP-190	180071999	MANISH	RAJENDER	51	65	116	58	C	Manish
62	18-IP-135	180072000	PARDEEP KUMAR	RAJENDER	55	65	120	60	B	Pardeep Kumar
63	18-IP-79	180072001	BHAWNA OBRAI	SITA RAM	54	59	113	57	C	Bhawna
64	18-IP-72	180072003	CHETNA	RAJ KUMAR	60	70	130	65	B	Chetna
65	18-IP-105	180072004	PREETI	KRISHAN	70	70	140	70	B	Preeti
66	18-IP-359	180072005	VISHAL	RAMPAL SINGH	65	72	137	69	B	Vishal



18-19-13/180072008 Sagor

Azad Singh

Roll No.	Name	Class
180072027	Komal	B.A
180072043	Usman	B.A
170080629	Manish	B.A
180072170	Sipali	B.A
180072176	Shivani	B.A
180072059	Mamta	B.A
180072187	VIKAS	B.A
180072166	Komal	B.A
180072095	Usha	B.A
180072209	Ritu	B.A
180071929	ANKUSH	B.A.



ROLL NO	NAME	FATHERS NAME	THEO	PRAC	TOTA	%	RESUL
133	18-IP-257	180072113 SEEMA DEVI					
134	18-IP-120	180072114 JASPREET KAUR					
135	18-IP-202	180072115 VIKAS					
136	18-IP-80	180072116 DEEPANSHI					
137	18-IP-283	180072117 GARIMA					
138	18-IP-53	180072119 KAVITA					
139	18-IP-333	180072120 RITU RANI					
140	18-IP-180	180072122 ASHISH					
141	18-IP-186	180072125 AJAY					
142	18-IP-301	180072127 MOHIT					
143	18-IP-70	180072128 PALLAVI					
144	18-IP-87	180072133 SIMRAN BHANDARI					
145	18-IP-123	180072134 NISHA					
146	18-IP-114	180072136 MENKA					
147	18-IP-81	180072144 ANJALI					
148	18-IP-794	180072145 AJAY KUMAR					
149	18-IP-103	180072146 DIKSHA RANI					
150	18-IP-354	180072148 ASHISH ROHILLA					
151	18-IP-244	180072152 ANJU					
152	18-IP-145	180072153 SACHIN					
153	18-IP-834	180072154 KIRTI					
154	18-IP-130	180072155 ASHWANI					
155	18-IP-204	180072157 GHANSHYAM					
156	18-IP-170	180072159 MANJEET					
157	18-IP-134	180072160 SUNNY					
158	18-IP-177	180072161 SANJEEV					
159	18-IP-820	180072162 KAPIL					
160	18-IP-281	180072163 AARTI					
161	18-IP-246	180072165 JYOTI KUMARI					
162	18-IP-198	180072167 AMAN KUMAR					
163	18-IP-308	180072171 MOHIT					
164	18-IP-821	180072173 ABHISHEK					
165	18-IP-191	180072175 SAHIL					
166	18-IP-127	180072177 SHALU					
167	18-IP-127	180072179 ANLUJ					
168	18-IP-139	180072182 GOURAV					
169	18-IP-52	180072183 MANISHA					
170	18-IP-229	180072186 VIKRAM					
171	18-IP-51	180072189 MANISHA					
172	18-IP-61	180072190 KUMARI SHIVANI					
173	18-IP-71	180072192 PINKI					
174	18-IP-263	180072193 JANVI					
175	18-IP-58	180072195 GEETA					
176	18-IP-888	180072197 KUSUM					
177	18-IP-41	180072198 PAYAL					
178	18-IP-112	180072199 BHUMIKA					
179	18-IP-266	180072202 PALLAVI					
180	18-IP-248	180072204 SIMRAN					
181	18-IP-340	180072206 KOMAL SHARMA					
182	18-IP-242	180072208 KAJAL RANI					
183	18-IP-258	180072209 RITU SHARMA					
184	18-IP-241	180072210 ANU					
185	18-IP-254	180072211 SWEETI					
186	18-IP-40	180072212 TAMANNA					
187	18-IP-832	180072214 ANU					
188	18-IP-829	180072217 TANU					
189	18-IP-828	180072220 MANISHA					
190	18-IP-833	180072221 RAKHI					
191	18-IP-82	180072222 ASHA					
192	18-IP-274	180072223 RUMA					
193	18-IP-264	180072226 SHILPY					
194	18-IP-830	180072227 SONIYA RANI					
195	18-IP-68	180072228 MANJEET					
196	18-IP-341	180072230 SHIVANI					
197	18-IP-280	180072231 RIYA					
198	18-IP-279	180072233 NISHA RANI GODSORA					



NO	NAME	FATHERS NAME	THEC	PRAC	TOTA	%	RESUL
180072235	NEHA	JAGDISH LAL	50	70	120	60	B
18-IP-86	SHIWANI	ASHOK KUMAR	70	59	129	65	B
18-IP-214	TAMANNA	RAJ KUMAR	60	60	120	60	B
18-IP-273	SANYAM DHIMAN	SHIV KUMAR DHIMAN	37	71	108	54	C
18-IP-232	MAUSAM	RAJESH	50	59	109	55	C
18-IP-200	SAGAR	AJAY KUMAR	45	65	110	55	C
18-IP-368	PINTU	ARJUN RAI	50	75	125	63	B
18-IP-265	KULDEEP	KRISHAN KUMAR	55	72	127	64	B
18-IP-880	SHIVANI	NARESH	65	60	125	63	B
18-IP-885	NEHA	DEVRAJ	30	70	100	50	C
18-IP-239	KIRAN	KUMRESH	37	70	107	54	C
18-IP-195	DIVESH	AMAR PARKASH	35	78	113	57	C
18-IP-47	MOHIT DHIMAN	ROSHAN LAL	38	70	108	54	C
18-IP-249	POOJA MANN	JAGBIR MANN	35	73	108	54	C
18-IP-831	RIYA SHARMA	KRISHAN LAL	35	79	114	57	C
18-IP-149	SHIVANI	ANIL BIRLA	68	79	147	74	B
180072261	KAUSHAL	MUKESH	55	75	130	65	B
18-IP-256	Rakhi	Karambire	75	79	154		A
18-IP-261	Monika	Maman Singh	45	70	115		C
18-IP-255	Bharti	Ajay Kumar	35	50	85		D
18-IP-268	Vaishali	Rajesh Kumar	35	77	112		C
180072123	Komal Sharma	Satish Kumar	40	70	110		C
18-IP-223	Rakesh	Sharma					
18-IP-148	Rakesh	Rambal	50	60	110		C
18-IP-176	Ashish	Kulbir Krishan	42	78	120		B
18-IP-287	Ajay	Rajesh	35	70	105		C
18-IP-205	Aakash	Manoj Kumar	41	60	101		C
18-IP-278	Amit Kumar	Elam Singh	60	65	125		B
18-IP-189	Anjali	Jagbir Singh	56	79	135		B Anjali
180072156	Devsoni	Surender Kumar	40	60	100		C
180072187	Mohit	Hari Prakash	35	70	105		C
18-IP-194	Vikas	Rajesh Kumar	35	70	105		C
180072258	Shivam Kumar	Rakesh	58	62	120		B
18-IP-384	Mudshida	Taishann	40	59	99		D
180072270	Tarun Deshwal	D.S. Deshwal	75	75	150		B

14-IP-470 6316470 Payal Nandgiri 62 63 125 (B)

180072039 Ankit Mr. Prakash

180072026 Sonam BA

180072006 Aarti BA



	UNIV ROLL NO	NAME	FATHERS NAME	THEO	PRAC	TOTAL	%	RESULT	
52	180072006	AARTI DEVI	SANJAY KUMAR	65	73	138	69	B	Aarti
69	18-IP-115	180072007	NIRMAL	60	71	131	66	B	Nirmal
	18-IP-151	180072008	SAGAR	37	72	109	55	C	Sagar
	18-IP-866	180072010	RACHNA	70	70	140	70	B	Rachna
71	18-IP-226	180072011	AJAY KADYAN	55	79	134	67	B	Ajay
72	18-IP-230	180072012	SUNITHA	40	75	115	58	C	Sunitha
73	18-IP-39	180072014	SUGHIKA	75	70	145	73	B	Sughika
74	18-IP-346	180072015	PAYAL TYAGI	60	75	135	68	B	Payal
75	18-IP-48	180072016	KAJAL NAIN	57	77	134	67	B	Kajal
76	18-IP-385	180072017	KOMAL	70	70	140	70	B	Komal
77	18-IP-825	180072018	KIRTI	65	70	135	68	B	Kirti
78	18-IP-335	180072019	SAWAN	59	65	124	62	B	Sawan
79	18-IP-328	180072020	KRISHAN	48	78	126	63	B	Krishan
80	18-IP-101	180072023	ANITA SAINI	65	79	144	72	B	Anita
81	18-IP-381	180072024	ANKIT ROHILLA	60	70	130	65	B	Ankit
82	18-IP-347	180072026	SONAM	70	70	140	70	B	Sonam
83	18-IP-188	180072027	MOHIT KUMAR	35	70	105	53	C	Mohit
84	18-IP-218	180072030	NAVNEET			0	0	FAIL	Navneet
85	18-IP-382	180072033	HARSHIT MOURYA	35	55	90	45	D	Harshit
86	18-IP-69	180072038	ANJALI	60	70	130	65	B	Anjali
87	18-IP-158	180072039	ANKIT	40	70	110	55	C	Ankit
88	18-IP-94	180072042	DISHA SHARMA	50	78	128	64	B	Disha
89	18-IP-220	180072043	USMAN	40	70	110	55	C	Usman
90	18-IP-96	180072044	ASHU	65	70	135	68	B	Ashu
91	18-IP-269	180072045	JONNY	60	78	138	69	B	Jonny
92	18-IP-174	180072048	AKSHAY KUMAR	45	67	112	56	C	Akshay
93	18-IP-83	180072049	PRIYANKA	75	59	134	67	B	Priyanka
94	18-IP-152	180072050	ANKIT	56	75	131	66	B	Ankit
95	18-IP-99	180072053	SNEHA	60	75	135	68	B	Sneha
96	18-IP-236	180072054	RAHUL	65	65	130	65	B	Rahul
97	18-IP-57	180072055	PREETI	70	79	149	75	B	Preeti
98	18-IP-89	180072058	PINKI	70	78	148	74	B	Pinki
99	18-IP-243	180072059	MAMTA	35	59	94	47	D	Mamta
100	18-IP-867	180072061	SAGAR	45	65	110	55	C	Sagar
101	18-IP-371	180072064	DEEPAK	50	59	109	55	C	Deepak
102	18-IP-100	180072069	NEETU	60	70	130	65	B	Neetu
103	18-IP-370	180072071	KANJAM	55	65	120	60	B	Kanjam
104	18-IP-74	180072073	SADHNA	70	78	148	74	B	Sadhna
105	18-IP-817	180072075	KANIKA	40	79	119	60	C	Kanika
106	18-IP-116	180072077	KAJAL	60	73	133	67	B	Kajal
107	18-IP-344	180072078	SANKIT	50	65	115	58	C	Sankit
108	18-IP-818	180072079	SHALU SHYORAN	55	70	125	63	B	Shalu
109	18-IP-282	180072080	KAJAL	70	79	149	75	B	Kajal
110	18-IP-253	180072081	KAJAL	55	70	125	63	B	Kajal
111	18-IP-85	180072083	SARITA	50	70	120	60	B	Sarita
112	18-IP-367	180072084	HARSHIT	75	65	140	70	B	Harshit
113	18-IP-144	180072085	SHUBHAM TOMAR	35	70	105	53	C	Shubham
114	18-IP-84	180072087	MANISHA	65	75	140	70	B	Manisha
115	18-IP-295	180072090	BALRAM SHARMA	40	65	105	53	C	Balram
116	18-IP-886	180072092	TAMANNA	50	78	128	64	B	Tamanna
117	18-IP-169	180072093	SACHIN	67	72	139	70	B	Sachin
118	18-IP-325	180072094	SUNNY	50	72	122	61	B	Sunny
119	18-IP-88	180072095	USHA	60	70	130	65	B	Usha
120	18-IP-77	180072096	VASNA DEVI	60	72	132	66	B	Vasna
121	18-IP-164	180072097	VIRENDER KUNDU	40	75	115	58	C	Virender
122	18-IP-259	180072099	DEVI RANI	57	61	118	59	C	Devirani
123	18-IP-363	180072100	MOHIT	55	79	134	67	B	Mohit
124	18-IP-262	180072101	SUSHMA	65	60	125	63	B	Sushma
125	18-IP-320	180072102	ANKIT	55	75	130	65	B	Ankit
126	18-IP-108	180072103	PARUL PANWAR	70	60	130	65	B	Parul
127	18-IP-356	180072105	PARVEEN KUMAR	60	72	132	66	B	Parveen
128	18-IP-75	180072106	KOMAL	65	78	143	72	B	Komal
129	18-IP-247	180072107	NISHA	40	70	110	55	C	Nisha
130	18-IP-55	180072108	SHALLU	55	78	133	67	B	Shallu
131	18-IP-183	180072109	NAVEEN	38	70	108	54	C	Naveen
132	18-IP-107	180072110	SHIVANI	65	70	135	68	B	Shivani



133 18-IP-332 180071905 Tarun Subhash Chander 70 75 145 72 B

15-12-19

Name - Sagar class - B.A. Final year Roll no - 180071943 - Sagar

Name - Arjun class - B.A Final year Roll no - 180071944 - Arjun

Name - Kuldeep Class - B.A final year Roll no - 180072245 - Kuldeep

Name - Ritu Rani Class B.A Final year Roll No = 180072120 Ritu

Name - Manjeet Class B.A Final year Roll No. 180072159 Manjeet

Name - Vinay class B.A Final Year Roll no - 180071909 Vinay

Name - Sankit class B.A Final year Roll no. 180072078 Sankit

Name - Vanshika class B.A final year Roll no. 180071960 Vanshika

Name - Gaurav class B.A Final year Roll no. 180072182 Gaurav

Name - Sahil class B.A Final Year Roll no. 170080628 Sahil.

Name - Garima class Bsc Final Year Roll No. 5359322 Garima (2016)

Name - Priyanka class B.Sc Final Year Roll No. 5359315 Priyanka (2016)

Name - Nancy Mittal class. Bsc. Final Year Roll no. 180040421 Nancy Med. (2021)

Name - Pooja class - B.A Final year Roll no 6316404 (2021)

Name - Renu (class B.A Final year Roll no 6316454 (2021)

Name - Reshma (class B.A Final year Roll no 6316453 (2021)

Name - Usha B.A Final year Roll no 5316293 - (2021)

Name - Sharmila B.A Final year Roll no 5316294 - (2021)

Name - Mannu (class B.A final year) - 5316311 Mannu

Name - Rubal (class B.A final year) - 5316312 Mannu

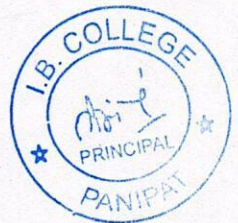
Name - Tony (class B.A. final year) 5316292 Arjun

Name - Simran (B.A (Hons) final year) 180140607 Simran

Name - Yojita (B.A. (Hons) Final year) 180140608 Yojita

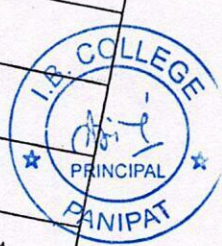
Name - Sachina (B.A (Hons) Final year) 180140644 Sachina

Name - Breeti (B.A) Final year) 180072055 - Breeti



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3425	15-IP-481	PRIYANKA	Priyanka	RAM NIWAS
3426	15-IP-482	BIJENDER KUMAR	Bijender	SOM DUTT
3427	15-IP-597	ANSHIYA GAHLYAN	Anshiya	OM PARKASH
3428	15-IP-598	RESHU PANWAR	Reshu	JASBIR SINGH
3429	15-IP-483	MONA	Mona	BIJENDER PAL
3430	15-IP-599	PARVESH ANTI	Parvesh	RAN SINGH ANTI
3433	15-IP-600	ANKIT	Ankit	PAJENDER
3434	15-IP-601	RITU KADYAN	Ritu	BALBIR KADYAN
3435	15-IP-485	SUNIL	Sunil	MOTI RAM
3436	15-IP-486	PRINCE TYAGI	Prince	PARDEEP TYAGI
3437	15-IP-487	ROHIL BENIWAL	Rohil	SURINDER
3439	15-IP-488	SHEETAL	Sheetal	MAHAVIR
3440	15-IP-489	ARTI	Arti	PARTAP
3441	15-IP-490	ANITA DEVI	Anita	BRIJPAL
3442	15-IP-602	RINKLE NANDA	Rinkle	KUSH NANDA
3443	0	GEETANJALI	Geetanjali	ASWANT SINGH
3444	0	PREETESH KUMAR	Preetesh Kumar	RAM CHANDRA
3445	15-IP-557	SARITA RANI	Sarita Rani	BALWAN SINGH
3446	0	AARTI	Aarti	OM PRAKASH
3447	15-IP-1076	SAHIL SALMANI	Sahil	SHABIR ALI
3451	15-IP-635	MOHD AKHLAQ ALVI	Akhlaq Alvi	TAHIR HASAN
3452	15-IP-542	SANDEEP	Sandeep	RAJBIR
3453	15-IP-543	NISHA	Nisha	RAJIV GARG
3454	15-IP-544	ASHUDIN	Ashud	IKRAMUDIN
3455	15-IP-545	MANINDER SHARMA	Manindra Sharma	RAM ROOP SHARMA
3456	15-IP-622	RUCHI	Ruchi	UNISH JAIN
15-IP-546	SHIVANI	Shivani		PREM SINGH



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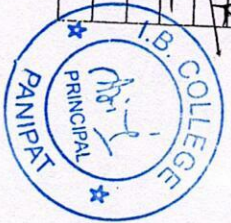
Pooja Rani
Page 9

Jagdish

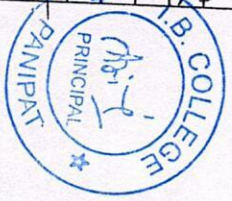
10 Nov. 2020

19-19-131180072008 Jagori

S.NO.	COLLEGE ROLL NO.	UNIVERSITY ROLL NO	REGN. NO	NAME	FATHER NAME	EXAMINATION DATE	THEORY MARKS	PRACTICAL MARKS	TOTAL GRADE	SIGNATURE
1	3161310003	191075051	19-IP-170	RAVI KUMAR	RAMMEHAR	Aug-21	80	70	150 A	Ravi Kumar
2	3161310004	191075040	19-IP-360	ASHISH MALIK	BALWAN SINGH	Aug-21	82	72		Ashish Malik
3	3161310007	191075043	19-IP-172	VISHU	RAJBIR	Aug-21	68	88	156 A	Vishu
4	3161310008	191075042	19-IP-173	HARSH	CHAND LAL	Aug-21	62	82	144 B	Harsh
5	3161310010	191075038	19-IP-174	SAHIL	KRISHAN	Aug-21	64	84	148 B	Sahil
6	3161310011	191075052	19-IP-175	VINITA	VINOD KUMAR	Aug-21	73	83	156 A	Vinita
7	3161310012	191074845	19-IP-176	DEEPIKA	RAJINDER SINGH	Aug-21	75	85	160 A	Deepika
8	3161310015	191075045	19-IP-178	VISHU SHARMA	MUKESH SHARMA	Aug-21	68	88	156 A	Vishu
9	3161310016	191075046	19-IP-179	NITESH	DINESH PAL	Aug-21	57	77	134 B	Nitesh
10	3161310017	191075044	19-IP-180	KARTIK	ANOO P SINGH	Aug-21	84	74	158 A	Kartik
11	3161310020	191074809	19-IP-183	SHEETAL KUMAR	RANDHIR SINGH	Aug-21	68	88	156 A	Sheetal
12	3161310021	191075086	19-IP-184	ASHISH	RAMMEHAR	Aug-21	89	79	168 A	Ashish
13	3161310024	191075056	19-IP-187	YOGESH	JAI PARKASH	Aug-21	72	82	154 A	Yogesh
14	3161310026	191075060	19-IP-189	RAVINDER	RAMMEHAR	Aug-21	92	82	172 A	Ravinder
15	3161310027	191074931	19-IP-362	Naveen	Shambhu Nath	Aug-21	70	80	150 A	Naveen
16	3161310028	191075058	19-IP-190	SAHIL SOROHA	KRISHAN KUMAR	Aug-21	90	80	170 A	Sahil Soroha
17	3161310029	191075059	19-IP-363	RAMAN	MANOJ KUMAR	Aug-21	88	78	166 A	Raman
18	3161310031	191075069	19-IP-192	YOGESH	RINKU KUMAR	Aug-21	80	70	150 A	Yogesh
19	3161310033	191075096	19-IP-194	VINAY	SATISH	Aug-21	88	78	166 A	Vinay
20	3161310034	191075063	19-IP-195	ABHISHEK	SAJAY	Aug-21	60	80	140 B	Abhishek
21	3161310035	191075065	19-IP-196	MONU	MANHENDER	Aug-21	62	82	144 B	Monu
22	3161310037	191075105	19-IP-197	ASHISH	KARAMBIR	Aug-21	80	70	150 A	Ashish
23	3161310038	191075066	19-IP-198	SHIVAM KUMAR	PARVEEN KUMAR	Aug-21	90	80	170 A	Shivam
24	3161310039	191075064	19-IP-199	ASHISH	RANBIR SINGH	Aug-21	62	82	144 B	Ashish
25	3161310040	191075057	19-IP-200	VISAHL SAINI	PAIPAL	Aug-21	87	77	164 A	Vishal Saini
26	3161310041	191075075	19-IP-201	SAHIL	JASHMER	Aug-21	93	83	176 A	Sahil
27	3161310043	191075080	19-IP-202	AKASH	ANIL	Aug-21	90	80	170 A	Akash
28	3161310044	191075076	19-IP-203	ABHISHEK	ARVIND	Aug-21	92	82	174 A	Abhishek
29	3161310046	191075079	19-IP-205	MOHIT	RAMNIWAS	Aug-21	75	85	160 A	Mohit
30	3161310047	191075222	19-IP-206	AMANJOT	KRISHAN LAL	Aug-21	80	70	150 A	Amanjot
31	3161310048	191075010	19-IP-207	DEEPAK KUMAR	RAJENDER SINGH	Aug-21	60	80	140 B	Deepak
32	3161310049	191075073	19-IP-208	VEENIT	MUKESH	Aug-21	49	69	118 C	Veenit
33	3161310050	191075037	19-IP-767	GOURAV	RAJBIR	Aug-21	85	75	160 A	Gourav
34	3161310051	191075084	19-IP-209	MONU	RAMDHARI	Aug-21	89	79	168 A	Monu
35	3161310052	191075083	19-IP-210	NIKHIL KUMAR	MUKESH KUMAR	Aug-21				Nikhil



796	120219030018	201039380	20-IP-321	REKHA	BIENDER	Aug-21	90	80	170 A	K. Chitra
797	120219030019	201039329	20-IP-341	HIMANI	DESRAJ	Aug-21	91	81	172 A	Alimud
798	120219030021	201039321	20-IP-345	AAKASH	GULSHAN KUMAR	Aug-21	94	84	178 A	aa Bhatt
799	120219030022	201039332	20-IP-342	MANSI	BIENDER SINGH	Aug-21	88	78	166 A	Mansi
800	120219030025	201039324	20-IP-328	VISHAL	KRISHAN	Aug-21	89	79	168 A	Vishal
801	120219030026	201039331	20-IP-343	MONA	TEK BAHADUR	Aug-21	89	79	168 A	Mona
802	120219030027	201039304	20-IP-329	AMIT	RAM AWADH	Aug-21	80	70	150 A	AMIT
803	120219030028	201039340	20-IP-824	KIRTI RANI	DHARAMBIR	Aug-21	90	80	170 A	Kirti Rani
804	120219030029	201039376	20-IP-323	KOMAL	RAMCHANDER	Aug-21	91	81	172 A	Komal
805	120219030030	201039338	20-IP-324	RANI	SEWA SINGH	Aug-21	89	79	168 A	Rani
806	120219030031	201039328	20-IP-706	ANKIT	RAMESH	Aug-21	80	70	150 A	Ankit
807	120219030034	201039327	20-IP-704	SEEMA	DHANI RAM	Aug-21	91	81	172 A	Seema
808	120219030035	201039348	20-IP-346	SACHIN GUPTA	AMAR NATH GUPTA	Aug-21	90	80	170 A	Sachin
809	120219030036	201039322	20-IP-1268	AMAN KUMAR	KRISHAN KUMAR	Aug-21	89	79	168 A	Aman
810	120219030037	201039333	20-IP-331	NIDHI	PARDEEP SHARMA	Aug-21	89	79	168 A	Nidhi
811	120219030038	201039302	20-IP-510	NISCHAL	RAJEEV KUMAR	Aug-21	90	80	170 A	Nischal
812	120219030039	201039374	20-IP-347	ANJU	RAJ KUMAR	Aug-21	89	79	168 A	Anju
813	120219030041	201039370	20-IP-348	KANAKAR	INDER SINGH	Aug-21	85	75	160 A	Kanaka
814	120219032001	201134411	20-IP-120	ARVAN VATS	RISHI PARKASH	Aug-21	70	80	170 A	Arvan
815	120219062002	201134422	20-IP-723	DEEPANSHI	SANJEEV KUMAR	Aug-21	80	70	150 A	Deepanshi
816	120219062003	201134427	20-IP-114	RIVA	ROSHAN	Aug-21	80	70	150 A	Riva
817	120219062004	201134408	20-IP-121	ANKUSH	SURENDER	Aug-21	80	70	150 A	Ankush
818	120219062007	201134403	20-IP-128	Vaanya	Ajay Saxena	Aug-21	90	80	170 A	Vaanya
819	120219062009	201134416	20-IP-711	RAHUL	RANDHIR SINGH	Aug-21	89	79	168 A	Rahul
820	120219062010	201134407	20-IP-115	RASHIDA	ALI HASAN	Aug-21	89	79	168 A	Rashida
821	120219062011	201134401	20-IP-116	Tamanna	Ravinder Kumar	Aug-21	89	79	168 A	Tamanna
822	120219062014	201134417	20-IP-713	SAHL KUMAR	LINDRIJEET	Aug-21	80	70	150 A	Sahl Kumar
823	120219062015	201134430	20-IP-714	KOMAL DEVI	RAVINDER KUMAR	Aug-21	80	70	150 A	Komal Devi
824	120219062016	201134431	20-IP-129	SONAM	SANJAY KUMAR	Aug-21	90	80	170 A	Sonam
825	120219062017	201134429	20-IP-130	KHUSHI	PARVEEN GARG	Aug-21	90	80	170 A	Khushi
826	120219062018	201134413	20-IP-123	HARSH	NARESH	Aug-21	60	80	140 B	Harsh
827	120219062019	201134409	20-IP-715	JATIN	SUBHASH	Aug-21	90	80	170 A	Jatin
828	120219062021	201134421	20-IP-716	SIMRAN	SURANDER KUMAR	Aug-21	90	80	170 A	Simran
829	120219062023	201134418	20-IP-717	TISHA MIDDHA	LALIT MIDDHA	Aug-21	88	78	166 A	Tisha
830	120219062024	201134426	20-IP-718	SHIVANI	AIMER	Aug-21	90	80	170 A	Shivani
831	120219062025	201134404	20-IP-117	Sakshi	Vijay Pal	Aug-21	80	70	150 A	Sakshi
832	120219062027	201134412	20-IP-126	VINAY	SUBHASH CHANDER	Aug-21	80	70	150 A	Vinay
833	120219062028	201134406	20-IP-118	SUSHMA RANI	KRISHAN LAL	Aug-21	89	79	168 A	Sushma Rani



834	120219062029	201134415	20-IP-119	RAVINA	VIKRAM SINGH	Aug-21	60	80	140	B	Ravina C
835	120219062032	201134405	20-IP-796	NANCY	VINOD KUMAR	Aug-21	90	80	170	A	Ravina C
836	120219062034	201134428	20-IP-823	SAKSHI SHARMA	MANGAT RAM	Aug-21	80	80	170	A	Ravina C
837	120219062035	201134419	20-IP-127	PRINCE	SATPAL	Aug-21	80	70	150	A	Ravina C
838	120219062036	201134424	20-IP-133	DRISHTI	YOGESH KUMAR	Aug-21	80	70	150	A	Ravina C
839	120219062037	201134425	20-IP-38	TANNU	Naresh SINGH	Aug-21	80	70	150	A	Ravina C
840	120219062038	201134423	20-IP-83	BADAL	RAVINDER KUMAR	Aug-21	80	70	150	A	Ravina C
841	120219062040	201134434	20-IP-738	MANJEET	SAMSHER SINGH	Aug-21	80	70	150	A	Ravina C

842 120219062040 201134434 20-IP-738 MANJEET

843 120219062048 201071623 20-IP-512 Nisha

2280020043 180071481 18-IP-109 Pooja Subhash

844 120219062081 201071727 20-IP-530 Teranu

845 180140635 2280120017 Kuran

846 180140610 2280120022 Roja

847 180072096 2280020050 Vashadevi

3161812009 191074821 Nitish Rajigan

201039358 201039358 Meekha

(20-IP-14631) Meekha

(19-IP-79) Preeti

3161320154 191075027 (19-IP-126) Bhavana

120219002250 20-IP-899 Pooja Subhash

86 76 162 A

86 76 162 A

64 75 139 B

81 73 154 A

73 87 164 Pooja

62 82 144 Vashadevi

68 88 156 Nitish

62 82 144 B Meekha

82 72 154 (A) Preeti

74 84 158 (A) Bhavana

73 83 156 (A) Pooja

Aug-21 Pawan 81 73 154 A Kuran

Aug-21 Jitendra 54 74 B Teranu

Aug-21 Roja 18-IP-404 Ner Sombir 77 87 164 Pooja

Aug-21 Vashadevi 62 82 144 Vashadevi

Aug-21 Nitish Rajigan 68 88 156 Nitish

Aug-21 Meekha 62 82 144 B Meekha

Aug-21 Preeti 82 72 154 (A) Preeti

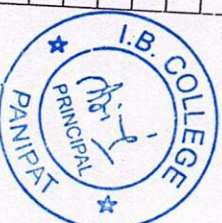
Aug-21 Bhavana 74 84 158 (A) Bhavana

Aug-21 Pooja 73 83 156 (A) Pooja



List of Students of Certificate in Computer Awareness
2017-20

36	3161310054	191074806	19-IP-204	BALINDER	MAHABIR	Aug-21	72	82	154 A	<i>Balinder</i>
37	3161310055	191075074	19-IP-768	RAVI KUMAR	RAJESH	Aug-21	86	76	162 A	<i>Ravi Kumar</i>
38	3161310057	191075214	19-IP-212	Archish	Jai Bhagwan	Aug-21	40	60	100 C	<i>Archish</i>
39	3161310058	191075213	19-IP-213	Ashish	Rajbir Singh	Aug-21	45	65	110 C	<i>Ashish</i>
40	3161310059	191075085	19-IP-214	SACHIN	SANJAY	Aug-21	86	76	162 A	<i>Sachin</i>
41	3161310061	191075104	19-IP-215	ROHIT KUMAR	PAWAN KUMAR	Aug-21	81	71	152 A	<i>Rohit Kumar</i>
42	3161310063	191075136	19-IP-217	ROHIT	ROSHAN LAL	Aug-21	90	80	170 A	<i>Rohit</i>
43	3161310064	191075226	19-IP-365	PRINCE	RAJESH	Aug-21	83	73	156 A	<i>Prince</i>
44	3161310065	191075207	19-IP-218	Rahul	Rajander	Aug-21	91	81	172 A	<i>Rahul</i>
45	3161310066	191075225	19-IP-219	SAHIL	RAJESH	Aug-21	73	83	156 A	<i>Sahil</i>
46	3161310068	191075212	19-IP-221	Himanshu	Rampal	Aug-21	74	84	158 A	<i>Himanshu</i>
47	3161310069	191075201	19-IP-222	VISHAL ROHILLA	SATISH KUMAR	Aug-21	88	78	166 A	<i>Vishal</i>
48	3161310070	191075078	19-IP-223	SAGAR	SEWARAM	Aug-21	54	74	128 B	<i>Sagar</i>
49	3161310074	191075196	19-IP-227	SAHDEV	ROHTAS	Aug-21	88	78	166 A	<i>Sahdev</i>
50	3161310077	191075204	19-IP-229	Harim	Anil Kumar	Aug-21	88	78	166 A	<i>Harim</i>
51	3161310078	191075132	19-IP-230	DEEPAK	BAHADUR SINGH	Aug-21	57	77	134 B	<i>Deepak</i>
52	3161310079	191075131	19-IP-231	VIJAY	RAJENDER	Aug-21	74	84	158 A	<i>Vijay</i>
53	3161310082	191075061	19-IP-813	SOURAV KUMAR	RANJEET YADAV	Aug-21	85	75	160 A	<i>Sourav</i>
54	3161310083	191075203	19-IP-232	Ajay	Sheetal Dass	Aug-21	73	83	156 A	<i>Ajay</i>
55	3161310084	191074906	19-IP-367	Deepak	Satish Kumar	Aug-21	64	84	148 B	<i>Deepak</i>
56	3161310086	191074814	19-IP-233	ANUJ	PARMOD SINGH	Aug-21	60	80	140 B	<i>Anuj</i>
57	3161310088	191075106	19-IP-368	DINESH	RAMPARSHAD	Aug-21	92	82	174 A	<i>Dinesh</i>
58	3161310089	191074819	19-IP-369	DEEPAK KUMAR	OMPARKASH	Aug-21	44	64	108 C	<i>Deepak</i>
59	3161310090	191074813	19-IP-234	ROBIN SHARMA	sharma	Aug-21	79	89	128 B	<i>Robin</i>
60	3161310093	191075087	19-IP-371	AMIT KUMAR	ROHTASH	Aug-21	54	74	128 B	<i>Amit</i>
61	3161310098	191075145	19-IP-372	PRINCE	MUKESH KUMAR	Aug-21	81	71	152 A	<i>Prince</i>
62	3161310099	191075095	19-IP-238	PAWAN KUMAR	OMPARKASH ANEJA	Aug-21	89	79	168 A	<i>Pawan</i>
63	3161310101	191075243	19-IP-769	RAHUL	SURESH	Aug-21	64	84	148 B	<i>Rahul</i>
64	3161310102	191075121	19-IP-239	ABHISHEK	SURESH	Aug-21	80	70	150 A	<i>Abhishek</i>
65	3161310103	191075153	19-IP-140	GOURAV	RAMKARAN	Aug-21	71	81	152 A	<i>Gourav</i>
66	3161310106	191074807	18-IP-358	VIVEK POSWAL	BISHAMBER SINGH	Aug-21	45	65	110 C	<i>Vivek</i>
67	3161310108	191075122	19-IP-243	SAHIL	KULDEEP	Aug-21	90	80	170 A	<i>Sahil</i>
68	3161310110	191075152	19-IP-245	RAVI	RAJKUMAR	Aug-21	89	79	168 A	<i>Ravi</i>
69	3161310111	191075125	19-IP-246	ANKIT KUMAR	RAM NIWAS	Aug-21	89	79	168 A	<i>Ankit</i>
70	3161310112	191075123	19-IP-247	AAKASH	KRISHAN SINGH	Aug-21	90	80	170 A	<i>Aakash</i>
71	3161310113	191074852	19-IP-248	AKSHAY LOHAN	SUBHASH LOHAN	Aug-21	52	72	124 B	<i>Akshay</i>
72	3161310114	191074818	19-IP-376	AKSHAY	JAIVIR SINGH	Aug-21	66	86	152 A	<i>Akshay</i>
73	3161310118	191074808	19-IP-251	VIJAY MEHRA	SHAMSHER	Aug-21	50	70	120 B	<i>Vijay</i>



74	3161310119	191075128	19-IP-252	DHANANJAY KUMAR	VINOD KUMAR	Aug-21	70	80	150 A	11) Hanesh
75	3161310124	191075193	19-IP-255	SAGAR	VINOD KUMAR	Aug-21	93	83	176 A	Sagar
76	3161310127	191075194	19-IP-258	ROHIT	RAJENDER	Aug-21	55	75	130 B	Shrut
77	3161310128	191075126	19-IP-259	HARSH	SUSHIL	Aug-21	86	76	162 A	Harsh
78	3161310129	191075114	19-IP-260	VIKAS	PARTAP SINGH	Aug-21	88	78	166 A	Vikas
79	3161310130	191074817	19-IP-377	MONTTOO MALIK	DALBIR SINGH	Aug-21	82	72	154 A	Monttoo
80	3161310131	191075090	19-IP-261	YOGESH	SURENDER	Aug-21	89	79	168 A	Yogesh
81	3161310132	191075092	19-IP-262	AJAY	SATYAWAN	Aug-21	80	70	150 A	Ajay
82	3161310136	191075176	19-IP-328	SAWAN	SKINDER SINGH	Aug-21	72	82	154 A	Sawan
83	3161310137	191075094	19-IP-266	ROHIT	SHRI RAM	Aug-21	80	70	150 A	Rohit
84	3161310139	191075227	19-IP-380	NISHANT SINGH	MOHINDER SINGH	Aug-21	83	73	156 A	Nishant
85	3161310140	191075098	19-IP-267	KASIM ALI	HAMID ALI	Aug-21	89	79	168 A	Kasim
86	3161310143	191075138	19-IP-381	SHREY	RAJIV	Aug-21	88	78	166 A	Shrey
87	3161310144	191075141	19-IP-270	TUSHAR	NARESH KUMAR	Aug-21	77	87	164 A	Tushar
88	3161310145	191075183	19-IP-771	UJWAL	RAMNIWAS	Aug-21	72	82	154 A	Ujwal
89	3161310146	191075115	19-IP-271	GULFAM	MUNNA LAL	Aug-21	82	72	154 A	Gulfam
90	3161310147	191075195	19-IP-382	MUKESH KUMAR	RADHESHYAM	Aug-21	74	84	158 A	Mukesh
91	3161310149	191075093	19-IP-272	SUNIL	DHARAMBIR	Aug-21	90	80	170 A	Sunil
92	3161310150	191075097	19-IP-273	ARIF ALI	JAHUR HASAN	Aug-21	88	78	166 A	Arif
93	3161310151	191075091	19-IP-274	PARVEEN KUMAR	DARBARA	Aug-21	88	78	166 A	Parveen
94	3161310153	191075089	19-IP-276	ANKIT	RAVINDER KUMAR	Aug-21	87	77	164 A	Ankit
95	3161310154	191075130	19-IP-277	SANJEEV KUMAR	RAJENDER SINGH	Aug-21	78	88	166 A	Sanjeev
96	3161310155	191075088	19-IP-278	DILJEET	JASVIR	Aug-21	80	70	150 A	Diljeet
97	3161310160	191075127	19-IP-283	KARAMPAL	SURENDER	Aug-21	72	82	154 A	Karampal
98	3161310161	191074804	19-IP-284	MONU	ISHWER SINGH	Aug-21	56	76	132 B	Monu
99	3161310163	191075164	19-IP-384	RITIK	KRISHAN KALRA	Aug-21	89	79	168 A	Ritik
100	3161310165	191075168	19-IP-287	RAHUL KASHYAP	MAHIPAL KASHYAP	Aug-21	70	80	150 A	Rahul
101	3161310165	191075168	19-IP-287	RAHUL KASHYAP	MAHIPAL KASHYAP	Aug-21	70	80	150 A	Rahul
102	3161310166	191075156	19-IP-288	RAMU	SUBHASH	Aug-21	55	75	130 B	Ramu
103	3161310169	191075192	19-IP-291	MOHIT	KRISHAN	Aug-21	62	82	144 B	Mohit
104	3161310172	191075162	19-IP-386	OSAMA	KOUSAR	Aug-21	81	71	152 A	Osama
105	3161310173	191075216	19-IP-216	SAHIL CHHOKER	RAMESH	Aug-21	60	80	140 B	Sahil
106	3161310174	191075202	20-IP-619	Sahil	Naresh	Aug-21	91	81	172 A	Sahil
107	3161310176	191075238	19-IP-296	ADITYA	KRISHAN LAL	Aug-21	69	89	158 A	Aditya
108	3161310178	191075187	19-IP-298	RINKU	SURESH	Aug-21	90	80	170 A	Rinku
109	3161310182	191075172	19-IP-301	ANIKET	SANJAY	Aug-21	91	81	172 A	Aniket
110	3161310184	191075166	19-IP-388	RITIK GOSWAMI	GOSWAMI	Aug-21	74	84	158 A	Ritik
111	3161310186	191075157	19-IP-389	PARVESH	SAMRAT	Aug-21	90	80	170 A	Parvesh



112	3161310190	191075111	19-IP-305	DHOUNCHAK	VIRENDER SINGH	Aug-21	80	70	150 A	<i>Dhounchak</i>
113	3161310198	191074820	19-IP-308	AAKASH	RAM BHAGAT	Aug-21	86	76	162 A	<i>Aakash</i>
114	3161310200	191075184	19-IP-310	ASHWANI	NANDAL	Aug-21	88	78	166 A	<i>Ashwani</i>
115	3161310203	191075190	19-IP-311	RAVINDER KUMAR	ISHWAR SINGH	Aug-21	92	82	174 A	<i>Ravinder</i>
116	3161310205	191075219	19-IP-825	ANKUSH	PAWAN	Aug-21	73	83	156 A	<i>ANKUSH</i>
117	3161310209	191074821	19-IP-315	NIKHIL BALIYAN	PANKAJ BALIYAN	Aug-21	68	88	156 A	<i>Nikhil</i>
118	3161310212	191075224	19-IP-317	ASHISH	KRISHAN PAL	Aug-21	93	83	176 A	<i>Ashish</i>
119	3161310214	191075189	19-IP-325	MOHIT BHARDWAJ	MUKESH KUMAR	Aug-21	92	82	174 A	<i>Mohit</i>
120	3161310215	191075173	19-IP-326	DEEPAK	DHARAMPAL	Aug-21	66	86	152 A	<i>Deepak</i>
121	3161310216	191075208	19-IP-327	Sourav	Salek	Aug-21	90	80	170 A	<i>Sourav</i>
122	3161310217	191075177	19-IP-328	NIKHIL KUMAR	SOHAN	Aug-21	70	80	150 A	<i>Nikhil</i>
123	3161310218	191075108	19-IP-396	SAGAR BHARDWAJ	MUKESH BHARDWAJ	Aug-21	70	80	150 A	<i>Sagar</i>
124	3161310219	191075154	19-IP-772	AKSHAY	RAJENDER	Aug-21	91	81	172 A	<i>Akshay</i>
125	3161310220	191075180	19-IP-397	GURUSEWAK SINGH	SUKHWANT SINGH	Aug-21	92	82	174 A	<i>Gurusewak</i>
126	3161310221	191075158	19-IP-787	ARUN PATEL	ASHOK PATEL	Aug-21	56	76	132 B	<i>Arun</i>
127	3161310222	191074836	19-IP-773	ASHISH	DHRAMBIR SINGH	Aug-21	74	84	158 A	<i>Ashish</i>
128	3161310224	191075181	19-IP-398	RIMPI	MUKESH	Aug-21	90	80	170 A	<i>Rimpi</i>
129	3161310225	191075163	19-IP-774	SAHIL BAUAJ	SATBIR BAUAJ	Aug-21	88	78	166 A	<i>Sahil</i>
130	3161310227	191075170	19-IP-399	ANKUSH KUMAR	SURESH KUMAR	Aug-21	73	83	156 A	<i>ANKUSH</i>
131	3161310228	191075171	19-IP-318	AKSHITIZ	JAGBIR	Aug-21	87	77	164 A	<i>Akshitz</i>
132	3161310229	191075239	19-IP-400	RITIK	NARESH	Aug-21	89	79	168 A	<i>Ritik</i>
133	3161310232	191075159	19-IP-338	SONU	RAMESH KUMAR	Aug-21	88	78	166 A	<i>Sonu</i>
134	3161310233	191075185	19-IP-339	NITESH	RAMKUMAR	Aug-21	65	85	150 A	<i>Nitesh</i>
135	3161310234	191075182	19-IP-837	RAHUL	SATNARAYAN	Aug-21	67	87	154 A	<i>Rahul</i>
136	3161310237	191075155	19-IP-820	DEEPAK SHARMA	VED PARKASH	Aug-21	77	87	164 A	<i>Deepak</i>
137	3161320001	191074827	19-IP-1	DIVYA	Surjeet singh	Aug-21	82	72	162 A	<i>Divya</i>
138	3161320002	191074854	19-IP-2	DEEPA RANI	PAWAN SAINI	Aug-21	86	76	162 A	<i>Deepa</i>
139	3161320003	191074837	19-IP-341	DEESHA SONI	SANJEEV SONI	Aug-21	62	82	144 B	<i>Deesha</i>
140	3161320004	191074847	19-IP-3	KIRTI DHANDA	VAZIR SINGH	Aug-21	62	82	144 B	<i>Kirti</i>
141	3161320004	191074847	19-IP-3	KIRTI DHANDA	VAZIR SINGH	Aug-21	62	82	144 B	<i>Kirti</i>
142	3161320007	191074826	19-IP-5	ASRIYA	RAJESH	Aug-21	67	87	154 A	<i>Asriya</i>
143	3161320008	191074851	19-IP-6	ASTHA TIWARI	HARI MOHAN	Aug-21	80	70	150 A	<i>Astha</i>
144	3161320009	191074856	19-IP-7	AYESHA SAIFEE	MOMEEN SAIFEE	Aug-21	72	82	124 A	<i>Ayesha</i>
145	3161320010	191074855	19-IP-8	MINAKSHI JAGLAN	ZILE SINGH JAGLAN	Aug-21	56	76	132 B	<i>Minakshi</i>
146	3161320011	191074842	19-IP-9	KOMAL SAINI	NARSI	Aug-21	68	88	156 A	<i>Komal</i>
147	3161320013	191074844	19-IP-11	ANSHU	RAVINDER	Aug-21	72	82	154 A	<i>Anshu</i>
148	3161320014	191075229	19-IP-342	MEHAK GULATI	SATISH	Aug-21	72	82	154 A	<i>Mehak</i>
149	3161320017	191074841	19-IP-14	NEHA	ANIL KUMAR	Aug-21	58	78	136 B	<i>Neha</i>



Principal

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150	3161320018	191074838	19-IP-343	POOJA	RAJESH PAPREJA	Aug-21	72	82	154 A	Pooja
151	3161320019	191074835	19-IP-15	POONAM	DHARMVEER	Aug-21	66	86	152 A	Poonam
152	3161320020	191074834	19-IP-16	PARUL	ADAY JAIN	Aug-21	58	78	136 B	Parul
153	3161320021	191074846	19-IP-176	RAIBALA	CHARAN SINGH	Aug-21	70	80	150 A	Raibala
154	3161320022	191074849	19-IP-183	MEHAK	VINOD KUMAR	Aug-21	46	66	112 C	Mehak
155	3161320023	191074828	19-IP-19	MANMEET KATU	VAZIR SINGH	Aug-21	57	77	134 B	Manmeet
156	3161320025	191074848	19-IP-21	ANALI	ANUP SINGH	Aug-21	75	85	160 A	Anali
157	3161320026	191074816	19-IP-22	MANJU	JOGINDER	Aug-21	64	84	148 B	Manju
158	3161320027	191074869	19-IP-344	TANIYA	SUSHIL KUMAR	Aug-21	67	87	154 A	Taniya
159	3161320028	191074858	19-IP-23	PRINCI	RAKESH	Aug-21	60	80	140 B	Princi
160	3161320031	191074878	19-IP-345	AAVUSHI	OMVEER SINGH	Aug-21	82	72	154 A	Avushi
161	3161320032	191074904	19-IP-775	Riha devi	Satnarayan	Aug-21	76	86	162 A	Riha devi
162	3161320034	191074882	19-IP-776	SHALU	SURESH	Aug-21	60	80	140 B	Shalu
163	3161320035	191074802	19-IP-260	DEVI	BHAGAT SINGH	Aug-21	82	72	154 A	Devi
164	3161320036	191074861	19-IP-27	ANNU	RAIPAL SINGH	Aug-21	68	88	156 A	Annu
165	3161320037	191074840	19-IP-4	ALSHA	MHO-AHSAN	Aug-21	64	84	148 B	Alsha
166	3161320038	191074860	19-IP-29	BHARTI SHARMA	BALBIR SHARMA	Aug-21	84	74	158 B	Bharti
167	3161320039	191074829	19-IP-31	REKHA	BALJIT	Aug-21	64	84	148 B	Rekha
168	3161320040	191074877	19-IP-32	KAJAL	BARU	Aug-21	78	88	166 A	Kajal
169	3161320041	191074880	19-IP-33	RITU	NARENDER KUMAR	Aug-21	80	70	150 A	Ritu
170	3161320042	191074831	19-IP-34	ANJALI	RAJESH KUMAR	Aug-21	76	86	162 A	Anjali
171	3161320043	191074885	19-IP-346	KOMAL	JAI BHAGWAN	Aug-21	74	84	158 A	Komal
172	3161320044	191074853	19-IP-36	NIKITA	NARESH	Aug-21	82	72	154 A	Nikita
173	3161320045	191074890	19-IP-37	Kajal	Ram Kishan	Aug-21	60	80	140 B	Kajal
174	3161320046	191074888	19-IP-38	Komal	Meva Singh	Aug-21	65	85	150 A	Komal
175	3161320047	191074884	19-IP-39	SEEMA RAWAT	AMAR SINGH RAWAT	Aug-21	78	88	166 A	Seema
176	3161320048	191074875	19-IP-41	Neetu	Tara Singh	Aug-21	66	86	152 A	Neetu
177	3161320049	191074871	19-IP-42	ANISHA	SURENDER	Aug-21	74	84	158 A	Anisha
178	3161320050	191074872	19-IP-43	NISHA	ARJUN DASS	Aug-21	83	73	156 A	Nisha
179	3161320051	191074873	19-IP-44	Shivani	Bhale ram	Aug-21	74	84	158 A	Shivani
180	3161320052	191074874	19-IP-45	PARTIKSHA	OM PARKASH SAINI	Aug-21	72	82	154 A	Partiksha
181	3161320053	191074875	19-IP-46	ANKITA	PARDEEP KUMAR	Aug-21	80	70	150 A	Ankita
182	3161320054	191074876	19-IP-47	ASHA	RAMMEHAR	Aug-21	78	88	166 A	Asha
183	3161320055	191074877	19-IP-48	KIRAN DEVI	SUSHEEL	Aug-21	60	80	140 B	Kiran
184	3161320056	191074878	19-IP-49	Jyoti	Shiv Kumar	Aug-21	74	84	158 A	Jyoti
185	3161320060	191074889	19-IP-49	Somnath	Somnath	Aug-21	64	84	148 B	Somnath



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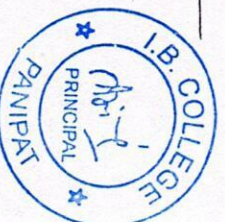
188	3161320063	191074876	19-IP-50	SHALLU	SHIV KUMAR	Aug-21	85	75	160 A	STC
189	3161320064	191074865	19-IP-51	RUHELLA	NATHO RAM RUHELLA	Aug-21	74	84	158 A	Rajya
190	3161320065	191074862	19-IP-52	RIVA DEVI	RISHIPAL	Aug-21	83	73	156 A	Rajya
191	3161320066	191074883	19-IP-53	KHUSHBOO	NARENDER	Aug-21	60	80	140 B	Rajya
192	3161320067	191075107	19-IP-54	MEENU	JAGDISH	Aug-21	70	80	150 A	Rajya
193	3161320068	191074867	19-IP-55	NEHA	AJAY KUMAR	Aug-21	68	88	156 A	STC
194	3161320069	191074893	19-IP-56	Chandna	Banarsi Lal vijay	Aug-21	80	70	150 A	Neha
195	3161320072	191074873	19-IP-58	MINAKSHI	TARA CHAND	Aug-21	65	85	150 A	Rajya
196	3161320073	191074887	19-IP-59	Hmanshi	Shiv Kumar	Aug-21	78	88	166 A	Rajya
197	3161320074	191074894	19-IP-60	Priyanka	Ram Gopal	Aug-21	82	72	154 A	Rajya
198	3161320075	191074881	19-IP-61	JYOTI KAPOOR	VIPAN KAPOOR	Aug-21	84	74	158 A	Rajya
199	3161320075	191074881	19-IP-61	AARTI KASHYAP	VINOD KUMAR	Aug-21	80	70	150 A	Rajya
200	3161320076	191074896	19-IP-779	Reetu	Bajinder kumar	Aug-21	68	88	156 A	Rajya
201	3161320078	191074957	19-IP-63	Tannu	Jai kumar	Aug-21	64	84	148 B	Rajya
202	3161320080	191074912	19-IP-65	Anita	Bachcha Lal	Aug-21	74	84	158 A	Rajya
203	3161320081	191075117	19-IP-66	HIMANSHI	RAJ KUMAR	Aug-21	80	70	150 A	Rajya
204	3161320083	191074959	19-IP-68	Tannu	Parveen	Aug-21	75	85	160 A	Rajya
205	3161320084	191074923	19-IP-69	Kajal	Krishan	Aug-21	66	86	152 A	Rajya
206	3161320085	191074961	19-IP-961	Kajal	Balwan singh	Aug-21	80	70	150 A	Rajya
207	3161320086	191074920	19-IP-780	Aarti	Vinod kumar	Aug-21	65	85	150 A	Rajya
208	3161320087	191074924	19-IP-71	Deepakshi	Pawan kumar	Aug-21	68	88	156 A	Rajya
209	3161320088	191074918	19-IP-72	Twinkle arora	Vijay arora	Aug-21	62	82	144 B	Rajya
210	3161320089	191074917	19-IP-73	Shalu	Sushil kumar	Aug-21	50	70	120 B	Rajya
211	3161320091	191075028	19-IP-75	DIVYA TYAGI	PRITAM SINGH	Aug-21	64	84	148 B	Rajya
212	3161320093	191074970	19-IP-404	Vidhi	Mehar singh	Aug-21	45	65	110 C	Rajya
213	3161320094	191075240	19-IP-78	PRIVANKA	OM PARKASH	Aug-21	76	86	162 A	Rajya
214	3161320095	191074907	19-IP-79	Preeti	gopi ram	Aug-21	82	72	154 A	Rajya
215	3161320096	191074954	19-IP-349	Himanshi	Krishan Lal	Aug-21	56	76	132 B	Rajya
216	3161320097	191075235	19-IP-80	PREETI	OMPARKASH	Aug-21	92	82	174 A	Rajya
217	3161320098	191074939	19-IP-81	Savita	Rakesh	Aug-21	60	80	140 B	Rajya
218	3161320099	191075015	16-AP-826	JIGVYASA NANDWAN	PARVEEN KUMAR	Aug-21	70	80	150 A	Rajya
219	3161320100	191074803	19-IP-820	CHARU	RAMESH NAGPAL	Aug-21	63	83	146 B	Rajya
220	3161320103	191074930	19-IP-84	Rekha	Jai bhagwan	Aug-21	64	84	148 B	Rajya
221	3161320104	191075036	19-IP-86	NEHA	BABBAN	Aug-21	64	84	148 B	Rajya
222	3161320106	191075032	19-IP-352	SAKSHI SINGH	GULAB SINGH	Aug-21	84	74	158 A	Rajya
223	3161320107	191074913	19-IP-88	PARMILA		Aug-21	72	82	154 A	Rajya
224	3161320109									
225										



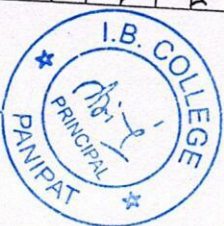
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227	3161320111	191074901	19-IP-89	Tanya	Jitender singh	Aug-21	75	85	160 A	Annu
228	3161320112	191074963	19-IP-353	Leeza	Inderjeet verma	Aug-21	70	80	150 A	Annu
229	3161320114	191074925	19-IP-91	Versha	Vinod kumar	Aug-21	80	70	150 A	Annu
230	3161320116	191075030	19-IP-931	ANJALI	RAJ KUMAR	Aug-21	72	82	154 A	Annu
231	3161320117	191074927	19-IP-94	Preeti sharma	Ramjari sharma	Aug-21	52	72	124 B	Annu
232	3161320118	191075110	19-IP-95	MANISHA	SUKHBIR	Aug-21	62	82	144 B	Annu
233	3161320119	191075031	19-IP-96	RAVINA	INDERPAL	Aug-21	62	82	144 B	Annu
234	3161320120	191074915	19-IP-97	Sakshi	Rajinder kumar	Aug-21	70	80	150 A	Annu
235	3161320122	191075029	19-IP-781	KOMAL	DAYANANAD	Aug-21	64	84	148 B	Annu
236	3161320123	191074948	19-IP-98	Nisha	Ishwar singh	Aug-21	82	72	154 A	Annu
237	3161320124	191074944	19-IP-99	Aarti	Jagmohan	Aug-21	60	80	140 B	Annu
238	3161320125	191074956	19-IP-100	Alka mishra	Kamlesh mishra	Aug-21	70	80	150 A	Annu
239	3161320126	191074935	19-IP-101	Shivani	Joginder	Aug-21	63	83	146 B	Annu
240	3161320127	191074965	19-IP-102	Khushboo	Roshan lal	Aug-21	80	70	150 A	Annu
241	3161320128	191074953	19-IP-103	Radhika	Subhash	Aug-21	73	83	156 A	Annu
242	3161320131	191074969	19-IP-166	Shallu	Hari babu	Aug-21	53	73	126 B	Annu
243	3161320132	191074958	19-IP-107	Sadhna	Puran lal	Aug-21	64	84	148 B	Annu
244	3161320133	191074902	19-IP-108	Tamnna	Parveen Tyagi	Aug-21	50	70	120 B	Annu
245	3161320135	191074922	19-IP-110	Rashmi	Hemant kumar	Aug-21	60	80	140 B	Annu
246	3161320136	191074949	19-IP-11	Priya	Jagdish kaushik	Aug-21	68	88	156 A	Annu
247	3161320138	191074962	19-IP-112	Kajal	Vinod kumar	Aug-21	44	64	108 C	Annu
248	3161320139	191074937	19-IP-113	Khushbu	Bhagwat	Aug-21	68	88	156 A	Annu
249	3161320141	191074936	19-IP-114	Ritika kathait	Virender kathait	Aug-21	76	86	162 A	Annu
250	3161320143	191074945	19-IP-115	Tripti	Satbir	Aug-21	82	72	154 A	Annu
251	3161320144	191074977	19-IP-116	Rimjhim	Pappu Ram	Aug-21	60	80	140 B	Annu
252	3161320145	191074994	19-IP-117	Manjeet	Sukhdev kumar	Aug-21	63	83	146 B	Annu
253	3161320148	191074967	19-IP-120	Kajal	Harender	Aug-21	72	82	154 A	Annu
254	3161320149	191074929	19-IP-121	Pooja devi	Rishipal	Aug-21	59	79	138 B	Annu
255	3161320150	191074910	19-IP-122	Anam	Mushraff	Aug-21	84	74	158 A	Annu
256	3161320151	191074824	19-IP-123	MANISHA PANDEY	OM PARKASH PANDA	Aug-21	47	67	114 C	Annu
257	3161320153	191074968	19-IP-125	Samiksha	Vipin kumar	Aug-21	76	86	162 A	Annu
258	3161320155	191074943	19-IP-127	Rashi	Sunil kumar	Aug-21	80	70	150 A	Annu
259	3161320157	191074926	19-IP-129	Anjali	Rameshwar das	Aug-21	62	82	144 B	Annu
260	3161320159	191074900	19-IP-131	Pooja	Om prakash	Aug-21	76	86	162 A	Annu
261	3161320160	191074938	19-IP-132	Shivani	Jagatram	Aug-21	76	86	162 A	Annu
262	3161320162	191075023	19-IP-134	RITU	KAILASH SHARMA	Aug-21	65	85	150 A	Annu
263	3161320163	191074974	19-IP-135	Tannu	Jagdishlar	Aug-21	64	84	148 B	Annu



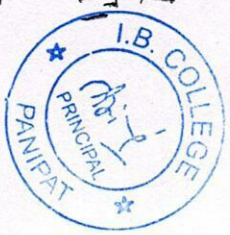
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265	3161320164	191074972	19-IP-136	Seema devi	Ram kumar	Aug-21	66	86	152 A	Seema devi
266	3161320165	191074984	19-IP-137	Kajal	Jagdish Singh	Aug-21	76	86	162 A	Kajal
267	3161320167	191074976	19-IP-138	Divya	Anil Kumar	Aug-21	68	88	156 A	Divya
268	3161320168	191074993	19-IP-139	Nikita	Sultan singh	Aug-21	60	80	140 B	Nikita
269	3161320169	191074985	19-IP-140	Aarti	Rohas	Aug-21	74	84	158 A	Aarti
270	3161320171	191074982	19-IP-142	Simran	Rampal	Aug-21	70	80	150 A	Simran
271	3161320172	191075004	19-IP-143	POOJA	ISHWAR	Aug-21	74	84	158 A	POOJA
272	3161320173	191074996	19-IP-144	Neha rani	Vinod kumar	Aug-21	65	85	150 A	Neha rani
273	3161320174	191074991	19-IP-	Preeti	Sajjan singh	Aug-21	76	86	162 A	Preeti
274	3161320175	191074964	19-IP-405	Aashu	Balbir	Aug-21	58	78	136 B	Aashu
275	3161320176	191075019	19-IP-145	TAMMAMNNA	MADAN LAL	Aug-21	69	89	158 A	TAMMAMNNA
276	3161320177	191075003	19-IP-146	ALPANA	RAMASHEESH	Aug-21	70	80	150 A	ALPANA
277	3161320178	191074952	19-IP-147	Preeti	Rajkumar	Aug-21	51	71	122 B	Preeti
278	3161320180	191075014	19-IP-148	KOMAL	SANJAY	Aug-21	62	82	144 B	KOMAL
279	3161320183	191138422	19-IP-436	MUSKAN	RAJINDER SANI	Aug-21	88	78	166 A	MUSKAN
280	3161320184	191074978	19-IP-150	Rinki	kaptan	Aug-21	63	83	146 B	Rinki
281	3161320185	191075147	19-IP-782	SAPNA	SUNIL YAMGAR	Aug-21	91	81	172 A	SAPNA
282	3161320186	191075013	19-IP-151	MANISHA	SHIVBHAWAN	Aug-21	58	78	136 B	MANISHA
283	3161320189	191075018	19-IP-153	SANJANA SONI	ASHOK	Aug-21	53	73	126 B	SANJANA SONI
284	3161320190	191075009	19-IP-783	BHARTI	PHOL CHAND	Aug-21	78	88	166 A	BHARTI
285	3161320191	191074990	19-IP-	simran	Satish Kumar	Aug-21	58	78	136 B	simran
286	3161320192	191075017	19-IP-155	DIKSHA	JAGDISH	Aug-21	62	82	144 B	DIKSHA
287	3161320193	191075005	19-IP-156	ANNU	BRAHM PAL	Aug-21	68	88	156 A	ANNU
288	3161320196	191074934	19-IP-157	Sakshi	Rakesh	Aug-21	58	78	136 B	Sakshi
289	3161320197	191075033	19-IP-843	BHARTI	SUBHASH	Aug-21	56	76	132 B	BHARTI
290	3161320199	191075008	19-IP-158	RAKHI RANA	PAWAN RANA	Aug-21	81	71	152 A	RAKHI RANA
291	3161320200	191075011	19-IP-829	MUSKAN	GULAB	Aug-21	58	78	136 B	MUSKAN
292	3161320201	191074987	19-IP-402	Anshika	Naresh Kumar	Aug-21	66	86	152 A	Anshika
293	3161320203	191075001	19-IP-359	VAISHALI RANI	SUNDER PAL	Aug-21	66	86	152 A	VAISHALI RANI
294	3161320204	191075020	19-IP-160	KOMAL	DHARMIBIR	Aug-21	64	84	148 B	KOMAL
295	3161320206	191075012	19-IP-162	MANISHA	KRISHAN DEV	Aug-21	68	88	156 A	MANISHA
296	3161320209	191075022	19-IP-164	MITALI	VINOD KUMAR	Aug-21	80	70	150 A	MITALI
297	3161320210	191074980	19-IP-165	Sakshi	howa singh	Aug-21	44	64	108 C	Sakshi
298	3161320211	191075119	19-IP-784	AANCHAL	RAJESH	Aug-21	80	70	150 A	AANCHAL
299	3161320212	191074986	19-IP-319	Manisha	Subhash	Aug-21	68	88	156 A	Manisha
300	3161320213	191075024	19-IP-785	KAJAL RANI	BALWAN SINGH	Aug-21	49	69	118 C	KAJAL RANI
301	3161320214	191074983	19-IP-407	Tannu	Jagpal	Aug-21	84	74	158 A	Tannu



302	3161320215	191074995	19-IP-320	Priyanka	Shambhu gupta	Aug-21	80	70	150 A	Priyanka
303	3161320216	191075006	19-IP-835	RIVA	NARESH KUMAR	Aug-21	78	88	166 A	Priyanka
304	3161320217	191074989	19-IP-154	Neeraj	Brahmpal	Aug-21	58	78	136 B	Priyanka
305	3161320220	191074998	19-IP-322	Anu	Jagbir	Aug-21	74	84	158 A	Priyanka
306	3161320221	191074981	19-IP-323	Simran	Shokender	Aug-21	71	81	152 A	Priyanka
307	3161320223	191075118	19-IP-330	GAYATRI	Gopal	Aug-21	91	81	172 A	Priyanka
308	3161320225	191074960	19-IP-167	Ritu	Somlal	Aug-21	60	80	140 B	Priyanka
309	3161320226	191075025	19-IP-790	SHIVANI GUPTA	VIJAY KUMAR	Aug-21	74	84	158 A	Priyanka
310	3161320227	191075016	19-IP-331	SONIA	JAGPAL	Aug-21	59	79	138 B	Priyanka
311	3161320229	191074942	19-IP-332	Rahemeen	Kafeel ahmad	Aug-21	70	80	150 A	Priyanka
312	3161320230	191075109	19-IP-333	SONALI	PARMOD KUMAR	Aug-21	74	70	150 A	Priyanka
313	3161320231	191074946	19-IP-406	Ishu	Pyare Lal	Aug-21	74	84	158 A	Priyanka
314	3161320232	191075068	19-IP-347	RAJNI AHLAWAT	DILAWAR SINGH	Aug-21	80	70	150 A	Priyanka
315	3161320233	191074988	19-IP-789	Kajal	Ram Kumar	Aug-21	80	80	158 A	Priyanka
316	3161320235	191074997	19-IP-815	Amrita	Sudhir paswan	Aug-21	80	70	150 A	Priyanka
317	3161320236	191074850	19-IP-336	NANCY	SATBIR SINGH	Aug-21	80	70	150 A	Priyanka
318	3161320237	191074830	19-IP-337	NEHA	SATBIR SINGH	Aug-21	72	82	154 A	Priyanka
319	3161410001	191138415	19-IP-415	SHAHID	AESHAN	Aug-21	90	80	170 A	Priyanka
320	3161410002	191138407	19-IP-416	PRAVAG	GOPAL	Aug-21	80	70	150 A	Priyanka
321	3161410005	191138440	19-IP-830	SACHIN HUMAR	RAJESH CHANDER	Aug-21	84	74	158 A	Priyanka
322	3161410006	191138429	19-IP-438	MOHIT	DEEPAK TYAGI	Aug-21	80	70	150 A	Priyanka
323	3161410011	191138401	19-IP-440	RAJAT TYAGI	SUKHWINDER SINGH	Aug-21	80	70	150 A	Priyanka
324	3161410018	191138427	19-IP-445	SAHIB SINGH	SANTRAM SHARMA	Aug-21	60	80	140 B	Priyanka
325	3161410022	191138430	19-IP-423	VISHAL TYAGI	RAJENDER	Aug-21	60	80	140 B	Priyanka
326	3161410023	191138433	19-IP-424	SHUBHAM	MANGE RAM	Aug-21	90	80	170 A	Priyanka
327	3161410024	191138426	19-IP-425	MANISH	RAJESH	Aug-21	89	79	168 A	Priyanka
328	3161420001	191138418	19-IP-408	ANANCHAL	KAVINDER SHARMA	Aug-21	90	80	170 A	Priyanka
329	3161420002	191138412	19-IP-409	SHIWANGI	RAKESH GULATI	Aug-21	80	70	150 A	Priyanka
330	3161420003	191138414	19-IP-410	KIRTI	RAJESH	Aug-21	88	78	166 A	Priyanka
331	3161420004	191138436	19-IP-428	SAJAL	RAKESH GULATI	Aug-21	80	70	150 A	Priyanka
332	3161420005	191138437	19-IP-430	MITALI	RAJESH	Aug-21	88	78	166 A	Priyanka
333	3161420006	191138423	19-IP-429	CHESTIA	RAJESH	Aug-21	80	70	150 A	Priyanka
334	3161420008	191138435	19-IP-431	KASHISH	RAJESH	Aug-21	80	70	150 A	Priyanka
335	3161420009	191138435	19-IP-432	NIKEETA KUMARI	RAJESH	Aug-21	80	70	150 A	Priyanka
336	3161420010	191138425	19-IP-433	RITIKA	RAJESH	Aug-21	80	70	150 A	Priyanka
337	3161420011	191138425	19-IP-412	REENA	RAJESH	Aug-21	80	70	150 A	Priyanka
338	3161420013	191138403	19-IP-434	NEHA MAAN	RAJESH	Aug-21	80	70	150 A	Priyanka
339	3161420014	191138403	19-IP-434	NEHA MAAN	RAJESH	Aug-21	80	70	150 A	Priyanka

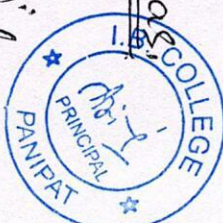


340	3161420015	191138424	19-IP-443	TANNU PRIYA	RAY	Aug-21	88	78	166 A	Tannu Priya
341	3161420016	191138413	19-IP-444	PURNIMA SHARMA	ASHWANI KUMAR	Aug-21	90	80	170 A	Purnima Sharma
342	3161420019	191138417	19-IP-447	ANJALI	BHAWAR	Aug-21	90	80	170 A	Anjali
343	3161420020	191138420	19-IP-811	ALISHA	SAMSHER ALI	Aug-21	89	79	168 A	Alisha
344	3161820001	191041659	19-IP-717	YASHIKA	PREM	Aug-21	89	79	168 A	Yashika
345	3161820002	191041603	19-IP-766	SHREYA	KANWAR BHAN	Aug-21	89	79	168 A	Shreya
346	3161820003	191041642	19-IP-724	ISHIKA	SUNIL KUMAR	Aug-21	80	70	150 A	Ishika
347	3161820004	191041602	19-IP-711	SUJAL	DINDYAL	Aug-21	92	82	174 A	Sujal
348	3161820008	191041687	19-IP-712	SHIVANI	RAJESH	Aug-21	90	80	170 A	Shivani
349	3161820009	191041646	19-IP-725	KAJAL DEVI	MUKESH KUMAR	Aug-21	90	80	170 A	Kajal Devi
350	3161820010	191041656	19-IP-719	SWATI TYAJI	JASRAJ TYAGI	Aug-21	87	77	164 A	Swati Tyagi
351	3161820012	191041669	19-IP-845	SHIWANI	ROHTASH	Aug-21	89	79	168 A	Shiwani
352	3161820013	191041658	19-IP-846	SANJANA	ANUP SINGH	Aug-21	86	76	162 A	Sanjana
353	3161820014	191041680	19-IP-794	POOJA	BHOPAL SINGH	Aug-21	90	80	170 A	Pooja
354	3161820015	191041640	19-IP-720	NANCY VERMA	SANJAY VERMA	Aug-21	87	77	164 A	Nancy Verma
355	3161820016	191041650	19-IP-795	SHALU	OM PARKASH	Aug-21	88	78	166 A	Shalu
356	3161820017	191041648	19-IP-727	ANSHIKA	LATE. RAJIV	Aug-21	89	79	168 A	Anshika
357	3161820020	191041672	19-IP-838	MONIKA	MUNESH KUMAR	Aug-21	92	82	174 A	Monika
358	3161820021	191041664	19-IP-723	KHUSI	RAJENDER	Aug-21	89	79	168 A	Khushi
359	3161820022	191041647	19-IP-716	DIMPAL	AZAD	Aug-21	89	79	168 A	Dimpal
360	3161820025	191041653	19-IP-796	SIMRAN	VIJAY KUMAR	Aug-21	80	70	150 A	Simran
361	3161820026	191041657	19-IP-728	RITU	ASHOK KUMAR	Aug-21	90	80	170 A	Ritu
362	3161910002	191041608	19-IP-682	SUMIT	PALERAM	Aug-21	88	78	166 A	Sumit
363	3161910003	191041607	19-IP-683	SHASHIKANT	SATISH	Aug-21	92	82	174 A	Shashikant
364	3161910004	191041604	19-IP-684	ANSHUL	BALBIR	Aug-21	80	70	150 A	Anshul
365	3161910006	191041612	19-IP-698	MOHIT	NARENDER KUMAR	Aug-21	80	70	150 A	Mohit
366	3161910007	191041617	19-IP-699	NIKHIL CHANDEL	KARAMCHAND	Aug-21	80	70	150 A	Nikhil Chandel
367	3161910008	191041631	19-IP-685	SAGAR	PREM	Aug-21	90	80	170 A	Sagar
368	3161910009	191041613	19-IP-686	SANJEEV	SUKHBIR	Aug-21	93	83	176 A	Sanjeev
369	3161910010	191041609	19-IP-700	SHIVAM KUMAR	OMPAL	Aug-21	89	79	168 A	Shivam Kumar
370	3161910013	191041634	19-IP-706	ANKIT UPADHAYAY	SARVESH	Aug-21	91	81	172 A	Ankit Upadhyay
371	3161910014	191041606	19-IP-693	VIPIN KUMAR	KRISHAN LAL	Aug-21	87	77	164 A	Vipin Kumar
372	3161910015	191041605	19-IP-701	ABHISHEK	AWDESH	Aug-21	80	70	150 A	Abhishek
373	3161910001	191041611	19-IP-673	DIVYA SHARMA	VINOD SHARMA	Aug-21	89	79	168 A	Divya Sharma
374	3161910002	191041616	19-IP-674	DIKSHA	BRJMOHAN	Aug-21	80	70	150 A	Diksha
375	3161910003	191041614	19-IP-675	KAFI	BIENDER SINGH	Aug-21	90	80	170 A	Kafi
376	3161910004	191041610	19-IP-676	PARTIBHA	BRHAM DUTT	Aug-21	92	82	174 A	Partibha



Tannu Priya
 Purnima Sharma
 Anjali
 Alisha
 Yashika
 Shreya
 Ishika
 Sujal
 Shivani
 Kajal Devi
 Swati Tyagi
 Shiwani
 Sanjana
 Pooja
 Nancy Verma
 Shalu
 Anshika
 Monika
 Khushi
 Dimpal
 Simran
 Ritu
 Ashok Kumar
 Sumit
 Shashikant
 Satish
 Balbir
 Narender Kumar
 Karamchand
 Prem
 Sukhbir
 Ompal
 Sarvesh
 Krishan Lal
 Awdes
 Vinod Sharma
 Brj Mohan
 Biender Singh
 Brahman Dutt

378	3161920006	191041618	19-IP-677	SAKSHI	RAMESH	Aug-21	90	80	170 A	Sakshi
379	3161920009	191041625	19-IP-679	TANNU	RAKESH	Aug-21	93	83	176 A	Tannu
380	3161920010	191041644	19-IP-680	SONIA SAI FEE	MOMIN SAI FEE	Aug-21	60	80	140 B	Sonia
381	3161920012	191041627	19-IP-694	DIVYANSHI	AJAY KUMAR	Aug-21	88	78	166 A	Divya
382	3161920013	191041624	19-IP-681	MINAXI	SHIV KUMAR	Aug-21	88	78	166 A	Minaxi
383	3161920014	191041622	19-IP-695	SONAL	SATISH KUMAR	Aug-21	93	83	176 A	Sonal
384	3161920015	191041638	19-IP-696	URVASHI	GULSHAN KUMAR	Aug-21	89	79	168 A	Urvashi
385	3161920016	191041628	19-IP-797	MUSKAN	JOGINDER	Aug-21	89	79	168 A	Muskan
386	3161920017	191041621	19-IP-729	BHAWNA	SANJEEV KUMAR	Aug-21	89	79	168 A	Bhawna
387	3161920019	191041685	20-IP-834	SANJU SHARMA	MAHENDER SHARMA	Aug-21	89	79	168 A	Sanju
388	3161920020	191041630	19-IP-687	JYOTI	OMSINGH	Aug-21	90	80	170 A	Jyoti
389	3161920021	191041632	19-IP-704	NANCY	KRISHAN KUMAR	Aug-21	90	80	170 A	Nancy
390	3161920022	191041637	19-IP-798	SONIA	ASHOK KUMAR	Aug-21	80	70	150 A	Sonia
391	3161920023	191041623	19-IP-688	REENU	NARSINGH	Aug-21	89	79	168 A	Reenu
392	3161920024	191041620	19-IP-705	SHALINI SINGH	SINGH	Aug-21	90	80	170 A	Shalini
393	3161920026	191041681	19-IP-690	KIRAN	JAGBIR	Aug-21	80	70	150 A	Kiran
394	3161920027	191041629	19-IP-691	MUSKAN	SANJAY	Aug-21	80	70	150 A	Muskan
395	3161920028	191041633	19-IP-847	MANJU	SURENDER	Aug-21	91	81	172 A	Manju
396	3161920029	191041636		REKHA	RAJKUMAR	Aug-21	74	84	158 A	Rekha
397	3161920030	191041626	19-IP-692	RISHU	OM SHARMA	Aug-21	93	83	176 A	Rishu
398	3162020001	191041676	19-IP-708	KOYANA	MANOJ KUMAR	Aug-21	91	81	172 A	Koyana
399	3162020002	191041678	19-IP-709	SHALLU KUMARI	SHARVAN KUMAR	Aug-21	90	80	170 A	Shallu
400	3162020004	191041670	19-IP-765	YUKTA CHADHA	PUNEET CHADHA	Aug-21	82	72	154 A	Yukta
401	120219002001	201071878	20-IP-51	RITESH KUMAR	JITRENDER SINGH	Aug-21	88	78	168 A	Ritesh
402	120219002002	201071859	20-IP-24	Shivani	Dinesh	Aug-21	75	85	160 A	Shivani
403	120219002003	201071746	20-IP-52	Kamal	Mukesh Kumar	Aug-21	76	86	162 A	Kamal
404	120219002005	201071705	20-IP-1	BABY	RAMPAL	Aug-21	81	71	152 A	Baby
405	120219002006	201071657	20-IP-601	VIKAS	JOGINDER	Aug-21	60	80	140 B	Vikas
406	120219002007	201071608	20-IP-02	SIMRAN	HAWA SINGH	Aug-21	54	74	128 B	Simran
407	120219002008	201071581	20-IP-610	HARSH	DEVINDER	Aug-21	46	66	112 C	Harsh
408	120219002009	201071722	20-IP-603	AADARSH	VIRENDER SINGH	Aug-21	85	75	160 A	Aadarsh
409	120219002010	201071654	20-IP-3	SAKSHI	JARNEL SINGH	Aug-21	91	81	172 A	Sakshi
410	120219002011	201071637	20-IP-837	VISHAL	RAMNIWASH	Aug-21	66	86	162 A	Vishal
411	120219002012	201071554	20-IP-4	NEETU	RAJ KUMAR	Aug-21	86	76	152 A	Neetu
412	120219002013	201071816	20-IP-604	AMIT	DHARAMBIR SINGH	Aug-21	66	86	152 A	Amit
413	120219002014	201071752	20-IP-831	Annu	Satish Kumar	Aug-21	64	84	148 B	Annu
414	120219002015	201071834	20-IP-420	Ravi Prakash	Bhanu Pratap	Aug-21	83	73	156 A	Ravi Prakash
415	120219002016	201071771	20-IP-25	SAMRIDHI	SANDEEP THAKRAL	Aug-21	82	72	154 A	Samridhi



416	120219002017	201071650	20-IP-421	HEMANT	ANIL KUMAR	Aug-21	88	78	166 A	Heman
417	120219002018	201071769	20-IP-422	VIKRAM	KARAMBIR	Aug-21	62	82	144 B	Vikram
418	120219002019	201071766	20-IP-005	KANIKA	SATISH KUMAR	Aug-21	45	65	110 C	Kanika
419	120219002020	201071815	20-IP-423	JATIN	ANIL	Aug-21	67	87	154 A	Jatin
420	120219002021	201071789	20-IP-6	PARSHI	KIRSHAN SHARMA	Aug-21	79	89	168 A	Parshi
421	120219002022	201071688	20-IP-424	SAHIL	DILBAG SINGH	Aug-21	92	82	174 A	Sahil
422	120219002025	201071607	20-IP-07	NAVJOT	MALUK SINGH	Aug-21	56	76	132 B	Navjot
423	120219002026	201071737	20-IP-53	Vishal	Krishan Jatt	Aug-21	54	74	128 B	Vishal
424	120219002027	201071643	20-IP-54	VISHAL	RAMSINGH	Aug-21	86	76	162 A	Vishal
425	120219002029	201071587	20-IP-587	ROSHNI	RAUBIR	Aug-21	81	73	154 A	Roshni
426	120219002030	201071561	20-IP-426	VIKAS	SUNIL	Aug-21	49	69	118 C	Vikas
427	120219002032	201071695	20-IP-26	ANJALI	SHYAM CHAND	21-Aug	64	84	148 B	Anjali
428	120219002033	201071644	20-IP-428	PUNEET ATRI	RAMNIWAS	Aug-21	70	80	150 A	Puneet
429	120219002034	201071728	20-IP-429	Anshu Malik	Krishan Malik	Aug-21	56	76	132 B	Anshu
430	120219002035	201071655	20-IP-9	LAVINA	SATISH	Aug-21	85	75	160 A	Lavina
431	120219002036	201071619	20-IP-10	SUNITA	TARA CHAND	Aug-21	82	72	154 A	Sunita
432	120219002037	201071652	20-IP-11	GAVTRI	DHRAMVIR SINGH	Aug-21	91	81	172 A	Gavtri
433	120219002038	201071806	20-IP-430	PRINCE	SOMDUIT	Aug-21	78	88	166 A	Prince
434	120219002041	201071740	20-IP-432	Sahil Kumar	Hari Ram	Aug-21	52	72	124 B	Sahil
435	120219002042	201071883	20-IP-13	ANCHAL	ASHOK KUMAR	Aug-21	87	77	164 A	Anchal
436	120219002043	201071888	20-IP-433	JATIN SOTRA	RAVINDER SOTRA	Aug-21	89	79	168 A	Jatin
437	120219002044	201071516	20-IP-710	SIMRAN	BALRAL	Aug-21	82	72	154 A	Simran
438	120219002045	201071716	20-IP-14	REKHA DEVI	GULAB SINGH	Aug-21	60	80	140 B	Rekha
439	120219002046	201071573	20-IP-15	ANNU	RAJA RAM	21-Aug	84	74	158 A	Annu
440	120219002047	201071664	20-IP-434	ARPIT	BIRHAM SINGH	Aug-21	60	80	140 B	Arpit
441	120219002048	201071890	20-IP-			Aug-21	89	79	168 A	
442	120219002048	201071890	20-IP-27	NISHA	SUBHASH CHAND	Aug-21	74	84	158 A	Nisha
443	120219002049	201071701	20-IP-16	SONIA	JAVED	Aug-21	68	78	156 A	Sonia
444	120219002050	201071928	20-IP-17	PRETTI	DHARAMBIR	Aug-21	73	83	156 A	Pretti
445	120219002051	201071733	20-IP-18	Nitesh	Bhupender Singh	Aug-21	87	77	164 A	Nitesh
446	120219002052	201071798	20-IP-435	PRINCE	SANJEEV KUMAR	Aug-21	87	77	164 A	Prince
447	120219002053	201071515	20-IP-28	TANNU	MANIPAL	Aug-21	87	77	164 A	Tannu
448	120219002054	201071715	20-IP-436	PARAS	RAMESH SHARMA	Aug-21	67	87	154 A	Paras
449	120219002055	201071684	20-IP-437	AKSHIT	ARUN KUMAR	Aug-21	77	87	164 A	Akshat
450	120219002056	201071668	20-IP-438	MANISH SAINI	BIJINDER SAINI	Aug-21	70	80	150 A	Manish
451	120219002057	201071662	20-IP-439	ANKUSH	RANBIR	Aug-21	60	80	140 B	Ankush
452	120219002058	201071630	20-IP-550	SHUBHAM	JAGDEEP	Aug-21	55	75	130 B	Shubham
453	120219002061	201071522	20-IP-20	KOMAL	MUKESH	21-Aug	87	77	164 A	Komal



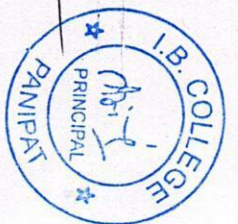
Heman
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 Jatin
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 Sahil
 Navjot
 Vishal
 Roshni
 Vikas
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 Puneet
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 Sunita
 Gavtri
 Prince
 Sahil
 Hari Ram
 Ashok
 Ravinder
 Balral
 Gulab
 Raja
 Birham
 Subhash
 Javed
 Dharambir
 Bhupender
 Sanjeev
 Manipal
 Ramesh
 Arun
 Bijinder
 Ranbir
 Jagdeep
 Mukesh

492	120219002114	201071892	20-IP-458	REET GOYAL	ASHOK GOYAL	Aug-21	67	87	154	A	Reet
493	120219002115	201071863	20-IP-476	Gourav	Inderjeet Paswan	Aug-21	70	80	150	A	Reet
494	120219002117	201071545	20-IP-459	RIVA	SURESH KUMAR	21-Aug	73	83	156	A	Reet
495	120219002118	201071603	20-IP-613	TANNU	SATBIR	Aug-21	88	78	166	A	Reet
496	120219002121	201071777	20-IP-741	VISHAL	RAJPAL	Aug-21	62	82	144	B	Reet
497	120219002122	201071773	20-IP-614	PREETI	BALRAM SINGH	Aug-21	64	84	148	B	Reet
498	120219002123	201071687	20-IP-460	SEEMA	UMA SHANKAR	Aug-21	80	70	150	A	Reet
499	120219002124	201071748	20-IP-742	Preeti devi	Surjeet singh	Aug-21	58	78	136	B	Reet
500	120219002125	201071660	20-IP-461	NEHA RANI	RAJESH KUMAR	Aug-21	54	74	128	B	Reet
501	120219002127	201071513	20-IP-31	SAKSHI	SURENDER MADDAAN	Aug-21	83	73	156	A	Reet
502	120219002128	201071502	20-IP-478	VIKAS	RAKESH	Aug-21	89	79	168	A	Reet
503	120219002130	201071703	20-IP-462	KOMAL	SANDEEP KUMAR	Aug-21	76	86	162	A	Reet
504	120219002131	201071708	20-IP-463	KAJAL	MADAN	Aug-21	70	80	150	A	Reet
505	120219002132	201071537	20-IP-464	GEEFA	TILAK RAMI	21-Aug	48	68	166	C	Reet
506	120219002133	201071601	20-IP-465	MONIKA	NARESH KUMAR	Aug-21	56	76	132	B	Reet
507	120219002134	201071529	20-IP-743	ANJALI SINGH	VJAY PAL SINGH	21-Aug	88	78	166	A	Reet
508	120219002135	201071514	20-IP-466	SIMRAN	SURENDER	Aug-21	64	84	148	B	Reet
509	120219002136	201071533	20-IP-467	CHARU	RAJESH KUMAR	21-Aug	60	80	140	B	Reet
510	120219002138	201071648	20-IP-863	YASH CHOPRA	SUBHASH CHANDER	Aug-21	61	81	142	B	Reet
511	120219002139	201071717	20-IP-479	SUMIT KUMAR	SULTAN SINGH	Aug-21	74	84	158	A	Reet
512	120219002141	201071711	20-IP-58	RITIK	KANWAR PAL	Aug-21	84	74	158	A	Reet
513	120219002142	201071805	20-IP-59	SAHL MORVA	GURDASS	Aug-21	79	89	168	A	Reet
514	120219002143	201071534	20-IP-480	MOHIT	SUKHBIR	21-Aug	78	88	166	A	Reet
515	120219002145	201071517	20-IP-746	JYOTI	SURESH	Aug-21	72	82	154	A	Reet
516	120219002148	201071735	20-IP-468	Amit Rani	Jagbir singh	Aug-21	86	76	162	A	Reet
517	120219002149	201071924	20-IP-853	VISHAL MALIK	JYENDER	Aug-21	86	76	162	A	Reet
518	120219002150	201071584	20-IP-32	MONIKA	SUBHASH CHAND	Aug-21	52	72	124	B	Reet
519	120219002152	201071712	20-IP-617	SONU	RAJESH KUMAR	Aug-21	65	85	150	A	Reet
520	120219002153	201071579	20-IP-33	PARUL	SHIV KUMAR	21-Aug	86	76	162	A	Reet
521	120219002154	201071594	20-IP-470	PRACHI	PAWAN SHARMA	Aug-21	70	80	150	A	Reet
522	120219002155	201071826	20-IP-747	Gourav	Joginder Nandal	Aug-21	77	87	164	A	Reet
523	120219002157	201071736	20-IP-60	Abhishek	Satish	Aug-21	88	78	166	A	Reet
524	120219002159	201071741	20-IP-34	Jyoti	Rajpal	Aug-21	50	70	120	B	Reet
525	120219002160	201071606	20-IP-471	ANJALI	JALJEET	Aug-21	40	60	100	C	Reet
526	120219002162	201071661	20-IP-35	RADHIKA	NARESH KUMAR	Aug-21	90	80	170	A	Reet
527	120219002163	201071552	20-IP-552	PRIVANKA	SUSHIL	21-Aug	84	74	158	A	Reet
528	120219002165	201071852	20-IP-472	Simran Tyagi	Devender Kumar	Aug-21	87	77	164	A	Reet
529	120219002166	201071839	20-IP-826	Balram	Jaswant	Aug-21	85	75	160	A	Reet



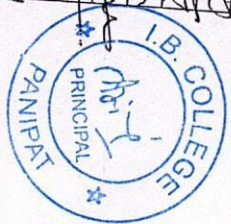
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530	120219002167	201071585	20-IP-774	NITIN	SUSHIL KUMAR	Aug-21	83	73	156 A	Sushil
531	120219002168	201071689	20-IP-481	SAGAR	RAMESH SHARMA	Aug-21	86	76	162 A	Agar
532	120219002169	201071779	20-IP-473	VAISHALI	RAJ KUMAR	Aug-21	82	72	154 A	Raj Kumar
533	120219002170	201071807	20-IP-621	KISHAN	VINOD KUMAR	Aug-21	63	83	146 B	Vinod
534	120219002171	201071790	20-IP-622	SURAJ	SOMDUJT KAUSHIK	Aug-21	74	84	158 A	Somdujt
535	120219002172	201071580	20-IP-482	RAMAN	JAGBIR	21-Aug	83	73	156 A	Jagbir
536	120219002173	201071598	20-IP-483	BRIJ BHUSHAN	BALWAN	Aug-21	80	70	150 A	Brij
537	120219002174	201071853	20-IP-623	Lavlin	Rajesh	Aug-21	69	89	158 A	Rajesh
538	120219002175	201071780	20-IP-484	SHIVAM	UDAY RAJ	Aug-21	60	80	140 B	Uday Raj
539	120219002177	201071867	20-IP-624	TANNU	RISHIPAL	Aug-21	65	85	150 A	Rishi
540	120219002178	201071860	20-IP-731	Wasim	Jamal Ansari	Aug-21	87	77	164 A	Jamal
541	120219002179	201071864	20-IP-649	Sunny	Narender	Aug-21	70	80	150 A	Sunny
542	120219002180	201071621	20-IP-474	KOMAL	BIJENDER	Aug-21	92	82	174 A	Bijender
543	120219002181	201071811	20-IP-475	NIKITA	SUNIL	Aug-21	83	73	156 A	Sunil
544	120219002182	201071900	20-IP-650	GARVISH	DEEPAK KATARIA	Aug-21	89	79	168 A	Garvish
545	120219002183	201071625	20-IP-788	RAHI	NARESH KUMAR	Aug-21	77	87	164 A	Rahi
546	120219002187	201071682	20-IP-37	KUSHI	TEK BHADUR	Aug-21	64	84	148 B	Tek Bhadur
547	120219002189	201071635	20-IP-486	KRISHNA	MUNNA	Aug-21	69	89	158 A	Munna
548	120219002190	201071588	20-IP-487	DEEPAK	SATYAWAN	Aug-21	57	77	134 B	Satyawan
549	120219002192	201071567	20-IP-625	SWEETY	LAXMAN SHHA	21-Aug	72	82	154 A	Laxman
550	120219002193	201071857	20-IP-789	Simran	Raj Kumar	Aug-21	91	81	172 A	Raj Kumar
551	120219002194	201071627	20-IP-808	MANISH	TEEPAK	Aug-21	86	76	162 A	Manish
552	120219002196	201071676	20-IP-833	KAJAL	MUNNA KUMAR	Aug-21	71	81	152 A	Munna
553	120219002197	201071825	20-IP-488	Kanhaiya	Sanjay	Aug-21	71	81	152 A	Sanjay
554	120219002198	201071714	20-IP-626	KOMAL	NARENDER	Aug-21	92	82	174 A	Narender
555	120219002199	201071510	20-IP-790	TANU	CHANDER PARKASH	Aug-21	64	84	148 B	Chander
556	120219002200	201071568	20-IP-854	SURAJ	SURESH	21-Aug	56	76	132 B	Suresh
557	120219002201	201071812	20-IP-751	MINAKSHI	RAMESH	Aug-21	85	75	160 A	Ramesh
558	120219002202	201071778	20-IP-489	MONU RANA	SOMBIR RANA	Aug-21	67	87	154 A	Sombir
559	120219002204	201071726	20-IP-490	Anku	Jashmer	Aug-21	53	73	126 B	Jashmer
560	120219002205	201071724	20-IP-491	AMAR KUMAR	NANDAL	Aug-21	53	73	126 B	Nandal
561	120219002206	201071799	20-IP-62	AMIT KUMAR	KARAN SINGH	Aug-21	71	81	152 A	Karan
562	120219002208	201071670	20-IP-492	ANNU KUMAR	JAGBIR	Aug-21	87	77	164 A	Jagbir
563	120219002211	201071795	20-IP-493	KULDEEP	RAMESH YADAV	Aug-21	63	83	146 B	Ramesh
564	120219002212	201071569	20-IP-494	VANSH	SANJAY KUMAR	21-Aug	91	81	172 A	Sanjay
565	120219002213	201071624	20-IP-855	SHEETAL	RAMKUMAR	Aug-21	85	75	160 A	Ram Kumar
566	120219002214	201071792	20-IP-495	HAIDER	SALIM	Aug-21	63	83	146 B	Salim
567	120219002215	201071699	20-IP-496	DEEPAK	RAWESH	Aug-21	50	70	120 B	Rawesh



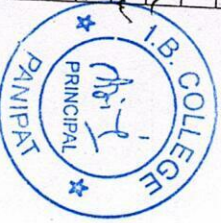
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607	120219002264	201071869	20-IP-518	MANISHA	HARIKESH SHARMA	Aug-21	68	88	154 A	Manisha
608	120219002266	201071508	20-IP-520	NEEHA	ANIL	Aug-21	88	78	156 A	Neeha
609	120219002267	201071578	20-IP-426	KIRAN	BALRAM	Aug-21	89	79	166 A	Kiran
610	120219002268	201071911		AFTAB	AZAD	Aug-21	52	72	124 B	Aftab
611	120219002269	201071600	20-IP-521	PAYAL	SATPAL	Aug-21	56	76	132 B	Payal
612	120219002270	201071656	20-IP-554	HARSH	NARENDER SINGH	Aug-21	56	76	132 B	Harsh
613	120219002271	201071698	20-IP-522	RAVINA	JAIVIR SINGH	Aug-21	84	74	158 A	Ravina
614	120219002272	201071547	20-IP-547	ANNU	RAMRATAN	Aug-21	56	76	132 B	Annu
615	120219002273	201071548	20-IP-525	ANNU	RAMMESHAR	Aug-21	60	80	140 B	Annu
616	120219002274	201071528	20-IP-528	SANJANA	PAWAN	Aug-21	80	70	150 A	Sanjana
617	120219002276	201071543	20-IP-72	DHANANJAY	PAWAN	Aug-21	60	80	140 B	Dhananjay
618	120219002277	201071543	20-IP-72	KAFI	RAMMESHAR	Aug-21	60	80	140 B	Kafi
619	120219002278	201071770	20-IP-73	SHUBHAM	PAWAN	Aug-21	80	70	150 A	Shubham
620	120219002279	201071528	20-IP-528	SANJANA	PAWAN	Aug-21	80	70	150 A	Sanjana
621	120219002280	201071544	20-IP-529	ROOMA	ROHTASH KUMAR	Aug-21	73	83	156 A	Rooma
622	120219002282	201071846	20-IP-531	KIRAN	Baldev	Aug-21	69	89	158 A	Kiran
623	120219002285	201071576	20-IP-533	ANNU	OM PAL	Aug-21	79	89	158 A	Annu
624	120219002287	201071551	20-IP-534	SHEETAL	BALBIR	Aug-21	66	86	152 A	Sheetal
625	120219002288	201071558	20-IP-43	ANISHA	SUKHBIR	Aug-21	64	84	148 B	Anisha
626	120219002290	201071850	20-IP-556	Rinku	Ishwar	Aug-21	85	75	160 A	Rinku
627	120219002291	201071559	20-IP-449	SIMRAN	SATPAL	Aug-21	53	73	126 A	Simran
628	120219002292	201071530	20-IP-536	NANCY	BIJENDER SHARMA	Aug-21	78	88	166 A	Nancy
629	120219002293	201071814	20-IP-537	SONAM	NARESH	Aug-21	74	84	158 A	Sonam
630	120219002294	201071577	20-IP-538	ANIALI	KULDEEP SETI	Aug-21	64	84	158 A	Aniali
631	120219002296	201071893	20-IP-540	RAADHIKA	RAJESH	Aug-21	66	86	152 A	Radhika
632	120219002297	201071765	20-IP-541	POOJA	KASHMIRI LAL	Aug-21	90	80	170 A	Pooja
633	120219002298	201071706	20-IP-542	KOMAL	SUNIL	Aug-21	66	86	152 A	Komal
634	120219002299	201071896	20-IP-543	SANGEETA	BIRAMPAL	Aug-21	60	80	140 B	Sangeeta
635	120219002300	201071614	20-IP-545	SONAM	SATBIR SINGH	Aug-21	64	84	148 B	Sonam
636	120219002301	201071913	20-IP-557	DEEPAK	KAILASH CHAND	Aug-21	80	70	150 A	Deepak
637	120219002302	201071563	20-IP-546	KAJAL	LAL BABU CHAUDRY	Aug-21	84	74	158 A	Kajal
638	120219002303	201071531	20-IP-547	MANISHA	KRISHAN	Aug-21	70	80	150 A	Manisha
639	120219002304	201071791	20-IP-558	ROBIN	JASMER	Aug-21	88	78	166 A	Robin
640	120219002306	201071564	20-IP-549	TANISHA	SANJAY	Aug-21	64	84	148 B	Tanisha
641	120219002308	201071595	20-IP-550	TANNU	LOKESH	Aug-21	72	82	154 A	Tannu
642	120219002309	201071747	20-IP-560	Mohit	Krishan kumar	Aug-21	66	86	152 A	Mohit
643	120219002310					Aug-21	70	80	150 A	



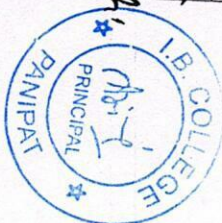
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 Payal
 Harsh
 Ravina
 Annu
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 Rohitash Kumar
 Baldev
 Om Pal
 Balbir
 Sukhbir
 Ishwar
 Satpal
 Bijender Sharma
 Naresh
 Kuldeep Seti
 Rajesh
 Kashmiri Lal
 Sunil
 Birampal
 Satbir Singh
 Kailash Chand
 Lal Babu Chaudry
 Krishan
 Jasmer
 Sanjay
 Lokesh
 Krishan Kumar
 Mohit

644	120219002311	201071831	20-IP-551	Aanchal	Aadesh	Aug-21	60	80	140 B	Aanchal
645	120219002312	201071887	20-IP-561	SURAJ	VIKASH KUMAR	Aug-21	70	80	150 A	SURAJ
646	120219002313	201071842	20-IP-562	Rohit	Jashir	Aug-21	85	75	160 A	Rohit
647	120219002314	201071819	20-IP-74	GOURAV	RAMPHAL MEHRA	Aug-21	84	74	158 A	GOURAV
648	120219002315	201071532	20-IP-75	JAYANT	PARVEEN KUMAR	21-Aug	77	87	164 A	JAYANT
649	120219002316	201071912	20-IP-45	DRISHITI	ROHIT SHARMA	Aug-21	85	75	160 A	DRISHITI
650	120219002319	201071865	20-IP-553	Vinita	Umesh Rekmi	Aug-21	46	66	112 C	Vinita
651	120219002320	201071685	20-IP-77	ANUJ	RAJESH KUMAR	Aug-21	80	70	150 A	ANUJ
652	120219002321	201071720	20-IP-563	AJAY	JAGFBIR	Aug-21	72	82	154 A	Ajay
653	120219002322	201071775	20-IP-586	KIRAN	MUKESH KUMAR	Aug-21	76	86	162 A	KIRAN
654	120219002323	201071557	20-IP-46	VUETA	SATBIR	Aug-21	89	79	168 A	VUETA
655	120219002324	201071574	20-IP-47	RIDHIMA	PARVEEN KUMAR	21-Aug	49	69	118 C	RIDHIMA
656	120219002325	201071591	20-IP-564	PANKAJ	SUBHASH	Aug-21	90	80	170 A	PANKAJ
657	120219002325	201071591	20-IP-39	POOJA	SUBHASH	Aug-21	73	83	156 A	POOJA
658	120219002326	201071640	20-IP-565	PARVEJ	MOHD. SHAKEL	Aug-21	83	73	156 A	PARVEJ
659	120219002327	201071730	20-IP-587	Radha	Sumer	Aug-21	66	86	152 A	Radha
660	120219002329	201071820	20-IP-566	SANJU	PAPPU	Aug-21	85	75	160 A	SANJU
661	120219002330	201071597	20-IP-567	AMIT KUMAR	KRISHAN LAL	Aug-21	92	82	174 A	AMIT KUMAR
662	120219002333	201071801	20-IP-776	VINAY KUMAR	DINESH KUMAR	Aug-21	56	76	132 B	VINAY KUMAR
663	120219002333	201071801	20-IP-776	VINAY KUMAR	DINESH KUMAR	Aug-21	56	76	132 B	VINAY KUMAR
664	120219002334	201071636	20-IP-568	ABHISHEK	SANDEEP KALSON	Aug-21	61	81	142 B	ABHISHEK
665	120219002335	201071876	20-IP-569	PRIYANSHU	SHIV KUMAR	Aug-21	64	84	148 B	PRIYANSHU
666	120219002338	201071674	20-IP-591	RAINI	RAJ KUMAR	Aug-21	86	76	162 A	RAINI
667	120219002340	201071667	20-IP-78	TANUJ	SANJESH KUMAR	Aug-21	87	77	164 A	TANUJ
668	120219002341	201071757	20-IP-571	Abhishek	Rakesh chaabra	Aug-21	36	56	92 C	Abhishek
669	120219002342	201071891	20-IP-572	VIKRAM	JOGINDER KUMAR	Aug-21	67	87	154 A	VIKRAM
670	120219002343	201071854	20-IP-592	Sakshi Singla	Rajesh Singla	Aug-21	87	77	164 A	Sakshi Singla
671	120219002344	201071872	20-IP-593	ANUJ	RAM MEHAR	Aug-21	62	82	144 B	ANUJ
672	120219002345	201071729	20-IP-573	Shubham	Anil	Aug-21	62	82	144 B	Shubham
673	120219002346	201071690	20-IP-574	SHIVAM	SIPATTAR SINGH	Aug-21	55	75	130 B	SHIVAM
674	120219002347	201071840	20-IP-594	Simran	Pawan	Aug-21	79	79	168 A	Simran
675	120219002349	201071762	20-IP-576	SAHL RAWAL	MAHENDER SINGH	Aug-21	76	86	162 A	SAHL RAWAL
676	120219002351	201071866	20-IP-595	Arti	Rasm kumar	Aug-21	75	85	160 A	Arti
677	120219002352	201071756	20-IP-817	Sumit	Arjun	Aug-21	56	76	132 B	Sumit
678	120219002353	201071582	20-IP-577	KARANJEET	RAMBALI	Aug-21	60	80	140 B	KARANJEET
679	120219002354	201071596	20-IP-80	NITIN	GOVIND SHARMA	Aug-21	86	76	162 A	NITIN
680	120219002355	201071725	20-IP-596	MADHU	SURENDER GUPTA	Aug-21	87	77	164 A	MADHU
681	120219002356	201071785	20-IP-597	SHIKHA	OM PARKASH	Aug-21	71	81	152 A	SHIKHA



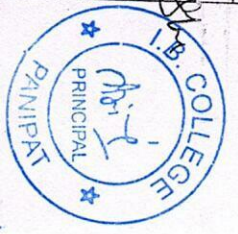
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 SURAJ
 Jashir
 RAMPHAL MEHRA
 PARVEEN KUMAR
 ROHIT SHARMA
 Umesh Rekmi
 RAJESH KUMAR
 JAGFBIR
 MUKESH KUMAR
 SATBIR
 PARVEEN KUMAR
 SUBHASH
 SUBHASH
 MOHD. SHAKEL
 Sumer
 PAPPU
 KRISHAN LAL
 DINESH KUMAR
 DINESH KUMAR
 SANDEEP KALSON
 SHIV KUMAR
 RAJ KUMAR
 SANJESH KUMAR
 Rakesh chaabra
 JOGINDER KUMAR
 Rajesh Singla
 RAM MEHAR
 Anil
 SIPATTAR SINGH
 Pawan
 MAHENDER SINGH
 Rasm kumar
 Arjun
 RAMBALI
 GOVIND SHARMA
 SURENDER GUPTA
 OM PARKASH

682	120219002357	201071617	20-IP-598	RIVA	MANOJ KUMAR	Aug-21	91	81	172 A	RIVA
683	120219002358	201071754	20-IP-813	Ankush	Rajpal	Aug-21	70	80	150 A	Rajpal
684	120219002359	201071555	20-IP-752	AYAJ KUMAR	SHYAM	21-Aug	46	66	112 C	Shyam
685	120219002360	201071649	20-IP-578	ABHISHEK	ISHWAR SINGH	Aug-21	66	86	152 A	ISHWAR SINGH
686	120219002361	201071553	20-IP-553	SALONI	PARVEEN	21-Aug	84	74	158 A	PARVEEN
687	120219002362	201071739	20-IP-579	Tushar	Atam Parkash	Aug-21	88	78	166 A	Tushar
688	120219002363	201071536	20-IP-599	ANJALI	RAMESH	21-Aug	80	70	150 A	ANJALI
689	120219002364	201071802	20-IP-580	SUJAL	NARESH	Aug-21	63	83	146 B	SUJAL
690	120219002365	201071800	20-IP-581	MANN MALIK	JUGPAL SINGH	Aug-21	64	84	148 B	MANN MALIK
691	120219002365	201071800	20-IP-581	MANN MALIK	JUGPAL SINGH	Aug-21	64	84	148 B	MANN MALIK
692	120219002366	201071788	20-IP-628	MANISHA	RAMJEVAN	Aug-21	64	84	148 B	MANISHA
693	120219002371	201071847	20-IP-655	Shubham	Balwan Singh	Aug-21	68	76	162 A	Shubham
694	120219002374	201071760	20-IP-656	KIRAN	RAJPAL LUTHRA	Aug-21	70	80	150 A	KIRAN
695	120219002375	201071761	20-IP-583	SHEKHAR	JAGBIR	Aug-21	78	88	166 A	SHEKHAR
696	120219002376	201071920	20-IP-50	JIVA KHURANA	JAGDISH KUMAR	Aug-21	69	89	158 A	JIVA KHURANA
697	120219002377	201071546	20-IP-753	Reena	NARESH KUMAR	21-Aug	87	77	164 A	Reena
698	120219002378	201071639	20-IP-584	KARAN	SUNDER	Aug-21	66	86	152 A	KARAN
699	120219002380	201071538	20-IP-600	NIKITA	RAM DULARE	21-Aug	70	80	150 A	NIKITA
700	120219002381	201071634	20-IP-585	ROHIT	SATBIR	Aug-21	83	73	156 A	ROHIT
701	120219002382	201071693	20-IP-82	MOHIT	RAJINDER	Aug-21	71	81	152 A	MOHIT
702	120219002384	201071718	20-IP-93	DIVYA	BRIJMOHAN	Aug-21	48	68	116 C	DIVYA
703	120219002388	201071885	20-IP-777	BHAVIK	RAVINDER KHANNA	Aug-21	77	87	164 A	BHAVIK
704	120219002389	201071572	20-IP-630	MONU	JASBIR	21-Aug	78	88	166 A	MONU
705	120219002390	201071784	20-IP-631	URVASHI	VEER BHAN	Aug-21	57	77	134 B	URVASHI
706	120219002391	201071719	20-IP-755	ANKUSH	FATEH SINGH	Aug-21	87	77	164 A	ANKUSH
707	120219002394	201071882	20-IP-632	DINESH	DILAWAR SINGH	Aug-21	51	71	122 B	DINESH
708	120219002395	201071818	20-IP-856	SONU	MEER HASSAN	Aug-21	60	80	140 B	SONU
709	120219002396	201071540	20-IP-633	NEHA DEVI	PAWAN KUMAR	Aug-21	70	80	150 A	NEHA DEVI
710	120219002397	201071821	20-IP-634	SOMIYA	SUBHASH	Aug-21	80	70	150 A	SOMIYA
711	120219002398	201071794	20-IP-635	SAHIL JANGDA	RAJBIR JANGDA	Aug-21	64	84	148 B	SAHIL JANGDA
712	120219002399	201071541	20-IP-92	Teena	MAHABIR	21-Aug	82	72	154 A	Teena
713	120219002400	201071743	20-IP-101	Aman	Subhash Kumar	Aug-21	82	72	154 A	Aman
714	120219002401	201071783	20-IP-85	SOHAN	ASHOK KUMAR	Aug-21	59	79	138 B	SOHAN
715	120219002402	201071686	20-IP-636	TULSI	CHANDERDEV SAAV	Aug-21	64	84	148 B	TULSI
716	120219002403	201071709	20-IP-637	ALINA KHAN	AMJAD KHAN	Aug-21	74	84	158 A	ALINA KHAN
717	120219002404	201071904	20-IP-97	SEEMA	SHOBHA RAMI	Aug-21	62	82	144 B	SEEMA
718	120219002406	201071575	20-IP-98	PRIVANKA	BILLU	21-Aug	64	84	148 B	PRIVANKA
719	120219002407	201071575	20-IP-98	PRIVANKA	BILLU	21-Aug	64	84	148 B	PRIVANKA



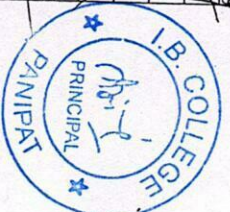
Handwritten signatures and names in the right margin, including 'Rajpal', 'Shyam', 'ISHWAR SINGH', 'PARVEEN', 'Tushar', 'ANJALI', 'SALONI', 'Atam Parkash', 'RAMESH', 'NARESH', 'JUGPAL SINGH', 'RAMJEVAN', 'Balwan Singh', 'RAJPAL LUTHRA', 'JAGBIR', 'JAGDISH KUMAR', 'NARESH KUMAR', 'SUNDER', 'RAM DULARE', 'SATBIR', 'RAJINDER', 'BRIJMOHAN', 'RAVINDER KHANNA', 'JASBIR', 'VEER BHAN', 'FATEH SINGH', 'DILAWAR SINGH', 'MEER HASSAN', 'PAWAN KUMAR', 'SUBHASH', 'RAJBIR JANGDA', 'MAHABIR', 'Subhash Kumar', 'ASHOK KUMAR', 'CHANDERDEV SAAV', 'AMJAD KHAN', 'SHOBHA RAMI', 'BILLU', 'PRIVANKA', 'BILLU'.

720	120219002410	201071781	20-IP-125	VISHAL	SUSHEEL	Aug-21	67	87	154 A	Vishal
721	120219002411	201071697	20-IP-124	MANISH	HARIKASH	Aug-21	60	80	140 D	Manish
722	120219002413	201071793	20-IP-638	MOHAN	JAI BHAGWAN	Aug-21	56	76	132 B	Mohan
723	120219002414	201071679	20-IP-99	RESHMI	ASHOK	Aug-21	86	76	162 A	Reshmi
724	120219002416	201071713	20-IP-84	ASHWANI DEVI	SATISH TYAGI	Aug-21	878	78	166 A	Ashwani
725	120219002417	201071742	20-IP-639	Tannu	Jitender singh	Aug-21	70	80	150 A	Tannu
726	120219002418	201071612	20-IP-640	BITTU	KARAMBIR	Aug-21	48	68	116 C	BITTU
727	120219002422	201071658	20-IP-105	VINITA	BABLU	Aug-21	65	85	150 A	Vinita
728	120219002423	201071659	20-IP-87	NEHA	KRISHAN	Aug-21	70	80	150 A	Neeta
729	120219002425	201071917	20-IP-760	MONIKA	DHRAM BEER	Aug-21	82	72	154 A	Monika
730	120219002428	201071642	20-IP-761	AMAN	JAGMOHINDER	Aug-21	61	81	142 B	Aman
731	120219002429	201071610	20-IP-106	NEHA	BALRAJ	Aug-21	64	84	148 B	Neeta
732	120219002430	201071696	20-IP-107	SANNU	MAHENDER	Aug-21	80	70	150 A	Sannu
733	120219002431	201071804	20-IP-108	NITIN KUMAR	BIJENDER SINGH	Aug-21	82	72	154 A	Nitin
734	120219002432	201071809	20-IP-109	AJAY GAUTAM	SURESH SHARMA	Aug-21	85	75	160 A	Ajay
735	120219002438	201071851	20-IP-110	Neelu	Subal	Aug-21	70	80	150 A	Neelu
736	120219002439	201071813	20-IP-643	SHIVANI	BIJENDER	Aug-21	68	88	156 A	Shivani
737	120219002440	201071906	20-IP-657	HARSHVA	JOGENDER	Aug-21	86	76	162 A	Harshva
738	120219002441	201071908	20-IP-86	SADAF	MAQSOOD AHMED	Aug-21	40	60	100 C	Sadaf
739	120219002442	201071836	20-IP-113	Ankit	Bharampal	Aug-21	54	74	128 B	Ankit
740	120219002443	201071823	20-IP-644	Sweety	Bijender	Aug-21	60	80	140 B	Sweety
741	120219002444	201071905	20-IP-111	VIPIN KUMAR	RAJENDRA	Aug-21	82	72	154 A	Vipin
742	120219002445	201071889	20-IP-764	KESHAV	RAMLAL	Aug-21	87	77	164 A	Keshav
743	120219002446	201071858	20-IP-645	Jatin Sharama	Ramesh Kumar	Aug-21	87	77	164 A	Jatin
744	120219002448	201071787	20-IP-646	JYOTI	MUSTRAM	Aug-21	70	80	150 A	Jyoti
745	120219002449	201071504	20-IP-647	DEEPA NSHU	RAVINDER KUMAR	Aug-21	60	80	140 B	Deepa
746	120219002450	201071916	20-IP-112	MONU	ARJUN	Aug-21	77	87	164 A	Monu
747	120219002451	201071923	20-IP-762	RINKI	BILENDER	Aug-21	87	77	164 A	Rinki
748	120219015001	201039307	20-IP-307	VISHAL	SUNDER SINGH	Aug-21	90	80	170 A	Vishal
749	120219015002	201039316	20-IP-299	PRACHI	DALBIR SINGH	Aug-21	88	78	166 A	Praachi
750	120219015003	201039325	20-IP-308	ROBIN	NARENDER KUMAR	Aug-21	90	80	170 A	Robin
751	120219015004	201039330	20-IP-300	CHANDNI	VIMAL GUPTA	Aug-21	89	79	168 A	Chandni
752	120219015005	201039337	20-IP-309	VIPUL	RAKESH KUMAR	Aug-21	88	78	166 A	Vipul
753	120219015006	201039312	20-IP-280	RITIK	VINOD	Aug-21	89	90	179 A	Ritik
754	120219015007	201039314	20-IP-281	SACHIN	SUBHASH	Aug-21	80	70	150 A	Sachin
755	120219015008	201039311	20-IP-282	SHAKTI	SATYANARAYAN	Aug-21	88	78	166 A	Shakti
756	120219015009	201039318	20-IP-301	PRIVANKA	YASPAL SINGH	Aug-21	87	77	164 A	Privanka
757	120219015011	201039317	20-IP-284	NILESH	MANOJ KUMAR	Aug-21	89	79	168 A	Nilesh



Handwritten signatures and names are present at the bottom of the page, corresponding to the students listed in the table. Some names are written in blue ink, while others are in black ink. The names include: Vishal, Manish, Mohan, Reshmi, Ashwani, Tannu, BITTU, Vinita, Neeta, Monika, Dhram Beer, Jagmohinder, Balraj, Mahender, Jogender, Harshva, Sadaf, Bharampal, Bijender, Rajendra, Ramlal, Ramesh Kumar, Mustram, Ravinder Kumar, Arjun, Bilender, Sunder Singh, Dalbir Singh, Narender Kumar, Vimal Gupta, Rakesh Kumar, Vinod, Subhash, Satyanarayan, Yaspal Singh, Manoj Kumar, and Nishu.

758	120219015012	201039313	20-IP-285	MANISH	MANOJ KUMAR	Aug-21	80	70	150	A	Manoj Kumar
759	120219015013	201039341	20-IP-268	TAMANNA	RAKESH PUNIANI	Aug-21	91	81	172	A	Tamanna
760	120219015014	201039351	20-IP-302	ISHITA SAINI	KULDEEP SAINI	Aug-21	89	79	168	A	Shruti
761	120219015015	201039342	20-IP-269	PRIYA	AJAY MISHRA	Aug-21	74	84	158	A	Priya
762	120219015016	201039315	20-IP-270	TAMANNA	DHARAMBIR	Aug-21	88	78	166	A	Tamanna
763	120219015017	201039350	20-IP-303	SIMRAN	SANDEEP	Aug-21	71	81	152	A	Simran
764	120219015018	201039385	20-IP-271	TANISHA	NARENDER	Aug-21	90	80	170	A	Tanisha
765	120219015020	201039308	20-IP-286	ASHWANI	BHUVINDER	Aug-21	89	79	168	A	Ashwani
766	120219015023	201039352	20-IP-272	VIVEK DIWAKER	PAWAN KUMAR	Aug-21	93	83	176	A	Vivek
767	120219015025	201039373	20-IP-273	NIKITA	SURENDER SINGH	Aug-21	90	80	170	A	Nikita
768	120219015029	201039389	20-IP-274	SIMRAN	SUKHVINDER	Aug-21	91	81	172	A	Simran
769	120219015030	201039357	20-IP-290	SINGH	MAHENDER SINGH	Aug-21	90	80	170	A	Singh
770	120219015032	201039381	20-IP-825	KOMAL	CHAURASIYA	Aug-21	90	80	170	A	Komal
771	120219015033	201039382	20-IP-275	MANSI	RAJBIR	Aug-21	89	79	168	A	Mansi
772	120219015035	201039354	20-IP-277	SHARDA	RAJPAL SAINI	Aug-21	90	80	170	A	Sharda
773	120219015037	201039353	20-IP-312	SAHIL RANA	KULDEEP	Aug-21	90	80	170	A	Sahil
774	120219015040	201039383	20-IP-830	GEETANJALI	SATISH KUMAR	Aug-21	91	81	172	A	Geeta
775	120219015042	201039361	20-IP-313	ANKIT	SHAMSHER	Aug-21	85	75	160	A	Ankit
776	120219015043	201039355	20-IP-278	KOMAL	PARDEEP	Aug-21	91	81	172	A	Komal
777	120219015046	201039384	20-IP-827	PUMMY	TILAKRAJ	Aug-21	89	79	168	A	Pummy
778	120219015047	201039387	20-IP-828	SANJANA	HARPAL	Aug-21	80	70	150	A	Sanjana
779	120219015050	201039388	20-IP-315	PARTH	SUBHASH SHARMA	Aug-21	90	80	170	A	Parth
780	120219015051	201039386	20-IP-279	MEENAKSHI	JASBEER SHARMA	Aug-21	78	88	166	A	Meenakshi
781	120219015053	201039377	20-IP-296	ANURAG	SAHAB SINGH	Aug-21	82	72	154	A	Anurag
782	120219015057	201039378	20-IP-318	AKASH	OMSINGH	Aug-21	89	79	168	A	Akash
783	120219015062	201039392	20-IP-703	KIRTI	VIKRAM	Aug-21	89	79	168	A	Kirti
784	120219030001	201039334	20-IP-332	RANI	BJENDER	Aug-21	91	81	172	A	Rani
785	120219030002	201039345	20-IP-333	KRITIKA	RAJINDER SINGH SAINI	Aug-21	90	80	170	A	Kritika
786	120219030003	201039343	20-IP-334	VANSHIKA SAINI	RAJINDER SINGH SAINI	Aug-21	91	81	172	A	Vanishika
787	120219030004	201039319	20-IP-344	KUMAR	HARISH KUMAR	Aug-21	87	77	164	A	Kumar
788	120219030005	201039395	20-IP-319	ANSHIKA	SAT NARAYAN	Aug-21	90	80	170	A	Anshika
789	120219030006	201039330	20-IP-335	PRAKRITI	RAVINDER KUMAR	Aug-21	80	70	150	A	Praakriti
790	120219030007	201039396	19-VS-193	RITIKA	RAJ SINGH	Aug-21	90	80	170	A	Ritika
791	120219030009	201039346	20-IP-337	NEHA KAUSHIK	DEVENDER	Aug-21	92	82	174	A	Neha
792	120219030011	201039371	20-IP-325	ANIKET VATS	SUSHIL KUMAR	Aug-21	89	79	168	A	Aniket
793	120219030014	201039326	20-IP-320	NEETU	ASHOK KUMAR	Aug-21	91	81	172	A	Neetu
794	120219030015	201039336	20-IP-339	SHEETAL	SHRI RAM	Aug-21	90	80	170	A	Sheetal
795	120219030016	201039335	20-IP-340	BHAWNA	GULSAN KUMAR	Aug-21	90	80	170	A	Bhawn



Section -D

S.NO.	COLLEGE ROLL NO.	UNIVERSITY/RO LL NO	REGN.NO	NAME	FATHER NAME	EXAMINATIO N DATE	THEORY MARKS	PRACTICAL MARKS	TOTAL GRADE	SIGNATURE
1	120219002001	201071878	20-IP-51	RITESH KUMAR	JITRENDER SINGH	Aug-21	88	78	168 A	Ritesh Kumar
2	120219002003	201071746	20-IP-52	Kamal	Mukesh Kumar	Aug-21	76	86	162 A	Kamal
3	120219002006	201071657	20-IP-601	VIKAS	JOGINDER	Aug-21	60	80	140 B	Vikas
4	120219002008	201071581	20-IP-610	HARSH	DEVINDER	Aug-21	46	66	112 C	Harsh
5	120219002009	201071722	20-IP-603	AADASH	VIRENDER SINGH	Aug-21	85	75	160 A	Aadash
6	120219002011	201071637	20-IP-837	VISHAL	RAMNIWASH	Aug-21	66	86	152 A	Vishal
7	120219002013	201071816	20-IP-604	AMIT	DHARAMBIR SINGH	Aug-21	66	86	152 A	Amit
8	120219002015	201071834	20-IP-420	Ravi Prakash	Bhanu Pratap	Aug-21	83	73	156 A	Ravi Prakash
9	120219002017	201071650	20-IP-421	HEMANT	ANIL KUMAR	Aug-21	88	78	166 A	Hemant
10	120219002018	201071769	20-IP-422	VIKRAM	KARAMBIR	Aug-21	62	82	144 B	Vikram
11	120219002020	201071815	20-IP-423	JATIN	ANIL	Aug-21	67	87	154 A	Jatin
12	120219002022	201071688	20-IP-424	SAHIL	DILBAG SINGH	Aug-21	92	82	174 A	Sahil
13	120219002026	201071737	20-IP-53	Vishal	Krishan Jatt	Aug-21	54	74	128 B	Vishal
14	120219002027	201071643	20-IP-54	VISHAL	RAMSINGH	Aug-21	86	76	162 A	Vishal
15	120219002030	201071561	20-IP-426	VIKAS	SUNIL	21-Aug	49	69	118 C	Vikas
16	120219002033	201071644	20-IP-428	PUNEET ATRI	RAMNIWAS	Aug-21	70	80	150 A	Puneet
17	120219002034	201071728	20-IP-429	Anshu Malik	Krishan Malik	Aug-21	56	76	132 B	Anshu Malik
18	120219002038	201071806	20-IP-430	PRINCE	SOMDUIT	Aug-21	78	88	166 A	Prince
19	120219002041	201071740	20-IP-432	Sahil kumar	Hari Ram	Aug-21	52	72	124 B	Sahil kumar
20	120219002043	201071888	20-IP-433	JATIN SOTRA	RAVINDER SOTRA	Aug-21	89	79	168 A	Jatin Sotra
21	120219002047	201071664	20-IP-434	ARPIT	BIRHAM SINGH	Aug-21	60	80	140 B	Arpit
22	120219002052	201071798	20-IP-435	PRINCE	SANJEEV KUMAR	Aug-21	73	83	156 A	Prince
23	120219002054	201071715	20-IP-436	PARAS	RAVESH SHARMA	Aug-21	67	87	154 A	Paras
24	120219002055	201071684	20-IP-437	AKSHIT	ARUN KUMAR	Aug-21	77	87	164 A	Akshit
25	120219002056	201071668	20-IP-438	MANISH SAINI	BIJINDER SAINI	Aug-21	70	80	150 A	Manish Saini
26	120219002057	201071662	20-IP-439	ANKUSH	RANBIR	Aug-21	60	80	140 B	Ankush
27	120219002058	201071630	20-IP-550	SHUBHAM	JAGDEEP	Aug-21	55	75	130 B	Shubham
28	120219002062	201071830	20-IP-441	Amit	Sunder	Aug-21	83	73	156 A	Amit
29	120219002063	201071926	20-IP-442	AASHISH	RAJENDER	Aug-21	89	79	168 A	Aashish
30	120219002066	201071681	20-IP-443	VIVEK	DEVENDER	Aug-21	46	66	112 C	Vivek
31	120219002067	201071602	20-IP-23	TANUJ	SURESH	Aug-21	70	80	150 A	Tanuj
32	120219002068	201071562	20-IP-414	RAHUL	ISHWAR	21-Aug	88	78	166 A	Rahul
33	120219002073	201071721	20-IP-605	DEEPAK	ANIL SHARMA	Aug-21	87	77	164 A	Deepak
34	120219002075	201071512	20-IP-838	MOHIT	SATYANARAVAN	Aug-21	88	88	168 A	Mohit
35	120219002078	201071753	20-IP-445	Anuj	Krishan	Aug-21	85	85	162 A	Anuj
36	120219002086	201071646	20-IP-446	MOHIT KUMAR	RAJESH KUMAR	Aug-21	88	88	166 A	Mohit Kumar



Handwritten signatures and names in the signature column, including: Ritesh Kumar, Kamal, Vikas, Harsh, Aadash, Vishal, Amit, Ravi Prakash, Hemant, Vikram, Jatin, Sahil, Krishan Jatt, Ramsingh, Sunil, Ramniwas, Krishan Malik, Somduit, Hari Ram, Ravinder Sotra, Birham Singh, Sanjeev Kumar, Ravesh Sharma, Arun Kumar, Bijinder Saini, Ranbir, Jagdeep, Sunder, Rajender, Devender, Suresh, Ishwar, Anil Sharma, Satyanaravan, Krishan, Rajesh Kumar.

37	120219002091	201071509	20-IP-447	VIKAS	Naresh SINGH	Aug-21	86	76	162 A	Vikas h
38	120219002092	201071556	20-IP-608	ARUN	OM PARKASH	21-Aug	86	76	162 A	Arun
39	120219002094	201071702	20-IP-609	SAHIL	PAWAN KUMAR	Aug-21	72	82	154 A	Sahil
40	120219002096	201071796	20-IP-842	SHIVAM	VINOD	Aug-21	75	85	160 A	Shivam
41	120219002100	201071918	20-IP-783	NISHU	HANIF	Aug-21	66	86	152 A	Nishu
42	120219002110	201071527	20-IP-787	ANKIT	RAM NIWAS	21-Aug	63	83	146 B	ANKIT
43	120219002115	201071863	20-IP-476	Gourav	Inderjeet Paswan	Aug-21	70	80	150 A	
44	120219002121	201071777	20-IP-741	VISHAL	RAIPAL	Aug-21	62	82	144 B	Vishal
45	120219002128	201071502	20-IP-478	VIKAS	RAKESH	Aug-21	89	79	168 A	Vikas
46	120219002138	201071648	20-IP-863	YASH CHOPRA	SUBHASH CHANDER	Aug-21	61	81	142 B	Yash
47	120219002139	201071717	20-IP-479	SUMIT KUMAR	SULTAN SINGH	Aug-21	74	84	158 A	Sumit Kumar
48	120219002141	201071711	20-IP-58	RITIK	KANWAR PAL	Aug-21	84	74	158 A	Ritik
49	120219002142	201071805	20-IP-59	SAHIL MORYA	GURDASS	Aug-21	79	89	168 A	Sahil Morya
50	120219002143	201071534	20-IP-480	MOHIT	SUKHBIR	21-Aug	78	88	166 A	Mohit
51	120219002149	201071924	20-IP-853	VISHAL MALIK	JIVENDER	Aug-21	86	76	162 A	Vishal Malik
52	120219002152	201071712	20-IP-617	SONU	RAJESH KUMAR	Aug-21	65	85	150 A	Sonu
53	120219002155	201071826	20-IP-747	Gourav	Joginder Nandal	Aug-21	77	87	164 A	Gourav
54	120219002157	201071736	20-IP-60	Abhishek	Satish	Aug-21	88	78	166 A	Abhishek
55	120219002166	201071839	20-IP-826	Balram	Jaewant	Aug-21	85	75	160 A	Balram
56	120219002167	201071585	20-IP-774	NITIN	SUSHIL KUMAR	Aug-21	83	73	156 A	Nitin
57	120219002168	201071689	20-IP-481	SAGAR	RAMESH SHARMA	Aug-21	86	76	162 A	Sagar
58	120219002170	201071807	20-IP-621	KISHAN	VINOD KUMAR	Aug-21	63	83	146 B	Kishan
59	120219002171	201071790	20-IP-622	SURAJ	SOMDUJT KAUSHIK	Aug-21	74	84	158 A	Suraj
60	120219002172	201071580	20-IP-482	RAMAN	JAGBIR	21-Aug	83	73	156 A	Raman
61	120219002173	201071558	20-IP-483	BRU BHUSHAN	BALWAN	Aug-21	80	70	150 A	Bru Bhushan
62	120219002175	201071780	20-IP-484	SHIVAM	UDAY RAJ	Aug-21	60	80	140 B	Shivam
63	120219002178	201071860	20-IP-731	Wasim	Jamal Ansari	Aug-21	87	77	164 A	Wasim
64	120219002179	201071864	20-IP-649	Sunny	Narender	Aug-21	70	80	150 A	Sunny
65	120219002182	201071900	20-IP-650	GARVISH	DEEPAK KATARIA	Aug-21	89	79	168 A	Garvish
66	120219002189	201071635	20-IP-486	KRISHNA	MUNNA	Aug-21	69	89	158 A	Krishna
67	120219002190	201071588	20-IP-487	DEEPAK	SATYAWAN	Aug-21	57	77	134 B	Deepak



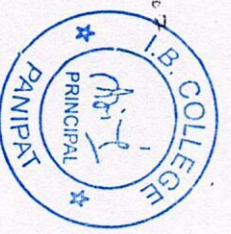
S.NO.	COLLEGE ROLL NO.	UNIVERSITY ROLL NO.	REGN. NO.	NAME	FATHER NAME	EXAMINATION DATE	THEORY MARKS	PRACTICAL MARKS	TOTAL GRADE	SIGNATURE
1	120219002001	201071878	20-IP-51	RITESH KUMAR	JITRENDER SINGH	Aug-21	88	78	168 A	P. D. D. D.
2	120219002002	201071859	20-IP-24	Shivani	Dinesh	Aug-21	75	85	160 A	P. D. D. D.
3	120219002003	201071746	20-IP-52	Kamal	Mukesh kumar	Aug-21	76	86	162 A	P. D. D. D.
4	120219002005	201071705	20-IP-1	BABY	RAMPAL	Aug-21	81	71	152 A	P. D. D. D.
5	120219002006	201071657	20-IP-601	VIKAS	JOGINDER	Aug-21	60	80	140 B	P. D. D. D.
6	120219002007	201071608	20-IP-02	SIMRAN	HAWA SINGH	Aug-21	54	74	128 B	P. D. D. D.
7	120219002008	201071581	20-IP-610	HARSH	DEVINDER	Aug-21	46	66	112 C	P. D. D. D.
8	120219002009	201071722	20-IP-603	AADARSH	VIRENDER SINGH	Aug-21	85	75	160 A	P. D. D. D.
9	120219002010	201071654	20-IP-3	SAKSHI	JARNEL SINGH	Aug-21	91	81	172 A	P. D. D. D.
10	120219002011	201071637	20-IP-837	VISHAL	RAMNIWASH	Aug-21	66	86	152 A	P. D. D. D.
11	120219002012	201071554	20-IP-4	NEETU	RAJ KUMAR	21-Aug	86	76	162 A	P. D. D. D.
12	120219002013	201071816	20-IP-604	AMIT	DHARAMBIR SINGH	Aug-21	66	86	152 A	P. D. D. D.
13	120219002014	201071752	20-IP-831	Annu	Satish Kumar	Aug-21	64	84	148 B	P. D. D. D.
14	120219002015	201071834	20-IP-420	Ravi Prakash	Bhanu Pratap	Aug-21	83	73	156 A	P. D. D. D.
15	120219002016	201071771	20-IP-25	SAMRIDHI	SANDEEP THAKRAL	Aug-21	82	72	154 A	P. D. D. D.
16	120219002017	201071650	20-IP-421	HEMANT	ANIL KUMAR	Aug-21	88	78	166 A	P. D. D. D.
17	120219002018	201071769	20-IP-422	VIKRAM	KARAMBIR	Aug-21	62	82	144 B	P. D. D. D.
18	120219002019	201071766	20-IP-005	KANIKA	SATISH KUMAR	Aug-21	45	65	110 C	P. D. D. D.
19	120219002020	201071815	20-IP-423	JATIN	ANIL	Aug-21	67	87	154 A	P. D. D. D.
20	120219002021	201071789	20-IP-6	PARSHI	KIRSHAN SHARMA	Aug-21	79	89	168 A	P. D. D. D.
21	120219002022	201071688	20-IP-424	SAHIL	DILBAG SINGH	Aug-21	92	82	174 A	P. D. D. D.
22	120219002025	201071607	20-IP-07	NAVJOT	MALUK SINGH	Aug-21	56	76	132 B	P. D. D. D.
23	120219002026	201071737	20-IP-53	Vishal	Krishan Jatt	Aug-21	54	74	128 B	P. D. D. D.
24	120219002027	201071643	20-IP-54	VISHAL	RAMSINGH	Aug-21	86	76	162 A	P. D. D. D.
25	120219002029	201071587	20-IP-587	ROSHNI	RAJBIR	Aug-21	81	73	154 A	P. D. D. D.
26	120219002030	201071561	20-IP-426	VIKAS	SUNIL	21-Aug	49	69	118 C	P. D. D. D.
27	120219002032	201071695	20-IP-26	ANJALI	SHYAM CHAND	Aug-21	64	84	148 B	P. D. D. D.
28	120219002033	201071644	20-IP-428	PUNEET ATRI	RAMNIWAS	Aug-21	70	80	150 A	P. D. D. D.
29	120219002034	201071728	20-IP-429	Anshu Malik	Krishan Malik	Aug-21	56	76	132 B	P. D. D. D.
30	120219002035	201071655	20-IP-9	LAVINA	SATISH	Aug-21	85	75	160 A	P. D. D. D.
31	120219002036	201071619	20-IP-10	SUNITA	TARA CHAND	Aug-21	82	72	154 A	P. D. D. D.
32	120219002037	201071652	20-IP-11	GAVTRI	DHRAMVIR SINGH	Aug-21	91	81	172 A	P. D. D. D.
33	120219002038	201071806	20-IP-430	PRINCE	SOMDUIT	Aug-21	78	88	166 A	P. D. D. D.
34	120219002041	201071740	20-IP-432	Sahil kumar	Hari Ram	Aug-21	52	72	124 B	P. D. D. D.
35	120219002042	201071883	20-IP-13	ANCHAL	ASHOK KUMAR	Aug-21	87	77	164 A	P. D. D. D.
36	120219002043	201071888	20-IP-433	JATIN SOTRA	RAVINDER SOTRA	Aug-21	89	79	168 A	P. D. D. D.
37	120219002044	201071516	20-IP-710	SIMRAN	BALRAJ	Aug-21	82	72	154 A	P. D. D. D.

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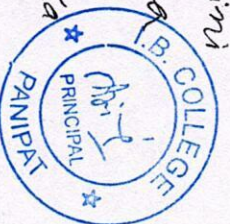
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38	120219002045	201071716	20-IP-14	REKHA DEVI	GULAB SINGH	Aug-21	60	80	140 B	Rekha Devi
39	120219002046	201071573	20-IP-15	ANNU	RAJA RAM	21-Aug	84	74	158 A	Annu
40	120219002047	201071664	20-IP-43A	ARPIT	BIRHAM SINGH	Aug-21	60	80	140 B	Arpit
41	120219002048	201071890	20-IP-			Aug-21			0	
42	120219002048	201071890	20-IP-27	NISHA	SUBHASH CHAND	Aug-21	89	79	168 A	Nisha
43	120219002049	201071701	20-IP-16	SONIA	JAVED	Aug-21	74	84	158 A	Sonia
44	120219002050	201071928	20-IP-17	PREETI	DHARAMBIR	Aug-21	68	88	156 A	Preeti
45	120219002051	201071733	20-IP-18	Nitesh	Bhupender Singh	Aug-21	77	87	164 A	Nitesh
46	120219002052	201071798	20-IP-43S	PRINCE	SANJEEV KUMAR	Aug-21	73	83	156 A	Prince
47	120219002053	201071515	20-IP-28	TANNU	MANIPAL	Aug-21	87	77	164 A	Tannu
48	120219002054	201071715	20-IP-43E	PARAS	RAMESH SHARMA	Aug-21	67	87	154 A	Paras
49	120219002055	201071684	20-IP-437	AKSHIT	ARUN KUMAR	Aug-21	77	87	164 A	Akshit
50	120219002056	201071668	20-IP-438	MANISH SAINI	BIJINDER SAINI	Aug-21	70	80	150 A	Manish Saini
51	120219002057	201071662	20-IP-439	ANKUSH	RANBIR	Aug-21	60	80	140 B	ANKUSH
52	120219002058	201071630	20-IP-550	KOMAL	MUKESH	Aug-21	87	77	164 A	Komal
53	120219002061	201071522	20-IP-20	Amit	Sunder	Aug-21	83	73	156 A	Amit
54	120219002062	201071830	20-IP-441	AASHISH	RAJENDER	Aug-21	89	79	168 A	Aashish
55	120219002063	201071926	20-IP-442	ANJALI	ADAY KUMAR	Aug-21	88	78	166 A	Anjali
56	120219002064	201071707	20-IP-21	MUSKAAN	ADAY KUMAR	Aug-21	60	80	140 B	Muskaan
57	120219002065	201071663	20-IP-22	VIVEK	DEVENDER	Aug-21	46	66	112 C	Vivek
58	120219002066	201071681	20-IP-443	TANNU	SURESH	Aug-21	70	80	150 A	Tannu
59	120219002067	201071602	20-IP-23	RAHUL	ISHWAR	Aug-21	88	78	166 A	Rahul
60	120219002068	201071562	20-IP-444	TANYA	RAJEEVR	Aug-21	62	82	144 B	Tanya
61	120219002069	201071560	20-IP-857	Tannu	Rajpal	Aug-21	50	70	120 B	Tannu
62	120219002070	201071732	20-IP-835	MUSKAN	ANIL KUMAR	Aug-21	60	80	140 B	Muskan
63	120219002071	201071566	20-IP-29	ANSHU	VIKRAM	Aug-21	82	72	154 A	Anshu
64	120219002072	201071620	20-IP-841	DEEPAK	ANIL SHARMA	Aug-21	87	77	164 A	Deepak
65	120219002073	201071721	20-IP-605	MOHIT	SATYANARAYAN	Aug-21	78	88	168 A	Mohit
66	120219002075	201071512	20-IP-838	SHALU	VEERBHAN	Aug-21	94	84	178 A	Shalu
67	120219002076	201071653	20-IP-829	Anuj	Krishan	Aug-21	76	86	162 A	Anuj
68	120219002078	201071753	20-IP-445	NEHA	HARPAL	Aug-21	54	74	128 B	Neha
69	120219002079	201071609	20-IP-448	ANKITA	MAHENDER	Aug-21	66	86	152 A	Ankita
70	120219002080	201071549	20-IP-449	RIYA SAINI	VINOD KUMAR	Aug-21	88	78	166 A	Riya Saini
71	120219002081	201071523	20-IP-30	Sujata	Subhash	Aug-21	74	84	158 A	Sujata
72	120219002082	201071848	20-IP-450	JAGRITI	RAJU VERMA	Aug-21	56	76	132 D	Jagrithi
73	120219002084	201071704	20-IP-451	SAKSHI	HARENDER	Aug-21	85	75	160 A	Sakshi
74	120219002085	201071678	20-IP-781	MOHIT KUMAR	RAM NIWAS	Aug-21	57	77	134 B	Mohit
75	120219002086	201071646	20-IP-446	PRIVANKA	Naresh SINGH	Aug-21	86	76	162 A	Privanka
76	120219002090	201071615	20-IP-452							
77	120219002091	201071509	20-IP-447							

RAHUL 52
 Annu
 Arpit
 Nisha
 Sonia
 Preeti
 Nitesh
 Prince
 Tannu
 Paras
 Akshit
 Manish Saini
 Ankush
 Komal
 Amit
 Aashish
 Anjali
 Muskaan
 Vivek
 Tannu
 Rahul
 Tanya
 Tannu
 Ishwar
 Rajeevr
 Rajpal
 Anil Kumar
 Vikram
 Anil Sharma
 Satyanarayan
 Veerbhan
 Krishan
 Harpal
 Mahender
 Vinod Kumar
 Subhash
 Raju Verma
 Harender
 Ram Niwas
 Naresh Singh



ATTORNEY

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78	120219002092	201071556	20-IP-606	ARUN	OM PARKASH	21-Aug	86	76	162 A	Pooja
79	120219002093	201071524	20-IP-453	POOJA	JAGBIR	21-Aug	88	78	166 A	Jagbir Singh
80	120219002094	201071702	20-IP-609	SAHIL	PAWAN KUMAR	Aug-21	72	82	154 A	Pawan Kumar
81	120219002096	201071796	20-IP-842	SHIVAM	VINOD	Aug-21	75	85	160 A	Vinod
82	120219002099	201071875	20-IP-454	GRACY	VEER SINGH	Aug-21	86	76	162 A	Veer Singh
83	120219002100	201071918	20-IP-783	NISHU	HANIF	Aug-21	66	86	152 A	Hanif
84	120219002101	201071677	20-IP-610	MANSI	SONU	Aug-21	78	88	166 A	Sonu
85	120219002102	201071525	20-IP-455	NANCY	RAMESH	21-Aug	85	75	160 A	Ramesh
86	120219002103	201071927	20-IP-784	KAJAL	PREM SINGH	Aug-21	85	75	160 A	Prem Singh
87	120219002104	201071622	20-IP-456	ISHU	BRAHAM PARKASH	Aug-21	60	80	140 B	Brahm Parkash
88	120219002108	201071638	20-IP-612	PRIYA	SANJAY	Aug-21	84	74	158 A	Sanjay
89	120219002110	201071527	20-IP-787	ANKIT	RAM NIWAS	21-Aug	63	83	146 B	Ram Niwas
90	120219002111	201071589	20-IP-457	KAJAL	SHARVAN SHARMA	Aug-21	67	87	154 A	Sharvan Sharma
91	120219002112	201071571	20-IP-786	MINAKSHI	RAM PAL	21-Aug	54	74	128 B	Ram Pal
92	120219002114	201071892	20-IP-458	REET GOYAL	ASHOK GOYAL	Aug-21	67	87	154 A	Ashok Goyal
93	120219002115	201071863	20-IP-476	Gourav	Inderjeet Paswan	Aug-21	70	80	150 A	Inderjeet Paswan
94	120219002117	201071545	20-IP-459	RIYA	SURESH KUMAR	21-Aug	73	83	156 A	Suresh Kumar
95	120219002118	201071603	20-IP-613	TANNU	SATBIR	Aug-21	88	78	166 A	Satbir
96	120219002121	201071777	20-IP-741	VISHAL	RAJPAL	Aug-21	62	82	144 B	Rajpal
97	120219002122	201071773	20-IP-614	PREETI	BALRAM SINGH	Aug-21	64	84	148 B	Balram Singh
98	120219002123	201071687	20-IP-460	SEEMA	UMA SHANKAR	Aug-21	80	70	150 A	Uma Shankar
99	120219002124	201071748	20-IP-742	Preeti devi	Surjeet Singh	Aug-21	58	78	136 B	Surjeet Singh
100	120219002125	201071660	20-IP-461	NEHA RANI	RAJESH KUMAR	Aug-21	54	74	128 B	Neha Rani
101	120219002127	201071513	20-IP-31	SAKSHI	SURENDER MADDAAN	Aug-21	83	73	156 A	Sakshi
102	120219002128	201071502	20-IP-478	VIKAS	RAKESH	Aug-21	89	79	168 A	Vikas
103	120219002130	201071703	20-IP-462	KOMAL	SANDEEP KUMAR	Aug-21	76	86	162 A	Komal
104	120219002131	201071708	20-IP-463	KAJAL	MADAN	Aug-21	70	80	150 A	Kajal
105	120219002132	201071537	20-IP-464	GEETA	TILAK RAMI	21-Aug	48	68	166 C	Geeta
106	120219002133	201071601	20-IP-465	MONIKA	NARESH KUMAR	Aug-21	56	76	132 B	Monika
107	120219002134	201071529	20-IP-743	ANJALI SINGH	VIJAY PAL SINGH	21-Aug	88	78	166 A	Anjali Singh
108	120219002135	201071514	20-IP-466	SIMRAN	SURENDER	Aug-21	64	84	148 B	Simran
109	120219002136	201071533	20-IP-467	CHARU	RAJESH KUMAR	21-Aug	60	80	140 B	Charu
110	120219002138	201071648	20-IP-863	YASH CHOPRA	SUBHASH CHANDER	Aug-21	61	81	142 B	Yash Chopra
111	120219002139	201071717	20-IP-479	SUMIT KUMAR	SULTAN SINGH	Aug-21	74	84	158 A	Sumit Kumar
112	120219002141	201071711	20-IP-58	RITIK	KANWAR PAL	Aug-21	84	74	158 A	Ritik
113	120219002142	201071805	20-IP-59	SAHIL MORYA	GURDASS	Aug-21	79	89	168 A	Sahil Morya
114	120219002143	201071534	20-IP-480	MOHIT	SUKHBIR	21-Aug	78	88	166 A	Mohit
115	120219002145	201071517	20-IP-746	JYOTI	SURESH	Aug-21	82	72	154 A	Jyoti
116	120219002148	201071735	20-IP-468	Amit Rani	Jagbir Singh	Aug-21	86	76	162 A	Amit Rani
117	120219002149	201071924	20-IP-853	VISHAL MALIK	JYENDER	Aug-21	86	76	162 A	Vishal Malik

Pooja
 Jagbir Singh
 Pawan Kumar
 Vinod
 Veer Singh
 Hanif
 Sonu
 Ramesh
 Prem Singh
 Brahm Parkash
 Sanjay
 Ram Niwas
 Sharvan Sharma
 Ram Pal
 Ashok Goyal
 Inderjeet Paswan
 Suresh Kumar
 Satbir
 Rajpal
 Balram Singh
 Uma Shankar
 Surjeet Singh
 Rajesh Kumar
 Surender Madnaan
 Rakesh
 Sandeep Kumar
 Madan
 Tilak Rami
 Nareesh Kumar
 Vijay Pal Singh
 Surender
 Rajesh Kumar
 Subhash Chander
 Sultan Singh
 Kanwar Pal
 Gurdass
 Sukhbir
 Suresh
 Jagbir Singh
 Jyender



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118	120219002150	201071584	20-IP-32	MONIKA	SUBHASH CHAND	Aug-21	52	72	124 B	Moni Ke
119	120219002152	201071712	20-IP-617	SONU	RAJESH KUMAR	Aug-21	65	85	150 A	Rajesh Kumar
120	120219002153	201071579	20-IP-33	PARUL	SHIV KUMAR	21-Aug	86	76	162 A	Parul
121	120219002154	201071594	20-IP-470	PRACHI	PAWAN SHARMA	Aug-21	70	80	150 A	Pawan
122	120219002155	201071826	20-IP-747	Gourav	Joginder Nandal	Aug-21	77	87	164 A	Gourav
123	120219002157	201071736	20-IP-60	Abhishek	Satish	Aug-21	88	78	166 A	Abhishek
124	120219002159	201071741	20-IP-34	Jyoti	Rajpal	Aug-21	50	70	120 B	Jyoti
125	120219002160	201071606	20-IP-471	ANIALI	JALJEET	Aug-21	40	60	100 C	Jaljeet
126	120219002162	201071661	20-IP-35	RADHIKA	NARESH KUMAR	Aug-21	90	80	170 A	Narish Kumar
127	120219002163	201071552	20-IP-552	PRIVANKA	SUSHIL	21-Aug	84	74	158 A	Privanka
128	120219002165	201071852	20-IP-472	Simran Tyagi	Devender Kumar	Aug-21	87	77	164 A	Devender Kumar
129	120219002166	201071839	20-IP-826	Balram	Jaswant	Aug-21	85	75	160 A	Balram
130	120219002167	201071585	20-IP-774	NITIN	SUSHIL KUMAR	Aug-21	83	73	156 A	Nitin
131	120219002168	201071689	20-IP-481	SAGAR	RAMESH SHARMA	Aug-21	86	76	162 A	Sagar
132	120219002169	201071779	20-IP-473	VAISHALI	RAJ KUMAR	Aug-21	82	72	154 A	Vaishali
133	120219002170	201071807	20-IP-621	KISHAN	VINOD KUMAR	Aug-21	63	83	146 B	Kishan
134	120219002171	201071790	20-IP-622	SURAJ	SOMDUIT KAUSHIK	Aug-21	74	84	158 A	Suraj
135	120219002172	201071580	20-IP-482	RAMAN	JAGBIR	21-Aug	83	73	156 A	Raman
136	120219002173	201071598	20-IP-483	BRU BHUSHAN	BALWAN	Aug-21	80	70	150 A	Balwan
137	120219002174	201071853	20-IP-623	Lavlin	Rajesh	Aug-21	69	89	158 A	Lavlin
138	120219002175	201071780	20-IP-484	SHIVAM	UDAY RAJ	Aug-21	60	80	140 B	Shivam
139	120219002177	201071867	20-IP-624	TANNU	RISHIPAL	Aug-21	65	85	150 A	Tannu
140	120219002178	201071860	20-IP-731	Wasim	Jamal Ansari	Aug-21	87	77	164 A	Wasim
141	120219002179	201071864	20-IP-649	Sunny	Narender	Aug-21	70	80	150 A	Sunny
142	120219002180	201071621	20-IP-474	KOMAL	BIJENDER	Aug-21	92	82	174 A	Komal
143	120219002181	201071811	20-IP-475	NIKITA	SUNIL	Aug-21	83	73	156 A	Nikita
144	120219002182	201071900	20-IP-650	GARVISH	DEEPAK KATARIA	Aug-21	89	79	168 A	Garvish
145	120219002183	201071625	20-IP-788	RAHI	NARESH KUMAR	Aug-21	77	87	164 A	Rahi
146	120219002187	201071682	20-IP-37	KUSHI	TEK BHADUR	Aug-21	64	84	148 B	Kushi
147	120219002189	201071635	20-IP-486	KRISHNA	MUNNA	Aug-21	69	89	158 A	Krishna
148	120219002190	201071588	20-IP-487	DEEPAK	SATYAWAN	Aug-21	57	77	134 B	Deepak

2164 201071588 20-IP-61 ASHISH s/o Rakesh Aug 21



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2021-22

Fakultas Keguruan dan Ilmu Pendidikan
 Mahasiswa Pendidikan IPS

No	Nama	Kelas	Tanda Tangan
1	Evania	BA.1ed	
2	Dyara	BA.2ed	
3	Poppy	BA.3ed	
4	Wahidhah	BA.1ed	
5	Katit	BA.2ed	
6	Sakura	BA.1ed	
7	Hendri	BA.1ed	
8	Yamirah	BA.1ed	
9	Praya	BA.1ed	
10	Septia	BA.1ed	
11	Syahr	BA.1ed	
12	Soni	BA.3ed	
13	Kemaheni	BA.2ed	
14	Suhani	BA.1ed	
15	Iska	BA.1ed	
16	Maria	BA.1ed	
17	Maria	BA.3ed	
18	Maria	BA.3ed	
19	Maria	BA.3ed	
20	Maria	BA.3ed	
21	Maria	BA.3ed	
22	Maria	BA.3ed	
23	Maria	BA.3ed	
24	Maria	BA.3ed	

Agus

Principals
 IB PGRI College



MAJORITY CLASING STUDENT LIST

NO	NAME	CLASS	Tanda Tangan
1	MARCI	BA.1ed	
2	MARCI	BA.1ed	
3	KANDICEP	BA.1ed	
4	IPSA	BA.1ed	
5	MARCI	BA.1ed	
6	MARCI	BA.1ed	
7	MARCI	BA.1ed	
8	MARCI	BA.1ed	
9	MARCI	BA.1ed	
10	MARCI	BA.1ed	
11	MARCI	BA.1ed	
12	MARCI	BA.1ed	
13	MARCI	BA.1ed	
14	MARCI	BA.1ed	
15	MARCI	BA.1ed	
16	MARCI	BA.1ed	
17	MARCI	BA.1ed	

Principals
 IB PGRI College

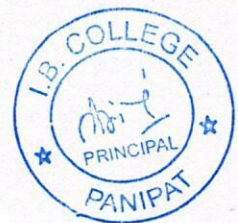
I.B. (PG) COLLEGE, PANIPAT

2021-22

List Of Students Completing "Employability Skills" Under "Lifeskills" Program Rubicon (14-23 Sept., 2021)

Sr. No.	Name	Father's Name	Class	College Roll No.
1.	Parth	Mr. Anil Kalra	B.Com	2383810024
2.	Ujjwal Tyagi	Dinesh Tyagi	B.Com Final	2280220072
3.	Shweta Malik	Rajesh Malik	Bba	2280820007
4.	Sunny	Sh. Laddu Ram	Bba	2280810018
5.	Bharti	Bhagwan Dass	Bcom Final Year	2383820034
6.	Aman	Ajmer Singh	B.Sc. Final(Non Medical)	2280610033
7.	Ankush Sharma	Pawan Kumar	Bcom (Hon)	2280310008
8.	Shivam	Naresh Kumar	Bcom Result Pending	2280210036
9.	Anjali Rani	Sh. Vinod Kumar	B.Sc.Final Year	2280620004
10.	Dolly	Ram Singh	B. Sc	2280620016
11.	Rahul	Late Rajesh	Bba	2280810009
12.	Ankit	Samunder	Bse Non-Medical Final Year	180040409
13.	Sanjoli Jain	Rajkumar Jain	Bba Final	2280820005
14.	Sanjana	Guddu	B.Com(Hons.) Final	2280320018
15.	Manisha	Sh. Ramesh Kumar	B.Sc LII Non Med	2280620006
16.	Pooja	Subhash	B.A Final Year	2280020093
17.	Akshay Verma	Surenader	B.Sc.-3rd Year	2280610025
18.	Shubham Tyagi	Vishesh Tyagi	Bba Final Sem	2280810014
19.	Aashi Saluja	Mr Himmat Saluja	B.Com	2280220025
20.	Tanya	Rajender	Bba	2280820012
21.	Jitender Goswami	Khasti Parsad	Bsc. Final Year (N.M)	2280610020

Parth
Ujjwal
Shweta
Sunny
Bharti
Aman
Ankush
Shivam
Anjali
Dolly
Rahul
Ankit
Sanjoli
Sanjana
Manisha
Pooja
Akshay
Shubham
Aashi
Tanya
Jitender

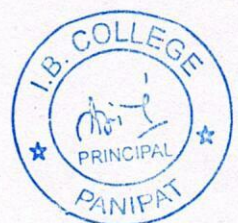


I.B. (PG) COLLEGE, PANIPAT

2021-22

Sr. No.	Name	Father's Name	Class	College Roll No.
22	Chirag	Ram Gopal	Bba Pass Out	2280810004
23	Radha Kumari	Chandermani Shah	B.Com	2280220043
24	Aishwarya Grover	Lokesh Grover	Bba Final Year	2280820004
25	Meera Gumber	Gulshan Gumber	Bcom 6 Th Sem	2383820047
26	Prachi	Somdutt	B. Sc(N.M)	2280620026
27	Aanchal	Krishan Kumar	B.Com Final Year	2280220019
28	Neelam	Sh. Panna Lal	B Com Final Year	2280220003
29	Inderpreet	Daljeet Singh	Bsc Biotech	2280720006
30	Kanchan	Ramkumar Jha	Bsc 3rd	2280720005
31	Mohit Kumar Dogra	Jai Chand	B.Com	2280210002
32	Himanshu Verma	Sanjay	B.Sc.(Non-Medical)	2280610007
33	Koyana	Sh. Surender Kumar Sharma	Bba	180004106
34	Ankit Saroha	Mr. Baljeet Singh	B.Sc.	2280610018
35	Sagar	Prem	Bsc 3rd Year	3161910008
36	Devavrat	Kaushlesh Kumar	M.A Hindi	2,2022e+11
37	Anju	Ram Avtar	M.A Hindi	2,2022e+11
38	Seenu	Sh. Ajmer Singh	Ba Ist Year	1,2012e+11
39	Rishu	Sh. Om Sharma	B.Sc Final Year	3161920030
40	Aashad	Irfan	B. Com 4th Semester	3161510046
41	Neeraj	Mr. Shiv Kumar	B.Com	3161510003
42	Chakshu Nagpal	Harish Nagpal	B.Com	3161510011
43	Sakshi	Mr. Harish	B. Com 2nd Year	3265120016

Chirag
Radha
Aanchal
Neelam
Inderpreet
Kanchan
Mohit
Himanshu
Koyana
Ankit
Sagar
Devavrat
Anju
Seenu
Rishu
Aashad
Neeraj
Chakshu Nagpal
Sakshi



I.B. (PG) COLLEGE, PANIPAT

2021-22

Sr. No.	Name	Father's Name	Class	College Roll No.
44	Mitali Dhiman	Mr. Murli Manohar	B. Com 2nd Year	3265120018
45	Reenu	Narsingh	B.Sc (Non Medical) 3rd Year	3161920023
46	Neelam	Devender Sharma	Ma Hindi Previous	2.2022e+11
47	Shivani	Anil Kumar	Ma Hindi	2.2022e+11
48	Manju	Mr. Surender	B.Sc - li (N.M)	3161920028
49	Sonal	Satish Kumar	Bsc 3rd Year (Non Medical)	3161920014
50	Shreya	Kanwar Bhan	Bsc 3 Year Medical	3161820002
51	Gunjan	Rajkumar	B.Com 2nd Year	3161520074
52	Muskan	Krishan Kumar Jattu	Bcom.2nd Year	3161520013
53	Ritika	Sh. Narinder Khurana	B. Com	3161520021
54	Diksha	Mr. Brijmohan Tiwari	Bsc 2nd Year 4th Semester	3161920002
55	Yukta Chadha	Puneet Chadha	Bsc Biotechnology	3162020004
56	Ritika	Mr Rakesh	B.Com (Honours)4th Sem	3161620004
57	Anchal	Krishan Pal	B. Com 3 Year	3161520023
58	Poonam Arora	Sh. Inderpal	B. Com 2nd Year	3265120020
59	Vinayak Saluja	Narinder Saluja	B.Com 2nd Year	3161510040
60	Swati Tyagi	Sh. Jasraj Tyagi	B.Sc. Medical 2nd Year	3161820010
61	Jyoti	Lahna Singh	B.Com	3161520009
62	Varsha	Angrej	B.Sc Computer Science	3253520037
63	Meena	Mr. Tejpal	M. A Hindi 1st Year	2.2022e+11
64	Ritu Devi	Sharvan Kumar	M.A Hindi 1st Year	2.2022e+11
65	Pari	Dharampal	Bcom (Aided)	3161520050
66	Tannu	Rakesh	B.Sc Non Medical	3161920009

Mitali
 Reenu
 Neelam
 Shivani
 Manju
 Sonal
 Kanwar Bhan
 Gunjan
 Muskan
 Ritika
 Diksha
 Yukta
 Ritika
 Anchal
 Poonam Arora
 Vinayak
 Swati
 Jyoti
 Varsha
 Meena
 Ritu
 Pari
 Tannu



2021-22

I.B. (PG) COLLEGE, PANIPAT

Sr. No.	Name	Father's Name	Class	College Roll No.
67	Ayush	Naveen	Bba -li	3162110001
68	Ruby	Sh Balbir Singh	B Com {2nd Year}	3161520069
69	Rishu	Dhruv	Bba	3162120003
70	Kiran	Subhash Singh	B.Com(Honors)3rd Year	3161620010
71	Anjali	Dharmendar	B.Com Honors	3161620009
72	Kirti	Krishan Lal Makhija	B.Com (Hons) Final Year	3161620012
73	Aman Sharma	Satnarayan	M.A.2nd Year	2.2022e+11
74	Nidhi Kumari	Sunil Tiwari	B.Com (Hons) 4th Sem	3161620008
75	Tanya	Mr. Gulshan Kalra	B.Com (Hons), 2nd Year	3161620003
76	Nidhi Kumari	Sunil Tiwari	(B.Com Hons) 4th Sem	3161620008
77	Vishal Kumar	Parmanand	B.Com	2383810019
78	Alisha	Omparkash Makkar	B.Com Hons	2280320002
79	Sumit Ruhel	Ranbir Singh Ruhel	Bsc (Cs)	2280410015
80	Pooja Papreja	Rajesh Papreja	Ba 3rd Year	3161320018
81	Tamanna	Mr. Manoj Kumar	Bca	3162220005
82	Minakshi Jaglan	Mr. Zile Singh Jaglan	Ba 3rd Year	3161320010
83	Shubham	Manoj Mishra	Bca	3162210004
84	Muskan	Ram Kumar	B Com (Hons.) 3rd Year	3161620005
85	Nikhil Saini	Joginder Saini	B.Com Final Year	2280210023
86	Lakshinarang	Bhushan Kumar	B.Com 3rd Year	3161520048
87	Tanu Rani	Surender Singh	B.Com(Complete)	2280220058
88	Bharti	Jashmer Singh	B.Com	3265120011

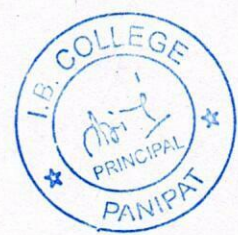
Ayush
 Ruby
 Rishu
 Kiran
 Anjali
 Kirti
 Aman
 Nidhi
 Tanya
 Nidhi
 Vishal
 Alisha
 Sumit
 Pooja Papreja
 Tamanna
 Minakshi
 Shubham
 Muskan
 Nikhil
 Lakshinarang
 Tanu
 Bharti



I.B. (PG) COLLEGE, PANIPAT
TALLY COURSE 2021-22
PARTICIPANTS LIST

SR NO	NAME	CLASS	FATHER NAME	ROLL NO
1	RIYA	B.A(H)-II	ROSHAN	120219062003
2	SONAM	B.A(H)-II	SANJAY KUMAR	120219062016
3	SUSHMA RANI	B.A(H)-II	KRISHAN LAL	120219062028
4	GOURAV	B.A-I	MOHAR SINGH	121219200205
5	VISHU	B.A-III	RAJBIR	3161310007
6	KAPIL SINGH	B.COM(H)-II	RAJENDER SINGH	120219076011
7	NISHITA SHARMA	B.COM(H)-II	ANIL SHARMA	120219076018
8	HARMEET SINGH	B.COM(H)-III	JEEVAN CHANDRA	3161610004
9	KESHAV	B.COM-I	PARVEEN DHIMAN	1212192003035
10	ANKUSH	B.COM-I	JAINARAYAN	1212192003048
11	NISHAN	B.COM-I	NARENDER	1212192003044
12	SAKSHAM	B.COM-I	RIMPI KUMAR	1212192003113
13	ANJALI	B.COM-I	ASHOK KUMAR	1212192003076
14	PREM	B.COM-I	SUNIL KUMAR DUBEY	1212192003115
15	ASHU	B.COM-I	PARDEEP	1212192003134
16	AJAY	B.COM-I	VEDPAL	1212192003149
17	SHEETAL	B.COM-II	JAGMAHENDER	120219003085
18	DIKSHA	B.COM-II	SUNIL PRASAD	120219003079
19	HIMANSHU	B.COM-II	PITAMBER DUTT	120219003049
20	SEJAL SINGH	B.COM-II	SURENDER SINGH	120219003001
21	MANJLI	B.COM-III	RAJENDER	3161520004
22	RITIKA	B.COM-III	NARINDER	3161520021
23	REKHA	B.SC-II	BAJINDER	120219030018
24	YACHNA	BCA-I	PARVEEN	1212193011066
25	DIRGH	BCA-I	RAMESH KUMAR	1212193011050
26	NIKHIL	BCA-I	SATPAL	1212193011014
27	NIKITA	BCA-II	SURESH	120219011014
28	ROHIT	BCA-II	RAJ KUMAR	120219011006
29	ANJLI	BCA-II	MUKESH	120219011028
30	PARDEEP	BCA-II	SANJAY	120219011012
31	DINESH	BCA-II	DAYANAND	120219011022
32	KOMAL	M.COM-II	DHARAMPAL	220219168044
33	ANMOL	B.COM IST	PAWAN	1212192003141
34	PARVEEN	B.COM IST	ISHWAR SINGH	3161520060
*	Naveen	Peon	Dharmbir	N/A

Riya
Sonam
Sushma
Govind
Vishu
Kapil Singh
Nishita
Harmeet Singh
Keshav
Angkush
Nishan
Saksham
Anjali
Prem
Ashu
Ajay
Sheetal
Diaksha
Himanshu
Sejal Singh
Milini
Ritika
Rekha
Yachna
Dirgh
Nikhil
Nikita
Rohit
Anjali
Pardeep
Dinesh
Komal
Anmol
Parveen
Naveen

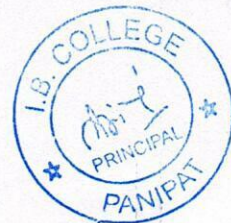


I.B. (PG) COLLEGE, PANIPAT

2021-22

List of Students Completed Certificate Course on Online Digital Marketing				
SR NO	ROLL NO	NAME	MOBILE NO	CLASS
1	1212192002401	Ajay Sharma	8307188046	B.A-I
2	1212193011027	Anchal	8814978336	BCA-I
3	1212193011065	Anuradha	8570827396	BCA-I
4	1212193011011	Aryan	7015481120	BCA-I
5	1212193011030	Ashwani	8800397036	BCA-I
6	3162110001	Ayush	7056267005	BBA-III
7	120219015022	Bharat	9306259823	B.SC(CS)-II
8	120219015049	Bhawana	7082432622	B.SC(CS)-II
9	1212192002064	Bhawna	7404920531	B.A-I
10	120219002241	Chirag	7494857526	B.A-II
11	120219076026	Deepak	9053471851	B.COM(H)-II
12	120219002316	Drishti	9310035783	B.A-II
13	120219076024	Gourav	7027350881	B.COM(H)-II
14	120219003169	Mohit	9518124084	B.COM-II
15	1212193011056	Monia	9817056570	BCA-I
16	120219015050	Parth	9671008605	B.SC(NM)-II
17	3161520050	Parti	8708790375	B.COM-III
18	120219002326	Parvej	9996723581	B.A-II
19	1212193011041	Prince	7206918801	BCA-I
20	3161320199	Rakhi Rana	9817895058	B.A-III
21	3162120003	Rishu	8053354995	BBA-III
22	1212193010005	Sachin	8570876436	BBA-I
23	1212193011046	Sagar	8708953001	BCA-I
24	120219076012	Saksham	9306617214	B.COM(H)-II
25	3161320189	Sanjana	8708813575	B.A-III
26	1212193011029	Sheetal	7056814405	BCA-I

Ajay
 Anchal
 Anuradha
 Aryan
 Ashwani
 Ayush
 Bharat
 Bhawana
 Bhawana
 Chirag
 Deepak
 Drishti
 Gourav
 Mohit
 Monia
 Parth
 Parti
 Parvej
 Prince
 Rakhi
 Rishu
 Sachin
 Sagar
 Saksham
 Sanjana
 Sheetal

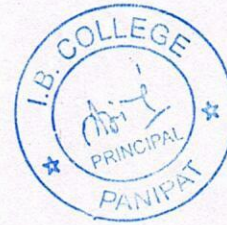


2821-22

I.B. (PG) COLLEGE, PANIPAT

27	1212193011012	Simran Kaur	7495023219	BCA-I
28	120219076021	Upwan Tyagi	7082073881	B.COM(H)-II
29	1212193011037	Vanshika	9255920062	BCA-I
30	120219002214	Haider	9991715547	B.A-II
31	3161320193	Annu	9996668556	B.A-III
32	3161520056	Nancy	9991029338	B.COM-III

Simran Kaur
Upwan
Vanshika
Haider
Annu
Nancy



Department of Computer Science

Certificate Course in Internet of Things (CCIOT) from 12.10.2021 to 22.12.2021

S. No.	Roll No.	Name	Class	Receiving Signature
1	120219011003	KASHISH DHINGRA	BCA	Kashish
2	120219011014	NIKITA	BCA	Nikita
3	120219011015	ANJALI	BCA	Anjali
4	120219011028	ANJU	BCA	Anju
5	120219011011	SURAJ	BCA	Suraj
6	120219015031	KOMAL SHARMA	B.Sc.	Komal Sharma
7	120219015052	ANKIT	B.Sc.	Ankit
8	120219015054	SAGAR	B.Sc.	Sagar
9	120219015059	AMIT	B.Sc.	Amit
10	120219015060	RENUKA	B.Sc.	Hemant
11	120219002017	HEMANT	B.A.	Hemant
12	120219002018	VIKRAM	B.A.	Vikram
13	120219002026	VISHAL	B.A.	Vishal
14	120219002029	ROSHNI	B.A.	Roshni
15	120219002030	VIKAS	B.A.	Vikas
16	120219003003	MOHIT SHARMA	B.Com	Mohit
17	120219003006	RAJNI	B.Com	Rajni
18	120219003007	AARTI	B.Com	Aarti
19	120219003013	NEERAJ	B.Com	Neeraj
20	120219003021	PALLAVI	B.Com	Pallavi

Vinay

Vijay Bhatt

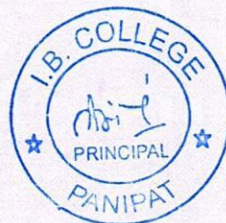
Assit. Prof., Dept. of Comp. Sc.
I.B. (Pw) College, Panipat.

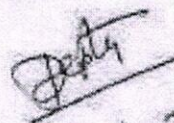


Department of Computer Science

Certificate Course in Web Designing (CCWD) from 11.10.2021 to 22.12.2021

S. No.	Roll No.	Name	Class	Receiving Signature
1	120219011008	ANJALI	BCA	Anjali
2	120219011009	ALKA	BCA	Alka
3	120219011016	PANKAJ DAHIYA	BCA	Pankaj
4	120219011017	ANKUSH	BCA	Ankush
5	120219011022	DINESH	BCA	Dinesh
6	120219011025	ANSHU	BCA	Anshu
7	120219011026	YASH SONI	BCA	Yash
8	120219015043	KOMAL	B.Sc.	Komal
9	120219015049	BHAWANA	B.Sc.	Bhawana
10	120219015050	PARTH	B.Sc.	Parth
11	120219015054	SAGAR	B.Sc.	Sagar
12	120219030004	PRATHAM KUMAR	B.Sc.	Pratham
13	120219030005	ANSHIKA	B.Sc.	Anshika
14	120219030006	PRAKRITI	B.Sc.	Prakriti
15	120219003006	RAJNI	B.Com	Rajni
16	120219003008	RISHIKA PALIWAL	B.Com	Rishika
17	120219003051	PRIYANKA	B.Com	Priyanka
18	120219003068	SHALLU RANI	B.Com	Shally
19	120219003083	ESHAAN GUPTA	B.Com	Eshaan





 Deputy Director
 Asst. Prof. in C.S.C
 Z-B. Coll. in C.S.C

Department of Computer Science

Certificate Course in Digital Marketing (CCDMW1) from 11.10.2021 to 22.12.2021

S. No.	Roll No.	Name	Class	Receiving Signature
1	120219002008	HARSH	BA	Harsh
2	120219002018	VIKRAM	BA	Vikram
3	120219002027	VISHAL	BA	Vishal
4	120219002037	GAYTRI	BA	Gaytri
5	120219002046	ANNU	BA	Annu
6	120219002085	SAKSHI	BA	Sakshi
7	120219002108	PRIYA	BA	Priya
8	120219002135	SIMRAN	BA	Simran
9	120219002161	GURDEEP	BA	Gurdeep
10	120219062003	RIYA	BA (H)	Riya
11	120219062023	TISHA MIDDHA	BA (H)	Tisha
12	120219062029	RAVINA	BA (H)	Ravina
13	120219062032	NANCY	BA (H)	Nancy
14	120219062036	DRISHTI	BA (H)	Drishiti
15	3161520062	AISHWARYA RANI	B.COM	Aishwarya
16	120219003004	DIYA	B.COM	Diya
17	120219003009	HARI KABIR SINGH	B.COM	Hari Singh
18	120219003016	SHAHJHAN	B.COM	Shahjhan
19	120219003030	RUBY	B.COM	Ruby
20	120219003037	KANIKA	B.COM	Kanika
21	120219003052	YATIN	B.COM	Yatin
22	120219003059	RAGHAV KARKAR	B.COM	Raghav




 Deputy Incharge
 Asst. Prof. in C.S.C
 I.B. College, Panipat

from: 15-11-2021 to 8-01-2022

(40 Hours)

LIST OF PARTICIPANTS

COURSE NAME -STRESS MANAGEMENT BY YOGA

SR NO	ROLL NO	NAME	CLASS	Receiving Signature
1	3161510051	ANJALI	B.Com. III	Anjali
2	3161510073	KARISHMA	B.Com. III	Karishma
3	3161510050	PARTI	B.Com. III	Parti
4	3161510052	SIMRAN	B.Com. III	Simran
5	3161510055	REENA	B.Com. III	Reena
6	3161510053	LEENA	B.Com. III	Leena
7	3161510061	ANTIN	B.Com. III	Antin
8	3161510060	PARVEEN	B.Com. III	Parveen
9	3161510049	GINNY	B.Com. III	GINNY
10	3161510067	VARNIKA	B.Com. III	Varnika
11	120219076001	DEEPAK	B.Com. II	Deepeek
12	12021906003	TRIPTI GAUTAM	B.Com. II	Tripti
13	120219076008	RAJNI	B.Com. II	Rajni
14	120219076013	NISHITA	B.Com. II	Nishita
15	120219076016	HARISH	B.Com. II	Harish
16	120219076020	RAHUL	B.Com. II	Rahul
17	120219076021	UPWAN	B.Com. II	Upwan
18	120219076023	MEET	B.Com. II	Meet
19	120219076024	GAURAV	B.Com. II	Gaurav
20	120219076025	SAHIL	B.Com. II	Sahil
21	120219076026	DEEPAK	B.Com. II	Deepeek
22	3162120001	SHIVANI	BBA III	Shivani
23	3162120003	RISHU	BBA III	Rishu
24	3162110010	ANUJ	BBA III	Anuj
25	3162110011	JATIN	BBA III	Jatin
26	3162110013	KAMALDEEP	BBA III	Kamaldeep
27	3162110016	PARMINDER	BBA III	Parminder
28	1212192062002	POOJA	BA I ENG.HONS	Pooja
29	1212192062003	AARTI	BA I ENG.HONS	Aarti
30	1212192062005	BHAWNA	BA I ENG.HONS	Bhavana
31	1212192062010	MAMTA	BA I ENG.HONS	Mamta
32	1212192062011	POONAM	BA I ENG.HONS	Poonam
33	1212192062012	ANJALI	BA I ENG.HONS	Anjali
34	1212192062013	YACHNA	BA I ENG.HONS	Yachna
35	1212192062016	ADITI	BA I ENG.HONS	Aditi

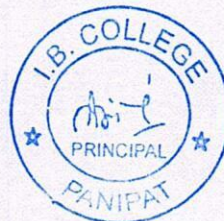


Deepinder

Department of Computer Science

Certificate Course in Account Executive(CCAE) from 18.10.2021 to 29.12.2021

S. No.	Roll No.	Name	Class	Receiving Signature
1	120219010003	YASH BANSAL	BBA	<i>Yash</i>
2	120219010007	ROHIT MEHTA	BBA	<i>Rohit</i>
3	120219010013	ANIKET TYAGI	BBA	<i>Aniket</i>
4	120219010024	SHUBHAM CHAUHAN	BBA	<i>Shubham</i>
5	120219010021	MUSKAN	BBA	<i>Muskan</i>
6	120219010038	AVNISH	BBA	<i>Avnish</i>
7	120219010047	ABHISHEK	BBA	<i>Abhishek</i>
8	120219003001	SEJAL SINGH	B.COM	<i>Sejal Singh</i>
9	120219003008	RISHIKA PALIWAL	B.COM	<i>Rishika</i>
10	120219003030	RUBY	B.COM	<i>Ruby</i>
11	120219003043	AAKANSHA	B.COM	<i>Aakansha</i>
12	120219003053	ANSHUL DHIMAN	B.COM	<i>Ansh</i>
13	120219003014	DIPANSHI	B.COM	<i>Dipanshi</i>
14	120219003020	VINES	B.COM	<i>Vinas</i>
15	120219003029	HITESH	B.COM	<i>Hitesh</i>
16	120219003038	PARAMJEET	B.COM	<i>Paramjeet</i>
17	120219076006	PARNEET KAUR	B.COM(H)	<i>Parneet</i>
18	120219076016	HARISH KUMAR	B.COM(H)	<i>Harish</i>
19	120219076019	SHUBHANGI	B.COM(H)	<i>Shubhangi</i>
20	120219076023	MEET	B.COM(H)	<i>Meet</i>

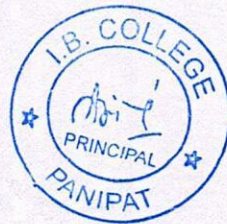


January
 Ashwani Gupta
 Asst. Prof. in C.S.E
 I.B. College
 Panipat.

Department of Computer Science

Certificate Course in Computer Hardware and Maintenance (AOCCHM) from
11.10.2021 to 13.12.2021

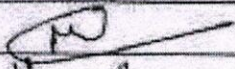
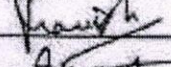
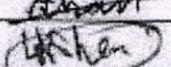
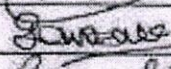
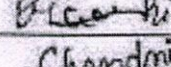
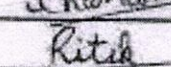
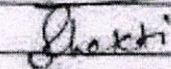
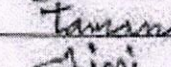

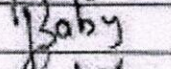
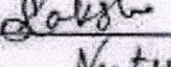

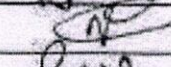
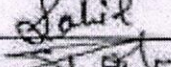
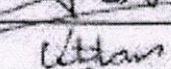
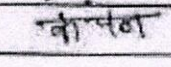



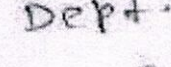
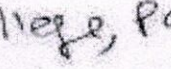
S. No.	Roll No.	Name	Class	Receiving Signature
1	120219011020	SUNNY MANIK	BCA	Sunny
2	120219011028	ANJU	BCA	Anju
3	120219015045	ANISH	B.Sc.	Anish
4	120219015046	PUMMY	B.Sc.	Pummy
5	120219015053	ANURAG	B.Sc.	Anurag
6	120219015057	AKASH	B.Sc.	Akash
7	120219015058	ANJALI DEVI	B.Sc.	Anjali Devi
8	120219015060	RENUKA	B.Sc.	Renuka
9	120219002028	SHUBHAM	BA	Shubham
10	120219002039	KANCHAN	BA	Kanchan
11	120219002070	TANNU	BA	Tannu
12	120219002071	MUSKAN TUTEJA	BA	Muskan
13	120219002084	JAGRITI	BA	Jagruti
14	120219002104	ISHU	BA	Ishu
15	120219003128	MANSI KHANNA	B.Com	Mansi
16	120219003139	AISHWARYA	B.Com	Aishwarya
17	120219003140	SAKSHI	B.Com	Sakshi
18	120219003147	SHABOO	B.Com	Shaboo
19	120219003152	CHINKI	B.Com	Chinki

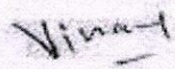


Meetu
 Prof. Meetu
 Assistant Professor
 I.B. PG College, Panipat

Department of Computer Science

Certificate Course in Web Designing & Office Automation (AOCWDOA) from 12.10.2021 to 22.12.2021

S. No.	Roll No.	Name	Class	Receiving Signature
1	120219011023	MEGHA GUGLANI	BCA	
2	120219011030	MANISH KUMAR	BCA	
3	120219011031	AMAN KUMAR	BCA	
4	120219011036	LAKHAN	BCA	
5	120219011043	GOURAV	BCA	
6	120219015002	PRACHI	B.Sc.	
7	120219015004	CHANDNI	B.Sc.	
8	120219015006	RITIK	B.Sc.	
9	120219015008	SHAKTI	B.Sc.	
10	120219015016	TAMANNA	B.Sc.	
11	120219002002	SHIVANI	BA	
12	120219002003	KAMAL	BA	
13	120219002005	BABY	BA	
14	120219002010	SAKSHI	BA	
15	120219002012	NEETU	BA	
16	120219002014	ANNU	BA	
17	120219002018	VIKRAM	BA	
18	120219002022	SAHIL	BA	
19	120219002029	ROSHNI	BA	
20	120219002031	UTTAM	BA	
21	120219002039	KANCHAN	BA	


 Vinay Bhattar
 Assit. Prof. & Dept. of Computer Sc.
 I.B. (P.A) College, Panipat

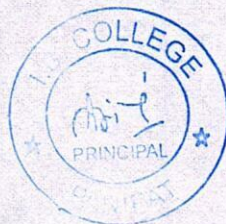


**CERTIFICATE COURSE
YOGASANA AND MEDITATION
LIST OF PARTICIPANTS**

From: 15.11.2021 to 12.01.2021

(40 hours)

S.NO.	ROLL NO.	NAME	CLASS	RECEIVING SIGNATURE
1	1212192062001	DEEPIKA	B.A ENG HONS. I	Deepika
2	1212192062014	KAJAL	B.A ENG HONS. I	Kajal
3	1212192062015	MOUSAM	B.A ENG HONS. I	Mousam
4	1212192062017	JIYA	B.A ENG HONS. I	Jiya
5	1212192062018	SEIJAL	B.A ENG HONS. I	Seijal
6	1212192062023	PRACHI	B.A ENG HONS. I	Prachi
7	1212192062025	MUSKAN	B.A ENG HONS. I	Muskan
8	1212192062026	TANYA	B.A ENG HONS. I	Tanya
9	3161310076	SHUBHAM	B.A ENG HONS. III	Shubham
10	3161310083	MUSKAN	B.A ENG HONS. III	Muskan
11	3161410001	SHAHID	B.A ENG HONS. III	Shahid
12	3161410002	PRAYAG	B.A ENG HONS. III	Prayag
13	3161420001	ANCHAL	B.A ENG HONS. III	Anchal
14	3161420002	SHIWANGI	B.A ENG HONS. III	Shiwangi
15	3161420003	KIRTI	B.A ENG HONS. III	Kirti
16	3161420004	RIDHIMA	B.A ENG HONS. III	Ridhima
17	3161420010	NIKITA	B.A ENG HONS. III	Nikita
18	3161420014	NEHA MANN	B.A ENG HONS. III	Neha
19	3161420015	TANNU PRIYA	B.A ENG HONS. III	Tannu Priya
20	3161420016	PURNIMA	B.A ENG HONS. III	Purnima
21	3161420019	ANJALI	B.A ENG HONS. III	Anjali
22	3161420020	ALISHA	B.A ENG HONS. III	Alisha
23	3162110001	AYUSH	B.A ENG HONS. III	Ayush
24	3162110002	RAHUL	BBA III	Rahul
25	3162110004	KHUSHI	BBA III	Khushi
26	3162110005	AMIT	BBA III	Amit
27	3162110009	SHAKIR	BBA III	Shakir
28	220219152001	JYOTI	M.A ENGLISH	Jyoti
29	220219152002	SHRISHTI	M.A ENGLISH	Shrishti
30	220219152004	RAHUL	M.A ENGLISH	Rahul
31	220219152005	NISHA	M.A ENGLISH	Nisha
32	220219152007	SAKSHI	M.A ENGLISH	Sakshi
33	220219152009	NAZRAMA	M.A ENGLISH	Nazrana
34	220219152016	KOMAL	M.A ENGLISH	Komal
35	220219152019	SAKSHI	M.A ENGLISH	Sakshi



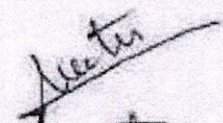
Reena Sharma

Department of Computer Science

Certificate Course in Accounting & Tax Procedure (AOCATP) from 11.10.2021 to 14.12.2021

S. No.	Roll No.	Name	Class	Receiving Signature
1	120219003049	HIMANSHU	B.COM	Himanshu
2	120219003050	ANKIT KUMAR	B.COM	Ankit
3	120219003060	ABHISHEKH KUMAR	B.COM	Abhishek
4	120219003065	RASHI	B.COM	Rashi
5	120219003066	RITIKA	B.COM	Ritika
6	120219003080	SUMIT KUMAR	B.COM	Sumit
7	120219003087	VINAY	B.COM	Vinay
8	120219076001	DEEPAK	B.COM (H)	Deepak
9	120219076003	TRIPTI GAUTAM	B.COM (H)	Tripti
10	120219076005	ISHIKA	B.COM (H)	Ishika
11	120219076006	PARNEET KAUR	B.COM (H)	Parneet
12	120219076007	AMIT KHURANA	B.COM (H)	Amit
13	120219076012	SAKSHAM KHURANA	B.COM (H)	Saksham
14	120219076013	NISHITA SHARMA	B.COM (H)	Nishita
15	120219076015	DIVYA RANI	B.COM (H)	Divya
16	120219076019	SHUBHANGI	B.COM (H)	Shubhangi
17	120219076021	UPWAN TYAGI	B.COM (H)	Upwan
18	120219076022	NISHCHAY	B.COM (H)	Nishchay
19	120219010043	LAVINA MIGLANI	BBA	Lavina
20	120219010044	PARSHANT TYAGI	BBA	P.T.
21	120219010046	MANSI MANGLA	BBA	Mansi

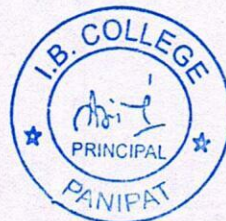


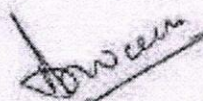

 Prof. Neetu
 Asst. Prof., Deptt. of CS
 J.B. PG College, Panipat

Department of Computer Science

Certificate Course in Python Programming (CCPP22) from 18.10.2021 to 29.12.2021

S. No.	Roll No.	Name	Class	Receiving Signature
1	120219011019	DEEPAK	BCA	Deepak
2	120219011032	AMIT	BCA	Amit
3	120219011036	LAKHAN	BCA	Lakhan
4	120219015010	SHIVAM	B.Sc.	Shivam
5	120219015046	PUMMY	B.Sc.	Pummy
6	120219015056	ROHAN SHARMA	B.Sc.	Rohan
7	120219030019	HIMANI	B.Sc.	Himani
8	120219030026	MONA	B.Sc.	Mona
9	3161320182	KUSUM	BA	Kusum
10	120219002009	AADARSH	BA	Aadarsh
11	120219002025	NAVJOT	BA	Navjot
12	120219002038	PRINCE	BA	Prince
13	120219002058	RAHUL	BA	Rahul
14	120219003001	SEJAL SINGH	B.COM	Sejal
15	120219003008	RISHIKA PALIWAL	B.COM	Rishika
16	120219003030	RUBY	B.COM	Ruby
17	120219003043	AAKANSHA	B.COM	Aakansha
18	120219010005	SWEETY	BBA	Sweety
19	120219010014	PUNIT	BBA	Punit
20	120219010040	MEHAK	BBA	Mehak

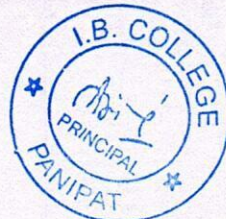



 Ashwani Gupta
 HOD - Dept. of C-Sc
 I.B. College, Panipat

Department of Computer Science

Certificate Course in Artificial Intelligence & Machine Learning (CCAIML22) from
21.10.2021 to 01.01.2022

S. No.	Roll No.	Name	Class	Receiving Signature
1	120219011001	SONI	BCA	Soni
2	120219011010	SOM NATH	BCA	Som Nath
3	120219011011	SURAJ	BCA	Suraj
4	120219011012	PARDEEP	BCA	Pardeep
5	120219011017	ANKUSH	BCA	Ankush
6	120219011019	DEEPAK	BCA	Deepak
7	120219011022	DINESH	BCA	Dinesh
8	120219011024	PRIYANKA	BCA	Priyanka
9	120219011026	YASH SONI	BCA	Yash
10	120219011029	SARTHAK GULATI	BCA	Sarthak
11	120219015050	PARTH	B.Sc.	Parth
12	120219015051	MEENAKSHI	B.Sc.	Meenakshi
13	120219030001	RANI	B.Sc.	Rani
14	120219030002	KRIKA	B.Sc.	Kritika
15	120219030016	BHAWNA	B.Sc.	Bhawna
16	120219030020	TUSHAR	B.Sc.	Tushar
17	120219030021	AAKASH	B.Sc.	Aakash
18	120219030026	MONA	B.Sc.	Mona
19	120219030028	KIRTI RANI	B.Sc.	Kirti Rani
20	120219030036	AMAN KUMAR	B.Sc.	Aman
21	120219030041	ASHWANI KUMAR	B.Sc.	Ashwani
22	120219002055	AKSHIT	BA	Akshat



Ritu Bhardwaj
 Prof. Ritu Bhardwaj
 Asstt Prof. (C.S.)
 I.B. College, Panipat

Department of Computer Science

Certificate Course in Cloud Computing (CCCC22) from 21.10.2021 to 28.12.2021

S. No.	Roll No.	Name	Class	Receiving Signature
1	120219011013	HARSHIT SHARMA	BCA	Harshit
2	120219011032	AMIT	BCA	Amit
3	120219011034	VISHAL	BCA	Vishal
4	120219011037	NANDANI	BCA	Nandani
5	120219011039	MUSKAAN	BCA	Muskaan
6	120219011042	DEEPAK KUMAR	BCA	Deepak
7	120219015007	SACHIN	B.Sc.	Sachin
8	120219015008	SHAKTI	B.Sc.	Shakti
9	120219015014	ISHITA SAINI	B.Sc.	Ishita
10	120219015017	SIMRAN	B.Sc.	Simran
11	120219015018	TANISHA	B.Sc.	Tanisha
12	120219015020	ASHWANI	B.Sc.	Ashwani
13	120219015023	VIVEK DIWAKER	B.Sc.	Vivek
14	120219015024	VIKASH	B.Sc.	Vikash
15	120219015036	KARTIK	B.Sc.	Kartik
16	120219015040	GEETANJALI	B.Sc.	Geetanjali
17	120219002009	AADARSH	BA	Aadarsh
18	120219002015	RAVI PRAKASH	BA	Ravi
19	120219002037	GAYTRI	BA	Gaytri
20	120219002043	JATIN SOTRA	BA	Jatin



Ritu Bhardwaj
 Prof. Ritu Bhardwaj
 Asstt Prof. (C.S.)
 I. B. College, (Pnp)

Attendance For Excel Classes
IB College Panipat

S.No.	Student Name	Class
1	Robin	BCA 1ST YEAR
2	Rohit Joshi	BCA 1ST YEAR
3	Bhawna	B.S.T 2ND YEAR
4	Rahul	BCA 1ST YEAR
5	Aman	BCA 1ST YEAR
6	Jatin	BCA 1ST YEAR
7	Anuradha	BCA 2ND YEAR
8	Pankaj	BCA 2ND YEAR
9	Dinesh	BCA 2ND YEAR
10	Deepak	BCA 2ND YEAR
11	Vijay	BCA 3RD YEAR
12	Deepak	BCA 3RD YEAR
13	Samridhi	BA 2ND YEAR
14	Rohit Kumar	BCA 2ND YEAR
15	Kirti	DM-HONS-3RD Y
16	Tanya	DM-HONS-3RD Y
17	Karanka	B.COM 2ND YEAR
18	Ravi	B.A 1ST YEAR
19	Prince	B.COM 2ND YEAR
20	Bharat	SC-CS-2ND YEAR
21	Vishal	B.A 2ND YEAR
22	Yogesh	B.A 2ND YEAR
23	manish	B.A 2ND YEAR
24	Kanchana	B.COM 3RD YEAR
25	Rahul	B.A 2ND YEAR
26	Mohit	B.A 2ND YEAR
27	Shivani	BCA 3RD YEAR
28	Anjali	B.COM 3RD YEAR
29	Laxmi	BCA 1st Year
30	Riya	BCA 1st Year
31	Nupur	BCA 1st Year
32	Pranav	BCA 2ND YEAR



~~2021-22~~
2021-22

I.B. (PG) COLLEGE, PANIPAT

ONE MONTH ONLINE CERTIFICATE COURSE

ENGLISH COMMUNICATION & SOFT SKILLS

SESSION: 2021-22

SR NO	ROLL NO	NAME	MOBILE NO	CLASS
1	3161320117	PREETI SHARMA	9518688950	B.A-III
2	1212192002351	RAVI	8930669153	B.A-I
3	1212192002226	MANISH	8607149941	B.A-I
4	1212192002201	AMAN	7027286062	B.A-I
5	120219002050	PREETI	9068500591	B.A-II
6	3161320088	TWINKLE ARORA	7056228231	B.A-III
7	3161320120	SAKSHI	9518455345	B.A-III
8	1212192002151	MANPREET KAUR	9729131386	B.A-I
9	1212192002256	PRIYA	9991035940	B.A-I
10	3161310038	SHIVAM KUMAR	9306162520	B.A-III
11	1212192062034	RUHANI	9350500031	B.A(H)-I
12	1212192062025	MUSKAN SONI	7082707701	B.A(H)-I
13	1212192062019	AKSHITA	9306231619	B.A(H)-I
14	121219062048	MEGHA	8057152384	B.A(H)-I
15	1212192002004	PREETI	9588763468	B.A(H)-I
16	1212192002045	HIMANSHU	9350253758	B.A-I
17	120219002357	RIYA	7206520074	B.A-II
18	120219002352	ARZOO	8221839935	B.A-II
19	120219002292	NANCY	9671535029	B.A-II
20	1212192002141	MUSKAN	8950126317	B.A-I
21	120219002417	TANMU	7206976602	B.A-II
22	1212192002340	SHIVANI	7988182985	B.A-I
23	1212192002212	POOJA	8708420265	B.A-I
24	1212192002336	NEHA	8708420265	B.A-I
25	1212192002390	POOJA	9991943438	B.A-I
26	1212192030020	ASHKIRAT SINGH	9817757430	B.SC(M)-I
27	1212192002192	SANJANA	7404665720	B.A-I
28	1212192002180	TANMU	8307038011	B.A-I
29	1212192002396	SHRUTI TIWARI		B.A-I
30	120219002380	NIKITA	8198948108	B.A-II
31	1212192002453	SHWETA	9050998642	B.A-I
32	120219002374	KIRAN	8950555600	B.A-II
33	1212192002185	KHUSHI	9813903579	B.A-I
34	120219002356	SHIKHA	7988515439	B.A-II
35	1212192002346	SEJAL	9588557531	B.A-I
36	3161320100	JIGYASA	7497096838	B.A-III
37	3161320103	REKHA	8813057469	B.A-III

Preeti
Ravi
Manish
Aman
Preeti
Twinkle
Sakshi
Kaur
Priya
Shivam
Ruhani
Muskan
Akshita
Megha
Preeti
Himanshu
Riya
Arzoo
Nancy
Muskan
Tanmu
Shivani
Pooja
Neha
Pooja
Ashkirat
Sanjana
Tanmu
Shruti
Nikita
Shweta
Kiran
Khushi
Shikha
Sejal
Jigyasa
Rekha

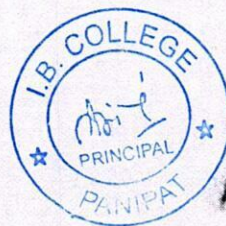
(Signature)
(NEELAM)

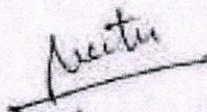
(Signature)
Principal
I.B. (PG) College, Panipat

Department of Computer Science

Certificate Course in Desktop Publishing (CCDP) from 12.04.2022 to 01.06.2022

S. No.	Roll No.	Name	Class	Receiving Signature
1	120219011003	KASHISH DHINGRA	BCA	Kashish
2	120219011014	NIKITA	BCA	Nikita
3	120219011015	ANJALI	BCA	Anjali
4	120219011006	ROHIT KUMAR	BCA	Rohit
5	120219011009	ALKA	BCA	Alka
6	120219030013	PARDEEP	BCA	Pardeep
7	120219011030	MANISH KUMAR	BCA	Manish
8	120219011031	AMAN KUMAR	BCA	Aman
9	120219011034	VISHAL	BCA	Vishal
10	120219011037	NANDANI	BCA	Nandani
11	120219011039	MUSKAAN	BCA	Muskaan
12	120219030011	ANIKET VATS	B.Sc.	Aniket
13	120219030014	NEETU	B.Sc.	Neetu
14	120219030028	KIRTI RANI	B.Sc.	Kirti
15	120219030032	DEEPENDER	B.Sc.	Deepender
16	120219002112	MINAKSHI	BA	Minakshi
17	120219002117	RIYA	BA	Riya
18	120219002136	CHARU	BA	Charu



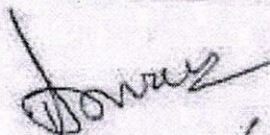

 Prof. Neetu
 Asst. Prof., Deptt. of CS
 J.B. PG College Panipat

Department of Computer Science

Certificate Course in CCTV Installation(CCCCTVI) from 16.04.2022 to 24.06.2022

S. No.	Roll No.	Name	Class	Receiving Signature
1	120206002426	SUBHAM	BA	Subham
2	120219002026	VISHAL	BA	Vishal
3	120219002033	PUNEET ATRI	BA	Puneet
4	120219002056	MANISH SAINI	BA	Manish
5	120219002066	VIVEK	BA	Vivek
6	120219002078	ANUJ	BA	Anuj
7	120219002083	NISHAN	BA	Nishan
8	120219002096	SHIVAM VASHIST	BA	Shivam
9	120219002138	YASH CHOPRA	BA	Yash
10	120219002142	SAHIL MORYA	BA	SAHIL
11	120219002156	BHANU SHARMA	BA	Bhanu
12	120219002166	BALRAM	BA	Balram
13	120219002173	BRIJ BHUSHAN	BA	Brij
14	120219002182	GARVISH	BA	Garvish
15	120219002194	CHIRAG	BA	Chirag
16	120219002211	KULDEEP KUMAR	BA	Kuldeep
17	120219002225	KANISHK GOSWAMI	BA	Kanishk
18	120219003032	RAHUL	B.COM	Rahul
19	120219003042	KRISHAN	B.COM	Krishan
20	120219030020	TUSHAR	B.Sc.	Tushar
21	120219011032	AMIT	BCA	Amit



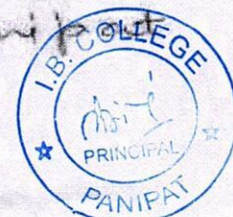

 Ashwani Gupta
 Asst. Prof. in C.S.E.
 I.B. College, Panipat

Department of Computer Science

Certificate Course in Programming C/C++ (CCPCPP) from 12.04.2022 to 26.05.2022

S. No.	Roll No.	Name	Class	Receiving Signature
1	120219011004	YASH	BCA	Yash
2	120219011005	PANKAJ ROHILLA	BCA	Pankaj
3	120219011006	ROHIT KUMAR	BCA	Rohit
4	120219011009	ALKA	BCA	Alka
5	120219030013	PARDEEP	B.Sc.	Pardeep
6	120219015055	GOURAV	B.Sc.	Gourav
7	120219030003	VANSHIKA SAINI	B.Sc.	Vanshika
8	120219030004	PRATHAM KUMAR	B.Sc.	Pratham
9	120219015027	TUSHAR	B.Sc.	Tushar
10	120219015029	SIMRAN	B.Sc.	Simran
11	120219015032	KOMAL	B.Sc.	Komal
12	120219015041	ROUNAK KUMAR	B.Sc.	Rounak
13	120219015043	KOMAL	B.Sc.	Komal
14	120219010007	ROHIT MEHTA	BBA	Rohit
15	120219010010	PIYUSH KUMAR	BBA	Piyush
16	120219010011	ABHISHEK	BBA	Abhishek
17	120219010012	DAIZY	BBA	Daizy
18	120219010015	GARIMA	BBA	Garima
19	120219002010	SAKSHI	BA	Sakshi
20	120219002019	KANIKA	BA	Kanika
21	120219002039	KANCHAN	BA	Kanchan

Vinay
 Vinay Bharti
 Assit. Prof., Dept. of Comp Sc
 I.B. (Pw) College, Panipat



Certificate Course
from:- 13-04-2021 to 7-06-2021

(40Hours)

LIST OF PARTICIPANTS

Course Name- YOGA & DIET MANAGEMENT

SR NO	ROLL NO	NAME	CLASS	Receiving Signature
1	1212193010001	Dheeraj	BBA -I	Dheeraj
2	1212193010005	Sachin	BBA -I	Sachin
3	1212193010007	Ankush	BBA -I	Ankush
4	1212193010010	Hansh	BBA -I	Hansh
5	1212193010015	Kirti	BBA -I	Kirti
6	1212193010018	Prince	BBA -I	Prince
7	1212193010020	Mukesh	BBA -I	Mukesh
8	1212193010041	Aman	BBA -I	Aman
9	1212193010046	Bhagat	BBA -I	Bhagat
10	1212193010050	Mohit	BBA -I	Mohit
11	1212192003002	Tanu	B.Com-I	Tanu
12	1212192003003	Sakshi	B.Com-I	Sakshi
13	1212192003004	Jyoti	B.Com-I	Jyoti
14	1212192003008	Tanya	B.Com-I	Tanya
15	1212192003013	Simmi	B.Com-I	Simmi
16	1212192003018	Preeti	B.Com-I	Preeti
17	1212192003027	Sheetal	B.Com-I	Sheetal
18	1212192003031	Shruti	B.Com-I	Shruti
19	1212192003064	Lata	B.Com-I	Lata
20	1212192003065	Sonam	B.Com-I	Sonam
21	120219010001	Chahat	BBA-II	Chahat
22	120219010005	Sweety	BBA-II	Sweety
23	120219010020	Anjali	BBA-II	Anjali
24	120219010021	Muskaan	BBA-II	Muskaan
25	120219010022	Mahima	BBA-II	Mahima
26	120219010027	Shivani	BBA-II	Shivani
27	120219010035	Priyanka	BBA-II	Priyanka
28	120219010040	Mehak	BBA-II	Mehak
29	120219010046	Mansi	BBA-II	Mansi
30	120219010047	Abhishek	BBA-II	Abhishek



Page's index

Department of Computer Science

Certificate Course In Accounting on Computers (AOCAC) from 18.04.2022 to 13.06.2022

S. No.	Roll No.	Name	Class	Receiving Signature
1	120219003049	HIMANSHU	B.COM	Himanshu
2	120219003050	ANKIT KUMAR	B.COM	Ankit
3	120219003060	ABHISHEKH KUMAR	B.COM	Abhishek
4	120219003065	RASHI	B.COM	Rashi
5	120219003066	RITIKA	B.COM	Ritika
6	120219003080	SUMIT KUMAR	B.COM	Sumit
7	120219003087	VINAY	B.COM	Vinay
8	120219003091	AYAN MAHAJAN	B.COM	Ayan
9	120219076001	DEEPAK	B.COM (H)	Deepak
10	120219076005	ISHIKA	B.COM (H)	Ishika
11	120219076008	RAJNI	B.COM (H)	Rajni
12	120219076011	KAPIL SINGH	B.COM (H)	Kapil
13	120219076012	SAKSHAM KHURANA	B.COM (H)	Saksham
14	120219076020	RAHUL BANGAR	B.COM (H)	Rahul
15	120219076025	SAHIL KUMAR	B.COM (H)	Sahil
16	120219076026	DEEPAK	B.COM (H)	Deepak
17	120219010022	MAHIMA	BBA	Mahima
18	120219010025	PREETI	BBA	Preeti
19	120219002101	MANSI	BA	Mansi
20	120219002112	MINAKSHI	BA	Minakshi
21	120219002114	REET GOYAL	BA	Reet
22	120219002125	NEHA RANI	BA	Neha

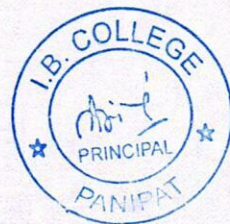
Vinay
 Vinay Bhandari
 Assit. Prof., Dept. of Comp. Sc.
 I.B. College, Panipat.



Department of Computer Science

Certificate Course in Android Development (CCAD22) from 15.04.2022 to
24.06.2022

S. No.	Roll No.	Name	Class	Receiving Signature
1	120219011001	SONI	BCA	Soni
2	120219011010	SOM NATH	BCA	Somnath
3	120219011011	SURAJ	BCA	Suraj
4	120219011012	PARDEEP	BCA	Pardeep
5	120219011037	NANDANI	BCA	Nandani
6	120219011039	MUSKAAN	BCA	Muskaan
7	120219015004	CHANDNI	B.Sc.	Chandni
8	120219015011	NILESH	B.Sc.	Nilesh
9	120219015016	TAMANNA	B.Sc.	Tamanna
10	120219015047	SANJANA	B.Sc.	Sanjana
11	120219015055	GOURAV	B.Sc.	Gourav
12	120219030027	AMIT	B.Sc.	Amit
13	120219030035	SACHIN GUPTA	B.Sc.	Sachin
14	120219010014	PUNIT	BBA	Punit
15	120219010027	SHIVANI	BBA	Shivani
16	120219010043	LAVINA MIGLANI	BBA	Lavina
17	120219002109	VIJAY SINGH	BA	Vijay
18	120219002114	REET GOYAL	BA	Reet
19	120219002142	SAHIL MORYA	BA	Sahil



Ritu Bhardwaj

Prof. Ritu Bhardwaj

Assist. Prof. (C.S)

I.B. College, Pnp

CERTIFICATE COURSE

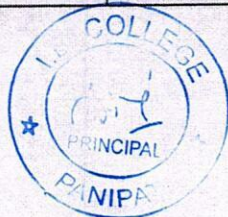
SHATKARMA, PRANAYAM AND MEDITATION

LIST OF PARTICIPANTS

FROM: 15-04-2021 TO 16-6-2021

(40 HOURS)

S.NO.	ROLL NO.	NAME	CLASS	RECEIVING SIGNATURE
1	1212192062003	RAHUL	B.A ENG HONS. I	Rahul
2	1212192062004	PREETI	B.A ENG HONS. I	Preeti
3	1212192062005	BHAWNA	B.A ENG HONS. I	Bhawna
4	1212192062033	NITISH	B.A ENG HONS. I	Nitish
5	1212192062034	RUHANI	B.A ENG HONS. I	Ruhani
6	1212192062035	DEEPAK	B.A ENG HONS. I	Deepak
7	1212192062036	ANJU	B.A ENG HONS. I	Anju
8	1212192062038	SUMIT	B.A ENG HONS. I	Sumit
9	1212192062039	RABIYA	B.A ENG HONS. I	Rabiya
10	1212192062040	JYOTI	B.A ENG HONS. I	Jyoti
11	1212192062041	JYOTI	B.A ENG HONS. I	Jyoti
12	1212192062042	KUSHAL	B.A ENG HONS. I	Parvech
13	1212192062043	PARVEEN	B.A ENG HONS. I	Parveen
14	1212192062062	SAHIL	B.A ENG HONS. I	Sahil
15	1212192062063	ISHU	B.A ENG HONS. I	Ishu
16	1212192062064	SAGAR	B.A ENG HONS. I	Sagar
17	1212192062066	NIYATI	B.A ENG HONS. I	Niyati
18	1212192062067	AARTI	B.A ENG HONS. I	Aarti
19	3161410005	SEIJAL	B.A ENG HONS. III	Sejal
20	3161410006	CHESTA	B.A ENG HONS. III	Chesta
21	3161410008	MITALI	B.A ENG HONS. III	Mitali
22	3161410009	KASHISH	B.A ENG HONS. III	Kashish
23	3161410011	RAJAT	B.A ENG HONS. III	Rajat
24	3161410013	REENA	B.A ENG HONS. III	Reena
25	3161410016	DEEPAK	B.A ENG HONS. III	Deepak
26	3161410018	SHAHIB	B.A ENG HONS. III	Shahib
27	3161410020	PURNIMA	B.A ENG HONS. III	Purnima
28	3161410022	VISHAL	B.A ENG HONS. III	Vishal
29	3161410024	MANISH	B.A ENG HONS. III	Manish
30	220219152001	JYOTI	MA ENGLISH	Jyoti
31	220219152003	VAISHALI	MA ENGLISH	Vaishali
32	220219152008	AMAN	MA ENGLISH	Aman
33	220219152011	SANGEETA	MA ENGLISH	Sangeeta
34	220219152013	SHUBHAM	MA ENGLISH	Shubham
35	220219152020	MONIKA	MA ENGLISH	Monika



Rachna Saini

Department of Computer Science

Certificate Course in Java Script (CCJS22) from from 11.04.2022 to 31.05.2022

S. No.	Roll No.	Name	Class	Receiving Signature
1	120219011010	SOM NATH	BCA	Som Nath
2	120219011011	SURAJ	BCA	Suraj
3	120219011022	DINESH	BCA	Dinesh
4	120219011029	SARTHAK GULATI	BCA	Sarthak
5	120219011017	ANKUSH	BCA	Ankush
6	120219030001	RANI	B.Sc.	Rani
7	120219030004	PRATHAM KUMAR	B.Sc.	Pratham
8	120219030011	ANIKET VATS	B.Sc.	Aniket
9	120219030018	REKHA	B.Sc.	Rekha
10	2280020075	SAPNA	BA	Sapna
11	120219002015	RAVI PRAKASH	BA	Ravi
12	120219002035	LAVINA	BA	Lavina
13	120219002051	NITESH	BA	Nitesh
14	120219002066	VIVEK	BA	Vivek
15	120219003022	AJAY	B.COM	Ajay
16	120219003046	DEV KUMAR	B.COM	Dev Kumar
17	120219003095	SUNNY	B.COM	Sunny
18	120219010001	CHAHAT RATHI	BBA	Chahat Rathi
19	120219010019	RAMAN PREET	BBA	Raman Preet
20	120219010041	OMKARESHWAR KUMAR SHRIVASTAV	BBA	Omkarshwar



Deputy
 (Deputy Jonein)
 Asst. Prof. in CISC
 I.B. College, P.N.A.

CERTIFICATE COURSE IN BHAV SANGEET

1st January 2022 to 20th February 2022

Duration: 40 hour

Music Vocal Department

List of Students

Sr No.	Roll No.	Name of the Student	Class	
1	1212192002228	Sunny Saini	BA I st	Sunny
2	2370	Anuj	BA I st	Anuj
3	2411	Anshul	BA I st	Anshul
4	2427	Lakshay	BA I st	Lakshay
5	2232	Shalini	BA I st	Shalini
6	1212192062048	Megha	BA I st	Megha
7	2017	Jiya	BA I st	Jiya
8	3161320183	Muskaan	BA I st	Muskaan
9	3161420001	Aanchal	BA I st	Aanchal
10	16	Purnima Sharma	BA I st	Purnima
11	120219002248	Nisha	BA II nd	Nisha
12	2259	Siya	BA II nd	Siya
13	2327	Radha	BA II nd	Radha
14	2041	Sahil Sharma	BA II nd	Sahil
15	12121920062006	Mausam Yadav	BA II nd	Mausam
16	22	Keshav Kapoor	BA II nd	Keshav
17	29	Meera Devi	BA II nd	Meera Devi
18	3161410002	Prayag	BA III rd	Prayag
19	20	Alisha	BA III rd	Alisha
20	0009	Kashish	BA III rd	Kashish
21	3161420004	Riddhima	BA III rd	Riddhima
22	14	Neha Mann	BA III rd	Neha
23	3161410016	Deepak Sharma	BA III rd	Deepak



Department of Computer Science

Certificate Course in Web Development using PHP (CCWDPHP22) from from
11.04.2022 to 31.05.2022

S. No.	Roll No.	Name	Class	Receiving Signature
1	120219011030	MANISH KUMAR	BCA	Manish
2	120219011031	AMAN KUMAR	BCA	Aman
3	120219011003	KASHISH DHINGRA	BCA	Kashish
4	120219011014	NIKITA	BCA	Nikita
5	120219011017	ANKUSH	BCA	Ankush
6	120219011019	DEEPAK	BCA	DK
7	120219011022	DINESH	BCA	Dinesh
8	120219011024	PRIYANKA	BCA	Priyanka
9	120219011026	YASH SONI	BCA	Yash
10	120219011029	SARTHAK GULATI	BCA	Sarthak
11	120219015050	PARTH	B.Sc.	Parth
12	120219015051	MEENAKSHI	B.Sc.	Meenakshi
13	120219030001	RANI	B.Sc.	Rani
14	120219030002	KRITIKA	B.Sc.	Kritika
15	120219030016	BHAWNA	B.Sc.	Bhawna
16	120219030020	TUSHAR	B.Sc.	Tushar
17	120219030021	AAKASH	B.Sc.	Aakash
18	120219030026	MONA	B.Sc.	Mona
19	120219030028	KIRTI RANI	B.Sc.	Kirti

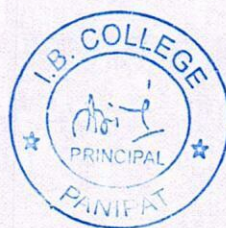


Deputy
 (Deputy Faculty)
 Asst. Prof. in C.S.C
 I. B. College, D.A.P

Department of Computer Science

Certificate Course in Network Security (CCNS22) from 15.04.2022 to 24.06.2022

S. No.	Roll No.	Name	Class	Receiving Signature
1	120219011005	PANKAJ ROHILLA	BCA	Pankaj
2	120219011024	PRIYANKA	BCA	Priyanka
3	120219011028	ANJU	BCA	Anju
4	120219011032	AMIT	BCA	Amit
5	120219011043	GOURAV	BCA	Gourav
6	120219015018	TANISHA	B.Sc.	Tanisha
7	120219015025	NIKKI	B.Sc.	Nikki
8	120219015035	SHARDA	B.Sc.	Sharda
9	120219015046	PUMMY	B.Sc.	Pummy
10	120219015057	AKASH	B.Sc.	Akash
11	120219003083	ESHAAN GUPTA	B.COM	Eshaan Gupta
12	120219003094	NEHA GARG	B.COM	Neha
13	120219003123	ANUJ	B.COM	Anuj
14	120219003124	KARTIKEY	B.COM	Kartikey
15	120219003144	VISHVNATH	B.COM	Vishwanath
16	120219010003	YASH BANSAL	BBA	Yash Bansal
17	120219010023	PRAJIT RAWAL	BBA	Prajit Rawal
18	120219062007	VAANYA	BA	Vaanya
19	120219062010	RASHIDA	BA	Rashida
20	120219062030	ARVIND DHIMAN	BA	Arvind



Ritu Bhardway
 Prof. Ritu Bhardway
 Assist. Prof. (C.S)
 I.B. College, Panipat

I.B. (PG) COLLEGE
G.T. ROAD PANIPAT

Department of Political Science

Duration :-40 Days

Course Name:- Certificate Course in Universal Human Values & Professional Ethics

Sr.No	Roll.no	Name	
1	3161310047	AMANJOT	Amanjot
2	3161310064	PRINCE	Prince
3	3161310078	DEEPAK	Deepak
4	3161310086	ANUJ	Anuj
5	3161310090	ROBIN	Robin
6	3161310093	AMIT	Amit
7	3161310095	RAJAN	Rajan
8	3161310110	RAVI	Ravi
9	3161310113	LAKSHAY	Lakshay
10	3161310122	ASHISH	Ashish
11	3161310127	ROHIT	Rohit
12	3161310140	KASIM ALI	Kasim Ali
13	3161310144	TUSHAR	Tushar
14	3161310150	ARIF ALI	Arif Ali
15	3161310170	HARSH	Harsh
16	3161310172	OSAMA	Osama
17	3161310186	PARVESH	Parvesh
18	3161310205	ANKUSH	Ankush
19	3161310214	MOHIT	Mohit
20	3161310220	GURUSEWA	Gurusewa
21	3161310237	DEEPAK	Deepak
22	3161320004	KIRTI	Kirti
23	3161320007	ASRIYA	Asriya
24	3161320017	NEHA	Neha
25	3161320092	SWATI	Swati
26	3161320103	REKHA	Rekha
27	3161320113	LEEZA	Leeza
28	3161320119	RAVINA	Ravina



Batch - CAB 1

Column1	Column2	Column3	Column4	Column5	Column6	Column7
Rekha	STU174138	sarohare123@gmail.com	I.B. (Pg) Coll. Third	Science	IBPGC eCAB 1 2021-2022	
Rishu Sharma	STU171709	rishu1311sharma@gmail.com	I.B. (Pg) Coll. Third	Science	IBPGC eCAB 1 2021-2022	
Saksham Khurana	STU172366	Sakshamkhurana.6363@gmail.com	I.B. (Pg) Coll. Second	Business	IBPGC eCAB 1 2021-2022	
Shallu Kumari	STU172877	kumarishallukumar010@gmail.com	I.B. (Pg) Coll. Third	Science	IBPGC eCAB 1 2021-2022	
Shashikant	STU172262	shashikantsharma0000111@gmail.com	I.B. (Pg) Coll. Third	Science	IBPGC eCAB 1 2021-2022	
Shreya	STU171647	Shreyaverma0031@gmail.com	I.B. (Pg) Coll. Third	Science	IBPGC eCAB 1 2021-2022	
Sonal	STU171577	sonalrathee027@gmail.com	I.B. (Pg) Coll. Third	Science	IBPGC eCAB 1 2021-2022	
Sujal	STU172063	sujalsindher123@gmail.com	I.B. (Pg) Coll. Third	Science	IBPGC eCAB 1 2021-2022	
Swati Tyagi	STU173394	0505tyagiswati@gmail.com	I.B. (Pg) Coll. Third	Science	IBPGC eCAB 1 2021-2022	
Yukta Chadha	STU172069	yuktachadha1412@gmail.com	I.B. (Pg) Coll. Third	Science	IBPGC eCAB 1 2021-2022	
Amit Wadhwa	STU172384	amitwadhwa123345@gmail.com	I.B. (Pg) Coll. Third	Business	IBPGC eCAB 1 2021-2022	
Ayush Jain	STU171728	ayushjain4275@gmail.com	I.B. (Pg) Coll. Third	Business	IBPGC eCAB 1 2021-2022	
Isha	STU172292	mukhijaisha@gmail.com	I.B. (Pg) Coll. Third	Commerce	IBPGC eCAB 1 2021-2022	
Kajal Devi	STU172468	rathikajal066@gmail.com	I.B. (Pg) Coll. Third	Science	IBPGC eCAB 1 2021-2022	
Koyana	STU172320	koyanasodhi33@gmail.com	I.B. (Pg) Coll. Third	Science	IBPGC eCAB 1 2021-2022	
Lakshi	STU172585	lakshinarang.in@gmail.com	I.B. (Pg) Coll. Third	Commerce	IBPGC eCAB 1 2021-2022	
Meena Kashyap	STU172387	69316931mk@gmail.com	I.B. (Pg) Coll. Second	Arts	IBPGC eCAB 1 2021-2022	
Monika Ghangas	STU171717	monikaghangas3@gmail.com	I.B. (Pg) Coll. Third	Science	IBPGC eCAB 1 2021-2022	
Mukul	STU172040	mukuldhawal@gmail.com	I.B. (Pg) Coll. Third	Commerce	IBPGC eCAB 1 2021-2022	
Neelam Sharma	STU172237	neelam123vashisht@gmail.com	I.B. (Pg) Coll. Second	Arts	IBPGC eCAB 1 2021-2022	
Neeru Bala	STU171736	neerubala9350@gmail.com	I.B. (Pg) Coll. Third	Arts	IBPGC eCAB 1 2021-2022	
Pooja	STU172396	Poojapannu0110@gmail.com	I.B. (Pg) Coll. Second	Commerce	IBPGC eCAB 1 2021-2022	
Shalu Rawal	STU172246	sr8910266@gmail.com	I.B. (Pg) Coll. Second	Arts	IBPGC eCAB 1 2021-2022	
Simran Sharma	STU173478	vijaysharma209442@gmail.com	I.B. (Pg) Coll. Third	Science	IBPGC eCAB 1 2021-2022	
Vaishnavi	STU172341	vishupal214@gmail.com	I.B. (Pg) Coll. Third	Commerce	IBPGC eCAB 1 2021-2022	
Yashika	STU172345	nyashika2001@gmail.com	I.B. (Pg) Coll. Third	Science	IBPGC eCAB 1 2021-2022	
Anshul Gupta	STU172060	anshugupta0110@gmail.com	I.B. (Pg) Coll. Second	Commerce	IBPGC eCAB 1 2021-2022	
Dimpal Malik	STU173484	dimpalmalik10@gmail.com	I.B. (Pg) Coll. Third	Science	IBPGC eCAB 1 2021-2022	
Kamini	STU172367	kunalkumar23254@gmail.com	I.B. (Pg) Coll. Second	Arts	IBPGC eCAB 1 2021-2022	
Nancy Verma	STU172021	vermanancy728@gmail.com	I.B. (Pg) Coll. Third	Science	IBPGC eCAB 1 2021-2022	
Monika Parjapat	STU201025	monikapar1234@gmail.com	I.B. (Pg) Coll. Third	Science	IBPGC eCAB 1 2021-2022	



Batch - CAB 2

Students → Full Name	Students → Student ID	Students → Phone	Students → Email	Institution → Name	Course Year	Course Type	Batches → Name
Bhawana Sharma	STU174218	8307828780	seshawana83980@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Nidhi	STU174173	8572852802	nidhis0106@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Parti	STU174208	8708790375	dpal0713@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Rishu	STU174179	8053354995	rishunagvanshi@gmail.com	I.B. (PG) College, Panipat	Third	Business	IBPGC eCAB 2 2021-2022
Shakir	STU174201	8683828084	shakirnarwal@gmail.com	I.B. (PG) College, Panipat	Third	Business	IBPGC eCAB 2 2021-2022
Nancy Sharma	STU174170	7015331138	sharmapoonam69109@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Ritika Johra	STU174253	9050486918	ritikajohra1002@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Kirti Sharma	STU174382	9812967556	karitiksharma180506@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Jyoti	STU174421	8708071837	xayjohra1999@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Reena Rani	STU174561	9306482723	reenarani68874@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Anjali	STU174623	8607861159	tannuparijapat41@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Geetanjali Bajaj	STU174626	8307556847	geetanjalibajaj387@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Karishma	STU174648	7404331529	manitakashyap53@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Abhishek	STU174667	8950777067	pandeyg0267@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Jasmeet Kaur	STU174731	8930151013	jasmeetkaurpanipat2000@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Prachi Batra	STU174762	9350135350	batraprachi969@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Suman	STU174849	7056437884	chinuladdu4@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Parmender Singh	STU174864	7266901000	parmendersingh0007@gmail.com	I.B. (PG) College, Panipat	Third	Business	IBPGC eCAB 2 2021-2022
Simran Singhal	STU174972	9896621107	SIMU19022002@GMAIL.COM	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Sanjna Singhal	STU174978	7599691018	SANJNA21072002@GMAIL.COM	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Komal	STU174981	8398047707	dhingrakomal.dk@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Sneha Machal	STU174984	7419410121	SNEHAMACHAL58@GMAIL.COM	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Tarandeep Singh	STU174990	9729709191	tarandeepingshagggu@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Bharat Charaya	STU175072	8168122773	bharatarora033@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Ritika	STU175159	7206335290	ritika9053894103@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Manju	STU175228	8708057392	manjusaini15092000@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022
Bharti	STU175478	7355847523	tomerbharti82@gmail.com	I.B. (PG) College, Panipat	Third	Commerce	IBPGC eCAB 2 2021-2022



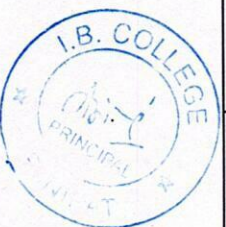
Batch - CAB 3

Students → Full Name	Students → S	Students → Phone	Students → Email	Course Year	Course Type	Year Of Batches → Name	Batches → Status
Sonia	STU174050	9306439652	sandeep.rana96058@gmail.com	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Diksha	STU174025	7015768228	tiwaridiksha652@gmail.com	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Garima Manocha	STU174031	9306413234	manochaangel@gmail.com	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Nancy Taneja	STU174185	9254466756	tanejanancy22@gmail.com	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Sakshi	STU174537	7988800859	sakshikathpal123456@gmail.com	Third	Commerce	IBPGC eCAB 3 2021-2022	Certified
Gourav	STU174962	8053954495	gouravghangas654321@gmail.com	Second	Arts	IBPGC eCAB 3 2021-2022	Certified
Sakshi	STU175124	9350088409	s400294@gmail.com	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Sonu	STU175301	9350289844	sonurana.kccc@gmail.com	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Sonia Saiffee	STU175556	9034500821	amreeshasaiffee@gmail.com	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Ayesha Saiffee	STU175565	9034500821	amreeshasaiffee@gmail.com	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Sanju Sharma	STU175568	9896613201	SANJUSHARMA010801@GMAIL.COM	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Ravi	STU175747	9991224547	ravirair4547@gmail.com	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Reenu	STU175750	9813514780	malikreenu22@gmail.com	Third	Arts	IBPGC eCAB 3 2021-2022	Certified
Asha	STU200012	9729034273	ayeshasing24@gmail.com	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Anshul	STU200013	9992064606	apthesharma11@gmail.com	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Neetu	STU200014	9817847576	neetup281@gmail.com	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Lokesh	STU200018	7357170707	lokeshjangra021@gmail.com	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Manju	STU200019	7988749494	shohtemanju@gmail.com	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Ashish	STU200021	9671384646	ab0182618@gmail.com	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Astha Tiwari	STU200041	8607262346	harimohantiwari2930@gmail.com	Third	Arts	IBPGC eCAB 3 2021-2022	Certified
Jaya	STU200062	9306289204	mehrajaya98@gmail.com	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Aarti	STU200070	8398819929	aartisharma8905@gmail.com	Third	Arts	IBPGC eCAB 3 2021-2022	Certified
Nancy	STU200071	9306887005	ns96883038@gmail.com	Third	Arts	IBPGC eCAB 3 2021-2022	Certified
Tushar	STU200196	8375058280	tusharanjalivats143@gmail.com	Third	Commerce	IBPGC eCAB 3 2021-2022	Certified
Prachi	STU200234	9050638645	prachijhandsalar@gmail.com	Third	Science	IBPGC eCAB 3 2021-2022	Certified
Muskan	STU200412	9671280127	muskanghanghass56@gmail.com	Third	Medical	IBPGC eCAB 3 2021-2022	Certified



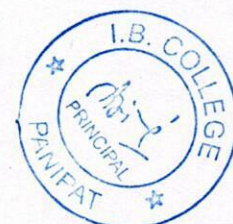
CAB 4 (2021-2022)

Sr. No.	Student Name	Name Of Parent Or Guardian	Status	Email	Course Name	Course Year
1	Shivam Kumar	Parveen Kumar	Certified	shivamkumar23102001@gmail.com	B.A	Third
2	Sonia	Dilawar Singh	Certified	sondeswalpanipat@gmail.com	M.A	First
3	Priya Pandy	Vijay Pandy	Certified	priyabandey03532@gmail.com	B. Com	Third
4	Ravinder	Ram Mehar	Certified	ravinderkashyap2205@gmail.com	B.A	Third
5	Ritika	Rajni	Certified	ritkarora11223344@gmail.com	B. Com	Third
6	Shruti	Vikas	Certified	bansalshruti917@gmail.com	B. Com	Third
7	Tamanna	Madan Lal	Certified	tamannabhans52@gmail.com	B.A	Third
8	Poonam Arora	Inderpal/ Veena rani	Certified	poonamarora808@gmail.com	B. Com	Third
9	Annu	Bharampal	Certified	neerajchoker41@gmail.com	B.A	Third
10	Yogita	Tilak Raj/Kanchan	Certified	gduverma91@gmail.com	B. Com	Third
11	Tannu	Hawa Singh	Certified	tannurawal1@gmail.com	B. Com	Third
12	Ragini Kumari	Ram Raj Kumar Singh /Seema Devi	Certified	kumariragini01719@gmail.com	B. Com	Third
13	Antim Tyagi	Ramnaresh Tyagi	Certified	tyagiantim05@gmail.com	B. Com	Third
14	Anu Rani	Bimla Dave	Certified	anurani7162@gmail.com	M.A	First
15	Pooja	Hansraj	Certified	poorahilla987@gmail.com	M.A	First
16	Nidhi Verma	Narender Kumar Verma	Certified	nidhi241120@gmail.com	B. Com	Third
17	Vishali Rani	Sunderpal	Certified	ranivishali41@gmail.com	B.A	Third
18	Simran	Rampal	Certified	Vishalsain405@gmail.com	B.A	Third
19	Sawan	Skinder Singh	Certified	kumarsawan8788@gmail.com	B.A	Third
20	Ritu	Kalish Sharma	Certified	ritusharma86078@gmail.com	B.A	Third
21	Jyoti	Sanjay Nanda	Certified	jiyotinanda2604@gmail.com	B. Com	Third
22	Mitali	Shri Vinod Kumar	Certified	bholamitali05@gmail.com	B.A	Third
23	Riya	Naresh Kumar	Certified	soniriyar7@gmail.com	B.A	Third
24	Sakshi	Pawan Attri	Certified	sakshiattri618@gmail.com	M.A English	Second
25	Tannu	Jagpal	Certified	rawaltanu23@gmail.com	B.A	Third
26	Diksha	Jagdish Chanana	Certified	dikshachanana773@gmail.com	B.A	Third



CAB 5(2021-2022)

Student Name	Name Of Parent Or Guardian	Status	Email	Course Name	Course Year
Anup Singh	Satish Kumar	Certified	anupdhanda819@gmail.com	B. Com	Third
Jagriti	Raju Verma	Certified	jagritiverma2003@gmail.com	B.A.	Third
Neeha	Mr. Anil	Certified	neehapanchal16@gmail.com	B.A.	Third
Priya	Subhash Sharma	Certified	sharmaprista@gmail.com	M.Sc	First
Gourav	Rajni	Certified	grovergourav127@gmail.com	B.Sc	Third
Yatin Sharma	Sandeep	Certified	yatinsharma015@gmail.com	B.Com	Third
Manisha	Krishan	Certified	myogi1265@gmail.com	B.A.	Third
Sejal Singh	Surender Singh	Certified	sejalsinghridm@gmail.com	B.Com	Third
Ravi	Sunder Parkash	Certified	ravikohli054321@gmail.com	B. Com	Third
Ramanpreet	Charanjeet singh	Certified	ramanpreetkaur13137@gmail.com	B.B.A.	Third
Anjali	Ajay Kumar	Certified	anjali bhasker164@gmail.com	B.A.	Third
Anshul	Sanjeev Kumar	Certified	anshulkumar8220@gmail.co	B. Com	Third
Preeti Mittal	Bijender Mittal	Certified	mittalpreeti011@gmail.com	B. Com	Third
Neetam	Dinesh Kumar	Certified	raviyadav52310@gmail.com	B. Com	Third
Annu	Rajaram	Certified	kumarrajaram353@gmail.com	B.A.	Third
Himanshu	Pawan	Certified	hr5384441@gmail.com	B. Com	Third
Shaboo	Ashraf	Certified	sk9787962@gmail.com	B. Com	Third
Laxmi	Karimbir	Certified	sainijagnnath3@gmail.com	B.A.	Third
Monika	Surender Kumar	Certified	parjapatigirl51@gmail.com	B.A	Third
Parvej	Shakeel	Certified	psaifi360@gmail.com	B.A.	Third
Sheetal	Prem Devi	Certified	sharmasheetal2255@gmail.com	B. A.	Third
Sakshi	Omparkash	Certified	sakshigoswami87@gmail.com	B. Com	Third
Anjali	Sanjeev	Certified	anjali jaglan540@gmail.com	B. Com	Third
Muskan	Yudhister	Certified	muskansaini41017@gmail.com	B. Com	Third
Aisha Noor	Amirudeen	Certified	farshis681@gmail.com	B. Com	Third
Sakshi Rawat	Kundan Singh	Certified	sakshirawat728@gmail.com	B. Com	Third
Kashish	Vinod	Certified	aggarwalkashish323@gmail.com	B. Com	Third
Chanchal	Mr. Devender	Certified	cv4309564@gmail.com	B. Com	Third
Annapurnima Srivastav	Parmod Srivastav	Certified	annu983845@gmail.com	B. Com	Third
Shivani	Mr. Jeevanlal	Certified	shivanishrivastav086@gmail.com	B. Com	Third
Shruti	Shivraj	Certified	shrutitomar519@gmail.com	B.A.	Third
Mahima	Rajinder Kumar	Certified	kashyapmahi188@gmail.com	B.B.A.	Third
Bhumi	Sunil	Certified	jagritikhanna98@gmail.com	B.Com	Third



CAB 6(2021-2022)

Sr. No.	Student Name	Name Of Parent Or Guardian	Status	Email	Course Name	Course Year
1	Ankit	Mr. Ramesh	Certified	ankisaroaha561@gmail.com	B.Sc.	Third
2	Bharat	Rajesh	Certified	bartpw3@gmail.com	B.Sc(CS)	Third
3	Shivam	Subhash Gupta	Certified	shivamgupta62851@gmail.com	B.Sc.(CS)	Third
4	Omkarshwar Kumar Shrivastav	Amar Kumar Shrivastav	Certified	omkarshwar.kumarshrivastav@gmail.com	B.B.A.	Third
5	Priyanka	Rajni	Certified	priyankakash0301@gmail.com	BBA	Second
6	Mehak Jindal	Rishi Raj Jindal	Not Certified	mehakjindal2209@gmail.com	B.B.A.	Third
7	Shivani	Parmod	Certified	shivaniyagi1769@gmail.com	B.B.A.	Third
8	Abhishek	Mr. Sher Singh	Certified	abhishekpaul487@gmail.com	B.B.A.	Third
9	Krish Arora	Vivek Arora	Certified	wizman.krish2@gmail.com	B.B.A.	Third
10	Rohit Mehta	Parveen Kumar	Certified	rohitmehta051@gmail.com	B.B.A.	Third
11	Preeti	Tilak Raj	Certified	trajverma11@gmail.com	B.B.A.	Third
12	Simran	Vijay	Certified	simran13156@gmail.com	B.B.A.	Third
13	Nitish	Balwan	Not Certified	kaushiknitish81@gmail.com	B.B.A.	Third
14	Daizy	Mursid	Certified	dzy96744@gmail.com	B.B.A.	Third
15	Raju	Girani	Certified	rajuverma1856@gmail.com	B.A.	Third
16	Lavina Miglani	Gulshan Miglani	Certified	lavinamiglan1221@gmail.com	B.B.A.	Third
17	Sanchit Garg	Parveen Kumar	Certified	sanchitgarg1705@gmail.com	B. Com	Third
18	Harshit	Raj Tilak	Certified	hk536218@gmail.com	B. Com	Third
19	Muskan	Santosh Tomar	Certified	tmuskan645@gmail.com	B.B.A.	Third
20	Nillesh	Manoj Kumar	Certified	nilleshkumar0000123@gmail.com	B.Sc.(Non-medical)	Third
21	Manish	Manoj Kumar Singh	Certified	kmanoj30205@gmail.com	B.Sc.(Non-medical)	Third
22	Preeti Sharma	Ramjuari Sharma	Not Certified	ankushsarma7027723890@gmail.com	BA	Third
23	Manisha	Shiv Bhawan	Certified	manishagautam763@gmail.com	BA	Third
24	Rimjhim	Pappu Ram	Certified	riniirajput8893@gmail.com	BA	Third
25	Rahul	Rajender Goyal	Not Certified	raahulgoel647@gmail.com	B.A	Third



CAB 7(2021-2022)

Sr. No.	Student Name	Name Of Parent Or Guardian	Status	Email	Course Name	Course Year
1	Sannu	Mr. Mahender	Certified	sannudhiman8@gmail.com	B.A	Third
2	Kajal	Mr. Lal babu	Certified	sahanigaurav742@gmail.com	B.A	Third
3	Ritika	Raj Singh	Certified	ritkapanwar2676@gmail.com	B.Sc.	Third
4	Madhu	Surendra Gupta	Certified	mg1542481@gmail.com	B.A.	Third
5	Tulsi	Rajni	Certified	ts0243141@gmail.com	BA	Fourth
6	Ashwani Gupta	Mamta Gupta	Certified	guptaashwani859@gmail.com	B.Sc	Third
7	Ishita Saini	Kuldeep Saini	Certified	ishitaasainii@gmail.com	B.Sc.	Third
8	Priya	Ajay Misra	Certified	priyamishra2738@gmail.com	B.Sc.(Non-medical)	Third
9	Komal Sharma	Ashok Sharma	Certified	ka.vya16923@gmail.com	B.Sc.(CS)	Third
10	Ankita	Mahender	Certified	gouravdeshwal8398000358@gmail.com	B.A.	Third
11	Sheetal	Ramkumar	Certified	sheetalgautam9254@gmail.com	B.A.	Third
12	Lavina	Satish Saini	Certified	lavinasaini38@gmail.com	B.A.	Third
13	Seema	Umashankar	Certified	sg4288131@gmail.com	B.A.	Third
14	Annu	Rajpal	Certified	dhullannu826@gmail.com	B.A	Third
15	Namrata Soni	Devendra Kumar	Certified	soninamrata720@gmail.com	B.Com	Third
16	Annu	Ramesh	Certified	annudhull85@gmail.com	B.A	Third
17	Kajal	Mirtunjay	Certified	kajalshrivastav343@gmail.com	B.Com	Third
18	Ankit	Rambir	Certified	ak951860420@gmail.com	B.Sc.(CS)	Third
19	Tushar	Anil Kumar	Certified	rnhahotrat06@gmail.com	B.Sc.(CS)	Third
20	Roshni	Rajbir	Certified	antilrashmi03@gmail.com	B.A.	Third
21	Kiran	Rajpal Luthra	Certified	poonamluthra2040@gmail.com	B.A	Third
22	Bharti	Jashmer singh	Certified	kadyanbharti934@gmail.com	B.Com	Third
23	Priyanka	Om Prakash	Certified	priyankabhardwaj9671@gmail.com	B.A.	Third

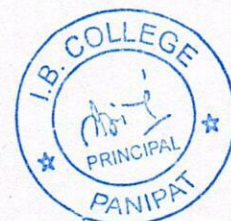


I.B. (PG) COLLEGE, PANIPAT

List of Students Completing Artificial Intelligence & Python Programming (2020-21)

Sr. No.	Name	Father's Name	Roll No
1.	Vishal Saini	Rajpal	3161310040
2.	Sachin	Shambhu Prasad	120219003185
3.	Deepak	Narender	3162210017
4.	Vishal Saini	Rajpal	3161310040
5.	Vijay	Balkar Singh	120219010006
6.	Akash	Anil	3161310043
7.	Ishika Sharma	Mr. Ashok Sharma	2280320014
8.	Yatin Grover	Dharampal Grover	2280210052
9.	Reena Rani	Sh. Kapil	3161520055
10.	Bharti Kundu	Ramesh Kundu	120219003106
11.	Sunny Deswal	Azad	120219003086
12.	Sapna	Mr. Rajender Singh	2280220005
13.	Vijay	Chattar Singh	3162210025
14.	Kartikey	Suresh	120219003124
15.	Reena Rani	Sh. Kapil	3161520055
16.	Sonam	Ms. Ravinder	2280220023
17.	Vijay	Balkar Singh	120219010006
18.	Annu Rani	Mr. Sunehra Singh	2280220006
19.	Bharti	Jashmer Singh	3265120011
20.	Ayan Mahajan	Bharat Dhushan Mahajan	120219003091
21.	Deepa	Naresh Pal	2280220069
22.	Komal Verma	Rajender Kumar	1650920012
23.	Shubham	Manoj Mishra	3162210001
24.	Sahil	Jashmer	3161310041
25.	Simran	Sh. Tilak	220219168020
26.	Aarti Kashyap	Subhash	220219168009
27.	Priya	Rajesh	3162520007
28.	Priya	Rajesh	3162520007
29.	Priya	Rajesh	3162520007
30.	Richa	Jagat Singh	220219168036
31.	Rishav Tyagi	Mr. Ramesh Tyagi Ji	2280010200
32.	Ritika	Mr. Sanjay	3161520008
33.	Shivani	Rishi Ram	2280520003
34.	Shruti Chawla	Mohinder Chawla	2280320011
35.	Pooja	Rajesh	220219168010
36.	Pooja	Rajesh	220219168010

Vishal
 Sachin
 Deepak
 Vishal
 Vijay
 Akash
 Ishika
 Yatin
 Reena
 Bharti
 Sunny
 Sapna
 Vijay
 Kartikey
 Reena
 Sonam
 Vijay
 Annu
 Bharti
 Ayan
 Deepa
 Komal
 Shubham
 Sahil
 Simran
 Aarti
 Priya
 Priya
 Priya
 Richa
 Rishav
 Ritika
 Shivani
 Shruti
 Pooja
 Pooja



I.B.(PG) COLLEGE, PANIPAT

LIST OF STUDENTS ENROLLED FOR ONE MONTH FALL/WINTER CERTIFICATE COURSE (FROM 28/12/2019 TO 27/01/2021)

Sl. No.	Roll Number	Student Name	Gender	Address	Parent Name	Qualification
1	10010001	ABHIRAM BISHNOI	MALE	...	...	B.COM II
2	10010002	ABHIRAM BISHNOI	MALE	...	...	B.COM II
3	10010003	ABHIRAM BISHNOI	MALE	...	...	B.COM II
4	10010004	ABHIRAM BISHNOI	MALE	...	...	B.COM II
5	10010005	ABHIRAM BISHNOI	MALE	...	...	B.COM II
6	10010006	ABHIRAM BISHNOI	MALE	...	...	B.COM II
7	10010007	ABHIRAM BISHNOI	MALE	...	...	B.COM II
8	10010008	ABHIRAM BISHNOI	MALE	...	...	B.COM II
9	10010009	ABHIRAM BISHNOI	MALE	...	...	B.COM II
10	10010010	ABHIRAM BISHNOI	MALE	...	...	B.COM II
11	10010011	ABHIRAM BISHNOI	MALE	...	...	B.COM II
12	10010012	ABHIRAM BISHNOI	MALE	...	...	B.COM II
13	10010013	ABHIRAM BISHNOI	MALE	...	...	B.COM II
14	10010014	ABHIRAM BISHNOI	MALE	...	...	B.COM II
15	10010015	ABHIRAM BISHNOI	MALE	...	...	B.COM II
16	10010016	ABHIRAM BISHNOI	MALE	...	...	B.COM II
17	10010017	ABHIRAM BISHNOI	MALE	...	...	B.COM II
18	10010018	ABHIRAM BISHNOI	MALE	...	...	B.COM II
19	10010019	ABHIRAM BISHNOI	MALE	...	...	B.COM II
20	10010020	ABHIRAM BISHNOI	MALE	...	...	B.COM II
21	10010021	ABHIRAM BISHNOI	MALE	...	...	B.COM II
22	10010022	ABHIRAM BISHNOI	MALE	...	...	B.COM II
23	10010023	ABHIRAM BISHNOI	MALE	...	...	B.COM II
24	10010024	ABHIRAM BISHNOI	MALE	...	...	B.COM II
25	10010025	ABHIRAM BISHNOI	MALE	...	...	B.COM II
26	10010026	ABHIRAM BISHNOI	MALE	...	...	B.COM II
27	10010027	ABHIRAM BISHNOI	MALE	...	...	B.COM II
28	10010028	ABHIRAM BISHNOI	MALE	...	...	B.COM II
29	10010029	ABHIRAM BISHNOI	MALE	...	...	B.COM II
30	10010030	ABHIRAM BISHNOI	MALE	...	...	B.COM II
31	10010031	ABHIRAM BISHNOI	MALE	...	...	B.COM II
32	10010032	ABHIRAM BISHNOI	MALE	...	...	B.COM II
33	10010033	ABHIRAM BISHNOI	MALE	...	...	B.COM II
34	10010034	ABHIRAM BISHNOI	MALE	...	...	B.COM II
35	10010035	ABHIRAM BISHNOI	MALE	...	...	B.COM II
36	10010036	ABHIRAM BISHNOI	MALE	...	...	B.COM II
37	10010037	ABHIRAM BISHNOI	MALE	...	...	B.COM II
38	10010038	ABHIRAM BISHNOI	MALE	...	...	B.COM II
39	10010039	ABHIRAM BISHNOI	MALE	...	...	B.COM II
40	10010040	ABHIRAM BISHNOI	MALE	...	...	B.COM II
41	10010041	ABHIRAM BISHNOI	MALE	...	...	B.COM II
42	10010042	ABHIRAM BISHNOI	MALE	...	...	B.COM II
43	10010043	ABHIRAM BISHNOI	MALE	...	...	B.COM II
44	10010044	ABHIRAM BISHNOI	MALE	...	...	B.COM II
45	10010045	ABHIRAM BISHNOI	MALE	...	...	B.COM II
46	10010046	ABHIRAM BISHNOI	MALE	...	...	B.COM II
47	10010047	ABHIRAM BISHNOI	MALE	...	...	B.COM II
48	10010048	ABHIRAM BISHNOI	MALE	...	...	B.COM II
49	10010049	ABHIRAM BISHNOI	MALE	...	...	B.COM II
50	10010050	ABHIRAM BISHNOI	MALE	...	...	B.COM II
51	10010051	ABHIRAM BISHNOI	MALE	...	...	B.COM II
52	10010052	ABHIRAM BISHNOI	MALE	...	...	B.COM II
53	10010053	ABHIRAM BISHNOI	MALE	...	...	B.COM II
54	10010054	ABHIRAM BISHNOI	MALE	...	...	B.COM II
55	10010055	ABHIRAM BISHNOI	MALE	...	...	B.COM II
56	10010056	ABHIRAM BISHNOI	MALE	...	...	B.COM II
57	10010057	ABHIRAM BISHNOI	MALE	...	...	B.COM II
58	10010058	ABHIRAM BISHNOI	MALE	...	...	B.COM II
59	10010059	ABHIRAM BISHNOI	MALE	...	...	B.COM II
60	10010060	ABHIRAM BISHNOI	MALE	...	...	B.COM II
61	10010061	ABHIRAM BISHNOI	MALE	...	...	B.COM II
62	10010062	ABHIRAM BISHNOI	MALE	...	...	B.COM II
63	10010063	ABHIRAM BISHNOI	MALE	...	...	B.COM II
64	10010064	ABHIRAM BISHNOI	MALE	...	...	B.COM II
65	10010065	ABHIRAM BISHNOI	MALE	...	...	B.COM II
66	10010066	ABHIRAM BISHNOI	MALE	...	...	B.COM II
67	10010067	ABHIRAM BISHNOI	MALE	...	...	B.COM II
68	10010068	ABHIRAM BISHNOI	MALE	...	...	B.COM II
69	10010069	ABHIRAM BISHNOI	MALE	...	...	B.COM II
70	10010070	ABHIRAM BISHNOI	MALE	...	...	B.COM II
71	10010071	ABHIRAM BISHNOI	MALE	...	...	B.COM II
72	10010072	ABHIRAM BISHNOI	MALE	...	...	B.COM II
73	10010073	ABHIRAM BISHNOI	MALE	...	...	B.COM II
74	10010074	ABHIRAM BISHNOI	MALE	...	...	B.COM II
75	10010075	ABHIRAM BISHNOI	MALE	...	...	B.COM II
76	10010076	ABHIRAM BISHNOI	MALE	...	...	B.COM II
77	10010077	ABHIRAM BISHNOI	MALE	...	...	B.COM II
78	10010078	ABHIRAM BISHNOI	MALE	...	...	B.COM II
79	10010079	ABHIRAM BISHNOI	MALE	...	...	B.COM II
80	10010080	ABHIRAM BISHNOI	MALE	...	...	B.COM II
81	10010081	ABHIRAM BISHNOI	MALE	...	...	B.COM II
82	10010082	ABHIRAM BISHNOI	MALE	...	...	B.COM II
83	10010083	ABHIRAM BISHNOI	MALE	...	...	B.COM II
84	10010084	ABHIRAM BISHNOI	MALE	...	...	B.COM II
85	10010085	ABHIRAM BISHNOI	MALE	...	...	B.COM II
86	10010086	ABHIRAM BISHNOI	MALE	...	...	B.COM II
87	10010087	ABHIRAM BISHNOI	MALE	...	...	B.COM II
88	10010088	ABHIRAM BISHNOI	MALE	...	...	B.COM II
89	10010089	ABHIRAM BISHNOI	MALE	...	...	B.COM II
90	10010090	ABHIRAM BISHNOI	MALE	...	...	B.COM II
91	10010091	ABHIRAM BISHNOI	MALE	...	...	B.COM II
92	10010092	ABHIRAM BISHNOI	MALE	...	...	B.COM II
93	10010093	ABHIRAM BISHNOI	MALE	...	...	B.COM II
94	10010094	ABHIRAM BISHNOI	MALE	...	...	B.COM II
95	10010095	ABHIRAM BISHNOI	MALE	...	...	B.COM II
96	10010096	ABHIRAM BISHNOI	MALE	...	...	B.COM II
97	10010097	ABHIRAM BISHNOI	MALE	...	...	B.COM II
98	10010098	ABHIRAM BISHNOI	MALE	...	...	B.COM II
99	10010099	ABHIRAM BISHNOI	MALE	...	...	B.COM II
100	10010100	ABHIRAM BISHNOI	MALE	...	...	B.COM II

Name: _____
 Signature: _____
 Date: _____
 Place: _____
 Principal: _____
 I.B. (PG) College, Panipat



I.B. (PG) College
 Panipat

CERTIFICATE COURSE IN BHAV SANGEET

1st January 2021 to 20th February 2021

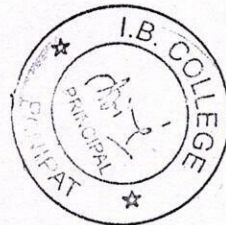
Session 2020-21

Music Vocal Department

Duration: 40 hour

List of Students

Sr No.	Roll No.	Name of the Student	Class
1	120219002257	Kunal <i>Kunal</i>	BA Ist
2	2312	Suraj <i>Suraj</i>	BA Ist
3	2030	Vikas <i>Vikas</i>	BA Ist
4	120219062005	Sagar Kumar <i>Sagar</i>	BA Ist
5	2023	Tisha Middha <i>Tisha</i>	BA Ist
6	2036	Drishti <i>Drishti</i>	BA Ist
7	2021	Simran <i>Simran</i>	BA Ist
8	3161310143	Shrey <i>Shrey</i>	BA Ist
9	0154	Bhawna <i>Bhawna</i>	BA Ist
10	0018	Sahib Singh <i>Sahib Singh</i>	BA Ist
11	0008	Mitali <i>Mitali</i>	BA Ist
12	2280010118	Sagar <i>Sagar</i>	BA IIIrd
13	20136	Janvi <i>Janvi</i>	BA IIIrd
14	120025	Anuradha <i>Anuradha</i>	BA IIIrd
15	10177	Shahbaz <i>Shahbaz</i>	BA IIIrd
16	3161310215	Deepak <i>Deepak</i>	BA IInd
17	320061	Preeti <i>Preeti</i>	BA IInd
18	0004	Vishal <i>Vishal</i>	BA IInd
19	420005	Saijal <i>Saijal</i>	BA IInd
20	0213	Kajal Rani <i>Kajal</i>	BA IInd



I.B. (PG) COLLEGE, PANIPAT

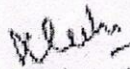
SESSION (2019-20)

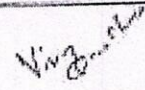
NOTICE

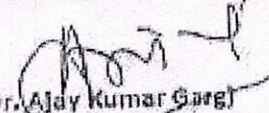
List of Students enrolled in Certificate Course in Communication Skills Development.

Sr. No.	Class	College Roll. No	Name of the Students
1	BA 6th Sem	1544520028	RENUKA DEVI
2		1544510197	SUSHIL
3		1544520113	KAJAL SHARMA
4		1544520024	ARADHANA
5		1544520013	SUMAN
6	BA (Hons). 6th Sem	1544620009	Riya
7		1544620014	Jyoti
8		1544620006	Srishti Sharma
9		1544620020	Meghna
10		1544620010	Komal
11	B.Com 6th Sem	1544720090	SONIA
12		1544720001	SIMRAN
13		1544720005	SAKSHI RAMDEV
14		1544720058	NANDNI
15		1544720013	VANI
16	B.Com (Hons). 6th Sem	1544820001	SHRUTI
17		1544820003	MANJU RANI
18	BBA 6th Sem	1545320002	DIVYA
19		1545320001	SHRUTI
20		1545320007	RIYA
21		1545320003	BHARTI POPLY
22	BCA 6th Sem	1545410003	PANKAJ GOEL
23		1545410002	VISHU KHOKHAR
24	B.SC. 6th Sem	1545220001	RITU
25		1544920006	DEVANTI
26		1544920014	TAMNNA
27		1545020029	ASHU
28		1545020028	AARCHI
29	1545120017	PREETI	
30		1545110001	ANSHUL VERMA

Renuka
 Sushil
 Kajal
 Aradhana
 Suman
 Riya
 Jyoti
 Srishti Sh
 Meghna
 Komal
 Sonia
 Simran
 Sakshi
 Nandni
 Vani
 Shruti
 Manju
 Divya
 Shruti
 Riya
 Bharti
 Pankaj
 Vishu
 Ritu
 Devanti
 Tamnna
 Ashu
 Aarchi
 Preeti
 Anshul


 (Prof. Neelam)
 Convener


 (Dr. Vinay Wadhwa)
 Course Coordinator


 (Dr. Ajay Kumar Garg)
 Principal

I.B.(PG) COLLEGE, PANIPAT
Session 2018-19
NOTICE

List of students enrolled in Certificate Course in Communication Skills Development.

Sr. No.	Class	College Roll No.	Name of the students
1.	BA 6TH SEM	5014	NEHA <i>Neha</i>
2.		5047	EKTA <i>EKTA</i>
3.		5018	KAMANA <i>Kamana</i>
4.		5509	REETU <i>Reetu</i>
5.		5408	JYOTI <i>Jyoti</i>
6.	B.A. (Hons). 6 th Sem	5701	ANITA RANI <i>Anita</i>
7.		5723	MONIKA <i>Monika</i>
8.		5702	AASHU <i>Aashu</i>
9.		5713	NIDHI <i>Nidhi</i>
10.		5719	PALAK <i>Palak</i>
11.	B.Com 6 th Sem	190	MEETU <i>Meetu</i>
12.		4	VARCHANA KADYAN <i>Varchana</i>
13.		47	ANKITA RAJPAL <i>Ankita</i>
14.		403	AAKAS KHATTAR <i>Aakash</i>
15.		39	SHIVANI <i>Shivani</i>
16.	BDA 6 th SEM	7414	SUNNY <i>Sunny</i>
17.		7419	KANIKA <i>Kanika</i>
18.		7410	BHAVYA <i>Bhavia</i>
19.		7418	RUCHI <i>Ruchi</i>
20.		7432	TIM TIM BANSAL <i>Tim Tim Bansal</i>
21.	BCA 6 th Sem	7423	JITESH ARORA <i>Jitesh</i>
22.		8002	MOHIT <i>Mohit</i>
23.	B.S.C. 6 th Sem	3455	RUCHI <i>Ruchi</i>
24.		3448	MONIKA <i>Monika</i>
25.		2910	MANNU <i>Mannu</i>
26.		2914	ANSHU GAHLYAN <i>Anshu</i>
27.		3271	SACHIN <i>Sachin</i>
28.		3253	VIKRANT BOORA <i>Vikrant</i>
29.		3018	KAMAL <i>Kamal</i>
30.		3021	RITU <i>Ritu</i>

(Prof. Neelam)
 (Prof. Neelam)
 Convener

(Dr. Vinay Wadhwa)
 (Dr. Vinay Wadhwa)
 Course Co-ordinator

(Dr. Madhu Sharma)
 (Dr. Madhu Sharma)
 Principal




Ajay Kumar
Garg

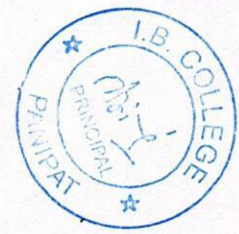
Digitally signed by
 Ajay Kumar Garg
 Date: 2023.06.23
 22:46:05 +05'30'

**List of Participants In Art and Craft, 2017-18
(Odd Semester)**

S.NO.	ROLL NO.	NAME
1	1544510055	Rinku
2	1544520007	Sakshi
3	1544520026	Sunaina
4	1544520040	Priya
5	1544520062	Kusum Sharma
6	1544520066	Neelam
7	1544520067	Pooja Devi
8	1544520084	Suman
9	1544520140	Sapna Jaglan
10	1544520127	Manisha

Rinku
Sakshi
Sunaina
Priya
Kusum Sharma
Neelam
Pooja
Suman
Sapna
Manisha


 Principal
 I.B. (PG) College, Paripat



Serial No. 849

Roll No. 170080719

52

Regn. No. 17-IP-197

I.B. (PG) COLLEGE, PANIPAT



Affiliated to

Kurukshetra University Kurukshetra

(Established by the State Legislature Act - XXI of 1956)

('A' Grade, NAAC Accredited)

CERTIFICATE COURSE IN COMPUTER EDUCATION (LEVEL-I)

Certified that Deepak Son/Daughter
of Shri/Smt. Joginder has passed
the Certificate Course in Computer Education (Level-I) Examination held in Oct 2020

Sr. No.	SUBJECTS	MARKS OBTAINED	MAXIMUM MARKS
1.	Theory	84	100
2.	Practical	72	100
	Total	156	200
	Grade (on the basis of total marks scored in Theory & Practical)	A	

For Grading Formula, see overleaf

Place Panipat
Dated 24.12.2020
Prepared By Vicu
Checked By Prudhvi

Prudhvi
CONTROLLER OF EXAMINATION

Prudhvi
PRINCIPAL

Serial No. 241

Roll No. 170080517

Regn. No. 17-IP-72

I.B. (PG) COLLEGE, PANIPAT



Affiliated to

Kurukshetra University Kurukshetra

(Established by the State Legislature Act - XXI of 1956)

('A' Grade, NAAC Accredited)

CERTIFICATE COURSE IN COMPUTER EDUCATION (LEVEL-I)

Certified that Ms. Suman Rani Son/Daughter
of Shri/Smt. Jai Narayan has passed
the Certificate Course in Computer Education (Level-I) Examination held in May 2018

Sr. No.	SUBJECTS	MARKS OBTAINED	MAXIMUM MARKS
1.	Theory	65	100
2.	Practical	65	100
	Total	130	200
	Grade (on the basis of total marks scored in Theory & Practical)	'B'	

For Grading Formula, see overleaf

Place Panipat

Dated 22-12-2018

Prepared By Vinay

Checked By [Signature]

CONTROLLER OF EXAMINATION

PRINCIPAL

Serial No. 396

Roll No. 180072005 ⁶⁶

Regn. No. 18-1P-359

I.B. (PG) COLLEGE, PANIPAT



Affiliated to

Kurukshetra University Kurukshetra

(Established by the State Legislature Act-XIII of 1956)

('A' Grade, NAAC Accredited)

CERTIFICATE COURSE IN COMPUTER EDUCATION (LEVEL-I)

Certified that.....Vishal.....Son/Daughter
of Shri/Smt. Joginder pal.....has passed
the Certificate Course in Computer Education (Level-I) Examination held in May..2019

Sr. No.	SUBJECTS	MARKS OBTAINED	MAXIMUM MARKS
1.	Theory	65	100
2.	Practical	72	100
	Total	137	200
	Grade (on the basis of total marks scored in Theory & Practical)	'B'	

For Grading Formula, see overleaf

Place Panipat

Dated 15.12.2020

Prepared By Vinay

Checked By [Signature]

[Signature]
CONTROLLER OF EXAMINATION

[Signature]
PRINCIPAL

Serial No. 303

Roll No. 180072152 ¹⁵¹

Regn. No. 18-1P-244

I.B. (PG) COLLEGE, PANIPAT



Affiliated to

Kurukshetra University Kurukshetra

(Established by the State Legislature Act-XXIII of 1956)

('A' Grade, NAAC Accredited)

CERTIFICATE COURSE IN COMPUTER EDUCATION (LEVEL-I)

Certified that..... Anjin Son/Daughter ✓
of Shri/Smt. Ram Niwas has passed ✓

the Certificate Course in Computer Education (Level-I) Examination held in May 2019

Sr. No.	SUBJECTS	MARKS OBTAINED	MAXIMUM MARKS
1.	Theory	50	100
2.	Practical	60	100
	Total	110	200
	Grade (on the basis of total marks scored in Theory & Practical)	C	

For Grading Formula, see overleaf

Place Panipat

Dated 15-12-2019

Prepared By Vijay

Checked By [Signature]

[Signature]
CONTROLLER OF EXAMINATION

[Signature]
PRINCIPAL

Serial No. 5107

Roll No. 191075190
Regn. No. 19-IP-311

I.B. (PG) COLLEGE, PANIPAT



Affiliated to

Kurukshetra University Kurukshetra

(Established by the State Registature Act - XXI of 1956)

('A' Grade, NAAC Accredited)

CERTIFICATE COURSE IN COMPUTER EDUCATION (LEVEL-I)

Certified that Ravinder Kumar Son/Daughter
of Shri/Smt. Ishwar Singh has passed
the Certificate Course in Computer Education (Level-I) Examination held in Aug. 2021

Sr. No.	SUBJECTS	MARKS OBTAINED	MAXIMUM MARKS
1.	Theory	92	100
2.	Practical	82	100
	Total	174	200
	Grade (on the basis of total marks scored in Theory & Practical)	A	

For Grading Formula, see overleaf

Place Panipat
Dated May 2022
Prepared By [Signature]
Checked By Kaaru

[Signature]
CONTROLLER OF EXAMINATION

[Signature]
PRINCIPAL

Serial No.

5192

Roll No. 191075176

Regn. No. 19-IP-328

I.B. (PG) COLLEGE, PANIPAT



Affiliated to

Kurukshetra University Kurukshetra

(Established by the State Registature Act - XXI of 1956)

('A' Grade, NAAC Accredited)

CERTIFICATE COURSE IN COMPUTER EDUCATION (LEVEL-I)

Certified that Sawan Son/Daughter
of Shri/Smt. Skinder Singh has passed
the Certificate Course in Computer Education (Level-I) Examination held in ... Aug. 2021

Sr. No.	SUBJECTS	MARKS OBTAINED	MAXIMUM MARKS
1.	Theory	72	100
2.	Practical	82	100
	Total	154	200
	Grade (on the basis of total marks scored in Theory & Practical)	A	

For Grading Formula, see overleaf

Place Panipat

Dated May 2022

Prepared By [Signature]

Checked By Karuna

[Signature]
CONTROLLER OF EXAMINATION

[Signature]
PRINCIPAL

Serial No. 5326

Roll No. 201071708
Regn. No. 20-IP-463

I.B. (PG) COLLEGE, PANIPAT



Affiliated to

Kurukshetra University Kurukshetra

(Established by the State Registature Act - XXI of 1956)

('A' Grade, NAAC Accredited)

CERTIFICATE COURSE IN COMPUTER EDUCATION (LEVEL-I)

Certified that KAJAL Son/Daughter
of Shri/Smt. MADAN has passed
the Certificate Course in Computer Education (Level-I) Examination held in ... Aug. 2021 ..

Sr. No.	SUBJECTS	MARKS OBTAINED	MAXIMUM MARKS
1.	Theory	70	100
2.	Practical	80	100
	Total	150	200
	Grade (on the basis of total marks scored in Theory & Practical)	A	

For Grading Formula, see overleaf

Place Panipat
Dated May 2022
Prepared By [Signature]
Checked By [Signature]

[Signature]
CONTROLLER OF EXAMINATION

[Signature]
PRINCIPAL

Serial No. 5368

Roll No. 201071537

Regn. No. 20-IP-464

I.B. (PG) COLLEGE, PANIPAT



Affiliated to

Kurukshetra University Kurukshetra

(Established by the State Registature Act - XXI of 1956)

('A' Grade, NAAC Accredited)

CERTIFICATE COURSE IN COMPUTER EDUCATION (LEVEL-I)

Certified that GIETA Son/Daughter ✓
of Shri/Smt. TILAK RAM has passed
the Certificate Course in Computer Education (Level-I) Examination held in Aug 2021

Sr. No.	SUBJECTS	MARKS OBTAINED	MAXIMUM MARKS
1.	Theory	48	100
2.	Practical	68	100
	Total	116	200
	Grade (on the basis of total marks scored in Theory & Practical)	C	

For Grading Formula, see overleaf

Place Panipat
Dated May 2022
Prepared By [Signature]
Checked By [Signature]

[Signature]
CONTROLLER OF EXAMINATION

[Signature]
PRINCIPAL



Estd. 1956

I.B. (PG) College, Panipat

Sr. No. 14

G.T. Road, Panipat-132103, Haryana

Website : ibpgcollegepanipat.ac.in, Email: principalibcollege@gmail.com

SESSION 2020-21 E-CERTIFICATE

This is to certify that Mr./Mrs **Anuradha**, class **BA Ist**, Roll no. **22800120025** of **I.B.(PG) College , Panipat** has Participated in Certificate Course in **BHAV SANGEET** held From **1 January, 2021 TO 20 Feburary, 2021** organised by Department of Music (Vocal).

Dr. Ajay Kumar Garg
Principal & Patron

Prof. Dharam Singh
Activity Incharge



Estd. 1956

I.B. (PG) College, Panipat

Sr. No. 09

G.T. Road, Panipat-132103, Haryana

Website : ibpgcollegepanipat.ac.in, Email: principalibcollege@gmail.com

SESSION 2020-21 E-CERTIFICATE

This is to certify that Mr./Mrs **Bhawna** , class **BA Ist** , Roll no. **3161310154** of **I.B.(PG) College , Panipat** has Participated in Certificate Course in **BHAV SANGEET** held From **1 January, 2021 TO 20 Feburary, 2021** organised by Department of Music (Vocal).

Dr. Ajay Kumar Garg
Principal & Patron

Prof. Dharam Singh
Activity Incharge



I.B. (PG) COLLEGE, PANIPAT

G.T. ROAD, PANIPAT-132103, HARYANA

Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com



E-CERTIFICATE

This is to certify that Mr./Ms. **Kashish Dhingra, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course on Internet of Things** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Vinay Bharti
Co-ordinator





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E-CERTIFICATE

This is to certify that Mr./Ms. **Nikita**, BCA-II of I.B. (PG) College, Panipat participated in **40 days Certificate Course on Internet of Things** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Vinay Bharti
Co-ordinator





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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com



E-CERTIFICATE

This is to certify that Mr./Ms. **Anjali**, BCA-II of I.B. (PG) College, Panipat participated in **40 days Certificate Course on Internet of Things** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Vinay Bharti
Co-ordinator





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E-CERTIFICATE

This is to certify that Mr./Ms. **Anjali, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Web Designing (CCWD)** organized by Department of Computer Science in October 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Deepty Juneja
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Alka, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Web Designing (CCWD)** organized by Department of Computer Science in October 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Deepty Juneja
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Pankaj Dahiya, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Web Designing (CCWD)** organized by Department of Computer Science in October 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Deepty Juneja
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Harsh, BA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Digital Marketing** organized by Department of Computer Science in October 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Deepty Juneja
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Vikram, BA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Digital Marketing** organized by Department of Computer Science in October 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Deepty Juneja
Co-ordinator



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G.T. ROAD, PANIPAT-132103, HARYANA

Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Vishal, BA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Digital Marketing** organized by Department of Computer Science in October 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Deepty Juneja
Co-ordinator



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G.T. ROAD, PANIPAT-132103, HARYANA

Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms Aditi, B.A I Eng. Hons. of **I.B. (P.G.) College, Panipat** participated in 40 days **Certificate Course on Stress Management by Yoga** organized by Department of yoga and meditation club on 15 November, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Pooja Dudeja
Activity Incharge



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms Yachna, B.A I Eng. Hons. of **I.B. (P.G.) College, Panipat** participated in 40 days **Certificate Course on Stress Management by Yoga** organized by Department of yoga and meditation club on 15 November, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Pooja Dudeja
Activity Incharge



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E-CERTIFICATE

This is to certify that Mr./Ms Anjali, B.A I Eng. Hons. of **I.B. (P.G.) College, Panipat** participated in 40 days **Certificate Course on Stress Management by Yoga** organized by Department of yoga and meditation club on 15 November, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Pooja Dudeja
Activity Incharge



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Yash Bansal, BBA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Account Executive** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ashwani Gupta
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Rohit Mehta, BBA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Account Executive** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ashwani Gupta
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Aniket Tyagi, BBA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Account Executive** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ashwani Gupta
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Sunny Malik, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Computer Hardware and Maintenance** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Neetu Bhatia
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Anju**, BCA-II of I.B. (PG) College, Panipat participated in **40 days Certificate Course in Computer Hardware and Maintenance** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Neetu Bhatia
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Anish**, B.Sc.-II of I.B. (PG) College, Panipat participated in **40 days Certificate Course in Computer Hardware and Maintenance** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Neetu Bhatia
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Megha Guglani, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course on Web Designing & Office Automation** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Vinay Bharti
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Manish Kumar, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course on Web Designing & Office Automation** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Vinay Bharti
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Aman Kumar, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course on Web Designing & Office Automation** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Vinay Bharti
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms Jyoti, M.A English of **I.B. (P.G.) College, Panipat** participated in 40 days **Certificate Course on Yogasana and Meditation** organized by Yoga and meditation club on 10 Nov, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Rekha Sharma
Activity Incharge



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms Shrishti, M.A English of **I.B. (P.G.) College, Panipat** participated in 40 days **Certificate Course on Yogasana and Meditation** organized by Yoga and meditation club on 10 Nov, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Rekha Sharma
Activity Incharge



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E-CERTIFICATE

This is to certify that Mr./Ms Rahul, M.A English of **I.B. (P.G.) College, Panipat** participated in 40 days **Certificate Course on Yogasana and Meditation** organized by Yoga and meditation club on 10 Nov, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Rekha Sharma
Activity Incharge



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Himanshu** , B.COM-II of I.B. (PG) College, Panipat participated in **40 days Certificate Course in Accounting & Tax Procedure** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Neetu Bhatia
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Ankit Kumar**, B.COM-II of I.B. (PG) College, Panipat participated in **40 days Certificate Course in Accounting & Tax Procedure** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Neetu Bhatia
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Abhishekh Kumar**, B.COM-II of I.B. (PG) College, Panipat participated in 40 days Certificate Course in Accounting & Tax Procedure organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Neetu Bhatia
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Deepak, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Python Programming** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ashwani Gupta
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Amit**, BCA-II of I.B. (PG) College, Panipat participated in **40 days Certificate Course in Python Programming** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ashwani Gupta
Co-ordinator



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E-CERTIFICATE

This is to certify that Mr./Ms. **Lakhan, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Python Programming** organized by Department of Computer Science in October, 2021.

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Principal cum Patron

Prof. Ashwani Gupta
Co-ordinator



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E-CERTIFICATE

This is to certify that Mr./Ms. **Soni, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course on Artificial Intelligence & Machine Learning** organized by Department of Computer Science in October 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ritu Bhardwaj
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Som Nath, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course on Artificial Intelligence & Machine Learning** organized by Department of Computer Science in October 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ritu Bhardwaj
Co-ordinator



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E-CERTIFICATE

This is to certify that Mr./Ms. **Suraj, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course on Artificial Intelligence & Machine Learning** organized by Department of Computer Science in October 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ritu Bhardwaj
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com



E-CERTIFICATE

This is to certify that Mr./Ms. **Harshit Sharma, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course on Cloud Computing** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ritu Bhardwaj
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com



E-CERTIFICATE

This is to certify that Mr./Ms. **Amit**, BCA-II of I.B. (PG) College, Panipat participated in **40 days Certificate Course on Cloud Computing** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ritu Bhardwaj
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com



E-CERTIFICATE

This is to certify that Mr./Ms. **Vishal, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course on Cloud Computing** organized by Department of Computer Science in October, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ritu Bhardwaj
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com



E-CERTIFICATE

This is to certify that Mr./Ms. **Kashish Dhingra** , BCA-II of I.B. (PG) College, Panipat participated in **40 days Certificate Course in Desktop Publishing** organized by Department of Computer Science in April, 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Neetu Bhatia
Co-ordinator



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G.T. ROAD, PANIPAT-132103, HARYANA

Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Nikita**, BCA-II of I.B. (PG) College, Panipat participated in **40 days Certificate Course in Desktop Publishing** organized by Department of Computer Science in April, 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Neetu Bhatia
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Anjali** , **BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Desktop Publishing** organized by Department of Computer Science in April, 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Neetu Bhatia
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Subham**, BA-II of I.B. (PG) College, Panipat participated in **40 days Certificate Course in CCTV Installation** organized by Department of Computer Science in April 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ashwani Gupta
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Vishal, BA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in CCTV Installation** organized by Department of Computer Science in April 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ashwani Gupta
Co-ordinator



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G.T. ROAD, PANIPAT-132103, HARYANA

Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Puneet Atri, BA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in CCTV Installation** organized by Department of Computer Science in April 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ashwani Gupta
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com



E-CERTIFICATE

This is to certify that Mr./Ms. **Yash** , BCA-II of I.B. (PG) College, Panipat participated in **40 days Certificate Course on Programming in C / C++** organized by Department of Computer Science in April, 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Vinay Bharti
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com



E-CERTIFICATE

This is to certify that Mr./Ms. **Pankaj Rohilla, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course on Programming in C / C++** organized by Department of Computer Science in April, 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Vinay Bharti
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com



E-CERTIFICATE

This is to certify that Mr./Ms. **Rohit Kumar, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course on Programming in C / C++** organized by Department of Computer Science in April, 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Vinay Bharti
Co-ordinator



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Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms Dheeraj, BBA I of **I.B. (P.G.) College, Panipat** participated in 40 days **Certificate Course on Yoga and Diet Management** organized by Department of yoga and meditation club on 13 April, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Pooja Dudeja
Activity Incharge



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G.T. ROAD, PANIPAT-132103, HARYANA

Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms Sachin, BBA I of **I.B. (P.G.) College, Panipat** participated in 40 days **Certificate Course on Yoga and Diet Management** organized by Department of yoga and meditation club on 13 April, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Pooja Dudeja
Activity Incharge



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G.T. ROAD, PANIPAT-132103, HARYANA

Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms Ankush, BBA I of **I.B. (P.G.) College, Panipat** participated in 40 days **Certificate Course on Yoga and Diet Management** organized by Department of yoga and meditation club on 13 April, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Pooja Dudeja
Activity Incharge



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G.T. ROAD, PANIPAT-132103, HARYANA

Website: ibpgcollegepanipat.ac.in Email: principalibcollege@gmail.com

E-CERTIFICATE

This is to certify that Mr./Ms. **Himanshu, B.COM-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course on Accounting on Computers** organized by Department of Computer Science in April, 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Vinay Bharti
Co-ordinator



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E-CERTIFICATE

This is to certify that Mr./Ms. **Ankit Kumar, B.COM-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course on Accounting on Computers** organized by Department of Computer Science in April, 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Vinay Bharti
Co-ordinator



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E-CERTIFICATE

This is to certify that Mr./Ms. **Abhishekh Kumar, B.COM-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course on Accounting on Computers** organized by Department of Computer Science in April, 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Vinay Bharti
Co-ordinator



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E-CERTIFICATE

This is to certify that Mr./Ms. **Soni**, **BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Android Development** organized by Department of Computer Science in April 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ritu Bhardwaj
Co-ordinator



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This is to certify that Mr./Ms Vaishali, M.A. English of **I.B. (P.G.) College, Panipat** participated in 40 days **Certificate Course on Shatkarma, Pranayam and Meditation** organized by yoga and meditation club on 15 april, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Rekha Sharma
Activity Incharge



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This is to certify that Mr./Ms Aman, M.A. English of **I.B. (P.G.) College, Panipat** participated in 40 days **Certificate Course on Shatkarma, Pranayam and Meditation** organized by yoga and meditation club on 15 april, 2021.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Rekha Sharma
Activity Incharge



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This is to certify that Mr./Ms Sangeeta, M.A. English of **I.B. (P.G.) College, Panipat** participated in 40 days **Certificate Course on Shatkarma, Pranayam and Meditation** organized by yoga and meditation club on 15 april, 2021.

Dr. Ajay Kumar Garg
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E-CERTIFICATE

This is to certify that Mr./Ms. **Som Nath, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Java Script (CCJS22)** organized by Department of Computer Science in April 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Deepty Juneja
Co-ordinator



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Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Deepty Juneja
Co-ordinator



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E-CERTIFICATE

This is to certify that Mr./Ms. **Dinesh, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Java Script (CCJS22)** organized by Department of Computer Science in April 2022.

Dr. Ajay Kumar Garg
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Estd. 1966

SESSION 2021-22

E-CERTIFICATE

This is to certify that Mr./Mrs Sunny Saini , class BA 1st , Roll no. 1212192002228 of I.B.(PG) College , Panipat has Participated in Certificate Course in **BHAV SANGEET** held From **1 January, 2022** to **20 February, 2022**organised by Department of Music (Vocal).



Dr. Ajay Kumar Garg
Principal & Patron



Prof. Dharam Singh
Activity Incharge

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Estd. 1956

SESSION 2021-22

E-CERTIFICATE

This is to certify that Mr./Mrs Anuj, class BA 1st, Roll no 1212192002370 of

I.B.(PG) College , Panipat has Participated in Certificate Course in **BHAV SANGEET** held

From **1 January, 2022** to **20 February, 2022** organised by Department of Music (Vocal).



Dr. Ajay Kumar Garg
Principal & Patron



Prof. Dharam Singh
Activity Incharge



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This is to certify that Mr./Ms. **Manish Kumar, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Web Development using PHP** organized by Department of Computer Science in April 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Deepty Juneja
Co-ordinator



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E-CERTIFICATE

This is to certify that Mr./Ms. **Aman Kumar, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Web Development using PHP** organized by Department of Computer Science in April 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Deepty Juneja
Co-ordinator



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E-CERTIFICATE

This is to certify that Mr./Ms. **Kashish Dhingra, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Web Development using PHP** organized by Department of Computer Science in April 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Deepty Juneja
Co-ordinator



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E-CERTIFICATE

This is to certify that Mr./Ms. **Pankaj Rohilla, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Network Security (CCNS22)** organized by Department of Computer Science in April 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ritu Bhardwaj
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E-CERTIFICATE

This is to certify that Mr./Ms. **Priyanka, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Network Security (CCNS22)** organized by Department of Computer Science in April 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ritu Bhardwaj
Co-ordinator



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E-CERTIFICATE

This is to certify that Mr./Ms. **Anju, BCA-II** of **I.B. (PG) College, Panipat** participated in **40 days Certificate Course in Network Security (CCNS22)** organized by Department of Computer Science in April 2022.

Dr. Ajay Kumar Garg
Principal cum Patron

Prof. Ritu Bhardwaj
Co-ordinator

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**Certificate Course
Scheme & Syllabus**

Syllabus Index

S. No.	Contents	Course Code
1	Certificate Course in Computer Awareness	CA
2	Certificate Course in NUTRITIOUS CUISINE	NS-21
3	Certificate Course in FASHION DESIGNING	CCFD-21
4	Certificate Course in “EMPLOYABILITY SKILLS” UNDER “LIFESKILLS” PROGRAM RUBICON	CCES-21
5	Certificate Course in TALLY ESSENTIAL	CCTE-21
6	ONLINE CERTIFICATE COURSE ON DIGITAL MARKETING	DM-21
7	Certificate Course in Internet of Things	CCIoT-21
8	Certificate Course in Web Designing	CCWD-21
9	Certificate Course in Digital Marketing	CCDMW1-21
10	Certificate Course in Stress Management By Yoga	CCSMBY-21
11	Certificate Course in Account Executive	CCAEE-21
12	Certificate Course in Computer Hardware & Maintenance	AOCCHM-21
13	Certificate Course in Web Designing & Office Automation	AOCWDOA-21
14	Certificate Course in Yogasana and Meditation	AOCCYM-21
15	Certificate Course in Accounting & Tax Procedure	AOCATP-21
16	Certificate Course in Python Programming	CCPP21
17	Certificate Course in Artificial Intelligence & Machine Learning	CCAAML21
18	Certificate Course in Cloud Computing	CCCC21
19	Certificate Course in Advance Excel and Powerpoint	CCAEP-22
20	Certificate Course in ENGLISH COMMUNICATION & SOFT SKILLS	ECSS
21	Certificate Course in Desktop Publishing	CCDP-22
22	Certificate Course in CCTV Installation	CCCCTVI-22
23	Certificate Course in Programming C/C++	CCPCCPP22
24	Certificate Course in Yoga and Diet Management	AOCCYDM-22
25	Certificate Course in Accounting on Computers	AOCAC22
26	Certificate Course in Android Development	CCAD22
27	Certificate Course in Shatkarma, Pranayam and Meditation	AOCCSPM-22
28	Certificate Course in Java Script	CCJS22
29	Certificate Course in Bhav Sangeet	CCBS
30	Certificate Course in Web Development using PHP	CCWDPHP22
31	Certificate Course in Network Security	CCNS22
32	Certificate Course on Universal Human Value and Professional Ethics	CCUHVPE-22
33	Career Advancement Bootcamp	CAB
34	Certificate Course in ARTIFICIAL INTELLIGENCE & PYTHON PROGRAMMING	CCAIPP20
35	Certificate Course in TALLY ACE CERTIFICATION ON TALLY ERP 9	CCTERP20
36	Certificate Course in Communication Skills Development	CCCSD

Certificate Course in Computer Awareness (CA)

COMPUTER AWARENESS (LEVEL – I) L1 – (I) BASIC COMPUTER EDUCATION

Max. Marks: 100

Pass Marks: 35

Exam Duration: 3 Hrs

Workload: 3 periods/week

Note: The examiner will set total 10(ten) questions covering the entire syllabus. Student will attempt any five questions. All questions will carry equal marks.

Operating System - Definition & Functions of Operating System, Basics of Popular Operating Systems; The User Interface, Exploring Computer, Icons, taskbar, desktop, Using Menu and Menu-selection, managing files and folders, Control panel – display properties, add/remove software and hardware, Running an Application, Using help; Creating Short cuts, Basics of O.S Setup; Common utilities.

Word Processing: Introduction to Word Processing, Menus, Creating, Editing & Formatting Document, Spell Checking, Printing, Views, Tables, Word Art, Mail Merge, Macros.

Spread Sheet: Elements of Electronics Spread Sheet, Applications, Creating and Opening of Spread Sheet, Menus, Manipulation of cells: Enter texts numbers and dates, Cell Height and Widths, Copying of cells, Mathematical, Statistical and Financial function, Drawing different types of charts.

Presentation Software: Creating, modifying and enhancing a presentation, Delivering a presentation, Using sound, animation and design templates in presentation.

Computer Communication: Internet and its applications, Connecting to internet, Surfing the Internet using web browsers, Web Browsing softwares, Search Engines, Understanding URL, Domain name, IP Address, Creating Email Id, Viewing an E-Mail, Sending an E-Mail to a single and multiple users, Sending a file as an attachment.

Certificate Course in Nutritious Cuisine (NS-21)

Duration: 30 Hours

1 Month – One Lecture per Day

Modules: -

Module-I

- 1.1 Novelty Dishes.
- 1.2 Tiffin Snacks.

Module-II

- 2.1 Chinese Food.
- 2.2 Italian Food.
- 2.3 Mock-tails & Cocktails.

Module-III

- 3.1 South Indian Dishes.
- 3.2 Indian Thali

Assessment with Pen and Paper:

Possible assessment methods include: quizzes, tests, collected assignments, group activities and demonstration of skills and performance. Such assessments and related assignments will develop critical thinking techniques and reading, along with developing fashion designing skills.

Grading System will be adopted for Certification.

Marks	Grades	Grade Point
>90 and <=100	A1	10
>80 and <=90	A2	9
>70 and <=80	B1	8
>60 and <=70	B2	7
>50 and <=60	C1	6
>40 and <=50	C2	5

Certificate Course in Fashion Designing (CCFD-21)

Duration: 30 Hours

1 Month – One Lecture per Day

Objectives:

- To create interest in fashion designing.
- To enable students to appreciate designing and enhance creativity.

Module-I

1.3 Basic Designs and Illustrations.

- Different types of Skirts, Shirts, Necklines, Pants (10 sketches).

1.4 Fashion Communication

Module-II

2.4 Painting.

2.5 Tie & Dye.

2.6 Drafting.

2.7 Paper Pattern.

Module-III

3.3 Basics of Sewing – Designer dresses cutting and sewing.

3.4 Embroidery.

3.5 Surface Ormentation.

3.6 Personality Development.

Course Outcomes: By the end of the course, the student will be able to:

CO1: Gain understanding of fashion sense

CO2: Understand basics of designing and stitching.

CO3: Have an enhanced perspective of design interpretation.

CO4: Acquire a holistic perspective towards learning fashion designing.

Assessment with Pen and Paper:

Possible assessment methods include: quizzes, tests, collected assignments, group activities and demonstration of skills and performance. Such assessments and related assignments will develop critical thinking techniques and reading, along with developing fashion designing skills.

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>80 and <=90	A2	9
>70 and <=80	B1	8
>60 and <=70	B2	7
>50 and <=60	C1	6
>40 and <=50	C2	5

**Certificate Course on “EMPLOYABILITY SKILLS” UNDER
“LIFESKILLS” PROGRAM RUBICON (CCES-21)**

New Hire Training/ Personality Development/ Employability Skills			
Sr. No.	Topic	Methodology	Learning Objectives
1	Expectation setting	Role play	To learn Industry expectations from freshers
2	Ice breaking	Introduction	To know more about the trainer & candidates
3	Organizational Structure	Case study	To learn Organizational structure
4	SWOT Analysis	Free speech	To identify their Strength/Weakness/Opportunities/Threat
5	Corporate Jargons	Presentation	To learn most commonly used words in corporates
6	Public Speaking	Extempore	To eliminate stage fear
7	Presentation Skills	Power Point presentation	To articulate your thoughts through Power point presentation
8	E-mail Etiquette	Presentation/Mock E-mails	To learn E-mail writing skills
9	Grooming	Presentation/Do's & Don'ts/Role play	Dress to impress/ Proximity/ Personal hygiene/
10	Body language	Role play	To learn positive body language
11	Telephone Etiquette	Role play/Mock Calls	To handle telephonic round of interview/ To learn call mechanics
12	Group Discussion	Group activity	To assess candidates' public speaking skills
13	Personal Interview	Mock Interviews	To perform well during interviews

Certificate Course on Tally Essentials (CCTE-21)

SYLLABUS & SCHEME OF EXAMINATION CERTIFICATION: TALLY ESSENTIAL LEVEL 1

Purpose of Course:

This Tally course & Certification will help in enabling students to work in Tally Prime software

Duration:

Total duration of the course is 35 Hours and will be covered in 30 days - 1 to 1.5 hrs per day (Theory + Practical)

Assessment:

Assessment will be online mode on Laptop or computer with Webcam and will have 60 multiple choice questions (Theory + Practical) & 2 marks for each Question. Students can come to authorized centre for assessment as well if they have laptop or computer issue.

Certificate :

After completion of the course certificate will be provided to all the students who score minimum 40% marks. It is mandatory to maintain at least 75% attendance in order to get certificate

CERTIFICATION: TALLY ESSENTIAL LEVEL 1

Table of Content

(Subject to change at discretion of Tally Education) Training will be for 1.5 Hrs per day- One hour Theory & Half Hour Self practical/practice

Chapter 1: Fundamentals of Accounting - Day 1 & Day 2

- This chapter summarizes the Fundamentals of Accountancy, starting with the accounting terms, concepts, right up to the double entry system of accounting. It explains the need and usage of Golden Rules of Accounting in the books of accounting and recording the business transactions.

Chapter 2: Introduction to Tally Prime - Day 3

- This introductory chapter on Accounting using Tally explains how simple it is to download and install Tally in the system. This chapter helps you understand the simplest way of creating a company and the company features and configurations.

Chapter 3: Maintaining Chart of Accounts - Day 4 to Day 6

- This chapter shows you how simple it is to create, alter and display the Chart of Accounts such as Ledgers, Groups, Stock Items and Units of Measure Creation.

Chapter 4: Recording and Maintaining Accounting Transaction - Day 7 to Day 16

- This chapter covers how to record transactions such as Receipt, Contra, Payment, Purchase, Sales, Debit Note, Credit Note, and Journal Vouchers with practical scenarios.



Chapter 5: Banking – Day 17 to Day 20

- This chapter covers the basic Banking Feature, Cheque Printing, Bank Reconciliation, Generating Deposit Slips including Payment Advice.

Chapter 6: Generating Financial Statements and MIS Reports – Day 21 to 25

- This chapter covers all MIS reports in Tally; Trail Balance, Balance Sheet, Profit and Loss account, Cash Flow Statement, Ratio Analysis, Daybook, Receipts and Payments, Purchase and Sales Register including Inventory Reports.

Chapter 7: Data Security – Day 26 to Day 28

- This chapter covers Securing Financial Information of the Company, Creating Security Control, User Roles, Creation of Users and Change User.

Chapter 8: Company Data Management – Day 29 & Day 30

- This chapter covers how to securely take company data and restore without any data loss.
-

Certificate Course on Digital Marketing (DM-21)

Duration - 30 hours

Method - Videos and online sessions

Eligibility - Open for all students

Syllabus:

- Introduction to FB & Instagram Ads
- Build customer base from scratch
- Audience targeting options
- Ads placement and budgeting option
- Types of Ads formats
- Landing pages & Remarketing
- Deep dive into FB & Instagram Ads

Certificate Course on Internet of Things (CCIOT)

Objective

The objective of course is to learn the aspect Internet of Things with the help of Arduino.

Benefit

Functionality of Arduino it's various types, Sensors and their area of application which enables student to get knowledge of their use and role in Internet of Things

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus Internet of

Things

- Introduction of IOT
 - Understanding IOT fundamentals
 - IOT Architecture and protocols
 - Various Platforms for IOT
 - Real time Examples of IOT
 - Overview of IOT components and IOT Communication Technologies
 - Challenges in IOT

- Arduino Simulation Environment.
 - Arduino Uno Architecture
 - Setup the IDE, Writing Arduino Software
 - Arduino Libraries
 - Basics of Embedded C programming for Arduino
 - Interfacing LED, push button and buzzer with Arduino
 - Interfacing Arduino with LC

- Arduino Displays
 - Working with Serial Monitor
 - Line graph via serial monitor
 - Interfacing a 8 bit LCD to Arduino
 - Fixed one line static message display.
 - Running message display.
 - Using the LCD Library of Arduino

- Arduino Sensors
 - Arduino – Humidity Sensor
 - Arduino – Temperature Sensor
 - Arduino – Water Detector / Sensor
 - Arduino – PIR Sensor
 - Arduino – Ultrasonic Sensor
 - Arduino – Connecting Switch (Magnetic relay switches)

- Arduino Secondary Integrations.
 - Types of Relay
 - Controlling Electrical appliances with electromagnetic relays
 - cctvWorking of a matrix keypad
 - Using the keypad library to interface with Arduino.
 - Interfacing Servo motors to Arduino
 - Interfacing a RF Module

Project

Student makes a project during training period.

Certification

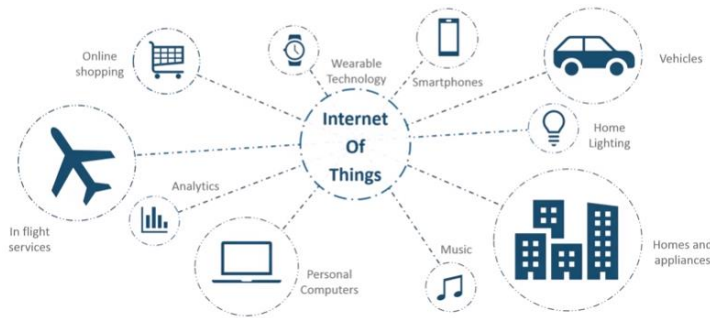
Certificate in Programming using Internet of Things.

Study Material of IOT (CCIOT)

Introduction of IOT

IOT -

- Let us look closely at our mobile device which contains GPS Tracking, Mobile Gyroscope, Adaptive brightness, Voice detection, Face detection etc. These components have their own individual features, but what about if these all communicate with each other to provide a better environment? For example, the phone brightness is adjusted based on my GPS location or my direction.
- Connecting everyday things embedded with electronics, software, and sensors to the internet enables us to collect and exchange data without human interaction called the Internet of Things (IoT).
- The term "Things" in the Internet of Things refers to anything and everything in day to day life which is accessed or connected through the internet.



- IoT is an advanced automation and analytics system which deals with artificial intelligence, sensor, networking, electronic, cloud messaging etc. to deliver complete systems for the product or services. The system created by IoT has greater transparency, control, and performance.
- As we have a platform such as a cloud that contains all the data through which we connect all the things around us. For example, a house, where we can connect our home appliances such as air conditioner, light, etc. through each other and all these things are managed at the same platform. Since we have a platform, we can connect our car, track its fuel metre, speed level, and also track the location of the car.

Application of IOT:-

1. Wearables

- Wearable technology is the hallmark of IoT applications and one of the earliest industries to deploy IoT. We have fit bits, heart rate monitors and smartwatches these days.
- Guardian glucose monitoring device has been developed to help people with diabetes. It detects glucose levels in our body, uses a small electrode called the glucose sensor under the skin, and relates it to a radiofrequency monitoring device.

2. Smart Home Applications

The smart home is probably the first thing when we talk about the IoT application. The example we see of AI home automation is employed by Mark Zuckerberg. Alan Pan's home automation system, where a string of musical notes uses in-house functions.

3. Health care

IoT applications can transform reactive medical-based systems into active wellness-based systems. Resources that are used in current medical research lack important real-world information. It uses controlled environments, leftover data, and volunteers for clinical trials. The Internet of Things improves the device's power, precision and availability. IoT focuses on building systems rather than just tools. Here's how the IoT-enabled care device works.

4. Smart Cities

- Most of you have heard about the term smart city. Smart city uses technology to provide services. The smart city includes improving transportation and social services, promoting stability and giving voice to their citizens.
- The problems faced by Mumbai are very different from Delhi. Even global issues, such as clean drinking water, declining air quality, and increasing urban density, occur in varying intensity cities. Therefore, they affect every city.
- Governments and engineers use the Internet of Things to analyze the complex factors of town and each city. IoT applications help in the area of water management, waste control and emergencies
- Example of a smart city - Palo Alto.
- Palo Alto, San Francisco, is the first city to acquire the traffic approach. He realized that most cars roam around the same block on the streets in search of parking spots. It is the primary cause of traffic congestion in the city. Thus, the sensors were installed at all parking areas in the city. These sensors pass occupancy status to the cloud of each spot.
- Internet of Things Applications
- This solution involves the use of sensor arrays that collect data and use it for many purposes.

5. Agriculture

- By the year 2050, the world's growing population is estimated to have reached about 10 billion. To feed such a large population, agriculture needs to marry technology and get the best results. There are many possibilities in this area. One of them is Smart Greenhouse.
- Farming techniques grow crops by environmental parameters. However, manual handling results in production losses, energy losses and labor costs, making it less effective
- The greenhouse makes it easy to monitor and enables to control the climate inside it.

Architecture of Internet of Things (IoT)

- Internet of Things (IoT) technology has a wide variety of applications and use of Internet of Things is growing so faster. Depending upon different application areas of Internet of Things, it works accordingly as per it has been designed/developed. But it has not a standard defined architecture of working which is strictly followed universally. The architecture of IoT depends upon its functionality and implementation in different sectors. Still, there is a basic process flow based on which IoT is built.
- So, from the above image it is clear that there is 4 layers are present that can be divided as follows: Sensing Layer, Network Layer, Data processing Layer, and Application Layer.

These are explained as following below.

1. **Sensing Layer** –Sensors, actuators, devices are present in this Sensing layer. These Sensors or Actuators accept data(physical/environmental parameters), process data and emit data over network.

2. **Network Layer** –Internet/Network gateways, Data Acquisition System (DAS) are present in this layer. DAS performs data aggregation and conversion function (Collecting data and aggregating data then converting analog data of sensors to digital data etc). Advanced gateways which mainly opens up connection between Sensor networks and Internet also performs many basic gateway functionalities like malware protection, and filtering also some times decision making based on inputted data and data management services, etc.
3. **Data processing Layer** –This is processing unit of IoT ecosystem. Here data is analyzed and pre-processed before sending it to data center from where data is accessed by software applications often termed as business applications where data is monitored and managed and further actions are also prepared. So here Edge IT or edge analytics comes into picture.
4. **Application Layer** –This is last layer of 4 stages of IoT architecture. Data centers or cloud is management stage of data where data is managed and is used by end-user applications like agriculture, health care, aerospace, farming, defense, etc.

Characteristics of the Internet of Things :

There are the following characteristics of IoT as follows. Let's discuss it one by one.

1. **Connectivity** – Connectivity is an important requirement of the IoT infrastructure. Things of IoT should be connected to the IoT infrastructure. Anyone, anywhere, anytime can connectivity should be guaranteed at all times Without connection, nothing makes sense.
2. **Intelligence and Identity** – The extraction of knowledge from the generated data is very important. For example, a sensor generates data, but that data will only be useful if it is interpreted properly. Each IoT device has a unique identity. This identification is helpful in tracking the equipment and at times for querying its status.
3. **Scalability** – The number of elements connected to the IoT zone is increasing day by day. Hence, an IoT setup should be capable of handling the massive expansion. The data generated as an outcome is enormous, and it should be handled appropriately.
4. **Dynamic and Self-Adapting (Complexity)** –IoT devices should dynamically adapt themselves to the changing contexts and scenarios. Assume a camera meant for the surveillance. It should be adaptable to work in different conditions and different light situations (morning, afternoon, night).
5. **Architecture** – IoT architecture cannot be homogeneous in nature. It should be hybrid, supporting different manufacturers ' products to function in the IoT network. IoT is not owned by anyone engineering branch. IoT is a reality when multiple domains come together.
6. **Safety** – There is a danger of the sensitive personal details of the users getting compromised when all his/her devices are connected to the internet. This can cause a loss to the user. Hence, data security is the major challenge. Besides, the equipment involved is huge. IoT networks may also be at the risk. Therefore, equipment safety is also critical.

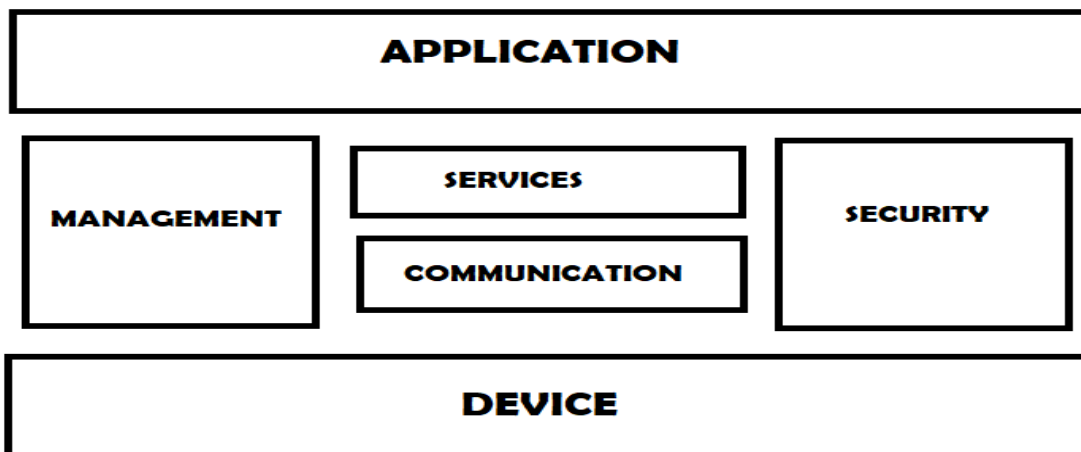
Physical Design of IoT

- Physical Design- of IoT refers to IoT Devices and IoT Protocols. Things are Node device which have unique identities and can perform remote sensing, actuating and monitoring capabilities. IoT Protocols helps Communication established between things and cloud based server over the Internet.
- Basically Things refers to IoT Devices which have unique identities and can perform remote sensing, actuating and monitoring capabilities. Things are is main part of IoT Application. IoT Devices can be various type, Sensing Devices, Smart Watches, Smart Electronics appliances, Wearable Sensors, Automobiles, and industrial machines. These devices generate data in some forms or the other which when processed by data analytics systems leads to useful information to guide further actions locally or remotely.

Logical Design of IoT

Logical design of IoT system refers to an abstract representation of the entities & processes without going into the low-level specifics of the implementation. For understanding Logical Design of IoT, we describes given below terms.

- IoT Functional Blocks
- IoT Communication Models
- IoT Communication APIs

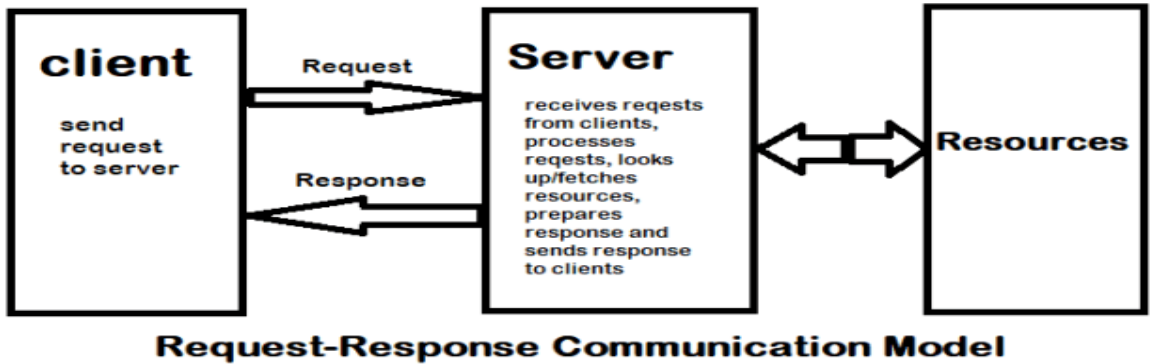


IoT Communication Models

Request-Response Model

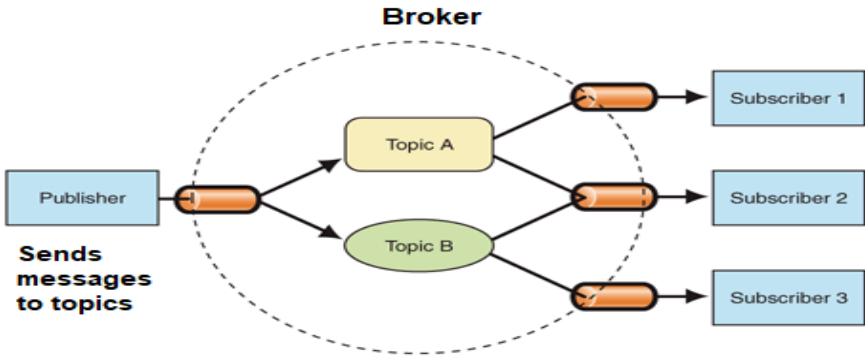
Request-response model is a communication model in which the client sends requests to the server and the server responds to the requests. When the server receives a request, it decides how to respond, fetches the data, retrieves resource representation, prepares the response, and then sends the response to the client. Request-response is a stateless communication model and each request-response pair is independent of others..

Example: A client (browser) submits an HTTP request to the server; then the server returns a response to the client. The response contains status information about the request and may also contain the requested content.



Publish-Subscribe Model

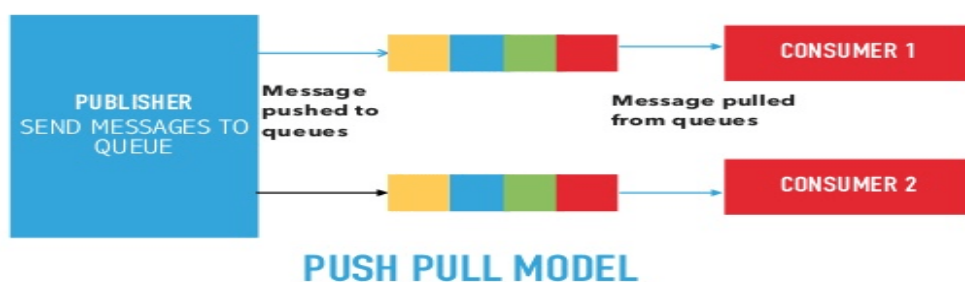
Publish-Subscribe is a communication model that involves publishers, brokers and consumers. Publishers are the source of data. Publishers send the data to the topics which are managed by the broker. Publishers are not aware of the consumers. Consumers subscribe to the topics which are managed by the broker. When the broker receives data for a topic from the publisher, it sends the data to all the subscribed consumers.



Push-Pull Model

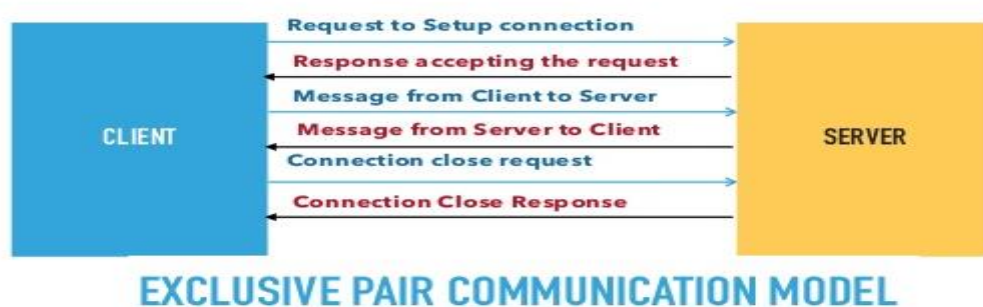
Push-Pull is a communication model in which the data producers push the data to queues and the consumers Pull the data from the Queues. Producers do not need to be aware of the consumers. Queues help in decoupling the

messaging between the Producers and Consumers. Queues also act as a buffer which helps in situations when there is a mismatch between the rate at which the producers push data and the rate rate at which the consumer pull data.



Exclusive Pair Model

Exclusive Pair is a bidirectional, fully duplex communication model that uses a persistent connection between the client and server. Connection is setup it remains open until the client sends a request to close the connection. Client and server can send messages to each other after connection setup. Exclusive pair is stateful communication model and the server is aware of all the open connections.



IoT Communication APIs

Generally we used Two APIs For IoT Communication. These IoT Communication APIs are:

- REST-based Communication APIs
- WebSocket-based Communication APIs

REST-based Communication APIs

Representational state transfer (REST) is a set of architectural principles by which you can design Web services the Web APIs that focus on systems's resources and how resource states are addressed and transferred. REST APIs that follow the request response communication model, the rest architectural constraint apply to the components, connector and data elements, within a distributed hypermedia system. The rest architectural constraint are as follows:

Stateless – Each request from client to server must contain all the information necessary to understand the request, and cannot take advantage of any stored context on the server. The session state is kept entirely on the client.

Cache-able – Cache constraints requires that the data within a response to a request be implicitly or explicitly leveled as cache-able or non cache-able. If a response is cache-able, then a client cache is given the right to reuse that response data for later, equivalent requests. caching can partially or completely eliminate some instructions and improve efficiency and scalability.

Uniform interface – uniform interface constraints requires that the method of communication between client and server must be uniform. Resources are identified in the requests (by URIs in web based systems) and are themselves is separate from the representations of the resources data returned to the client. When a client holds a representation of resources it has all the information required to update or delete the resource you (provided the client has required permissions). Each message includes enough information to describe how to process the message.

Code on demand – Servers can provide executable code or scripts for clients to execute in their context. this constraint is the only one that is optional.

Basics of C Program Using Arduino

Understanding basics of arduino

Arduino Download

The Arduino software (IDE) is open-source software. We are required to write the code and upload the code to the board to perform some task.

The Arduino IDE software can be used with any type of [Arduino boards](#). The software is available for various operating system such as, Windows, Linux, and Mac OS X.

The steps to download the Arduino software are listed below:

1. Go to the official website of Arduino (<https://www.arduino.cc/>) > Click on SOFTWARE < click on DOWNLOADS, as shown below:



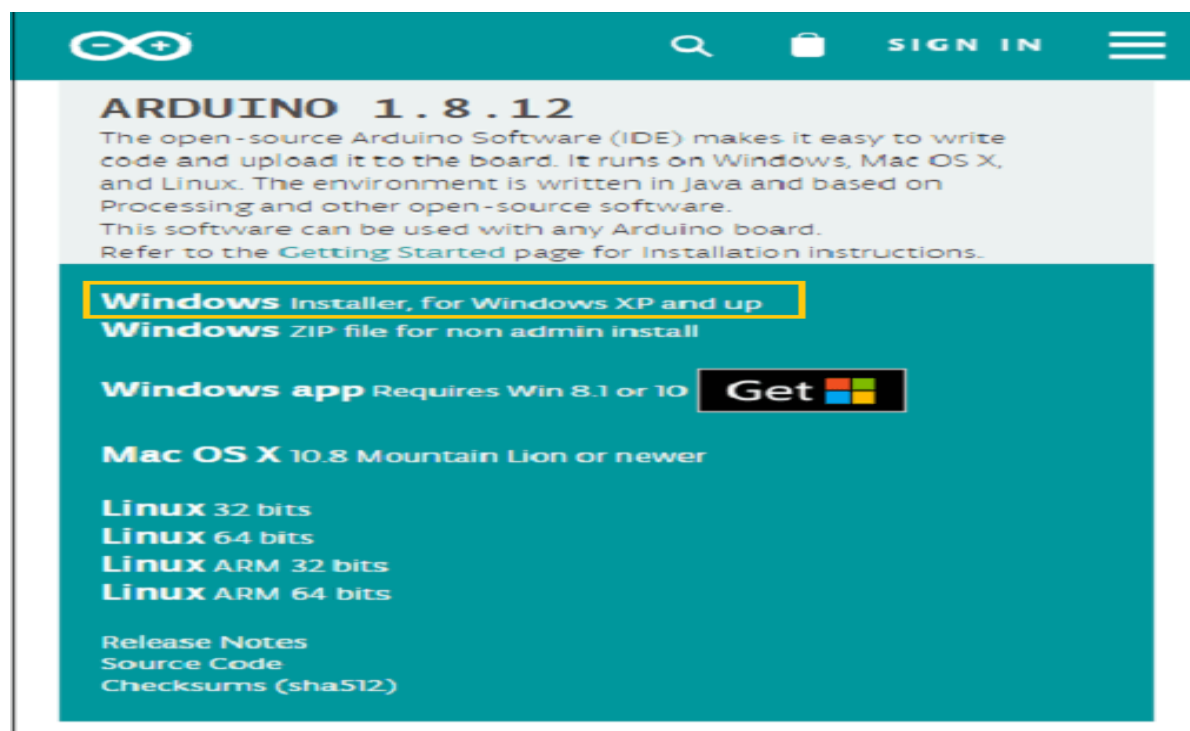
Or

Open the URL <https://www.arduino.cc/en/Main/Software>

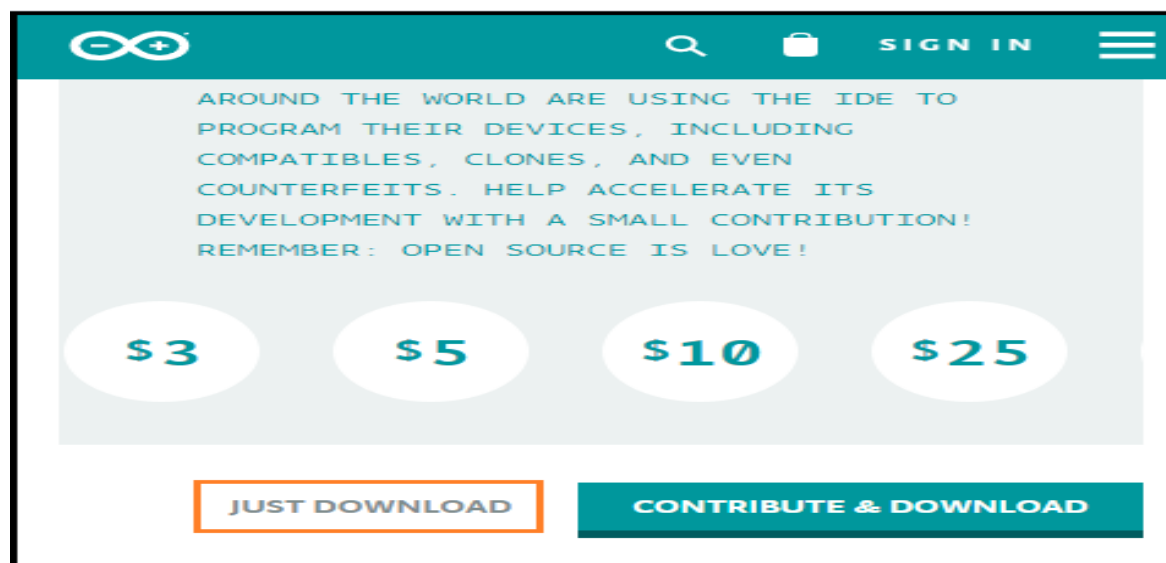
2. A page will appear, as shown below:



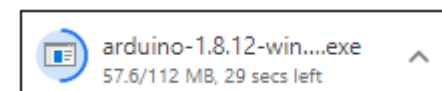
3. Scroll the screen a little, as shown below:



4. Click on the 'Windows Installer' as we are operating with the Windows. We can select the **Linux** or Mac OS X, accordingly.
5. A contribution window will appear. We can contribute according to our choice and click on the 'CONTRIBUTE & DOWNLOAD' option. Otherwise, click on the 'JUST DOWNLOAD' option, as shown below:



6. The downloading process will start. The downloading file will look like the below image:

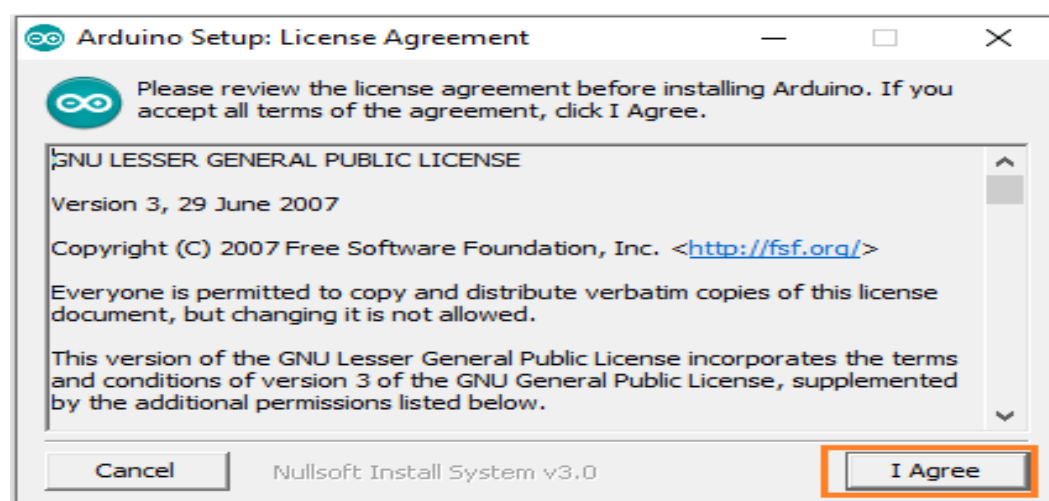


7. Wait for few seconds for the downloading process to complete.

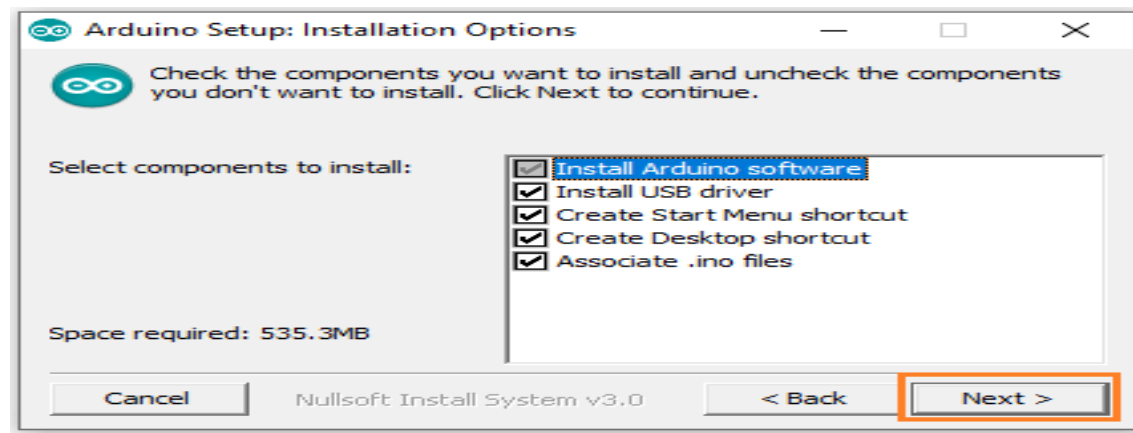
8. Open the downloaded file.

9. Grant permission to the Arduino Software on your computer.

10. Accept the license by clicking on 'I Agree' button, as shown below:

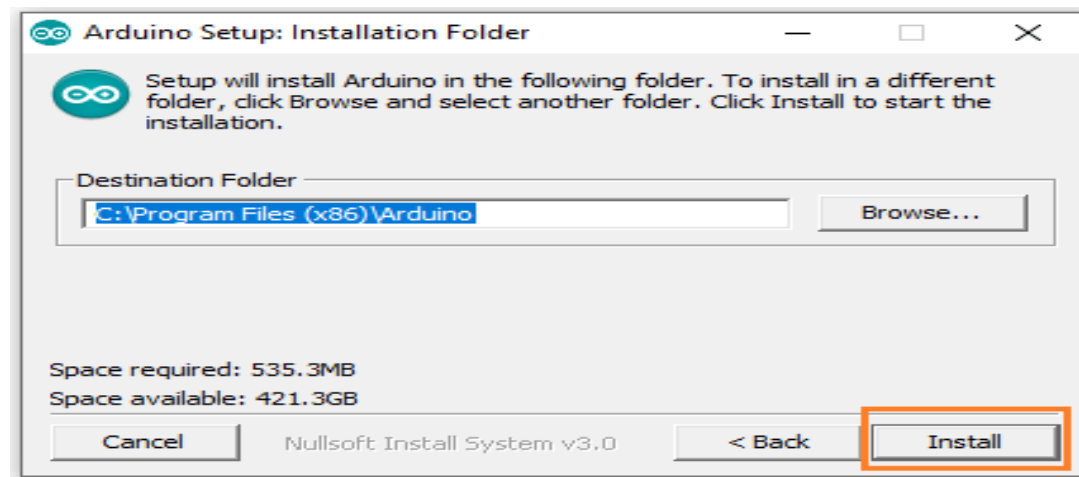


11. Click on the 'Next' button. It is shown below:



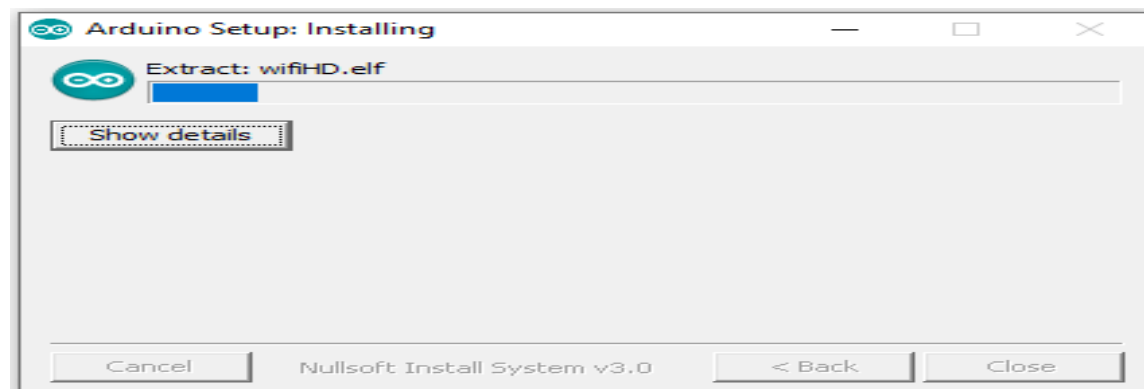
12. The window specifying the location of the installed folder will appear.

Click on the 'Install' button. It is shown below:



If you want to change the location, click on the 'Browse' button.

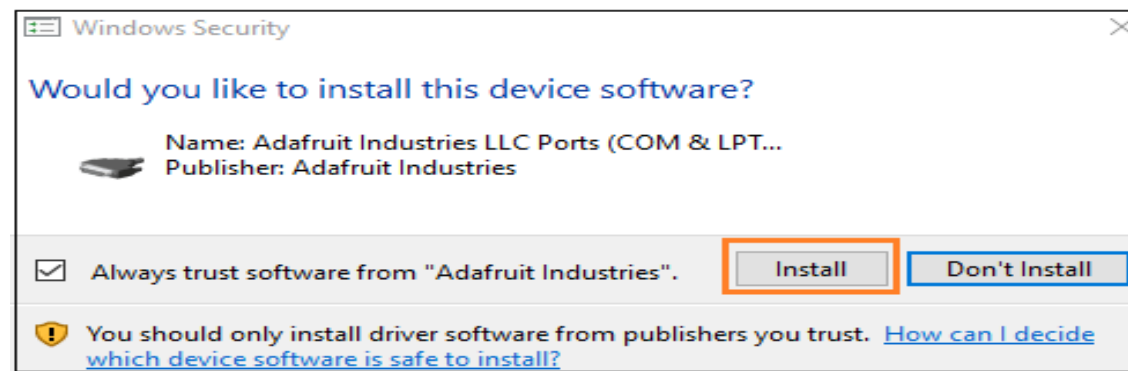
13. The installing process of Arduino will start, as shown below:



Wait for the installation process to complete.

14. Now, we have to accept the security for the installation. We are required to accept the security Installation three times.

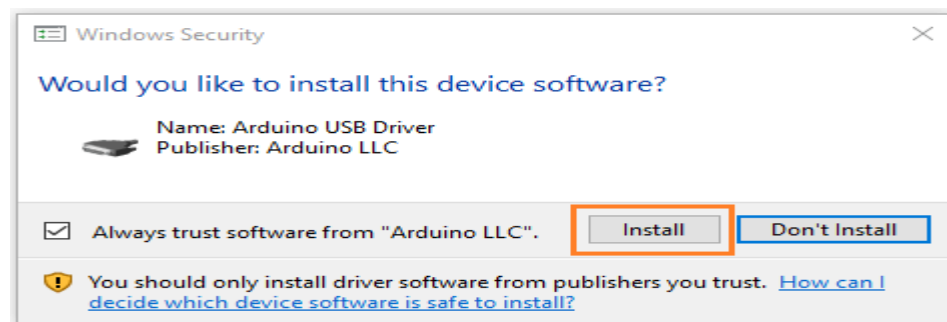
Click on the 'Install' button. The image is shown below:



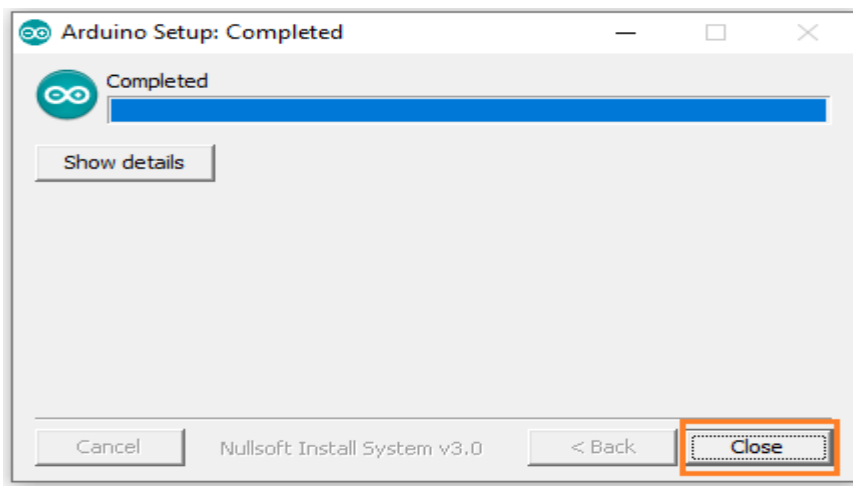
15. Again, click on the 'Install' button. It is shown below:



16. Again, click on the 'Install' button. It is shown below:



17. The installation process is now completed. The window will now appear as:



18. Click on the 'Close' button at the bottom.

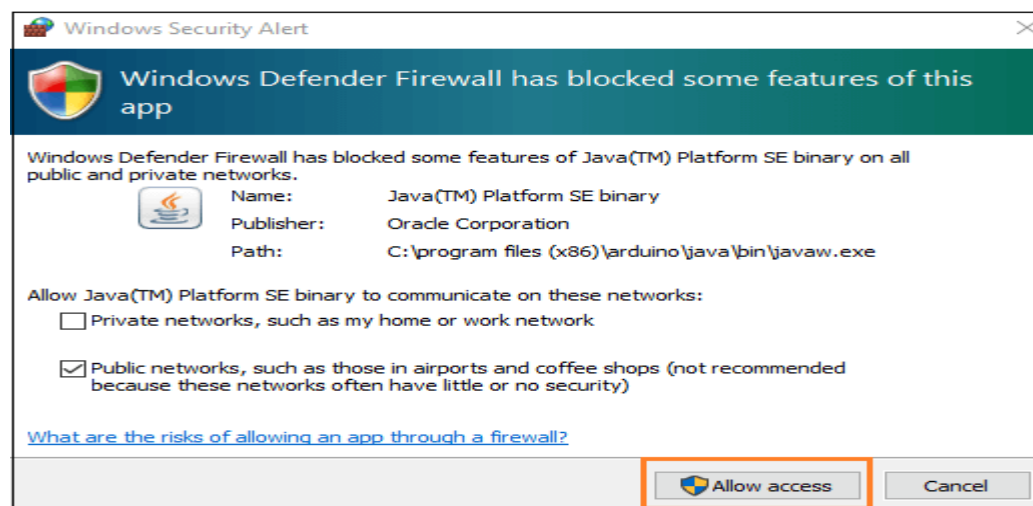
The Arduino IDE software will appear on your desktop, as shown below:



19. Now, open the Arduino software.

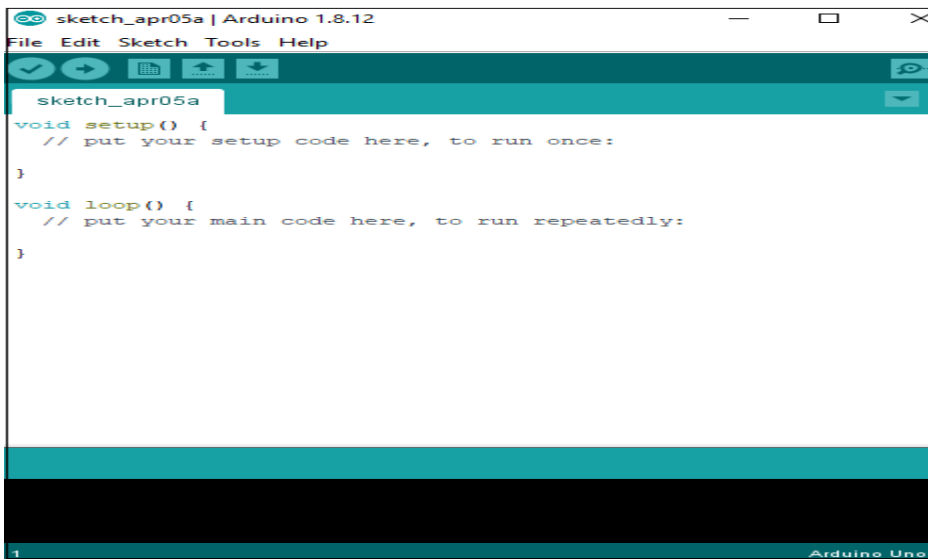
20. The Arduino IDE environment is written in the programming language named as Java. So, we need to allow access to the Java Platform.

As soon we open the Arduino software, a license window will appear, as shown below:



Accept the license by clicking on the 'Allow access' button.

1. The Arduino window will appear as:



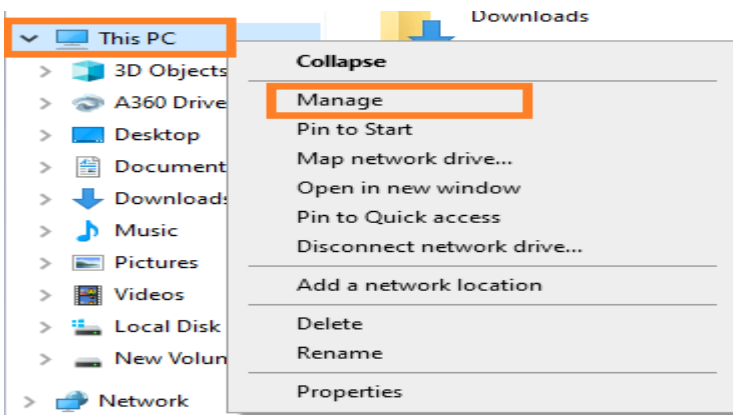
2.

Visibility of the connected Hardware port

We can view the port of the attached hardware Arduino IDE to our computer.

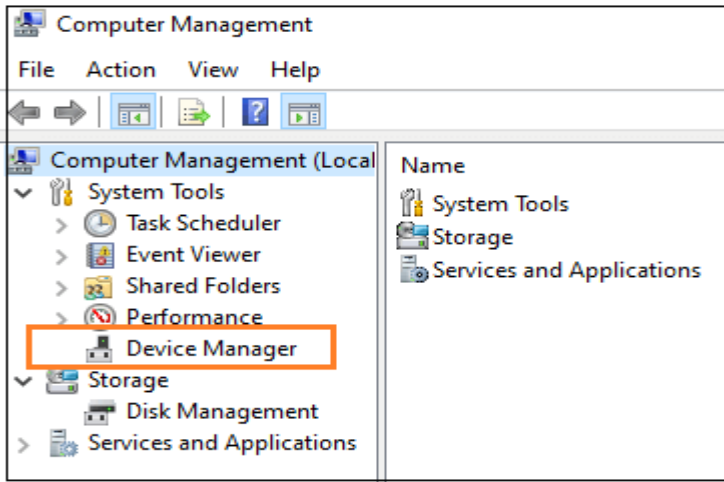
The steps are listed below:

1. Go to the File Manager and right-click on the This PC option, as shown below:



2. Click on the Manage
3. First, we need to connect the Arduino board to our computer.

4. A window will appear, as shown below:



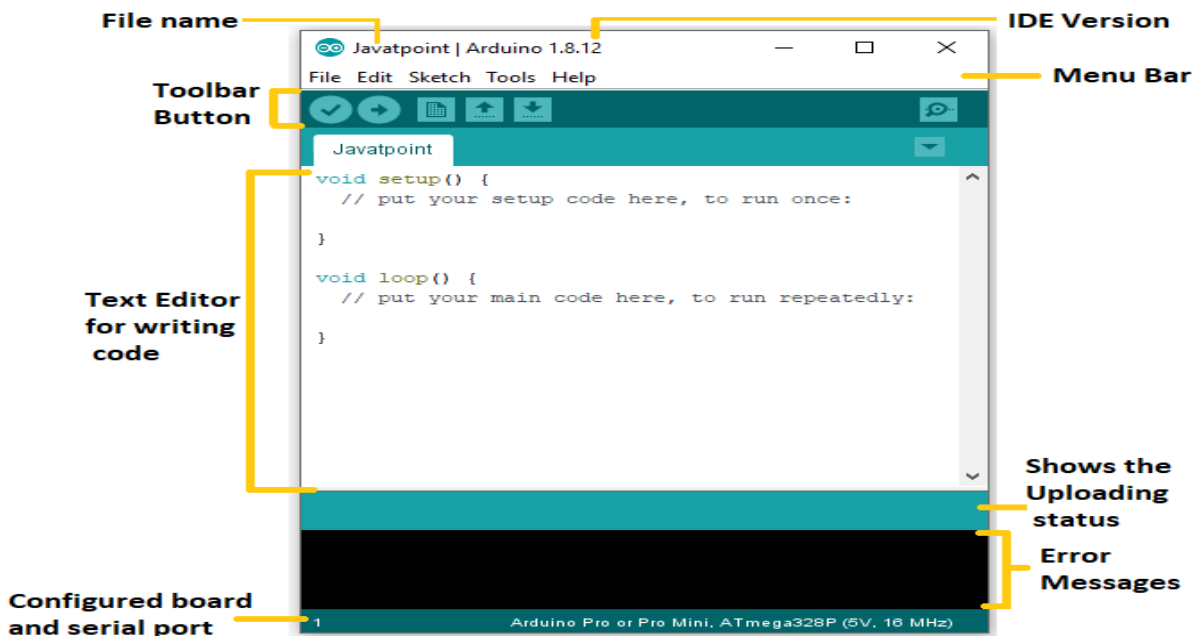
5. Click on the Device Manager

6. Under the PORT option, we can see the ports of the connected hardware.

Arduino IDE

The Arduino IDE is an open-source software, which is used to write and upload code to the Arduino boards. The IDE application is suitable for different operating systems such as **Windows, Mac OS X, and Linux**. It supports the programming languages C and C++. Here, IDE stands for **Integrated Development Environment**.

The Arduino IDE will appear as:



Let's discuss each section of the Arduino IDE display in detail.

Toolbar Button

The icons displayed on the toolbar are **New**, **Open**, **Save**, **Upload**, and **Verify**.

It is shown below:



Upload

The Upload button compiles and runs our code written on the screen. It further uploads the code to the connected board. Before uploading the sketch, we need to make sure that the correct board and ports are selected.

If the uploading is failed, it will display the message in the error window.

We do not require any additional hardware to upload our sketch using the Arduino Bootloader. A **Bootloader** is defined as a small program, which is loaded in the microcontroller present on the board. The LED will blink on PIN 13.

Open

The Open button is used to open the already created file. The selected file will be opened in the current window.

Save

The save button is used to save the current sketch or code.

Verify

The Verify button is used to check the compilation error of the sketch or the written code.

Serial Monitor

The serial monitor button is present on the right corner of the toolbar. It opens the serial monitor.

It is shown below:

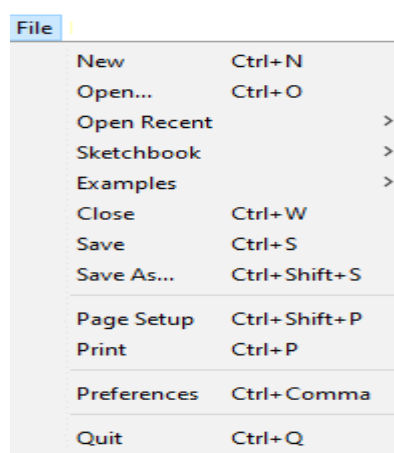


When we connect the serial monitor, the board will reset on the operating system Windows, Linux, and Mac OS X. If we want to process the control characters in our sketch, we need to use an external terminal program. The terminal program should be connected to the COM port, which will be assigned when we connect the board to the computer.

Menu Bar

- **File**

When we click on the File button on the Menu bar, a drop-down list will appear. It is shown below:



Let's discuss each option in detail.

New

The New button opens the new window. It does not remove the sketch which is already present.

Sketchbook

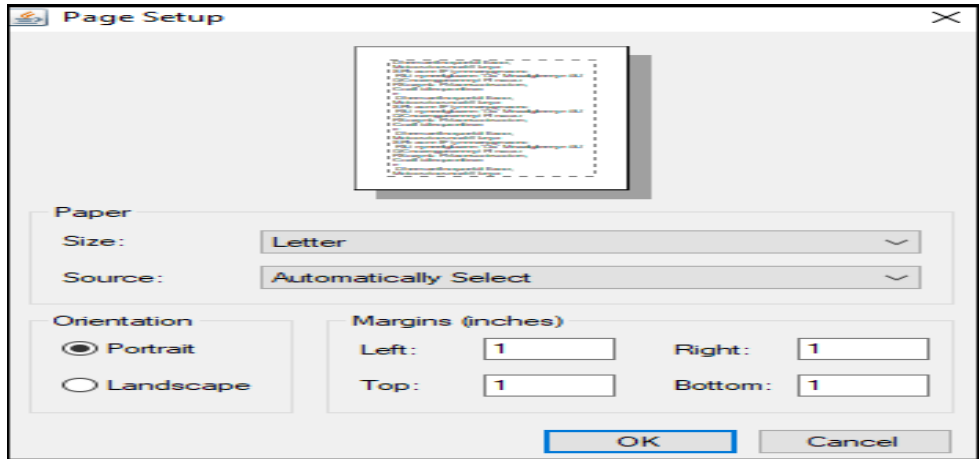
It stores the current sketches created in the Arduino IDE software. It opens the selected sketch or code in a new editor at an instance.

Examples

It shows the different examples of small projects for a better understanding of the IDE and the board. The IDE provides examples of self-practice.

Page Setup

It allows setting the page margins, orientation, and size for printing. The 'Page Setup' window will appear as:



- **Edit**

When we click on the Edit button on the Menu bar, a drop-down list appears. It is shown below:

Edit	
Undo	Ctrl+Z
Redo	Ctrl+Y
Cut	Ctrl+X
Copy	Ctrl+C
Copy for Forum	Ctrl+Shift+C
Copy as HTML	Ctrl+Alt+C
Paste	Ctrl+V
Select All	Ctrl+A
Go to line...	Ctrl+L
Comment/Uncomment	Ctrl+Slash
Increase Indent	Tab
Decrease Indent	Shift+Tab
Increase Font Size	Ctrl+Plus
Decrease Font Size	Ctrl+Minus
Find...	Ctrl+F
Find Next	Ctrl+G
Find Previous	Ctrl+Shift+G

Let's discuss each option in detail.

Undo

The Undo button is used to reverse the last modification done to the sketch while editing.

Redo

The Redo button is used to repeat the last modification done to the sketch while editing.

Copy as HTML

The 'Copy for Forum' button is used to copy the selected text as HTML to the clipboard. It is desirable for embedding in web pages.

Paste

The Paste button is used to paste the selected text of the clipboard to the specified position of the cursor.

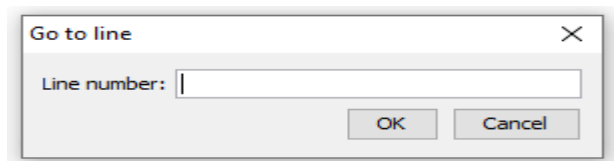
Select All

It selects all the text of the sketch.

Go to line...

It moves the cursor to the specified line number.

The window will appear as:



Comment/Decomment

The Comment/Decomment button is used to put or remove the comment mark (//) at the beginning of the specified line.

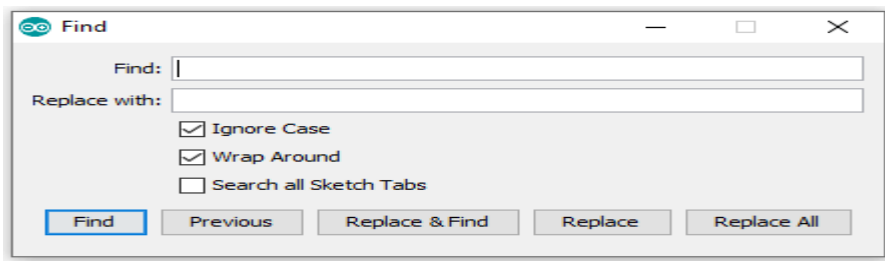
Decrease Font Size

It decreases the font size of the written text.

Find...

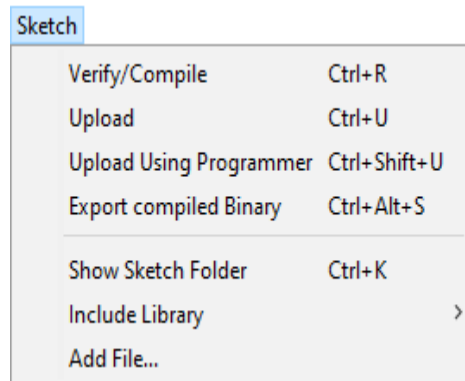
It is used to find the specified text. We can also replace the text. It highlights the text in the sketch.

The window will appear as:



- **Sketch**

When we click on the Sketch button on the Menu bar, a drop-down list appears. It is shown below:



Let's discuss each option in detail.

Verify/Compile

It will check for the errors in the code while compiling. The memory in the console area is also reported by the IDE.

Upload

The Upload button is used to configure the code to the specified board through the port.

Upload Using Programmer

It is used to override the Bootloader that is present on the board. We can utilize the full capacity of the Flash memory using the 'Upload Using Programmer' option. To implement this, we need to restore the Bootloader using the **Tools-> Burn Bootloader** option to upload it to the USB serial port.

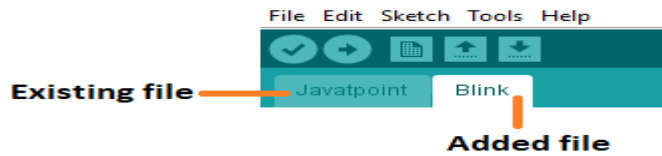
Include Library

Include Library includes various Arduino libraries. The libraries are inserted into our code at the beginning of the code starting with the #. We can also import the libraries from .zip file.

Add File...

The Add File... button is used to add the created file in a new tab on the existing file.

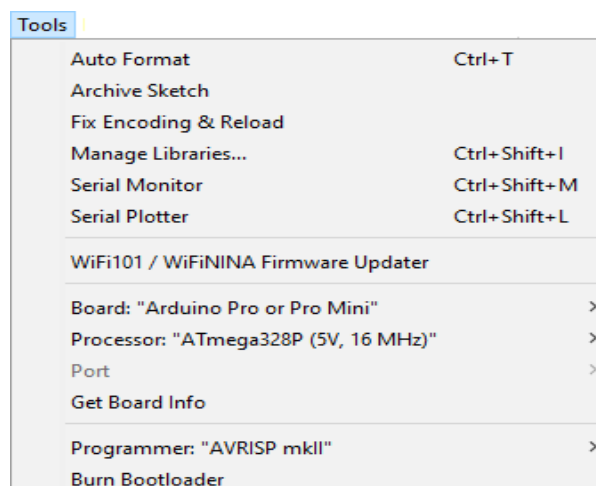
For example, let's add **'Blink'** file to the **'Javatpoint'** file. The tab will now appear as:



We can also delete the corresponding file from the tab by clicking on the **small triangle** -> **Delete** option.

Tools

When we click on the Tools button on the Menu bar, a drop-down list appears. It is shown below:



Let's discuss each option in detail.

Auto Format

The Auto Format button is used to format the written code. For example, lining the open and closed curly brackets in the code.

Archive Sketch

The copy of the current sketch or code is archived in the .zip format. The directory of the archived is same as the sketch.

Fix Encoding and Reload

This button is used to fix the inconsistency between the operating system char maps and editor char map encoding.

Manage Libraries...

It shows the updated list of all the installed libraries. We can also use this option to install a new library into the Arduino IDE.

Serial Monitor

It allows the exchange of data with the connected board on the port.

Serial Plotter

The Serial Plotter button is used to display the serial data in a plot. It comes preinstalled in the Arduino IDE.

Variables ,Datatype ,loops,control statement,function

Arduino Data Types

The data types are used to identify the types of data and the associated functions for handling the data. It is used for declaring functions and variables, which determines the bit pattern and the storage space.

The data types that we will use in the Arduino are listed below:

- void Data Type
- int Data Type
- Char Data Type
- Float Data Type
- Double Data Type
- Unsigned int Data Type
- short Data Type
- long Data Type
- Unsigned long Data Type
- byte data type
- word data type

void Data Type

The void data type specifies the empty set of values and only used to declare the functions. It is used as the return type for the functions that do not return any value.

Let's understand with an example in [Arduino](#).

Consider the below code.

```
1. int a = 3;  
2. void setup()  
3. {  
4. . //  
5. }  
6. void loop ()  
7. {  
8. .  
9. .  
10. }
```

Int Data Type

The integer data types are the whole numbers like 5, -6, 10, -123, etc. They do not have any fractional part. The integer data types are represented by **int**. It is considered as the primary data type to store the numbers.

The size of int is 2 bytes (16 bits).

Minimal range: -32768 to 32767 or $-(2^{15})$ to $((2^{15}) - 1)$

In the ATmega and [Arduino UNO boards](#), the int data types store the value of 2 bytes.

On the boards like Arduino Zero and MKR1000 (SAMD boards), and Arduino Due, the int data type stores the value of 4 bytes or 32 bits. The Minimal range in such case would be $-(2^{31})$ to $((2^{31}) - 1)$ or -2,147,483,648 to 2,147,483,647.

The negative numbers are stored in the form of 2's complement, where the sign bit or the highest bit is flagged as the negative number.

The syntax is used as:

```
1. int var = val;
```


where,

var= variable

value = the value assigned to the variable

For example,

1. **int** a;
2. **int** b = 3;

Any variable or identifier becomes an integer variable and can hold only integer values.

Let's understand with an example in Arduino.

Consider the below code.

1. **int** Sum = 0;
2. **void** setup()
3. {
4. Serial.begin(9600);
5. }
6. **void** loop ()
7. {
8. Sum++; // on every loop, it adds 1 to the Sum int
9. Serial.println (Sum); // it prints the current state of the Sum variable
10. delay(1500); // delay of 1.5 seconds
11. }

Char Data Type

The char datatype can store any number of character set. An identifier declared as the char becomes a character variable. The literals are written inside a single quote.

The char type is often said to be an integer type. It is because, symbols, letters, etc., are represented in memory by associated number codes and that are only integers.

The size of character data type is **minimum of 8 bits**. We can use the byte data type for an unsigned char data type of 8 bits or 1 byte.

For example, character ' A ' has the ASCII value of 65.

If we specify, ' A ' + 2, it will have the ASCII value of 67.

The syntax is:

1. **char** var = val;

where,

var= variable

val = The value assigned to the variable.

Let's understand with an example.

Consider the below code.

1. **char** myvariable = ' B ';
2. **char** myvariable = 66 ; // both the value are equivalent

The ASCII table is shown below:

ASCII TABLE

Decimal	Hex	Decimal	Hex	Char	Decimal	Hex	Char	Decimal	Hex	Char
0	0	32	20	[SPACE]	64	40	@	96	60	`
1	1	33	21	!	65	41	A	97	61	a
2	2	34	22	"	66	42	B	98	62	b
3	3	35	23	#	67	43	C	99	63	c
4	4	36	24	\$	68	44	D	100	64	d
5	5	37	25	%	69	45	E	101	65	e
6	6	38	26	&	70	46	F	102	66	f
7	7	39	27	'	71	47	G	103	67	g
8	8	40	28	(	72	48	H	104	68	h
9	9	41	29	)	73	49	I	105	69	i
10	A	42	2A	*	74	4A	J	106	6A	j
11	B	43	2B	+	75	4B	K	107	6B	k
12	C	44	2C	,	76	4C	L	108	6C	l
13	D	45	2D	-	77	4D	M	109	6D	m
14	E	46	2E	.	78	4E	N	110	6E	n
15	F	47	2F	/	79	4F	O	111	6F	o
16	10	48	30	0	80	50	P	112	70	p
17	11	49	31	1	81	51	Q	113	71	q
18	12	50	32	2	82	52	R	114	72	r
19	13	51	33	3	83	53	S	115	73	s
20	14	52	34	4	84	54	T	116	74	t
21	15	53	35	5	85	55	U	117	75	u
22	16	54	36	6	86	56	V	118	76	v
23	17	55	37	7	87	57	W	119	77	w
24	18	56	38	8	88	58	X	120	78	x
25	19	57	39	9	89	59	Y	121	79	y
26	1A	58	3A	:	90	5A	Z	122	7A	z
27	1B	59	3B	;	91	5B	[	123	7B	{
28	1C	60	3C	<	92	5C	/	124	7C	|
29	1D	61	3D	=	93	5D	]	125	7D	}
30	1E	62	3E	>	94	5E	^	126	7E	~
31	1F	63	3F	?	95	5F	_	127	7F	[DEL]

Float Data Type

A number having the fractional part and a decimal part is considered as a floating-point number. For example, 4.567 is a floating-point number. The number 13 is an integer, while 13.0 is a floating-point number. Due to their greater resolution, fractional numbers are used to approximate the contiguous and analog values.

Floating point numbers can also be written in the exponent form. The numbers can be as large as 3.4028235E+38 and as small as -3.4028235E+38. The size of float data types is 4 bytes or 32 bits.

The syntax is:

1. **float** var = val;

where,

var= variable

val = The value assigned to the variable

Let's understand with an example.

Consider the below code.

1. **int** a ;
2. **int** b ;
3. **float** c ;
4. **void** setup ()
5. {
6. Serial.begin (9600);
7. }
8. **void** loop ()
9. {
10. a = 3 ;
11. b = a/2 ; // b is an integer. It cannot hold fractions. The output will be 1.
12. c = (**float**) a / 2.0 ; // c now contains 1.5.
13. // Here, we have to use 2.0 instead of 2.
14. }

Note: We need to add a decimal point to a number. Otherwise, it will be considered as an integer. For example, 14.0 is considered

as a float number, while 14 is an integer.

The floating-point numbers can also be converted to integers. For example,

1. `float a = 3.6;`
2. `int b = a + 0.6; // output = 4`

Double Data Type

The double data type is also used for handling the decimal or floating-point numbers. It occupies twice as much memory as float. It stores floating point numbers with larger precision and range. It stands for double precision floating point numbers.

It occupies 4 bytes in ATmega and UNO boards, while 8 bytes on Arduino Due.

The syntax is:

1. `double var = val;`

where,

var= variable

val = The value assigned to the variable

Unsigned int Data Type

The unsigned int stores the value upto 2 bytes or 16 bits. It stores only positive values. The range of unsigned int data type is from 0 to 65,535 or 0 to $(2^{16} - 1)$.

Arduino Due stores the unsigned data value of 4 bytes or 32-bits.

The difference between Unsigned and signed data type is the sign bit. The int type in Arduino is the signed int. In a 16-bit number, 15 bits are interpreted with the 2's complement, while the high bit is interpreted as the positive or negative number. If the high bit is '1', it is considered as a negative number.

The syntax is:

1. `unsigned int var = val;`

where,

var= variable

val = The value assigned to the variable

For example,

1. unsigned **int** pinofLED = 8;

short Data Type

The short is an integer data type that stores two bytes or 16-bit of data.

The range of short data types is from -32768 to 32767 or $-(2^{15})$ to $((2^{15}) - 1)$. The ARM and ATmega based Arduino's usually stores the data value of 2 bytes.

The syntax is:

1. **short** var = val;

where,

var= variable

val = the value assigned to the variable

For example,

1. **short** pinofLED = 8 ;

long Data Type

The long data types are considered as the extended size variables, which store 4 bytes (32 -bits). The size ranges from -2,147,483,648 to 2,147,483,647.

While using integer numbers, at least one of the numbers should be followed by L, which forces the number to be a long data type.

The syntax is:

1. **long** var = val;

where,

var= variable

val = The value assigned to the variable

For example,

1. **long** speed = 186000L;

Unsigned long Data Type

The unsigned long data types are also considered as the extended size variables, which store 4 bytes (32 -bits). It does not store negative numbers like other unsigned data types, which makes their size ranges from 0 to 4,294,967,295 or $(2^{32} - 1)$.

The syntax is:

1. unsigned **long** var = val;

where,

var= variable

val = The value assigned to the variable

For example

1. unsigned **long** currentTime;

byte

1 byte = 8 bits.

It is considered as an unsigned number, which stores values from 0 to 255.

The syntax is:

1. **byte** var = val;

where,

var= variable

value = the value assigned to the variable

For example,

1. **byte** c = 20;

word

It is considered as an unsigned number of 16 bits or 2 bytes, which stores values from 0 to 65535.

The syntax is:

1. **word** var = val;

where,

var= variable

val = The value assigned to the variable

For example,

1. **word** c = 2000;

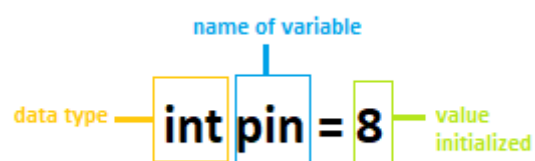
Arduino Variables

The variables are defined as the place to store the data and values. It consists of a name, value, and type.

The variables can belong to any data type such as int, float, char, etc. Consider the url - [Arduino data types](#) for detailed information.

Consider the below example:

1. **int** pin = 8;



Here, the **int** data type is used to create a variable named **pin** that stores the value **8**. It also means that value 8 is initialized to the variable **pin**.

We can modify the name of the variable according to our choice. For example,

The above example can also be written as:

```
1. int LEDpin = 8;
```

Here, the variable name is **LEDpin**.

We can refer the declared variable further in our program or code.

For example,

```
1. pinMode(LEDpin, OUTPUT);
```

Here, the value stored (8) in the declared variable (LEDpin) will be passed to the pinMode() function.

If we have not declared the variable, the value can also be directly passed to the function.

For example:

```
1. pinMode(8, OUTPUT);
```

Advantages of Variables

The advantages of the variables are listed below:

- We can use a variable many times in a program.
- The variables can represent integers, strings, characters, etc.
- It increases the flexibility of the program.
- We can easily modify the variables. For example, if we want to change the value of variable LEDpin from 8 to 13, we need to change the only point in the code.
- We can specify any name for a variable. For example, greenpin, bluePIN, REDpin, etc.

How can we change the value of a variable in Arduino?

The value of a variable can be changed using the assignment operator (equal = sign). But we need to declare a variable before assigning the value.

If we directly specify the value as:

1. `pin = 7;`

We will get an error that pin has not declared.

We can easily change the variables by copying its value to another variable.

For example,

1. `int LEDpin = 7;`
2. `int pin1 = LEDpin;`
3. `LEDpin = 13;`

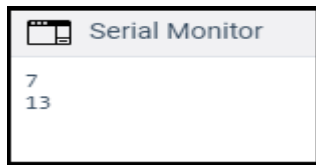
The LEDpin now contains the value 13 instead of 7. But, value of pin1 is still 7.

Let's understand with an example.

Consider the below code.

1. `void setup()`
2. `{`
3. `Serial.begin(9600);`
4. `int pinLED = 7;`
5. `Serial.println(pinLED); // value 7 will be printed`
6. `int pin1 = pinLED;`
7. `pinLED = 13;`
8. `Serial.println(pinLED); // value is now changed`
9. `// now, value 13 will be printed`
10. `}`
11. `void loop()`
12. `{`
13. `}`

Output:



We can notice in the output that the value of **LEDpin** is changed from 7 to 13. Similarly, we can change the values of variables.

Variables Scope

It means that in how many ways the variables can be declared.

The variables can be declared in two ways in **Arduino**, which are listed below:

- Local variables
- Global variables

Local Variables

The local variables are declared within the function. The variables have scope only within the function. These variables can be used only by the statements that lie within that function.

For example,

```
1. void setup()
2. {
3.   Serial.begin(9600);
4. }
5. void loop()
6. {
7.   int x = 3;
8.   int b = 4;
9.   int sum = 0;
10. sum = x + b;
11. Serial.println(sum);
12. }
```

Global Variables

The global variables can be accessed anywhere in the program. The global variable is declared outside the setup() and loop() function.

For example,

Consider the below code.

```
1. int LEDpin = 8;  
2. void setup()  
3. {  
4.   pinMode(LEDpin, OUTPUT);  
5. }  
6. void loop()  
7. {  
8.   digitalWrite(LEDpin, HIGH);  
9. }
```

We can notice that the LEDpin is used both in the loop() and setup() functions.

The value is used in both functions, so, changing the value in one function will reflect in the other. For example,

```
1. int LEDpin = 8;  
2. void setup()  
3. {  
4.   LEDpin = 13;  
5.   pinMode(LEDpin, OUTPUT);  
6. }  
7. void loop()  
8. {  
9.   digitalWrite(LEDpin, HIGH);  
10. }
```


Arduino for Loop

The statements inside the curly brackets under for loop are executed repeatedly according to the specified condition. An increment counter in the for loop is used to increment or decrement the loop repetitions.

The for statement is commonly used for repetitive task or operation or to operate on the group of data/pins in combination with arrays.

The syntax is:

1. **for** (initialization; condition; increment)
2. {
3. \ statements
4. }

where,

- **initialization:** It is defined as the initialization of the variable.
- **condition:** The condition is tested on every execution. If the condition is **true**, it will execute the given task. The loop ends only when the condition becomes **false**.
- **increment:** It includes the increment operator, such as $i++$, $i--$, $i+1$, etc. It is incremented each time until the condition remains true.

For example,

1. **for** ($i = 0$; $i < 5$; $i++$)

The above statement will execute the loop for five times. The values of i will be from 0 to 4.

If the statement is:

1. **for** ($i = 0$; $i <= 5$; $i++$)

The above statement will execute the loop six times. The values of i will be from 0 to 5.

Note: If we do not want to execute the for loop again and again. Then, we can insert the for loop in the void setup() function.

Example 1:

To print a message 'Arduino' 15 times.

To print a message 15 times or more is quite complicated using `Serial.println()`, as the code will become too lengthy.

To overcome this, programmers prefer to use for loop to execute a task multiple times, while using a single statement.

Let's consider the below code.

```
1. int i;
2. void setup ()
3. {
4.   Serial.begin(9600);
5.   for ( i = 0 ; i < 15 ; i ++ )
6.   {
7.     Serial.println( "Arduino");
8.   }
9. }
10. void loop () {
11. }
```

Output:



Example 2:

To use a multiplication increment

The multiplication increment in the for loop will generate a logarithmic progression.

Consider the below code:

```
1. int x;
```



```
2. void setup ()
3. {
4.   Serial.begin(9600);
5.   for (x = 2; x < 100; x = x * 2)
6.   {
7.     Serial.println(x);
8.   }
9. }
10. void loop () {
11. }
```

Output:



We can also declare the int data type directly in the for loop.

For example,

```
1. for (int x = 2; x < 100; x = x * 2)
```

Example 3: To fade an LED

Here, fade and LED means that LED will faint slowly.

Consider the below code:

```
1. const int pinPWM = 11; // here, we have initialized the PWM pin.
2. void setup ()
3. {
4.   Serial.begin(9600);
5. }
6. void loop ()
7. {
8.   int x = 1;
```



```
9.  for (int i = 0; i > -1; i = i + x)
10. {
11.  analogWrite(pinPWM, i);
12.  if (i == 255)
13.  {
14.    x = -1; // It will switch the direction at peak
15.  }
16.  delay(10); // It is delay time of 10 milliseconds
17.  // the lesser the time, the more fading effect can be seen clearly
18. }
19. }
```

For the connection, we will connect the positive terminal of the LED in series with the resistor to PIN 11 (PWM pin), and the negative terminal of the LED to GND.

Note: The for loops in C++ programming language is much more flexible than other types of programming languages.

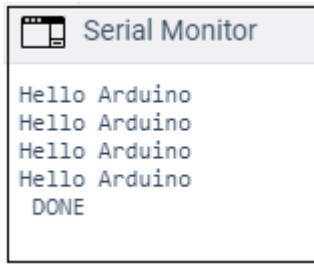
Example 4:

Consider the below code:

```
1.  void setup ( )
2.  {
3.  int i;
4.  Serial.begin(9600);
5.  for (i = 0; i < 4; i = i + 1)
6.  {
7.    Serial.println( "Hello Arduino" );
8.  }
9.  Serial.println( " DONE");
10. }
11. void loop ( )
12. {
13. }
```

The above code will print 'Hello Arduino' four times. After that the condition becomes false, control comes out of the loop, and 'DONE' is printed.

Output:



```
Serial Monitor
Hello Arduino
Hello Arduino
Hello Arduino
Hello Arduino
DONE
```

Arduino while loop

The while loop() is the conditional loop that continues to execute the code inside the parentheses until the specified condition becomes false.

The while loop will never exit until the tested condition is changed or made to stop. The common use of a while loop in [Arduino](#) includes **sensor testing, calibration (calibrating the input of sensor), variable increment, etc.**

The syntax is:

1. **while** (condition)
2. {
3. // code or set of statements
4. }

where,

condition: It specifies the boolean expression, which determines the condition to be true or false.

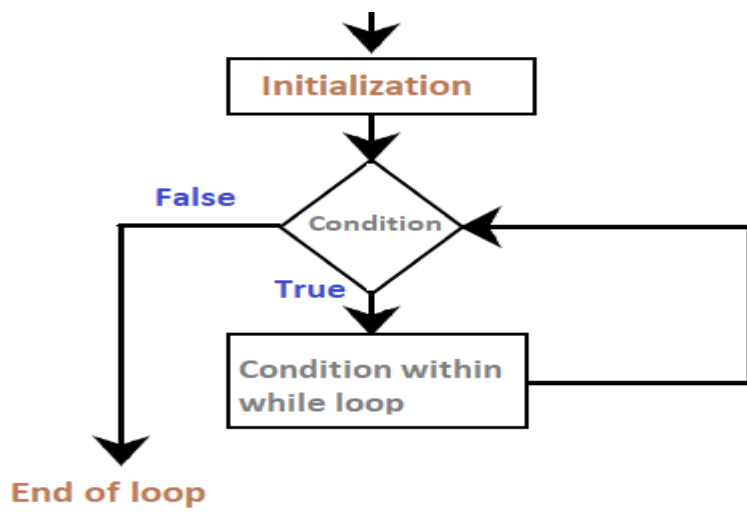
For example,

1. variable = 0;
2. **while** (variable < 100) {
3. // performs the specified task 100 times repeatedly
4. variable++; // increments after every execution
5. }

The above code inside the curly braces in while loop will execute continuously and repeatedly as long as the variable is less than 100.

Flowchart

The flowchart is shown below:



Code Example

In order to change the flow of the program, we need to change the specified condition inside the parentheses of while loop. The process is much like the if statement.

Let's understand the concept of while loop with two examples.

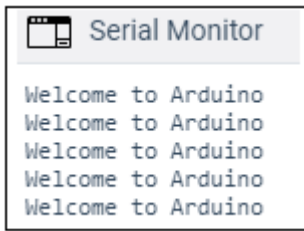
Example 1:

Consider the below code:

```
1. int a = 0;
2. void setup()
3. {
4.   Serial.begin(9600);
5.   while( a < 5)
6.   {
7.     Serial.println("Welcome to Arduino");
8.     a = a + 1;
9.   }
10. }
11. void loop()
12. {
13. }
```

Output:

The message inside the loop will be printed five times, as shown below:



Let's look at the code.

Explanation: At first, we have defined the variable **a** as 0, and initialized the serial monitor as usual (means `Serial.begin()`). The loop first checks the condition specified within the parentheses. At first, `a = 0`. The condition is true (`0 < 5`). The code inside the curly braces will execute, and the message is printed.

Now, the value of **a** is incremented (added 1 to a), and the loop executes again.

Similarly, five times the condition remains true. When `a = 5`, the condition becomes false, and the loop exits and drops. The code outside the loop is executed.

Let's consider another example.

Example 2:

The code is similar to the above example. We will only add some statements outside the loop.

Consider the below code:

```
1. int a = 0;
2. void setup()
3. {
4.   Serial.begin(9600);
5.   while( a < 5)
6.   {
7.     Serial.println("Welcome to Arduino");
8.     a = a + 1;
9.   }
10.  Serial.println("DONE");
11.  Serial.println("Welcome to the code outside the loop");
12. }
13. void loop()
14. {
15. }
```

Output:


```
Serial Monitor
Welcome to Arduino
Welcome to Arduino
Welcome to Arduino
Welcome to Arduino
Welcome to Arduino
DONE
Welcome to the code outside the loop
```

We can notice that as soon as the condition in the loop becomes false, the message specified outside the loop is printed.

do...while

The working of the do-while loop is similar to the while loop. The condition inside the do-while will execute at least once. It is because the condition is tested at the end of the loop instead of the beginning.

The syntax is:

1. **do**
2. {
3. // code or set of statements
4. } **while** (condition);

where,

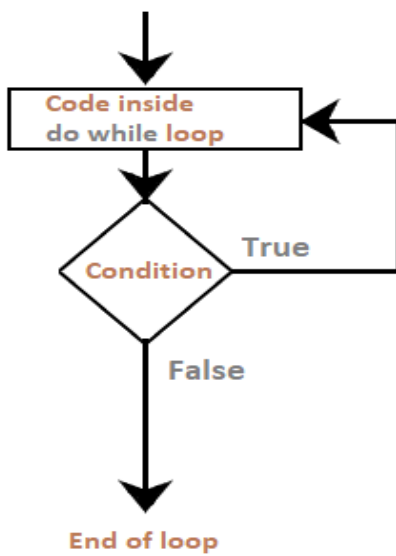
condition: It specifies the boolean expression, which determines the condition to be true or false.

For example,

1. **int** b = 0;
2. **do** {
3. delay(100); // wait for stabilization of the sensors
4. b = readSensors(); // It checks the sensors
5. } **while** (x < 100); // specified condition

Flowchart

The flowchart is shown below:



Code Example

Let's understand the concept of the do-while loop with an example.

Example 1:

Consider the below code:

```
1. int a = 0;
2. void setup()
3. {
4.   Serial.begin(9600);
5.   do
6.   {
7.     Serial.println("Welcome to the do while loop");
8.     a = a + 1;
9.   } while( a < 3);
10.}
11. void loop()
12. {
13. }
```

Output:

```
Serial Monitor
Welcome to the do while loop
Welcome to the do while loop
Welcome to the do while loop
```

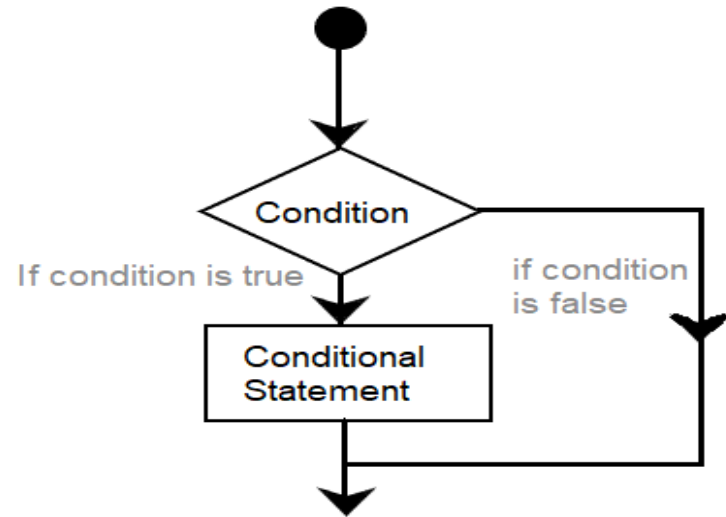

Arduino If statement

The if () statement is the conditional statement, which is the basis for all types of programming languages.

If the condition in the code is true, the corresponding task or function is performed accordingly. It returns one value if the condition in a program is true. It further returns another value if the condition is false.

It means that if () statement checks for the condition and then executes a statement or a set of statements.

Let's understand the concept with the help of a flow chart.



It clearly explains the process of execution of a statement. If the condition is False, it comes out of the if () statement. If the condition is true, the function is performed.

The if () statement is written as:

1. **if (condition)**
2. **{**
3. **// include statements**
4. **// if the condition is true**
5. **// then performs the function or task specified inside the curly braces**
6. **}**

Here,

condition = It includes the boolean expressions, that can be true or false.

We can also use one or more operators inside the parentheses.

The comparison operators that can be used as a condition inside the parentheses are listed below:

- **a != b (a not equal to b)**
- **a < b (a less than b)**
- **a > b (a greater than b)**

- $a = b$ (a equal to b)
- $a <= b$ (a less than or equal to b)
- $a >= b$ (a greater than or equal to b)

where,

a and b are the variables.

Code Examples

Let's understand with the help of two coding examples.

Example 1:

Consider the below code.

```

1. int a = 6; // initialization of values to variables a and b
2. int b = 4;
3. void setup()
4. {
5.   Serial.begin(9600);
6. }
7. void loop()
8. {
9.   if (a > b)
10.  {
11.    Serial.println( " a is greater than b ");
12.  }
13.  if (b > a )
14.  {
15.    Serial.println( " b is greater than a ");
16.  }
17.}

```

Output: a is greater than b

The code shows the initialization of values to the two variables a and b. In this example, the first condition is True. Hence the corresponding information is printed.

Example 2:

Consider the below code.

```

1. const int LED1 = 2;
2. const int LED2 = 13;

```



```
3. int x = 80 ;
4. void setup ( )
5. {
6. Serial.begin( 9600 );
7. pinMode ( LED1, OUTPUT);
8. pinMode ( LED2, OUTPUT);
9. }
10. void loop ( )
11. {
12. if ( x > 100 )
13. {
14. digitalWrite(LED1, HIGH);
15. delay (500);
16. }
17. if ( x < 100 )
18. {
19. digitalWrite(LED2, HIGH);
20. delay (500);
21. }
22. }
```

The example is of **two LEDs**.

In the above example, we have initialized the value of x. Since the value of x is less than 100, the second condition is true. Hence, LED2 will light up.

If the value of x is greater than 100, LED1 will light.

Arduino Functions

The functions allow a programmer to divide a specific code into various sections, and each section performs a particular task. The functions are created to perform a task multiple times in a program.

The function is a type of procedure that returns the area of code from which it is called.

For example, to repeat a task multiple times in code, we can use the same set of statements every time the task is performed.

Advantages of using Functions

Let's discuss some advantages of using functions in programming, which are listed below:

- It increases the readability of the code.
- It conceives and organizes the program.
- It reduces the chances of errors.
- It makes the program compact and small.
- It avoids the repetition of the set of statements or codes.
- It allows us to divide a complex code or program into a simpler one.
- The modification becomes easier with the help of functions in a program.

The **Arduino** has two common functions `setup()` and `loop()`, which are called automatically in the background. The code to be executed is written inside the curly braces within these functions.

`void setup()` - It includes the initial part of the code, which is executed only once. It is called as the preparation block.

`void loop()` - It includes the statements, which are executed repeatedly. It is called the execution block.

But sometimes, we need to write our own functions.

Let's start writing the functions.

Function Declaration

The method to declare a function is listed below:

- **Function return type**

We need a return type for a function. For example, we can store the return value of a function in a variable.

We can use any data type as a return type, such as float, char, etc.

- **Function name**

It consists of a name specified to the function. It represents the real body of the function.

- **Function parameter**

It includes the parameters passed to the function. The parameters are defined as the special variables, which are used to pass data to a function.

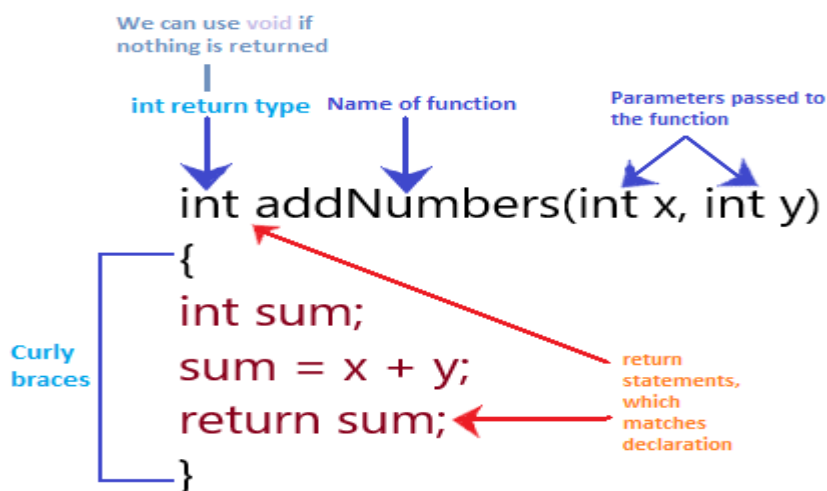
The function must be followed by parentheses () and the semicolon ;

The actual data passed to the function is termed as an argument.

Let's understand with some examples.

Example 1:

Consider the below image:



Example 2: Here, we will add two numbers.

Consider the below code:

1. `void setup()`
2. `{`
3. `Serial.begin(9600);`
4. `}`
5. `void loop() {`
6. `int a = 5; // initialization of values to the variables a and b`
7. `int b = 4;`
8. `int c;`
9. `c = myAddfunction(a, b); // c will now contains the value 9`
10. `Serial.println(c); // to print the resulted value`


```
11. delay(1000); // time delay of 1 second or 1000 milliseconds
12.}
13.int myAddfunction(int i, int j)
14.{
15. int sum;
16. sum = i + j;
17. return sum;
18.}
```

Similarly, we can perform arithmetic operations using the above concept.

Example 3:

Here, we will create a function that determines if a number is even or odd.

Consider the below code.

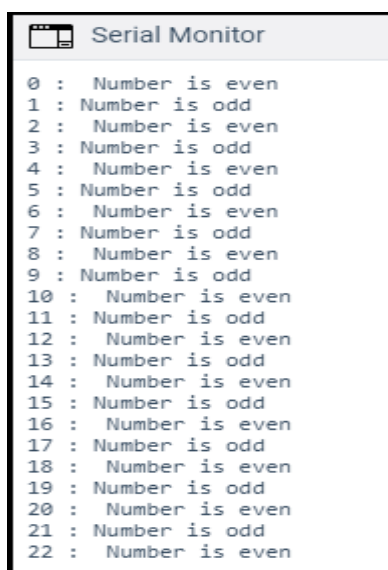
```
1. int a= 0;
2. int b;
3. void setup()
4. {
5.   Serial.begin(9600);
6. }
7. void loop()
8. {
9.   b = Evenfunction(a); // we can store the function return value in variable b
10.  Serial.print(a);
11.  Serial.print(" : "); // to separate even or odd text
12.  if (b==1)
13.  {
14.    Serial.println( " Number is even");
15.  }
16.  else
17.  {
18.    Serial.println("Number is odd");
19.  }
20.
21.  a++; // the function will increment and will again run
```



```
22.         delay(1000);
23.}
24.
25. int Evenfunction(int d)
26.     {
27.         if (d% 2==0)
28.             {
29.                 return 1;
30.             }
31.         else
32.             {
33.                 return 0;
34.             }
35.     }
```

Output:

The output is shown below:



```
Serial Monitor
0 : Number is even
1 : Number is odd
2 : Number is even
3 : Number is odd
4 : Number is even
5 : Number is odd
6 : Number is even
7 : Number is odd
8 : Number is even
9 : Number is odd
10 : Number is even
11 : Number is odd
12 : Number is even
13 : Number is odd
14 : Number is even
15 : Number is odd
16 : Number is even
17 : Number is odd
18 : Number is even
19 : Number is odd
20 : Number is even
21 : Number is odd
22 : Number is even
```

Practical of Using of Arduino

Arduino - Blinking LED

LEDs are small, powerful lights that are used in many different applications. To start, we will work on blinking an LED, the Hello World of microcontrollers. It is as simple as turning a light on and off. Establishing this important baseline will give you a solid foundation as we work towards experiments that are more complex.

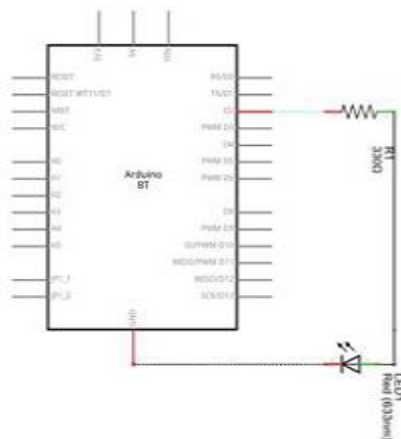
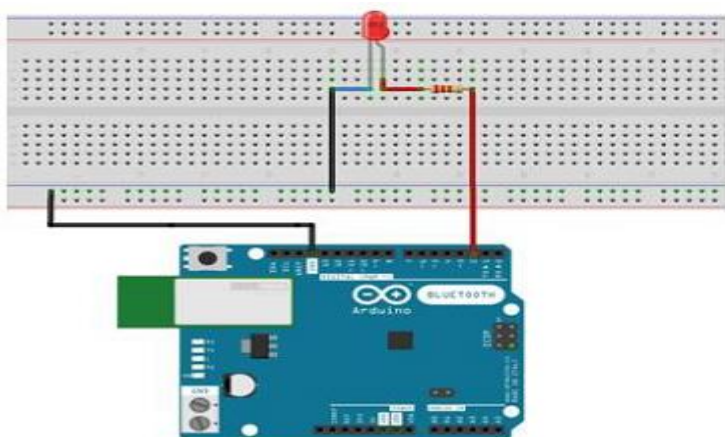
Components Required

You will need the following components –

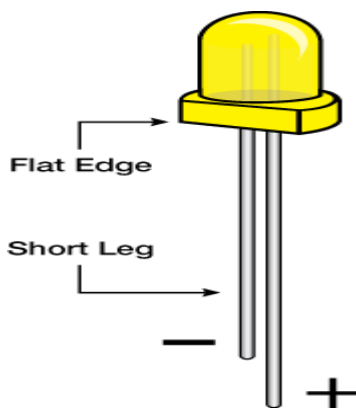
- 1 × Breadboard
- 1 × Arduino Uno R3
- 1 × LED
- 1 × 330Ω Resistor
- 2 × Jumper

Procedure

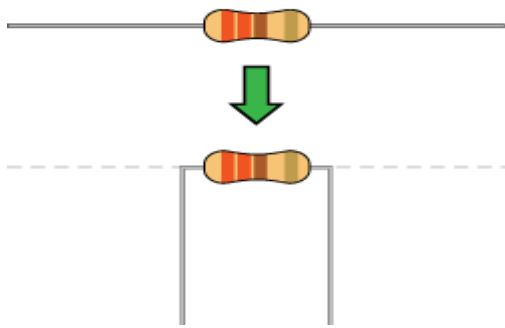
Follow the circuit diagram and hook up the components on the breadboard as shown in the image given below.



Note – To find out the polarity of an LED, look at it closely. The shorter of the two legs, towards the flat edge of the bulb indicates the negative terminal.

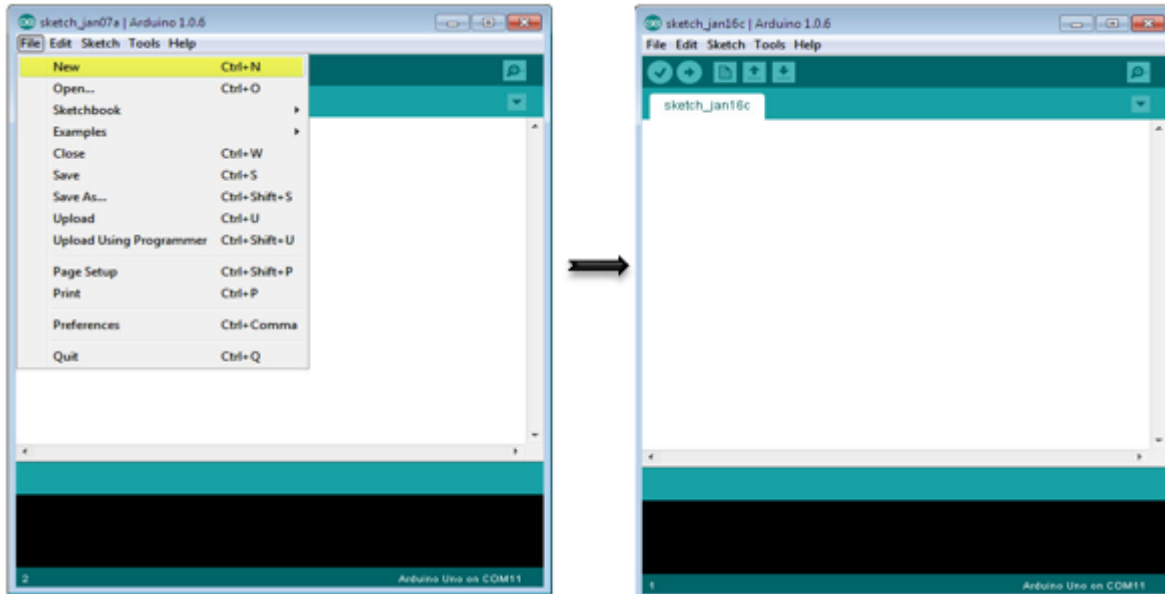


Components like resistors need to have their terminals bent into 90° angles in order to fit the breadboard sockets properly. You can also cut the terminals shorter.



Sketch

Open the Arduino IDE software on your computer. Coding in the Arduino language will control your circuit. Open the new sketch File by clicking New.



Arduino Code

```

/*
  Blink
  Turns on an LED on for one second, then off for one second, repeatedly.
*/

// the setup function runs once when you press reset or power the board

void setup() { // initialize digital pin 13 as an output.
  pinMode(2, OUTPUT);
}

// the loop function runs over and over again forever

void loop() {

```



```
digitalWrite(2, HIGH); // turn the LED on (HIGH is the voltage level)
```

```
delay(1000); // wait for a second
```

```
digitalWrite(2, LOW); // turn the LED off by making the voltage LOW
```

```
delay(1000); // wait for a second
```

```
}
```

Code to Note

`pinMode(2, OUTPUT)` – Before you can use one of Arduino’s pins, you need to tell Arduino Uno R3 whether it is an INPUT or OUTPUT. We use a built-in “function” called `pinMode()` to do this.

`digitalWrite(2, HIGH)` – When you are using a pin as an OUTPUT, you can command it to be HIGH (output 5 volts), or LOW (output 0 volts).

Result

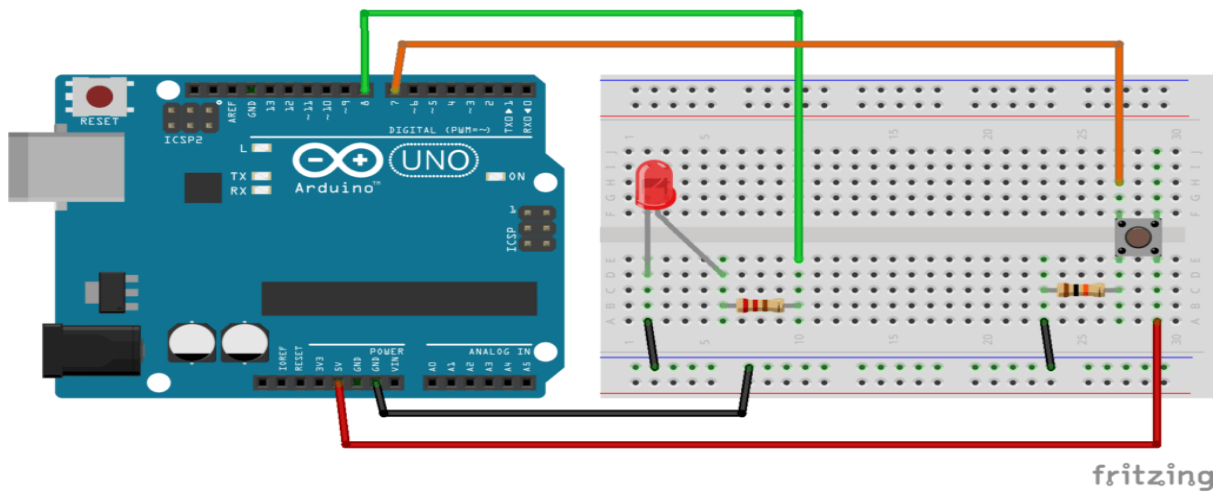
You should see your LED turn on and off. If the required output is not seen, make sure you have assembled the circuit correctly, and verified and uploaded the code to your board.

Arduino circuit with an LED and a button

To build the circuit you will need those components:

- Arduino board (any board, if you don’t have Uno you can easily adapt by finding corresponding pins).
- Breadboard.
- LED – any color.
- Push button.
- 220 Ohm resistor for the LED. If you don’t have this specific value, any resistor from 330 to 1k Ohm will do.
- 10k Ohm resistor for the push button. If you don’t have, you can go until 20k-50k Ohm.
- A bunch of male to male wires (including if possible black, red, and other colors).

Here’s the circuit you have to make.



fritzing

Step by step instructions to build the circuit ([more info about Arduino pins here](#)):

- First, make sure to power off your Arduino – remove any USB cable.
- Plug a black wire between the blue line of the breadboard and a ground (GND) pin on the Arduino board.
- Plug the LED. You can notice that the LED has a leg shorter than the other. Plug this shorter leg to the ground (blue line here) of the circuit.
- Connect the longer leg of the LED to a digital pin (here pin no 8, you can change it). Add a 220 Ohm resistor in between to limit the current going through the LED.
- Add the push button to the breadboard, like in the picture.
- Connect one leg of the button to the ground, and put a 10k Ohm resistor in between. This resistor will act as a “pull down” resistor, which means that the default button’s state will be LOW.
- Add a red wire between another leg of the button and VCC (5V).
- Finally, connect a leg of the button (same side as the pull down resistor) to a digital pin (here 7).

Turn on the LED when button is pressed, turn it off otherwise

What we want to achieve is simple: when the button is not pressed, the LED is off. And when we press the button the LED should be on.

The code

```
#define LED_PIN 8

#define BUTTON_PIN 5

void setup() {

  pinMode(LED_PIN, OUTPUT);

  pinMode(BUTTON_PIN, INPUT);

}
```



```
void loop() {  
  
  if (digitalRead(BUTTON_PIN) == HIGH) {  
  
    digitalWrite(LED_PIN, HIGH);  
  
  }  
  
  else {  
  
    digitalWrite(LED_PIN, LOW);  
  
  }  
  
}
```

Night Light automatic turn ON and OFF using Arduino, Relay and LDR

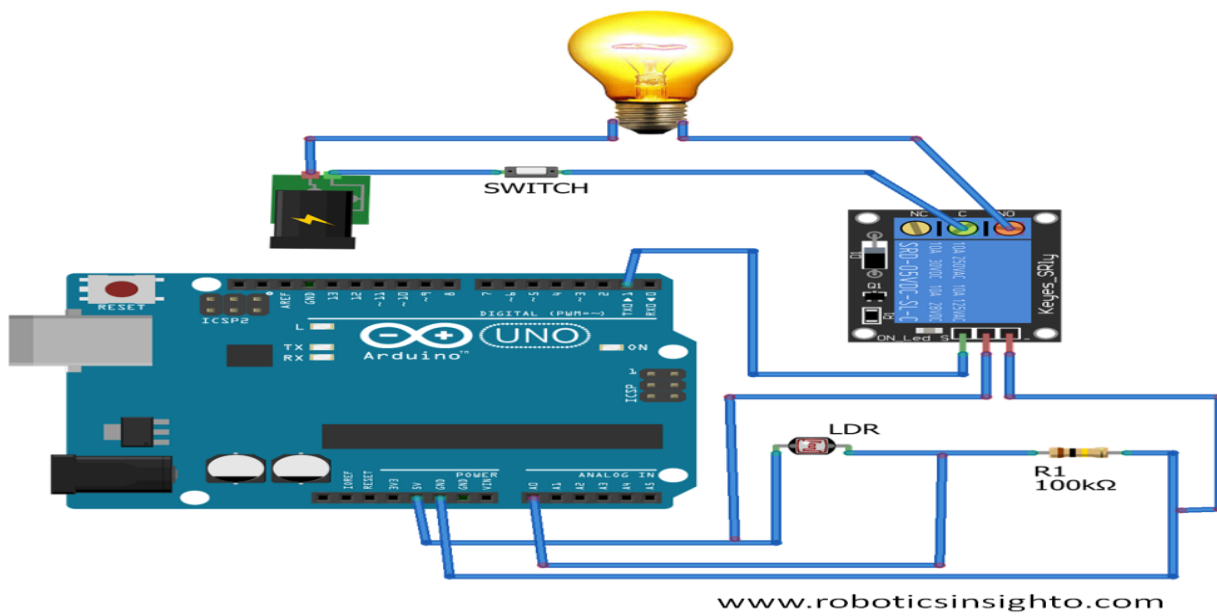
we are going to make an automatic light ON and OFF during night and day respectively using LDR sensor that gets activated or it's resistance gets reduced when light falls on it. We have also connected a manual switch ON and OFF for the bulb whenever we are out of home for weekends.

Let's get started,

Components Required:

1. Arduino UNO X 1
2. LDR light sensor X 1
3. 5V RelayModule X 1
4. Resistor (100k) X 1
5. AC Bulb (25 or 100) Watt X 1

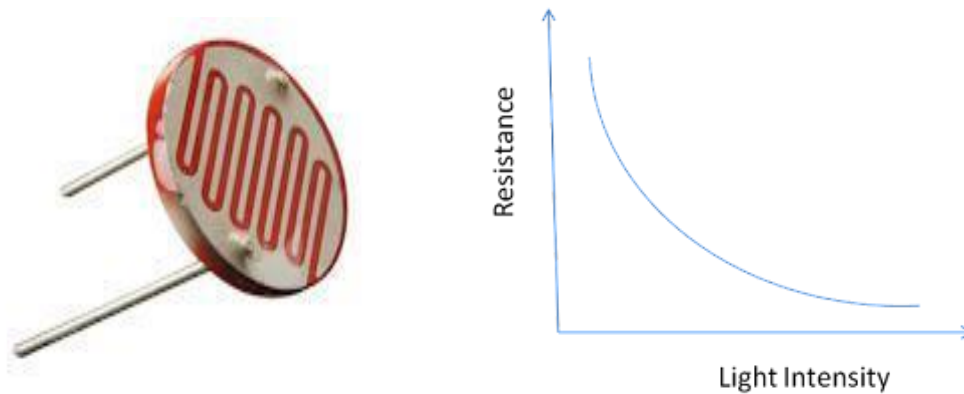
Circuit Design:(Note: First upload the program to the Arduino IDE then only do the below given wirings in order to avoid short circuit from previously uploaded code in the Arduino.)



About LDR (Light Dependent Resistor) Sensor:

It is the sensor with resistance as its main property. When light falls upon it then its resistance decreases and allows electric current to flow through it. And when it is dark then it offers high resistance to the circuit and blocks current to flow through it.

Let's see it graphically,



In the above diagram, as light intensity increases, resistance decreases and when light intensity decreases then resistance of LDR increases.

Arduino senses the value from LDR in the range 0 to 1023. When the LDR value is less than 900 or 1000 then we call it as day condition and the bulb remains off. When the value is greater than 900 or 1000 then we check for night condition and turn on the bulb.

(Note: About relay and other module we have already discussed in other tutorials that you can see in the same website.)

Coding:

```
int ldr=A0; // taking input from LDR in pin A0 i.e analog pin

int led=1; // declaring output pin for bulb

int ldrStatus;

void setup()

{

pinMode(ldr,INPUT);

pinMode(led,OUTPUT);

pinMode(led,LOW);

}

void loop()

{

ldrStatus=analogRead(ldr);

if (ldrStatus<=1000) // checks if it is day then led remains OFF

{

digitalWrite(led,LOW);

}

else

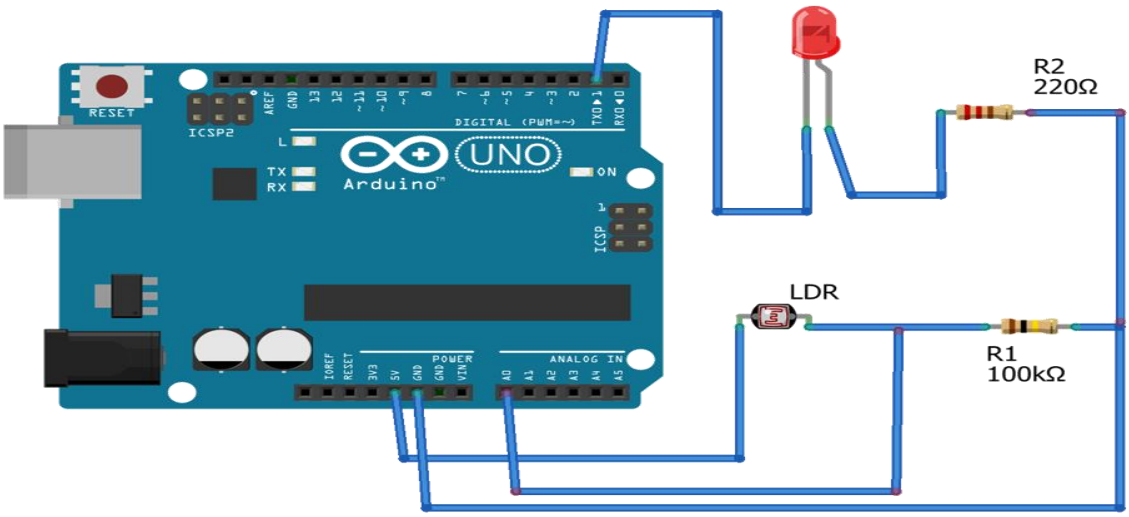
{

digitalWrite(led,HIGH); // during night led becomes ON
```



```
}  
  
}
```

In this way you can make your own automated light system using Arduino, Relay, and LDR sensor. Also by removing relay and placing the 5 volt bulb to the digital pin 1 with 0.5 K or 220 ohm resistor, you can directly make your DC 5 volt bulb operate from Arduino as shown in below given figure with your mini project done. **(Upload the same code)**



Arduino temperature sensor

The temperature sensor in Arduino converts the surrounding temperature to voltage. It further converts the voltage to Celcius, Celcius to Fahrenheit, and prints the Fahrenheit temperature on the LCD screen.

We will use a temperature sensor (TMP 36) of low voltage. Such sensors are also stable while dealing with large capacitive loads. It is also suitable for automotive applications.

The temperature sensors TMP 35, TMP 36, and TMP 37 are the sensors with the same features.

The operating voltage of the TMP 36 sensor ranges from 2.7V to 5.5V.

The sensor will look like the image shown below:



It has three terminals, which are listed below:

- **Pin 1: DC voltage**

Here, we will connect the DC voltage pin to 5V on the Arduino UNO board.

- **Pin 2: Analog voltage output**

We will consider the Analog voltage output pin as the output.

- **Pin 3: GND**

We will connect the GND pin to Ground on the [Arduino UNO board](#).

Let's start the project.

Hardware Required

The components required for the project are listed below:

- 1 x TMP 36 sensor (Temperature sensor)
- 1 x LCD display
- Arduino UNO R3 board (We can take any Arduino board).
- Jump wires

Principle

We will connect the LCD Display and TMP 36 temperature sensor with the [Arduino UNO R3 board](#). The sensor detects the surrounding temperature and converts it into volts, to Celsius to Fahrenheit, and displays Fahrenheit temperature on the LCD screen.

We need to open the URL: [Arduino LCD display](#) for details about LCD display.

Connection

The steps to set up the connection are listed below:

- Connect the RS pin of LCD to pin 13 of the Arduino board.
- Connect the Enable pin of LCD to pin 12 of the Arduino board.
- Connect the D4 pin of LCD to pin 6 of the Arduino board.
- Connect the D5 pin of LCD to pin 4 of the Arduino board.
- Connect the D6 pin of LCD to pin 3 of the Arduino board.
- Connect the D7 pin of LCD to pin 2 of the Arduino board.
- Connect the Vo pin of LCD to pin 8 of the Arduino board.

- Connect the middle terminal to a sensor to A0(analog pin).
- Connect one end of the sensor to GND and another end to 5V.
- Connect one end of a resistor to the A and K of the LCD and another end to 5V.

Sketch

Consider the below code:

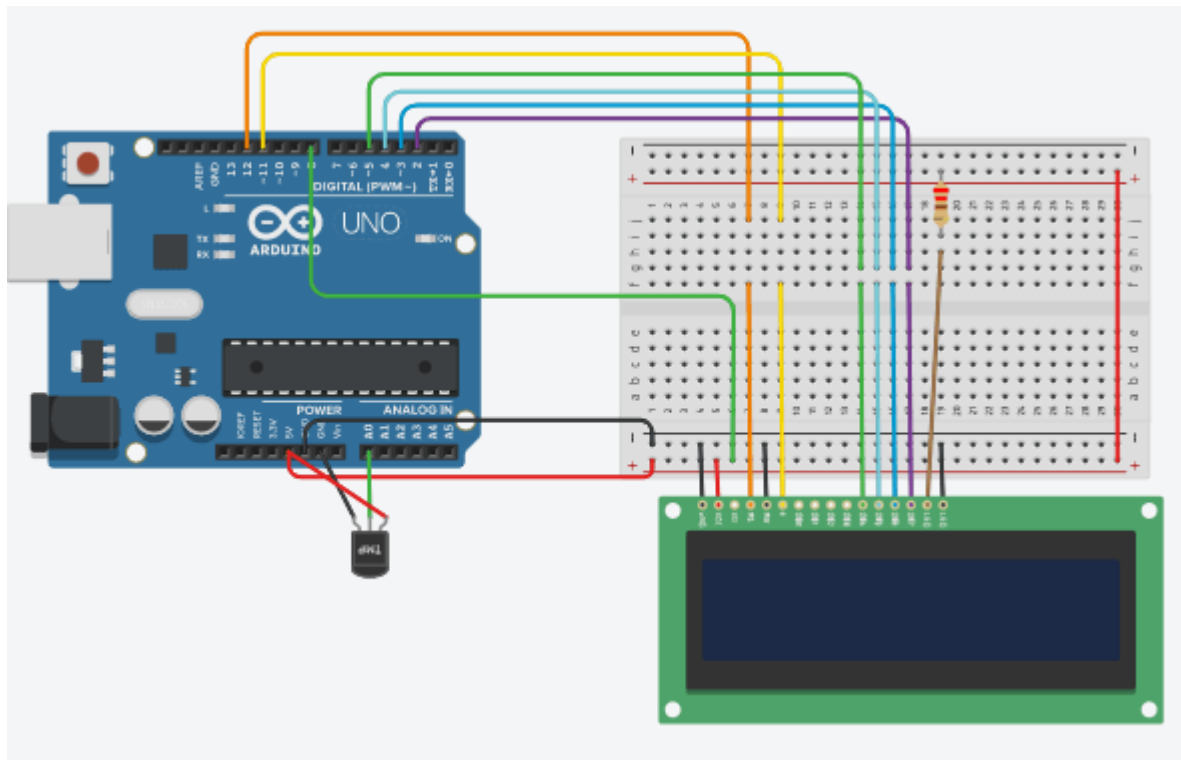
```

1. #include <LiquidCrystal.h>
2. // initialize the library with the pins on the Arduino board
3. LiquidCrystal lcd(13, 12, 6, 4, 3, 2);
4. const int temperature = A0; //A0 is the analog pin
5. const int D = 8; // Vo of LCD is connected to pin 8 of the Arduino
6. void setup()
7. {
8.   lcd.begin(16, 2);
9.   Serial.begin(9600);
10.  pinMode(D, OUTPUT);
11. }
12. void loop()
13. {
14.  digitalWrite(D,LOW);
15.  int Temp = analogRead(temperature);
16.  float volts = (Temp / 965.0) * 5;
17.  float celcius = (volts - 0.5) * 100;
18.  float fahrenheit = (celcius * 9 / 5 + 32);
19.  Serial.println(fahrenheit);
20.  lcd.setCursor(5, 0);
21.  lcd.print(fahrenheit);
22.  delay(2000);
23.  // time delay of 2000 microseconds or 2 seconds
24. }

```

We will show the connection using the Simulator because the connections become clearer and more precise.

We can make the same connection using the hardware devices.



Output

The output is now visible on the LCD screen.

For better understanding, let's consider the output on the Serial Monitor.



```
84.69
84.69
84.69
84.69
```

Arduino LCD Display

The LCD (**Liquid Crystal Display**) is a type of display that uses the liquid crystals for its operation.

Here, we will accept the serial input from the computer and upload the sketch to the **Arduino**. The characters will be displayed on the LCD.

The library that allows us to control the **LCD** display is called **Liquid Crystal Library**, which is discussed below:

The library is declared as:

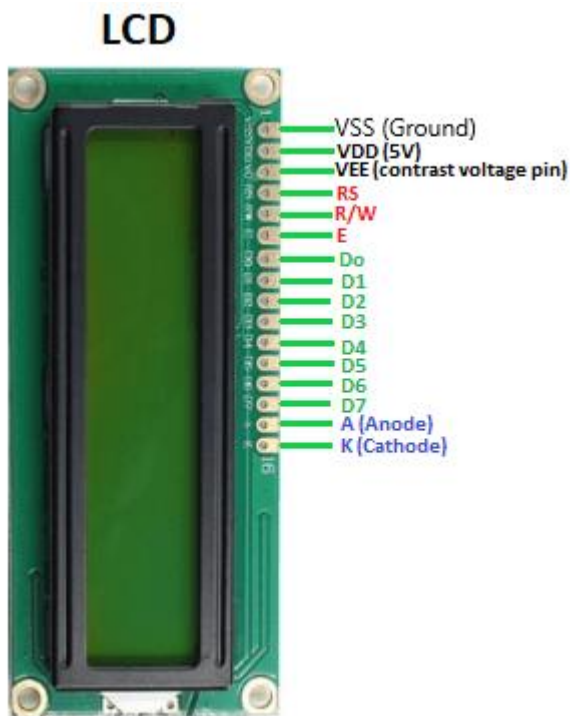
1. `#include <LiquidCrystal.h>`

The library is based on a compatible chipset called **Hitachi HD44780**. It is found on most of the LCDs that are based on text. It works with either an 8-bit mode or 4-bit mode. Here, the bit mode signifies the data lines in addition to the enable, rs, and rw control lines (optional).

LCD Structure

The LCD display has a 16-pin interface.

The structure of the LCD is shown below:



The Liquid Crystal Display has a parallel interface. It means that the microcontroller operates several pins at once to control the LCD display.

The 16-pins present on the LCD display are discussed below:

- **RS**

The **Register Select (RS)** pin controls the memory of the LCD in which we write the data. We can select either the **data register** or the **instruction register**. The LCD looks for the upcoming instruction, which is present in the instruction register.

- **R/W**

The Read/Write pin selects the reading or writing mode.

- **E**

The **Enable (E)** mode is used to enable the writing to the registers. It sends the data to the data pins when the mode is HIGH.

- **D0 to D7**

These are eight data pins numbered as D0, D1, D3, D3, D4, D5, D6, and D7. We can set the state of the data pin either HIGH or LOW.

Pin 1 of the LCD is the **Ground** pin, and pin 2 is the **Vcc** or the voltage source pin.

The pin 3 of the LCD is the **VEE** or the **contrast pin**. For example, we can connect the potentiometer's output to the VEE and can adjust the contrast of the LCD.

The A and K pins are also called as **Backlight pins** (Bklt+ and Bklt-).

Principle of LCD

The process includes putting the data (to be displayed on the LCD screen) into the data registers. The instructions in the Register Select are kept in the instruction register. The liquid crystal library has simplified process to display the characters on the LCD.

The LCDs can be controlled in 4-bit or 8-bit modes, which requires 7 and 11 Input/Output pins from the particular Arduino board.

Let's discuss a project to display the text on the LCD.

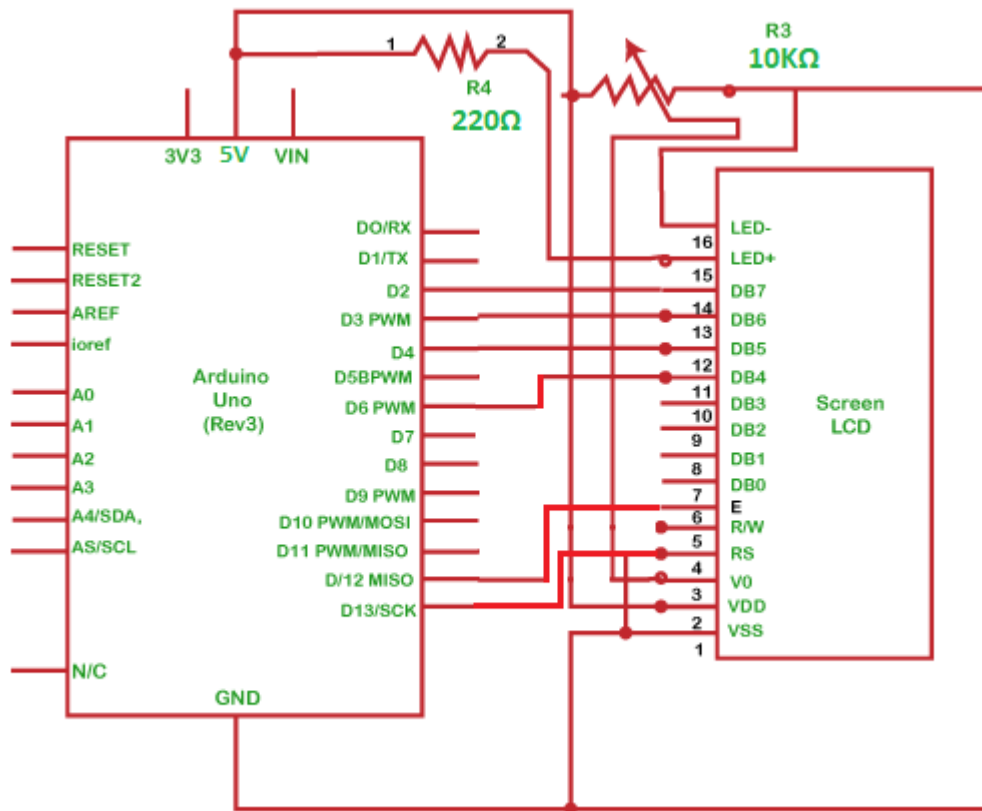
Hardware Required

The components required for the project are listed below:

- LCD Screen (Hitachi HD44780 compatible driver display)
- 1 x 220 Ohm Resistor
- 1 x 10K Ohm Resistor
- Arduino UNO board or Genuino board
- Jump wires
- Pin header required to solder the LCD display pins
- breadboard

Structure of the project

The structure of the project is shown below:



Procedure

The connection is explained below:

We need to first connect the data pins of LCD to the digital pins.

- Connect the RS pin of LCD to pin 13 of the Arduino board.
- Connect the Enable pin of LCD to pin 12 of the Arduino board.
- Connect the D4 pin of LCD to pin 6 of the Arduino board.
- Connect the D5 pin of LCD to pin 4 of the Arduino board.
- Connect the D6 pin of LCD to pin 3 of the Arduino board.
- Connect D7 pin of LCD to pin 2 of the Arduino board.
- Connect the middle terminal of the potentiometer to the VEE (contrast pin).
- Connect the two ends of the potentiometer to the Ground and 5V.
- Connect one end of a resistor to the A and K of the LCD and another end to 5V.

Sketch

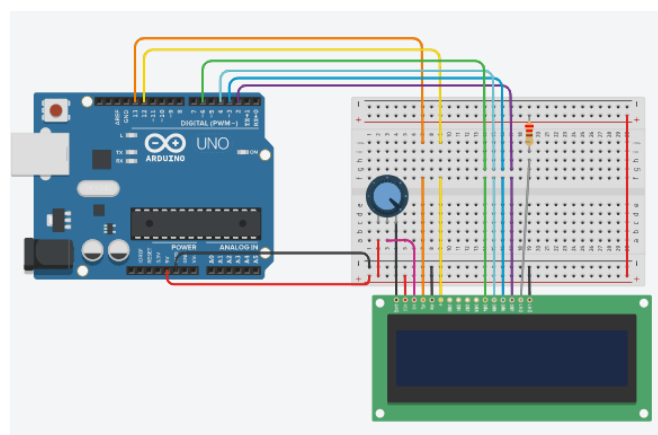
The code to display the specified message on the LCD display is given below:

1. // here, we will include the liquid crystal library:
2. #include <LiquidCrystal.h>
3. // initialize the library with the pins on the Arduino board
4. LiquidCrystal lcd(13, 12, 6, 4, 3, 2);
5. void setup() {
6. // Here, 16 and 2 are the columns and rows of the LCD
7. lcd.begin(16, 2);
8. // It prints the message on the LCD.
9. lcd.print("hello Arduino");
10. // We can modify the message as per our choice.
11. }
12. void loop() {
13. // It sets the cursor to column 0, line 1
14. // Since counting begins with 0, line 1 is the second row
15. lcd.setCursor(0, 1);
16. // print the number of seconds
17. lcd.print(millis() / 1000);
18. // Here, millis() is the return type of the timer in milliseconds
19. }

Connection Diagram

We will show the connection using the Simulator so that the connections become clearer and more precise.

We can make the same connection using the hardware devices.



Output

The message 'Hello Arduino' will be printed on the LCD display, as shown below:

Web Designing (CCWD)

Objective

The objective of course is to learn the fundamental Website Development which are essential to design a Website.

Benefit

Core concepts to design, implement and test website using the fundamental elements of Website Designing which enables student to get knowledge of web development

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus

Fundamentals of Object Website Development.

- Data Representation
 - Introduction to Web Technologies
 - Careers in Web Technologies and Job Roles
 - How the Website Works?
 - Client and Server Scripting Languages
 - Domains and Hosting
 - Responsive Web Designing
 - Types of Websites (Static and Dynamic Websites)
 - Web Standards and W3C recommendations

- HTML 4.01 and XHTML 1.1
 - What is Mark-up Language
 - Basic Structure of HTML o Difference Between HTML and XHTML
 - Head Section and Elements of Head Section, Meta Tags, CSS Tags, Script Tag, Table Tag, Div Tag, Header Tags Paragraph, Span, Pre Tags, Anchor Links and

Named Anchors, Image Tag, Object Tag, Iframe

Tag, Forms Form Tag, Attributes of Form POST and GET Method Field set and Legend Text input, Text area Checkbox and Radio Button Dropdown, List and Opt group File Upload and Hidden Fields Submit, Image, Normal, Reset Button Creating a Live Website Form HTML Validators

□ **Java Script**

- Introduction to Client Side Scripting
- Introduction to Java Script
- JavaScript Types
- Variables in JS
- Operators in JS
- Conditions Statements
- Java Script Loops
- JS Popup Boxes

□ **CSS**

- Introduction to Cascading Style Sheets
- Types of CSS
- CSS Selectors
- Universal Selector
- ID Selector
- Tag Selector
- Class Selector
- Sub Selector
- Child Combinatory Selector
- Adjacent Sibling Selector
- Attribute Selector
- Group selector
- First-line and First-letter selector
- Before and After Selector
- CSS Properties
- Type Properties
- Background Properties
- Block Properties

- o Box Properties

- o List Properties
- o Border Properties
- o Positioning Properties
- o Real-time Implementation
- o Conversion of Table to CSS
Layout
- o CSS Menu Design (Horizontal,
Vertical)
- o Form Designing

Project

Student makes a project during training period.

Certification

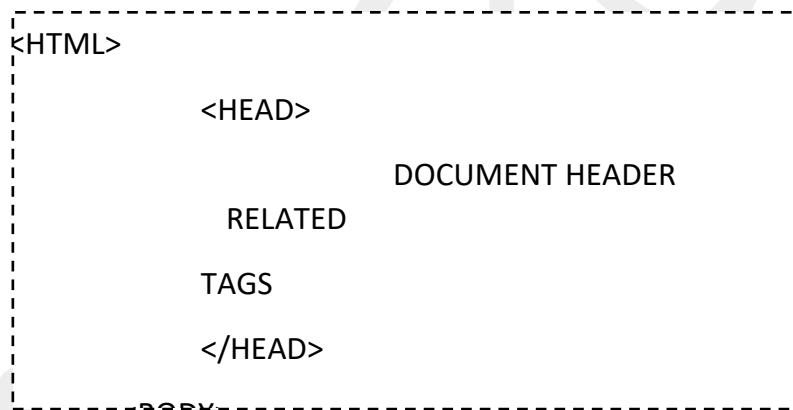
Certificate in Web Site Designing.

WEB DESIGNING Study Material (CCWD)

- HTML stands for Hypertext Markup Language, and it is the most widely used Language to write Web Pages.
- Hypertext refers to the way in which Web pages (HTML documents) are linked together.
- Thus the link available on a webpage is called *Hypertext*.
- HTML documents are also called **web pages**.
- Now, HTML is being widely used to format web pages with the help of different tags available in HTML.

□ HTML Document Structure:

- A typical HTML document will have following structure: Document declaration tag



□ HTML Tags:

- HTML markup tags are usually called HTML tags.
- These tags are keywords (tag name) surrounded by angle braces like **<Tag Name>**.
- The first pair of tags is the start tag and the second tag is the end tag.
- End tag contains a forward slash before the tag name.
- Start tag and end tag are also called opening tags and closing tags.
- Except few tags, most of the tags have their corresponding closing tags.
- For example **<html>** has its closing tag **</html>** and **<body>** tag has its closing tag **</body>** tag.

Tags	Descripti on
<HTM L>	This tag encloses the complete HTML document and mainly comprises of document header which is represented by <HEAD>...</HEAD> and document body which is represented by <BODY>...</BODY> tags.

<HEAD >	This tag represents the document's header which can keep other HTML tags like <TITLE>, <LINK> etc.
<TITLE >	The <TITLE> tag is used inside the <head> tag to mention the document title.
<BODY >	This tag represents the document's body which keeps other HTML tags like <H1>, , <P> etc.

□ **HTML Basic Tags:**

Tag Name	Description	Syntax
Heading	Different sizes for your headings	<H1>, <H2>, <H3>, <H4>, <H5>, and <H6>.
Paragraph	Way to structure your text into different paragraphs.	<P> </P>
Line Break	It starts from the next line.	<BR />
Horizontal Lines	Used to visually break up sections of a document.	<HR>

□ **HTML Text Formatting Tags:**

Tag	Description	Tag	Description
	Defines bold text	<I>	Defines italic text
	Defines emphasized text	<U>	Underline
	Defines strong text	<SMALL>	Defines small text
<SUB>	Defines subscripted text	<SUP>	Defines superscripted text
<INS>	Defines inserted text		Defines deleted text

□ **HTML Images:**

- Images are very important to beautify as well as to depict many complex concepts in simple way on your web page.
- This will take you through simple steps to use images in your web pages.

□ **Insert Image:**

- You can insert any image in your web page by using `` tag.
- Following is the simple syntax to use this tag.

``

□ **HTML Hyper Links:**

- A webpage can contain various links that take you directly to other pages and even specific parts of a given page. These links are known as hyperlinks.
- Hyperlinks allow visitors to navigate between Web sites by clicking on words, phrases, and images. Thus you can create hyperlinks using text or images available on a webpage.

` Next page`

- **Anchor element** allows you to link various WebPages or different sections on the same page. The syntax of Anchor element is given below:

`<A>.....`

- The various attributes of the Anchor element are HREF, NAME, TITLE, TARGET and ALT
 - **Href:** The href (**h**yperlink **r**eference) attribute specifies the location of the file or resource that you want to provide a link to.
 - **Name:** The name attribute specifies a location within the current or the existing document.
 - **Title:** The title attribute specifies a title for the file which you are providing a link.
 - **Target:** The target attribute specifies a position in the webpage where the browser displays a file.
 - **Alt:** The alt attribute specifies the alternative text which is displayed when an image used as a hyperlink is not displayed.

□ **HTML Lists:**

- HTML offers web authors three ways for specifying lists of information.
- All lists must contain one or more list elements.
- Lists may contain:
 1. `` - An unordered list. This will list items using plain bullets.
 2. `` - An ordered list. This will use different schemes of numbers to list your items.
 3. `<DL>` - A definition list. This arranges your items in the same way as they are arranged in a dictionary.

□ **HTML Tables:**

- The HTML tables allow web authors to arrange data like text, images, links, other tables, etc. into rows and columns of cells.
- Basic TABLE tags:
- `<TABLE>` `</TABLE>`

<TH>REGNO</TH>

<TH>NAME</TH>

<TH>MARKS</TH>

<TD>101</TD>

<TD>AKASH</TD>

<TD>535</TD>

<TD>102</TD>

<TD>KARTHIK</TD>

<TD>578</TD>

THIS IS THE TABLE
CAPTION

REGNO	NAME	MARKS
101	AKASH	535
102	KARTHIK	578

◆ **Some of the attributes associated with various tags are:**

Attribute	Description	Syntax
BORDER	Draws a border around the table of certain pixels wide	<TABLE BORDER="4">
BGCOLOR	Specifies the background colour of the entire Table	<TABLE BGCOLOR="IVORY">
ALIGN (LEFT, CENTER, RIGHT)	Identifies the horizontal alignment of a table	<TABLE ALIGN="LEFT"> <TABLE ALIGN="CENTER"> <TABLE ALIGN="RIGHT">
VALIGN (TOP, MIDDLE, BOTTOM)	Identifies the vertical alignment of a table	<TABLE VALIGN="TOP"> <TABLE VALIGN="MIDDLE"> <TABLE VALIGN="BOTTOM">
CELLSPACING	Specifies the space in pixels between cells	<TABLE CELLSPACING="4">
CELLPADDING	Specifies the space in pixels between cell border and cell data	<TABLE CELLPADDING="4">
COLSPAN	Allows a number of columns to be combined in a cell	<TD COLSPAN="2">
ROWSPAN	Allows a number of rows to be combined in a cell	<TD ROWSPAN="2">

□ **FORMS:**

- A form is a web page which allows the user to enter information; it also allows the user to interact with the contents of the form.
- To insert a form we use the <FORM> </FORM> tags.
- The rest of the form elements such as text boxes, check boxes, and pull down menus and so on must be inserted between the form tags.
- The form container works as follows:

<FORM METHOD="how to send" ACTION="URL of script">

.....form data.....

</FORM>

- The <FORM> tag takes two attribute:
 - **METHOD:** This attribute accepts GET or POST as its value. POST is by far the more popular, as it allows for a greater amount of data to be sent. GET is a little easier for web programmer

to deal with, and is best with single response, like a single textbox.

- **ACTION:** It simply accepts the URL for the script that will process the data from your form.

□ **Difference between GET and POST Methods of Form:**

- The POST method is used to send sensitive information's such as password, credit card number etc. The GET method appends data along with the URL. It is less secure than POST method.

□ **<FORM> Elements:**

- Form elements have properties such as Text boxes, Password boxes, Check boxes, Radio buttons, Submit, Reset etc.
- The properties are specified in the TYPE attribute of the HTML element **<INPUT> </INPUT>**
- **<INPUT> Element's Properties**

Element	Description
TYPE =	This value indicates the type of INPUT entry field which can include text, password and so on.
NAME =	It represents a variable name passed to CGI application.
VALUE =	The data associated with the variable name to be passed to the CGI application.
CHECKED =	This value indicates the Button/box is checked by default.
SIZE =	This value indicates the number of characters in the text field.
MAXLENGTH =	This value indicates the maximum number of characters that can be accepted.

□ **INPUT TYPES:**

1. TEXT BOXES:

- These boxes are used to provide input fields for text, phone, numbers, and dates and so on.
- Example: **<INPUT TYPE="TEXT" NAME = " studentname" SIZE="30">**

2. PASSWORD:

- These boxes are used to allow the entry of passwords.
- Example: **<INPUT TYPE="PASSWORD" NAME="Secret">**

3. CHECKBOX:

- These boxes are used to allow the user to select more than one option.
- Example: **<INPUT TYPE="CHECKBOX">**

4. RADIO Button:

- The Radio button allows user to select only one option among a list of options.
- Example: `<INPUT TYPE="RADIO">`

5. File Upload:

- You can use a file upload to allow users to upload files to your web server.
- Example: `<INPUT TYPE="FILE" NAME="fileupload">`

6. SUBMIT:

- This is the element that causes the browser to send the names and values of the other elements to the CGI application specified by the ACTION attribute of the FORM element.
- Example: `<INPUT TYPE="SUBMIT" VALUE="Submit the Form">`

7. RESET:

- It allows the user to clear all the input in the form.
- Example: `<INPUT TYPE="RESET" VALUE="Reset the Form">`

□ Other Elements used in FORMS:

- **Text Area:** This element is enclosed by the tags `<TEXTAREA>` `</TEXTAREA>` it is an element that allows for free form text entry.

Example: `<TEXTAREA NAME="Remarks ROWS="3" COLS="50">`

Please give your opinion here.

`</TEXTAREA>`

- **<SELECT> tag:** The `<SELECT>` tag is used to create a drop-down list. The `<OPTION>` tag inside the `<SELECT>` tag defines the available options in the list.

□ FRAMES:

- HTML Frames are used to divide your browser window into multiple sections where each section can load a separate HTML document.
- A collection of frames in the browser window is known as Frameset.

□ Creating Frames:

- To use frames on a page we use `<FRAMESET>` tag instead of `<BODY>` tag.
- The `<FRAMESET>` tag defines how to divide the window into frames.
- The row attribute of `<FRAMESET>` tag defines horizontal frames.
- The cols attribute of `<FRAMESET>` tag defines vertical frames.
- Each Frame is indicated by `<FRAME>` tag.

- **Example:**

`<HTML>`


```

<HEAD>
<TITLE> HTML FRAMES </TITLE>
</HEAD>
<FRAMESET ROWS= "10%, 80%, 10%">
<FRAME name= "top" src="/html top_frame.htm" />
<FRAME name= "main" src="/html main_frame.htm" />
<FRAME name= "bottom" src="/html bottom_frame.htm" />
<NOFRAMES>
<BODY>
</NOFRAMES>
</FRAMESET>
</HTML>

```

✓ Advantages of HTML:

- HTML document browser interfaces are easy to build.
- It is easy to learn.
- There are some specialized structures in HTML.

✓ Disadvantages of HTML:

- It is a weak presentation tool.
- Weak markup tool.
- It is very instable.

➤ XML:

- XML stands for **eXtensible Markup Language**.
- XML is a markup language for documents containing structured information.
- Structured information contains both content (words, pictures etc.) and some indication of what role content plays.
- XML is a text-based markup language that is fast becoming the standard for data interchange on the web.

➤ Difference between HTML and XML:

HT ML	XML
• Hypertext Markup Language	• eXtensible Markup Language

<ul style="list-style-type: none"> ● HTML is used to display data and to focus on formatting of data. 	<ul style="list-style-type: none"> ● XML is used to describe data and focus on what data is.
<ul style="list-style-type: none"> ● HTML tags are predefined 	<ul style="list-style-type: none"> ● XML tags are not predefined (Create our own tag)
<ul style="list-style-type: none"> ● HTML tags are not case sensitive 	<ul style="list-style-type: none"> ● XML tags are case sensitive
<ul style="list-style-type: none"> ● HTML is not extensible 	<ul style="list-style-type: none"> ● XML is extensible

➤ **DHTML:**

- DHTML stands for **Dynamic Hyper Text Markup Language**.
- DHTML refers to Web content that changes each time it is viewed.
- For example, the same URL could result in a different page depending on any number of parameters, such as:
 - geographic location of the user
 - Time of day
 - Previous pages viewed by the user
 - Profile of the reader
- Dynamic HTML is collective term for a combination of HTML tags and options that can make web pages more animated and interactive than previous versions of HTML.

➤ **Web Hosting:**

- Web Hosting means of hosting web-server application on a computer system through which electronic content on internet is readily available to any web-browser client.
- Various types of web hosting services are:
 - Free Hosting
 - Virtual or shared Hosting
 - Dedicated Hosting
 - Co-location Hosting

✓ **Free Hosting:**

- This type of hosting is available with many prominent sites that offer to host some web pages for no cost.

✓ **Virtual or shared Hosting:**

- This type of hosting is where one's own web site domain (ex: www.yourname.com) is hosted on the web server of hosting company along with the other web sites.

✓ **Dedicated Hosting:**

- In this type of hosting, the company wishing to go online rents an entire web server from hosting company. This is suitable for large, high traffic sites.

✓ **Co-location Hosting:**

- In this type of hosting, the company owning the site instead of web hosting company. Suitable for those who need the ability to make changes?

➤ **Web Scripting :**

- *The process of creating and embedding scripts in a web page is known as web-scripting.*
- **Script:**
 - *A Script is a list of commands embedded in a web page.*
 - Scripts are interpreted and executed by a certain program or scripting –engine.

● **Types of Scripts:**

1. **Client Side Script:**

- Client side scripting enables interaction within a web page.
- The client-side scripts are downloaded at the client-end and then interpreted and executed by the browser.
- Some popular client-side scripting languages are VBScript, JavaScript, ActionScript.

2. **Server-Side Scripts:**

- Server-side scripting enables the completion or carrying out a task at the server-end and then sending the result to the client –end.
- Some popular server-side Scripting Languages are PHP, Perl, ASP(Active Server Pages), JSP(Java Server Pages) etc.

Digital Marketing(CCDMW1)

Objective

The objective of course is to enable the students to get overview of the Digital Marketing methods and tools

Benefit

Core concepts of SEO, SMM, Google Ads and Facebook Ads fundamental elements of Digital Marketing which enables student to get basics of Digital Marketing

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus Digital

Marketing

- Introduction of Digital Marketing
 - Marketing Process
 - Traditional Marketing Vs Digital Marketing

- SEO
 - Overview of SEO
 - Keyword Research & Types of Keywords
 - On Page SEO
 - Off Page SEO
 - Back Link Building
 - Advantage and Disadvantages of OOP

- Google Ads
 - Introduction to SEM, Google Ads Account Setup & Search Campaign
 - Display Campaigns
 - Conversion Tracking Setup
 - Shopping Campaigns

- FB & Instagram ADs
 - Introduction & Understanding Boost Post
 - Setting Up Ads Manager/Business
 - FB Pixel Setup
 - Campaign
 - Typing and Executing Programs

- E-Mail Marketing
 - Introduction to E-Mail Marketing
 - Types of E-Mails & Audience
 - E-Mail List Building

- Strategy for a successful E- Mail Campaign

Project

Student makes a project during training period.

Certification

Certificate in Digital Marketing.

Digital Marketing Study Material (CCDWW1)

Introduction to Digital Marketing, Traditional Vs Digital Marketing, Technology behind Digital Marketing, Characteristics of Digital Marketing, Digital Marketing Strategy, Understanding Digital Consumer.

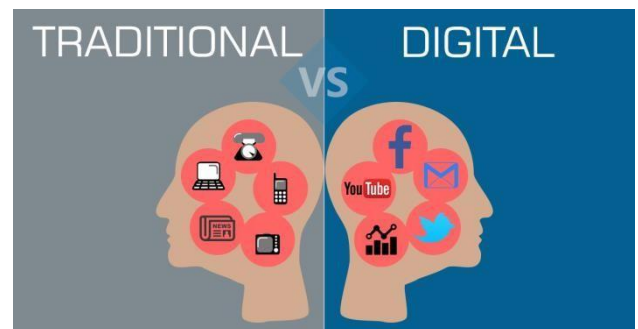
[Introduction to Digital Marketing:](#)

Today's time of Internet has opened the gateway of tremendous digital marketing opportunities for businesses. By utilizing different channels of digital marketing, businesses cannot just share their product and services online; additionally they can gain clients for their business, entice them and can convert them to boost their business profits. The speed and straightforwardness with which the digital media transmits data and support a business is astonishing.

The world is super-connected nowadays and all things considered, marketing and advertising are no more the same as they once were. This is particularly valid because of the ascent of online networking, which has changed how organizations speak with potential and existing customers. Essentially, it is an aggregate term, which is utilized where advertising and marketing meet web innovation and different types of online media platforms.

Traditional Marketing Vs Digital Marketing:

The debate continues as to whether digital marketing is overpowering and surpassing traditional marketing or not. Many think that for the most part, digital marketing has taken over and traditional marketing barely exists, if at all. Recent occurrences such as the magazine giant, Newsweek switching to totally digital publications cause ripples throughout the marketing arena. Over the last year or so traditional marketing had fallen nearly 160% while in the same time frame expenses for digital marketing increased over 14%.



Traditional Marketing:

The traditional way of marketing lets businesses market their products or administrations on print media, radio and TV commercials, bill boards, business cards, and in numerous other comparable ways where Internet or web-based social networking sites were not utilized for promoting.

- However, traditional promoting approaches had constrained client reachability and extent of driving clients' purchasing conduct. In addition, traditional marketing methods were not quantifiable too.
- There are many facets of traditional marketing and examples might include tangible items such as business cards, print ads in newspapers or magazines. It can also include posters, commercials on TV and radio, billboards and brochures. Traditional marketing is anything except digital means to brand your product or logo.
- Another overlooked means of traditional marketing is when people find a particular business through a referral or a network and eventually you build a rapport with them.
- Because of its longevity, people are accustomed to traditional marketing. Finding ads in magazines and newspapers, or reading billboards are still familiar activities and people still do them all the time.
- Most of the time, traditional marketing is reaching only a local audience even though it is not limited to

one.

- There are some aspects where traditional marketing wins over the online advertising battle, which include Target Local Audience, Materials are for keeps, More personal and Simpler process.
- One of the primary disadvantages of traditional marketing is that the results are not easily measured, and in many cases cannot be measured at all.
- In most cases, traditional marketing is also more costly than digital marketing. And perhaps the biggest disadvantage today is that traditional marketing is static which means there is no way to interact with the audience. It's more

like you are throwing information in front of people and hoping that they decide to take action.



Digital Marketing:

Digital Marketing can be understood as a well-targeted, conversion-oriented, quantifiable, and interactive marketing of products or services by utilizing digital innovation to achieve the customers, and transform them into clients in a sustainable fashion. The whole concept and functionalities of Digital Marketing are more competent, effective, result-oriented and measurable, which make it very different from traditional marketing.



- Digital or online marketing is the marketing mode of the global village. It is only obvious that the era of the internet will have its influence in every realm of life.
- The world of digital marketing continues to evolve and as long as technology continues to advance, digital marketing will as well.
- Examples of digital marketing include things like websites, social media mentions, YouTube videos, and banner ads. Specifically, digital marketing is similar to traditional advertising, but using digital devices.
- However, digital marketing is considered a form of inbound marketing and its goal is for people to find you. Businesses put content (or ads) out for individuals to find.
- People may conduct an organic online search, a paid search, find your business on a social network or by reading content that has been published online such as a blog or an article. The more they see you or your content, the more familiar they will become with your brand and they will eventually develop a trust and a rapport with you through this online presence.
- One benefit to using digital marketing is that the results are much easier to measure; and another is that a digital campaign can reach an infinite audience. It is also possible to tailor a digital campaign to reach a local audience but it can also be used on the web and reach the entire globe when appropriate.
- Digital marketing is also a very interactive means of reaching an audience since it makes use of social outlets. There can be plenty of direct contact between the audience and the business which means that the business can get some very valuable consumer feedback.
- Benefits of Digital Marketing over Traditional Marketing include reduced cost, real time result, brand Development, non-intrusive, higher exposure, higher engagement, Quicker publicity, Non

interruptive, Good For All Stages Of Fields, Easy analytics and Strategy Refinement.

- One of the disadvantages to using digital media marketing strategies is that it can take some time to realize measurable success.

Differences between Traditional Marketing & Digital Marketing:

Traditional Marketing	Digital Marketing
1. Communication is unidirectional in traditional marketing, which means, an organization communicates about its services with its audiences.	1. Communication is bidirectional in Digital Marketing as businesses can communicate with customers and customers can ask queries or make suggestions to businesses as well.
2. Medium of communication in traditional marketing is generally phone calls, emails, and letters.	2. Medium of communication is more powerful and involves social media websites, chats, apps and Email.
3. Campaign in Traditional marketing takes more time as designing, preparing, and launching are involved.	3. Digital marketing campaigns can be developed quite rapidly and with digital tools, channelizing Digital Marketing campaigns is easier.
4. It is best for reaching local audience.	4. It is very effective for reaching global audiences.
5. It is almost impossible to measure the effectiveness of a traditional marketing campaign.	5. Digital Marketing lets you measure the effectiveness of a digital marketing campaign through analytics.

Characteristics of Digital Marketing:

We are living in the digital age today. Outdated marketing won't help you get profits you desire for. Digital Marketing is a necessity today of almost every business. There is no way around it. The way you dedicated a lot of your time and effort to making your product, similarly it is important to invest in a complete digital strategy to launch and show your product or services to your targeted audience and continually improve your brand presence online.

Make sure that you evaluate all your options so you get aware of your digital marketing platforms and whether or not you're really boosting the potential of your marketing campaign. When done correctly, this can help you stand out from the crowd and get succeed.

Digital Marketing is a great way of increasing brand awareness, customer engagement and long-term loyalty and generating a short-term boost in sales, despite the fact that every digital marketing campaign is different in their own ways, the reality is that many of them are built on common basics and a few key elements. Successful Digital Marketing Campaign requires a lot of time following through analytics and data to find insights. But, as we have analyzed which characteristics successful campaigns share to help you.

1. Get a Quality Company Website:

What was a novelty a mere decade ago is a critical requirement today. A business website is a pseudo B2B portal, allowing businesses and customers from around the world to connect with you. A business website is similar to your Company brochure, available 24x7, and projects you as a professional outfit.

2. Social Media Presence:

The biggest achievement of this digital era has been the ease with which people have learnt to communicate- Social Media websites like Facebook, Twitter, Google+, Pinterest, YouTube etc. are the latest methods to communicate across wide demographics of age, taste and culture. By actively promoting your company on these social media, you are getting the world to talk about you.

3. Blogging and Forums:

Here is a powerful axiom- 'Content is King'. Produce powerful, genuine and compelling content as part of your Company blog. Be a regular on relevant forums and discussion panels. Learn the art of connecting your business themes into the content that you produce. In time, your content will stand up to be the biggest promoter of your brand.

4. List your business on the three biggest listing services:

Register your business on 'Google Places'- this allows your business to feature on Google searches and be listed on Google Maps. Other business databases that you must be part of include 'Yahoo! Local' and Microsoft's 'Bing'. Joining these services is free; setting up an account takes very limited time and the far reach of these services translates to free promotion for your business.

5. Email Marketing:

In recent times, bulk emailing isn't a very favored promotional concept. However, if done well, and with good intentions, email marketing could be a powerful tool in your Company's online promotional arsenal. Personalized emails speak directly to the target audience, helps you get an immediate response and can aid in the opening of a line of communication with your prospective customer base. It's free and fast promotion- with an impactful feedback.

6. A Dedicated Digital Marketing Expert:

If you aren't sure about pulling off a good promotional job individually, maybe it's a good idea to hire an innovative, enthusiastic Digital Marketing Consultant to handle your Company's online promotional strategy. This action will allow you to be on top of your promotional ideas while employing a professional to implement concepts that drive towards your expected results.

Technology behind Digital Marketing:

Developments in technology and the evolution of marketing are inextricably intertwined. Technology has underpinned major milestones in the history of marketing since its inception. The process tends to go something like this:

- New technology emerges and is initially the preserve of technologists and early adopters.
- The technology gains a firmer foothold in the market and starts to become more popular, putting it on the marketing radar.
- Innovative marketers jump in to explore ways they can harness the power of this emerging technology to connect with their target audience.
- The technology migrates to the mainstream and is adopted into standard marketing practice.

The printing press, radio, television and now the internet are all examples of major breakthroughs in technology that ultimately altered the relationships between marketers and consumers for ever, and did so on a global scale.

But, of course, marketing isn't about technology; it's about people: technology is only interesting, from a marketing perspective, when it connects people with other people more effectively. There are plenty of examples of technology through the ages having a significant impact on various markets – technology that may seem obscure, even irrelevant today. The mainstream adoption of digital technology – the internet, the software applications that run on it, and the devices that allow people to connect both to the network and to each other whenever, wherever and however they want to – promises to dwarf all that has come before it.

The first global communications network: ‘the highway of thought’

To understand the explosive growth of the internet we need to look back at how early communications technology evolved into the global network of interconnected computers that today we call the internet. The story of electronic communication begins with the wired telegraph – a network that grew explosively to cover the globe, connected people across vast distances in a way that seemed almost magical, and changed the world for ever.

Early Networks:

The internet story really starts in 1957, with the USSR’s launch of the Sputnik satellite. It signalled that the United States was falling behind the Soviet Union in the technology stakes, prompting the US government to invest heavily in science and technology. In 1958, the US Department of Defense set up the Advanced Research Projects Agency (ARPA), a specialist agency established with a specific remit: to make sure the United States stayed ahead of its Cold War nemesis in the accelerating technology race.

You’ve got mail E-mail, which is still often described as the internet’s ‘killer application’, began life in the early 1960s as a facility that allowed users of mainframe computers to send simple text-based messages to another user’s mailbox on the same computer. But it wasn’t until the advent of ARPANET that anyone considered sending electronic mail from one user to another across a network.

In 1971 Ray Tomlinson, an engineer working on ARPANET, wrote the first program capable of sending mail from a user on one host computer to another user’s mailbox on another host computer. As an identifier to distinguish network mail from local mail Tomlinson decided to append the host name of the user’s computer to the user login name. To separate the two names he chose the @ symbol.

E-mail, one of the Internet’s most widely used applications, and one of the most critical for internet marketers, began life as a programmer’s afterthought. The ARPANET was a solution looking for a problem.

From ARPANET to Internet :

The term ‘internet’ was first used in 1974 by US computer scientist Vinton Cerf (commonly referred to as the ‘father of the internet’, and now a senior executive and internet evangelist with Google). Cerf was working with Robert Khan at DARPA on a way to standardize the way different host computers communicated both across the growing ARPANET and between the ARPANET and other emerging computer networks. The Transmission Control Program (TCP) network protocol they defined evolved to become the Transmission Control Program/Internet Protocol (TCP/IP) protocol suite that’s still used to pass packets of information backwards and forwards across the internet to this day.

In 1983 the ARPANET started using the TCP/IP protocol – a move that many consider to signal the true ‘birth’ of the internet as we know it. That year, too, the system of domain names (.com, .net, etc) was invented. By 1984 the number of ‘nodes’ on the still fledgling network passed 1,000 and began climbing rapidly. By 1989 there were more than 100,000 hosts connected to the internet, and the growth continued.

Making Connections – ‘birth of the Web’

It was in 1989 that Tim Berners-Lee, a British developer working at the European Organization for Nuclear Research (CERN) in Geneva, proposed a system of information cross-referencing, access and retrieval across the rapidly growing internet based on ‘hypertext’ links. The concept of a hypertext information architecture was nothing new, and was already being used in individual programs running on individual computers around the world. The idea of linking documents stored on different computers across the rapidly growing internet, though, was

nothing short of revolutionary. The building blocks for the world wide web were already in place

– but it was Tim Berners-Lee’s vision that brought them together.

The first web page on the internet was built at CERN, and went online on 6 August 1991. It contained information about the new world wide web, how to get a web browser and how to set up a web server. Over time it

also became the first ever web directory, as Berners-Lee maintained a list of links to other websites on the page as they appeared.

The World Wide Web – A New Frontier

Up to this point, the internet had been the realm of technologists and scientists at research institutions. But the advent of the web changed the landscape, making online information accessible to a much broader audience. What happened next was explosive. Between 1991 and 1997 the web grew at an astonishing 850 per cent per annum, eclipsing all expectations. With more websites and more people joining the online party every day, it was only a matter of time before innovative tech-savvy marketers started to notice the web's potential as an avenue for the marketing message.

In August 1995 there were 18,957 websites online; by August 1996 there were 342,081 ('Fifteen Years of the Web', Internet timeline, www.bbc.co.uk). It was an era that saw the birth of some of today's most well-known online brands: sites like Amazon, Yahoo!, eBay and, in September 1998, Google Inc.

Boom, Boom. . . Bang!

For a time it seemed as though the halcyon days of the late 1990s would continue forever and that the dot.com bubble was impervious to bursting. Fuelled by speculative investment and high-profile high-tech IPOs, the Nasdaq Composite stock index continued to rocket upwards. Each new dot.com success fuelled the fervour for technology stocks, blowing the bubble up a little more. On 10 March 2000 the Nasdaq index hit an intraday high of 5,132.52 before settling to an all-time closing high of 5,046 points.

Enough Technology – let's talk about people

One of the key things to remember is this: digital marketing isn't actually about technology at all; it's all about people. In that sense it's similar to traditional marketing: it's about people (marketers) connecting with other people (consumers) to build relationships and ultimately drive sales.

Technology merely affords you, the marketer, new and exciting platforms that allow you to connect with people in increasingly diverse and relevant ways. Digital marketing is not about understanding the underlying technology, but rather about understanding people, how they're using that technology, and how you can leverage that to engage with them more effectively. Yes, you have to learn to use the tools at your disposal – but understanding people is the real key to unlocking the potential of digital marketing.

A huge and growing market

Although internet companies suffered bruised finances and a tarnished public image in the wake of the dot.com crash, the internet itself never stopped growing, in terms both of the number of websites online and, crucially from a marketing perspective, of the number of people with internet access.

In March 2000, when the dot.com bubble burst, there were an estimated 304 million people in the world with internet access. By March 2003 that figure had doubled to 608 million, and in December 2005 the global online population passed 1 billion. As of December 2007 the figure sat at around 1.3 billion people. That's 20 per cent of the world's population – and climbing (Internet World Stats, www.internetworldstats.com). As global and local online populations have spiralled upwards, so too have the levels of broadband penetration, which

means that not only are there more people online but they're also online more often, for much longer periods of time and can do much more with that time.

All of this means the market penetration of digital channels is growing rapidly. As the potential audience grows, so too does the allure of digital marketing. Marketers around the world are sitting up and taking notice, and big name brands are starting to take the internet and other digital marketing channels seriously: loosening the purse strings and redistributing their advertising spend.

Introducing Consumer 2.0

Web 2.0 is not a revolution in technology; it's an evolution in the way people are using technology. It's about harnessing the distributed collaborative potential of the internet to connect and communicate with other like-minded people wherever they are: creating communities, and sharing knowledge, thoughts, ideas and dreams. If you've ever shared photos on Flickr, read and commented on a blog, looked for friends on Facebook or MySpace, watched a video clip on YouTube, tried to find your house on Google Maps, video-called friends or family abroad using Skype or looked up an article on Wikipedia, then you've used Web 2.0 technologies.

Analysts at Jupiter Research identified **seven key ways** in which the increasingly widespread adoption of **technology is influencing consumer behavior**:

- **Inter-connectivity:** Networked digital technology is enabling consumers to connect with each other more readily, be it through e-mail, instant messaging (IM), mobile messaging, or web-based social networking platforms such as Facebook, MySpace and LinkedIn – or more likely a combination of all of these platforms. Consumers are interacting with like-minded people around the world, paying scant regard to trifling concerns like time zones or geography. Peer-to-peer interaction is reinforcing social networks and building new virtual communities.
- **Technology is leveling the information playing field:** With digital technology content can be created, published, accessed and consumed quickly and easily. As a result the scope of news, opinion and information available to consumers is broader and deeper than ever. Consumers can conduct their own unbiased research, comparing and contrasting products and services before they buy. Knowledge is power, and digital technology is shifting the balance of power in favour of the consumer.
- **Relevance filtering is increasing:** With such a glut of information available to them, digital consumers are, through necessity, learning to filter out items relevant to them and to ignore anything they perceive as irrelevant. Increasingly digital consumers look to have their information aggregated, categorized and delivered (whether through e-mail or RSS feeds). They use personalization features to block out irrelevant content and increasingly employ software solutions to exclude unsolicited commercial messages.
- **Niche aggregation is growing:** The abundance and diversity of online content allow consumers to participate in and indulge their specialist interests and hobbies. Aggregations of like-minded individuals congregate online; the homogeneous mass consumer population is fragmenting into ever-smaller niche groups, with increasingly individual requirements.
- **Micropublishing of personal content is blossoming:** Digital media's interactive and interconnected nature allows consumers to express themselves online. Publishing your own content costs little more than a bit of time and imagination, whether through discussion forums, message boards, feedback forms, voting platforms, personal photo galleries, or blogs. Users are posting their opinions online for all to see and are consulting the opinion of their online peers before making purchasing decisions. How often do you check an online review before booking a table at an unknown restaurant or a weekend break at a hotel, or even buying a new car?
- **Rise of the 'prosumer':** Online consumers are getting increasingly involved in the creation of the products and services they purchase, shifting the balance of power from producer to consumer. They're letting producers know what they want in no uncertain terms: the level of interaction between producer and consumer is unprecedented. Individuals are more involved in specifying, creating and customizing products to suit their requirements, and are able to shape and mould the experiences and communications they receive from producers. Traditional mass-production and mass-marketing concepts are rapidly becoming a thing of the past.
- **On demand; any time, any place, anywhere:** As digital technology becomes more ubiquitous in people's lives, the corresponding acceleration of business processes means that consumers can satisfy their needs more quickly, more easily and with fewer barriers. In the digital economy, trifling concerns like time, geography, location and physical store space are becoming irrelevant. It's a world of almost instant gratification, and the more consumers get of it the more they want it – now, now, now!

Digital Marketing Strategy:

Why you need a digital marketing strategy?

The simple answer: because without one you'll miss opportunities and lose business. Formulating a digital marketing strategy will help you to make informed decisions about your venture into the digital marketing arena and ensure that your efforts are focused on the elements of digital marketing that are most relevant to your business. It's a crucial first step towards understanding how the constantly evolving digital marketplace relates to you and how it affects the relationship between your business or brand and your customers and prospects.

- It doesn't matter what business you're in; it's a fairly safe bet that an increasing number of your target market rely on digital technology every day to research, evaluate and purchase the products and services they consume.
- Without a coherent strategy of engagement and retention through digital channels your business is at best missing a golden opportunity and at worst could be left behind, watching your competitors pull away across an ever-widening digital divide.
- Unlike conventional forms of mass media marketing, the internet is unique in its capacity to both broaden the scope of your marketing reach and narrow its focus at the same time.
- Using digital channels you can transcend traditional constraints like geography and time zones to connect with a much wider audience. At the same time, digital technology allows you to hone your marketing message with laser-like precision to target very specific niche segments within that wider market. Implemented effectively, it can be an incredibly powerful combination.
- It's often stated that the internet puts consumers in control as never before. But it's also important to remember that the internet also delivers an unprecedented suite of tools, techniques and tactics that allow marketers to reach out and engage with those same consumers. The marketing landscape has never been more challenging, dynamic and diverse.
- And therein lies the crux of our need for a cohesive digital marketing strategy. If you're going to harness the power of digital marketing to drive your online business to dizzying new heights, you need a thorough understanding of your market, how your customers are using digital technology, and how your business can best utilize that same technology to build enduring and mutually rewarding relationships with them.
- As digital channels continue to broaden the scope available to us as marketers, so they add to the potential complexity of any digital marketing campaign. Having a clearly defined strategy will help to keep you focused, ensure that your marketing activities are always aligned with your business goals and, crucially, ensure that you're targeting the right people.

Defining your Digital Marketing Strategy:

Once you've decided that you do, in fact, need to pursue some form of digital marketing, the next step is actually to sit down and define your strategy. Unfortunately there is no 'one size fits all' strategic panacea here. We don't have a magic recipe to ensure your digital marketing success, and neither does anybody else. Basically every business needs to 'bake' its own unique strategy based on its own particular set of circumstances. While the available ingredients are the same, the resulting strategies can be radically different.

If you sell apples to local grocers by the truckload, your strategy will bear little resemblance to that of a company selling downloadable e-books and reports on financial trading, which will in turn be very different to the strategy adopted by a sports clothing manufacturer who wants to cut out the retailer and sell directly to consumers over the web. Different products, different markets, different needs – different solutions. What it ultimately boils down to is this: the best people to define your digital marketing strategy, curiously enough, are the people who best know your business.

Laying strong digital foundations:

The good news is that you've almost certainly already started the process of defining your digital marketing strategy. Probably been thinking about digital marketing in the context of your business, about what your competitors are doing online and why, about how your customers and prospects are integrating digital technology into their lives, and about how you can best exploit these new and exciting digital channels to foster longer, more productive relationships with them. These are the components that will form the foundation of your digital marketing strategy:

- **Know your business:** Is your business ready to embrace digital marketing? Are your products or services suited to online promotion? Do you have the right technology, skills and infrastructure in place? How will digital marketing fit into your existing business processes, do those processes need to change, and are you and your staff ready to accommodate those changes?
- **Know the competition:** Who are your main competitors in the digital marketplace? Are they the same as your offline competitors? What are they doing right (emulate them), what are they doing wrong (learn from them), what aren't they doing at all (is there an opportunity there for you?) and how can you differentiate your online offering from theirs? Remember, competition in the digital world can come from just around the corner or from right around the globe. The same technologies that allow you to reach out to a broader geographical market also allow others to reach into your local market. When you venture online you're entering a global game, so don't limit your analysis to local competition.
- **Know your customers:** Who are your customers and what do they want from you? Are you going to be servicing the same customer base online, or are you fishing for business from a completely new demographic? How do the customers you're targeting use digital technology, and how can you harness that knowledge to engage in a productive and ongoing relationship with them?
- **Know what you want to achieve:** If you don't know where you're going, there's a pretty fair chance you'll never get there. What do you want to get out of digital marketing? Setting clear, measurable and achievable goals is a key part of your digital marketing strategy. Are you looking to generate online sales, create a source of targeted sales leads, improve your brand awareness among online communities, all of the above or perhaps something completely different? Your goals are the yardsticks against which you can measure the progress of your digital marketing campaigns.
- **Know how you're doing:** The beauty of digital marketing is that, compared to many forms of advertising, results are so much more measurable. You can track everything that happens online and compare your progress against predefined goals and key performance indicators (KPIs). How is your digital campaign progressing? Are certain digital channels delivering more traffic than others? Why is that? What about conversion rates? How much of that increased traffic results in tangible value to your business? Measure, tweak, refine, re-measure. Digital marketing is an ongoing and iterative process.

The process of formally defining your digital marketing strategy forces you to sit down and analyze the market in which you're operating with a critical eye, and to really think about the different components of your business and how digital marketing can help you to achieve your business goals. Don't get down in the technical details – remember, digital marketing is about people communicating with other people; the technology is just the bit in the middle that helps it to happen. Your strategy should provide you with a high-level framework – a bird's-eye view of the digital marketing landscape with your business centre stage; the details will come later.

Understanding Digital Consumers:

There is a notion that pervades marketing circles today, a notion of mysterious ethereal creatures who exist in a hyper-connected, multifaceted cyber-world of their own. They are an enigma: they speak a different language, communicate in ways we don't understand, and they're turning the world of marketing on its head. These are the

ephemeral, wraithlike ‘digital consumers’, who slip effortlessly through the marketer’s grasp. Digital consumers are different, we’re told – but are they really?

The first thing to realize about digital consumers is that there’s basically no such thing. The customers and prospects you encounter online are the very same people who walk into your store every day, call you on the telephone, or order something from your mail-order catalogue. There’s nothing dark, sinister or mysterious about them. They’re people – like everybody else. ‘There is no great mystery about how [digital consumers] think and what they want’, maintains interactive marketing expert.

These consumers are doing exactly what people have been doing for thousands of years – communicating with each other. The fact that technology is enabling them to communicate with each other faster, over distance, over mobiles and in 3D worlds is being perceived as something dangerous, unique and extraordinary, something that needs to be controlled and pinned down. People talk to each other – they always have.

Making the Web their own

Consumers, whatever their ‘flavour’, don’t care about the way marketers define what they do. Concepts like above the line, through the line, below the line, digital, traditional, experiential, linear, analogue, mobile, direct, indirect or any other ‘box’ we care to slip our marketing endeavours into are completely meaningless to them.

All consumers care about is the experience – how the marketing available to them can enhance the experience and help them to make more informed decisions. People are the single most important element in any form of marketing. That’s just as true in the digital space as it is in any other sphere of the discipline. As a marketer you need to understand people and their behaviour – and here’s where the notion of the digital consumer does carry some weight, because consumer behaviour is changing, and it’s changing because of the pervasive, evocative and enabling nature of digital technology.

Digital marketing allows us to build uniquely tailored ongoing relationships with individual customers. Marketing in the digital age has been transformed into a process of dialogue, as much about listening as it is about telling.

I don’t know you and you don’t know me

Perceived anonymity is another online trait that can have a profound effect on consumer behaviour. It liberates consumers from the social shackles that bind them in the real world; online they are free to do and say as they please with scant regard for the social propriety that holds sway in ‘real life’. In a bricks-and-mortar store shoppers will wait patiently for service, and will often endure a less-than-flawless shopping experience to get what they want. Online they won’t; they demand instant gratification and a flawless customer experience. You have to deliver, first time, every time. If you fail to engage, retain and fulfill their expectations on demand, they’re gone, vanishing into the ether of cyberspace as quickly as they came, the only trace a fleeting, solitary record left on your web server’s log file.

Key traits of the Online Consumer

Well, there’s something about the immediacy and anonymity of the digital experience that has a similar effect on people. It’s always risky to generalize and make assumptions about people – especially in a field as dynamic and fast moving as this one. The only real way to know your market intimately is to conduct original research within your particular target group. That said, a

lot of research work has been done (and continues to be done) on the behavioural traits of online consumers, and a broad consensus has emerged around the key characteristics that epitomize digital consumers:

Digital consumers are increasingly comfortable with the medium: Many online consumers have been using the internet for several years at this stage – and, while the user demographic is still skewed in favour of younger people, even older users are becoming increasingly web savvy. As people become more comfortable with the medium they use it more efficiently and effectively, which means they don't hang around for long: your content needs to deliver what they want, and it needs to deliver quickly.

They want it all, and they want it now: In the digital world, where everything happens at a million miles per hour, consumers have grown accustomed to getting their information on demand from multiple sources simultaneously. Their time is a precious commodity, so they want information in a format that they can scan for relevance before investing time in examining the detail. Designers and marketers need to accommodate this desire for 'scannability' and instant gratification when constructing their online offering.

They're in control: The web is no passive medium. Users are in control – in the Web 2.0 world more than ever before. Fail to grasp that simple fact and your target audience won't just fail to engage with you, but they will actively disengage. We need to tailor our marketing to be user-centric, elective or permission based, and offer a real value proposition to the consumer to garner positive results.

They're fickle: The transparency and immediacy of the internet don't eradicate the concept of brand or vendor loyalty, but they do erode it. Building trust in a brand is still a crucial element of digital marketing, but today's consumers have the power to compare and contrast competing brands literally at their fingertips. How does your value proposition stack up against the competition around the country and across the globe? Your brand identity may be valuable, but if your *overall* value proposition doesn't stack up you'll lose out.

They're vocal: Online consumers talk to each other – a lot. Through peer reviews, blogs, social networks, online forums and communities they're telling each other about their positive online experiences – and the negative ones. From a marketing perspective this is something of a double-edged sword – harness the positive aspects and you have incredible viral potential to propagate your message; get it wrong, and you could just as easily be on the receiving end of an uncomfortable online backlash.

Using influencers to help spread the word

There is one particular category of users online that warrants a special mention when it comes to defining your digital marketing strategy. Dubbed 'influencers', these early adopters are the online opinion leaders. Through blogs, podcasts, forums and social networks they harness the power of the web to extol the virtues of products and brands that they like, and equally to denigrate those they find unsatisfactory.

Why are influencers important to you as a marketer? Because they have the virtual ear of the online masses. People read and listen to what they have to say; they value their opinion and trust their judgment. These online influencers have already won the pivotal battle for the hearts

and minds of online consumers. Engage positively with them, and you essentially recruit a team of powerful online advocates who can have a potentially massive impact on a much wider group of consumers.

This is the online equivalent of 'word-of-mouth' marketing, on steroids. Of course, give them a negative experience and, well, you can guess the rest. But how exactly will you recognize these online influencers? A December 2006 report by DoubleClick ('Influencing the Influencers: how online advertising and media impact word of mouth') defined influencers as people who 'strongly agreed' to three or more of the following statements:

- They consider themselves expert in certain areas (such as their work, hobbies or interests).
- People often ask their advice about purchases in areas where they are knowledgeable.
- When they encounter a new product they like they tend to recommend it to friends.
- They have a large social circle and often refer people to one another based on their interests.
- They are active online, using blogs, social networking sites, e-mail, discussion groups, online community boards, etc to connect with their peers.

Identifying the influencers within your market sector, analyzing their behavior and tailoring part of your digital campaign to target this small but influential group can result in disproportionate knock-on benefits. Don't neglect your core market, of course – but certainly consider targeting influencers as part of your overall digital marketing strategy.

Unit – II

Online Advertising

Introduction, Objective, Where to Advertise, Online Ad Format, Search Engine Ad, Network Advertising, Affiliate Programs, Landing Pages.

Introduction:

Simply put, online advertising is advertising on the Internet. Online advertising encompasses advertisements on search engine results pages, advertisements placed in e-mails, and other ways in which advertisers use the Internet.

- Whether online or off, the main objective of advertising is to increase sales. Advertising also aims to increase brand awareness. Advertising is based on the simple economics of supply and demand. Advertisers aim to stimulate a consumer need and then satisfy that need.
- One of the greatest benefits of online display advertising is that the messages are not restricted by geography or time.
- Online advertisements are also much more interactive than offline advertising. While both online and offline advertising can be disruptive, interactive online advertising can be designed to be perceived as less so.
- Online display advertising began as simple hyperlinked images shown on a Web site and has since progressed to include video, sound, and many other modern technologies. Today, messages and interactions can be contained within the advertising display without ever taking consumers to a landing page.
- Although the Internet provides new scope for creative approaches to advertising, we see its true advantage when we realize how trackable, and therefore measurable, Internet advertising is. Or, to take it from Eric Schmidt, CEO of Google, “The Internet will transform advertising because of its trackability, not its beauty.”

History:

Online advertising rapidly followed the developing Internet. And, as consumers are increasingly spending more time online, and hours spent on the Internet start to eclipse hours spent watching television, the medium becomes increasingly important to any advertiser.

According to Wikipedia, the first clickable banner advertisement was sold to a law firm in 1993 by Global Network Navigator. HotWired, an early Web magazine, was the first to sell advertising space in large quantities

to a number of advertisers. One of the very first advertisers was AT&T (a U.S. telecom company), which went online in October 1994.

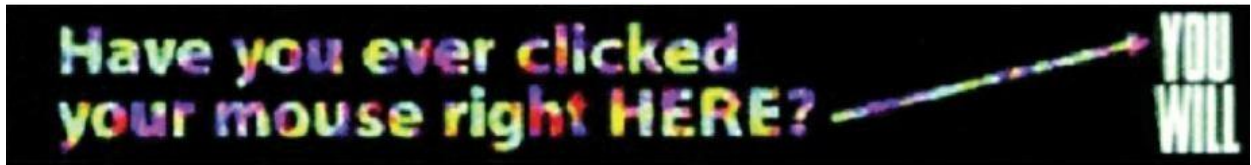


Figure 3.1 An Early Banner Ad for AT&T

This was part of a campaign that AT&T was running to promote the Internet to consumers, and included television and outdoor advertising. Believe it or not, but this was cutting edge back in

1994! As Web technology has developed, so has the technology that is used to create and serve advertising online.

Definition of Online Advertising:

Online advertising is a marketing strategy that involves the use of the Internet as a medium to obtain website traffic and target and deliver marketing messages to the right customers. Online advertising is geared toward defining markets through unique and useful applications.

Since the early 1990s there has been an exponential increase in the growth of online advertising, which has evolved into a standard for small and large organizations. Online advertising is also known as Internet advertising.

A major advantage of online advertising is the quick promotion of product information without geographical boundary limits. A major challenge is the evolving field of interactive advertising, which poses new challenges for online advertisers.

Online advertisements are purchased through one of the following common vehicles:

- **Cost per Thousand (CPM):** Advertisers pay when their messages are exposed to specific audiences.
- **Cost per Click (CPC):** Advertisers pay every time a user clicks on their ads.
- **Cost per Action (CPA):** Advertisers only pay when a specific action (generally a purchase) is performed.

Examples of online advertising include banner ads, search engine results pages, social networking ads, email spam, online classified ads, pop-ups, contextual ads and spyware.

Objectives of Advertising:

Understand when best to use online advertising. Advertising, whether online or offline, has a number of objectives:

1. **Building Brand Awareness:** Making people aware of a brand or product is an important long-term goal for any marketer. Once customers know about the brand, the marketer has taken the first step toward gaining the customer's trust and patronage. The better known a brand is, the more business they can do. And the ultimate goal is to do more business and sell more of the product. Online, creative advertising or banner advertising is largely visual, making it an ideal channel for promoting brand collateral.
2. **Creating Consumer Demand** Consumers can't want what they don't know about. Advertising needs to convince consumers about what they should want and why they should want it. Modern online advertising provides a great way to communicate the USPs (unique selling points) of a product, thereby helping stimulate demand.
3. **Satisfying Consumer Demand:** Once the consumer is aware of and desires a product, they need to find out how to satisfy that desire. If brand building has been effective, they will know that a particular brand exists. At this point, it is important for the marketer to show the consumer how their particular brand or product will best meet that need.
4. **Driving Response and Sales:** All forms of online marketing need to drive traffic and

sales in the long term. However, the immediacy of online advertising also drives traffic and sales in the short and medium terms. Unlike traditional media advertising, online advertising can turn the potential customer into an actual customer right there and then. What's more, it is possible to measure accurately how effectively the online advertising campaign does this.

- 5. The Key Differentiator:** Online advertising is able to drive instant sales and conversions. Unlike offline advertising mediums, the consumer can go from advertisement to merchant in one easy click. Because of the connected nature of the Internet, online activities are highly trackable and measurable, which makes it possible to target advertisements and to accurately track and gauge the effectiveness of the advertising. Each display advertisement can be tracked for success.
- 6. Introducing a New Product to the Market:** Online advertising is an important strategy when a new product or brand is launched, however this should often be after the launch of an online public relations campaign which includes press releases, blogs, news sites and other tactics to gain wide media coverage. Advertising before the launch of an online PR is not advisable because it loses its newsworthiness and media outlets are unlikely to accept it. Some online channels to use to announce your new product are display ads on networks like the Google Display Network (GDN), Search advertising, organic search, email marketing and others.
- 7. Explain how a Product Works:** Advertising can help to explain the uses of a product and in what setting it is to be used. It's often easier with video advertising which can include animation, motion, text, graphics and many other elements. It is also effective at showing the product in use and even talking heads are great for explaining how it works.
- 8. Reduce Buyer Fear:** Video advertising is also helpful here after a purchase to reduce fear that the customer has bought the wrong product and to explain how they can use it. Buyer remorse is a major problem especially for high-ticket items that require a high financial outlay, so it's important to allay their fears and convince them that they have made the right purchase.
- 9. Build Company Image:** Many online channels are effective at building a company's image but social media is one of the best and using advertising tools on sites like Facebook you can reach out to new, existing and non-existent customers. This is about raising brand awareness and reinforcing the company's image at all touchpoints with the target market. Social media is helpful because the company can interact with followers and build a relationship outside of its own portals.
- 10. Build Brand Preference:** There are many brands in the online space that are vying for customers' attention and it's important to highlight brand attributes and values and create a competitive advantage for your brand. Using advertising vehicles like PPC advertising, display advertising, social media paid advertising and others, your brand can promote its unique online value proposition and increase click through rate, conversions and brand recall.
- 11. Inform Market of an Offer:** If you have a sales promotion and want to inform the market through online advertising, you can use text and display ads on search and display platforms. So you can include a money-off offer, a coupon or voucher, category discount and many others and these are effective at boosting CTRs for ads and also conversions.
- 12. Encourage Switching to Your Brand:** Comparative advertising is common online especially on PPC platforms like Google Adwords. So, you can bid on competitor brand names and then display ads that highlight your unique offers and how your products have a competitive advantage. Of course many competitors will be doing the same so it's important that you bid on your own brand names too.
- 13. Maintain Top Of Mind Awareness:** Remarketing is an online advertising vehicle that works well for a wide range of brands and companies that want to raise brand awareness, increase sales or leads, increase brand recall and be top of mind. Google Adwords, Analytics and Facebook provide remarketing features and resources to target people that are aware of your brand and then bring them back to your website and purchase from your business.
- 14. Remind Buyer of the Product or Brand:** This marketing objective is similar to top of mind awareness and using remarketing and pay per click advertising; it is possible to effectively remind target customers of your products or brands. The benefit is that it is affordable and you only pay for clicks to your website, unlike traditional advertising vehicles where you pay even if there is no customer interaction or response.

[Where to Advertise?](#)

Advertising can be expensive – and way out of your budget if you're just starting out as a freelancer or small business. But with some clever thought, there are a few ways you can promote your enterprise for free in your local area.

Different ways to advertise your business:

Here are 10 simple ideas for promoting your freelance services or small business for free in your local area (and beyond).

1) Make sure your website adds value

Whether you're targeting local or global customers, your website should clearly explain what you do, be easy to find and navigate, and be attractive. An article in E-consultancy suggests that you should look at the following things when building or rebuilding your website:

- How goal-focused it is.
- The quality of your content.
- How easy your website is to use by its intended target audiences.
- How well it projects and communicates your brand identity.
- How search engine optimized (SEO) it is.
- Social media channel usage and integration.
- Mobile internet users.

2) Make blogging a high priority

It's important to add a blog to your website because it increases your chances of being noticed, and helps with your SEO as you can use your keywords and phrases in your blog posts. Websites get crawled quite regularly so it's always important to have new, quality content.

Writing a regular blog also gives your audience an opportunity to interact with you by placing their comments about your posts. Remember to add social sharing buttons to your blog posts so readers can easily share them, and more people can discover you and your business.

3) Distribute a press release once a month

It's important to keep in touch with your local newspaper and submit press releases which have the potential opportunity to get you in print for free. These could be about anything from taking on new staff to winning a new client – it doesn't have to be big news, just something to let local businesses know you are there.

If you build relationships with editors and journalists this will help ensure that your press release is read and hopefully published. As will our quick, 30-second guide to writing a powerful press release!

4) Use email marketing software to help increase sales

This method is fast, effective, immediate and easy to design. You can also track and understand exactly how your email marketing software is growing your business and see how individual customers respond so you can increase sales over time.

To get full value from your email marketing, ensure that you update and grow your database regularly, and try to get people to opt-in by signing up on your website. There are many self-service email platforms available (such as MailChimp), or you may decide to get help from a specialist agency.

5) Start using videos to market your business

YouTube is the world's second largest search engine, so it makes sense to create a YouTube Channel and leverage proven video marketing tactics, like 'how-to' style video content and response videos, to improve search visibility and potentially drive leads.

One idea is to make individual video interviews on local news-makers in your niche using Skype. Once you've recorded the video, to maximize its benefit:

- Post it on YouTube.
- Embed the YouTube code on your website.

- Transcribe the video with a cheap tool.
 - Post the transcribed content on your blog for search engines to find.
- 6) Or you could host an online seminar and share it on your website and via social media networks – a perfect opportunity to gain exposure.

List your business on popular local directories

Getting clients and customers to find out where you are is crucial, and one of the best ways local businesses can be found online is by adding their company to top online business directories.

There are a number of popular online directories, including Google, Bing, Yahoo, LinkedIn, Yelp, Yellowbook and Foursquare. Make sure you place your details on all of them, because if you are only posting on these top few, then you will be missing an opportunity to be found by customers and clients who are after your services. You can find a more comprehensive list of free directories on HubSpot.

7) Be active on social media

It's important to know who your target audience is, as this is one of the most popular ways to get noticed.

You can promote any news, events and interact with your audience as well as post your blog content through the most common media channels, including Facebook, Google+ LinkedIn and Twitter.

8) Verify your listing on Google+ Local

Previously known as Google Places, Google+ Local is a way of verifying on Google maps where your business physically is.

This can be verified by anyone at the business. Google will send a pin number through to your exact business address, and as long as someone enters this pin number onto your listing it means you are verified and can receive the benefits.

These include more chances to appear within Google local searchers, the opportunity to connect your Google+ profile to your Google+ Local listing, and the opportunity to gain reviews from your customers that will



then show up as star ratings in your search results.

The best bit about this is that it's completely free.

9) Attend local networking events and build connections

The best way to meet new local contacts (and potential customers) is to get out there and start networking. Make a point of attending events and meet-ups focused on your business topic, and participate in conversations by asking questions or volunteer to speak at a live blog conference.

You can search local events by region and town or city on Find Networking Events. You can also look for networking events specifically for women, as well as workshops, seminars and business shows.

10) Guest post on someone else's site

Writing a blog for someone else's site is a great way to gain more exposure for your business, and get a reputation as an expert – especially if they're well known in your local area.

Guest posting gives you an excellent opportunity to make new contacts with bloggers and hopefully attract some loyal readers. These readers could well evolve into customers, so guest posting is going to be beneficial towards your increase in revenue. Just make sure you stay within the Google guidelines for guest posting.

Other relevant directories that could increase exposure for your business include:

- Bing Places for Business:** Only Google outpaces this free Microsoft product in visits, and you can add multiple business locations, photos, videos, and more during your fast, free, and easy registration.
- Yahoo Local Listing:** Ranking third next to Google and Bing, Yahoo's service draws millions of searches daily.
- Yelp** is one of the best online sources for candid consumer reviews. Bonus: It allows you to send public or private messages (including deals) to customers and review business trends using the Yelp reporting tool. The most reviewed categories on Yelp include shopping, restaurants, and home services respectively.
- MerchantCircle** is a free network targeted toward small businesses seeking to connect with local customers and other small businesses in their areas.
- Yellow Pages:** This well-organized online version of the antiquated classic generates millions of daily searches. It offers advertising, lead generation, and detailed ad performance data.
- White Pages:** This lists some 30 million companies, offering sponsored ad opportunities and a premium text message service for clients.
- Superpages.com:** This free, easy-to-navigate service includes helpful options, including weather and lottery listings, as well as fast access to popular categories, search tips, and a Facebook sign-in option.
- Yellowbook** allows for easily searchable business listings that include your business information, a link to your website, product descriptions, a map feature, and options for display and video ads.
- YellowBot** provides basic contact and location info about your business similar to the Yellow Pages, with customer reviews and options that include premium listings, searchable tags, and fast sign-in via Windows Live, Google, Facebook, Yahoo, or Twitter.
- Manta** calls itself one of the largest online resources dedicated to small business. "The Manta directory boasts millions of unique visitors every month who search our comprehensive database for individual businesses, industry segments, and geographic-specific listings," it reports. "[We] deliver helpful news and advice, promotion opportunities, and tools for small businesses.
- Citysearch:** This free site specializes in listings for restaurants, bars, spas, hotels, restaurants, and other businesses across the U.S., optimizing them via a partner network that includes Expedia, Urbanspoon and MerchantCircle.
- MapQuest:** This blast-from-the-past web-mapping service owned by Verizon gets searchers to your physical location quickly and easily via detailed maps.

- **Local.com:** This free directory gives searchers detailed info about events, deals, and info relevant to a given city. Its database includes more than 16 million business listings covering every zip code in the U.S., it reports. Paid ad options allow for coupons and other features.
- **Foursquare:** This combination business directory and social networking site allows users to check in via map and comment about your business, with or without the Foursquare mobile app.
- **DexKnows:** This business listing site monitors your reviews and ratings and provides data into how customers engage with your profile, giving insights to online and offline advertising opportunities. The DexKnows mobile app is available for Android and Apple and allows users to make single-tap searches, write reviews, mark favorites, and find fuel stations based on GPS locations.
- **The Business Journals:** This local option, available in most major U.S. cities, generates 8 million monthly searchers and offers four levels of listings. Its searchers rack up an average income of more than \$97,000, and 84 percent shop online.
- **Angie's List:** This respected site is known for its objective consumer reviews in more than 720 categories. More than 3 million members turn to Angie's List to research, hire, rate, and review local service providers.
- **Hotfrog:** This free, detailed online directory can help get your website listed in Google search results. Options include coupons for your customers. The site attracts 1.6 million active users monthly across 38 different countries.
- **Kudzu:** This free database reports that it helps some 20 million homeowners a year make decisions regarding their renovations. Options include a dedicated account manager who can work to boost your website in search results. Profiles can include marketing descriptions, photographs of work performed, videos, coupons, professional affiliations, credentials, and user-generated reviews and ratings.
- **Trip Advisor** offers a flat subscription rate for any business related to the hospitality or entertainment industries in 48 markets worldwide. Calling itself the world's largest travel site, it reaches 390 million average monthly unique visitors and so far has logged some 435 million reviews and opinions covering 6.8 million accommodations, restaurants, and attractions.

[Affiliate Marketing:](#)

Affiliate Marketing is a web-based marketing practice in which a business rewards one or more affiliates for each visitor or customer brought about by the affiliate's marketing efforts.

Affiliate marketing is also the name of the industry where a number of different types of companies and individuals are performing this form of internet marketing, including affiliate networks, affiliate management companies and in-house affiliate managers, specialized 3rd party vendors, and various types of affiliates/publishers who promote the products and services of their partners.

Affiliate marketing overlaps with other internet marketing methods to some degree, because affiliates often use regular advertising methods. Those methods include organic search engine optimization, paid search engine marketing, email marketing and in some sense display advertising. On the other hand, affiliates sometimes use less orthodox techniques like publishing reviews of products or services offered by a partner.

In simplistic terms, therefore, affiliate marketing is the practice of driving traffic from one site to another in return for reward.

Right now, affiliate marketing is very much the staple diet of adult, gaming and retail sites across the web, but it is rapidly extending its reach into other vertical markets like mobile phones and finance, which are, incidentally, the highest-spending categories in global online marketing.

The affiliate marketing eco-system

Affiliate marketing is still treated by many as a bit of a dark art within the overall marketing mix. Many brands are wary of the potential for misrepresentation and seek reassurances on a range of issues, including security, fraud and brand bidding.

‘Brand bidding’ is the term used to describe the practice of affiliates buying keywords on PPC programmes relating directly to brands or trademarks, with the sole objective of driving traffic towards the brand site and generating income for the affiliate. Many marketers want to maintain control over their own brand names, believing that this is, in essence, their traffic to begin with and that affiliates or other partners should stay away from these particular keywords and focus on more ‘long-tail’ keyword phrases to drive traffic. In other words, some marketers don’t want to find themselves competing with affiliate partners in the SERPs.

Others are more enthusiastic about affiliate marketing and regard it as an integral part of their overall online marketing operations. On the plus side, affiliate marketing offers you a ready-made sales force operating on a reward or commission-only basis – in an age when marketers continuously seek ways to offset risk this surely has to be worth investigating, right?

On the negative side there are plenty of challenges surrounding measurement, and a lack of clear communication channels between affiliates and brands. For example, say a customer clicks on a special offer on an affiliate site, only to discover on arriving at the brand site that the offer has already expired – that’s bad news for the affiliate and for the brand, because both lose revenue potential, but more seriously they also alienate a customer, perhaps for good (and, remember, online consumers are highly accomplished when it comes to letting their peers know about bad online experiences).

Today things are starting to hot up on the affiliate front. Early in 2008 Time Warner’s AOL acquired affiliate network buy.at, and in the travel sector Expedia-owned TripAdvisor acquired Holidays Watchdog, deals that demonstrate how seriously investors are treating the whole affiliate business model.

But who are these people?

Meet your affiliates:

The most basic affiliates are individuals (or companies run by individuals) or larger organizations who leverage their web properties to suck traffic from around the web and then push that traffic out to brand sites in return for commission. A click on an affiliate site can pay handsomely for high-value transactions. One web hosting company, for example, pays its affiliates up to \$600 for new business. More traditional affiliates, such as poker rooms and casinos, pay up to \$400 for a new account and a decent share of all revenue earned too. So there’s plenty of incentive.

Affiliates may be considered by some as the bottom feeders in the affiliate ecosystem, but they are a vital component in achieving any sort of scale through investment in the affiliate marketing channel. You should look after your affiliates as well as you’d look after your own sales force. Equally, the age-old adage ‘Be wary of strangers bearing gifts’ applies, and you should make sure you have controls and measures in place to monitor your affiliates: there is no point in signing up 100 affiliates who are unchecked, unmotivated and unproductive. Moving up a notch, you have what are known as super-affiliates. These would typically include price comparison sites like moneysupermarket.com and pricerunner.com as well as loyalty sites like the Irish-owned pigsback.com (the term ‘on the pig’s back’ is derived from an old Gaelic expression that essentially means someone is ‘on to something good’).

Super-affiliates do pretty much the same thing as affiliates, but on a much larger scale. Companies like E-conversions, for example, operate as super-affiliates for major brands such as Dell, British Gas and SKY in the UK market.

One example we encountered at the 2008 Internet World show in London was the US-owned Affiliate Response Network; their proposition is very straightforward. Once you are set up as a client and they conduct some initial testing on search terms (to find out what keywords pull relevant, targeted traffic) they connect your brand to a high-performing online network of affiliates focused on getting results. They will work closely with you to assess the optimal channels to pull targeted traffic: this could be e-mail, search, display, emerging media and so on. Typical models of business they support include cost per lead, cost per sale, etc. The network also provides clients with real-time tracking and reporting systems, an essential ingredient in understanding the power of affiliate marketing and also in allowing marketers to get a more accurate picture of which digital marketing elements really work for them.

So who lives in this ecosystem? Consumers, clients, affiliates, super-affiliates, affiliate networks and not forgetting, of course, Google and the search engines (which sounds suspiciously like a dodgy 1970s rock band). Depending on your view of the world, Google with its distributed AdSense pay-per-click model is the biggest affiliate marketing player of them all. Then again, in the words of the great Jerry Reitman, former head of direct marketing worldwide for Leo Burnett's, 'at the end of the day. . . it's all advertising'. Online Ad Format:


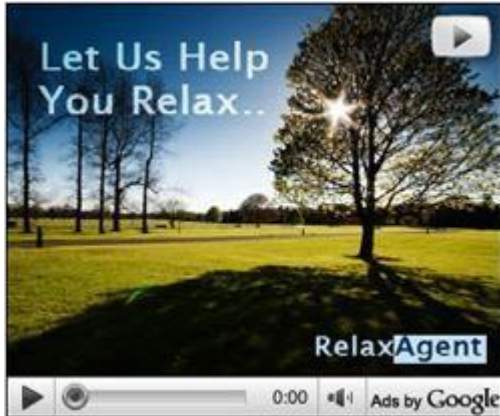
The text ads that appear alongside Google search results are just one type of ad format you can create with AdWords. You can also promote your products and services with video ads, image ads, app or digital content ads, and more.

Each ad format has its own benefits, whether it's the ease and affordability of running a text ad, or the colorful storytelling that comes with video. You can run multiple kinds of ads from the same AdWords account and, in some cases, from the same campaign.

Ad formats available in an AdWords account

Format	Description	Main benefits
Text	Words only. * Boston's Best Bonsais - Spring Sale Going on Now Adwww.example.com Florist And Indoor Plant Nursery. Two Locations. Spruce Up Your Desk Today!	Maintain ads quickly and easily. Reach customers when they search on Google. Use Ad extensions to provide additional details and contact information that can make your text ads more relevant to customers.
Responsive	Responsive ads automatically adjust their size, appearance, and format to fit available ad spaces. They can transform into text or image ads.	In a matter of minutes, create ads that fit just about any ad space available. Plus, responsive ads can show as native ads, which boost your impact by blending into publisher's websites.

Image	Static or interactive graphics. Animated ads in .gif and Flash format can be used.	Showcase your product or service in a visual way. Reach customers on websites that partner with Google.
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<p>App promotion ads</p>	<p>Drive app downloads and engagement with app promotion ads.</p>	<p>Send your customers to download your app from an app store, or include a deep link directly into your app. Note: Ads will appear only on devices compatible with your content.</p>
<p>Video</p>	<p>Video ads that show online. Run standalone video ads or insert them in streaming video content.</p> 	<p>Deliver a rich and engaging experience to customers. Reach customers on websites that partner with Google.</p>
<p>Product Shopping ads</p>	<p>Shopping ads show users a photo of your product, a title, price, store name, and more details about your product.</p>	<p>Show an ad featuring your product to people shopping online for that product or related products.</p>

Showcase Shopping ads	An image and description that expands when clicked to show several related products and information about the store.	Show a Shopping ad to people who are researching where to buy rather than looking to buy a specific product. Showcase Shopping ads are available in Australia, Canada, Germany, France, Ireland, India,
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		New Zealand, Singapore, South Africa, the UK, and the US. You may create Showcase Shopping ads using the new AdWords experience and the AdWords API . If you want to advertise individual products, check out Product Shopping ads
Call-only ads	Call:(555)555-555 Adwww.example.com Description Line 1 Description Line 2	Drive phone calls to your business with ads that include your phone number. People can click on these ads and then call your business directly. These ads will only appear on devices that can make phone calls, and any field in these ads can be hidden to fit on smaller screens.

Search Engine Ad:

Search engine advertising (SEA) is a branch of online marketing and, together with SEO, a discipline of search engine marketing. In SEA, advertisements in the form of a text or images are posted on search engines such as Google or Bing. The advertisements then appear prominently in the SERP (Search Engine Results Pages). The posting of advertisements within the framework of SEA belongs to the main source of income for search engine providers.

SEM vs. SEA vs. SEO

The terms SEO, SEA, and SEM are mainly used less selectively. The following description will try to compare and contrast these marketing terminologies.

SEM

- Search engine marketing, abbreviated: SEM
- Combination of SEA and SEO, branch of online marketing

SEA

- Search engine advertising, abbreviated: SEA
- Posting of ads in the form of a text or images on search results pages or other websites
- Ad booking in the SERPs based on bids on keywords for which the ads are placed
- Good ranking can be achieved through optimization of text ads and offers
- Clear control of advertisement measures with calculable success
- Means to increase traffic or improve the brand
- Can be part of a temporary marketing campaign
- Many possibilities for targeting or retargeting
- It can be part of remarketing
- Acknowledged as advertising

SEO

- Search engine optimization, abbreviated: SEO
- Includes measures to optimize websites for crawling and indexing by search engines using on-page and off-page optimization.
- Good rankings can be achieved through optimization of the website onpage and off-page factors
- No decisive guarantee that optimization measures will lead to better positions for certain keywords
- Branding is more of a secondary part of an SEO strategy
- SEO is often long-term
- Targeting can only be done through tests, evaluations, and estimations that lead to the adaptation of the content or seeding
- Rather “invisible” for the user

Objectives of SEA:

Search engine advertising is usually a part of a marketing or branding strategy. One of the primary objectives of SEA is to increase the click-through rate since the number of clicks on a website can quickly be increased through the posting of advertisement space. In addition, the Conversion Rate is particularly important for the SEA, as it ultimately determines how high the advertising costs are, and thus the ROAS.

At the same time, search engine advertising can also be used to generate advertising pressure through page impressions from display campaigns. For the most part, advertisements are used by customers in the e-commerce industry since SEA is aimed at persuading the user to buy. Thus, one of the main objectives is to increase conversions in the form of sales.

However, newsletter subscriptions, downloads, or reviews, and leads, can be manipulated through search engine optimization. The scope of the SEA measures is thereby always dependent on the amount of invested advertising budget as well as the actual search volume of research keywords.

Google AdWords:

Google Adwords is a product of Alphabet Inc. that offers marketers a wide range of advertisement opportunities in the SEA field. The principle of placing ads through AdWords is based on auctioning. Advertisers bid on specific keywords or they pay for clicks and impressions on display advertisements. Factors, such as the quality of the landing page, quality of the ad text, as well as relevance of the keywords and positive history of the AdWords account, play a crucial role in the final placement of text ads or banners. Banners or text ads posted through Google AdWords are always regarded as advertising. The following forms of advertising are possible using Google AdWords:

- Classic text ads: An advertiser selects keywords with which his/her text ads will be displayed on a prominent position in the SERP. This entails creating the so-called campaigns that, in turn, consist of ad groups. Every ad group is categorized into advertisements based on the selected keywords. If a user searches for one of these keywords, the corresponding AdWords advertisement is displayed.
- Product listing ads: With the so-called Shopping Ads (former Product Listing Ads), Google AdWords offers the possibility to place product ads that are directly created from a product

file generated by the customer. The modulation is done by specifying the Structured Data in the data feed.

- Display ads: These are ads in the form of images or text that are placed on platforms belonging to the Google advertisement network. Registration for this network can be done through the Google AdSense platform.

Google AdWords offers the possibility to combine different forms of advertisement of SEA. Simultaneous placement of PLA, text ads, and display ads is, therefore, possible. The AdWords platform is one of the most used SEA tools in the world.

- Video ads: Advertisers in the Google AdWords program can also place ads on YouTube. Text or video ads

are available for this purpose.

- Gmail-Ads: If you use Google AdWords, you can also book ads in Gmail accounts. Payment is made via CPM or Cost-per-Click.
- With the AdWords Express program, Google offers small companies the possibility to use SEA without having to create their own campaigns. The thereby required files are automatically generated by Google. The advertiser only provides his/her advertising budget.

Bing / Yahoo ads:

Together with Yahoo, Bing also offers its own SEA platform. Bing / Yahoo ads]] function in a similar way to Google AdWords. However, due to Google's market dominance, Google AdWords is the platform that is mostly used for SEA in Germany and Europe. Nevertheless, a comprehensive SEM strategy should also include possibilities to advertise on Bing and Yahoo. This applies, for example, to the USA, where Bing has a significantly larger market share than in Germany.

Other SEA platforms:

Besides the major search engine providers, almost all larger search engines offer their own advertising programs. SEA, through specialized search engines, can also be advantageous depending on the targeting. As an alternative to purchasing ads from Google AdWords, for example, Amazon product ads can also be placed on the Amazon platform.

For example, if a website also wants to be successful in Russia, SEA for Yandex, etc. should also be taken into consideration. If an online shop wants to advertise vehicle parts to specific target groups, it also has the option to place its ads on different car comparison portals.

Posting models:

In SEA, posting ads is done based on different provisions:

- CPC (cost per click): Here, the advertiser specifies how much he/she is willing to pay per click.
- CPA (cost per acquisition): The advertiser specifies how much he/she is willing to pay per conversion achieved through the advertising measures.
- CPM (cost per thousand): The advertiser specifies how much he/she is willing to pay per 1,000 impressions of his/her advertisements.
- Cost per call: Here, certain advertisement portals offer the possibility to specify how much an advertiser is willing to pay per visit, Google AdWords, for example.
- Cost per lead: Depending on the web portal, costs for leads such as subscribing to a newsletter or downloading a PDF can also be agreed upon.

Impacts of SEA on SEO:

Although search engine advertising is not considered to be SEO, SEA can possibly have an impact on the ranking of a website. Therefore, this makes SEA sort of an indirect SEO measure. If an online shop raises its advertising impact through SEA and thereby improves its scope and visibility, direct type-ins of the shop's name as a brand are for example deemed to follow. Thus, the brand is strengthened and, among other things, the domain trust of a website is as well. Ever since the Vince Update, the brand plays a greater role in the SERP. For example, a website can increase its awareness with the help of SEA and, if a campaign is successful, can thus generate more traffic via the organic search, because the brand is known to many users and they decide in the SERPs for the more well-known URL, although it may even rank worse.

Through SEA, Google, or any other search engine, new information on the visits to a website is received. Since the click rate and bounce rate are also considered in the evaluation of a website, successful SEA measures also lead

to an improvement of the quality of a website. Another direct consequence of SEA measures is that a website or web shop can become more famous and thereby result in “offline” access through word of mouth.

Network Advertising:

What is an Advertising Network?

An advertising network, or ad network, connects businesses that want to run advertisements with websites that wish to host them. The principle attribute of an ad network is the gathering of ad space and matching it with the advertiser's needs.

The term ad network is media neutral, but is often used to imply "online ad network" since the marketplace of aggregated publisher ad space and advertisers is increasingly found on the Internet. The crucial difference between traditional and online ad networks is that online ones deliver advertisements to the public through an ad server. Delivering ads through one central hub allows the business owner to use various methods of targeting, tracking and reporting that don't exist with traditional media alternatives.

How do they work?

Ad networks work with publishers all over the Web, helping anyone who has unsold inventory, or ad space, and wishes to monetize their offerings. The networks then aggregate this inventory, package it and sell it to advertisers.

Advertising networks provide a way for media buyers to coordinate ad campaigns across dozens, hundreds, or even thousands of sites in an efficient manner. The campaigns often involve running ads over a category (run-of-category) or an entire network (run-of-network). Site- specific buys are not a major emphasis when dealing with advertising networks.

Ad networks vary in size and focus. Large ad networks may require premium brands and millions of impressions per month. Small ad networks may accept unbranded sites with thousands of impressions per month.

One of the key issues for publishers is **Exclusive vs. Non-exclusive representation**.

- the space themselves.
- Advertisers also like the ease of use. With minimal effort, they can **Exclusive** representation generally brings a higher percentage of revenue sharing, but sometimes results in a smaller percentage of ad inventory being sold.
- In **non-exclusive** arrangements, publishers may use secondary advertising options to fill the space left unsold by the primary ad network.

Pros and Cons:

- The benefits of using ad networks are numerous for both content providers and advertisers. Content providers find them an easy and reliable way to sell inventory, although the revenue is typically less than what they could earn selling purchase a campaign that targets a specific group of consumers on websites throughout the world. Ad networks are also known for flexible payment models and cost efficiencies.
- The downside to advertisers is limited control over ad placements. The possibility exists that ads could appear next to inappropriate content.
- Many advertisers have also complained that their own campaign analytics often do not match up with the metrics provided by the networks. Despite these downfalls, many businesses find ad networks to be an affordable and efficient way of reaching consumers.

Pricing Structure:

Ad networks offer many different pricing models to suit the needs of different businesses.

- **CPM - cost-per-mille** (Latin for "thousand") is the simplest of ad delivery options. Advertisers pay a price for every 1,000 impressions delivered. An ad served on someone's browser is an impression. Whether or not the user clicks on the ad has no bearing on the price.
- **CPC - cost-per-click** is a performance-based model. Impressions served do not factor in cost. Instead, advertisers pay for every click they get on an ad campaign. This method of pricing often depends upon advertisers bidding on the maximum amount they will pay for a single click, a model that's become very popular on Google AdSense and Adwords. The downside of CPC is the uncertainty of how often the ad will be served, however, the low risk and focus on performance still make it an attractive option to most marketers.
- **CPA - cost-per-acquisition**, or **cost-per-action**, takes the performance-based model even further by guaranteeing advertisers will only pay for a specific action or conversion by the user. This ad delivery metric is often a key performance indicator for marketers when evaluating return on investment (ROI).

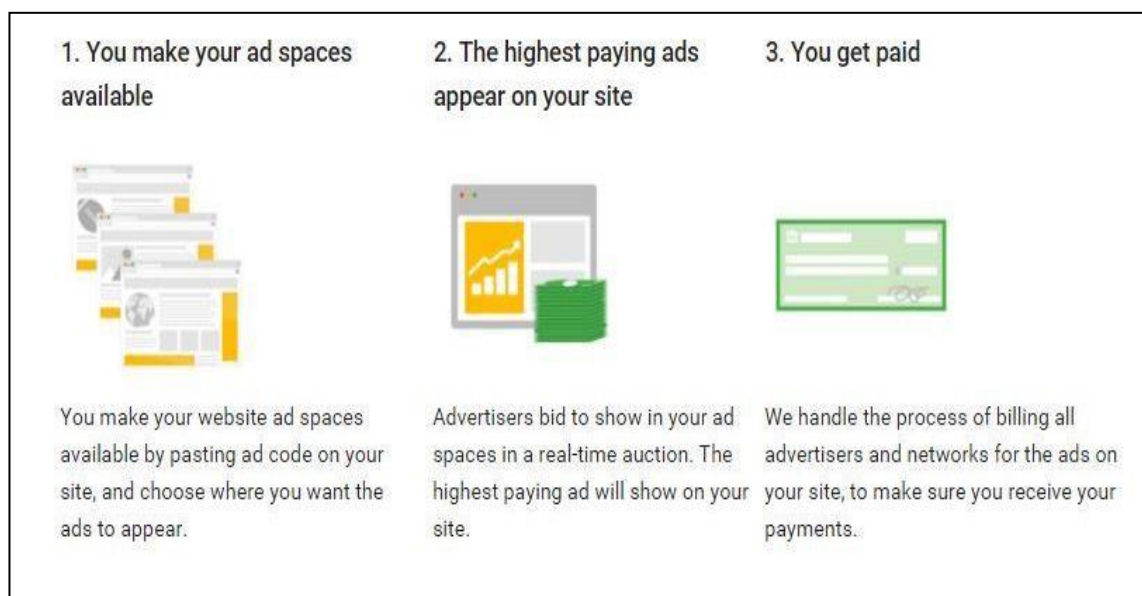
Ad targeting capabilities

Targeting capabilities for advertisers have increased dramatically over the years due to massive quantities of consumer data that have become available to the marketing community. Targeting capabilities may include:

- Age
- Gender
- Income
- Geography
- Behavior - displays relevant ads to users based on content they've clicked on while visiting several sites.

How Ad network work with Advertisers and Publishers:

An ad network is essentially a middleman; it connects advertisers to websites that host advertisements. The network seeks out unsold advertising space from publishers, and then sells that space to advertisers searching for ad space with particular content.



Ad networks are beneficial for all three parties involved; the advertiser pays a certain amount each time their ad is clicked by a potential customer (or a set amount for every 1,000 impressions), while the network and publisher each take a percentage. For example, if an advertiser pays \$1 per click, every time the ad is clicked, the publisher might get 70 cents and the network 30 cents.

There are **three** types of ad networks, each based on how they work with advertisers and publishers. These include:

1. **Blind networks** offer low prices, but advertisers generally have no control over where ads are placed.
2. **Vertical networks** tend to have higher quality traffic with advertising across general categories like automotive.
3. **Targeted networks** are the most expensive for advertisers, and focus on specific targeting like behavior or website context.

Perhaps the most well-known ad network is Google AdSense, but there are many others out there, including advertising.com, casalemedia.com, tribalfusion.com, and valueclick.com.

How Do Ad Networks Help Content Publishers:

Ad networks offer content publishers an easy and convenient way to make money by selling space on a personal blog or other website. They link advertisers and publishers that perhaps would never connect otherwise – and offer a safe place for both publishers and advertisers to buy and sell.

Generally it costs a blogger or publisher nothing to partner with a network and implement a revenue stream. The network does all the work, from finding advertisers, setting up campaigns, targeting and collecting money. The network taking on those parts of the partnership leaves the publisher with time to create quality and relevant content, which is necessary to bring in revenue.

Google Display Network (GDN):

Google has a vast network of websites advertisers can display ads on, from the New York Times down to the smallest blogs on the Web. They offer several options businesses can use to target audiences. They may even combine two or more targeting methods in the same campaign.

- **Contextual Targeting** - Google delivers advertisements to users based on the content they consume. The content aggregator - Google, in this case - assigns labels to specific websites and matches it with keywords associated with a specific ad. GDN can also serve an ad that contextually fits websites where a user has previously been. For instance, a user might visit an outdoor sporting goods website and then click away to look at political news site. Contextual targeting could be used to show an ad for family-sized camping tents to that user on the political site.
- **Placement Targeting** - marketers can choose which websites or webpages the ad serves on.
- **Remarketing** - users who visit a website are then shown advertisements for that website as they browse other areas of the display network. Remarketing can be a highly effective tactic to market to people who may have abandoned their shopping carts on your website.
- **Interest Categories** - Marketers can target people based on interests they reveal in the Web content they visit.
- **Topic Targeting** - Similar to interest categories, topic targeting allows marketers to pick a specific topic and Google will display the ads on quality sites related to that subject.
- **Geographic and Language** - Marketers can distribute their ads within a specified region or postal code and define the native language of the audience.
- **Demographic Targeting** - Ads are distributed to an audience based on age and gender.

The growth of advertising networks, and the wealth of user data that has come with it, presents tremendous opportunities for marketers who want to expand their reach with consumers. Whether your goals are to build awareness or generate conversions, an advertising network can help you find your audience and get results.

Landing Pages:

What is a Landing Page?

In the purest sense, a landing page is any web page that a visitor can arrive at or “land” on. However, when discussing landing pages within the realm of marketing and advertising, it’s more common to refer to a landing page as being **a standalone web page distinct from your main website** that has been designed for a single focused objective. This means that your landing page should have no global navigation to tie it to your primary website. The main reason for this is to limit the options available to your visitors, helping to **guide them toward your intended conversion goal**.



Landing pages are specialized, optimized web pages that visitors are taken to upon clicking an ad. Landing pages can feature specific

products featured in the advertisements themselves, or they may include prompts for users to provide the advertiser with more information, such as web forms. Landing pages can be used to convince prospects to complete an action, such as making a purchase, or function as another step in a longer “funnel,” such as requesting additional information or downloading a piece of content for lead generation purposes.

A landing page can be commonly defined as the page beyond the click in a digital marketing campaign context. Landing page optimization is a central issue for:

- Display Campaigns
- Pay per Click (PPC) ads
- Affiliate marketing programs
- Email marketing campaigns
- Some offline campaigns - with QR Codes for instance.

Types of Landing Pages:

There are 2 basic types of landing page, Click Through and Lead Generation (also referred to as Lead Gen or Lead Capture pages).

1. Click Through Landing Pages

Click through landing pages (as the name implies) have the goal of persuading the visitor to click through to another page. Typically used in ecommerce funnels, they can be used to describe a product or offer in sufficient detail so as to “warm up” a visitor to the point where they are closer to making a purchasing decision.

All too often, inbound advertising traffic is directed at shopping cart or registration pages. This leads to poor conversions as the ad doesn’t provide sufficient information for someone to make an informed decision.

This is where the click through page comes in. As a result, the destination page from a click through page is typically the shopping cart or registration page – now with a much higher chance of conversion having passed through the details of the landing page.

2. Lead Generation Landing Pages

Lead generation landing pages are used to capture user data, such as a name and email address. The sole purpose of the page is to collect information that will allow you to market to and connect with the prospect at a subsequent time. As such, a lead capture page will contain a form along with a description of what you'll get in return for submitting your personal data.

There are many uses for lead gen landing pages, some example uses and the items given to the user are listed below:

- Ebook or whitepaper
- Webinar registration
- Consultation for professional services
- Discount coupon/voucher
- Contest entry
- Free trial
- A physical gift (via direct mail)
- Notification of a future product launch

Some websites may have hundreds or thousands of automated landing pages created specifically for digital campaigns.

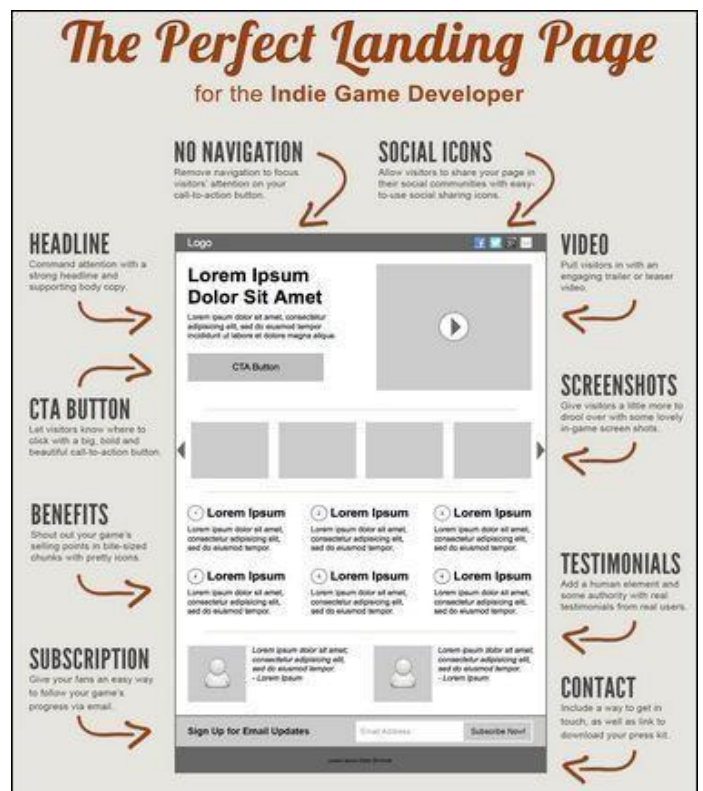
Landing pages are key factors of campaign effectiveness and ROI, and are still sometimes insufficiently taken into account. Many failed digital campaigns are due to poor landing pages. Landing page design and optimization rules differs according to industries, product categories, traffic sources and campaign goals. Some landing page design services may offer several hundreds of landing page templates.

There are many kinds of landing pages:

- Product landing pages
- Lead gen landing pages
- Facebook landing pages
- Dynamic landing pages
- Automated landing pages
- Personalized landing page
- Mobile landing pages
- Responsive landing pages
- Co-branded landing pages
- Co-branded affiliate landing pages
- B2B landing page

The Importance of Landing Pages in Your Digital Marketing Campaigns:

When it comes to turning traffic into conversions, landing pages can be the most important aspect of a digital campaign. Remember, landing pages are independent pages dedicated for specific traffic (Email



marketing, Pay Per Click, Direct, etc) and are designed to drive conversions. For the purposes of this post we are focusing on the relationship between landing pages and PPC campaigns, however, the best practices outlined can be applied to all traffic sources.

There are many different benefits that come from having optimized and targeted landing pages in any campaign, to understand these benefits it's important to understand Pay-Per-Click campaigns and how landing pages work within those campaigns.

The PPC process can essentially be broken down into two main parts:

- Generating traffic through the setup of the campaign
- Converting that traffic at the highest rate possible

When setting up your PPC campaign, the focus is on structuring the ad groups in a way that will produce a high quality score for your identified keywords. Quality Score is Google's grading system for Adwords performance strength and is determined by three things:

- Ad relevance
- Expected click-through rate
- Landing page experience

This quality score is very important in determining where an ad is placed and how much the click will cost. Following the keyword and ad copy, converting traffic becomes a responsibility of the landing page experience. It is vital that the landing page follows this same pattern of keyword and ad copy to continually communicate the same response to what the initial inquiry was seeking.

Being able to create very specific, targeted ad groups is the power of PPC efforts. Therefore, differentiating the landing page message based on each target is vital to conversions. To help with this, here are some 'best practices' for creating landing pages for your PPC account and overall paid marketing efforts:

- Be Campaign Specific:** We all know companies generally offer a lot of different products/services. However, most PPC searches are based on users looking for something specific. It is much more effective to provide the specific information they are searching for rather than a generic message with conflicting offerings.
- Make Them Easy to Modify:** PPC campaigns are constantly being optimized and modified, that's one of their greatest aspects. Your landing pages need to have the same flexibility in order to incorporate A/B testing ideas and overall optimization strategies.
- Focus on Conversions:** Your website's homepage is typically found organically or through referral traffic and does a great job educating someone on the company, products, etc. PPC traffic is psychologically different than Organic traffic and needs to be treated differently. The window of opportunity to convert PPC traffic is much smaller than that of the Organic visitor. Being able to have relevant calls-to-action and information based on the visitor's intent streamlines their steps to conversion rather than possibly losing them as they browse the website searching for the answers on their own.
- Keep it Simple:** Determine the most essential information needed and leave the rest out. The easier it is for the customer to complete the desired action, the higher the conversion rate will be.
- Be Benefit Driven:** Once the user has reached your landing page you know they are already interested in your product or service, the goal now is to give them an offer they can't refuse through promotions or discounts.

- **Stay Focused:** Include specific search terms from the ad group that brought the user to the site. Including these keywords not only adds a level of trust for your potential customer but also adds value to the landing page experience, which directly improves the Quality Score in AdWords. Once you have determined what your marketing goals are, as well as the point of conversion for each goal, you can create a landing page based on the points above to round out your overall PPC structure. Be sure to keep your messaging tightly themed with each corresponding ad group and as you continually monitor and optimize both your ad groups and landing pages you will find which combinations work best to improve your overall performance rates.

By segmenting your potential website customers into their interest areas, you can ensure the first thing they see when they land on your website is highly relevant information which gives you the best chance of turning them into a customer.

Email Marketing

Introduction, Types of Email, Email Marketing Campaign Process, Email Marketing Tools, Advantages and Disadvantages, Opt-in Email Advertising, Email tracking.

What is Email Marketing?

Email marketing is using e-mail as a means of promoting your products or services. This can be direct one to one e-mails but typically it relates to sending e-mails to a group of people that have subscribed to a mailing list.

Email marketing is a digital marketing channel that engages prospects at various stages of the funnel, engaging and maintaining their interest. Because of its versatile nature, email is a vital tool for online retailers who want to stay top of mind with consumers. Email marketing is a good and cheaper alternative to sending direct mail (via the post).

For example some people may subscribe to receive a regular newsletter from you. In general the term “Email marketing” is used to refer to:

- Sending promotional e-mails in order to acquire new customers or convincing current customers to purchase something immediately.
- Sending emails specifically designed to enhance relationships with current or previous customers, to encourage customer loyalty and repeat business.
- Adding advertisements to others companies’ e-mails (on a partnership basis) to gain exposure within a new market.

How online businesses use e-mail to engage customers:

Email is utilized throughout the sales funnel and is a key revenue driver for many online retailers. Common emails include:

- **Newsletters:** Engage users with information about the industry, company news, and
- **Promotions:** Often sent to existing customers, promotional emails alert users to new products and sales.
- **Abandoned Cart Notifications:** Indecision, nontransparent shipping charges, and a variety of other reasons cause customers to leave a cart before purchase. These notifications remind them and can boost conversion by 15% or more.

Measuring the Success of Email Marketing:

The following metrics are used to judge the overall success of email marketing:

- List Growth Rate:** This measures how many addresses are being added to the company's list of contacts. More contacts is *not* necessarily better - a small list of leads who are likely to buy is better than a large list that doesn't care.
- Bounce Rate:** A 'bounce' is an email that was never successfully delivered. This indicates a problem such as the account no longer being in use, and businesses need to trim these addresses on a regular basis.
- Click-Through-Rate:** This calculates how many people are clicking one or more links in the email (typically taking them to a product page or special offer), and is one of the major signs of interest in an online store.
- Conversion Rate:** An extension of the previous metric, the Conversion Rate calculates how many people are *finishing* what they've been prompted to do. The most common criteria for this is purchasing a product or service, but it is possible to use other criteria, such as filling out a form to provide more information about themselves.
- Revenue Per Message:** This metric calculates how much profit, on average, a company made throughout its campaign. The calculation is a simple division of total revenue by the number of marketing emails sent.

Checklist for an Effective Marketing Email:

Individual needs for e-commerce businesses vary, but the following elements of marketing emails have been proven to improve the overall conversion rate.

- One Topic:** Emails with multiple marketing messages are seen as "busy." Restricting them to one topic focuses the reader on the actual message and tends to result in measurably higher revenue per message.
- Attractive Design:** Simple designs that complement the message without distracting from it are best. Remember that many emails will be opened on mobile devices and many accounts have disabled images.
- A Clear Call To Action:** Readers should never be wondering what to do next, especially when you want them to purchase something.
- The Result of Experience:** Every campaign should teach something new about customer behavior and what elements (designs, offers, etc.) they are responsive to. Use this experience to improve the messages on a regular basis.

Types of Email:

1. Promotional Email:

seasonal promotion, this email from Banana Republic Factory injects a little personality into their CTA language, encouraging readers to “hop to a store Promotional email is to promote a product or service, usually to entice customers to make a purchase. Every Business almost would enjoy this benefit. Promotional emails are short and sweet. You might want to create a special graphic to complement your email copy; otherwise, it’s not a time consuming process.

Tips for creating a Promotional Email:

- Make the offer clear.** Your customers may not take the time to read your email, but if you have a clear offer that’s front-and-center, they won’t be able to ignore it. In the promotional email below, there’s no question what the deal is.
- Create a sense of urgency.** Give customers a reason to act quickly, rather than let the email sit in their inbox. In the example above, the dates of the promotion are apparent. Use active language

as well. To tie in with a.”

- words, the retailer sums up the deal. **Keep it short.** Promotional emails don't require a lot of explanation. State the deal, then tell customers how to redeem it before it expires. No need for a lot of flowery words. Take a look at the example below. In less than 45

2. New inventory email

Its Purpose is to let your customers know about new items. It falls under the promotional email umbrella. You're updating customers, but also hoping for a sale. Any business can tell customers about a new item in stock. Fashion and retail businesses may get the most bang for their buck. Time is spent taking a good picture of the new product, but these don't require a lot of text.

Tips for creating a new inventory email:

- **Send the email out as soon as the item arrives.** As soon as you have the inventory in stock, create the email and hit send. This shows you're on top of new trends and want your customers to have the latest, greatest items available.
- **Take a killer picture.** You don't have to get artsy, but you do need to showcase your new item. In fact, these types of emails are more about the photo than text. Take the email below, for example. It's all about the picture. With just a few words, Nike gets its point across.
- **Convey the point in your subject line.** You know subject lines can determine whether or not your customer opens your email, and this email is no different. Be sure to tell your customers that you've got something new and fun for them to check out.

3. Newsletter email

Newsletter email purpose is to inform customers about company news, improve brand awareness and build a relationship with your core audience. Almost Business would benefit with this type of email. It takes a bit of time to create a solid newsletter, but it's a valuable marketing tool.

Tips for creating a newsletter email:

- **A newsletter doesn't mean long format.** Break the copy in your newsletter into short, digestible and actionable sections of content, copy, images and calls to action.
 - **Create an easy-on-the-eyes design.** Think of your newsletter like a mini- newspaper. You want clear lines and divisions between your content. You want a simple layout with basic fonts. Don't go crazy with the color scheme, either:
- 4. Include your contact information in the newsletter.** You always want your contact information in an easy-to-find area on the newsletter. The purpose of your newsletter isn't necessarily to sell, but if your customers are inspired to reach out to you because of the newsletter, you want them to be able to find you. You could put social media contact buttons in the header or footer of your message; you could go the more traditional route, and include your phone number and email address; or you could do both.

Welcome email

Its purpose is to welcome new email subscribers to the family and establish a good relationship. Creating the email doesn't take long, but you need to know when a new customer signs up.

Tips for creating a welcome email:

- **Write in a conversational tone.** A welcome email is like a virtual handshake that accepts a new member into your group. It should be inviting and warm. Show the personal side of your business. Take a look at the email below. It specifically welcomes new subscribers into a community, and the tone is friendly and casual, but still professional.
- **Consider offering a reward.** In celebration of a new customer, you could offer a discount or some sort of perk. You could offer 10 percent off the next purchase like Society6 did in the example above, or offer another perk like free shipping.
- **Remind new users about the benefits.** Thank your new customers for signing up and reinforce their decision to join. Tell readers what they'll get out of this new partnership. The email below does exactly that.

5. Product advice email

The purpose of this mail is to offer your customers advice on how to get the most from your business or product. At the same time, to establish your authority in the industry. This kind of email has more information, so your time will go toward writing and proofreading.

Tips for creating a product advice email:

- **Create valuable content** - The key to this kind of email is to offer tips that your customers want to read. Help solve problems they may have or obstacles they may need to overcome. Or, offer tips to help your customers use and maintain your product or service. If you sell cameras, send an email that teaches customers how to use certain features. Whatever your business is, create an email that gives your customers a helping hand.
- **Proofread** - No matter what email you send, you should proofread it several times. Read it from the bottom up so your brain isn't reading words that aren't there. Then, have someone else read it. Take it through an error-check process before sending. Nothing cuts your credibility like misspellings and grammatical errors.
- **Focus on customer service** - Emails that offer product tips should also showcase your commitment to customer service. Emails like this tell customers, "We're here for you." Follow through with that message by adding contact information to the email. The email below, for example, offers tips to wear a certain piece of clothing, but you'll also notice there is a "contact us" option in the top right corner.

6. Educational email

Educational Email provide customers with industry knowledge that's connected to your business or product. It helps build relationships and trust between your business and your customers. It takes time to brainstorm ideas and to create a sharp email.

Tips for creating an educational email:

- **Offer relevant content** - When you send an educational email, you're trying to build a relationship with your customers. The best way to do that is to teach them something. However, you want to teach them something that has a connection to your business. For instance, Monster.com, the job search site, sends its customers information about life in the workplace. An example is below.
- **Consider offering bite-sized information** - Take a cue from the Monster.com email above and write bite-sized pieces of information in the article; let your customers decide if they want to read more. The "Read more" link takes your customer to your blog for the full article. It's a great way

to engage with customers via email and boost blog traffic.

- **Add a mini-promotion** - You can add a promotional element to this kind of email, but it shouldn't be the main attraction. For example, Lumosity, the brain game site, offers an educational article as the main feature, but notice a promotion on the right side for a family membership. It's subtle and simple.

7. Reorder email

Reorder Email is To remind customers that it's time to reorder a certain product. Any business that sells products or services needed on a regular basis would benefit. Examples include products like printer cartridges, contacts, pet medications and vitamins. Basic text and images are needed.

Tips for creating a reorder email:

- **Clear call to action** - The purpose of a reorder email is to encourage your customers to replenish your product or perhaps renew a subscription for a service. You want to make the buying process as simple as possible. To do so, create a simple, easy-to-find button that says, "Reorder now." For instance, in the example below, customers can reorder pet medication from Pet Wellbeing.
- **Remind customers of the value** - In the email, tell your customers why reordering is a good idea. Maybe it's to keep vital pet medications on hand, or to avoid the hassle of running out of toner at the office. You could also offer a discount to those who reorder within a certain time frame.
- **Mention past purchases** - If you want, you can mention in the email what your customer purchased in the past, so they can reorder the same thing. The pet supply store below does this for its customers. It's a nice addition to the email, but you can send it without this information.

8. Testimonial Email:

Its Purpose is to reinforce how valuable your business or product is through customer feedback. Every business **would** benefit with this mail and It takes a bit of time to collect testimonials. You may need to be persistent to get customers to give them to you.

tips for creating a testimonial email:

- **Create a sleek design** - Email design elements are important with testimonial emails. You want something that's eye-catching and easy to read. Take a look at the example below. This retailer put together four quotes from happy customers and highlighted the product, too. It's a win-win. Both the accolades and the products are showcased well in this simple design.
- **Include an image** - If you sell tangible items like clothing, using pictures of shirts and dresses makes sense. But that doesn't work for every business. Take a medical clinic, for example, or a sanitation company. What image do you use in these cases? If you need a powerful image, ask the customer who gave the testimonial for a picture. Take a look at the example below. The customer's picture is what makes the email work.
- **Offer more information** - A testimonial is great, but you should offer your customers a next step. For example, in the email above, customers can read more testimonials by clicking on the text. You could offer a link for others to leave feedback, or a link to other uplifting company news.

9. Survey email

Survey Email is to collect helpful information you can use to improve the customer experience. Any business looking to better itself can use this email. We have to spend time creating the survey and writing an email with a link to the survey.

Tips to create a survey email:

- **Explain what's in it for them** - If you want a customer to take the time to fill out a survey, you need to give them a reason. In the example below from CVS, participants are entered to win a cash prize.
- **Address the purpose of the survey** - Besides an incentive to fill out the survey, you should tell your customers why you want the information. Whether you're trying to improve your business or conducting product research, let your customers know the purpose of the survey.
- **Make the survey easy to access** - There should be an obvious, clickable link to the survey. Take a look at the example below. Notice the link to the survey is a clear, easy-to-spot button at the bottom of the email.

Email Marketing Campaign Process:

Planning your Email Marketing Campaign Before you get started actually creating your email campaign and designing the layout of your email, you first need to think about the purpose of the campaign and what you are trying to achieve. The types of things we need to include:

- **What am I trying to achieve?** — This is where you think about the purpose and goals of your email marketing campaign. You may have a long term goal, whereby you want to communicate with your customers on a regular basis to keep them informed of the latest offers, new services you have added to the hotel, and so on.
- **Who do I want to target?** — identify who you want to send the email to. Your existing customers, such as, families or couples who have stayed with you before. You may even want to split up all your e-mail subscribers to groups and tailor communication based on the group.
- **How will I get people to subscribe to my mailing list?** — By law you have to get specific permission from people to send them a marketing email. This is sometimes referred to as an “opt-in” and there are many ways you can get people to subscribe (or opt-in) to your mailing list. For example, you could have a sign-up form on your home page so that people can subscribe to your newsletter.
- **How frequently will I send these emails?** — How frequently you send out your emails will depend on their type and purpose. For example, you may send out special offer and promotional emails as and when they are available, whereas you may send out a newsletter once a month. But try and keep the number of promotional communication's to a minimum (1-2 a month) as too many emails could potentially annoy and alienate your subscribers causing them to unsubscribe.
- **Calls to action** — This is what you want to get the reader to do once they have read your email. When designing your email you need to lay out exactly what you want the recipients of your email to do, and design it to make that path clear and easy to follow. For example, don't distract with too many links or offers, and make not only the call to action clear but also what recipients can expect when they click through. This can be as simple as "Click here for a 20% discount on your next weekend trip". For more information on calls to action, see the section in the guide “Getting the Most from your Website” which is part of this series of guides.

E-mail Marketing has evolved, moving from simple one-way messages and auto-responders (now referred to as e-mail 1.0) to a much more sophisticated way of communicating with your customers referred to as e-mail 2.0. It's an advancement in technology, entrepreneurs now have the ability to tailor the messages they send based on their customers' interests, preferences and purchase history - and targeted e-mails yield greater results.

With all the capabilities now available in e-mail marketing systems, there are a few basic things we need to know about e-mail marketing to build deeper relationships with your customers to increase revenues, grow your business and get ahead of your competition.

Here are seven steps to creating and launching a successful **E-Mail Marketing 2.0 Campaign**.

1. Choose the Right E-mail Marketing Software System

CRM systems can range from simple database models to more complex systems that include sales force management, shopping carts, affiliate programs and e-mail behavior campaigns. Infusionsoft offers complete CRM capabilities, which include not only database and campaign management but also offer information on interest, preference and purchase behaviors so that you can tailor your message and campaigns. Other systems, such as Mail Chimp, Constant Contact and AWeber offer more basic e-mail database and campaign management services. Decide what capabilities you want and use a checklist to compare systems. Most e-mail programs have training and free support to guide you through the learning process.

2. Build a List

Even if you only have 10 e-mail addresses, you need to start somewhere. Add those to your database. Once you have your list started, make sure that you launch a campaign to keep in touch and in front of your contacts without overwhelming their inbox. I suggest two e-mails per month maximum. It's not about e-mail quantity; it's about quality.

3. Set up Contact Information Capture Forms

It's easy to add forms to your website or blog to allow visitors to give you their contact information, such as e-mail address, name and phone number.

4. Decide What You Want to Accomplish

Before you launch your first campaign, you need to decide what it is that you want to accomplish. Do you want to deepen the quality of relationships, take your list through the sales cycle, educate them? Why are you sending your e-mails? Set clear goals before you send your first e-mail, and build your messages and campaign around those goals.

5. Set up Auto-respond E-mails

Set up at least six e-mails that will automatically release on the dates and times you choose to send out to your list. Keep them short, simple and to the point. Do not make them "sales pitchy"; use auto-respond e-mails to educate and build relationships, and the rest will follow. Make sure that each auto-respond e-mail has several links for more information; this is how you will gauge their interest and determine how to keep marketing to them.

6. Add Triggers to E-mails

Here's an example of a trigger: Your client clicks on a link in one of the e-mails you sent her about your product or service. As soon as she clicks on that link, it automatically triggers the release of a message sending her information about a similar product or service based on the original link. Triggers are used to send clients into a new sales cycle based on topic.

7. Monitor Results

Once per month, look at reporting (metrics) to see which e-mails are more effective and have a higher rate of opening as well as click-through. Use the lessons learned to build your next campaign. It's important to know how your list is responding to the e-mails that you send. If you aren't getting a good click-through response, the problem is either the quality of your message or the topic. Test a few e-mails with your top customers to see what they respond to and what they don't respond to (one common test is to send the same message with several different subject lines to see what your list favors). Offer recipients a discount on services for their time.

Not only has e-mail technology and software evolved, but the way people use it to communicate has changed how entrepreneurs and small-business owners market and grow their businesses. E-mail 2.0 marketing is an effective way to increase relationships, response rates and conversions through smart, targeted communication.

Advantages of Email Marketing:

Email marketing can be used for many different purposes.

- **Promotion** — you can use emails to promote a special offer, or a new product or service to a list of existing or potential customers. The main aim of a promotional email is to get the reader to take some type of action, such as, book a room, buy a gift card, or reserve a table. If your readers have specifically subscribed to your mailing list to receive special offers and promotions then that's fine, but if they have subscribed to a list to be kept up-to-date on news and events then if you are constantly bombarding them with promotional emails you stand the risk of alienating them and forcing them to unsubscribe.
- **Retention** — these are emails aimed at building a relationship between you and your readers. These generally take the form of newsletters where you are providing your readers with information and stories that they may find interesting. A newsletter can of course also include promotional messages or advertisements but these should not be their main aim. Your customers can forget about you very quickly so keeping in contact with them on a regular basis is a good way to keep them aware of you and your business.
- **Communication** — these types of emails are generally short emails designed to communicate some important information to your readers. For example, invitation to an event in your hotel, a traveller tip for your area, details of a news article about your hotel. Email marketing allows you to reach millions of customers with a click of a button. Like any marketing medium, it has its advantages and disadvantages. Use it correctly, and you'll make more money, but use it incorrectly and you could lose your business. Weigh these pros and cons before you start an email campaign.
- **Other Benefits of Using Email marketing** - There are many good reasons to use e-mail marketing because even with the growth of social media, e-mail marketing can still be very effective
 - **Cost** — Communicating via email has many of the advantages of traditional direct mail but with much lower costs.
 - **Speed** — if you need to, you can get a message out to your entire list very fast.
 - **Easy to create** — with the many email tools out here, such as, MailChimp and Constant Contact, it has become extremely easy to send out professional looking emails and track their performance through reports. Most of these tools provide standard templates and layouts for all different types of emails, such as newsletters, invitations, special offers and many more.
 - **Personalized** — the more information you collect, the more messages can be tailored and personalized.
 - **Tracking** — you can track how well your email campaign is doing, such as, how many emails were opened, what links did they click, and so on. With this information you can then adjust your next campaign and improve performance.

Disadvantages of Email Marketing:

Businesses use email marketing as an affordable and often effective advertising tool. However, before employing this technique we should make yourself aware of the disadvantages and misconceptions that exist. For example, though many people believe email marketing is free, starting any marketing campaign from scratch (even an electronic one) will cost your company money. Several factors can hinder your effectiveness, and, in some cases, email marketing can even work against your business.

- **Spam** - People's in-boxes get inundated with email, both solicited and unsolicited. To cut down on the amount of unwanted emails, many servers have filters in place to lessen the number of spam emails a person receives. ("Spam" is a common term for bulk distributed emails.) People can further adjust their email filters to their own tastes. Our email marketing could well land in a spam folder and never get

viewed. In some cases, you could find yourself or your business in serious legal trouble. The CAN-SPAM Act sets forth strict guidelines that companies must meet in order to use email marketing. Violations of the act can cost up to \$16,000, and numerous people may be charged. Even when you take pains to ensure your email marketing conforms to the rules, you may still be accused and have to prove your campaigns are legitimate.

- **Engagement** - Email marketing requires constant tweaking to keep your subscribers engaged. A person will often sign up to receive email solely as part of a promotion. For example, if a user provides his email address, he may receive a discount on a product. A user might also unintentionally sign up, such as if subscribing was the default choice on a web page. In such cases, your email marketing may be perceived as a nuisance. Even in the case that someone deliberately signed up to receive your marketing emails, like an industry newsletter, you still must work to maintain a level of engagement to keep your reader from unsubscribing.

- **Appearance** - You may have worked to create your email marketing to look exactly the way you envisioned. Unfortunately, due to the varying servers and computer settings, your design may not come through the way you hoped, which can diminish the impact of your message. Text may be moved from one line to the next on a person's screen. The email setting on another person's computer may only allow text, blocking images from coming through. If the main focus of your marketing was a logo, it could be lost. If you want to avoid a misconstrued or possibly messy appearance, you'll need to make sure the code used translates to the most basic processing systems. This may entail consulting with a technical specialist or marketing firm.

- **Costs** - Sending a quick email to someone may not cost you much more than Internet access, but the costs of launching an email marketing campaign add up. Even basic self-managed monthly plans with fewer than 10,000 subscribers can cost \$70, according to one marketing software firm. Hiring a company to design and manage an email marketing campaign includes templates and consultations and can get pricey. A start-up package can cost several thousand dollars initially plus a thousand or more per month for continuing management.

Opt-in Email Advertising:

Opt-in email is defined as an email that a brand sends after a consumer willingly provides his or her email address. Brands can collect email addresses in myriad ways, but usually they use forms on their websites as well as incentives, such as free downloads.

Think of it as a way to authenticate your email list. Instead of sending emails blindly to people who might not have any interest in your online courses, you're spending time only on people who already know who you are and who want to hear from you.

What Is Opt-In Email Marketing?

Opt-in email marketing is a marketing campaign that uses permission-based email-collection methods to capture email addresses from willing consumers. Once you have a potential customer's email, you can add it to a marketing list based on the customer's position in the sales funnel.

For instance, if your prospect signs up for your email list during his or her first interaction with your brand, you might segment that consumer into a list that introduces your online courses and provides actionable tips for interested consumers.

However, if your prospect joins after buying a course, you could send emails about getting the most out of your course material or about applying the information you teach to the real world.

Opt-in email marketing isn't just a way to capture email addresses so you can blast prospects with sales copy. In fact, that's the worst way to use it.

Instead, use opt-in email marketing to nurture your prospects through the sales process.

- Invite prospects to interact:** Let your email marketing recipients know where to find you online, from your social media accounts to your blog.
- Encourage customers to convert:** Provide sound reasons why a prospect should buy one of your courses. Use real-world examples to illustrate your points whenever possible.
- Follow up with prospects:** If a prospect abandons his or her shopping cart or goes inactive for a while, reconnect with a nurturing email that reminds him or her that you exist.
- Send promotions:** Offer discounts and other promotions that encourage prospects to buy your course for the first time or to buy a subsequent course.
- Set up your opt-in email marketing campaign based on your specific objectives. Every course creator has different goals, so you don't want to copy someone else's campaign. Instead, think of the goals you want to reach, then design emails that help push customers to help you reach them.

- Gain brand visibility:** If you want to establish yourself as an authority figure in your industry and make more people aware of your brand, encourage your email opt-ins to share your messages. The more people forward your emails, the more signups you get.
- Boost sales:** Use promotions, bundles, and discounts to get people to finally hit the "buy" button.
- Increase upsells:** Encourage customers to buy multiple courses and other digital products.
- Check on progress:** Find out where your customers are in their online courses and whether they need any assistance or have any feedback.
- Solicit reviews:** Ask your customers to review your courses online. You'll get backlinks as well as more brand visibility. Plus, prospective customers will feel more comfortable buying from you. In fact, nearly 85 percent of respondents to a study stated that they trusted online reviews as much as they valued recommendations from friends.

You'll continually adjust your email marketing campaign as you gain more subscribers and measure the results. Even though you're using an opt-in email approach, you can't always predict whether customers will open, read, or engage with your emails.

Keeping track of key metrics can help.

- Open rates:** If customers don't open your emails, you might need to create more compelling subject lines or introduce an incentive early in your emails.
- Engagement rates:** Customers open your emails, but they don't do anything else. If this happens, add more attractive calls to action using freebies and discount codes. Get people to click on links through incentives.
- Conversion rates:** Do customers buy your online courses after reading your emails? You can track conversions through email and landing pages to figure out how well you're converting.

Spam Versus Opt-In Email

Spam is a word, whom you don't want people to associate it with your brand.

Unfortunately, even when you use opt-in email, your emails could be perceived as spam. It happens when you use overly promotional, salesy language, or when you send too many emails in too short a time period.

Additionally, if you don't use the opt-in strategy at all, you risk your emails getting diverted to spam folders. If your recipients report your emails as spam, their email clients might automatically assume that everything you send is spam. That's the wrong way to start an email marketing campaign.

So what differentiates spam from opt-in emails?

First, of course, is the permission factor. When you collected an email address, did you get permission from the person who owns it? In other words, did it come via a form or other email- collection tool? If not, you might not want to use it.

Secondly, were you clear about the types of messages the consumer would receive?

It's easy to collect email addresses via a form if you promise rainbows and unicorns. Unless you can actually deliver rainbows and unicorns, however, you're being disingenuous, and your subscribers will quickly catch on to your game.

When you collect email addresses through an opt-in form, make two things perfectly clear:

1. **Email type:** What messages will the subscriber receive? Mention that you send insider tips and tricks, promotions and sales, or other content (but make sure it's true).
2. **Frequency:** How often should subscribers expect to hear from you? If you promise to email only once per month, but you send emails every day, you'll get some backlash.

If you follow those rules, you can separate your email campaign from the dreaded spam word.

A smooth opt-in process from start to finish will ensure that you are collecting subscribers who know what they are signing up for and who will be active recipients when they receive the content they are expecting. Delivering on promises made during the opt-in process and refining your strategy to send targeted mailings will keep your attrition rate low.

Opt-in email: Advantages

- Preserves your email marketing reputation
- Shows customers that you respect their privacy
- Helps you email people who are interest in what you're selling
- Saves you time and money by micro-focusing your list
- Lets you be more targeted in your campaigns
- Helps you build long-term, trust-based relationships with customers
- Can boost your sales and product interest

Email Marketing Tools:

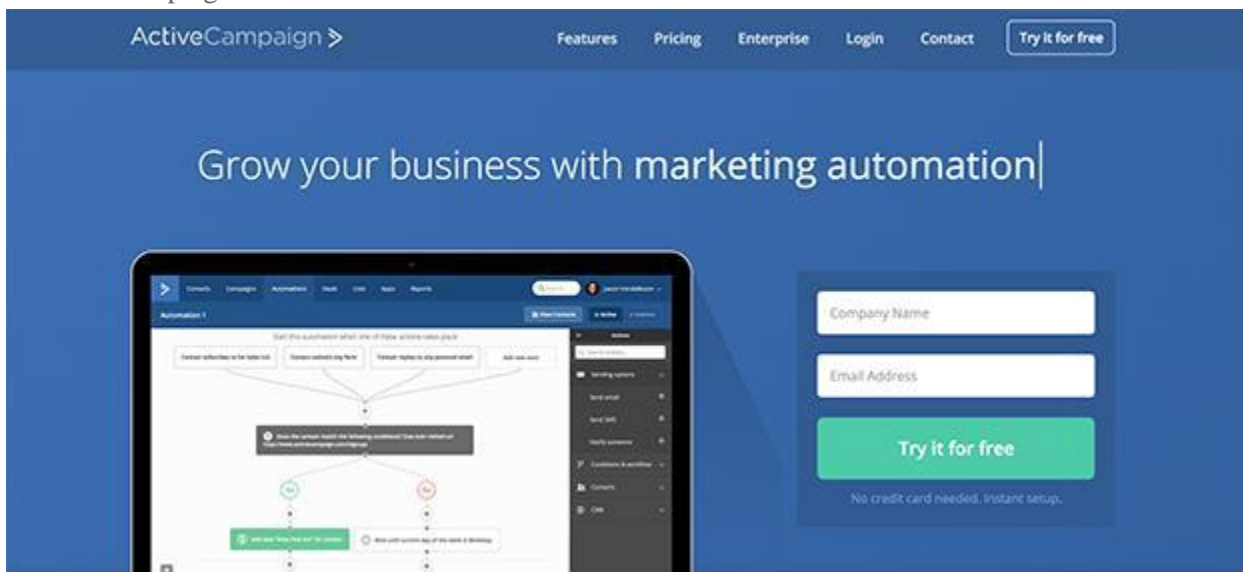
Email marketing tools are tools that marketers use to create, send, test, optimize and report on their email campaigns. An email marketing tool could be a specific tool related to email marketing like an email subject line generator, or an inbox placement testing tool, or a suite of tools that enables a marketer to do all their email marketing end-to-end.

1. Sendloop



One of the most important aspects of refining a drip campaign is targeting the right people. With **Sendloop**, you can funnel contacts into very specific campaigns and track their movements on your site to further tailor your messaging in the future.

2. ActiveCampaign



ActiveCampaign allows you to create drip emails that are driven by subscriber interaction, behavior, interests, location, history and more. With this tool, you can automate the entire life cycle of a subscriber or customer.

3. BombBomb

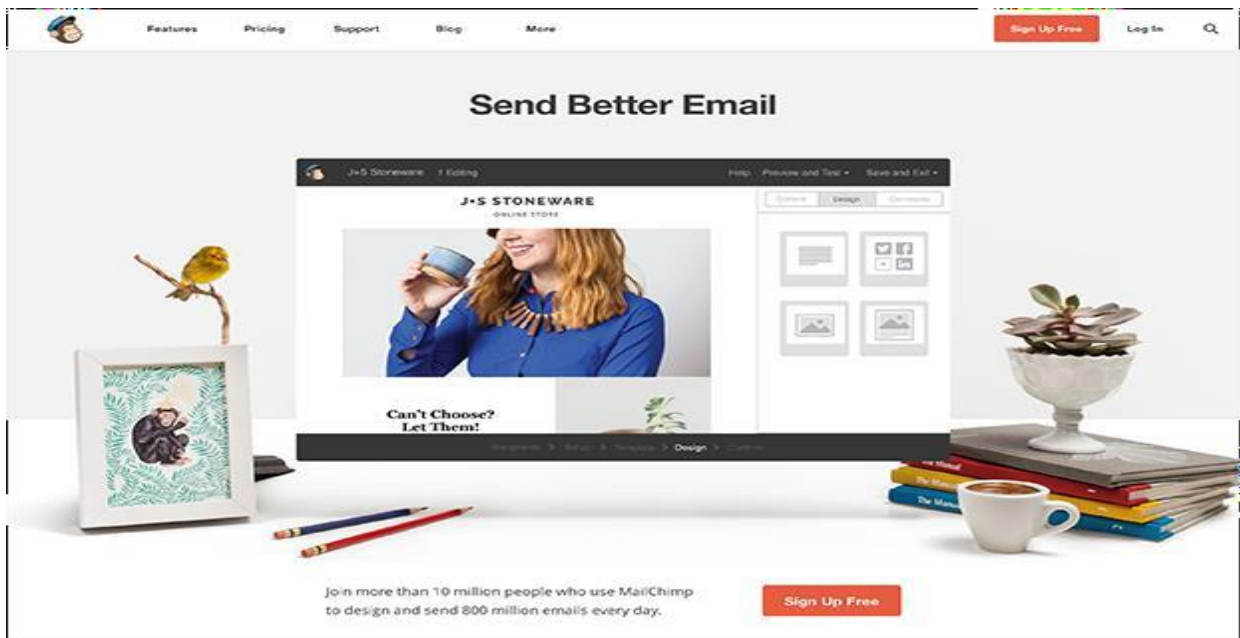
Text-only emails can be boring. Heck, even images are becoming boring in today's media-saturated internet landscape. If you want to effortlessly spice up your emails, then you should consider using **BombBomb** to create video-powered drip emails.

4. Drip



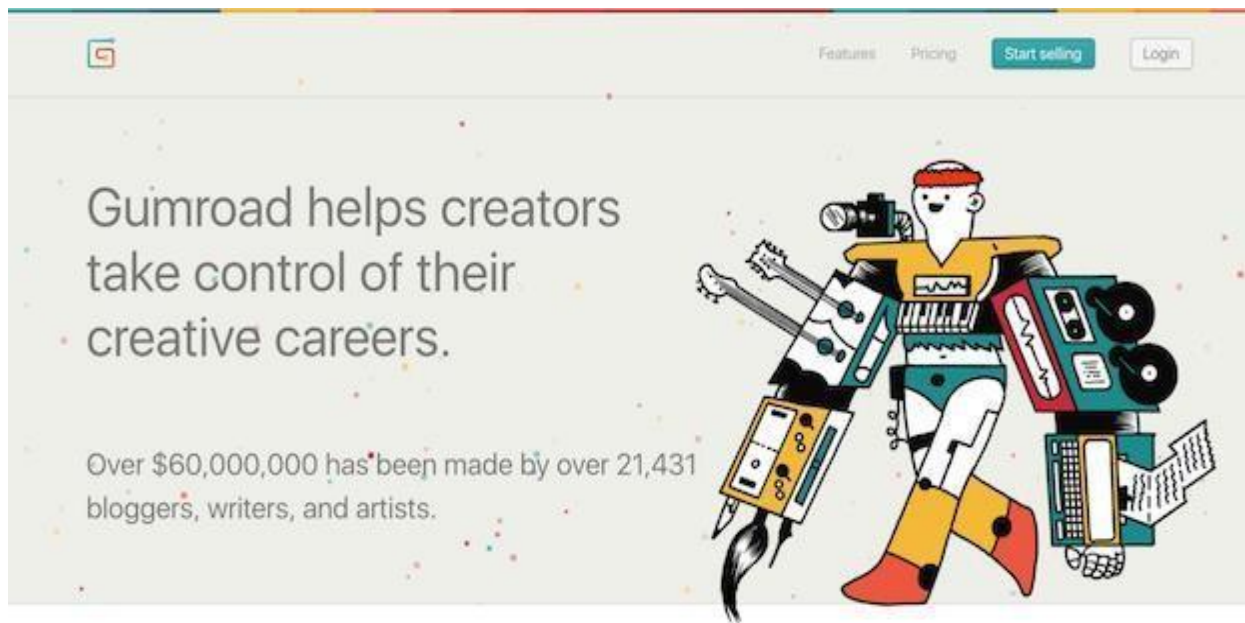
As the name suggests, **Drip** is an app designed for streamlining the drip email process. It's a surprisingly simple tool that packs quite the punch. The app features email gathering technology, pre-made templates, and drag and drop elements for simple creation.

5. MailChimp



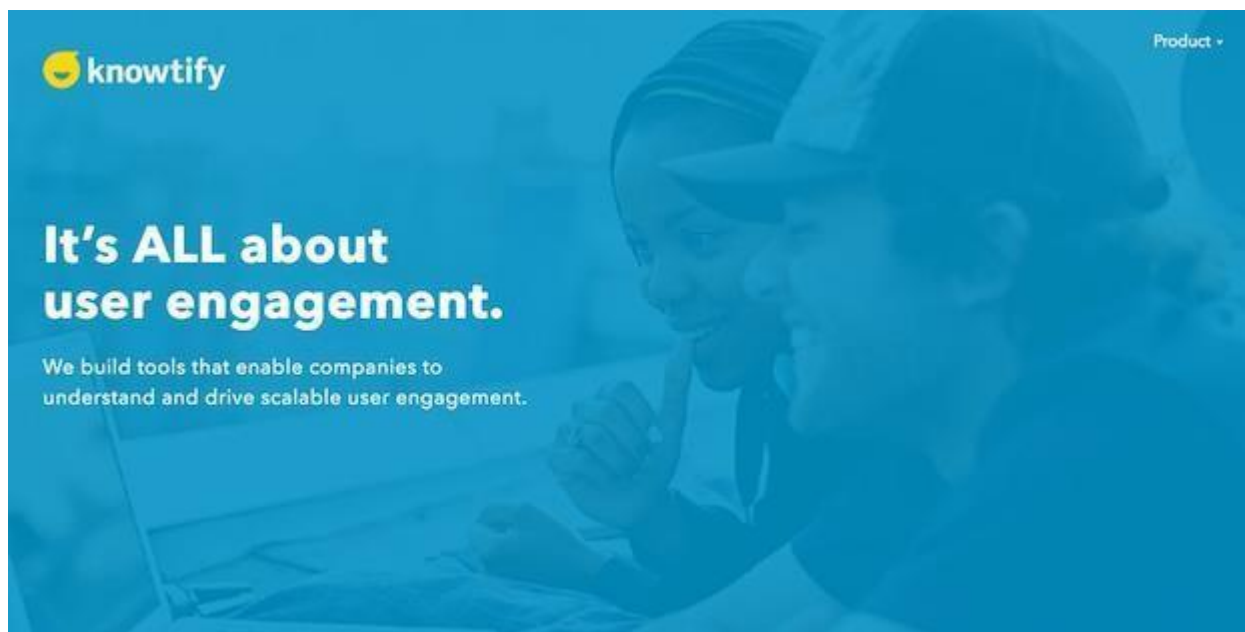
MailChimp allows you to send drip emails to follow up based on website activity, abandoned carts, activity or inactivity, and much more. You can also use **MailChimp Groups + OptinMonster** to send drip emails based on what the subscriber opted in for, or even based on checkboxes that the user selects on your optin form.

6. Gumroad:



Widely known as a place to sell digital products and services, **Gumroad** now has an email feature that lets you gather and store potential customers alongside existing customers. You can then segment based on numerous features and send updates about your products.

7. Knowtify



As you know, email is a versatile tool. Rarely are two messages ever sent with the same goal in mind. **Knowtify** understands this, and gives you an easy way to launch drip campaigns based on transactional, digest, or behavioral emails.

8. Infusionsoft



In addition to helping automate standard email drip campaign tasks, **Infusionsoft** serves as a general task manager. The “My Day” feature shows you which appointments you have for the day, as well as which contacts you need to follow up with.

9. AWeber

Did you recently add a bunch of new subscribers to your email list? Well, instead of bombarding them with a bunch of past emails, you can use **AWeber’s** Follow Up feature to get subscribers up to speed in a hurry.

10. GetResponse



If you're like most people, your email newsletters are sent at predetermined times. Shouldn't they be integrated into your calendar then? **GetResponse's** autoresponder tool uses drag and drop features to make calendar management a breeze.

11. ConvertKit



Want some of the more advanced features of a CRM without the price tag? **ConvertKit** allows you to send targeted autoresponders to subscribers based on their interaction with your emails with Automation Rules. They even have blueprints that you can use to quickly create **autoresponder sequences** for almost any situation.

12. Emma



Nobody likes a generalized email newsletter. That's why **Emma** is a great tool. This powerful tool works with Shopify, Salesforce and **OptinMonster** to gather CRM and sales data and personalize emails based on the subscriber.

13. Contactually

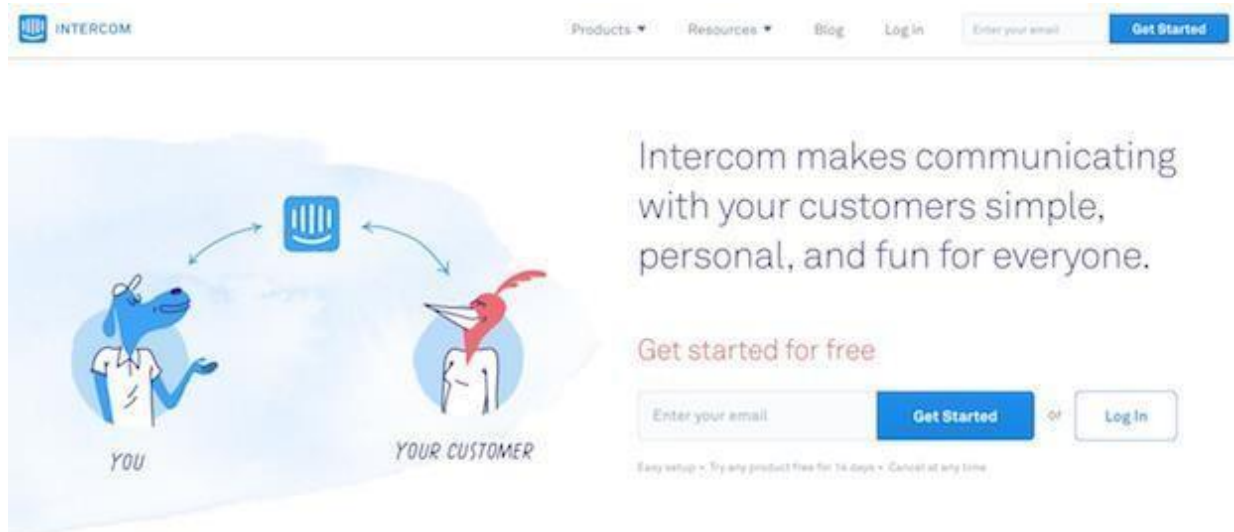
Contactually is one of the neatest tools on the list. It's a CRM platform that focuses on vetting contacts. It gathers contacts from your email inbox, website, and social media profiles, and then gathers as much information as it possibly can to guide your messaging.

14. HubSpot



HubSpot is consistently ranked as one of the top marketing automation tools across a spectrum of tasks. One of its top uses involves streamlining email marketing through the use of automated workflows.

15. Intercom



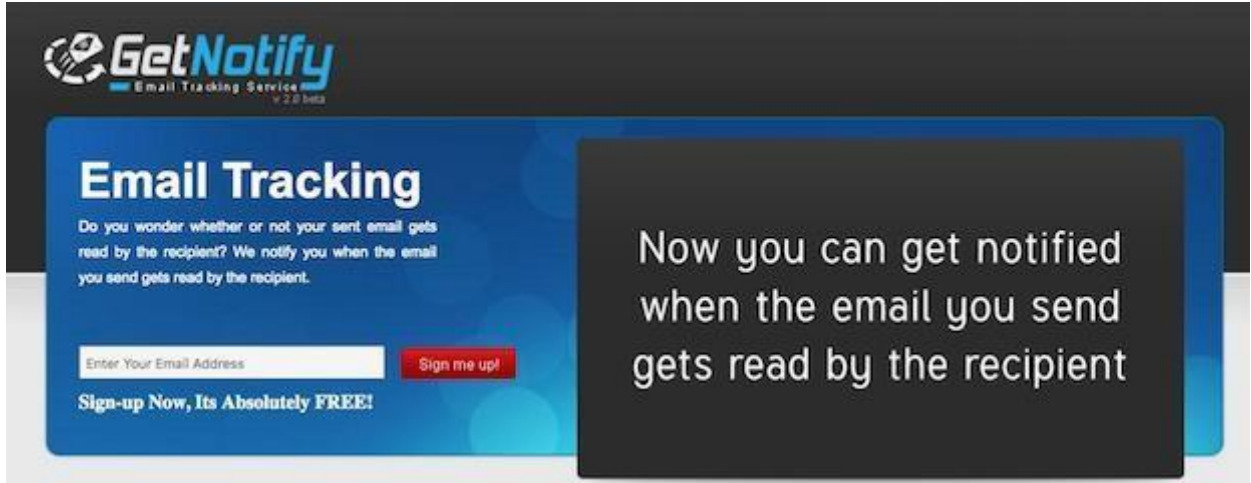
If you're trying to teach your customers/users about your app, **Intercom** lets you send automated email conversations directly in the app. This gives them assistance where they're most likely to see it.

16. Hatchback



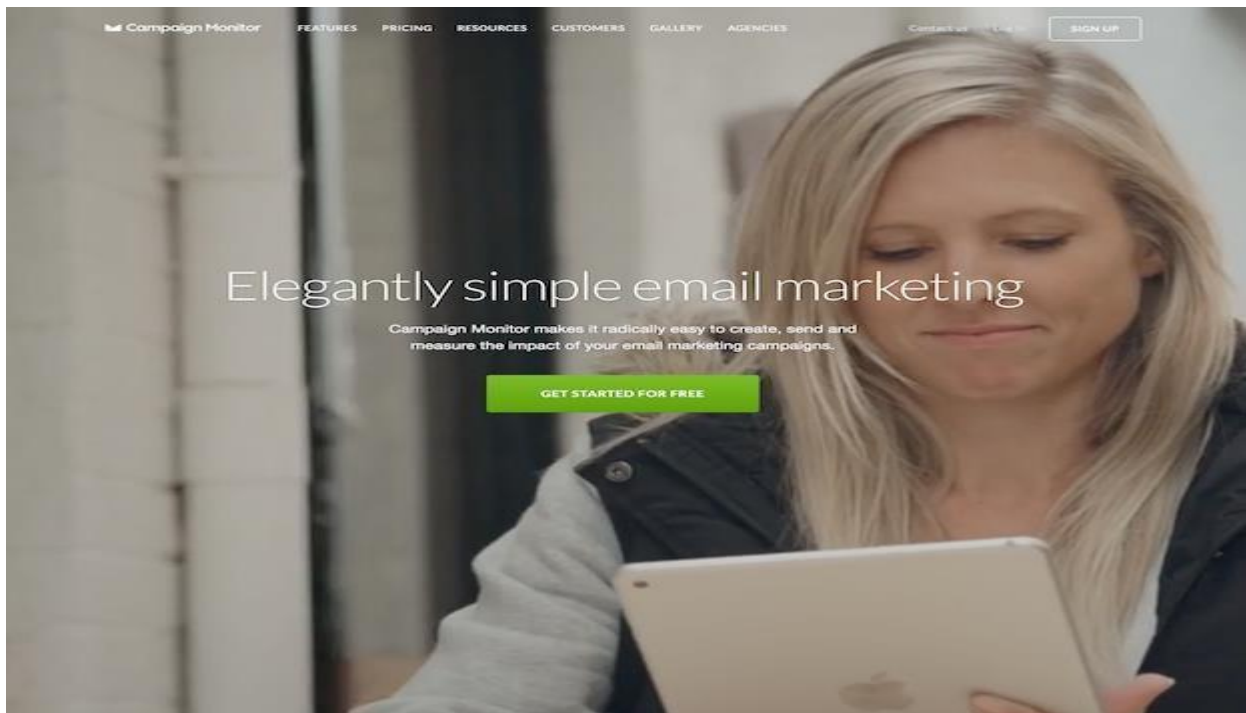
Just like Gmail now uses tags to optimize messages, so does **Hatchback**. You can create tags and assign them to specific contacts based on their interests and the stage of the funnel they're currently in.

17. GetNotify



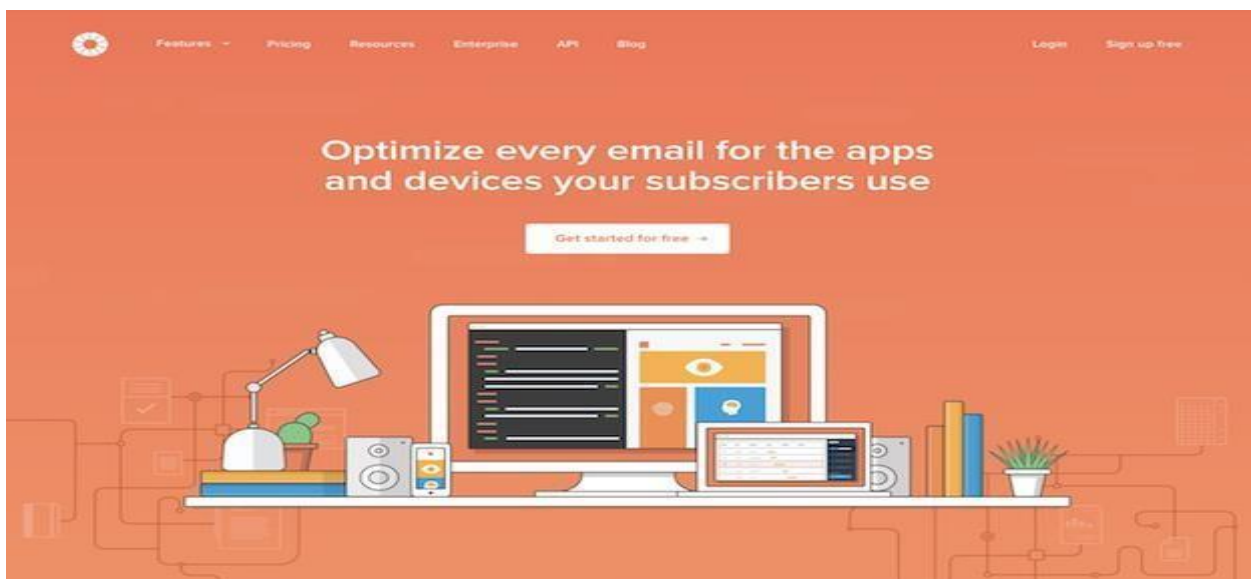
GetNotify is a free tool that notifies you the instant your email gets read by the recipient. You just send your emails like your normally would, but add “.getnotify.com” to the recipient’s email address. Your recipient will not see this, and they will not know that you are tracking their opens.

18. Campaign Monitor



What good is an email marketing campaign if you can't automate things like testing, tracking, and optimizing? With **Campaign Monitor**, you can. It features interactive analytics that are easy to review and act upon.

19. Litmus



Litmus is one of the top tools for render testing emails on any device. You can test up to 40 clients and devices with one single click, which cuts down on the time it takes for you to review each and every email combination.

20. Reach Mail



The **Reach Mail** testing feature lets users compare direct performance metrics on up to five individual email campaigns at once. It also accounts for things like subject lines, content, and images to show you which emails will perform best.

Email tracking:

Email marketing allows you to easily track the effectiveness of your campaigns. When you send out a direct mailing through the post office, for example, you have no way to know how many recipients opened your mail. An email message, though, shows you how many people received it, how many opened it and how many clicked through to your links and made a purchase.

Types of Tracking Reports

Depending on the ESP you use, you have a great deal of data and to track and analyze. The kinds of data you can track include, but are not limited to, the following:

- Email bounce rates
- Who opened emails
- What links were clicked
- Customers that unsubscribe
- Email forwards

Let's take a closer look at the most commonly used types of tracking reports. As we go through the types of reports, they will become more and more specific

1. **Bounce Rates/Non-Bounce Rates** - Bounce rate refers to the amount of emails that were not received by recipients. It is the equivalent of having a mailed letter sent back to the sender. This number is expressed as a percentage of total emails sent and requires a

simple calculation. Calculating the bounce rate means taking the number of bounced emails (which a tracking report will tell you) and dividing that by the total number of emails you sent to a particular category on your list. You will get a small number (less than one) expressed in decimal form. To get the percent number, move the decimal to the right two places. As an example, if you get 0.25 from your division equation, moving the decimal over two spots gives you 25%.

Bounces can happen for a number of reasons, like firewalls or a full inbox. Most of the time, though, it is out of your control and there is little you can do to fix it. However, you can check for certain things like misspelled email addresses to see if the problem is in your hands and is fixable.

Non-Bounce rates, on the other hand, are the percentage of emails that did get sent through, regardless of whether or not the recipient opened them. This is a very useful number because it is used to let you know detailed information that we will discuss in the next few sections. Calculating the non-bounce rate is also simple. If you already have the bounce rate, all you have to do is subtract the percentage number from 100 to get the non-bounce rate.

2. Open Rates - Open rates are the number of interactions your email server gets as a result of a recipient opening an email. This number only comes from the non-bounce rate and not the total number of emails you sent out. Your ESP will know when an email has opened because of one of the following:

- The images were displayed in an opened email
- A recipient clicked a link in an email

The reason these actions indicate an opened email is because images are stored on the ESP's server and accessed from the server when an email is opened. A link within an email is tracked because clicks are easily trackable. This is another reason why putting images and links into an email is important for your email marketing strategy.

3. Click-Through Rates - Click-through rates are the percentage of users clicking on links in an email. This number is taken from the number of opened, non-bounced emails. As you can already see, these tracking data get more and more specific, building off of one another. The click-through rate number will be displayed and calculated by your ESPs software tools. Some ESP software will allow you to view exactly which links were clicked in addition to the number of times each one was clicked.

Click-through rates are especially beneficial for customizing the interests of your customers. It extends beyond the email as well, being used on websites to track who clicks on what links. Since it is easy to track what exactly your customers click on, you can make well-educated assumptions about what they would prefer for you to send them in the future. You can also use click-through rates to recommend other types data to the customer to get them more involved in your company's other marketing channels.

You can also use click-through rates as a means of testing out different versions of an email. Separate a list in two and send out a different version of the same email to each list. Analyze which list has more click-through rates and if necessary, make adjustments to the emails. Keep testing them out until you feel you have an optimal and effective email.

4. Additional Tracking Reports - In addition to the tracking data we have already mentioned, there are a few other points of data you can view and perhaps even use to improve the effectiveness of your email marketing strategy. You can see how many people unsubscribed and keep their data in a category of your email list. It is a good practice to keep this data because if the customer decides to subscribe to your email list once more, you do not have to do any additional research on their information. Remember, though, that you cannot send them any emails unless they grant permission again.

You can also use tracking reports to see if anyone has forwarded your email to other email addresses. If your email marketing strategy calls for you to get people to spread the word about your organization or something it has to say, this is a very useful type of data to track.

You might come across an instance where you want to track how well your emails are doing for certain components of your entire marketing strategy. In some cases, though, using click-through or open rates will do little to help you track your progress and success. Some situations where you will want to know if your emails are effective include:

- In-Store Purchases
- Phone Calls
- Event Attendance

Sometimes, an organization wants to know if their emails are enticing people to participate in actions such as these listed.

Their participation cannot be tracked by software, so being able to track this kind of data involves some participation on the part of your email recipients. The best way to determine the effectiveness of your emails is to have your email recipients give you their email address when they make a purchase at a store or call your organization. For event attendance, you might give them some kind of special code that gets them into the event and can only be viewed from an email.

Email Tracking Tools:

1. ContactMonkey:

ContactMonkey provides email tracking and a Salesforce-integrated sidebar in Gmail or Outlook email clients. The reporting dashboard gives you analytics on how many sends, opens, reads, and interactions your emails receive. Use the merge feature to send to multiple recipients based on a pre-built or on-the-fly list. ContactMonkey's predictive engine provides insight into how your contacts open their emails by device and time, so you know when to send for the best response.

2. ToutApp:

ToutApp combines CRM, phone, and email client integrations into a single platform. You can build email templates and drip campaigns and log real-time customer interactions with emails so your team can jump on opportunities. Playbooks help your team choose the best sales-focused actions for each customer interaction. In-team messaging and notifications are also available. All of these features are accessible directly from your connected CRM, so you don't have to spend a lot of time updating notes and copy-pasting data from one platform to another. ToutApp is built for the enterprise, with privacy settings and full integrations for most of your technology stack.

3. Yesware:

Yesware offers email tracking that drives prescriptive sales analytics. Prescriptive data helps your sales team anticipate customer behavior and better target warm leads. Contextual data reports show you what the best reps are doing so you can duplicate it across your team. An "Activity vs. Engagement" report shows customer engagement with your content, instead of shallow interest. Individual team member reporting shows where your team can improve and where they're lagging. Yesware offers a native connection with Salesforce to help you build customer lists for use in your email campaigns.

4. Clearslide

Clearslide integrates with any existing email client. Build a sales library with your most successful templates, and use Clearslide's customized, real-time tracking to follow customer engagement with all of your content, including your website. You can automatically upload content into your email templates and scale email blasts with customer segments from your CRM. All of your email client work auto-logs into your CRM, so (again) you don't have to duplicate information.

Social Media Marketing

What is Social Media Marketing, Seven Myths of SMM, Characteristics of Successful Social Media Marketer, Social Media Marketing Plan, Social Media marketing Tools, Publishing Blogs, Podcast and Webinars, Social Media Monitoring, Social Media: Facebook, Twitter.

What is Social Media Marketing?

Social media marketing, or SMM, is a form of internet marketing that involves creating and sharing content on social media networks in order to achieve your marketing and branding goals.

Social media marketing includes activities like posting text and image updates, videos, and other content that drives audience engagement, as well as paid social media advertising.

- The goal of SMM is to produce content that users will share with their social network to help a company increase brand exposure and broaden customer reach.
- One of the key components of SMM is social media optimization (SMO). Like search engine optimization (SEO), SMO is a strategy for drawing new and unique visitors to a website. SMO can be done two ways: adding social media links to content, such as RSS feeds and sharing buttons - or promoting activity through social media by updating statuses or tweets, or blog posts.
- SMM helps a company get direct feedback from customers (and potential customers) while making the company seem more personable. The interactive parts of social media give customers the opportunity to ask questions or voice complaints and feel they are being heard. This aspect of SMM is called social customer relationship management (social CRM).
- SMM became more common with the increased popularity of websites such as Twitter, Facebook, Myspace, LinkedIn, and YouTube. In response, the Federal Trade Commission (FTC) has updated its rules to include SMM. If a company or its advertising agency provides a blogger or other online commenter with free products or other incentives to generate positive buzz for a product, the online comments will be treated legally as endorsements. Both the blogger and the company will be held responsible for ensuring that the incentives are clearly and conspicuously disclosed, and that the blogger's posts contain no misleading or unsubstantiated statements and otherwise complies with the FTC's rules concerning unfair or deceptive advertising.

Social media marketing (SMM) refers to techniques that target social networks and applications to spread brand awareness or promote particular products. Social media marketing campaigns usually center around:

- Establishing a social media presence on major platforms
- Creating shareable content and advertorials
- Cultivating customer feedback throughout the campaign through surveys and contests

Social media marketing is perceived as a more targeted type of advertising and is therefore believed to be very effective in creating brand awareness.

Myths about Social Media Marketing:

Social media marketing has become one of the pillars of a successful digital marketing strategy, and one that every business needs in order to maximize online visibility. It is understandable that not everyone is social media savvy right out the box, and for most, a lot of learning and training is necessary in order to successfully DIY their business' social media efforts.

The good news is that should you need a bit of a crash course in social media, you can team up with a social media consultant to help you learn the ropes. There are also hundreds of informative articles and how-tos online that you can use as references. No matter which route

you go however, it's always important to know and understand what social media can and cannot do for your business so that you can manage your expectations and establish achievable objectives.

The social media myths that we'll be discussing today are actually quite common. There are lots of people who believe that these illusions are achievable and they expect their digital marketing agency to deliver these ridiculous goals. Let's get these out of the way.

1. Myth One: Just build it and the money will follow

Simply creating social media accounts is not enough to fulfill meaningful marketing objectives. Facebook pages and Twitter accounts don't just gain followers and fans simply by existing. You need to put in the work to promote your social media accounts and publish content that will retain and gain the right audience.

2. Myth Two: It's all about the numbers

It's a common misconception that the more people following your social media accounts the better your yields will be. The reality is that even if you have millions of followers on every social media platform, if none of them become loyal, paying customers, then what's the use of having them there? Quality over quantity should be your mantra.

3. Myth Three: Social media management is a day job

Do your fans and followers follow a 9 to 5 schedule when browsing their social media accounts? Nope. A follower may leave super damaging feedback on your page at 6 in the evening and if you wait until the following morning to address their concern, it may be too late. Timely interaction and engagement with your followers will help in creating a meaningful environment for your audience to linger in. Using scheduling tools and alerts will help you manage your social media accounts efficiently. Here are five tools that we highly recommend.

4. Myth Four: You need to be on every social media platform there is

A lot of social media DIY-ers make this mistake. They believe that they need to be visible on Facebook, Twitter, YouTube, LinkedIn, Instagram, SnapChat, and 10 other platforms because that's what successful social media is all about. Wrong. You don't have to be on every platform, just on platforms that your target audience uses most frequently. You need to be smart and efficient about your time and resources and doing social media marketing on platforms that won't yield prime results will just be a waste of effort.

5. Myth Five: Publish the same type of content to get more views.

If you use effective analytics tools like Cyfe and Buffer, you'll be able to get an insight on the type of content that gets the most engagement and activity. A lot of people mistakenly think that they should publish the same type of content over and over again to replicate these results. Big no-no. Instead of sharing the same

article and links day in and day out, add some variety to your content strategy. Give your followers a good reason to check your pages everyday.

6. Myth Six: When it comes to content, quantity over quality always.

Let me start off by saying no. It may be tempting to share scores of articles, links, photos and videos per day but there is a fine line between sharing content and spamming.

Cleverly space out your publishing schedule and don't over do it. Take the time to sift through your content and select the best and most relevant ones to share on your pages.

7. Myth Seven: Delete negative feedback as soon as they are posted.

While it is understandable why business owners would want to delete negative feedback about their products or services, doing so can open a can of worms and ruin your reputation more than the original feedback can. Instead, use these as an opportunity to provide excellent customer service by providing a clear plan of action on how their complaints will be fixed and addressed. Engage with your customers and others will see that you'll be taking care of their needs should they decide to patronize you.

8. Myth Eight: You'll get instant results with social media.

Actually, if you look at almost all types of digital marketing solutions, you won't find any type that will get you instant results. That's just the nature of digital marketing and it's the same for social media. It takes time for you to gain the visibility that would pave the way for your goals to be achieved (e.g. getting x number of likes, an article being shared x number of times). As long as you're hitting your desired metrics within a reasonable period of time, you should stay your course and continue in executing your social media strategy.

9. Myth Nine: Social media is for hard promotion.

While it's true that social media provides a great promotional avenue for your business, keep in mind that it may not be what your audience wants to see. You need to strike a balance between engaging your audience with relevant content and fun interactions and getting your name out there.

10. Myth Ten: Social media performance can't be measured.

There are plenty of tools out there – both free and premium – that can help you track your social media performance. As long as you first establish your social media objectives, it will be easy for you to determine whether you are hitting your marks. Some tools even give you insights on how to improve your social media strategy. Choosing the best tools for the job can give you invaluable information.

Characteristics of a Successful Social Media Marketer:

Social media can be a fun and effective way to reach your customers on a more personal level. Social media networks are mode of social interaction. It is a platform of sharing and discussing information among human beings. Social media can include text, audio, video, images, podcasts and other multimedia communication elements. Social media sites are nothing but a group of special and user friendly websites.

Social Media Marketing is a very broad term. It is a technique of building a business using various social media networks. For instance, videos and blogs that gives exposure to your company.

When someone talks about social media marketing people often think that they may be talking about Facebook and Twitter. But social media networks also offer effective marketing tools that can bring more traffic to your website and improve your online popularity. Social media marketing has many characteristics. To attain a good marketing strategy, you need to have a look at the following SMM characteristics.

Participation

Social media encourages contributions and feedback from everyone. Social media includes delivery of ideas at the time of online conversation. It tries to bridge the gap between companies and audience. With all the new channels of social media, people are enjoying this process of participation.

Openness

Social media success requires honesty, transparency and authenticity. You should maintain a trust worthy relationship with your customers in your SMM (social media marketing) strategy. One fake or negative comment can destroy your online reputation.

Build relationships

Social media is a two-way communication channel. It requires participation from both companies and customers. As a business owner, it is very important to make good connections with your target audience. Online conversation through various social media tools happen in real time with real people. You get a chance to interact with your target audience and you can answer to their queries. Answering to their queries is a good way to build relationship with customers.

Reliability

To make your profile reliable, you need to consistently show your online presence. Effective social media marketer visits their targeted sites regularly. They also get involved with new users and promote their products. They talk to their target audience on a regular basis.

Build communities

Social media sites allow you to build communities quickly, this helps you communicate more effectively. Communities share common interests, such as a love of photography, a political issue or a favorite TV show. These communities help you to know about your target audience. You can also support other communities which you think are good for your business.

Customer service

It is very essential to take care of your customers. Social media networks are all about helping each others. It's about providing value to your customers, not just promotion.

Avoid spamming

Don't give importance only to promoting your links. Also share insightful content about your company. Do not send the same message to your community again and again, it works as a spam and it may irritate your customers.

Social media marketing is the most powerful platform for small businesses. An effective social media marketing campaign grows your business and brings more traffic to your website. Social media marketing is the best marketing strategy allows you to promote your company at the same time build relationships.

Social Media Marketing Plan:

Start With a Plan - Before we begin creating social media marketing campaigns, consider your business's goals. Starting a social media marketing campaign without a social strategy in mind is like wandering around a forest without a map—you might have fun, but you'll probably get lost.

Here are some questions to ask when defining your social media marketing goals:

- What are you hoping to achieve through social media marketing?
- Who is your target audience?
- Where would your target audience hang out and how would they use social media?
- What message do you want to send to your audience with social media marketing?

Social media marketing can help with a number of goals, such as:

- Increasing website traffic
- Building conversions
- Raising brand awareness
- Creating a brand identity and positive brand association
- Improving communication and interaction with key audiences

The bigger and more engaged your audience is on social media networks, the easier it will be for you to achieve every other marketing goal on your list!

Social media strategy:

A major strategy used in social media marketing is to develop messages and content that individual users will share with their family, friends and coworkers. This strategy relies on word of mouth and provides several benefits.

- First, it increases the message's reach to networks and users that a social media manager may not have been able to access otherwise.
- Second, shared content carries an implicit endorsement when sent by someone who the recipient knows and trusts.

While social media marketing can provide benefits, it also can create obstacles that companies may not have had to deal with otherwise. For example, a viral video claiming that a company's product causes consumers to become ill must be addressed by the company, regardless of whether the claim is true or false. Even if a company is able to set the message straight, consumers may be less likely to purchase from the company in the future.

Social Media Marketing Suggestions:

Here are a few social media marketing tips to kick off your social media campaigns.

- **Social Media Content Planning** — building a social media marketing plan is essential. Consider keyword research and competitive research to help brainstorm content ideas that will interest your target audience.
- **Great Social Content** — Consistent with other areas of online marketing, content reigns supreme when it comes to social media marketing. Make sure you post regularly and offer truly valuable information that your ideal customers will find helpful and interesting. The content that you share on your social networks can include social media images, videos, infographics, how-to guides and more.
- **A Consistent Brand Image** — Using social media for marketing enables your business to project your brand image across a variety of different social media platforms. While each platform has its own unique

environment and voice, your business's core identity, whether it's friendly, fun, or trustworthy, should stay consistent.

- **Social Media for Content Promotion** — Social media marketing is a perfect channel for sharing your best site and blog content with readers. Once you build a loyal following on social media, you'll be able to post all your new content and make sure your readers can find new stuff right away. Plus, great blog content will help you build more followers. It's a surprising way that content marketing and social media marketing benefit each other.
- **Sharing Curated Links** — While using social media for marketing is a great way to leverage your own unique, original content to gain followers, fans, and devotees, it's also an opportunity to link to outside articles as well. If other sources provide great, valuable information you think your target audience will enjoy, don't be shy about linking to them. Curating and linking to outside sources improves trust and reliability, and you may even get some links in return.
- **Tracking Competitors** — It's always important to keep an eye on competitors—they can provide valuable data for keyword research and other social media marketing insight. If your competitors are using a certain social media marketing channel or technique that seems to be working for them, considering doing the same thing, but do it better!
- **Measuring Success with Analytics** —You can't determine the success of your social media marketing strategies without tracking data. Google Analytics can be used as a great social media marketing tool that will help you measure your most triumphant social media marketing techniques, as well as determine which strategies are better off abandoned. Attach tracking tags to your social media marketing campaigns so that you can properly monitor them. And be sure to use the analytics within each social platform for even more insight into which of your social content is performing best with your audience.

Social Media Marketing Plan:

Here are few steps to follow in Social Media Marketing Plan of Action.

Step 1: Create Social Media Marketing Goals That Solve Your Biggest Challenges

- The first step to any strategy is to understand what you want out of your efforts. Social media marketing isn't about flipping a switch and calling it a day. Instead, social media planning should be looked at like cooking your favorite dish.
- That's why creating goals is so critical to the first part of your social media strategy. At the same time, it's best to **set goals that you know are attainable**. Asking for 1 million new Instagram followers in 2018 is unrealistic. With achievable goals, you're more likely to stick to the original plan and continue to take on new hurdles as you complete old ones.
- This is the same reason why brands should never take on every social media channel possible in their current marketing strategy. Try to choose the channels that have the most importance based on your brand's goals. Avoid over complicating a strategy with too many targets and objectives. Simplicity can take you a long way.
- And also, don't forget to document your social media goals. Not only is it important to help you benchmark where you are, but it also improves your chances of achieving them.

Social Media Goals to Consider in 20th Century:

Goal setting is a staple of all marketing and business strategies. Social media is no exception. Of course, with a range of social capabilities, it can be difficult to determine exactly what your objectives should be. For guidance, here are some common social media goals to consider:

- ❑ **Increase brand awareness:** To create authentic and lasting brand awareness, avoid a slew of promotional messages. Instead, focus on meaningful content and a strong brand personality through your social channels.
- ❑ **Higher quality of sales:** Digging through your social channels is nearly impossible without **monitoring** or **listening** to specific keywords, phrases or hashtags. Through more efficient social media targeting, you reach your core audience much faster.
- ❑ **Drive in-person sales:** Some retailers rely on social media marketing efforts to drive in- store sales. Is your brand promoting enough on social to reward those who come to you? What about alerting customers to what's going on in your stores?
- ❑ **Improve ROI:** There's not a brand on social media that doesn't want to increase its return on investment. But on social, this goal is specific to performing a thorough **audit of your channels** and ensuring cost of labor, advertisements and design stay on track.
- ❑ **Create a loyal fanbase:** Does your brand promote **user-generated content**? Do your followers react positively without any initiation? Getting to this point takes time and effort with creating a positive brand persona on social.
- ❑ **Better pulse on the industry:** What are your competitors doing that seems to be working? What strategies are they using to drive engagement or sales? Having a pulse on the industry could simply help you improve your efforts and take some tips from those doing well.

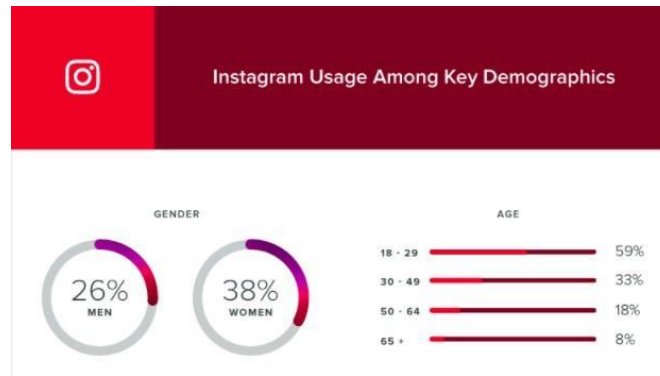
Step 2: Research Your Social Media Audience

Approximately **79% of adults use Facebook**—but are your customers actively engaging with your brand there? Understanding your audience is necessary to learn things like who buys your products, what age group is the toughest to sell and what income level makes up the most of your returning customers? As for social media, it's just as critical to know your audience.

First, your brand should look into the demographics of your most valuable social channels. Like we mentioned before, you should have a goal in mind for your social media marketing strategy. This is why you need to research the channels that correlate the most with your goals.

To help you find your focus channels: let's take a quick look at the essential demographics data for each major network:

- ❑ Facebook's most popular demographics include:
 - Women users (89%)
 - 18-29 year olds (88%)
 - Urban- and rural-located users (81% each)
 - Those earning less than \$30,000 (84%)
 - Users with some college experience (82%)
- ❑ Instagram's most popular demographics include:
 - Women users (38%)
 - 18-29 year olds (59%),
 - Urban-located users (39%)
 - Those earning less than \$30,000 (38%)
 - Users with some college experience (37%)



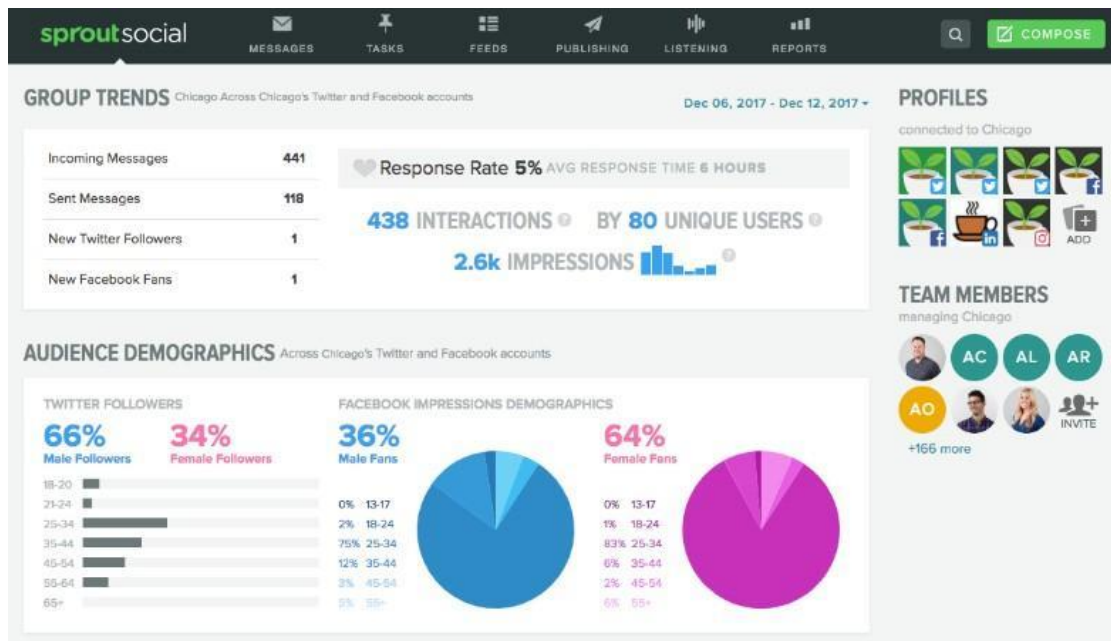
- Twitter's most popular demographics include:
 - Women users (25%)
 - 18-29 year olds (36%)
 - Urban-located users (26%)
- o Those earning \$50,000-\$74,999 (28%)
 - Users with college experience or more (29%)
- LinkedIn's most popular demographics include:
 - Men users (31%)
 - 18-29 year olds (34%)
 - Urban-located users (34%)
 - Those earning \$75,000 or more (45%)
 - Users with college experience or more (50%)
- Snapchat and other auto-delete app's most popular demographics include:
 - Men users (24%)
 - 18-29 year olds (56%)
 - Those earning less than \$50,000 (27%)
 - Users with some college experience (27%)

Identifying Customer Demographics

While the demographics data above gives you insight into each channel, what about your own customers? Further analysis has to be completed before you can truly know your customer demographics on social media.

That's why many brands use a **social media dashboard** that can provide an overview of who's following you and how they interact with you on each channel. Most brands today are using at least some sort of dashboard. However, does your dashboard address your specific goals?

Whether you're an agency providing insights for your clients or an enterprise company discovering your own demographics, an all-in-one dashboard solution is critical.



Sprout Social prides itself on the in-depth and essential demographics data for your social networks to help you identify your customers. Learn more with a [free 30-day trial](#) to uncover crucial data with Sprout!

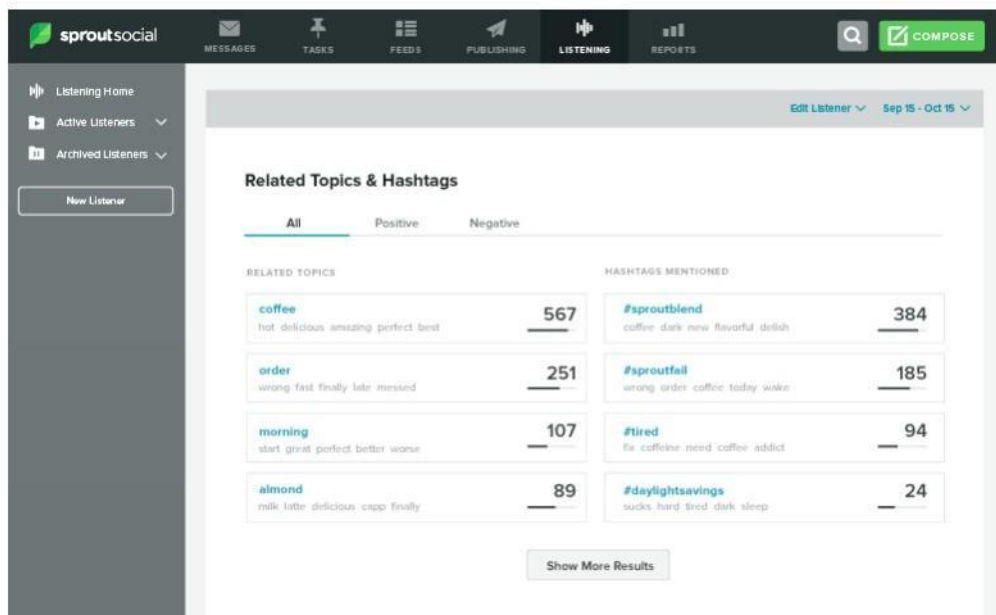
Step 3: Establish Your Most Important Metrics

While your targeted social media metrics might be the most important step of a strategy, it's often the spot most veer off the path. We often get wrapped up in viewing followers and likes as the truth to a campaign, but it's smart to take a step back and evaluate the social metrics associated with your overall goals.

Large audiences and likable content is absolutely great, but here are **some other metrics** you might want to pursue in 2018:

- Reach:** Post reach is the number of unique users who saw your post. How far is your content spreading across social? Is it actually reaching user's feeds?
- Clicks:** This is the amount of clicks on your content, company name or logo. Link clicks are critical toward understanding how users move through your marketing funnel. Tracking clicks per campaign is essential to understand what drives curiosity or encourages people to buy.
- Engagement:** The total number of social interactions divided by number of impressions. For engagement, it's about seeing who interacted and if it was a good ratio out of your total reach. This sheds light on how well your audience perceives you and their willingness to interact.
- Hashtag performance:** What were your most used hashtags on your own side? Which hashtags were

most associated with your brand? Or what hashtags created the most engagement?



- **Sentiment:** This is the measurement of how users reacted to your content, brand or hashtag. Did customers find your recent campaign offensive? What type of sentiment are people associating with your campaign hashtag? It's always better to dig deeper and find what people are saying.
- **Organic and paid likes:** More than just standard Likes, these likes are defined from paid or organic content. For channels like Facebook, organic engagement is much harder to gain traction, which is why many brands turn to **Facebook Ads**. However, earning organic likes on Instagram isn't quite as difficult.

Step 4: Research Your Social Competitive Landscape

Before you start creating content (we promise we're almost there!), it's really smart to investigate your competitors. We put this before the content creation process because you often find new ways to look at content by analyzing what's making your competitors successful.

Again, we'll always believe you shouldn't steal your competitors' ideas, but instead learn and grow from their success and failures. So how do you find that information? The first step is to find out who's your competition in the first place.

The simplest way to find competitors is through a simple Google search. Look up your most valuable keywords, phrases and industry terms to see who shows up.

Here you can see post break downs of text, images and video to see what your competitors are doing to drive the most engagement. Once you dig through the competitive analysis, you'll have a better idea of what your potential customers want.

Step 5: Build & Curate Engaging Social Media Content

Did someone say content? It's no lie—social media content is extremely important to your marketing strategy. However, it's best to follow the previous steps before planning out content (we caught you, blog skippers!) so you can start building more effective themes.

For starters, we recommend creating content that fits to your brand's identity. This means you should avoid things like reaching out to your unpopular demographics without a complete strategy in place.

It's necessary to find the perfect balance between target content and being overly promotional as well. In fact, **46% of users say they'll unfollow a brand** if there's too many promotional messages. Additionally, 41% of users say they'd unfollow a brand that shared too much irrelevant content.

Video Content or Bust

How important is video to your social media marketing strategy? Extremely—approximately **90% of online shoppers** believe product videos help them make a purchasing decision. Additionally, the average online video is completely watched end to end by **37% of viewers**.

These type of stats should only enforce your reasoning to **invest in social media video content**. Brands can reach users through Instagram Stories, Facebook Live and other in-the-moment media.

Build Content Themes

One of the toughest challenges to visual content is creating it on a day-to-day basis. A **Vennage infographic** showed 36.7% of marketers said their No.1 struggle with creating visual content was doing so consistently.

This truly shows how important highly-visual content is to marketers and the people they want to reach. That's why building content themes is a great approach to sectioning out your content. Instagram is one your premier channels to work off visual themes.

Step 6: Engage With Your Audience & Don't Ignore

Social media channels are built as networks. This means their main purpose is to be a space to converse, discuss topics and share content. Your brand can't forget these core elements of "networking" and it takes effort to ensure conversations or engagement opportunities aren't left unattended.

Through social media, you gain respect as a brand by just being present and talking to your audience. That's why **social customer care** is so important to brands wanting to increase audience awareness. It's all about engagement.

Designating teams to specific tasks can help your staff run like a well-oiled social media team, whether you're a group of one or 100.

Post at the Best Times to Engage

When is your brand available to engage and interact with customers? You might see some recommending times to post late in the evening. But if your brand isn't there to communicate, what's the point of posting at the preferred time?

Instead, try to ensure your social media or community managers are available and ready to answer any product questions or concerns when you tweet or post. It's smart to learn the **best times to post on social media**, but it's just as critical to engage after posting.

According to our Index, a brand's average response time is **around 10 hours**. But did you know that most users believe brands should respond to social media messages within four hours?

With all the updated algorithms, organic content has a tough time reaching the majority of your audience. The last thing you want to do is ignore those who engage and lose out on sending more down your marketing funnel.

Step 7: Track Your Efforts & Always Improve

So, how well did you do on your social media marketing strategy? Without continuously analyzing your efforts, you'll never know how one campaign did over another. Having a bird's-eye-view of your social media activity helps put things into perspective.

You've got down your most important goals, network preferences and metrics—now it's time to make sure you made the right decisions. Knowing you've made the right choices is still a difficult task in social media.

In fact, **46% of B2B marketers** are unsure if their social strategy actually created revenue for their brand. But marketers are always trying and looking for the perfect connection. That's why the most commonly used metric (80%) for marketers is engagement.

If you work at building lasting relationships, there's a lot less room for failure with your social media marketing strategy.

Publishing Blogs, Podcast and Webinars:

Publishing Blogs:

A blog is basically a 'weblog', a kind of website, a journal that is updated regularly. It is a discussion platform besides being a content achieve. People can discuss a topic on a blog and comment on posts. It is basically run by an individual or a small group.

Blogging

Every activity and skillset that is required to manage a blog comes under the purview of Blogging, for example, writing posts, publishing them, designing, social marketing, etc. In simple words, blogging is the process of adding new content to a blog and updating it at regular intervals.

- ❑ **Blogger (Person)** – Person involved in blogging is called a 'blogger'.
- ❑ **Blogger (Service)** – It is a service provided by Google that allows us to compose a post, edit, update, and manage it. You can customize your blogs easily with the help of a 'blogger'. It lets you share what is on your mind and earn money. It is a convenient platform for avid as well as novice users. No technical knowledge or coding is required. It runs directly on Google servers and is impossible to hack.
- ❑ **WordPress** – It's a free software to create and customize a search engine friendly website or a blog. A number of themes and plugins are available to transform your website as required. Approximately 70 million people are a part of WordPress community. WordPress is available in both free and premium plans.
- ❑ **Blogspot** – Blogspot is a free web hosting service gifted to web developers by Google. It helps Google Blogger in delivering its service. We cannot use any other platform to use it.
- ❑ **Tumblr** – It is a microblogging platform that allows us to make a blog and customize it. We may use stories, images, videos, audio, etc. Bloggers can either keep their blogs private or follow other blogs.

Advantages of Blogging

- ✓ Better online influence. It assists in making impressions in grabbing a good profile.
- ✓ It forms a good source of income. Pat Flynn earns \$100,000 per year from his blog 'Green Exam Academy'.
- ✓ Maintaining a blog can help improve your writing skills.
- ✓ A blogger can easily become a published author.
- ✓ You can get instant feedbacks in the form of comments, shares, etc.
- ✓ Bloggers can be sound learners, as they tend to read and engage more in such content.
- ✓ Get a long fan following list.
- ✓ Blogs can help you build a strong network.
- ✓ Maintaining a blog can help you improve your technical skills on Wordpress, SEO, etc.
- ✓ Sell Online – Blogs can be a great virtual store.
- ✓ Express yourself – Blogging is a great way to share your ideas through inspirational means.
- ✓ Blogging is an easy, yet a sure way to build trust online.

Setting a Blog using WordPress

You can create blogs on many platforms. They can be either free or paid. Here is how you can create a blog using WordPress –

- Create your account on WordPress.com. Enter your name and Email address and other required details.
- Select a web address; it can be either free or premium.
- Choose a suitable WordPress plan.
- Set up your profile and build your profile page.
- Configure site settings like Site Title and tagline.

Setting a Blog using Blogger

Blogger.com is a popular platform that is being used widely for creating ready-to-post blogs. Follow the steps given below to create a blog using blogger –

- Sign up and create an account on www.blogger.com.
- Enter display name and click 'create your blog now'.
- Choose your blog title and URL. Verify whether it is available.
- Choose a desirable template from the given options.
- You would come across the 'posting' tab. Create post, edit posts, and page here.
- Enter the title of your post on the 'title' tab.
- The rest of your post goes in the 'Compose' text editor. You can customize your post by editing its font, size, text color, etc. 'Edit HTML' option is available to insert your content in HTML format.
- Select 'post option' if you want to enable readers' comment.
- Save once you are done with it. You can preview the final page before publishing it. Click 'Publish' to publish the post directly.

Blog Promotion

We can take the following measures to promote your blog –

- Connect your blog to Google+ to allow auto-sharing.
- Post quality content and post regularly.
- Write search engine friendly content.
- Have an Email button in order to receive feedback from your readers.
- Use your blog link in mail signatures.
- Enable site feed to let more and more people subscribe to your content.
- Add your blog to Blogger's listings. Submit your URL to blog directories.
- Actively comment on other's posts. This way, your profile gets more exposure.
- Participate in online forums.
- Use social media for branding.
- Hold a contest or a carnival.
- Write as a guest blogger. Write multiple pages and link them together.

Blog Commenting

Commenting on a blog is an art. You need to put some effort to post comments that catch users' attention.

- Add a few attractive phrases with exclamation mark to draw attention.
- Comment as early as possible, as the first few comments are the ones read by most.
- Refrain yourself from over-promoting.
- Don't be rude or use offensive language.
- Include questions in your comments. They seek more attention.
- Be influencing by updating an article.

Podcast:

A podcast is a digital audio file that is made available via Web syndication technologies such as RSS. Although strictly speaking, it's not social media, it's often classified as such because it allows anybody to easily syndicate their own audio content. You can use podcasts as a way to share information with your audiences. Podcasts typically don't form a whole SIM campaign in and of themselves, but work well with other SIM ones.

- Podcasting is the preparation and distribution of audio files using RSS to the computers of subscribed users. These files may then be uploaded to digital music or multimedia players like the iPod. A podcast can be easily created from a digital audio file. The podcaster first saves the file as an MP3 and then uploads it to the Web site of a service provider. The MP3 file gets its own URL, which is inserted into an RSS XML document as an enclosure within an XML tag.
- Once a podcast has been created, it can be registered with content aggregators, such as podcasting.net or ipodder.org, for inclusion in podcast directories. People can browse through the categories or subscribe to specific podcast RSS feeds which will download to their audio players automatically when they next connect. Although podcasts are generally audio files created for digital music players, the same technology can be used to prepare and transmit images, text, and video to any capable device.
- Podcasting has been likened to TiVo because it allows users to listen to their selected podcasts whenever they like, similarly to the way time-shifting lets viewers watch television programs when it suits them. Furthermore, because of the portability of the player devices, users can listen to audio files from the Internet as they go about their daily activities - for example, listening to a news blog entry while at the gym, commuting, or just walking around.
- Content producers are increasingly turning to podcasting as an inexpensive and user- friendly new distribution channel that has the potential to reach a large audience. Not surprisingly, musicians and bloggers are prevalent among the early adopters, but mainstream media organizations, including ZDNet and National Public Radio (NPR), are beginning to venture into podcasting as well.
- The cultural milieu supporting podcasting is sometimes referred to as the podosphere, just as the cultural environment surrounding the blog is called the blogosphere.

Webinars:

Webinars are taking the digital marketing world by storm. Also known as web conferencing, webinars are services that allow real-time, multicast video conferencing or audio conferencing events to occur even when participants come from remote locations. These are made possible through online technologies like TCP/IP. Some great examples of oft-cited webinar services include Google Hangouts, and ClickMeeting.

Many people today consider webinar as the next big thing in marketing since it offers real-time connectivity and interaction between the presenter or presenters plus guests and the audience that are interacting with them.

Importance of webinar marketing is growing rapidly nowadays. Webinars have quickly become the standard for the new marketing culture of so called "permission marketing." For ones who are not familiar with the term, permission marketing is based, in short, on the knowing participation of potential consumers in the marketing process. Consumers do this because they think the marketing materials will help them in their business or personal attempts.

- There is no area that webinars cannot be helpful at. Almost any subject that you can think of can provide webinars through you can learn a lot. And they are aimed at all sorts of audiences, from clients

to colleagues.

- However, the amount of knowledge and values vary from one area to another, for example you will probably get more following tech webinars than ones from another sector, but knowledge can be useful anyways. Therefore, no matter what industry you are at, you should definitely consider getting involved in them.
- Another positive aspect that makes webinars so important is how easy they are to use. Organizing webinar doesn't require nether the most advanced technology nor any other special requirement. Webinars don't require the time or expense of travel. It is based on the most simplest form, sharing your knowledge with others in fast and easy way. Therefore, all you have to do is to be an expert in certain area and provide the information that you audience needs in order for your webinar to be a success.
- Nowadays, due to so many information that are circulating all around us, consumers are getting smarter and started to demand knowledge instantly. Instead of searching for the right books or getting in touch to people from certain field, consumers are interested in getting the information the easiest way possible. So the Internet search seems like the most logical step. For that reason, your company or your personal project should be promoted there so that it can be reached faster than others. There is no better way to demonstrate your expertise or communicate to potential clients than promoting your brand or idea online.
- Your goal should be to provide all necessary information so that clients have the whole picture of what are you offering. And webinars seem simplest than writing a long posts or articles that no one probably have a time to go through. When it comes to organizing part, webinars give you almost all freedom of process. But there are still a couple of rules that you should be following. First of all, your main goal is to keep it interesting. Therefore, try to pick a topic that is not too wide so that your audience would not get boring listening general information. It's always better to go with a more specific topic so that you can engage people with the same interest and build your first client base. Speaking of that, another aspect should be making your audience active.
- Today, it's not enough to have listeners, you will need more active audience who would be able to spread information about your project everywhere. Therefore, try to keep them involved by appreciating and encouraging their feedback, answering their questions in a reasonable amount of time, incorporating them in your future marketing materials. That's how you can get the most of your webinar.

Here are the reasons why a webinar is a great marketing tool:

1. **Webinars are Convenient:** On-demand webinars are quite convenient to have because at this point, everyone has an online connection and a means to access it.
2. **Webinars Can Help with Your Promotions:** If you want to promote your site or company with the help of webinars, then it's all possible. Webinar presentations, even informational ones, can increase the exposure of your business or company altogether.
3. **Webinars Establish Your Credibility:** By having a webinar, you'll be able to give more credibility to your ideas. The simple act of putting on webinars will allow you, the people you're talking to, and the people who are watching, to understand your concepts and establish agreements.
4. **Webinars Have Huge Applications on Training and Education:** Webinar live streams and webcasts can include how-to videos that showcase training in various fields of study and concepts.

5. **Webinars Can Create and Increase Brand Awareness:** Brand awareness is a concept that involves making audiences more aware of a brand or product through consistent promotion, advertisements, marketing, and labeling focused on a single theme, message, or identity.
6. **The Consumer Reach of Webinars Is Quite Impressive:** Having a webinar, especially involving news and current events that are burning holes in everyone's minds, enables you to reach to most people, particularly your target audience if you play your cards right.
7. **Webinars Helps Build You a Bigger Audience and Contact List:** Just like with podcasts or simply having a YouTube channel, every webinar you made forges new contacts.
8. **Webinars Are Cost-Effective Solutions:** Webinars aren't that much expensive and some of them are even available for free.

Social Media Monitoring:

Social media monitoring is a process of using social media channels to track, gather and mine the information and data of certain individuals or groups, usually companies or organizations, to assess their reputation and discern how they are perceived online.

Social media monitoring is also known as social media listening and social media measurement.

Organizations use social media monitoring to reach out to customers and prospects for information gathering and front-end customer support. It is used to collect and mine data, especially by organizations seeking customer intelligence to determine current industry trends. The process has become easier - yet more tedious - due to free and readily available outlets, like blogs, wikis, news sites, social networking sites, forums, video/photo sharing sites and message boards.

- There are a variety of social media monitoring tools, but most are customized data mining software and Web crawlers. Large enterprises use these tools to search for specific keywords on various websites and blogs.
- The monitoring software transfers the desired words and phrases from unstructured to structured database data for analysis with traditional data mining techniques.

Social media monitoring software provides functionality for listening, tracking, and gathering relevant content across wide ranges of social media.

Social media monitoring products are used by social media, marketing, and communications teams to identify trends, track competitors, and understand customer sentiment.

The products can also be used by researchers to gain information on social trends or by media outlets to identify breaking news. Social media monitoring tools allow marketers to personalize content to specific users or demographics. identify thought leaders or qualify for inclusion in the Social Media Monitoring category, a product must:

Listen for specific mentions across social media

Identify trending topics or phrases

Detail customer sentiment

1. Better Understanding of Listening & Monitoring - Another way social media monitoring can benefit your business is by learning the difference between monitoring and social listening. Far too often, the terms social media monitoring and social media listening are considered one in the same.

While it's easy to see why they're mixed together, monitoring and listening are both unique methods to view, measure and analyze your audience. Here's how we break down the difference

between monitoring and listening:

- **Social media monitoring** is more so the process of collecting social messages into a single stream and to take a specific action in response to each message (via a like, comment or tasked message).
 - **Social media listening** queries large volumes of social messages from specific keywords or topics that then requires your brand to reflect and draw analysis from the these actions.

Understanding the difference between social media monitoring and social media listening is critical to any social strategy. It's also important to know one is not more important than the other.

2. Become More Approachable to Your Customers

Providing excellent customer service is at the forefront of most brand's initiatives. Being an approachable organization means you have to consider every avenue of communication. And this most certainly includes social media.

Social media monitoring tools allow brands to become more approachable by finding customer inquiries and interactions faster.

Positive brand experiences can truly have an effect on customers in your sales funnel. It's always best to think of building strong communication with your customers as a long-term relationship. And what's the best way to open that line of communication? It starts with monitoring your social messages and providing the best customer experience.

3. Never Miss a Brand-Relevant Message

One of the best benefits to social media monitoring is discovering more opportunities to engage with customers. For organizations on social, this means you need to focus on incoming brand- relevant messages, whether you're directly mentioned or not.

And for a lot of brands, there are so many messages, it's easy to miss important questions because they didn't tag, @mention or use your hashtag. However, identifying your brand keywords in a social media monitoring platform, like Sprout Social, makes it simple.

You'll never miss an incoming message, hashtag, mention or even common misspellings by monitoring brand keywords and hashtags. Not only does this help you put all your incoming brand messages in one place, you can also analyze hashtag performance and see how users interact with your brand materials on social.

By identifying relevant keywords on social, you open yourself up to new discussions, blog and social media post ideas and see what topics your audience truly engages with the most.

4. Stay Organized With Marketing Campaigns Tags

An essential benefit of social media monitoring tools is the ability to organize campaigns. When incoming messages related to an important campaign come in, you need to be able to respond or engage in a timely manner. Start by setting up a brand keyword in Sprout that's associated with a specific campaign.

With the brand keyword saved, you'll be able to filter all incoming Tweets or Instagram hashtags with that specific phrase. For brands that receive a large volume of incoming messages for customer support, people sharing your content and everything in between, the ability to filter conversations based on your brand keywords is a huge time saver.

Not only that, but it also guarantees that important messages don't get overlooked.

5. Interact With Your Top Brand Advocates & Key Customers

Brand advocates are essential to promoting your product and driving more engagement in smaller pockets of the market.

With the help of social media monitoring tools, you easily interact with influencers and brand advocates to truly move the engagement needle. On top of that, monitoring interactions and conversations from key customers can provide valuable instances of ways to include them in your marketing efforts.

Finding places to interact with key customers can make the difference between a small sale and a major win for your business. With monitoring tools, you can find and reply to those customers on the edge to make a purchase from you.

6. Understand What's Working (and Not Working) For Competitors

Social media monitoring isn't strictly limited to your brand. It also pays to understand what your competitors are doing and how they engage with their own fans.

Consider monitoring conversations that contain the names of your top competitors on social. For instance, T-Mobile might want to track conversations about Verizon. It could help them understand some of the pain points of Verizon customers. Then T-Mobile could use these Verizon customer issues in its own marketing messaging to speak more directly to the audience.

7. Win Back Lost Customers

As we mentioned earlier, quickly replying to customers can mean all the difference on social media. When an upset customer Tweets a complaint about your brand, you need to jump on it quickly to resolve the issue. Even if you can't fix their current situation, you could restore your chances of doing business with them in the future.

Don't let negative customer experiences go unnoticed on social media. While some bigger brands receive hundreds or thousands of messages a day, the right monitoring tool helps you dig through the noise and find the biggest issues to address.

Social Media: Facebook, Twitter: Facebook:

Facebook is a social networking service provider. It lets you invite and connect with friends, send messages and pictures, like and comment or share them. Facebook has seen outstanding growth since its inception and is poised to maintain its dominance in social networking.

History of Facebook

Facebook was founded by Harvard student Mark Zuckerberg on February 4, 2004. In May 2007, Facebook opened up its developer platform to allow third-party developers to build applications and widgets that, once approved, could be distributed through the Facebook community. In May 2008, Facebook engineers announced Facebook connect, a cross-site initiative that allows users to publish on third-party sites in their Facebook newsfeed. The site was redesigned in late 2008, intended to streamline the website and make it easier to see what friends were doing.

What is Facebook Marketing?

Facebook is undoubtedly the most popular social media platform available with many advantages associated with it. It is primarily a social networking site, however it can be used as a handy tool for promoting and advertising a business. We can use Facebook to promote a brand, market a company, or create awareness about a service or a product. Success with this form of marketing requires more than a fan page and a few friends. When used effectively, Facebook marketing can provide a business with exciting benefits and results. Facebook marketing can enable businessmen to greatly improve their brand awareness and reach out to a wider audience.

Grow Your Business with Facebook

Facebook is fast becoming a powerhouse of marketing activity due to the sheer number of engaging users on the site and the simplicity of connecting with them directly. Facebook can provide your business with a branding outpost on the web where customers, employees, and even the media can find information about your company, products, and services. Facebook connects you and your staff directly to your customers and fans. Facebook can generate new leads for your business by drawing users' attention towards what you are offering. Facebook helps in sharing links, images, and posts on a customizable page to project a better sense of your business. Facebook runs tactics like contests, sweepstakes, etc., that can increase fans and brand awareness of your business.

Latest Facebook Trends

The nature of social media marketing is ever-changing, so it is important to constantly stay updated with what the current market trends are. The latest Facebook trends that a business should be aware of are: using the cover photo for marketing, different types of Facebook posts, more pictures, etc. Facebook looks completely different

from how it was a year ago, so it should not be surprising that marketing on the social network has also changed a great deal.

What are Adverts?

Adverts on Facebook are unique. They are shown to specific groups of highly engaged people. If your adverts have a great creative content and are well targeted, they get more likes, comments, and shares. When we boost our page posts or expand the audience for the adverts, more people will see them when they visit Facebook. Facebook ads allow us to promote our business, get more fans to our business page, and drive more leads for our sales team. Facebook ads allow us to advertise a website or content that we manage on Facebook (like a group, page, or event) To create an ad, go to: <http://www.facebook.com/advertising> And click "create an ad".

Facebook–Do's and Don'ts

Do's

- ✓ Use Facebook to stay in touch with your friends and make new ones.
- ✓ Use Facebook to advertise your organization's events.
- ✓ Use Facebook to get involved with the campus community and learn what is happening around.
- ✓ Use Facebook customer support page since it contains valuable information about privacy controls and other important safety information.
- ✓ Do check each friend request carefully after visiting their profile. Do use "privacy settings" while building up your photo albums.

Don'ts

- ✓ Don't use your wall to announce your schedules, journey and planning.
- ✓ Don't use public walls as your own. Try to maintain the decorum of groups and fan pages.
- ✓ Don't accept friend requests from strangers.
- ✓ Don't use Facebook for ragging and bullying anyone.
- ✓ Don't post pictures of your friends without their permission.

Increase Facebook Likes for a Fan Page :

- Create a Facebook fan page with an instantly appealing image, as it will help in attracting more attention.
- Keep the Facebook fan page up to date by writing suitable description and posting interesting and friendly page titles. Always try to provide your readers with something fresh to read.
- If you are running a contest on your page, then ask your visitors to like your fan page. Facebook contests are the easiest way to get people excited, as the lure of a big prize compels your target customers to 'like' your page and become your fan.
- If you are running a business, then you should promote your fan page by using ads in the Facebook, as it is the easiest way to increase the visibility of your brand and reach out to a highly targeted audience.
- Promote your page on your official website because it helps you to get likes from new visitors on your site. Having a 'like' button on your website is an easy way to drive new likes over time.
- Synchronize your Facebook page with your other profiles on other social networking sites like Twitter, dig, etc. it will help you get more visitor response.
- Sometimes educational content is a better incentive for a 'like' than a discount offer or a prize, depending on your industry or the target audience. Providing free written content such as eBooks can drive tons of new fans and customers.

What are Facebook Apps?

Facebook apps are basically software programs that can be added to users' Facebook profiles. These interactive software applications are developed to utilize the core technologies of the Facebook platform. Applications for Facebook have gained massive popularity in the last few years due to its uniqueness and the ease of creating them.

Facebook apps integrate Facebook newsfeeds, notifications, various social channels, and other features to generate awareness and interest in the app by the Facebook users. Apps and games are normally developed to enhance your experience on Facebook.

Facebook Apps –Advantages

- ✓ Increased exposure to potential customers.
- ✓ Easily create new product or service campaigns online.
- ✓ Lower marketing expenses.
- ✓ Reach a targeted customer.
- ✓ Build brand loyalty.
- ✓ Provide multiple marketing platforms.
- ✓ Budget-friendly ads.
- ✓ Marketing strategy is low cost.
- ✓ Allows business to communicate with existing and prospective clients.
- ✓ Can easily update everyone at once about your business.

Twitter:

Twitter is another social networking platform that allows registered users to read and write 140- character messages called 'tweets'. It is available across all devices such as cell phones, desktops, laptops, and tablets.

History of Twitter

Jack Dorsey, an undergraduate student at New York University, introduced the idea of an individual using a message service to communicate with a small group. Twitter was launched as an SMS-based communication platform. Initially it was known as "twtr". On March 21, 2006, Jack Dorsey sent the first ever tweet: "just setting up my twtr".

What is Twitter Marketing?

Twitter marketing is a powerful tool for companies of every size and structure to reach out to new customers, promote their brand, and connect with the rest of the companies. Users can find out if customers are talking about them, and the business can accordingly respond. Tweets create another instance for the business that shows up in the search engine results. Twitter serves as a solid foundation for your business to branch out into other social sites. Twitter is a great platform for projecting what your company is doing and accessing a large audience, where your Tweets can promote products and events.

How to Increase Followers on Twitter?

- Grow your community by adding a follow button in your website and promote your username.

- Get noticed with hash tags like #smallbiz etc.
- Engage with your followers by collecting feedback to build a better business.
- Sync your email contacts with Twitter.
- Keep your bio updated with the events or the business campaign you are running.
- Embed your best tweets and tweet to people every day.
- You can promote your twitter account on any printed material, e.g., business cards.
- Follow people who follow you.
- Make sure you are engaging with your customers on twitter and not to your product.

What is Hash Tag?

The symbol hash tag (#) is used to mark keywords in a tweet. It was originally created by Twitter users. This symbol helps them to categorize the tweets and show them easily when people search for them. Hash tags can occur anywhere in a tweet – middle, end, or at the beginning. If you tweet with a hash tag on a public account, anyone who does a search for that hash tag will find you. A hash tag is a way for people to search for tweets having a common topic.

Sponsored Tweets and Hash Tags

Sponsored tweets are advertising platforms that connect companies with tweeters. Sponsored tweets allow brands to tap into a Twitter user's followers to reach out to new customers. By giving companies access to your twitter stream, tweeters are compensated for each advertisement they accept. The only thing tweeters need to do is to write a tweet based on some simple guidelines provided by the advertiser.

Sponsored Hash Tags place the tag of a customer's choice among the list of trending topics that users see when they access the social network through the web.

Tools to Integrate Twitter on Your Blog or Website

- Add the twitter widget to your site's sidebar as it's a great way to show your latest tweets on your website.
- Choose from 40 different well-designed twitter buttons to quickly create a badge to promote your account.
- **TwitThis** is a little button that can be placed in your HTML file or in your blog to allow your readers to quickly and easily share what they are reading with their twitter followers.
- **Chirrup** is another solution for pulling Twitter comments across any platform. It allows you to display all the references from Twitter on a given webpage.
- **Aweber** has an excellent feature for any newsletter marketer. Newsletter delivery service has actually created a way to convert RSS to email to tweet.
- **Twitterfeed** is a pioneer of website and Twitter integration which allows you to automatically insert tweets into your Twitter from any RSS feed.

Twitter Automation Tools

Following are some of the twitter automation tools that make your profile look like an announcement board.

- **Twitterfeed** is a service that allows you to set up RSS from your blog or website.
- **Social Oomph** is a tool to create an automated direct message for new followers.

- **Tweet Old Post** is a great plugin which allows you to connect a Twitter account with your blog and regularly tweet posts to your followers.
- **Hootsuite** is a free tool that you can use if you have fewer than five social profiles to manage. It offers an option to schedule updates to specific social media accounts.
- **Visibili** is a free service that lets you create a custom sharing bar that goes with any links to share through their service.
- **Twitter Showdown** is a tool that provides valuable insights on follower-to-following ratio, level of Tweet engagement, tweet timing, and how two accounts compar

Search Engine Optimization (SEO)

Understanding SEO, Search Engine Optimization Process - Goals, On-Page Optimization, Off- Page Optimization and Analyze, Search Engine Result Process (SERP), SEO Tools.

Understanding SEO:

Search engine optimization (SEO) refers to techniques that help your website rank higher in organic (or “natural”) search results, thus making your website more visible to people who are looking for your product or service via search engines.

- SEO is part of the broader topic of Search Engine Marketing (SEM), a term used to describe all marketing strategies for search. SEM entails both organic and paid search. With paid search, you can pay to list your website on a search engine so that your website shows up when someone types in a specific keyword or phrase.
- Organic and paid listings both appear on the search engine, but they are displayed in different locations on the page. So, why is it important for your business’ website to be listed on search engines? On Google alone, there are over 694,000 searches conducted every second. Every second that your website is not indexed on Google, you are potentially missing out on hundreds, if not thousands of opportunities for someone to visit your website, read your content, and potentially buy your product or service.
- Practicing SEO basics, as well as more advanced techniques after those, can drastically improve your website's ability to rank in the search engines and get found by your potential customers. Then about paid search, you can pay to have your website listed on the search engines. However, running paid search campaigns can be quite costly if you don't know what you're doing. Not to mention, about 88% of search engine users never click on paid search ads anyway.
- Because the sole purpose of a search engine is to provide you with relevant and useful information, it is in everyone's best interest (for the search engine, the searcher, and you) to ensure that your website is listed in the organic search listings. In fact, it is probably best to stay away from paid search all together until you feel you have a firm grasp on SEO and what it takes to rank organically.

How does a Search Engine Work?

Search engines perform several activities in order to deliver search results.

- **Crawling** - Process of fetching all the web pages linked to a website. This task is performed by a software called a crawler or a spider (or Googlebot, in case of Google).
- **Indexing** - Process of creating index for all the fetched web pages and keeping them into a giant database from where it can later be retrieved. Essentially, the process of indexing is identifying the

words and expressions that best describe the page and assigning the page to particular keywords.

- **Processing** - When a search request comes, the search engine processes it, i.e., it compares the search string in the search request with the indexed pages in the database.
- **Calculating Relevancy** - It is likely that more than one page contains the search string, so the search engine starts calculating the relevancy of each of the pages in its index to the search string.
- **Retrieving Results** - The last step in search engine activities is retrieving the best matched results. Basically, it is nothing more than simply displaying them in the browser.

Search engines such as Google and Yahoo! often update their relevancy algorithm dozens of times per month. When you see changes in your rankings, it is due to an algorithmic shift or something else beyond your control.

Although the basic principle of operation of all search engines is the same, the minor differences between their relevancy algorithms lead to major changes in the relevancy of results.

What is Search Engine Rank?

When you search any keyword using a search engine, it displays thousands of results found in its database. A page ranking is measured by the position of web pages displayed in the search engine results.

If a search engine is putting your web page on the first position, then your web page rank will be number 1 and it will be assumed as the page with the highest rank. SEO is the process of designing and developing a website to attain a high rank in search engine results.

Search Engine Optimization Process & Goals:

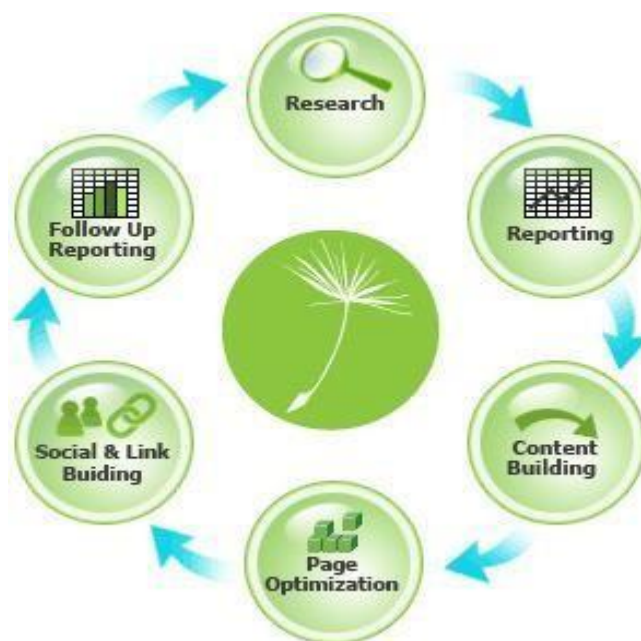
Search Engine Optimization Process:

Before beginning a search engine optimization (SEO) project, it is important to understand the process involved in an effective SEO campaign. To that end, we break the process down into the six steps shown below and describe the

activities involved in each of these steps.

One word on search engine optimization in general first, though. SEO does not start and finish with these steps and the initial work that we do. In order to have ongoing success, it is important to monitor results and build meaningful content on a continual basis.

1. Keyword Research
 2. Reporting & Goal Setting
 3. Content Building
 4. Page Optimization
 5. Social & Link Building
 6. Follow Up Reporting & Analysis
1. Research
Keyword Research



Keyword phrase research involves identifying a group of keyword phrases that will be used in optimization. This step is critical and requires a considerable amount of time to find a good set of phrases that offer a balanced combination of two important factors: high usage by searchers and relatively low competition within the search engines.

Determining the most used phrase that contains your targeted keyword(s) is relatively easy. Online tools allow you to enter a particular keyword or words and will return all the ways in which that word(s) was used by searchers in the last month and in what volume. A more effective approach is to find a set of phrases that are heavily used by searchers but somewhat less competitive in terms of the total number of search results.

Competitive Research

Once armed with the target keyword phrases, we do a thorough competitive analysis of the subject site against its 7 – 10 biggest competitors (using both offline and online competitors). We use a series of SEO metrics, including indexed content, Alexa rating, inbound links, domain age, and social media following among others. Through this process, we are able to gauge the client site's starting position against its competition and identify areas requiring priority in the subsequent work.

For example, if we see that relative to the competition, the client's site has 50% less indexed content, then content building would be a priority in the goal setting that happens in the next phase.

2. Reporting & Goal Setting

After establishing your targeted keyword phrases and starting position relative to the site's competitive set, it is important to understand what the subject site's starting position is within the search engines. Doing so ensures that you know the specific areas that need work and provides a baseline against which to gauge the subsequent campaign's success.

Access to site traffic information is very important. These statistics show how searchers are finding and interacting with the subject site, e.g., which search engines, what keyword phrases are being used, bounce rates, most popular content, etc. Understanding the site's traffic level and the source of its referrals can also be a critical tool in making other online marketing decisions.

After developing a complete picture of the site's starting position, goals are set for the SEO plan. These goals are measurable (one big advantage of SEO over other advertising options) and tied to the specific business objectives of the site. In the ongoing progress of reporting and follow up, progress towards the plan's goals are analyzed and reported. Adjustments to the SEO plan can be made according to the findings of these progress reports.

3. Content Building

Content is king in search engine optimization. The search engines love text; high volume, high-quality content related to your business will serve you in a couple of important ways.

First, a site loaded with high-quality content of interest to site users will give them a reason to stay and a reason to come back. After all, the reason they came to your site was to find information. Second, you will receive the added benefit of serving up exactly what the search engines want – content. Search engines will have more information to store about your business and products; that information will translate directly into the ranking they give your site for related keyword phrases. For more information on content development and specific ideas about ways to expand your site's content, read our, [Content is Still King](#).

We often find in the Competitive Research phase that the client's site is falling behind its competitors in the amount of indexed content. In those cases, this phase of the process takes on additional importance.

4. Page Optimization

Following the addition of new, high quality content, we tackle on-page optimization.

- Page Titles
- Text-Based Navigation
- Prominence of Targeted Keyword Phrases
- Site Map
- ALT and META data
- Clean up the Code

5. Social & Link Building

Social Media - In marketing, you fish where the fish are. And, the fish are using social media in increasing numbers. The power of online sharing through social media provides tremendous opportunities for companies willing to commit the time to using it. During this phase of the process, we help clients establish a social media presence and consult with the client on how best to use those social media profiles to share site content and connect with customers and potential customers.

Building In-Bound Links - Each new, quality link to your site increases the likelihood of both the search engines' spiders running across your site as well as searchers looking for services or products like yours. Google views links to your site (as long as they are links from high quality sites) as votes for your site and rewards the site accordingly. You can check your link popularity with a variety of free online tools. In addition, Google's Webmaster Tools provides information regarding the inbound links to your site. We consult with our clients on ways to build their online reach and influence with new, high-quality inbound links.

6. Follow Up Reporting and Analysis

The same reporting done in the initial phase of the campaign is done again at regular intervals, post-optimization. Rankings, site traffic levels, social signals and other key metrics can then be compared to pre-optimization levels, giving measurable results to the SEO campaign. The specific metrics used in an SEO plan will depend on the goals of that site.

Search Engine Optimization Goals:

The ultimate goal of SEO is to increase the site's usability so that you can bring the right people in from the search engines. The purpose of your site should be clearly defined so that you can make sure your site achieves that purpose.

- When search engine visitors see that your site meets their expectations after they find you on a web search, this means your usability is solid. If visitors are disappointed, the site has missed its mark.
- The goal is to follow the best strategies possible for ranking in the search engines, and to do this you need to understand how they want things done. When the search engine crawls your site, the bots look for certain pieces of information. If the bots deem that the information is up to par, you'll be rewarded with better rankings. To insure that you understand what they're looking for, it helps to become familiar with their terms and conditions and Webmaster guidelines.
- Because of this constraint, the battle to get to the top of Google, Yahoo! Bing and the like has become quite a challenge. You need all the help that you can get! Proper SEO that use white hat techniques, or those that fall in line with what the search engines determine are their "best practices" will be a big step in the right direction.

SEO Strategies

- All search engine optimization spawns from diligent keyword research. This involves finding out just how people are coming to your website – what terms they use, what questions they ask, etc. If you know how people are looking for sites like yours, all you have to do is provide them with the answers they seek. This is all about appealing to your audience. You need to think of popular and related keywords that suit your sites content, then you can incorporate them into the content and the marketing techniques that you employ.
- Another part of SEO is link building, and it's always changing. Link building is where you have a link to your site appear on other sites. Instead, your focus should be on building content and let the linking occur naturally.
- Tactics that worked in the past, such as posted links on articles you write on other sites, are now considered spammy and if there are too many of these, your site can get a penalty.
- To fully understand SEO, you should consider getting some sort of consultant to guide you along. There are so many different marketing techniques out there, making it hard to find just the right one for you. You can use someone else's experience to narrow down your options and pinpoint the perfect strategy to help you reach your audience.

On-Page Optimization:

On-Page SEO refers to how well your website's content is presented to search engines. On page optimization involves ensuring whether a particular webpage is structured in a manner so that it gets found by the search engines for given

keywords and key phrases. It not only helps in getting good search engine ranking but also increases overall readability of the site. The best part is that not much has changed about the on-page optimization approach. It can still be improved immediately by tweaking incorrect elements on a webpage.

There 5 key elements of a successful on page optimization:

1. Page Copy

A good content copy is really the key to your success. It is an open secret that you need to produce original, unique and high

quality content of relevance on a continuous basis to perform well and rank high on search engines. There are few things you need to keep in mind while creating the content copy.

Keyword

Each piece of content should be created keeping the focus primarily on a single keyword or a key phrase. This word or phrase should at least be mentioned for a specific number of times in the whole content and this process is known as keyword density. Each content copy is supposed to maintain a keyword density of 3-5% as par



industry standard. Keep a mix of primary and secondary keywords and key phrases in your content but optimize your content around only those keywords and phrases on which you desire to achieve top organic search rankings.

Quality over quantity

You don't essentially need longer articles for better search engine rankings. Web pages with more content intensity and depth have started performing better on search engine ranking since the 2011 Google algorithm update.

2. Title Tags

Arguably title tag is the most important element among the "big three", the other two being page copy and inbound links. Title tag contains the words which appear in the clickable link of the search engine result. Google has limited the page titles up to 70 characters, so it is extremely important that your title tags are keyword-relevant yet concise. For example, when looking up in Google for a query, you might have noticed the chopped off title tags in few results, that's because the title tags for that page are too long. To optimize the title tags primary keywords and secondary keywords should be mentioned in the same order and the branded keywords at the end, this is a rule to follow except for the home page.

3. Meta Data

Meta data is a well-written description summarizing the content of a particular webpage. It used to be one of the most important factors affecting search engine optimization in pre-Panda era. Meta data completely lost its importance in influencing Search Engine rankings from September 2009 after Google's declaration. It was majorly devalued because of a wide practice of spam techniques. Google crawlers though look at the Meta keywords to get an idea about the topicality of the page content. Meta descriptions have to be created within a limit of 155- 160 characters which essentially should not include anything but alphanumeric characters. It can't influence search engine rankings but do help in getting a high click through rate.

Meta description works more as an ad copy for the organic search results which influences the readers to click on a particular link. It can also intelligently accommodate the primary keywords within it, Google especially highlights them if searched key phrase contains the exact key words.

4. Heading Tags

These are the tags which define the content of your page section wise, just like traditional headings and subheadings. There should be one <h1> tag every page, which should include the most relevant key phrase or key word. This tag can be created up till <h6>, though general practice is to use this till <h3>.

Apart from the primary keyword mentioned in the <h1>, you can include the other important keyphrases in <h2> and <h3> tags to define the other sections of the content. The <h1> tag should be optimized well as search engines still give this some value.

5. Interlinking

Strategically, linking one of your website pages to other similar pages on your website provides context to the search engine and to the readers as well. Some best practices are:

1. Include links in the main content of each page.
2. Paragraph links carry the most weight.
3. Use keyword-rich anchor text in links.
4. Avoid using non-descriptive anchor text (for example, read more, click here, etc).
5. Link to relevant, deep pages.
6. Use breadcrumb navigation on every page
7. Monitor your inbound links through Google Webmaster Tools.
8. Avoid multiple links to the same page from a single page.
9. Less links= More authority per link.

The most common practice of showing “related links” or “tags” at the end of a page or in a sidebar is done to thematically relate one page to another.

Off-Page Optimization:

Off-Page SEO refers to your website’s overall “authority” on the web determined by what other websites say about your site. Off-page optimization is a long-term process and takes the time to improve. Simply put, off page is all about

your online reputation. Off page optimization includes acquiring backlinks to your page from the authority sites in your niche. Backlinks are the currency of any off-page strategy. And, unlike on-page optimization, off-page optimization efforts are not apparently visible on the webpage itself; it does the background work for a better search result.



But, after the recent Google Panda and Penguin updates, off-page optimization scenario has drastically changed. Many effective old school practices became obsolete and negatively affected many big websites with high page ranks. Off page optimization effort can be grossly divided into two parts:

1. Acquiring Backlinks

Acquiring backlinks to your pages from higher authority sites is now more important than ever. Search engines treat link popularity as one of the key factors for a better search engine ranking. Though, link popularity is not the top ranking factor anymore, as it can easily be manipulated. Nowadays, search engines focus more on the quality of your content and the level of engagement on the site, over the number of links pointing towards your site. So, the success factor is not building a long list of inbound links but building a trail of quality links for your site. Creating quality content that informs and educates your target audience is more important than ever.

TIP: Getting a number of links from multiple domains relevant in your industry are the key. Buying backlinks from non-related domains won’t earn you goodwill in search engine results and can even penalize you.

2. Leveraging social interaction with your site

Use of social metrics or social engagement as a ranking factor is an increasing trend. Besides backlinks, Google now gives prominence to social signals around your content. Whether it’s the number of people who tweet,

'Like', social bookmark, or "vote" via Google +1 for your content, your site's social footprints has a direct relation with your rankings. SEO has now evolved into social.

3. Promote your content via social channels

Make sure to promote your content through multiple social media channels to obtain some social media traction.

You can use multiple platforms to engage your audience, keeping the focus on the ones creating maximum buzz for you. There are various platforms at your exposure:

Facebook

Facebook is the social platform with the maximum number of active users at this moment. You can share your content there but don't use a promotional tone, rather keep it light as people come to Facebook mostly with an intention of socializing in a casual mood. Especially interesting and light topics with pictures get more attention in the form of Likes and Share on Facebook.

Twitter and LinkedIn

You can distribute your content on both these platforms. You can share your content in the form of an article, video, image or even in the form of a simple update. You can [join relevant LinkedIn groups](#) and share your articles there too. If you have content of great quality you'll surely be able to create buzz around it.

Google+

It has become very important to share any content you create on Google+, as it is from the search engine provider itself. Recently, there is a lot of noise that Google+ has a indirect correlation with your website's ranking in the search engine. Google also have introduced a new feature called **Google Authorship**. It shows the picture and name of an author with his articles in Google search results. This has come across as a major factor to counter the duplicate content by giving weightage to the authors and the content they have created.

Pinterest

Pinterest is the latest social media sensation. The image sharing website allows you to share pictures from your post to appeal to your target audience. If you have an e-commerce site, Pinterest can help you drive your sales.

Quora

This is a question & answer platform where a lot of people come searching for the solution to different problems and queries. You can post your content or your opinion in any of the relevant discussion thread and readers can up vote or down vote it. This is in fact the future of commenting. The platform can help you establish yourself as a subject matter expert in your field.

Video Sharing

You can create informational videos on topics like make-up tips or different marketing strategies to share them on free video hosting sites like Vimeo, YouTube etc. generating billions of unique viewers every month.

4. Add social book markings

Social bookmarking is one of those old yet useful off-page SEO techniques being used from the pre-Panda and Penguin age. There are many sites like Tumbler, Stumbleupon, Reddit, Delicious, Digg being the most

prominent ones, where people come in searching for different content topics. You can add a social bookmarking panel to your website and share all the content you produce.

5. Guest Blogging

Another way of acquiring strong back links in post Panda era is guest blogging. You have to create relevant and high quality content and submit to the blogs with higher page ranks. If your article contains real good stuffs it will get published and to do that you have to observe the content types and categories your target blogs are covering, it's even great if there are some common or related categories both of you cater to.

For a long term and successful search engine optimization strategy, you need to work on your site structure as well as on building your online reputation by getting backlinks and creating the community around your content. And, ultimately, it boils down to creating interesting and informative content people would like to read and share. Content is still the King.

Search Engine Result Process (SERP):

A **Search Engine Results Page**, or SERP, is the web page that appears in a browser window when a keyword query is put into a search field on a search engine page.

- The list of results generally includes a list of links to pages that are ranked from the most popular to the least popular from the number of hits for the particular keyword.
- The list will include not only the links, but also a short description of each page, and of course, the titles of the webpage. The term “search engine results page” may refer to a single page of links returned by a query or the entire set of links returned.
- Many search engine results pages have different types of listings. These types of SERPs are found most commonly in larger search engines, such as Google.com and Yahoo!. They include results such as:
 - Contextual
 - Algorithmic
 - Sponsored listings
 - Images
 - Maps
 - Organic search listings
 - Definitions
 - Suggested search query refinements
- ✓ Major search engines can also offer **specific search engine results pages** that pertain to specific the specific types of listings. Search engine results pages can also be the results page for an image search, a map search, a news search, a blog search, or many of the other options major search engines offer.

The main elements of SERP are:

1. Direct search results, consisting of links to sites. This is the natural issuance of search engines, where sites are struggling for the highest positions. The search results page contains, by default, 10 links, but the number can be changed in the search settings;
2. Blocks with contextual advertising;
3. Small fields before search results. They can contain typing errors, a quick response to a user request, a calculator, and so on;

4. Pictures are issued in response to a particular search query;
5. Related queries – the search query is refined. The user is offered word forms or similar requests;
6. Elements of management – this includes links to go to the site, prompts when entering a user request.

A search engine results page (SERP) is the list of results that a search engine returns in response to a specific word or phrase query. Each listing includes the linked Web page title, the linked page URL (Uniform Resource Locator), a brief description of the page content and, in some cases, links to points of interest within the website.

There are three main types of results on a SERP:

1. Pages that the search engine spider has crawled and indexed;
2. pages that have been manually added to the search engine's directory;
3. and pages that appear as a result of paid inclusion.

The highest-ranking hits generally link to the most useful information; links grow less relevant as they move farther down the list.

Search Engine Results Pages: What They Are and How They Work

Search engine results pages are web pages served to users when they search for something online using a search engine, such as Google. The user enters their search query (often using specific terms and phrases known as keywords), upon which the search engine presents them with a SERP.

Every SERP is unique, even for search queries performed on the same search engine using the same keywords or search queries. This is because virtually all search engines customize the experience for their users by presenting results based on a wide range of factors beyond their search terms, such as the user's physical location, browsing history, and social settings. Two SERPs may appear identical, and contain many of the same results, but will often feature subtle differences.

The appearance of search engine results pages is constantly in flux due to experiments conducted by Google, Bing, and other search engine providers to offer their users a more intuitive, responsive experience. This, combined with emerging and rapidly developing technologies in the search space, mean that the SERPs of today differ greatly in appearance from their older predecessors.

SERPs typically contain two types of content – “organic” results and paid results.

1. ‘Organic’ Results

Organic results are listings of web pages that appear as a result of the search engine's algorithm. Search engine optimization professionals, commonly known as SEOs, specialize in optimizing web content and websites to rank more highly in organic search results.

In the following figure, the highlighted results are all organic results:

The screenshot shows a Google search for "Abraham Lincoln". The search bar at the top contains the text "abraham lincoln" and a search icon. Below the search bar are navigation tabs for "Web", "Images", "News", "Books", "Videos", "More", and "Search tools". The search results are displayed below, starting with "About 68,900,000 results (0.40 seconds)".

On the left side, there are several organic search results:

- Abraham Lincoln - Wikipedia, the free encyclopedia**: A snippet from Wikipedia stating "Abraham Lincoln was born February 12, 1809, the second child of Thomas and Nancy Hanks Lincoln, in a one-room log cabin on the Sinking Spring Farm in ...".
- Abraham Lincoln on Twitter**: A snippet showing a tweet from Michael Beschloss (@BeschlossDC) from 1 day ago, mentioning "Abraham Lincoln, President-elect, 155 years ago next week: #LOC".
- Abraham Lincoln | whitehouse.gov**: A snippet from the White House website stating "Abraham Lincoln became the United States' 16th President in 1861, issuing the Emancipation Proclamation that declared forever free those slaves within the ...".
- Abraham Lincoln - Biography.com**: A snippet from Biography.com stating "Abraham Lincoln was the 16th president of the United States ...".

On the right side, there is a Knowledge Graph (Knowledge Box) for Abraham Lincoln. It features a grid of images of Lincoln, including a large portrait and several smaller ones. Below the images, the text reads:

Abraham Lincoln
16th U.S. President

Abraham Lincoln / ˈɛbrəhæm ˈlɪŋkən/ was the 16th President of the United States, serving from March 1861 until his assassination in April 1865. Wikipedia

Born: February 12, 1809, Hodgenville, KY
Height: 6' 4"
Assassinated: April 15, 1865, Washington, D.C.
Party: National Union Party
Children: William Wallace Lincoln, Robert Todd Lincoln, Edward Baker Lincoln, Tad Lincoln

Organic results on the SERP

The box on the right side of this SERP is known as the Knowledge Graph (also sometimes called the Knowledge Box). This is a feature that Google introduced in 2012 that pulls data to commonly asked questions from sources across the web to provide concise answers to questions in one central location on the SERP. In this case, you can see a wide range of information about Abraham Lincoln, such as the date and place of his birth, his height, the date on which he was assassinated, his political affiliation, and the names of his children – many of which facts have their own links to the relevant pages.

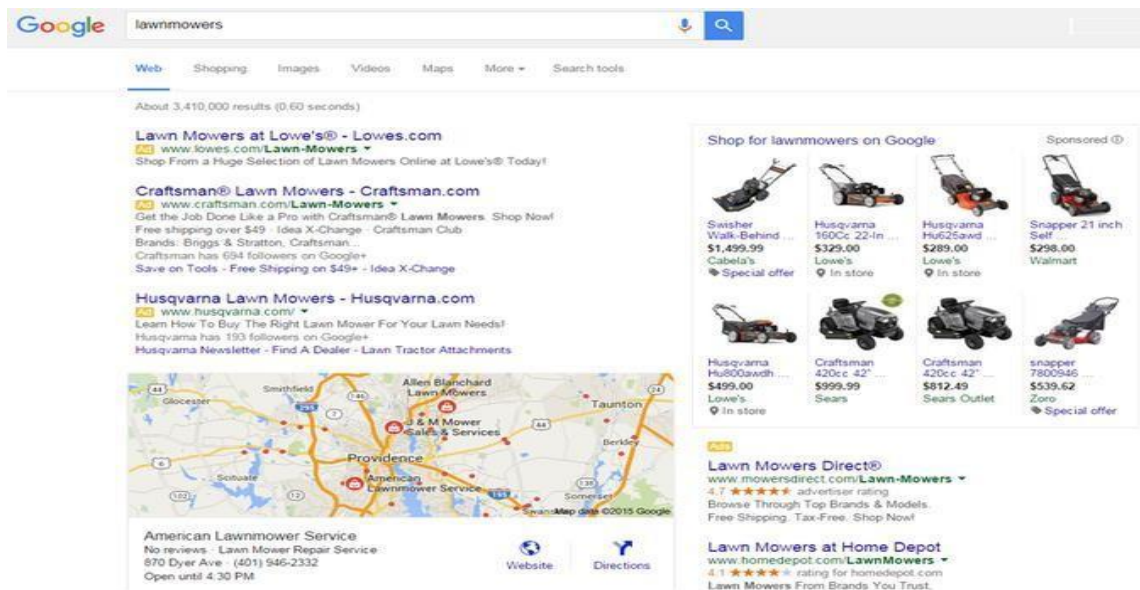
Some SERPs will feature significantly more organic results than others, such as the example above. This is due to the differing intent of various searches. There are three primary types of Internet search: Informational, Navigational and Transactional.

- **Informational searches** are those in which the user hopes to find information on a given topic, such as Abraham Lincoln.
- **Navigational queries** are those in which the user hopes to locate a specific website through their search. This may be the case for individuals searching for a specific website, trying to locate a website whose URL they can no longer remember, or another type of navigational objective.
- **Transactional searches** have high commercial intent, and search queries leading to transactional SERPs may include keywords such as “buy” and other terms that suggest a strong desire to make a purchase.

2. Paid Results

In contrast to organic results, paid results are those that have been paid to be displayed by an advertiser. In the past, paid results were almost exclusively limited to small, text-based ads that were typically displayed above and to the right of the organic results. Today, however, paid

results can take a wide range of forms, and there are dozens of advertising formats that cater to the needs of advertisers.



Some paid results on your SERP:

In the example above (a SERP for the search query “lawnmowers”), all of the results on the SERP – with the exception of the map and business listing beneath it – are paid results. The three large text-based ads at the top of the SERP are typical PPC ads.

Of those three ads, the lower two (for Craftsman.com and Husqvarna.com) both feature ad extensions allowing prospective customers to navigate to specific pages on their websites directly from the ads.

The image-based ads on the right of the page are Shopping ads, a feature offered on the Google AdWords platform that allows ecommerce retailers’ product information to be displayed alongside other results on the SERP. Shopping ads can contain a wide range of information, such as product availability, user reviews, special offers, and more.

There are two additional PPC ads directly beneath the **Shopping ads** that also feature the user review ad extensions, indicated by the star ratings directly beneath the destination URL.

The map and business listing are the only results on this SERP that are not explicitly paid results. This map is shown based on a user’s location, and feature listings for local businesses that have set up their free Google My Business listing.

Ranking Signals and Search Algorithms

Organic results are listings that have been indexed by the search engine based on a number of factors, also known as “ranking signals.”

For example, the search algorithm used by Google features hundreds of ranking factors, and while nobody outside of Google knows precisely what they are, some are thought to be more important than others. In the past, the link profile of a site – the number of external links that link to a specific website or web page from other websites – was an important ranking signal. It

the two top search engines think of your site. It’s helpful to still is to some extent (which is why Wikipedia ranks so prominently in organic results for so many queries), though search advances at such a rapid pace that ranking signals that were once crucial to the search algorithm may be less important today, a source of constant frustration to SEOs.

SEO Tools:

1. Google Page Speed Insights

Check the speed and usability of your site on multiple devices

Enter a URL, and this tool will test the loading time and performance for desktop and for mobile, plus identify opportunities to improve (and pat you on the back for what you're doing well). The mobile results also come with a user experience score, grading areas like tap targets and font sizes.

2. Moz Local Listing Score

See how your local business looks online

Moz crunches data from more than 15 different sources—including Google, Foursquare, and Facebook—to score your brick-and-mortar business on how it looks online. Results come complete with actionable fixes for inconsistent or incomplete listings.

3. Keywordtool.io

700+ keyword ideas based on a single keyword

Enter a keyword, and the Keyword Tool provides a huge handful of long-tail keyword opportunities, organized alphabetically.

4. Google Analytics

Complete web stats and search insights

In addition to tracking pretty much every bit of traffic you could imagine on your website, Analytics also surfaces many keyword insights as to which terms people use to land on your pages.

5. Google Webmaster Tools + Bing Webmaster Tools

Constant website analysis, alerts, and error reports

These webmaster tools help give you a taste of what see any bugs, alerts, and indexing issues.

Each of these two tools requires a bit of installation on your site. If you've got a WordPress website, you can add the webmaster code automatically through a [plugin](#) like [Jetpack](#) or [Yoast](#).

6. Open Site Explorer

Comprehensive link analysis

The free version of Open Site Explorer gives you a quick look a full range of link analysis, including a look at the most impactful links coming your way and your most linked-to pages.

7. Google Keyword Planner

Know what people search for

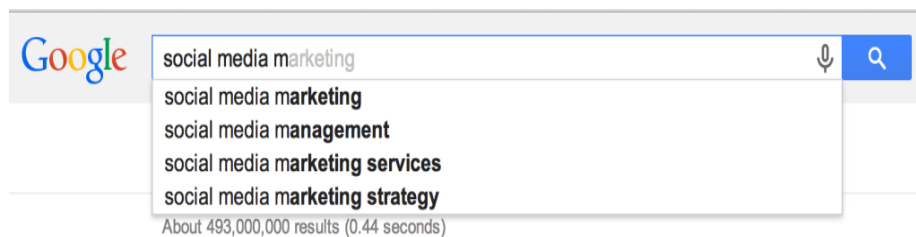
twitter tips	10	🔗
twitter tips		
twitter tips and tricks		
twitter tips for business		
twitter tips 2014		
twitter tips and tricks 2014		
twitter tips for nonprofits		
twitter tips for authors		
twitter tips for journalists		
twitter tips for small business		
twitter tips for newbies		

Enter a keyword or group of keywords into the tool, and Google will return all sorts of helpful stats to guide your keyword strategy: monthly search volume, competition, and even suggested terms you might not have considered.

8. Google.com in an Incognito Window

Discover auto-fill opportunities

Searching Google.com in an incognito window will bring up that all-familiar list of autofill options, many of which can help guide your keyword research. The incognito ensures that any customized search data Google stores when you're signed in gets left out. Incognito may also be helpful to see where you truly rank on a results page for a certain term.



9. Google Trends

Changes in search volume for key terms

A quick browse or search through Google Trends can show you the hockey-stick rise of potential terms and SEO opportunities for your content.

10. QuickSprout Website Analyzer

Full analysis of your website

The QuickSprout tool does a comprehensive look at just about everything: SEO optimization, speed, tags, keywords, social, links, and even competitor comparisons.

11. Schema Creator

Uber-customize the way your search results appear

Create custom code so that your reviews, events, organizations, and people are displayed the way you want on search pages. Once you've created your schema code, copy and paste to your website, or try [the free WordPress plugin](#) for an even easier implementation.

Here's an example of schema in action:

12. SimilarWeb

View site stats for any domain

Use this tool to compare traffic between two websites, a helpful tool for competitor research.

13. SERPs Rank Checker

See where your site ranks for certain terms

You can run Rank Checker one of two ways: Input your keyword and your website and see where you land, or leave the website field blank to view the top-to-bottom list of results for a keyword.

14. XML

Sitemaps Build
a sitemap

Simply enter your site's URL and some optional parameters, and XML Sitemaps will create a sitemap that you can upload to Google Webmaster Tools.

15. Browseo

See your website the way a search engine sees it

Enter your site, and this tool will strip out everything but the guts, revealing your website the way search spiders see it. This particular view can be helpful to see the hierarchy you've given particular elements (maybe without realizing it!).

16. SEO Site Checkup

Audit and score for your website

Site Checkup runs through a fast audit of your site, checking for proper tags and surfacing any errors that might come up.

17. Searchmetrics Website Analyzer

Performance dashboard for search and social rankings

The free version of the Searchmetrics report shows you a taste of how your website ranks in search and social, along with a preview of top terms.

18. Find Broken Links

Discover errors on your site

The link report from Ninja Internet Marketers combs through your whole site and highlights a number of link insights, including the internal and external links that need fixing.

19. Ahrefs' Site Explorer and Backlink Checker Complete

overview of your website, pages, and links

A free (and substantial) sampling of what ahrefs offers, the dashboards for referring pages and inbound links are rich and informative.

20. Copyscape

Check for duplicate content

Enter a URL for a blogpost or website, and Copyscape can tell you where else that content exists online. You might find results that you'll need to follow-up with to help get your SEO in order.

21. Moz toolbar

I've shied away from referencing any toolbars thus far, but the Moz toolbar is just too good to pass up. Once installed, the Moz toolbar can show you SEO insights from within Google search results pages and at any particular website.

22. Robots.txt Generator

Robots.txt files let the web robots know what to do with a website's pages. When a page is disallowed in robots.txt, that's instructions telling the robots to completely skip over those web pages. There are some exceptions in which case a robots.txt might be ignored, most notably malware robots that are looking for security issues.

23. Structured Data Testing Tool

Structured data helps to provide context to the information on your page. This tool from Google uses live data to validate the structured data for any web page, or you can copy/paste code to test it.

24. Microsoft Free SEO Toolkit

The Microsoft SEO Toolkit combines quite a few different tools into one. Used together, it can analyze your site and provide recommendations on how to make your site's content more SEO- friendly, including tweaks to your sitemap and robots.txt. Sorry to all of the Apple folks, this one seems to be Windows-only!

Certificate Course in Stress Management by Yoga

Code: CCSMY

Duration: 40 Hours

Three Months – One Lecture per Day

Aims:

- Enhancing your ability to cope with adversity.
- To provide appropriate information about health.
- Learning skills such as problem solving, prioritizing task.
- To develop time management skills to reduce stress.

Objectives:

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- To recognise the stressor.
- To Learn various relaxation methods to reduce stress.
- To recognize the cognitive components for stress.
- To promote healthy behaviour among the society that they will inculcate for life.

Module I

1. Yoga and Mental Health

- 1.1 Define mental health, Holistic health, Medical & Yogic perspective
- I .2 Concept of Chitta (Conciseness)
- I .3 Concept of Chitta Bhumis (state of mind)
- 1.4 Concept of Pancha Kosha (pranic body)

Module II

2. Mental Hygiene

- 2. I Mental Hygiene and roll of yoga in mental hygiene
- 2.2 Relationship between mind and body.

Module III

3. Meditation - Yoga

3.1 Swara yoga the balance of life

3.2 Mental deep relaxation (Pratyahara) and meditation (dhyana)

3.3 The mind and personality

3.4 Importance of true knowledge — Kath Upanishad

Module IV

4. Yoga & Stress Management

4.1 Human Psyche: Yogic and modern concept, Behaviour and consciousness

4.2 Concept of stress according to modern science and yoga

4.3 Stress and Personality

4.4 Role of yoga in life management

Course Outcomes: By the end of Course, the students will be able to:

- CO1: Identify and understand the signs and symptoms of stress.
- CO2: Distinguish methods to control and/or reduce stress in their daily life.
- CO3: Develop coping skills that will enable the student to control his/her level of stress.

Assessment with Pen and Paper:

Possible assessment methods include: quizzes, tests, collected assignments, group activities and demonstration of skills and performance. Such assessments and related assignments will develop critical thinking techniques and reading, along with developing classical music skills.

Grading System will be adopted for Certification.

Marks	Grades	Grade Point
>90 and <=100	A1	10
>80 and <=90	A2	9
>70 and <=80	B1	8

>60 and <=70	B2	7
>50 and <=60	C1	6
>40 and <=50	C2	5

Account Executive(CCAE)

Objective

The objective of course is to learn the aspect GST and Taxation.

Benefit

GST Return Filing, TDS Filing which enables student to get knowledge of their use and role in Accounts Executive.

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus Accounts Executive

- Principles of Accountancy
 - Accounting definition, functions, single entry & double entry system of Accounting.
 - Accounting equations, types of accounts, rules of Accounting, Accounting standards.
 - Accounting concepts & conventions, phases of Accounting: Journal, Ledger & Trial balance.
 - Preparation of Cash book, Subsidiary books.
 - Preparation of Final statements of accounts

- Introduction to Tally
 - Tally-origin, General Features, Accounting features, Inventory feature, Starting TALLY, Start-up screen component, Processing icons, Multilingual feature of TALLY, Quit TALLY
 - Company creation; creating, selecting, deleting, shutting a company, altering company details changing data directory, auto selection of company
 - Pre-defined groups in TALLY- Primary groups sub groups- creation of user defined primary groups, display- alteration of Groups-Ledger Accounts-creations, display, alteration, deletion.
 - Tally Vouchers-Meaning-Payment Vouchers Receipt vouchers-entering, deleting, cancelling, printing a voucher- Post-dated vouchers
 - Security Control- Meaning, need creation, Display, alteration of security TALLY Audit features-conduct

- Financial Tally
 - Preparation of Trial Balance- Preparation of Profit & Loss account - Balance sheet.
 - Interest Simple, Compound interest calculation setting up ledger master- Interest Report-Voucher classes and ledger for interest Entry-Bill wise interest calculations.
 - Receivables and Payable Management Meaning activating bill wise details-sales entries, purchases entries, Purchases Returns, Sales returns Receipt, payment Entries-Display and

printing of outstanding printing reminder letters- printing confirmation.

- Cost, Cost centre, Cost categories- Meaning creation, display, alteration of cost categories and cost centres- allocation of transactions to cost centres-voucher entry using voucher class and cost centre class.
- Budget-Budgetary Control- Meaning, Creation of Budgets, Group Budgets, Budget ledgers, Alteration of budgets-deletion of budgets

- INCOME TAX RETURN E-FILING

- Introduction to Indian Income Tax Act
- Income Tax Computation
- Salary Income
- Income from PGBP
- Income from House Property
- Income from Capital Gains
- Income from Other Sources
- Tax planning (deduction)
- How to file Income Tax return?
- Online Filing of Income Tax Return
- Provision Related to TDS & Filing

- Indirect Taxation (GST) GST RETURN E-FILING

- What is GST- Goods and Service Tax Indirect Tax for the whole India
- Overview of Goods & Service Tax
- Registration and Return
- Registration under GST (Regular and Composition),
- Meaning & Scope of Supply, Time of Supply, Value of Supply, Tax Rate Structure
- Invoicing under GST regime,
- Input Credit Mechanism Return under GST (GSTR1, GSTR2, GSTR3 and so on), Payment of Taxes, Consequences of non-compliance and Compliance

Project

Student makes a project during training period.

Certification

Certificate in Accounts Executive.

Study Material of Account Executive(CCAE)

Goods and Service Tax (GST) :

“GST is a comprehensive, multi - stage, destination - based tax that is levied on every value addition”.

Characteristics of goods and Services tax :

1. **Comprehensive** : Scope of business covering the entire trade related activities inclusive of all business transactions.
2. **Multi - stage** : From manufacture to final sale to the consumer.
3. **Destination/Consumption Based** : Goods and Services tax is levied at the point of consumption. So, the entire tax revenue will go to consumption state and not to origin state.
4. **Value Addition** : The monetary value added at each stage to achieve the final sale to the end customer.

Vision of GST :

To establish highest standards of co - operative federalism in the functioning of GST Council.

Mission of GST :

Evolving by a process of wider consultation, a Goods and Service Tax structure, which is information technology driven and user friendly.

GST and The Cascading effect :

In the pre - GST regime, every purchaser including the final consumer paid tax on tax. This tax on tax is called Cascading effect of taxes.

Illustration :

Mr.X a biscuit manufacturer along with some members, with the input Rs.1000 we can see what happens to the cost of goods and the taxes in the pre GST and GST regimes.

Tax calculations in the pre GST regime :

Action	Cost	10% Tax	Total
Manufacturer	1000	100	1100
Warehouse adds a label and repacks @ 300	1400	140	1540
Retailer advertises @500	2040	204	2244
Total	1800	444	2244

This is called the cascading effect of taxes where a tax is paid on tax and the value of the item keeps increasing every time this happens.

Tax calculations in GST regime :

Action	Cost	10% Tax	Actual Liability	Total
Manufacturer	1000	100	100	1100
Warehouse adds label and repacks @300	1300	130	30	1430
Retailer advertises @ 500	1800	180	50	1980
Total	1800		180	1980

An individual is able to claim the input tax credit, thus reducing the tax burden on the final customer.

Primary objectives of GST :

1. The primary objective of GST is One Nation, One Tax, One Market.
2. To merge several Central and State taxes into a single tax.
3. To facilitate a common national market, it helps to improve competitiveness of original goods and services in the market which directly impact on GDP of the country.
4. To reduce the Cascading effect of taxes.
5. To ensure speedy and faster economic growth.

Secondary objectives of GST :

1. To reduce compliance cost
2. Seamless flow of tax credit
3. Minimising wastage of time and effort to comply
4. Transparent and corruption free system
5. Supportive to compete at Domestic and International Market
6. Buoyancy in tax collection both for Central and State / UT
7. Tax impact on inflation should be minimal

Salient features of GST :

1. **Supply of goods and services :** GST is applicable on 'supply' of goods or services as against the present concept on the manufacture of goods or on sale of goods or on provision of services.
2. **Principle of destination :** GST is based on the principle of destination – based consumption taxation as against the present principle of origin – based taxation
3. **A Dual GST Model :** It is a dual GST with the Centre and the States simultaneously levying tax on a common base
4. **An Integrated GST (IGST) :** Integrated GST (IGST) will be levied on inter – state supply (including stock transfers) of goods or service.
5. **Import of goods or services covered under IGST :** Import of goods or services will be treated as inter-state supply and would be subject to IGST in addition to the applicable customs duties
6. **Four rates GST Model :** CGST, SGST, & IGST would be levied at rates to be mutually agreed upon by the Centre and the States. In a recent meeting, the GST Council has decided that GST would be levied at four rates viz. 5%, 12%, 18% and 28%
7. **Merger of Existing taxes under GST :** GST replaced the following taxes that are prevailed in practice under the system of previous tax regime. VAT levied and collected by the Union and State Governments that are subsumed within the GST
8. **Exception from GST :** GST would apply on all goods and services except Alcohol for human

consumption. GST on five specified petroleum products (Crude, Petrol, Diesel, ATF & Natural Gas) would be applicable from a date to be recommended by the GSTC. Tobacco and tobacco products would be subject to GST. In addition , the Centre would have the power to levy Central Excise duty on these products.

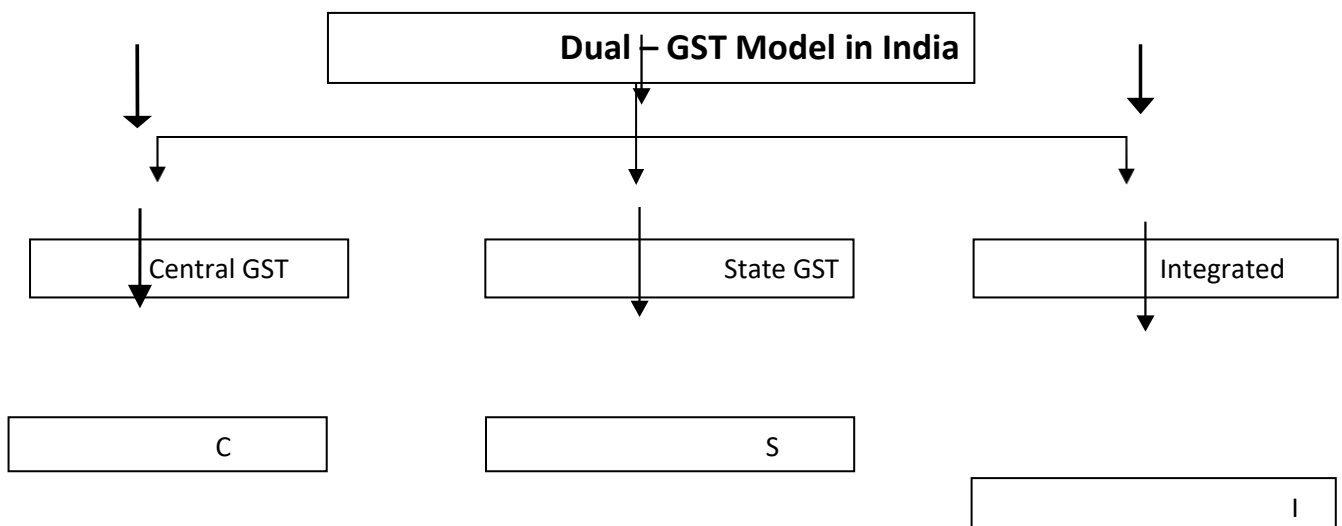
9. Composition scheme : For small taxpayers with an aggregate turnover in a financial year upto 1.5 crores, a composition scheme is available. Under the scheme a taxpayer shall pay tax as a percentage of his turnover in a State during the year without benefit of Input Tax Credit. This scheme will be optional

10. Input Tax credit (ITC) : Credit of CGST paid on inputs may be used only for paying CGST on the output and the credit of SGST paid on inputs may be used only for paying SGST. Input Tax Credit (ITC) of CGST cannot be used for payment of SGST and vice versa. In other words, the two streams of Input Tax Credit (ITC) cannot be cross – utilized, except in specified circumstances of inter - state supplies for payments of IGST.

DUAL GST MODEL :

India adopted a dual GST model, meaning that taxation is administered by both the Union and State Governments. Transactions made within a single state are levied with

1. Central GST (CGST) by the Central Government
2. State GST (SGST) by the State Government
3. Integrated GST (IGST) is levied by the Central Government for inter – state transactions and imported goods or services



Levy on supply of All goods and/ or services within a particular State, by the Central Government

Levy on supply of All goods and/ or services within a particular State, by the respective State Government

Levy on All Inter – State supplies of goods and/ or services, by the Central Government

GST replaced the following taxes levied and collected by the Union Government :

1. Central Excise Duty
2. Duties of Excise (Medicinal and Toilet Preparations)
3. Additional Duties of Excise (Goods of Special Importance)
4. Additional Duties of Excise (Textiles and Textile Products)
5. Additional Duties of Customs (Commonly known as Counter veiling Duty)
6. Special Additional Duty of Customs. 3(1) CVD: 3(5) Special. CVD.
7. Service Tax
8. Cesses and surcharge in so far as they relate to supply of goods and services.

State taxes that are subsumed within the GST :

1. State VAT
2. Central States Tax
3. Purchase Tax
4. Luxury Tax
5. Entry Tax (All forms)
6. Entertainment Tax and Amusement Tax (except those levied by the local bodies)
7. Taxes on advertisements
8. Taxes on lotteries, betting and gambling
9. State cesses and surcharges in so far as they relate to supply of goods and services.

Need for GST in India :

1. **Cascading effect :** The introduction of CENVAT removed to a great extent cascading burden by expanding the coverage of credit for all inputs, including capital goods.
2. **VAT, CENVAT tax burden :** In the State-level VAT, CENVAT load on the goods has not yet been removed and the cascading effect of that part of tax burden has remained unrelieved.
3. **Plethora of taxes :** There were various indirect taxes in India in existence prior to introduction of GST. There was a three tier system of tax collection in India:
 - a) Taxes levied by Central Government i.e. Customs Duties, Central Excise Duties, Service Tax etc.,
 - b) State Excise, VAT, CST, Entry tax, Entertainment tax, luxury tax etc., are levied by the State Government
 - c) Local Bodies levy taxes like entertainment tax Octroi, Property tax, local body tax, etc.
4. **Poor integration of VAT with tax on services :** There has also not been any integration of VAT on goods with tax on services at the State level with removal of cascading effect of service

tax.

5. **Cascading nature of CST(Central Sales Tax) :** It was another source of distortion in terms of its cascading nature. It was also against one of the basic principles of consumption taxes that tax should accrue to the jurisdiction where consumption takes place.
6. **Obstacles in free movement of goods :** The National Market was fragmented with too many obstacles in free movement of goods necessitated by procedural requirement under VAT and CST.
7. **Multiplicity of compliances :** Payment of tax to various authorities, different due dates, assessment, refund process at various levels made the taxation system more complex and lead to an increase in compliance cost. Further, there was inbuilt cascading effect of taxes.
8. **Commitment of an inevitable reform process :** India moved towards value added taxation both at Central and State level, and this process was complete by the year 2005. Integration of Central VAT and State VAT therefore is nothing but an inevitable consequence of the reform process.
9. **Need of unification tax system :** The Constitution of India envisages a federal nature of power bestowed upon both Union and States in the Constitution itself.

GOODS AND SERVICE TAX COUNCIL

The GST Council is chaired by the Union Finance Minister and other members are the Union State Minister of Revenue or Finance and Ministers in-charge of Finance or Taxation of all the States.

ADVANTAGES / BENEFITS / IMPACT OF GST

Advantages for the Government :

1. **Make in India** will help to create a unified common national market for India, giving a boost to foreign investment and “Make in India” campaign;
2. **Mitigate Cascading of Taxes** will mitigate cascading of taxes as Input Tax Credit will be available across goods and services at every stages of supply;
3. **Harmonized Principle** Harmonization of laws, procedures and rates of tax between Centre and States and across States;
4. **Better Compliance** Improved environment for compliance as all returns are to be filed online, input credits to be verified online, encouraging more paper trail of transactions at each level of supply chain;
5. **Uniformity in Levy** Similar uniform SGST and CGST rates will reduce the incentive for evasion by eliminating rate arbitrages between neighbouring States and that between intra and inter – state sales;
6. **Improved Taxation System** Common procedures for registration of taxpayers, refund of taxes, uniform formats of tax return, common tax base, common system of classification of goods and services will lend greater certainty to taxation system;
7. **Reducing Corruption** Greater use of IT will reduce human interface between the taxpayer and the tax administration, which will reduce corruption.

8. **Economic Growth** It will boost export and manufacturing activity, generate more employment and thus increase GDP with gainful employment leading to substantive economic growth.
9. **Generating Resources** Ultimately it will help in poverty eradication by generating more employment and more financial resources.

Advantages to Trade and Industry :

1. Simple tax regime with fewer exemptions;
2. Increased ease of doing business;
3. Reduction in multiplicity of taxes
4. Elimination of double taxation on certain sectors like works contract, software, hospitality sector;
5. Will mitigate cascading of taxes as Input Tax Credit will be available across goods and services at every stage of supply
6. Reduction in compliance costs – No multiple record keeping for a variety of taxes – so lesser investment of resources and manpower in maintaining records;
7. More efficient neutralization of taxes especially for exports thereby making our products more competitive in the international market and give boost to Indian Exports;
8. Simplified and automated procedures for various processes such as registration, returns, refund, tax payments, etc;
9. Average tax burden on supply of goods or service is expected to come down which will be helping in the growth of industries manufacturing in India.

Advantages to Consumers :

1. Final price of goods is expected to be transparent
2. Reduction in prices of commodities and goods in long run due to reduction in cascading impact of taxation;
3. Relatively large segment of small retailers will be either exempted from tax or will suffer very low tax rates under a compounding scheme – purchases from such entities will cost less for the consumers;
4. Poverty eradication by generating more employment and more financial resources.

Advantages to the States :

1. Supply chain : Expansion of the tax base as they will be able to tax the entire supply chain from manufacturing to retail;
2. Revenue : Power to tax services, which was Hitherto with the Central Government only, will boost revenue and give State access to the fastest growing sector of the economy;
3. Favour to consuming States : GST being destination based consumption tax will favour consuming States;
4. Overall investment : Improve the overall investment climate in the country which will naturally benefit the development in the States;
5. Improved Compliance : Improved Compliance levels of the tax payers will contribute greatly in improving the revenue collection of the States.

IMPACT OF GST ON INDIAN ECONOMY

1. Overall Reduction in Prices
2. Common National Market
3. Benefits to Small Taxpayers
4. Self – Regulating Tax System
5. Non – Intrusive Electronic Tax System
6. Simplified Tax Regime
7. Reduction in Multiplicity of Taxes
8. Consumption Based Tax
9. Abolition of CST
10. Exports to be Zero Rated
11. Protection of Domestic Industry – IGST
12. Decrease in Inflation
13. Ease of Doing Business
14. Decrease in “Black” Transaction
15. More informed consumer
16. States to Gain
17. Make in India
- 18.Reduction in Cascading of Taxes

Computer Hardware & Maintenance (AOCCHM)

Objective

The objective of course is to learn the comprehensive understanding of the basic hardware in the computer and other devices.

Benefit

Students know the function of each part of computer, its error and there solutions.

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus of Computer Hardware & Maintenance

- Soldering
 - Step for soldering
 - Resistor and resistor Connection
 - Precautions while using soldering components
 - Basic information about current and voltage
 - Ohm's law, voltage rise and voltage drop

- Power, Bridge Circuit
 - Knowledge of Inductor & Capacitor
 - RC time constant
 - AC fundamentals

- Rectifiers and Amplifiers
 - Half wave and full wave rectifier
 - What id Zener Diode
 - Transistor and transistor amplifier
 - Operational Amplifier

- Junction PET Characteristics
 - LED Characteristics
 - Photo Transistor Characteristics

- Basic Terminology of Computer
 - Computer Fundamentals
 - Operating Systems
 - Application Software
 - Overview of some application software

- Basic Computer Hardware
 - Different hardware devices
 - Input device, processing devices and output devices
 - Working of input and output devices
 - Computer Assembling

- Installation
 - Installation of operating system like window 7, window 8, etc.
 - Installation of Several Application Software like MS-Office
 - Introduction of viruses, detection of virus, Prevention and antivirus utilities
 - Installation of various Device and Drivers
 - Updating and upgrading system.

- Troubleshooting
 - Maintenance of Computer
 - Problem Finding in system and diagnosing it
 - Precaution for smooth working of computer

Project

Student makes a project during training period

Certification

Certificate in Computer Hardware & Maintenance

Study Material of Computer Hardware & Maintenance(AOCCHM)

Soldering

Step for soldering

What are the 4 steps of soldering?

Flux – please see the page titled: Soldering 101 – Oxidation, Flux, and Firescale/stain Prevention.

- Step One: Good Fit. This just means that the two pieces of metal that you are joining together, fit as closely as possible. ...
- Step 2: Clean Metal/Solder/Flux/Hands. ...
- Step 3: Heat. ...
- Step 4: Flux.

What are the 5 S of soldering?



Which are Sort, Set in order, Shine, Standardize, and Sustain.

What is soft soldering?

Soldering is the term for establishing a firmly bonded connection by using solder material, where only the solder reaches a molten condition.



Soldering performed using alloys with a melting point above 450 °C (840 °F; 720 K) is called



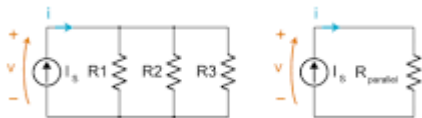
removing oxide films which form on the surface of metals being soldered

Resistor and resistor Connection

Two or more resistors are said to be connected in series when the same amount of current flows through all the resistors.

What are the 2 types of resistors?

- Types of Resistors. There are many different types of resistors and they can be made from various materials, all of which have their own unique advantages and disadvantages. ...
- Resistive Materials. ...
- Metal Film Resistors. ...
- Wirewound Resistors. ...
- Metal Oxide Resistors. ...
- Metal Strip Resistors.



Two identical resistors in parallel

Resistor

Featured snippet from the web

Resistor is defined as. A passive electrical component with two terminals that are used for either limiting or regulating the flow of electric current in electrical circuits



Precautions while using soldering components

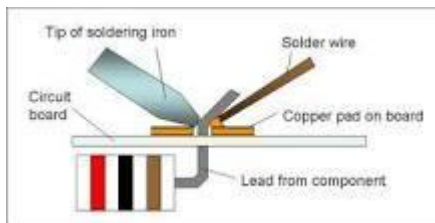
Soldering Safety

- Never touch the element of the soldering iron.... 400°C!
- Hold wires to be heated with tweezers or clamps.
- Keep the cleaning sponge wet during use.
- Always return the soldering iron to its stand when not in use. Never put it down on the workbench.
- Turn unit off and unplug when not in use.

What are the safety hazards of soldering?

Heat & Electrical: The soldering iron will be hot, which may cause burn injuries if contacted directly. Flammable materials may catch fire from the heat, and electric shock hazard from exposed wiring could cause injury or start a fire. Rosin: Solder used for hand soldering electronics typically contains a rosin core.

What is the correct procedure of soldering a component?



Soldering

1. Solder needs a clean surface on which to adhere. Buff the copper foil of a PC board with steel wool before soldering. Remove any oil, paint, wax, etc. ...
2. To solder, heat the connection with the tip of the soldering iron for a few seconds, then apply the solder. Heat the connection, not the solder.

What components are used in soldering?



What Metals are Used? Filler metals used in soldering were once lead based (lead solder), however, owing to regulations, lead-based solders are increasingly replaced with lead free solders, which may consist of antimony, bismuth, brass, copper, indium, tin or silver.

How many types of safety precautions are there?

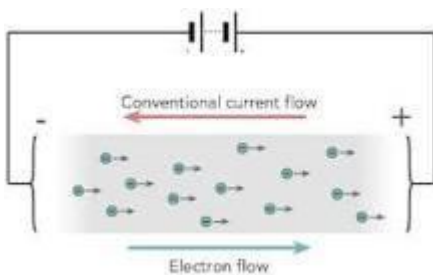
Personal protective equipment (PPE)

- Gloves.
- Eye protection/face protection.
- Hearing protection.
- Coats/aprons.
- Footwear.
- Head protection.
- Height safety equipment.

Basic information about current and voltage

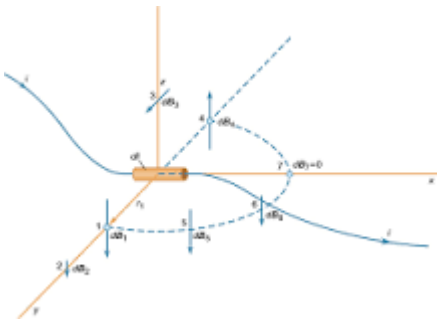
voltage is the difference in electric potential between two points. Current is just the rate of flow of electric charge

What is the basic concept of current?



The basic concept of current is that it is the movement of electrons within a substance. Electrons are minute particles that exist as part of the molecular structure of materials.

What is current formula?



Current is usually denoted by the symbol I . Ohm's law relates the current flowing through a conductor to the voltage V and resistance R ; that is, $V = IR$. An alternative statement of Ohm's law is $I = V/R$.

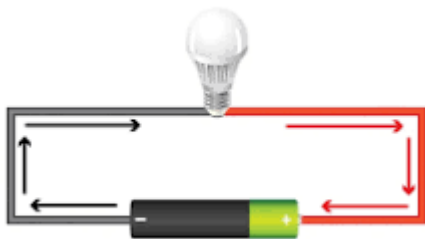
What are the 3 basics of electricity?



There are three primary electrical parameters: the volt, the ampere and the ohm.

- The Volt. The pressure that is put on free electrons that causes them to flow is known as electromotive force (EMF). ...
- The Ampere. The ampere defines the flow rate of electric current. ...
- The Ohm. The ohm is the unit of resistance in a conductor.

What is called voltage?



Voltage is the pressure from an electrical circuit's power source that pushes charged electrons (current) through a conducting loop, enabling them to do work such as illuminating a light. In brief, voltage = pressure, and it is measured in volts (V).

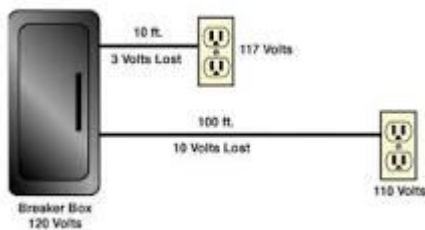
Ohm's law, voltage rise and voltage drop

If the loop enters at the - label and leaves at the + label as in V_y , it is a voltage rise. Otherwise, the loop goes from the + label to the - label as in V_z , so the voltage is a drop.

What is the Ohm's law for voltage drop?

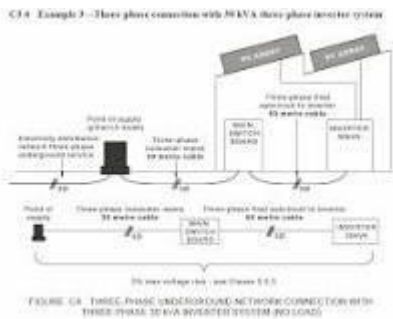
Ohm's Law can be used to determine the DC voltage drop by multiplying current times resistance: $V = IR$. Also, Kirchhoff's circuit laws state that in any DC circuit, the sum of the voltage drops across each component of the circuit is equal to the supply voltage

What is voltage drop?



Voltage drop is defined as the amount of voltage loss that occurs through all or part of a circuit due to impedance. A common analogy used to explain voltage, current and voltage drop is a garden hose. Voltage is analogous to the water pressure supplied to the hose.

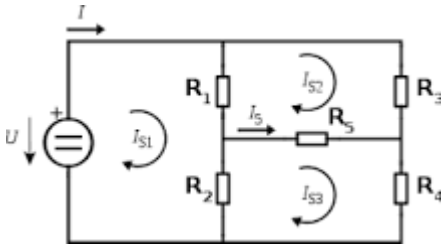
What is the formula for voltage rise?



So the calculation is $Vd/r = L \times I \times Vc/1000$ where: L = cable run in metres, 86m. I = the current, 144.51A. $Vc = 0.449$ mV/A.m.

Power, Bridge Circuit

What is a bridge circuit used for?

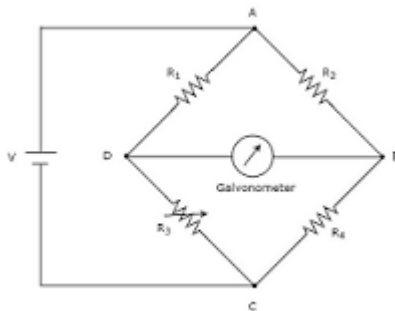


In power supply design, a bridge circuit or bridge rectifier is an arrangement of diodes or similar devices used to rectify an electric current, i.e. to convert it from an unknown or alternating polarity to a direct current of known polarity.

What are the type of bridge circuits?

Wheatstone, Wien, Maxwell, H-bridge, Fontana, Diode, Kelvin and Carey Foster.

What is bridge in EMI?



ADVERTISEMENT. If the electrical components are arranged in the form a bridge or ring structure, then that electrical circuit is called a bridge. In general, bridge forms a loop with a set of four arms or branches. Each branch may contain one or two electrical components.

What are the benefits of full bridge circuit?

output voltage is 2 times input voltage and output power is 4 times compared to a half-bridge inverter.

What are the 5 main bridge types?

Five main types of Bridges

- Beam Bridges.
- Integral Beam Bridges.
- Cantilever Bridges.
- Arch Bridges.

- Cable-Stayed Bridges.



Knowledge of Inductor & Capacitor

A capacitor stores energy in an electric field; an inductor stores energy in a magnetic field.

What are the basics of inductor and capacitor?

a capacitor opposes a change in voltage while an inductor opposes a change in the current.

What is the basic knowledge of capacitor

components capable of storing electricity and releasing the stored electricity when



Is inductor AC or DC?

The inductor stores electrical energy in the form of magnetic energy. The inductor does not allow AC to flow through it, but does allow DC to flow through it

What is the use of inductor?



An inductor is defined as a passive component that is used in most electrical circuits to store energy in the form of magnetic energy when electric current flows through it. It is also known

as the coil, choke, or reactor. It is a two-terminal electrical component that is characterized by its inductance.

RC time constant

equal to the product of the circuit resistance (in ohms) and the circuit capacitance (in farads)

How do you find the time constant of an RC circuit?

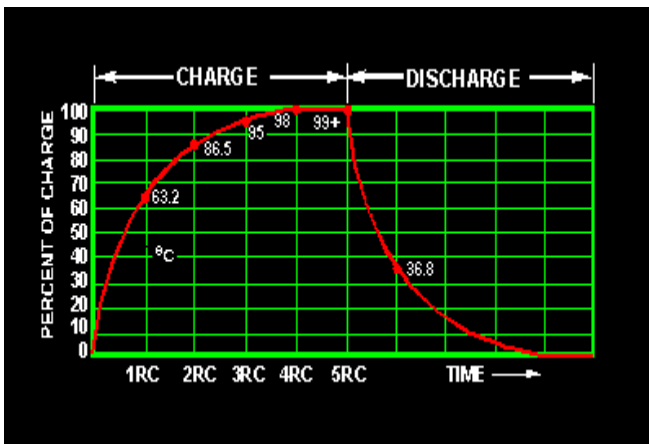
The time constant of an RC circuit is given by the product of the equivalent resistance and capacitance of the circuit: $t=RC$.

What is the time constant for capacitors?

Ans. The time constant for a resistor-capacitor circuit in series is the time it takes for the cap...Read full

What does time constant depend on?

Ans. In an RC circuit, the amount of time needed for a capacitor to be charged to capacity depends on the ca...Read full



AC fundamentals

necessary to analyse the networks consisting of various alternating current and voltage sources, resistances and inductive, capacitive reactances

What are fundamentals of AC?

The main components of AC circuits are resistors, capacitors, and inductors. All these passive electrical elements have one property in common; they restrict electric current in a circuit coil but in completely different ways. The voltages and currents are marked by direction and magnitude in an AC circuit.

What are the fundamentals of AC and DC current?

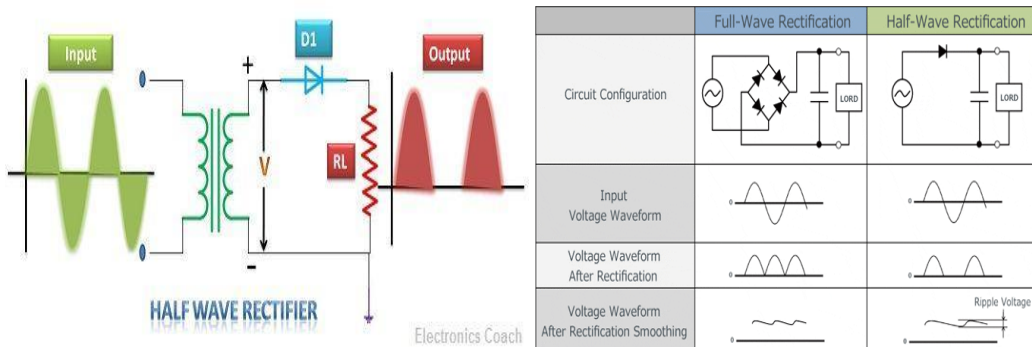
Electric current flows in two ways as an alternating current (AC) or direct current (DC). The main difference between AC and DC lies in the direction in which the electrons flow. In DC, the electrons flow steadily in a single direction, while electrons keep switching directions, going forward and then backwards in AC.



Rectifiers and Amplifiers

Half wave and full wave rectifier

Full-wave rectification rectifies the negative component of the input voltage to a positive voltage, then converts it into DC (pulse current) utilizing a diode bridge configuration. In contrast, half-wave rectification removes just the negative voltage component using a single diode before converting to DC.



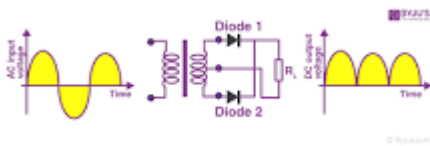
Why half-wave rectifiers are not used in dc power supply?

Half-wave rectifiers are not used in dc power supply because the supply provided by the half-wave rectifier is not satisfactory.

What is the cycle followed by the current in a full-wave rectifier?

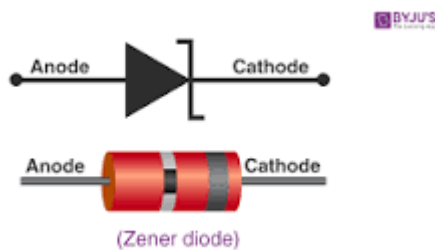
In a full-wave rectifier, the current flows in the half cycle of the input signal.

What is half wave and full wave rectifier?



Definition. The half-wave rectifier is a rectifier which is used for converting the one-half cycle of AC input to DC output. A full-wave rectifier is a rectifier which is used for converting both the half cycles of AC input into DC output.

What is Zener Diode

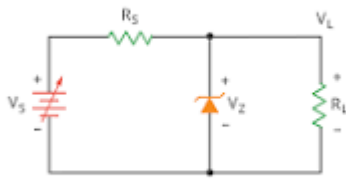


A Zener diode is a heavily doped semiconductor device that is designed to operate in the reverse direction. Zener diodes are manufactured with a great variety of Zener voltages (V_z), and some are even made variable.

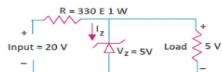
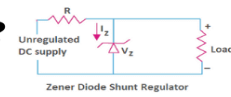
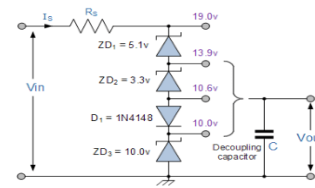
What is a Zener diode and its working?

A Zener diode is a semiconductor device that makes the current flow in the forward or in the backward direction. The diode usually consists of a p-n junction which is heavily doped. The diode is designed to conduct the flow of current in the reverse direction after reaching a specified voltage.

What is Zener diode an example of?



What is Zener Diode as Voltage Regulator?



E4U Electrical 4 U

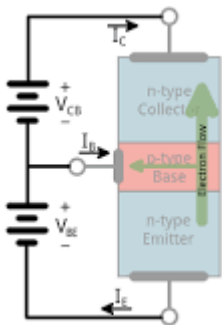
Therefore a zener diode is sometimes called a Voltage-regulator diode. For example, the output of half-wave, full-wave or bridge rectifiers consists of ripples superimposed on a DC voltage. By connecting a simple zener diode across the output of the rectifier, we can obtain a more stable DC output voltage.

Transistor and transistor amplifier

What is difference between transistor and amplifier?

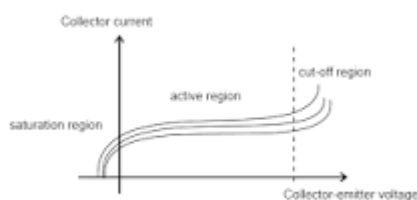
One of the key characteristics of a transistor is that it can be used as an amplifier

What are the 3 types of amplifiers using a transistor?



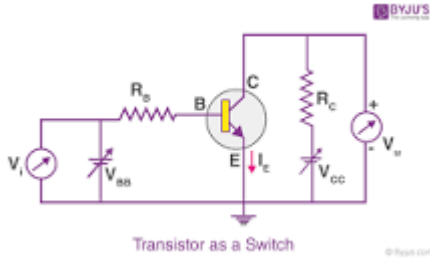
Three of the most fundamental transistor amplifiers are: common emitter, common collector, and common base.

In which region of operation transistor works as an amplifier?



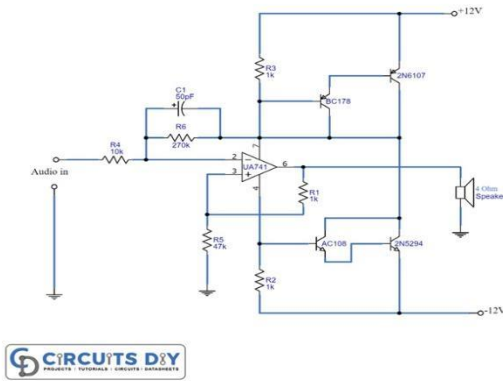
Hint: Transistor acts as an amplifier in the active region of its output characteristics. The active region, also called the linear region, lies between the saturation and cut-off region and it is the region where the emitter-base junction is forward biased while the collector-base junction is reverse biased.

What is the use of transistor as an amplifier?



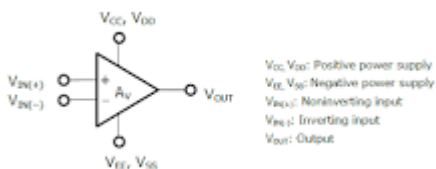
Transistor as an amplifier is used in optical fiber communication. Since the intensity of the output signal is high, it finds application in long-distance communication. The amplification of radio signals is possible because of such amplifiers. Amplifiers are used in wireless communication.

12 Watts Transistor Amplifier



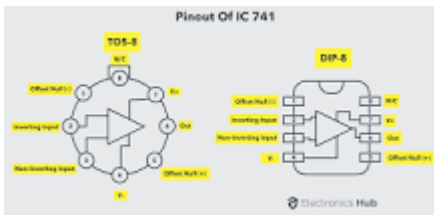
Operational Amplifier

What is the operational amplifier?



An operational amplifier (op-amp) is an integrated circuit (IC) that amplifies the difference in voltage between two inputs. It is so named because it can be configured to perform arithmetic operations.

Why IC 741 is called operational amplifier?



IC 741 Op Amp (Operational Amplifier)

The number 741 indicates that this operational amplifier IC has 7 functional pins, 4 pins capable of taking input and 1 output pin.

Junction PET Characteristics

What are the characteristics of a pet dog?

Dogs are known to be faithful and loyal companions, protective of their masters and territory. There are several breeds, each possessing its own characteristics

What are the characteristics features of pet?

Polyethylene terephthalate (PET)

Chemical formula $(C_{10}H_8O_4)_n$

Monomers Terephthalic acid, Ethylene glycol

General properties Transparency to visible light and microwaves. Very good resistance to ageing, wear and heat. Lightweight, impact and shatter resistant. Good gas and moisture barrier properties



LED Characteristics

Characteristics of LED

- Light Generated by LED is Directional. A LED is all forward directional lighting, not Omni as conventional light bulb. ...
- LED can Generate Different Light Color. A. ...
- Temperature will Affect LED Efficacy. A. ...
- Low Energy Consumption. A. ...
- Long Life.



Photo Transistor Characteristics

Characteristics of Phototransistors

- Spectral Response. The output of a phototransistor is dependent upon the wavelength of incident light. ...
- Sensitivity. ...
- Linearity. ...
- Collector-Emitter Saturation Voltage - $V_{CE(sat)}$
- Dark Current - (I_D) ...
- Breakdown Voltages - (V_{BR}) ...
- Speed of Response. ...
- Selecting a Photodetector.

What is the principle of photo transistor?



The working principle of a phototransistor is similar to a photodiode including an amplifying transistor. The light falls on the base terminal of a phototransistor then it will induce a little current then the current amplified through the action of a normal transistor, which results in an extensively large.

What is the principle of transistor characteristics?

Common Base (CB) Configuration of Transistor

Transistor Characteristics

Definition

Current Transfer Characteristics

The variation of collector current(I_C) with the emitter current(I_E), keeping Collector Base voltage(V_{CB}) constant. The resulting current gain has a value less than 1.

Basic Terminology of Computer

What are the basic terminologies of computer?

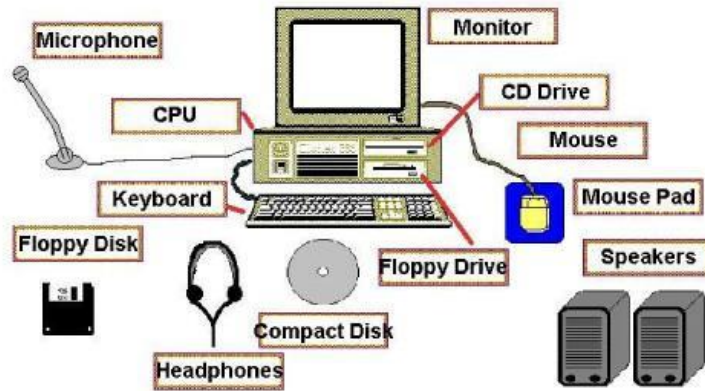
Basic Computer Terminologies

- CPU. CPU means 'Central Processing Unit'. ...
- RAM. Specifically, RAM stands for “Random Access Memory” or “Ready Access Memory”. ...
- Hard-disk Drive. ...
- Floppy Disk. ...
- Hardware. ...
- Software.

Computer science terms related to hardware

- CPU. CPU stands for the Central Processing Unit. ...
- Bit. Bit is an abbreviation for “binary digit,” the smallest piece of information used by a computer. ...
- RAM. ...
- Secondary storage. ...

- ROM. ...
- Input/Output Devices (I/O Devices) ...
- Algorithm. ...
- API (Application Programming Interface)



Computer Fundamentals

What are fundamentals of computer?

Step 1 – Accepts data as input. Step 2 – Saves the data/instructions in its memory and utilizes them as and when required. Step 3 – Execute the data and convert it into useful information. Step 4 – Provides the output. Step 5 – Have control over all the above four

How a computer works?

A computer, a digital information-processing machine, works by changing information into binary numbers (ones and zeros) and then using simple mathematics to make decisions about how to rearrange those numbers into words or actions.

Here are the different types of operating systems you need to know:

- Batch OS. The batch operating system does not have a direct link with the computer. ...
- Time-sharing or multitasking OS. ...
- Distributed OS. ...
- Network OS. ...
- Real-time OS. ...
- Mobile OS.

Operating Systems

What are the 5 operating system?



Top 10 Operating Systems

- Windows 10.
- iOS.
- Windows 7.
- macOS Sierra.
- Ubuntu.
- Android.
- Red Hat Linux.
- CentOS.

Application Software

What is application software with example?



The sole purpose of application software is to aid the user in doing specified tasks. **Web** browsers like Firefox, and Google Chrome, as well as Microsoft Word and Excel, are examples of application software that is used on a personal computer or laptop.

What is meant by application software?

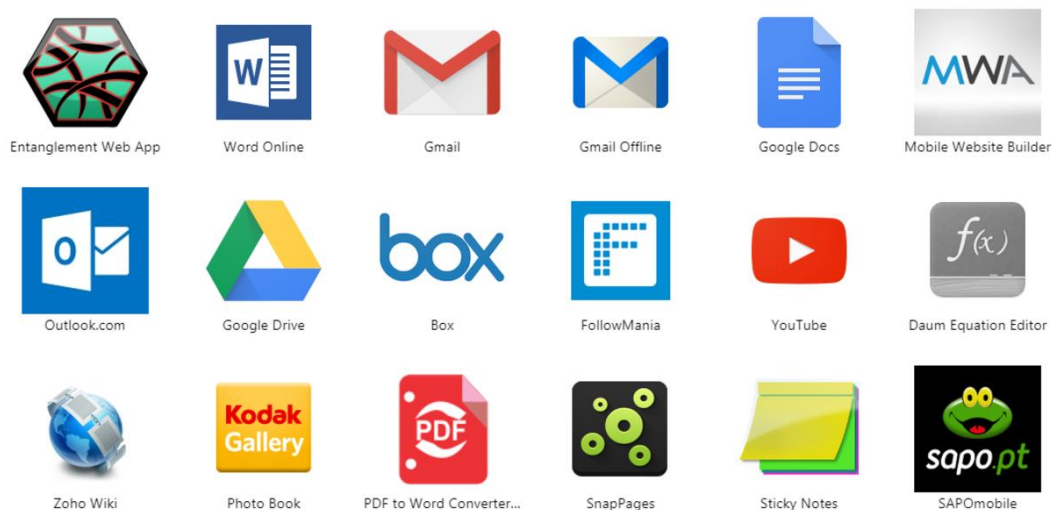


An application, also referred to as an application program or application software, is a computer software package that performs a specific function directly for an end user or, in some cases, for another application. An application can be self-contained or a group of programs.

What's a system software?



System software is a type of computer program that is designed to run a computer's hardware and application programs. If we think of the computer system as a layered model, the system software is the interface between the hardware and user applications. The operating system is the best-known example of system software.



Overview of some application software

Application Software Examples

Real examples of application software include office suites (like Microsoft Word, PowerPoint, and spreadsheets), web browser applications (including Mozilla Firefox, Google Chrome, and Microsoft Edge), and media player applications that include iTunes, VLC, PotPlayer, KMPlayer, etc.

What is the overview of software?

Software is a set of instructions, data or programs used to operate computers and execute specific tasks. It is the opposite of hardware, which describes the physical aspects of a computer. Software is a generic term used to refer to applications, scripts and programs that run on a device.

What are the 10 uses of application software?

Here are a few uses of application software:

- Performs specific tasks. In general, the application software should be designed with the end user in mind. ...
- Manages and manipulates data. ...
- Organize information effectively. ...
- Presentation Software. ...
- Spreadsheet Software. ...
- Database Software. ...
- Multimedia Software. ...
- Simulation Software.

What are the 4 types of application software?



Some of the commonly used application software include:

- Word Processing Software.
- Graphics Software.
- Spreadsheet Software.
- Presentation Software.
- Web Browsers.

Basic Computer Hardware

Different hardware devices

The five types of hardware are mentioned below.

- Monitor.
- Motherboard.
- Keyboard.
- Mouse.
- CPU (Central Processing Unit)

What is different types of hardware?



The hardware of the computer system includes monitor, CPU, keyboard, mouse, printer, sound system, RAM, hard disk and many more. Hardware is used for taking input data from the user, store the data and display the output and execute the commands given by an individual.

Which are the hardware devices?



Common input hardware components include the following:

- Mouse. A mouse is a hand-held pointing device that moves a cursor around a computer screen and enables interaction with objects on the screen. ...
- Keyboard. ...
- Microphone. ...
- Camera. ...
- Touchpad. ...
- USB flash drive. ...
- Memory card.

Input device, processing devices and output devices

What are the input output and processing devices

Input

keyboard mouse joystick
graphics tablet trackball
touchpad touchscreen
microphone sensor

Processing

processor (CPU)
processor (GPU)
memory motherboard

Output

printer monitor touchscreen
plotter speakers headphones
motor data projector

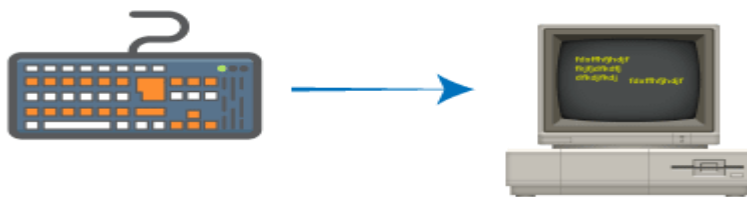
Working of input and output devices

Input device helps the computer to receive instructions from users. The output device helps the computer to produce or display the information to

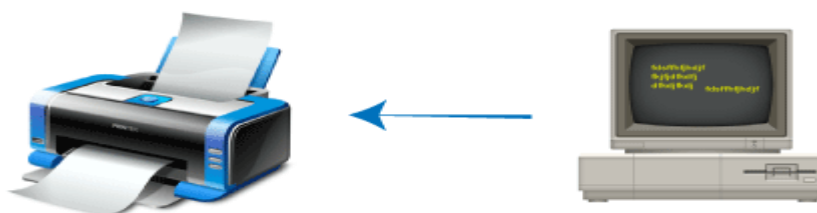
What is the working of output?

An output device works by receiving a signal from the computer and using that signal to perform a task to display the output. For example, below is a basic list of the steps of how an output device works. On a computer keyboard (input device), if you type "H", it sends (inputs) a signal to the computer.

Input Example



Output Example



Computer Assembling

Computer assembly is a process in which all the internal components required for the computer system are fitted so as to make the computer functional.

What are the steps of assembling computer?

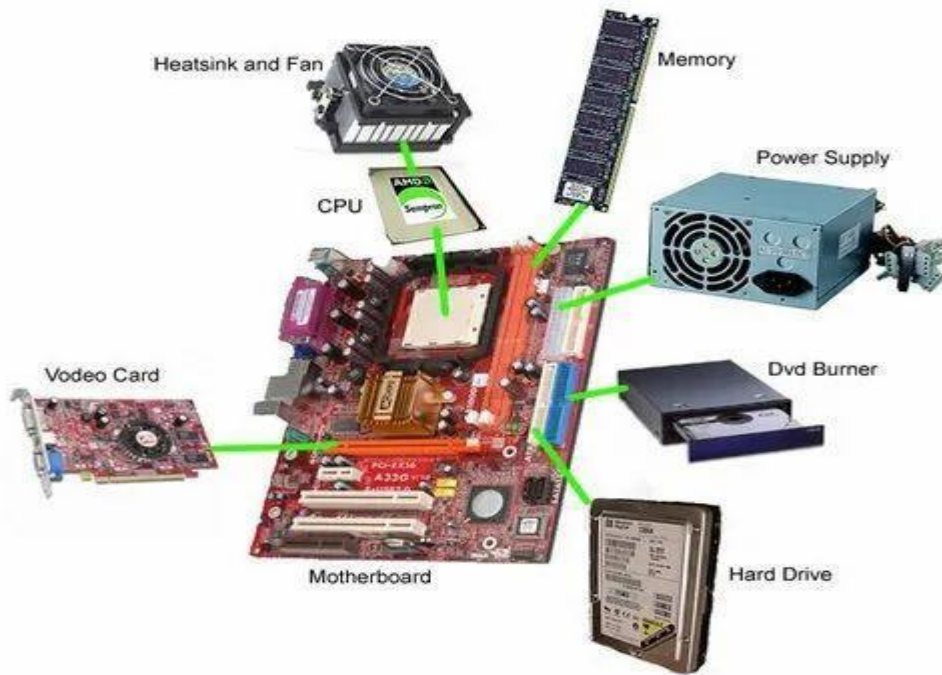
1. Step 1: Create a Space to Work. ...
2. Step 2: Installing Motherboard/ Central Processing Unit (CPU) ...
3. Step 3: Applying Thermal Paste/ Installing the cooling system.
4. Step 4: Installing the Solid-State Drive (SSD) ...
5. Step 5: Installing the Random-Access Memory (RAM) ...
6. Step 6: Installing input Output shield (I/O shield)

What are the steps procedures in PC assembly and disassembly?

1. Step 1: Open The Case. ...
2. Step 2: Install The Power Supply. ...
3. Step 3: Attach The Components To Motherboard. ...
4. Step 4: Install motherboard.
5. Step 5: Install internal drives.
6. Step 6: Connect all internal cables.
7. Step 7: Install motherboard power connections.
8. Step 8: Connect external cables to the computer.

Computer Assembly Steps

1. Step 1: Open Case. Remove the back screws. ...
2. Step 2: Mount Motherboard. Screw motherboard standoffs into the case. ...
3. Step 3: Mount Processor (CPU) ...
4. Step 4: Install CPU Cooler. ...
5. Step 5: Install Power Supply (PSU) ...
6. Step 6: Mount Memory (RAM) ...
7. Step 7: Install Graphics Card. ...
8. Step 8: Mount Storage Drives.



Installation

Installation of operating system like window 7, window 8, etc.

How to install operating system like Windows 7?

Windows 7 Installation Procedure

1. Boot your PC using Windows 7 DVD/USB drive and press any key if you see Press any key to continue message.
2. Next select your language, keyboard type (Generally the US) and time format.
3. Click the Install button.



How to install Windows 7 from Windows 8?

1. Before You Begin.
2. Create Windows 8 Pro Recovery Media.
3. Download Critical Drivers and Copy to a USB Key.
4. Change System Setup Settings for Windows 7 Installation.
5. Install Windows 7 Professional.
6. Update Critical Drivers from USB Drive.
7. Update All Drivers from Dell Support Website.

Installation of Several Application Software like MS-Office

How to install an application software like Microsoft Office suite?

Watch: Install Office apps

1. Go to office.com. You might need to sign in with your work account.
2. Select Install Office > Microsoft 365 apps > Run , and then select Yes.
3. The Office apps are installed. ...
4. To install Microsoft Teams, go to the office.com page, and choose Teams.
5. Get the Windows app, and then select Run.

What are the application software that are in MS Office?

In this article

- Microsoft Word.
- Microsoft Excel.
- Microsoft PowerPoint.
- Microsoft OneNote.
- Microsoft Outlook.
- Microsoft Publisher.
- Microsoft Access.
- Skype for Business.

What are the 4 types of installation?

There are four approaches of installation; direct, parallel, single-location and phased installation.



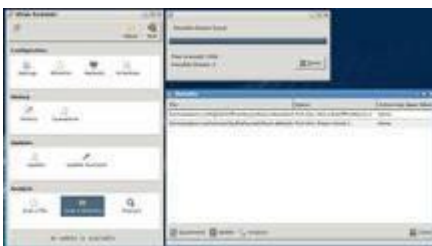
Introduction of viruses, detection of virus, Prevention and antivirus utilities

What is the introduction of computer antivirus?



An antivirus product is a program designed to detect and remove viruses and other kinds of malicious software from your computer or laptop. Malicious software - known as malware - is code that can harm your computers and laptops, and the data on them.

What is antivirus Wikipedia introduction?



Antivirus software was originally developed to detect and remove computer viruses, hence the name. However, with the proliferation of other malware, antivirus software started to protect against other computer threats. Some products also include protection from malicious URLs, spam, and phishing.

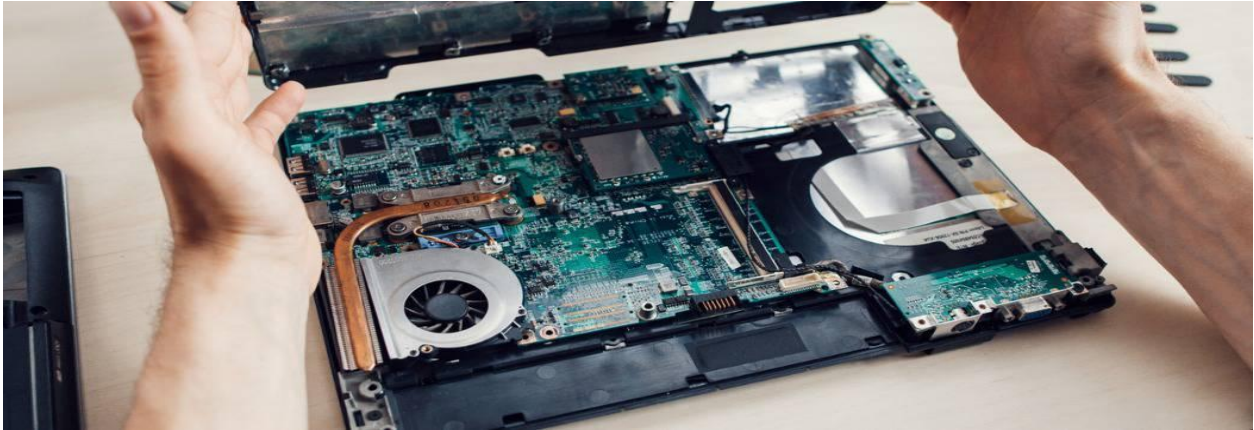
Modern antivirus solutions are capable of:

- Detecting, blocking, and removing viruses, malware, and ransomware.
- Preventing identity theft and block phishing and fraud.
- Warning about dangerous websites and links before you click.
- Scanning the Dark Web to find if an email address has been compromised.

Installation of various Device and Drivers

Following steps are for your reference how to install the driver in this way.

- Go to Device Manager.
- Find the device that need to install a driver. ...
- Right-click on the device and select Update Driver Software...
- Select Browse my computer for driver software.
- Select Let me pick from a list of device drivers on my computer.



Updating and upgrading system.

What is the difference between updating and upgrading?

A software update is typically a release containing enhancements to the current version. An upgrade is a whole new version of software that represents a significant change or major improvement.

What is system upgrading?

A system upgrade involves either adding new components to an existing piece of IT equipment (a hardware upgrade) or installing more recent software (a software upgrade) System upgrades can be an effective way to extend the life of some computer

How do I update software?

Get the latest Android updates available for you

1. Open your phone's Settings app.
2. Near the bottom, tap System. System update.
3. You'll see your update status. Follow any steps on the screen.



Troubleshooting

Maintenance of Computer

Keep all programs and Internet Browsers up-to-date. Uninstall programs and applications you no longer use. Shutdown your computer over the weekends or when they are unattended for extended periods. Perform a regular backup of any files you do not want to lose.

What is the computer maintenance?



Computer maintenance means keeping your computers and laptops in good condition through regular cleanings, hard drive updates, and virus prevention. Doing so can lengthen the lifespan of your devices and it can also help you browse the web more safely.

What are the 4 types of software maintenance?

- Corrective Software Maintenance. Corrective software maintenance is the typical, classic form of maintenance (for software and anything else for that matter). ...
- Preventative Software Maintenance. ...
- Perfective Software Maintenance. ...
- Adaptive Software Maintenance.



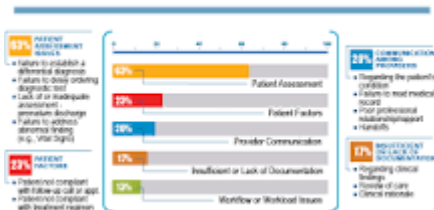
Problem Finding in system and diagnosing it

What is identifying and diagnosing the problem?

Diagnosing the problem requires identifying hypotheses and testing them. A useful approach to building a why map might be to think in terms of processes. Another useful approach might to use existing frameworks and maps when possible.

What is diagnosing process?

Failures in the Diagnostic Process



The steps of the diagnostic process fall into three broad categories: Initial Diagnostic Assessment – Patient history, physical exam, evaluation of the patient's chief complaint and symptoms, forming a differential diagnosis, and ordering of diagnostic tests.

Precaution for smooth working of computer

What precautions should you take when working with a computer?

Make sure the space underneath your desk is free from clutter and your legs have room to move. Use your mouse as close to the keyboard as possible. Adopt good posture while at the computer. Know how to adjust your chair to the most comfortable position.

What are the 4 types of software maintenance?

- Corrective Software Maintenance. Corrective software maintenance is the typical, classic form of maintenance (for software and anything else for that matter). ...
- Preventative Software Maintenance. ...
- Perfective Software Maintenance. ...
- Adaptive Software Maintenance.

How to clean your computer, Step 1: Hardware

- Wipe down your computer. ...
- Clean Your keyboard. ...
- Blow dust buildup out of computer vents, fans and accessories. ...
- Run check disk tool. ...
- Check surge protector. ...
- Keep PC ventilated. ...
- Back up your hard drives. ...
- Get antivirus software to protect from malware.



10 Essential Computer Maintenance Tips

- Protect with padding. ...
- Organize cords. ...
- Update your operating system. ...
- Unplug to avoid overcharging. ...

- Purge your system of junk files and programs. ...
- Run regular antivirus scans. ...
- Clean the keyboard and case. ...
- Update your passwords.

Web Designing & Office Automation (AOCWDOA)

Objective

The objective of course is to learn the basic application of computer.

Benefit

Students aware of internet, basic software for office use.

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus of Web Designing & Office Automation

- Introduction to Internet
 - Definition and evolution to internet
 - Hardware and software requirement of internet
 - Major features of internet
 - Accessing the internet
 - Search Engine
 - Major Application area of internet

- Internet Protocol
 - Concept of TCP/IP internet Addressing
 - How to get into Internet, Modem, Browser and Internet service provisions

- Internet Services
 - File transfer protocols
 - Opening a connection with a FTP server
 - Transfer file to My Computer
 - Remote Login
 - Bulletin Board and News Groups

- Domain software, the client side and the server side
- Creating and locating information on the web search engines, URL's

- Introduction to Windows
 - Fundamentals features of windows
 - Types of windows and elements of windows
 - Customizing windows
 - Working with files and folders, icons, recycle bin control panel, windows explore

- MS-Word
 - Introduction to MS-Word
 - Standard Toolbar Word Warp, Text formatting, Formatting paragraphs
 - Applying efforts to text
 - Applying animation to text

- MS-Excel
 - Introduction to MS-Excel
 - Working with toolbars
 - Formatting Formulas
 - Data management
 - Graphics and chart

- MS-PowerPoint
 - Introduction to MS-PowerPoint
 - Power point Slide
 - Creating a slide- show, adding graphics, formatting, customizing and printing slides

- MS-Access
 - Introduction to MS-Access
 - Understanding data base
 - Creating data base and table through wizard

Project

Student makes a project during training period

Certification

Certificate in Computer Web Designing & Office Automation.

Study Material of Web Designing and Office Automation **(AOCWDOA)**

What is a Computer?

A Computer is a group of electronic devices used to process data. In the 1950s, computers were massive, special-purpose machines that only huge institutions such as governments and universities could afford. Primarily, these early computers performed complex numerical tasks, such as calculating the precise orbit of Mars or planning the trajectories of missiles or processing statistics for the Bureau of the census. Although computers were certainly useful for tasks like these, it soon became apparent that they could also be helpful in an ordinary business environment.

In the 1960s, modern computers began to revolutionize the business world. IBM introduced its System/360 mainframe computer in April 1964 and ultimately sold over 33,000 of these machines. As a result of the commercial success of its System/360, IBM became the standard against which other computer manufacturers and their systems would be measured for years to come.

In the 1970s, Digital Equipment Corporation (DEC) took two more giant steps toward bringing computers into mainstream use with the introduction of its PDP-11 and VAX computers. These models came in many sizes to meet different needs and budgets. Since then, computers continue to shrink in size while providing more power for less money. Today, the most common type of computer you will see is called a personal or PC, because it is designed to be used by just one person at a time. Despite its small size the modern personal computer is more powerful than any of the room-sized machines of the 1960s.

Fundamentals of Computers

A system can be defined as a set of components that work together to accomplish one or more common goals. A Computer is nothing but a system accepting input from a

user, process the same, and giving the output in the required format. In other words a computer is a machine , which can be programmed to compute. The characteristics of a computer are:

- Response to a specific set of commands called as Instructions.
- Execution of a prerecorded list of instructions called Program

Classification of Computers

There are two basic categories of computers: Special purpose and General Purpose. Special purpose computers are designed to perform a specific task such as keeping time in a digital watch or programming a video cassette recorder. In the case of General purpose computers they are adapted to perform any number of functions or tasks. Computers based on their size, cost and performance can be further classified into four types

1. Super Computers
2. Main Frames
3. Mini Computers
4. Micro Computers

Super Computers

Supercomputers are the most powerful computers made. They are built to process huge amounts of data. For example, scientists build models of complex processes and simulate the processes on a supercomputer. One such process is nuclear fission. As a fissionable material approaches a critical mass, the researchers want to know exactly what will happen during every nanosecond of a nuclear chain reaction. A supercomputer can model the actions and reactions of literally millions of atoms as they interact.

Because computer technology changes so quickly the advanced capabilities of a supercomputer today may become the standard features of a PC a few years from now, and next year's supercomputer will be vastly more powerful than today's.

Main Frames

The largest type of computer in common use is the mainframe. Mainframe computers are used where many people in a large organization need frequent access to the same information, which is usually organized into one or more huge databases. For example, consider the Texas Department of Public Safety,

where people get their drivers' licenses. This state agency maintains offices in every major city in Texas, each of which has many employees who work at computer terminals. A terminal is a keyboard and screen wired to the mainframe. It does not have its own CPU or storage; it is just an input/output (I/O) device that functions as a window into a computer located somewhere else. The terminals at the Public Safety offices are all connected to a common database on a mainframe in the state capital. A mainframe computer controls the database that handles the input and output needs of all the terminals connected to it. Each user has continuous access to the driving records and administrative information for every licensed driver and vehicle in the state- literally, millions of records. On smaller systems, handling this volume of user access to a central database would be difficult and more time consuming.

No one really knows where the term mainframe originated. Early IBM documents explicitly define the term frame as an integral part of a computer: "the housing,... hardware support structures,... and all the parts and components therein." It may be that when computers of all sizes and shapes began to appear in computer environments, the big computer was referred to as the main frame, as in the main computer, and that eventually the term was shortened to one word, mainframe.

MS Office

Microsoft Office is a software which was developed by Microsoft in 1988. This Office suite comprises various applications which form the core of computer usage in today's world.

From the examination point of view, questions from MS Office and its applications are frequently asked in all the major Government Exams conducted in the country.

In this article, we shall discuss at length Microsoft Office, its applications, important notes to prepare for the upcoming examinations and some sample questions and answers for the reference of candidates.

Competitive exams including Bank, SSC, Railways, Insurance, etc. have Computer Knowledge as an integral part of their exam syllabus and candidates must note that it can be the most scoring too.

No lengthy calculations or solutions are required to answer Computer knowledge-based questions and instead of complex questions, straightforward and direct questions are asked which makes answering them even easier.

Thus, candidates must focus on this section to improve their overall performance and improve their mark sheet. Given below are a few important links which may help candidates with their preparation for competitive exams:

High Level Computer Languages	Cloud Computing for IBPS PO & SBI PO Exam
Difference between Hardware and Software	10 Important Computer Awareness Terms
Computer Abbreviations & Acronyms	Microsoft Windows

MS Office Applications & its Functions

Currently, MS Office 2016 version is being used across the world and all its applications are widely used for personal and professional purposes.

Discussed below are the applications of Microsoft Office along with each of their functions.

1. MS Word

- First released on October 25, 1983
- Extension for Doc files is “.doc”
- It is useful in creating text documents
- Templates can be created for Professional use with the help of MS Word
- Work Art, colours, images, animations can be added along with the text in the same file which is downloadable in the form of a document
- Authors can use for writing/ editing their work

To read in detail about Microsoft Word, its features, uses and to get some sample questions based on this program of Office suite, visit the linked article.

2. MS Excel

- Majorly used for making spreadsheets
- A spreadsheet consists of grids in the form of rows and columns which is easy to manage and can be used as a replacement for paper
- It is a data processing application
- Large data can easily be managed and saved in tabular format using MS Excel

- Calculations can be done based on the large amount of data entered into the cells of a spreadsheet within seconds
- File extension, when saved in the computer, is “.xls”

Also, visit the Microsoft Excel page to get more information regarding this spreadsheet software and its components.

3. MS PowerPoint

- It was released on April 20, 1987
- Used to create audiovisual presentations
- Each presentation is made up of various slides displaying data/ information
- Each slide may contain audio, video, graphics, text, bullet numbering, tables etc.
- The extension for PowerPoint presentations is “.ppt”
- Used majorly for professional usage
- Using PowerPoint, presentations can be made more interactive

In terms of Graphical user interface, using MS PowerPoint, interesting and appealing presentation and documents can be created. To read more about its features and usage, candidates can visit the linked article.

4. MS Access

- It was released on November 13, 1992
- It is Database Management Software (DBMS)
- Table, queries, forms and reports can be created on MS Access
- Import and export of data into other formats can be done
- The file extension is “.accdb”

5. MS Outlook

- It was released on January 16, 1997
- It is a personal information management system
- It can be used both as a single-user application or multi-user software
- Its functions also include task managing, calendaring, contact managing, journal logging and web browsing
- It is the email client of the Office Suite
- The file extension for an Outlook file is “.pst”

6. MS OneNote

- It was released on November 19, 2003
- It is a note-taking application
- When introduced, it was a part of the Office suite only. Later, the developers made it free, standalone and easily available at play store for android devices
- The notes may include images, text, tables, etc.
- The extension for OneNote files is “.one”
- It can be used both online and offline and is a multi-user application

Apart from the applications mentioned above, various other applications are included in the MS Office suite but these are most commonly used ones and questions based on the same may be asked in the upcoming exams as well.

What is HTML?

- HTML stands for Hyper Text Markup Language
 - HTML is the standard markup language for creating Web pages
 - HTML describes the structure of a Web page
 - HTML consists of a series of elements
 - HTML elements tell the browser how to display the content
 - HTML elements label pieces of content such as "this is a heading", "this is a paragraph", "this is a link", etc.
-

A Simple HTML Document

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>

<h1>My First Heading</h1>
<p>My first paragraph.</p>

</body>
</html>
```

Example Explained

- The `<!DOCTYPE html>` declaration defines that this document is an HTML5 document
- The `<html>` element is the root element of an HTML page
- The `<head>` element contains meta information about the HTML page
- The `<title>` element specifies a title for the HTML page (which is shown in the browser's title bar or in the page's tab)
- The `<body>` element defines the document's body, and is a container for all the visible contents, such as headings, paragraphs, images, hyperlinks, tables, lists, etc.
- The `<h1>` element defines a large heading
- The `<p>` element defines a paragraph

HTML Documents

All HTML documents must start with a document type declaration: `<!DOCTYPE html>`.

The HTML document itself begins with `<html>` and ends with `</html>`.

The visible part of the HTML document is between `<body>` and `</body>`.

Example

```
<!DOCTYPE html>
<html>
<body>

<h1>My First Heading</h1>
<p>My first paragraph.</p>

</body>
</html>
```

HTML Attributes

- All HTML elements can have **attributes**
- Attributes provide **additional information** about elements
- Attributes are always specified in **the start tag**
- Attributes usually come in name/value pairs like: **name="value"**

The href Attribute

The `<a>` tag defines a hyperlink. The `href` attribute specifies the URL of the page the link goes to:

Example

```
<a href="https://www.w3schools.com">Visit W3Schools</a>
```

HTML Headings

HTML headings are defined with the `<h1>` to `<h6>` tags.

`<h1>` defines the most important heading. `<h6>` defines the least important heading.

Example

```
<h1>Heading 1</h1>
<h2>Heading 2</h2>
<h3>Heading 3</h3>
<h4>Heading 4</h4>
<h5>Heading 5</h5>
<h6>Heading 6</h6>
```

HTML Paragraphs

The HTML `<p>` element defines a paragraph.

A paragraph always starts on a new line, and browsers automatically add some white space (a margin) before and after a paragraph.

Example

```
<p>This is a paragraph.</p>  
<p>This is another paragraph.</p>
```

The HTML Style Attribute

Setting the style of an HTML element, can be done with the `style` attribute.

The HTML `style` attribute has the following syntax:

```
<tagname style="property:value;">
```

Background Color

The CSS `background-color` property defines the background color for an HTML element.

Example

Set the background color for a page to powderblue:

```
<body style="background-color:powderblue;">  
  
<h1>This is a heading</h1>  
<p>This is a paragraph.</p>  
  
</body>
```

What is CSS?

Cascading Style Sheets (CSS) is used to format the layout of a webpage.

With CSS, you can control the color, font, the size of text, the spacing between elements, how elements are positioned and laid out, what background images or background colors are to be used, different displays for different devices and screen sizes, and much more!

Tip: The word **cascading** means that a style applied to a parent element will also apply to all children elements within the parent. So, if you set the color of the body text to "blue", all headings, paragraphs, and other text elements within the body will also get the same color (unless you specify something else)!

Using CSS

CSS can be added to HTML documents in 3 ways:

- **Inline** - by using the `style` attribute inside HTML elements
- **Internal** - by using a `<style>` element in the `<head>` section
- **External** - by using a `<link>` element to link to an external CSS file

The most common way to add CSS, is to keep the styles in external CSS files. However, in this tutorial we will use inline and internal styles, because this is easier to demonstrate, and easier for you to try it yourself.

HTML Images Syntax

The HTML `` tag is used to embed an image in a web page.

Images are not technically inserted into a web page; images are linked to web pages. The `` tag creates a holding space for the referenced image.

The `` tag is empty, it contains attributes only, and does not have a closing tag.

The `` tag has two required attributes:

- `src` - Specifies the path to the image
- `alt` - Specifies an alternate text for the image

Syntax

```

```

HTML Page Title

Every web page should have a page title to describe the meaning of the page.

The `<title>` element adds a title to your page:

Example

```
<!DOCTYPE html>
<html>
<head>
  <title>HTML Tutorial</title>
</head>
<body>
```

The content of the document.....

```
</body>
</html>
```

Define an HTML Table

A table in HTML consists of table cells inside rows and columns.

Example

A simple HTML table:

```
<table>
  <tr>
    <th>Company</th>
    <th>Contact</th>
    <th>Country</th>
  </tr>
  <tr>
    <td>Alfreds Futterkiste</td>
    <td>Maria Anders</td>
    <td>Germany</td>
  </tr>
  <tr>
    <td>Centro comercial Moctezuma</td>
    <td>Francisco Chang</td>
    <td>Mexico</td>
  </tr>
</table>
```


Certificate Course in Yogasana and Meditation

Code: CCYM

Duration: 40 Hours

Three Months – One Lecture per Day

Aims:

- To acquaint students with the practical knowledge of Yogasana.
- To provide appropriate information about benefits of Suryanamashkar .
- Learning skills leading to meditation.
- To acquire Practical knowledge of Kriya and bandha.

Objectives:

- To dissipate feeling of anxiety.
- To gain an inner sense of peace and tranquility.
- To Learn various relaxation methods of meditation enhancing mental peace.
- To promote healthy behaviour among the society that they will inculcate for life.

Module 1

I. Yogasana

1.1 Standing Asana: Tadasana, Trikonasana, Urdhahastotanasana, Vrikshasana, Ardhchakrasna, Padhastanasana, Ashwasthasana

1.2 Sitting Asana: Padmasana, Vakrasana, Ardhamatsyendrasana, Janusirsasana,

Paschimottanasana, Vajrasana, Ushtrasana, Shasankasana, Gomukhasana ,Mandukasana, Bhadrasana, Singhasana

1.3 Prone Lying Asana: Bhujangasana, Shalabhasana, Dhanurasana, Makarasana

1.4 Supine Lying Asana: Pawanmuktasana and its variation, setubandhasana,, sarvangasana, Ardhalasana, Uttanpadasana, Halasana, Naukasana , Cakrasana ,Markatasana,

Shavasana.

Module II

2. Yogic Sukshma Vyayama, Sthula Vyayama and Surya Namaskar

2.1 Yogic Sukshma Vyayama

2.2 Yogic Sthula Vyayama

2.3 Surya Namaskara

Module III

3. Practices leading to Meditation

- 3.1 Pranav and Soham Japa
- 3.2 Yoga Nidra
- 3.3 Chakra Meditation
- 3.4 Ajapa Dharana
- 3.5 Om Meditation

Course Outcomes: By the end of Course, the students will be able to:

- CO1: Prevent the effects of stress in educators and develop healthy strategies of dealing with the daily work demand.
- CO2: Foster participant's ability to relax.
- CO3: Learn the best practices to improve student's emotional balance, through practical and experiential activities which can be adapted to any classroom.
- CO4: Favour student's search for self-awareness and identity and thus to promote changes in brain areas associated with attention and decision-making.

Assessment with Pen and Paper:

Possible assessment methods include: quizzes, tests, collected assignments, group activities and demonstration of skills and performance. Such assessments and related assignments will develop critical thinking techniques and reading, along with developing classical music skills.

Grading System will be adopted for Certification.

Marks	Grades	Grade Point
>90 and <=100	A1	10
>80 and <=90	A2	9
>70 and <=80	B1	8
>60 and <=70	B2	7
>50 and <=60	C1	6
>40 and <=50	C2	5

Accounting & Tax Procedure (AOCATP)

Objective

The objective of course is to learn the aspect of accounting.

Benefit

Students can learn fundamental of accounting and taxation.

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus of Accounting & Tax Procedure

- Fundamental of accounting
 - Meaning and scope of accounting
 - Basic of Accounting terms
 - Accounting Principles
 - Double entry system
 - Accounting rules
 - Accountancy and Technology

- Various Financial Reports
 - Working with journal
 - Ledger
 - Trial balance
 - Profit and loss account
 - Balance sheet and Different financial statement

- Inventory
 - Statement of Inventory
 - Outstanding Inventory
 - Comparing of Inward and outward of inventory
 - Inventory report

- Report and Analyzing Equity
 - What is Equity
 - Types of stock
 - Dividends and retained earning

- Application of Income tax
 - Income Tax-Definitions
 - Basis of charge
 - Incidence of tax
 - Exempted incomes
 - Computation of income from salaries
 - Income from House property
 - Income from business and profession including depreciation
 - Capital gains and income from other sources

- Deduction and Computation
 - Deemed incomes and clubbing of incomes
 - Set off and carry forward of losses
 - Deductions out of Gross Total income
 - Computation of total of individuals
 - Partnership firms and association of persons

- Filling of Prescribe Forms
 - Income tax Returns
 - Income tax Challan
 - TDS Certificates and returns
 - TDS/TCS, Pan and TAN Application

- Refund and Appeal
 - Recovery and Refund of tax
 - Appeals and Revision
 - E-Filing of Income Tax Returns

Project

Student makes a project during training period

Certification

Certificate in Accounting & Tax Procedure

Study Material of Accounting and Tax Procedure **(AOCATP)**

Introduction of Accounting and Tax Procedure

Business is an economic activity undertaken with the motive of earning profits and to maximize the wealth for the owners. Business cannot run in isolation. Largely, the business activity is carried out by people coming together with a purpose to serve a common cause. This team is often referred to as an organization, which could be in different forms such as sole proprietorship, partnership, body corporate etc. The rules of business are based on general principles of trade, social values, and statutory framework encompassing national or international boundaries. While these variables could be different for different businesses, different countries etc., the basic purpose is to add value to a product or service to satisfy customer demand.

The business activities require resources (which are limited & have multiple uses) primarily in terms of material, labour, machineries, factories and other services. The success of business depends on how efficiently and effectively these resources are managed. Therefore, there is a need to ensure that the businessman tracks the use of these resources. The resources are not free and thus one must be careful to keep an eye on cost of acquiring them as well.

As the basic purpose of business is to make profit, one must keep an ongoing track of the activities

undertaken in course of business. Two basic questions would have to be answered:

- (a) What is the result of business operations? This will be answered by finding out whether it has made profit or loss.
- (b) What is the position of the resources acquired and used for business purpose? How are these resources financed? Where the funds come from?

The answers to these questions are to be found continuously and the best way to find them is to record all the business activities. Recording of business activities has to be done in a scientific manner so that they reveal correct outcome. The science of book-keeping and accounting provides an effective solution. It is a branch of social science. This study material aims at giving a platform to the students to understand

Accounting Process

basic principles and concepts, which can be applied to accurately measure performance of business. After studying the various chapters included herein, the student should be able to apply the principles, rules, conventions and practices to different business situations like trading, manufacturing or service.

Over years, the art and science of accounting has evolved together with progress of trade and commerce at national and global levels. Professional accounting bodies have been doing intensive research to come up with accounting rules that will be applicable. Modern business is certainly more complex and continuous updating of these rules is required. Every stakeholder of the business is interested in a particular facet of information about the business. The art and science of accounting helps to put together these requirements of information as per universally accepted principles and also to interpret the results. It is interesting to note that each one of us has an accountant hidden in us. We do see our parents keep track of monthly expenses. We make a distinction between payment done for monthly grocery and that for buying a house or a car. We understand that while grocery is a monthly expense and buying a house is like creating a resource that has indefinite future use. The most common accounting record that each one of us knows is our bank passbook or a bank statement, which the bank maintains for us. It tracks each rupee that we deposit or withdraw from our account. When we go to supermarket to buy something, the cashier at the counter will record things we buy and give us a 'bill' or 'cash memo'. These are source documents prepared for the transaction between the supermarket and us. While these are simple examples, there could be more complex business activities. A good working knowledge of keeping records is therefore necessary. Professional accounting bodies all over the world have been functioning with the objective of providing this body of knowledge. These institutions are engaged in imparting training in the field of accounting. Let us start with some basic definitions, concepts, conventions and practices used in development of this art as well as science.

1.2

In order to understand the subject matter with clarity, let us study some of the definitions which depict the scope, content and purpose of Accounting. The field of accounting is generally sub-divided into:

- (a) Book-keeping
- (b) Financial Accounting
- (c) Cost Accounting and
- (d) Management Accounting

Let us understand each of these concepts.

(a) Book-keeping

The most common definition of book-keeping as given by J. R. Batliboi is "Book-keeping is an art of

recording business transactions in a set of books."

As can be seen, it is basically a record keeping function. One must understand that not all dealings are, however, recorded. Only transactions expressed in terms of money will find place in books of accounts. These are the transactions which will ultimately result in transfer of economic value from one person to the other. Book-keeping is a continuous activity, the records being maintained as transactions are entered into. This being a routine and repetitive work, in today's world, it is taken over by the computer systems. Many accounting packages are available to suit different business organizations.

It is also referred to as a set of primary records. These records form the basis for accounting. It is an art because, the record is to be kept in such a manner that it will facilitate further processing and reporting of financial information which will be useful to all stakeholders of the business.

(b) Financial Accounting

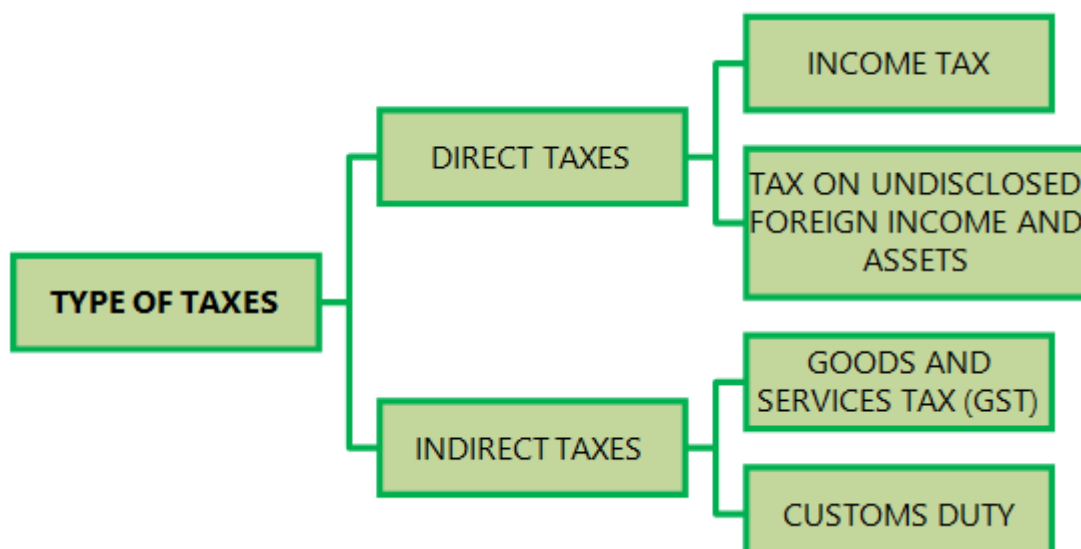
It is commonly termed as Accounting. The American Institute of Certified Public Accountants defines Accounting as “an art of recoding, classifying and summarizing in a significant manner and in terms

1.1 What is the meaning of tax?

Let us begin by understanding the meaning of tax. Taxes are considered to be the “cost of living in a society”. Taxes are levied by the Governments to meet the common welfare expenditure of the society. There are two types of taxes - direct taxes and indirect taxes.

Direct Taxes: If tax is levied directly on the income or wealth of a person, then, it is a direct tax. The person who pays the tax to the Government cannot recover it from somebody else i.e. the burden of a direct tax cannot be shifted. e.g. Income- tax.

Indirect Taxes: If tax is levied on the price of a good or service, then, it is an indirect tax e.g. Goods and Services Tax (GST) or Custom Duty. In the case of indirect taxes, the person paying the tax passes on the incidence to another person.



1.1 Why are taxes levied?

The reason for levy of taxes is that they constitute the basic source of revenue to the Government. Revenue so raised is utilized for meeting the expenses of Government like defence, provision of education, health-care, infrastructure facilities like roads, dams etc.

1.2 Power to levy taxes

The Constitution of India, in Article 265 lays down that “*No tax shall be levied or collected except by authority of law.*” Accordingly for levy of any tax, a law needs to be framed by the government.

Constitution of India gives the power to levy and collect taxes, whether direct or indirect, to the Central and State Government. The Parliament and State Legislatures are empowered to make laws on the matters enumerated in the Seventh Schedule by virtue of Article 246 of the Constitution of India.

Seventh Schedule to Article 246 contains three lists which enumerate the matters under which the Parliament and the State Legislatures have the authority to make laws for the purpose of levy of taxes.

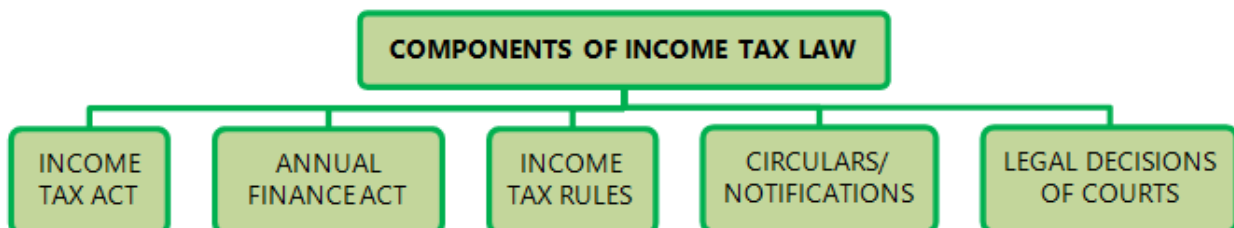
The following are the lists:

- (i) **Union List:** Parliament has the exclusive power to make laws on the matters contained in Union List.
- (ii) **State List:** The Legislatures of any State has the exclusive power to make laws on the matters contained in the State List.
- (iii) **Concurrent List:** Both Parliament and State Legislatures have the power to make laws on the matters contained in the Concurrent list.

Income-tax is the most significant direct tax. Entry 82 of the Union List i.e., List I in the Seventh Schedule to Article 246 of the Constitution of India has given the power to the Parliament to make laws on taxes on income other than agricultural income.

1.3 Overview of Income-tax law in India

In this material, we would be introducing the students to the Income-tax law in India. The income-tax law in India consists of the following components –



Income-tax Act, 1961

The levy of income-tax in India is governed by the Income-tax Act, 1961. In this book, we shall briefly refer to this as the Act.

- It extends to the whole of India.
- It came into force on 1st April, 1962.
- It contains sections 1 to 298 and schedules I to XIV.
- ❖ A section may have **sub-sections or clauses and sub-clauses**.
 - When each part of the section is independent of each other and one is not related with other, such parts are called a “Clause”. “Sub section”, on the other hand refers to such parts of a section where each part is related with other and all sub sections taken together completes the concept propounded in that section.
 - **Example 1**
 - The clauses of section 2 define the meaning of terms used in the Income-tax Act, 1961. Clause (1A) defines “agricultural income”, clause (1B) defines “amalgamation” and so on. Each one of them is independent of other clause of the same section.
 - Likewise, the clauses of section 10 contain the exemptions in respect of certain income, like clause (1) provides for exemption of agricultural income and clause (2) provides for exemption of share income of a member of a Hindu Undivided Family and so on.
 - Section 5 defining the scope of total income has two sub- sections (1) and (2). Sub-section (1) defines the scope of total income of a resident and sub-section (2) defines the scope of total income of a non-resident. Each sub section is related with the other in the sense that only when one reads them all, one gets the complete idea related with scope of total income.
- ❖ A section may also have **Provisos and Explanations**.
 - The Proviso(s) to a section/sub-section/clause spells out the exception(s)/condition(s) to the provision contained in the respective section/sub-section/clause, i.e., the proviso spells out the cases where the provision contained in the respective section/sub-section/clause would not apply or where the provision would apply with certain modification.
 - The *Explanation* to a section/sub-section/clause gives a clarification relating to the provision contained in the respective section/sub-section/clause.
 - **Example 2**
 - Sections 80GGB and 80GGC provides for deduction from gross total income in respect of contributions made by companies and other persons, respectively, to political parties or an electoral trust.
 - The proviso to sections 80GGB and 80GGC provide that no deduction shall be allowed under those sections in respect of any sum contributed by cash to political parties or an electoral trust. Thus, the provisos to these sections spell out the circumstance when deduction would not be available thereunder in respect of contributions made.
 - The *Explanation* below section 80GGC provides that for the purposes of sections 80GGB and 80GGC, “political party” means a political party registered under section 29A of the Representation of the People Act, 1951. Thus, the *Explanation* clarifies that the political party has to be a registered political party.

- The Income-tax Act, 1961 undergoes change every year with additions and substitutions brought in by the Annual Finance Act passed by Parliament. Sometimes, the Income-tax Act, 1961 is also amended through other legislations like Taxation Laws (Amendment) Act.

The Finance Act

Every year, the Finance Minister of the Government of India introduces the Finance Bill in the Parliament's Budget Session. When the Finance Bill is passed by both the houses of the Parliament and gets the assent of the President, it becomes the Finance Act. Amendments are made every year to the Income-tax Act, 1961 and other tax laws by the Finance Act.

The First Schedule to the Finance Act contains four parts which specify the rates of tax -

- **Part I** of the First Schedule to the Finance Act specifies the rates of tax applicable for the current Assessment Year. Accordingly, Part I of the First Schedule to the Finance Act, 2022 specifies the rates of tax for A.Y. 2022-23.
- **Part II** specifies the rates at which tax is deductible at source for the current Financial Year. Accordingly, Part II of the First Schedule to the Finance Act, 2022 specifies the rates at which tax is deductible at source for F.Y. 2022-23
- **Part III** gives the rates for calculating income-tax for deducting tax from income chargeable under the head "Salaries" and computation of advance tax for F.Y. 2022-23.
- **Part IV** gives the rules for computing net agricultural income.

Income-tax Rules, 1962

The administration of direct taxes is looked after by the Central Board of Direct Taxes (CBDT).

- The CBDT is empowered to make rules for carrying out the purposes of the Act.
- For the proper administration of the Income-tax Act, 1961, the CBDT frames rules from time to time. These rules are collectively called **Income-tax Rules, 1962**.
- Rules also have sub-rules, provisos and *Explanations*. The proviso to a Rule/Sub-rule spells out the exception to the limits, conditions, guidelines, basis of valuation, as the case may be, spelt out in the Rule/Sub-rule. The *Explanation* gives clarification for the purposes of the Rule.
- It is important to keep in mind that along with the Income-tax Act, 1961, these rules should also be studied.

Circulars and Notifications

Circulars

- Circulars are issued by the CBDT from time to time to deal with certain specific problems and to clarify doubts regarding the scope and meaning of certain provisions of the Act.
 - Circulars are issued for the guidance of the officers and/or assesseees.
 - The department is bound by the circulars. While such circulars are not

binding on the assesseees, they can take advantage of beneficial circulars.

Notifications

- Notifications are issued by the Central Government to give effect to the provisions of the Act. The CBDT is also empowered to make and amend rules for the purposes of the Act by issue of notifications which are binding on both department and assesseees.

Case Laws

- Case Laws refer to decision given by courts. The study of case laws is an important and unavoidable part of the study of Income-tax law. It is not possible for Parliament to conceive and provide for all possible issues that may arise in the implementation of any Act. Hence the judiciary will hear the disputes between the assesseees and the department and give decisions on various issues.
- The Supreme Court is the Apex Court of the Country and the law laid down by the Supreme Court is the law of the land. The decisions given by various High Courts will apply in the respective states in which such High Courts have jurisdiction.

Note – Case laws are dealt with at the Final level.

1.5. Levy of Income-tax

Income-tax is a tax levied on the total income of the previous year of every person [Section 4].

A person includes an individual, Hindu Undivided Family (HUF), Association of Persons (AOP), Body of Individuals (BOI), a firm, a company etc.

(1) Total Income and Tax Payable

Income-tax is levied on an assessee's total income. Such total income has to be computed as per the provisions contained in the Income-tax Act, 1961.

Let us go step by step to understand the procedure for computation of total income of an individual for the purpose of levy of income-tax –

Step 1 – Determination of residential status

The residential status of a person has to be determined to ascertain which income is to be included in computing the total income. The residential status as per the Income-tax Act, 1961 can be classified as under –

IMPORTANT DEFINITIONS

In order to understand the provisions of the Act, one must have a thorough knowledge of the meanings of certain key terms like 'person', 'assessee', 'income', etc. To understand the meanings of these terms we have to first check whether they are defined in the Act.

Terms defined in the Act: Section 2 gives definitions of the various terms and expressions used therein. If a particular definition is given in the Act itself, we have to be guided by that definition. For e.g. the term 'perquisite' has been defined under section 17(2) for the purpose of taxation of salaries.

Terms not defined under the Act: If a particular definition is not given in the Act, reference can be made to the General Clauses Act or dictionaries.

Students should note this point carefully because certain terms like "dividend", "transfer", etc. have been given a wider meaning in the Income-tax Act, 1961 than

they are commonly understood. Some of the important terms defined under section 2 are given below:

2.1 Assessee [Section 2(7)]

“Assessee” means a person by whom any tax or any other sum of money is payable under this Act. In addition, it includes –

Every person in respect of whom any proceeding under this Act has been taken for the assessment of

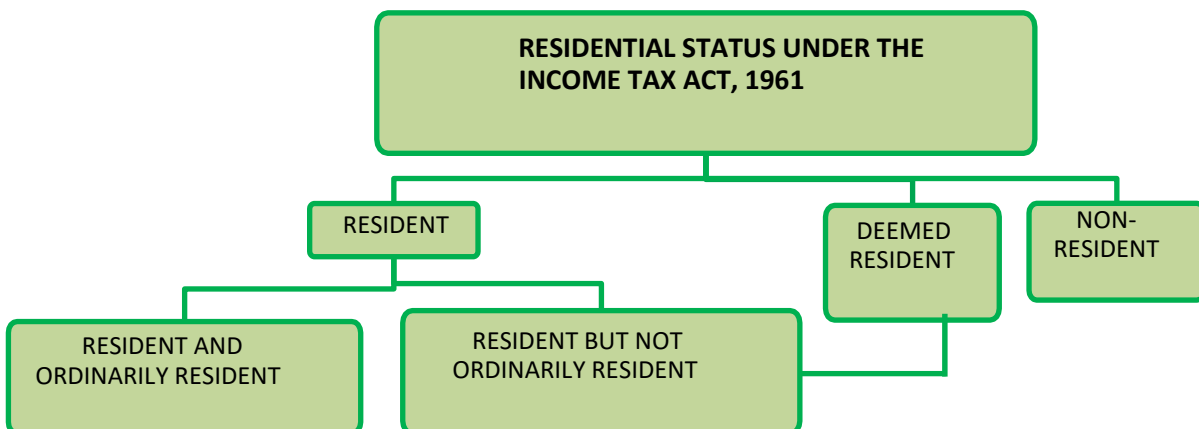
- his income; or
- the income of any other person in respect of which he is assessable; or
- the loss sustained by him or by such other person; or
- the amount of refund due to him or to such other person.
- Every person who is deemed to be an assessee under any provision of this Act;
- Every person who is deemed to be an assessee-in-default under any provision of this Act.

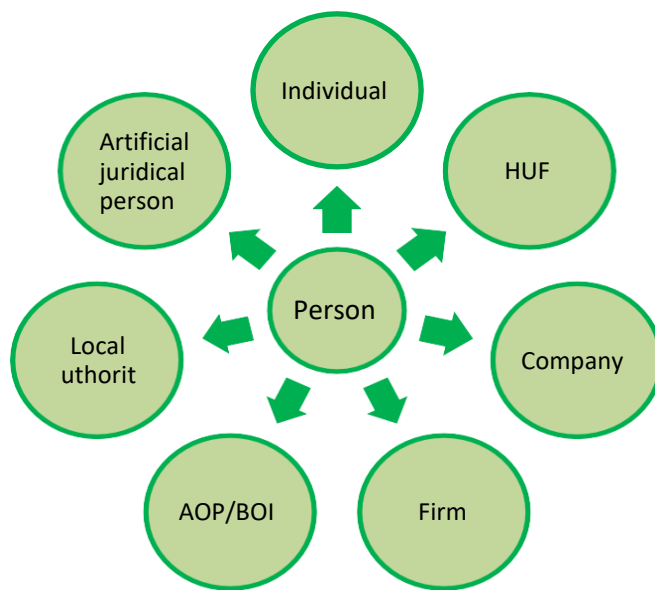
2.2 Assessment [Section 2(8)]

This is the procedure by which the income of an assessee is determined. It may be by way of a normal assessment or by way of reassessment of an income previously assessed. Assessment Procedure will be dealt with in detail at the Final level.

2.3 Person [Section 2(31)]

The definition of ‘assessee’ leads us to the definition of ‘person’ as the former is closely connected with the latter. The term ‘person’ is important from another point of view also viz., the charge of income-tax is on every ‘person’.





Python Programming (CCPP22)

Objective

The objective of course is to learn the fundamental of python programming.

Benefit

Core concepts of Python Programming.

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus of Python Programming

- Introduction of Python
 - Installing Python IDEs – Python IDLE and Anaconda
 - Writing Your First Python Program
 - Data-types in Python
 - Variables in Python – Declaration and Use
 - Typecasting in Python
 - Operators in Python – Assignment, Logical, Arithmetic etc.
 - Taking User Input (Console)
 - Conditional Statements – If else and Nested If else and elif
 - Python Collections (Arrays) – List, Tuple, Sets and Dictionary
 - Loops in Python – For Loop, While Loop & Nested Loops
 - String Manipulation – Basic Operations, Slicing & Functions and Methods
 - User Defined Functions – Defining, Calling, Types of Functions, Arguments

- **Object Oriented Programming in Python**
 - Basics of Object Oriented Programming
 - Creating Class and Object
 - Constructors in Python – Parameterized and Non-parameterized
 - Inheritance in Python
 - In built class methods and attributes
 - Multi-Level and Multiple Inheritance
 - Method Overriding and Data Abstraction
 - Encapsulation and Polymorphism

Project

Student makes a project during training period.

Certification

Certificate in Python Programming

Study Material of Python (CCPP22)

What is Python?

Python is a popular programming language. It was created by Guido van Rossum, and released in 1991.

It is used for:

- web development (server-side),
- software development,
- mathematics,
- system scripting.

What can Python do?

- Python can be used on a server to create web applications.
- Python can be used alongside software to create workflows.
- Python can connect to database systems. It can also read and modify files.
- Python can be used to handle big data and perform complex mathematics.
- Python can be used for rapid prototyping, or for production-ready software development.

Why Python?

- Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc).
- Python has a simple syntax similar to the English language.
- Python has syntax that allows developers to write programs with fewer lines than some other programming languages.
- Python runs on an interpreter system, meaning that code can be executed as soon as it is written. This means that prototyping can be very quick.
- Python can be treated in a procedural way, an object-oriented way or a functional way.

Good to know

- The most recent major version of Python is Python 3, which we shall be using in this tutorial. However, Python 2, although not being updated with anything other than security updates, is still quite popular.
- In this tutorial Python will be written in a text editor. It is possible to write Python in an Integrated Development Environment, such as Thonny, Pycharm, Netbeans or Eclipse which are particularly useful when managing larger collections of Python files.

Python Syntax compared to other programming languages

- Python was designed for readability, and has some similarities to the English language with influence from mathematics.
- Python uses new lines to complete a command, as opposed to other programming languages which often use semicolons or parentheses.

- Python relies on indentation, using whitespace, to define scope; such as the scope of loops, functions and classes. Other programming languages often use curly-brackets for this purpose.

Example

```
print("Hello, World!")
```

Execute Python Syntax

As we learned in the previous page, Python syntax can be executed by writing directly in the Command Line:

```
>>> print("Hello, World!")  
Hello, World!
```

Variables

Variables are containers for storing data values.

Creating Variables

Python has no command for declaring a variable.

A variable is created the moment you first assign a value to it.

Example

```
x = 5  
y = "John"  
print(x)  
print(y)
```

Variable Names

A variable can have a short name (like x and y) or a more descriptive name (age, carname, total_volume). Rules for Python variables:

- A variable name must start with a letter or the underscore character
- A variable name cannot start with a number
- A variable name can only contain alpha-numeric characters and underscores (A-z, 0-9, and _)
- Variable names are case-sensitive (age, Age and AGE are three different variables)
- A variable name cannot be any of the [Python keywords](#).

Example

```
Legal variable names:
```

```
myvar = "John"  
my_var = "John"  
_my_var = "John"  
myVar = "John"  
MYVAR = "John"  
myvar2 = "John"
```

Built-in Data Types

In programming, data type is an important concept.

Variables can store data of different types, and different types can do different things.

Python has the following data types built-in by default, in these categories:

Text Type:	<code>str</code>
Numeric Types:	<code>int</code> , <code>float</code> , <code>complex</code>
Sequence Types:	<code>list</code> , <code>tuple</code> , <code>range</code>
Mapping Type:	<code>dict</code>
Set Types:	<code>set</code> , <code>frozenset</code>
Boolean Type:	<code>bool</code>
Binary Types:	<code>bytes</code> , <code>bytearray</code> , <code>memoryview</code>
None Type:	<code>NoneType</code>

Getting the Data Type

You can get the data type of any object by using the `type()` function:

Example

Print the data type of the variable x:

```
x = 5  
print(type(x))
```


Python Numbers

There are three numeric types in Python:

- `int`
- `float`
- `complex`

Variables of numeric types are created when you assign a value to them:

Example

```
x = 1 # int
y = 2.8 # float
z = 1j # complex
```

Specify a Variable Type

There may be times when you want to specify a type on to a variable. This can be done with casting. Python is an object-orientated language, and as such it uses classes to define data types, including its primitive types.

Casting in python is therefore done using constructor functions:

- `int()` - constructs an integer number from an integer literal, a float literal (by removing all decimals), or a string literal (providing the string represents a whole number)
- `float()` - constructs a float number from an integer literal, a float literal or a string literal (providing the string represents a float or an integer)
- `str()` - constructs a string from a wide variety of data types, including strings, integer literals and float literals

Example

Integers:

```
x = int(1) # x will be 1
y = int(2.8) # y will be 2
z = int("3") # z will be 3
```

Example

Floats:

```
x = float(1) # x will be 1.0
y = float(2.8) # y will be 2.8
z = float("3") # z will be 3.0
w = float("4.2") # w will be 4.2
```

Strings

Strings in python are surrounded by either single quotation marks, or double quotation marks.

'hello' is the same as "hello".

You can display a string literal with the `print()` function:

Example

```
print("Hello")  
print('Hello')
```

Boolean Values

In programming you often need to know if an expression is `True` or `False`.

You can evaluate any expression in Python, and get one of two answers, `True` or `False`.

When you compare two values, the expression is evaluated and Python returns the Boolean answer:

Example

```
print(10 > 9)  
print(10 == 9)  
print(10 < 9)
```

Python Operators

Operators are used to perform operations on variables and values.

In the example below, we use the `+` operator to add together two values:

Example

```
print(10 + 5)
```

List

Lists are used to store multiple items in a single variable.

Lists are one of 4 built-in data types in Python used to store collections of data, the other 3 are [Tuple](#), [Set](#), and [Dictionary](#), all with different qualities and usage.

Lists are created using square brackets:

Example

Create a List:

```
thislist = ["apple", "banana", "cherry"]
print(thislist)
```

Loop Through a List

You can loop through the list items by using a `for` loop:

Example

Print all items in the list, one by one:

```
thislist = ["apple", "banana", "cherry"]
for x in thislist:
    print(x)
```

Tuple

Tuples are used to store multiple items in a single variable.

Tuple is one of 4 built-in data types in Python used to store collections of data, the other 3 are [List](#), [Set](#), and [Dictionary](#), all with different qualities and usage.

A tuple is a collection which is ordered and **unchangeable**.

Tuples are written with round brackets.

Example

Create a Tuple:

```
thistuple = ("apple", "banana", "cherry")
print(thistuple)
```

Tuple Items

Tuple items are ordered, unchangeable, and allow duplicate values.

Tuple items are indexed, the first item has index `[0]`, the second item has index `[1]` etc.

Ordered

When we say that tuples are ordered, it means that the items have a defined order, and that order will not change.

Unchangeable

Tuples are unchangeable, meaning that we cannot change, add or remove items after the tuple has been created.

Allow Duplicates

Since tuples are indexed, they can have items with the same value:

Example

Tuples allow duplicate values:

```
thistuple = ("apple", "banana", "cherry", "apple", "cherry")
print(thistuple)
```

Access Tuple Items

You can access tuple items by referring to the index number, inside square brackets:

Example [Get your own Python Server](#)

Print the second item in the tuple:

```
thistuple = ("apple", "banana", "cherry")
print(thistuple[1])
```


Set

Sets are used to store multiple items in a single variable.

Set is one of 4 built-in data types in Python used to store collections of data, the other 3 are [List](#), [Tuple](#), and [Dictionary](#), all with different qualities and usage.

A set is a collection which is *unordered*, *unchangeable**, and *unindexed*.

*** Note:** Set *items* are unchangeable, but you can remove items and add new items.

Sets are written with curly brackets.

Example

Create a Set:

```
thisset = {"apple", "banana", "cherry"}
print(thisset)
```

Dictionary

Dictionaries are used to store data values in key:value pairs.

A dictionary is a collection which is ordered*, changeable and do not allow duplicates.

As of Python version 3.7, dictionaries are *ordered*. In Python 3.6 and earlier, dictionaries are *unordered*.

Dictionaries are written with curly brackets, and have keys and values:

Example [Get your own Python Server](#)

Create and print a dictionary:

```
thisdict = {
    "brand": "Ford",
    "model": "Mustang",
    "year": 1964
}
print(thisdict)
```

Dictionary Items

Dictionary items are ordered, changeable, and does not allow duplicates.

Dictionary items are presented in key:value pairs, and can be referred to by using the key name.

Example

Print the "brand" value of the dictionary:

```
thisdict = {  
    "brand": "Ford",  
    "model": "Mustang",  
    "year": 1964  
}  
print(thisdict["brand"])
```

Python Conditions and If statements

Python supports the usual logical conditions from mathematics:

- Equals: `a == b`
- Not Equals: `a != b`
- Less than: `a < b`
- Less than or equal to: `a <= b`
- Greater than: `a > b`
- Greater than or equal to: `a >= b`

These conditions can be used in several ways, most commonly in "if statements" and loops.

An "if statement" is written by using the `if` keyword.

Example

If statement:

```
a = 33  
b = 200  
if b > a:  
    print("b is greater than a")
```

Creating a Function

In Python a function is defined using the `def` keyword:

Example

```
def my_function():  
    print("Hello from a function")
```

Calling a Function

To call a function, use the function name followed by parenthesis:

Example

```
def my_function():  
    print("Hello from a function")  
  
my_function()
```

What is a Module?

Consider a module to be the same as a code library.

A file containing a set of functions you want to include in your application.

Create a Module

To create a module just save the code you want in a file with the file extension `.py`:

Example [Get your own Python Server](#)

Save this code in a file named `mymodule.py`

```
def greeting(name):  
    print("Hello, " + name)
```

Use a Module

Now we can use the module we just created, by using the `import` statement:

Example

Import the module named `mymodule`, and call the `greeting` function:

```
import mymodule  
  
mymodule.greeting("Jonathan")
```

Variables in Module

The module can contain functions, as already described, but also variables of all types (arrays, dictionaries, objects etc):

Example

Save this code in the file `mymodule.py`

```
person1 = {  
    "name": "John",  
    "age": 36,  
    "country": "Norway"  
}
```

Built-in Math Functions

The `min()` and `max()` functions can be used to find the lowest or highest value in an iterable:

Example

```
x = min(5, 10, 25)  
y = max(5, 10, 25)
```

```
print(x)  
print(y)
```

The `abs()` function returns the absolute (positive) value of the specified number:

Example

```
x = abs(-7.25)
```

```
print(x)
```

The `pow(x, y)` function returns the value of x to the power of y (x^y).

Example

Return the value of 4 to the power of 3 (same as $4 * 4 * 4$):

```
x = pow(4, 3)
```

```
print(x)
```


The Math Module

Python has also a built-in module called `math`, which extends the list of mathematical functions.

To use it, you must import the `math` module:

```
import math
```

When you have imported the `math` module, you can start using methods and constants of the module.

The `math.sqrt()` method for example, returns the square root of a number:

Example

```
import math
```

```
x = math.sqrt(64)
```

```
print(x)
```

The `math.ceil()` method rounds a number upwards to its nearest integer, and the `math.floor()` method rounds a number downwards to its nearest integer, and returns the result:

Example

```
import math
```

```
x = math.ceil(1.4)
```

```
y = math.floor(1.4)
```

```
print(x) # returns 2
```

```
print(y) # returns 1
```

The `math.pi` constant, returns the value of PI (3.14...):

Example

```
import math
```

```
x = math.pi
```

```
print(x)
```


Artificial Intelligence & Machine Learning (CCAIML22)

Objective

The objective of course is to learn the Artificial Intelligence & Machine Learning.

Benefit

Student know how to create technology that allows computers and machines to work intelligently.

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus of Artificial Intelligence & Machine Learning

- PRE PREPARATORY CONTENT
 - INTRODUCTION TO PYTHON FOR DATA ANALYSIS
 - PYTHON FOR DATA SCIENCE
 - MATH FOR MACHINE LEARNING
 - DATA VISUALISATION IN PYTHON
 - DATA ANALYSIS USING SQL

- STATISTICS ESSENTIAL
 - ANALYTICS PROBLEM SOLVING
 - INVESTMENT ASSIGNMENT
 - INFERENCE STATISTICS
 - HYPOTHESIS TESTING

- MACHINE LEARNING
 - LINEAR REGRESSION
 - LINEAR REGRESSION ASSIGNMENT
 - LOGISTIC REGRESSION
 - NAIVE BAYES
 - MODEL SELECTION

- Natural Language Processing
 - LEXICAL PROCESSING
 - SYNTACTIC PROCESSING
 - SYNTACTIC PROCESSING-ASSIGNMENT
 - SEMANTIC PROCESSING

Project

Student makes a project during training period.

Certification

Certificate in Artificial Intelligence & Machine Learning

Study Material of Artificial Intelligent (CCAIML22)

What is Artificial Intelligence?

Artificial Intelligence suggest that machines can mimic humans in:

- Talking
- Thinking
- Learning
- Planning
- Understanding

Artificial Intelligence is also called **Machine Intelligence** and **Computer Intelligence**.

Arthur Samuel 1959:

"Machine Learning is a subfield of computer science that gives computers the ability to learn without being programmed"

Arthur Samuel, IBM Journal of Research and Development, Vol. 3, 1959.

Wikipedia 2022:

Artificial intelligence is intelligence demonstrated by machines. Unlike natural intelligence displayed by humans and animals, which involves consciousness and emotionality.

Investopedia 2022:

Artificial intelligence refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions.

IBM 2022:

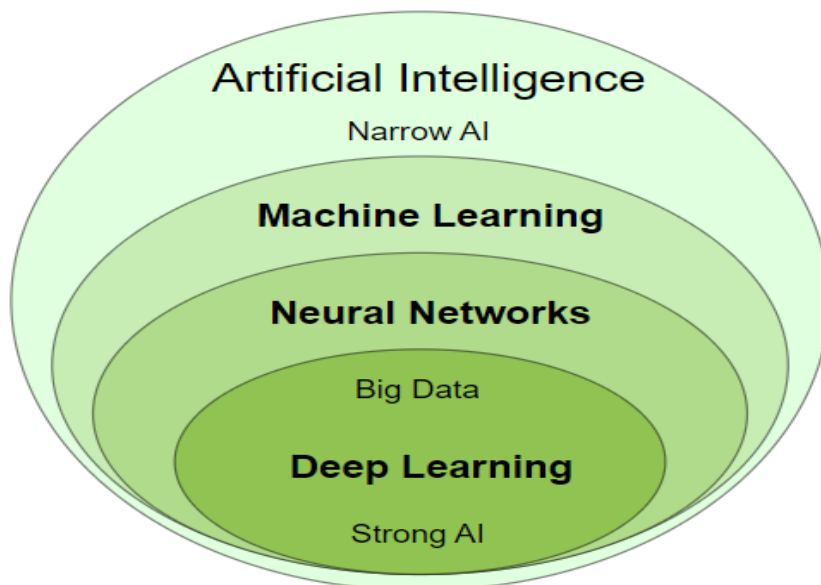
Artificial intelligence leverages computers and machines to mimic the problem-solving and decision-making capabilities of the human mind.

Britannica 2022:

Artificial intelligence is the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings, such as the ability to reason, discover meaning, generalize, or learn from past experience.

Artificial Intelligence (AI)

Artificial Intelligence is a scientific discipline embracing several **Data Science** fields ranging from narrow AI to strong AI, including machine learning, deep learning, big data and data mining.



Narrow AI

Narrow Artificial Intelligence is limited to narrow (specific) areas like most of the AI we have around us today:

- Email spam Filters
- Text to Speech
- Speech Recognition
- Self Driving Cars
- E-Payment
- Google Maps
- Text Autocorrect
- Automated Translation

- Chatbots
- Social Media
- Face Detection
- Visual Perception
- Search Algorithms
- Robots
- Automated Investment
- NLP - Natural Language Processing
- Flying Drones
- IBM's Dr. Watson
- Apple's Siri
- Microsoft's Cortana
- Amazon's Alexa
- Netflix's Recommendations

Narrow AI is also called **Weak AI**.

Weak AI: Built to **simulate** human intelligence.

Strong AI: Built to **copy** human intelligence.

Strong AI

Strong Artificial Intelligence is the type of AI that mimics human intelligence.

Strong AI indicates the ability to think, plan, learn, and communicate.

Strong AI is the theoretical next level of AI: **True Intelligence**.

Strong AI moves towards machines with self-awareness, consciousness, and objective thoughts.

Machine Learning in JavaScript

Traditionally, Machine Learning applications are using R or Python.

But JavaScript has a great future as an Machine Learning language:

- JavaScript is well known. All developers can use it.
- Security is built in. JavaScript cannot access your files.
- JavaScript is faster than Python.
- JavaScript can use hardware acceleration.
- JavaScript runs in the browser

JavaScript is Good for Machine Learning

Machine Learning can be math-heavy. The nature of neural networks is highly technical, and the jargon that goes along with it tends to scare people away.

This is where JavaScript comes to help, with easy to understand software to simplifying the process of creating and training neural networks.

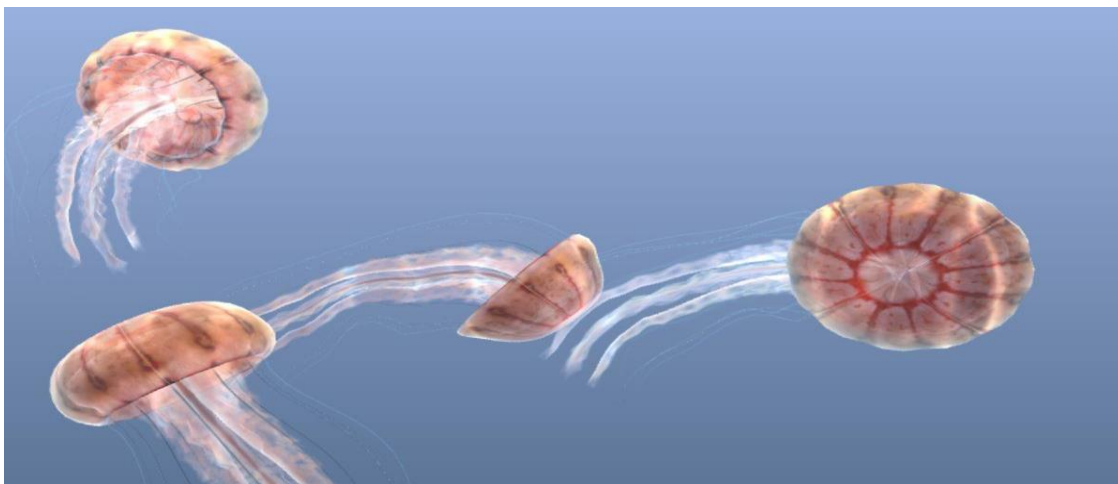
With new Machine Learning libraries, JavaScript developers can add Machine Learning and Artificial Intelligence to web applications.

WebGL API

WebGL is a JavaScript API for rendering 2d and 3D graphics in any browser.

WebGL can run on both integrated and standalone graphic cards in any PC.

WebGL brings 3D graphics to the web browser. Major browser vendors Apple (Safari), Google (Chrome), Microsoft (Edge), and Mozilla (Firefox) are members of the WebGL Working Group.



JavaScript Machine Learning Libraries

Machine Learning in the **Browser** means:

- Machine Learning in JavaScript
- Machine Learning for the Web
- Machine Learning for Everyone
- Machine Learning on more Platforms

Advantages:

- Easy to use. Nothing to install.
- Powerful graphics. Browsers support WebGL.
- Better privacy. Data can stay on the client.
- More platforms. JavaScript runs on mobile devices.

Math.js

Math.js is an extensive math library for JavaScript and Node.js.

Math.js is powerful and easy to use. It comes with a large set of built-in functions, a flexible expression parser, and solutions to work with many data types like numbers, big numbers, complex numbers, fractions, units, arrays, and matrices.

Brain.js

Brain.js is a JavaScript library that makes it easy to understand Neural Networks because it hides the complexity of the mathematics.

Brain.js is simple to use. You do not need to know neural networks in details to work with Brain.js.

Brain.js provides multiple neural network implementations as different neural nets can be trained to do different things well.

ml5.js

ml5.js is trying to make machine learning more accessible to a wider audience.

The ml5 team is working to wrap machine learning functionality in friendlier ways.

The example below uses only **three lines** of code to classify an image:

```

```

```
<script>
```

```
const classifier = ml5.imageClassifier('MobileNet');
```

```
classifier.classify(document.getElementById("image"), gotResult);
```

```
function getResult(error, results) { ... }  
</script>
```

Try substitute "pic1.jpg" with "pic2.jpg" and "pic3.jpg".

TensorFlow

[TensorFlow Playground](#) is a web application written in **d3.js**.

With TensorFlow Playground you can learn about **Neural Networks** (NN) without math.

In your own **Web Browser** you can create a Neural Network and see the result.

TensorFlow.js was previously called Tf.js and Deeplearn.js.

Plotting in the Browser

Here is a list of some JavaScript libraries to use for both Machine Learning graphs and other HTML charts:

- [Plotly.js](#)
 - [Chart.js](#)
 - [D3.js](#)
 - [Google Chart](#)
-

Plotting Equations

Enter Equation:

01234567891516171819

Scatter Draw Line

Plotting Values

Enter X and Y Values:

60801001201408101214

Machine Learning Languages

Programming languages involved in **Machine Learning** and Artificial Intelligence are:

- LISP
- R
- Python
- C++
- Java
- JavaScript
- SQL

LISP

LISP is the second oldest programming language in the world (1958), one year younger than Fortran (1957).

The term **Artificial Intelligence** was made up by **John McCarthy** who invented LISP.

LISP was founded on the theory of **Recursive Functions** (self modifying functions), and this is very suitable for Machine Learning programs where "self-learning" is an important part of the program.



The R Language

R is a programming language for **Graphics** and **Statistical** computing.

R is supported by the [R Foundation for Statistical Computing](#).

R comes with a wide set of statistical and graphical techniques for:

- Linear Modeling
- Nonlinear Modeling
- Statistical Tests
- Time-series Analysis

- Classification
- Clustering



Python

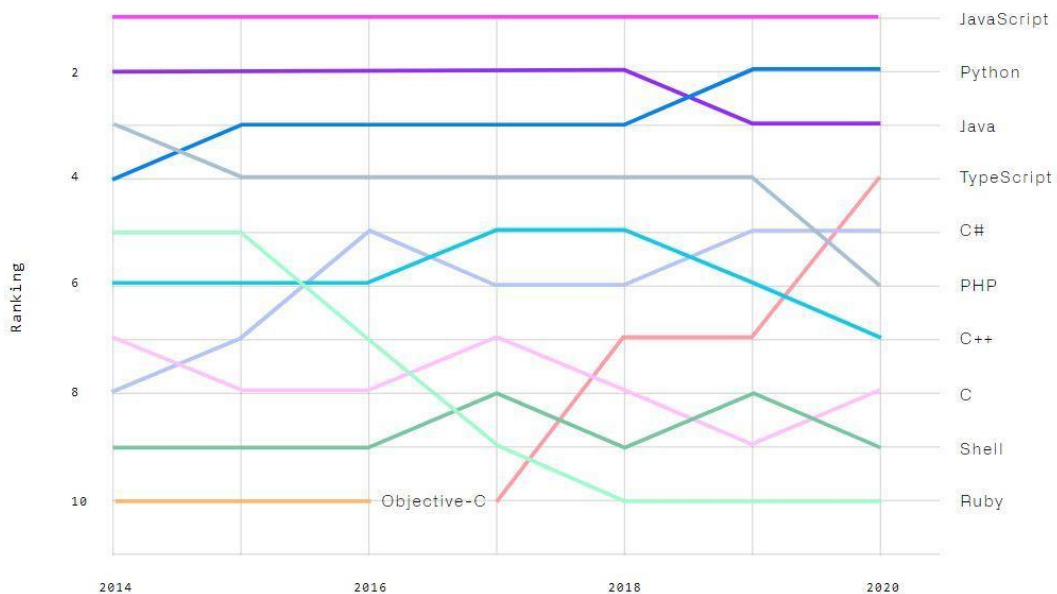
Python is a general-purpose coding language. It can be used for all types of programming and software development.

Python is typically used for server development, like building web apps for web servers.

Python is also typically used in **Data Science**.

An advantage for using Python is that it comes with some very suitable libraries:

- NumPy (Library for working with Arrays)
- SciPy (Library for Statistical Science)
- Matplotlib (Graph Plotting Library)
- NLTK (Natural Language Toolkit)
- TensorFlow (Machine Learning)



C++

C++ holds the title: "**The worlds fastest programming language**".

Because of the speed, C++ is a preferred language when programming Computer Games.

It provides faster execution and has less response time which is applied in search engines and development of computer games.

Google uses C++ in Artificial Intelligence and Machine Learning programs for SEO (Search Engine Optimization).

SHARK is a super-fast C++ library with support for supervised learning algorithms, linear regression, neural networks, and clustering.

MLPACK is also a super-fast machine learning library for C++.

Java

Java is another general-purpose coding language that can be used for all types of software development.

For Machine Learning, Java is mostly used to create algorithms, and neural networks.

SQL

SQL (Structured Query Language) is the most popular language for managing data.

Knowledge of SQL databases, tables and queries helps data scientists when dealing with data.

SQL is very convenient for storing, manipulating, and retrieving data in databases.

Cloud Computing (CCCC22)

Objective

The objective of course is to learn the Cloud Computing.

Benefit

Student know the concept of cloud computing and area where we use it.

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus of Cloud Computing

Introduction to cloud computing

- Properties, Characteristics & Disadvantages
- Pros and Cons of Cloud Computing,
- Benefits of Cloud Computing

Visualisation

- Overview of data visualization and its importance
- The importance of data visualization
- The relationships, comparisons, distribution, and composition of data

Fundamentals

- Core concepts of data warehousing
- Primary components and architectures of data warehousing
- To review and configure cloud storage options

Private cloud environment

- Security and privacy to be maintained through private clouds
- Elimination of third-party or intruders.

Public cloud environment

- Administration of public cloud
- Managing multiple users of the same data at the same time

Cloud security

- Infrastructure Security
- Network-level security
- Host level security
- Data Security and Storage
- Cloud Access: authentication, authorization and accounting

Project

Student makes a project during training period.

Certification

Certificate in Cloud Computing

Study Material of Cloud Computing (CCCC22)

The Client-Server Model

The client-server model is an important concept in cloud computing.

It is about many clients using services from a centralized server.

What is the Client-Server Model?

The Client-Server model is about a client that interacts and makes requests to a computer server.

A client is the way that the person interact with the server.

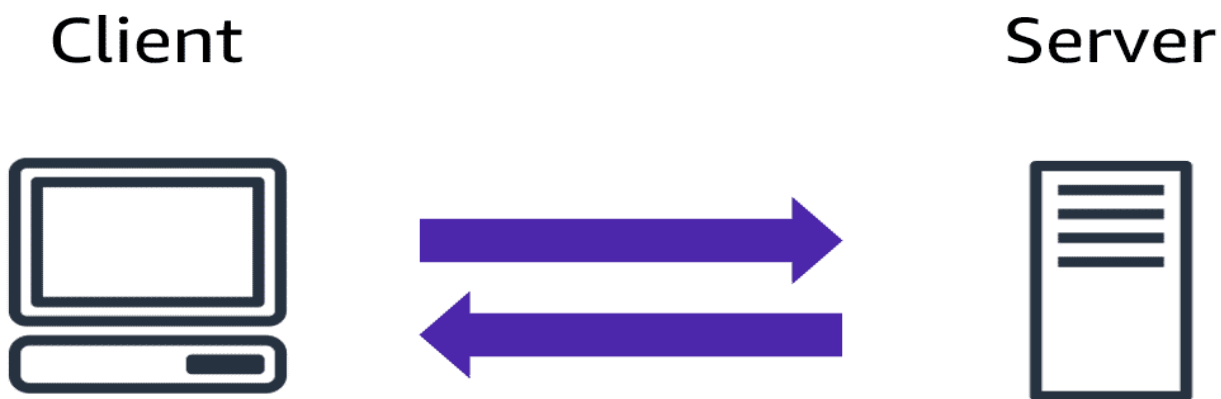


Image created by Amazon Web Services

The server does tasks for the client and returns information.

What is Cloud Computing?

Cloud computing is a computing service made available over the internet.

Cloud computing is a pay-as-you-go model for delivering IT resources.

You pay only for what you use.

Deployment Models

There are three different kinds of deployment models:

- Cloud-based
- On-premises
- Hybrid

The models are different ways of accessing compute services - over the internet, locally, or in a combination.

Cloud-Based Deployment

Everything runs in the cloud.

This model allows you to build new applications or move existing ones to the cloud.

There are different levels of services ranging from low to high.

The level of service has different requirements on your management, architecting, and infrastructure.

For example, a company might create an application consisting of virtual servers, databases, and networking components entirely based in the cloud.

On-Premises Deployment

Deploy resources by using virtualization and resource management tools.

On-Premises Deployment is also known as private cloud deployment.

For example, you might have applications that run on technology that is fully kept in your on-premises data center.

Though this model is much like legacy IT infrastructure, its application management and virtualization technologies make it more effective.

Hybrid Deployment

In a hybrid deployment, you connect cloud resources to an on-premises infrastructure.

This approach is relevant in many situations.

Why Choose Cloud Computing?

There are many reasons for going with the cloud.

Cloud computing enables benefits such as:

- Cost savings
 - Security
 - Scalability
 - Flexibility
-

Payment Model

The cloud payment model is flexible.

You do not have to invest in a data center, servers, and other resources.

The cloud services is a variable expense.

You can use the services from the start and consume more as you grow.

Fewer Operations

Having your own data centers and servers requires resources and staffing.

Cloud computing reduces operation and lets you focus on important things, such as your applications and customers.

Flexible Capacity

Having and managing your own servers can result in unused capacity and limitations.

On the other hand, you can grow freely with cloud computing.

You pay for what you use

Economies at Scale

Cloud computing is about shared resources.

Sharing the infrastructure cost with hundreds of thousands of other customers lowers the overall costs.

Increased Speed

The flexibility of cloud computing makes it easier to develop and deploy applications.

You can test and utilize resources as you want in minutes.

This freedom allows you to experiment and invent more.

It allows for instant resource access.

Global Reach

AWS has data centers all over the world.

The AWS Cloud's global reach allows you to swiftly deploy apps to consumers anywhere.

Customers can access your apps quickly.

You can pick the ones near your clients to reduce the latency.

AWS EC2 - Virtual Cloud Server

EC2 is a virtual server in the AWS Cloud.

AWS EC2 is short for AWS Elastic Cloud Compute.

It makes scaling of capacity up and down easy.

Why AWS EC2?

It makes the process of increasing and decreasing capacity easier.

As a result, you can access the resources at demand.

No upfront investment is needed.

You only pay for what you need.

EC2 is secure.

Get Started With AWS EC2

You can get started with EC2 in three steps.

1. Launch

Start with selecting a template with basic configurations.

The config includes the operating system, application server, or applications.

Next, decide the instance type and hardware configuration of your instance.

Finally, specify the security settings to control the traffic in and out of your instance.

2. Connect

There are many ways to connect an instance.

Programs and applications have multiple connection methods to exchange data.

Users can connect and access the computer desktop by logging in.

3. Use

Once connected, you can use the instance.

Execute commands to install software, add storage, copy, and organize files, and much more.

AWS EC2 Instance Types

There are different instance types.

Which one to use depends on the needs.

More About EC2 Instance Types

The types are best used for different things.

Therefore, when selecting an instance type, consider the needs.

For example, needs can be a requirement for compute, memory, or storage.

General Purpose Instance

The General Purpose Instance balances computing, memory, and networking resources.

It fits many purposes. Such as:

- Application servers
- Gaming servers
- Backend servers for companies
- Small and medium databases

The General Purpose Instances are best when there is a balance between the resources.

Compute Optimized Instances

The Compute Optimized Instances are best there is a need for high compute.

This type is also good for application servers, gaming servers, and web applications.

The main difference is that this type is ideal for high-performance and compute-intensive needs.

Memory Optimized Instances

This type can deliver large dataset workloads fast.

Memory is a temporary storage area.

It loads from storage, holds the data, and processes it before the computer can run it.

The processing allows for a preloading process and gives the CPU direct access to the computer program.

The Memory Optimized Instances are best when huge amounts of data need to be preloaded before running the app.

Accelerated Computing Instances

This type use hardware accelerators.

The accelerators boost the data processing.

The Accelerated Computing Instances are best for graphics applications and streaming.

Storage Optimized Instances

This type is best when you have large datasets on local storage.

Some examples:

- Large file systems
- Data warehouses
- Online transaction systems

The Storage Optimized Instances are designed to deliver many inputs as fast as possible.

AWS EC2 Auto Scaling

EC2 Auto Scaling can be added as a buffer on top of your instances.

It can add new instances to the application when necessary and terminate them when no longer needed.

You can set up a group of instances.

Here you can set a **minimum capacity** of instances that will always be running. The rest will operate when necessary.

You can set the **desired number** of AWS EC2 instances in the scaling group.

However, the desired capacity defaults to your minimum capacity if not specified.

The last configuration is **Maximum capacity**.

Here you set the maximum capacity of instances to be used.

The Auto Scaling groups allow you to have a dynamic environment.

You set the minimum capacity, the desired number, and the maximum capacity.

The group will operate within the config and give you a predictable and cost-effective architecture.

What is AWS SNS?

SNS is a cloud service for the mass delivery of messages.

It is a fully managed publish-subscribe messaging and mobile communication service.

It can be event-driven, with automated services responding to triggers.

Distributed systems and micro services can be decoupled with messaging between them through AWS SNS.

Application-to-person messaging to users is possible with SMS, mobile push, and email.

Message Endpoints

AWS SNS can publish messages to many different endpoints:

- HTTP and HTTPS
 - Email and Email-JSON
 - AWS SQS
 - Applications
 - AWS Lambda
 - SMS (depending on region)
-

The Difference between SQS and SNS

SNS is a notification system, which pushes messages to its subscribers.

SQS is a queuing system, and the receivers have to pull the messages to be processed and deleted from the queue.

SNS and SQS can work well together.

What is CloudFormation

CloudFormation is an infrastructure service.

It lets you create templates that describe the AWS services that you want.

Then, it handles the config and provisioning of the resources described in the template.

It makes it easier because you do not have to configure the resources individually.

CloudFormation helps to handle the dependencies between the resources.

AWS Virtual Private Cloud

AWS Virtual Private Cloud is also called AWS VPC.

VPC is a service that lets you isolate your AWS resources in an isolated network.

The boundaries created around the resources let AWS restrict the network traffic.

In addition, it allows you to include the sections of the AWS Cloud that you want in the isolated network.

Resources can be organized in subnets.

A subnet is a section in the VPC that can contain specific resources.

Internet Gateway

Public traffic can be allowed to your VPC.

The traffic is allowed by an Internet Gateway.

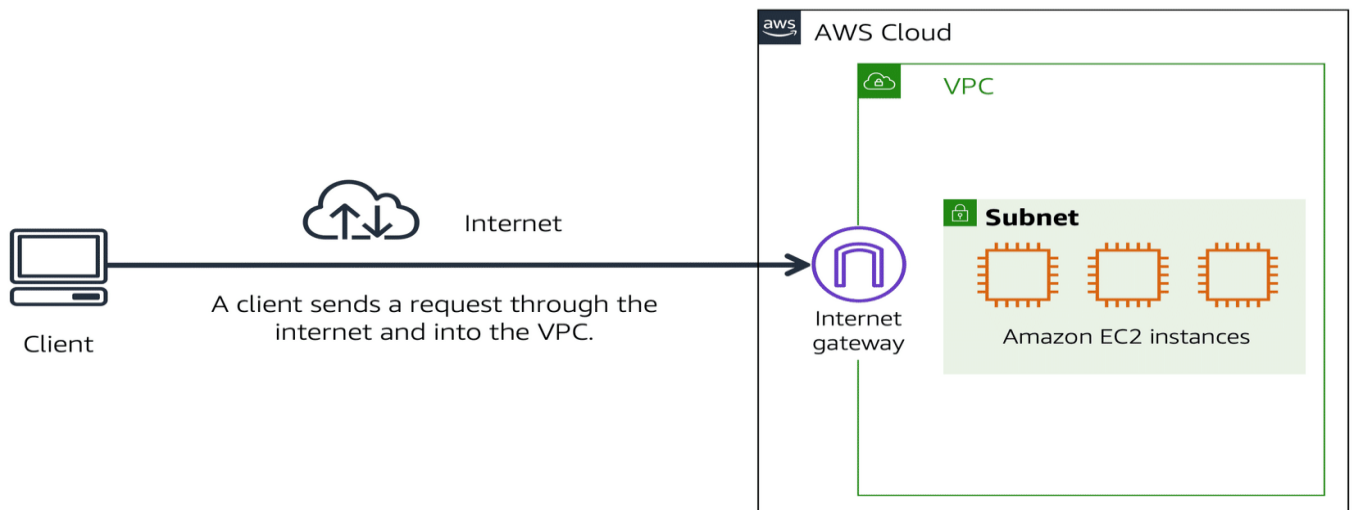


Image created by Amazon Web Services

An Internet Gateway is a door between the VPC and the internet.

The traffic enters the VPC through the Internet Gateway.

Without the Internet Gateway, you cannot access the resources in the VPC.

Virtual Private Gateway

A Virtual Private Gateway is used to access private resources in the VPC.

It has extra layers of protection.

The Virtual Private Gateway encrypts the internet traffic, keeping it protected.

It is a component that allows the encrypted traffic to enter the VPC.

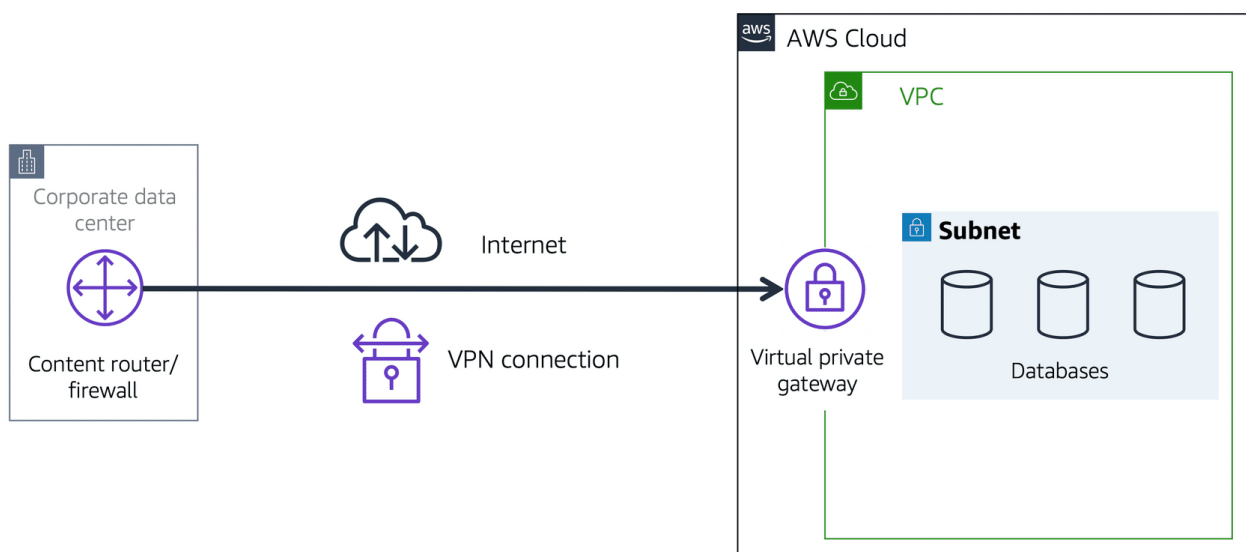


Image created by Amazon Web Services

The Virtual Private Gateway allows you to make a Virtual Private Network (VPN) between the VPC and private network.

It only allows traffic from approved networks.

Many businesses use VPNs to ensure that their traffic and data are secure.

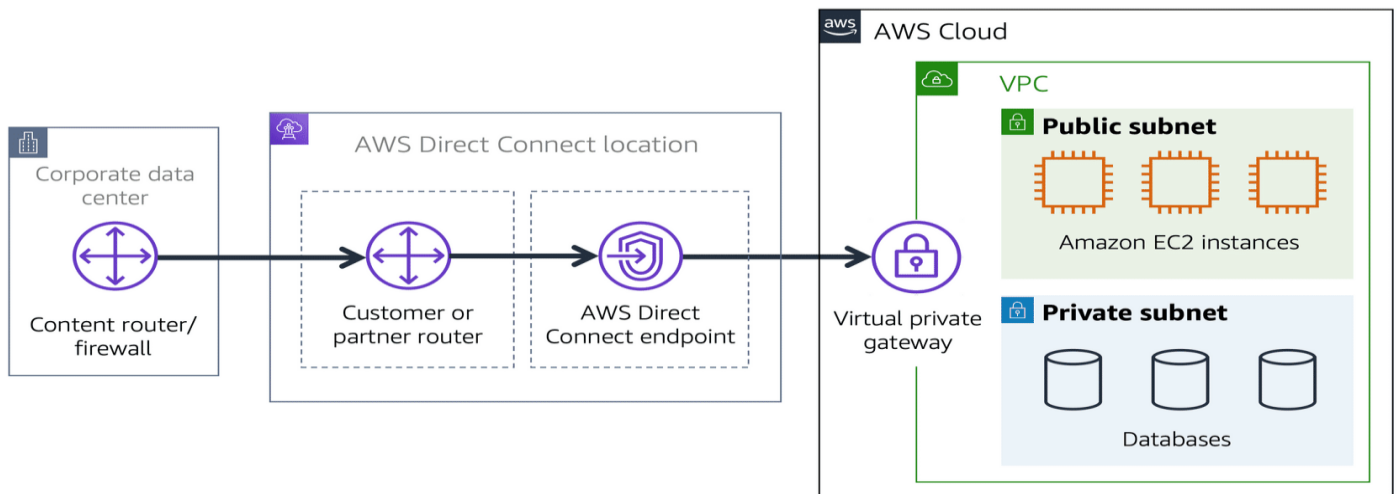
AWS Direct Connect

AWS Direct Connect lets you make a dedicated private connection between the Data Center and a VPC.

A dedicated connection is to have the link for yourself.

The link is not shared with others.

Only you and your data can travel through the connection.



Domain Name System

Domain Name System is also called DNS.

DNS is the service that lets someone access your website from their browser.

The DNS is like a phone book.

It connects the IP address to the domain name.

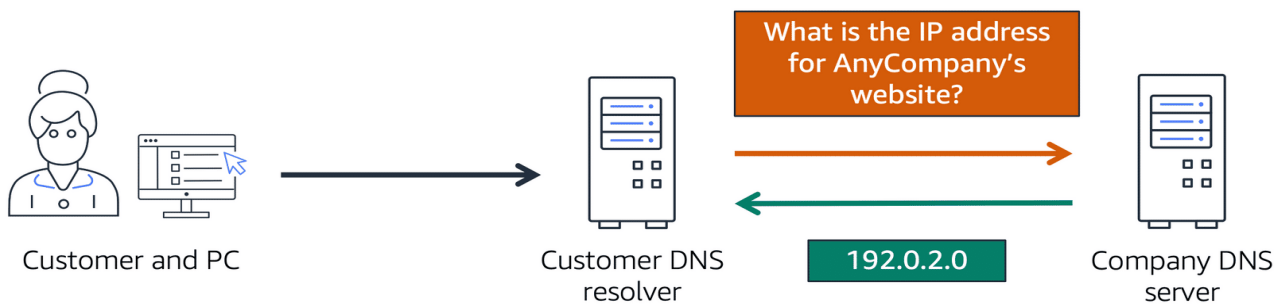


Image created by Amazon Web Services

AWS Route 53

Route 53 is a DNS web service.

It routes end users to internet apps hosted in AWS.

Route 53 connects users and their requests to AWS resources and external resources.

Route 53 has a feature to manage DNS records.

You can register new and transfer domains with Route 53.

You can manage all of your domain names from Route 53.

Use AWS Route 53 and AWS CloudFront

Route 53 and CloudFront can be combined to deliver content.

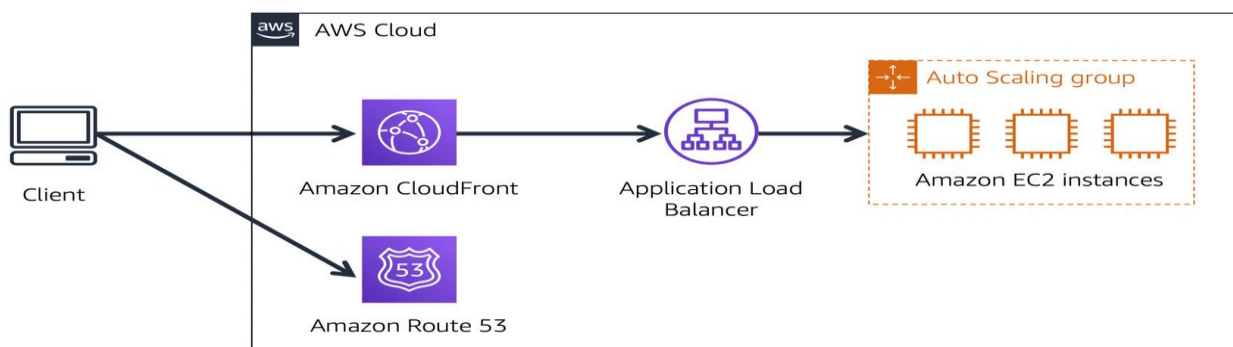


Image created by Amazon Web Services

The picture explained:

The company has 3 EC2 Instances in an Auto Scaling group.

The group is attached to an Application Load Balancer.

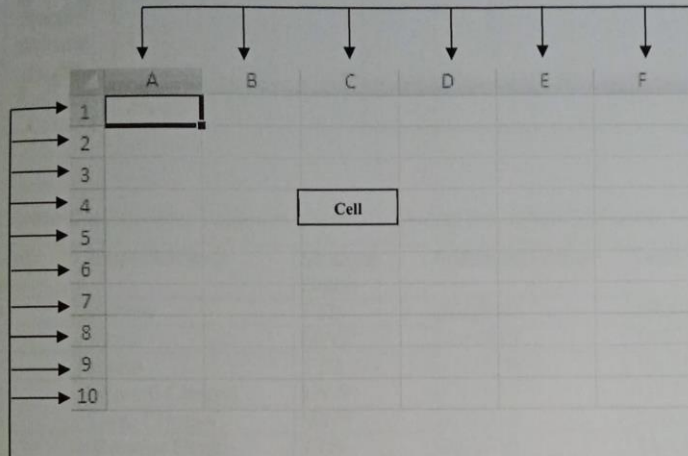
1. User requests data from the website application.
2. Route 53 uses DNS resolution to identify the IP address.
3. The data is sent back to the user.
4. The user request is sent to the nearest Edge Location through CloudFront.
5. CloudFront connects to the Application Load Balancer.
6. The Load Balancer sends the packet to the EC2 instance.

Certificate Course on Advance Excel and PowerPoint

Syllabus for MS Excel and PowerPoint

Advance MS Excel

Day 1



Columns in Excel 2007 (16384 or XFD)

Columns in Excel 2003 (256 or IV)

Rows in Excel 2007 (1048576)

Rows in Excel 2003 (65536)

1. Most important Queries
 1. Go to the **last column**.
 2. Go to the **last Row**.
 3. Go to the Cell H44 (Using by "Go to" Option)
 4. Go to K23 (Using by "Name Box")
 5. How to Change the R1C1 reference style?
 6. How to insert more sheets?

Day 2

7. What is **wrap text** Command?
8. What is **Merge & center** Command?
9. What is **shrinking to fit** Command?
10. Many types of **cell categories**
11. How to change the **style & format** of **currency**?
12. How to change the **style & format** of **Date**?
13. All option of **Format** command on Home menu.
14. Add Remove the **Decimal places** on Number & Currency Cell..



Create the following Format on your Excel Sheet

BICA	B I C A	Name :-	<input type="text"/>
		Father Name :-	<input type="text"/>
		Address :-	<input type="text"/>

3. Create the following Tables in sheet 1, having the following format :-

Student Code	Student Name	Student Batch	Admission Date	Fees	Tuition Fees	Book Facilities
S001	Mohan	TTS	2/5/2015	15000/-	2500	
S002	Swati	MWF	2/6/2015	15000/-	2500	
S003	Nisha	TTS	5/7/2015	14000/-	2500	
S004	Shivani Chopra	MWF	6/7/2015	12000/-	2500	
S005	Tanu Chopra	MWF	7/7/2015	12000/-	2500	
S006	Jitender Singh	TTS	2/9/2015	14000/-	2500	
S007	Mohit Sharma	TTS	2/9/2015	8000/-	2500	
S008	Neha Bajaj	MWF	5/9/2015	7000/-	2500	
S009	Geet Narang	TTS	18/10/2015	9000/-	2500	
S010	Kavi Arora	MWF	10/11/2015	7000/-	2500	

4. Give the font on This Table Respectively.

- | | | |
|---------------|---|---------------------|
| a. Font | = | Times New Roman |
| b. Font Style | = | Bold |
| c. Font Size | = | 13 |
| d. Border | = | Out line And Inside |
| e. Pattern | = | Any Light Shade |

Day 4

1. Put the following information in another sheet.

S. No.	Name of The Item	Quantity	Rate	Amount	Discount (%)	Discount Amount	Net Amount
1.	Monitor	50	5000.00		10		
2.	Mouse	100	250.00		2		
3.	Keyboard	70	500.00		8		
4.	Ram	20	800.00		5		
5.	Motherboard	40	1000.00		7		
6.	Speaker	30	400		9		

- Calculate Amt = Quantity * Rate
- Calculate Discount Amount = Amount * Discount Rate%
- Calculate Net Amount = Amount - Discount Amount



1. Font Face : Verdana
 2. Font Size : 12Points
 3. Color : Blue
- Give the border to the entire table having double line.
 Rename the sheet as "Product".
 Apply Centre Alignment to **Name of item** and **Quantity** column.
 Apply two decimal places for **Rate & Amount** Column.
 Go to new sheet and prepare the following table:-

PH. No.	Opening Reading	Closing Reading	Total Calls	Call Per Unit	Total Amount	Service Tax (10.3%)	Bill Amount
6549863	8069	9001		1.20			
2261908	7465	7869		1.20			
6000189	2129	2846		1.20			
2247609	13556	14469		1.20			
2569874	859	1356		1.20			
5698745	465	689		1.20			

Day 5

1. Prepare the Following Table:-

Books Name	Rate	Quantity	Amount
Income tax		50	
Cost Accounting	350/-	60	
Auditing		20	

2. Same Rate of all books Calculate the Amount with **Absolute Referencing**.
 3. Prepare the following Mark Sheet:-

MARKSHEET							
S_Name	Tally	Busy	Fact	Ms-Office	Total	Percentage (%)	Grade
Anamika	35	34	45	40			
Deepak	60	56	65	82			
Anju	52	82	67	87			
Gourav	74	78	39	89			
Sumit	69	65	59	64			

Calculate **Total Marks** and also Find **Percentage**.



Calculate Grade on the basis of following Conditions:-

Percentage (%)	Grade
Greater than 80%	"A+"
70-80	"A"
60-70	"B"
50-60	"C"
40-50	"D"
Less than 40	"Fail"

Day 6

6. Prepare The Following Series:--
- 2, 4, 6, 8, 10
 - 3, 6, 9, 12, 15
 - 4, 16, 64, 256.....
 - 01/02/2006, 05/02/2006, 09/02/2006, 13/05/2006.....

7. Prepare The Following Table And Do As Per the Instructions:--

First Name	Full Name	Upper Case	Lower Name
Inder			
Samita			
Satya vir			
Kamal			
Tarun			
Pooja			
Bhawna			
Reeta			
Jai Parkash			

- i. Insert a New Column Named as "Last Name" between "First Name" and "Full Name".
- ii. Create a Custom List of Last Name and apply in Last Name Column.
- iii. Apply the Concatenate function in Full name column having First Name and Last Name. Gap should be must between First Name & Last Name.
- iv. Change the Full Name in upper Case and Lower Case. With upper and lower functions
- v. Change the orientation of this table with Paste special function (Paste Special - Transpose).
- vi. Show the First 4 character from left side of every name with (Left Function).
- vii. Show the Last 5 character from right side of every name with (Right Function).
- viii. Show the mid name of Satya Vir Singh (Mid Function).
- ix. Insert a new column named as Numbers and type any in these cells
- x. Convert in Roman Counting of total (Roman Function).
- xi. Insert the Currency style (Rs.) on numbers (Dollar Function).



Name of Book	issu Date	Received Date	Total day	Rent per Day	Total Amount
Income Tax	25-Mar-15	25-Jun-15		Rs. 3.00	
Cost Accounting	20-Feb-15	7-May-15		Rs. 2.50	
Math	4-Aug-15	26-Oct-15		Rs. 3.60	
Accounts	15-May-15	16-Aug-15		Rs. 1.25	

xii. Find out the Total Days between issu Date and Received Date (Days360 Function).

xiii. Calculate the total Amount (Total Days*Rent Per day)

Day 7

1. Create a Sheet "Sales Report" and give the following data in this sheet

SALES REPORT

Salesman	Product	Target	Actual Sales	Per Unit Prices	Sales value	Incentive
Ashish	Airtel	100	85	1000		
Rahul	Vodafone	80	50	900		
Sunil	Idea	75	45	1200		
Darpan	Reliance	95	80	1500		
Nitin	Docomo	40	10	800		
Raman	Airtel	180	160	890		
Dheeraj	Vodafone	25	20	350		
Hitesh	Idea	480	290	260		

2. Calculate Sales value.

3. Insert the New Column Named as Target Achieved and Calculate Target Achieved.

4. Calculate Incentive:-

- If Target Achieved is greater than 80% AND Sales Value is also greater Than 85000 then Incentive is 20% of Sales value
- If Target Achieved is greater than 60% OR Sales Value is greater Than 60000 then Incentive is 15% of Sales value.
- If Target Achieved is greater than 40% AND Sales Value is also greater Than 40000 then Incentive is 10% of Sales value. Otherwise "NIL"

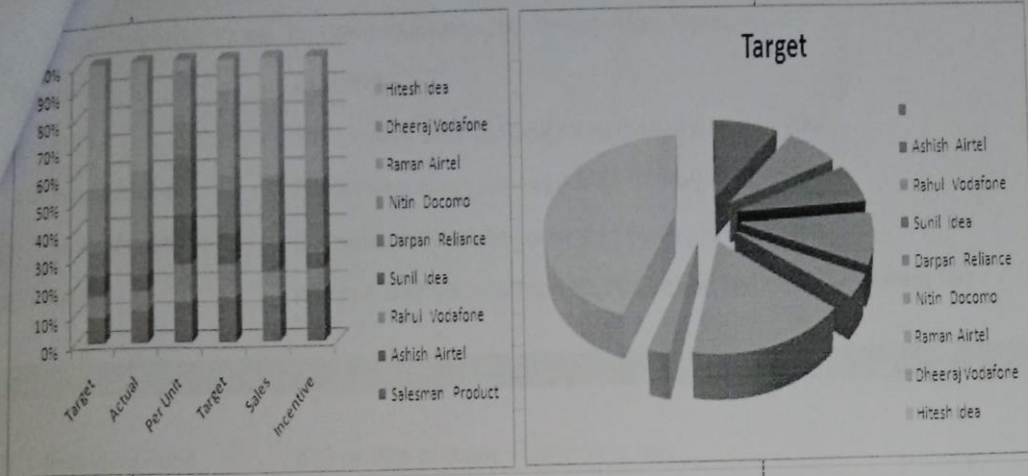
Day 8

5. Sort the above table in ascending order of their incentive.

6. Rename the sheet as "Reports".



ate a Column Chart and pie chart based on incentive.



8. Calculate the **Average** of incentive.
9. Calculate the **Minimum Incentive** of the sales man and give the **Comment** on **Incentive** cell who takes the **Minimum Incentive**.
10. Calculate the **Maximum Incentive** of the sales man and give the **Comment** on **incentive** cell who takes the **Maximum Incentive**.
11. Give the **light shade (Conditional Formatting)** on who takes the **incentive More than 10,000**.
12. Count the cells of **sales man**.



Day 9

1. Create the following table on a new Excel Sheet
Employees details and payroll

E_Code	Employee	City	Department	Basic Salary	HRA	DA
E001	anjay Kapoor	Panipat	Manager	Rs. 15,000.00		
E002	Swati Bajaj	Sonipat	Quality Controller	Rs. 12,000.00		
E003	Anu Arora	Karnal	Accountant	Rs. 8,000.00		
E004	Neha	Ambala	Quality Controller	Rs. 12,000.00		
E005	Gourav	Rohtak	Marketing	Rs. 7,000.00		
E006	Sandeep	Panipat	Accountant	Rs. 10,000.00		
E007	Sanjeev	Sonipat	Marketing	Rs. 5,000.00		
E008	Hitesh	Ambala	Accountant	Rs. 12,500.00		
E009	Pooja	Panipat	Manager	Rs. 42,000.00		

Ramesh	Jind	Marketing	Rs. 11,500.00		
--------	------	-----------	---------------	--	--

Insert in sheet "Employee Details" and Remove the Date of Joining and Incentive Columns.

Insert Columns (House, Ta, Other Allowance, Pf, Gross) in this Sheet.

- DA = Basic*8%
- 5. TA = 500 for who is Basic Salary less than or Equal to 7000.
- 6. Other Allowance = 300 for who is not provide the TA (if, Not)
- 7. House (Yes/No) = Company provide the house that belong to Marketing.
- 8. HRA = (Basic + DA)*5% who have No House and Not Equal to Panipat City

Day 10

- 9. Provident Fund = 800 or 10% of Basic whichever is less.
- 10. ESI (Employee State Insurance) = Calculate the ESI 2% of Basic Salary that member not belong to marketing and basic salary Less than or Equal to 10000.
- 11. Gross salary = (Basic salary +DA + HRA+ TA+ Other Allowance) - (PF+ESI)
- 12. Insert another column after calculating the gross salary as P.TAX (Professional Tax)
- 13. If Gross salary is less than or equal to 5000 then tax is Rs. 0. If gross salary is less than or equal to 8000 then tax is Rs. 25. If Gross salary is less than or Equal to 12000 then tax is Rs. 50. Otherwise Professional tax is Rs. 60.
- 14. Calculate the Net Salary (Gross salary-professional tax)
- 15. Calculate the Net Salary of only Accountant Department. (Sum If)



Day 11

- 16. Sort the Department column in ascending and see the effect. (Data - Sort)
- 17. Calculate the Subtotal of Net Salary of all Departments. (Data - Subtotal)
- 18. Calculate the number of members of Marketing Department (COUNTIF)
- 19. Put the Following records in this table.

E_CODE	Employee Name	Department	Basic Salary
E008	Amandeep Singh	Marketing	Rs. 6,500.00
E009	Taranjeet	Accountant	Rs. 6000.00

- 20. Show only following Records with Auto filter and Advance filter in Existing Table and sheet. (Department = Marketing and Basic Salary is less than 8000)
- 21. Remove those Records having Net Salary less than 13000 using by auto filter
- 22. Remove the Auto Filter from Employee table.

Now this Record on another Location and Another sheet with Advance Filter.
 Department = Accountant and Basic Salary is less than 12000)

To create the Pivot Table & Pivot chart of this Table.

Name Of Employee	Department	Total Sale (2015)	Total Sales (2016)
Arun	Accountant Department	26000	23000
Ravinder	Accountant Department	24000	27000
Manoj	Electronic Department	22000	19000
Sandeep	Electronic Department	17000	14000
Gopal	Electronic Department	16000	12000
Sumit	Electronic Department	23000	27000
Sohan	Electronic Department	26000	24000
Anuj	Furniture Department	15000	18000
Sunil	Furniture Department	18000	28000
Nitin	Furniture Department	28000	30000
Mohan	Purchase Department	25000	28000
Abhilash	Purchase Department	12000	19000
Govind	Purchase Department	18000	16000
Varun	Sales Department	23000	26000
Anoop	Sales Department	19000	23000
Anil	Sales Department	24000	26000

Day 13

1. Keep the following table in Second sheet of Excel.

Student Name	Mohit Tomar
Roll No.	80315
Subject Name	Marks
Accounts	85
Maths	55
Business Management	75
Business Economics	60
EVS	95
Computer	78
Total	448

2. Find out the total marks and Grand Total.

3. Changes the Total Marks in 460. with Goal seek (Tools - Goal Seek). Always Goal seek apply only on formula cell.



the following Marks of Lakshi Bareja and Ashu Chhabra with scenarios (Tools - Scenarios)

Student Name	Lakshi Bareja	Student Name	Ashu Chhabra
	80316	Roll No.	80317
Subject Name	Marks	Subject Name	Marks
Accounts	54	Accounts	86
Maths	84	Maths	45
Business Management	68	Business Management	78
Business Economics	48	Business Economics	66
EVS	90	EVS	87
Computer	60	Computer	67
Total	404	Total	429

Day 14

5. Merge both the tables in another sheet using (Paste Special function – Add Function).
6. Calculate the total Marks of Business management and accounts with consolidate on Same Location and Another location. (Data - Consolidate).
7. Insert the Column chart of Different persons of Marks (Mohit, Lakshi and Ashu). (Insert - Chart)
8. After create the chart change the type of chart and give the Heading " Marks Details" in chart and show the table in chart (Chart - Chart Type)
9. Rename the sheet as "Result" with Red Color.

Day 15

10. Protect (Format - Protection) your Table and give password (Review - Protect Sheet). After give the Password you can't edit in this Table.
11. Remove the Password from this Table.
12. Give the password on your file (File- Save As).
13. Change the -786 to a positive number. (ABS Function).
14. Solve this equation $(A)^2 + (B)^2 + 2ab$.
 - a = 2
 - b = 3 (Ans.= 25)
15. Round the 15905.50 in the following manner :-
 - Downward Rounding (Rounddown Function = 15900)
 - Normal Rounding (Round Function = 15906)
 - Upward Rounding (Roundup Function = 15910)



Open Sales Report Sheet.

Salesman	Product	Target	Actual Sales	Per Unit Prices	Sales value	Incentive
Ashish	Airtel	100	85	1000		
Rahul	Vodafone	80	50	900		
Sunil	Idea	75	45	1200		
Darpan	Reliance	95	80	1500		
Nitin	Docomo	40	10	800		
Raman	Airtel	180	160	890		
Dheeraj	Vodafone	25	20	350		
Hitesh	Idea	480	290	260		

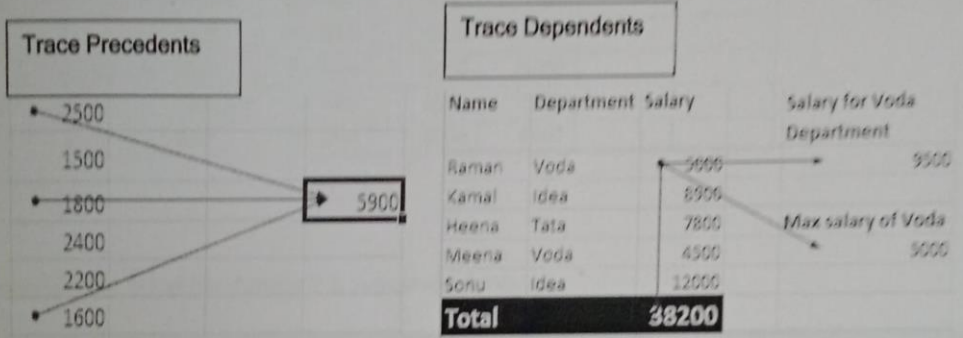
2. Give the name of sales man column and full table. (**Name - Define**)
3. Create a link of this table with another sheet another file to automatic update.
4. Create the Popup of Sales Man Column (**Data - Validation**).
5. Select the Name in this popup of Hitesh, Rahul and Darpan.
6. Find out the Product, Target, and Actual Sales and Sales value with **VLOOKUP** Function
7. Copy of the Table and Change the orientation of this table with Transpose

Day 17

8. Again give the Name of Sales man column and full table in Horizontal Position. (**Name - Define**)
9. Create the Popup in Horizontal Position and find out another field with **HLOOKUP** Function.
10. Place the cursor on under the Sales Man cell and split the window from this Position and rotate your Cursor with keyboard then sees the effect. (**View-Split**)
11. Remove the Split From the Window.
12. Place the cursor on under the **Sales Man** cell and Freeze Panes the window From this position and rotate your cursor with keyboard then see the effect Difference between Split Window and Freeze Panes (**View - Freeze panes**)
13. Open a new workbook and import records from your previous workbook Having Sales Report. (**Data - Existing connections - Browse for more**).
14. Create the following Custom List (Tools - Option - Custom List).
Accounts, Income Tax, Sales Tax, Excise, R.O.C., Investment



- Give the following Header and Footer.
 Header = Bajrang Institute of Computer Accounting
 Footer = Page No. in Right Alignment
- Insert the Multiple sheets from Tools Bar. Open new file of excel and see the effect. (office button - Excel Option - popular).
- Define page setup for entire workgroup with Paper: A4, Orientation: Landscape and Margins: 1.5 cm each. Change the view to page break Preview mode to check Whether all the data adjusted properly within Print- area or not. If require change scaling To fit it on the page.
- Add more commands in Quick Access Toolbar with Customize (Office Button - Excel Options - Customize)
- What is the use of Trace Precedents & Trace Dependents?



6. Create another Following Table in this sheet

Numbers	Integer Return	Reminder	Square Root	Rounded
126.56				
227.58				
352.54				
659.25				

- Find the Integer Values of each Number Integer Return Column Using INT Function.
- Divide all the Integer Values of each numbers by 3 and find out then Reminder Under Reminder head Using Mod function (Insert - Function).
- Find out the square Root of Integer Numbers under the head Square Root Using SQRT Function.
- Round off all the Square Root figures up to 2(Two) Decimals places and keep under Rounded Figure head using Round function.

Day 19

- How to fixed the cells only for 10 Digits.
- Calculate the date of Days, Years & Months.
- Create the Following Table:-



Dates	Days	Days, Years & Months
15-08-1947		
26-01-1950		
02-10-1869		
01-02-2003		
30-01-1948		

S.no.	Name of Students	Sam	Total Fees	Amount Paid	Balance Amount	Advance
1	Anubhav	Fist Sam	8000	6000		
2	Abhijeet	Fist Sam	8000	6500		
3	Varun	Fist Sam	8000	8000		
4	Mukesh	Fist Sam	8000	9000		
5	Sonam	Fist Sam	8000	7500		
6	Aruna	Fist Sam	8000	7800		
7	Gopal	Fist Sam	8000	9500		
8	Nitin	Fist Sam	8000	5000		
9	Sandeep	Fist Sam	8000	7300		
10	Sunil	Fist Sam	8000	8500		

Calculate the Balance Amount & Advance Amount.

Day 20

Final Test for MS Excel

Power Point

Setting Started

Day 21

- Introduction of Power point
- Creating Presentation
- Adding New Slides
- Adding Text in Boxes
- Adding New Text Boxes



Deleting Existing Slide

Rearranging Slides

Normal View

Slide Sorter View

- Adding Slide Notes

Day 22

- Managing Sections
 - Creating Sections
 - Rearranging Sections
 - Deleting Sections
- Working with Outlines
- Sidebars
- Presentation Views
 - Normal View
 - Slide Sorter View
 - Reading View
 - Slideshow
- Setting Backgrounds
- Slide Orientations
- Saving Presentation

Day 23

- Reviewing Presentation
- Adding Slide Numbers
- Adding Header & Footer
- Running Slideshow
- Keyboard Shortcuts
- Getting Context Help

Day 24

Editing Presentation

- Copy & Paste Content
- Find & Replace Content
- Undo Edited Changes
- Spell Check
- Content Translation



Setting Language Type

Duplicating Content

- Special Characters
- Slides Zoom In-Out

Day 25

Font Designing & Formatting Presentation

- Font Management
- Setting Text Fonts
- Text Decoration
- Changing Text Case
- Changing Text Size
- Changing Text Color
- Text Alignments

Day 26

- Indent Paragraphs
- Setting Line Spacing
- Borders and Shades
- Apply Formatting
- Using Slide Master
- Saving Design Template

Day 27

Adding Graphics & Multimedia

- Adding Pictures to Slide
- Editing Added Pictures
 - Image Adjustments
 - Picture Styles
- Formatting Added Pictures
 - Picture Arrangement Features
 - Picture Sizing Features



Day 28

- Editing Added Shapes
 - Insert Shape Features
 - Shape Styles Features
- Formatting Added Shapes
 - Shape Arrangement Features
 - Shape Sizing Features
- Adding Text to Shapes
- Arranging Shapes/Images
- Grouping/Ungrouping Objects

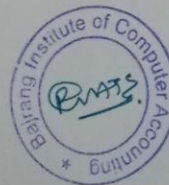
Day 29

- Adding Audio & Video
- Adding & Formatting Tables
 - Table Design Features
 - Table Format Features
- Adding & Formatting Charts
 - Chart Design Features
 - Chart Layout Features
 - Chart Format Features
- Adding & Formatting SmartArt
 - SmartArt Design Features
 - SmartArt Format Features
- Adding & Previewing Animations
- Adding & Previewing Transitions

Day 30

PRESENTATION OUTPUT

- Creating a PDF File
- Creating a Video File
- Creating an Image File
- Printing Presentation



Certificate Course on English Communication and Soft-Skills

Aims and Objectives:

Communication and soft skills are the main stipulation in the workforce today. Though there is social media to simulate human interaction but interpersonal skills are also equally important in this cut throat era. As each soft skill comes with its own advantage, so this course will help the students to enhance their communication and soft skills. They will also be given certificates after the course.

Eligibility:

Under Graduate and Post Graduate students of any stream can get registered for the course.

Course Contents:

- Self-introduction
- PPT Presentation
- CV Making
- Activities of speaking
- E-mail Etiquettes
- Group Discussion
- Extempore
- Analysis of Inspirational Videos
- Debate
- Mock interviews
- Body Language.

Sr. No.	Topics
1	Introduction and the Importance of Communication
2	(Rules of Tenses) Grammar
3	Small activities of Speaking (Sentence making)
4	Preparation of self-Introduction
5	Extempore Exercises
6	Formal/Business Letter Writing
7	E-mail Etiquettes
8	Group Discussion on Current Topics
9	Inspirational Videos and Analysis
10	PPT Presentation on Current Topics
11	Debate on current issues
12	C.V. Making
13	How to prepare for Interview positive Gestures, symbols and signs, physical appearance & the art of self-presentation & conduct.
14	Mock-Interview sessions
15	Overall Grooming or Final Wrap-up
16	Query Session
17	Written Test with Oral Presentation

Objective

The objective of course is to enable the students to get overview of the Desktop Publishing

Benefit

Core concepts of Photoshop and Corel Draw fundamental elements of Graphic Designing which enables student to get basics of Desktop Publishing

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus Desktop

Publishing

- Introduction Variations in Photoshop Publication
 - Illustrator
 - Photoshop
 - Light Room
 - Premier Pro

- Photoshop
 - About Photoshop, Photoshop Features
 - Key Board practice
 - Editing Photo in camera raw
 - Creating Web Galleries, PDF converts
 - Creating Web Galleries, PDF converts

- Tools
 - Rectangular Marquee Tool & Elliptical marquee tool & single row marquee tool ,single column marquee tool
 - Move tool, magic wand tool, quick selection tool, lasso tool, polygonal lasso tool, magnetic lasso tool
 - Crop tool, slice tool, slice select tool, eyedropper tool, colour sampler tool, ruler tool, note tool, count tool
 - Spot healing brush tool, healing brush tool, patch tool, red eye tool, brush

- tool, pencil tool, colour replacement tool, mixer brush tool
 - Clone stamp tool, pattern tool, history brush tool, art history tool
- Colour & Tools
 - About colour information, Colour Modes
 - Working with layers & layer styles.
 - Create Droplet & Conditional Mode Change, Fit Image, Picture Package.
 - Use the Merge To HDR command to combine multiple images & Export Layers To Files
 - Auto Blend Layers, Auto Align layers, RGB or grayscale images
 - Layer Mask, Vector Mask Merge Layers, Flatten all layers Matting

- Corel Draw
 - Getting Started with CorelDraw
 - Visiting Card
 - Understanding the Colour Palette
 - Sticker
 - Letterhead with Logo
 - Working with the Objects
 - Wedding Card
 - Flex Banner

- Understanding other controls (Layers and Tables)
 - Flyer with Coupon
 - Brochure
 - Product Box Package
 - Book Cover
 - Newspaper advertising
 - Magazine Inner page

Project

Student makes a project during training period.

Certification

Certificate in Desktop Publishing.

Desktop Publishing Study Material (CCDP)

Desktop Publishing (DTP) is the creation of electronic forms of information such as documents, presentations, brochures, books, or even website content using computer programs. DTP has evolved to be an important component of creating and disseminating information as it allows an amalgamation of various tasks that are generally performed independently at printing presses such as layouts, typesetting, graphic design, etc.

Evolution of DTP Software

Earlier, DTP was specifically meant to cater to printed matter but modern DTP allows for even more forms of electronic content. A modern DTP software can be your word processor, graphic design tool and publishing tool, all rolled into one package. With the explosive growth of smartphones and mobile PCs, the way people consume information has changed dramatically over the last decade. Modern DTP software enables content output that caters dynamically to all screen sizes, without the need to republish the same for each device or form factor.

Types of DTP Content

The content created by DTP software can be broadly classified into two categories –

- Electronic Pages
- Virtual Pages

Electronic pages commonly refer to websites, manuals, eBooks, digital archives, presentations, etc. which are normally not printed but are shared digitally. This tutorial is an example of an electronic page which can be opened in a browser.

Virtual pages on the other hand are electronic pages created in the DTP software which are eventually published as printed pages. Virtual pages allow the author to visualize exactly how the printed page will look and can help in easy editing. The process is called **WYSIWYG** which stands for, ‘**What You See Is What You Get**’. This means all the changes and formatting that are made will be exactly replicated in print.

Coral – Draw

This is a special Program created by the Coral Company. The program was invented in 1989 by the Coral Company, Which has been used by large and small graphics companies. There are various versions like Corel Draw 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, Coral Draw X3, X6, X7, X8 and all other versions whose table diagram can be below Viewed, release date is also given.

Most of the tasks in this program are done through tools. It has a variety of tools.

1. Pick Tool - Through this tool all types of text and objects created on the page are selected and move after selecting the object.

2. Shape Tool (F10) uses the shape tool to make any type of design created on the page into another shape. After converting the shape or text to a curved one, you can use the options like delete and curve by right clicking the mouse.
3. Knife Tool- Uses it to cut any graphics in any form.
4. Eraser Tool (X)- Uses it to erase the graphic and convert to curved text on the page.
5. Smudge Tool- Any graphic and text is used to spread with the help of a brush.
6. Roughen Tool- It is used to give any object a thorny or toothed design.
7. Free Transform Tool It is used to transform any shape into another angle.
8. Virtual Segment Delete Through this, we use to remove any graphic from the page during selection.
9. Zoom Tool (Z) We use this to enlarge the page. After taking this tool, the part on which the draw will take place will zoom. You can also zoom in and zoom out by clicking it. If you click the left mouse button, it will zoom out. If you click the right button, it will zoom in.
10. Hand Tool (H) It is used to move (Resettlement) the page as well as zoom in and out. Double clicking the left button of the mouse zooms in (big) and the right button is double click to zoom out (small).
11. Free Hand tool (F5) Through this tool you can draw any type of line design in any angle.
12. Bezier Tool With this tool, you can design any type of line in different ways such as burning lamp, tree leaves and other shapes.
13. Artistic Media Tool (I) By this tool Coral is used to draw the default shape and design in draw, in this you can use different types of Brush like preset, sprayers, such as calligraphy, and other graphic etc.
14. Pen Tool With this tool, you can create any type of design in any angle and make any shape with your mouse.
15. Polyline Tool The polyline tool is also used like a pen tool and you can also use it like a free hand tool, both of which are given in the same tool.
16. Interactive Connector Tool Through this tool, 2 objects created on the page are used to connect them together.
17. Dimension Tool Use it to measure any graphic created on the page. In this, we can measure the object of any angle.
18. Smart Drawing Tool (S) Through this you can draw any type of line by drawing smooth line and straight line.
19. Rectangle Tool (F6) Rectangle tool is used to draw objects. Pressing the Ctrl button and drawing will make your object the same size from all four sides, to create exactly the right rectangle.

20. 3 Point Rectangle Tool It is also used to draw a rectangular object (Rectangle) but first a straight line is drawn in it, after which your rectangle will be ready when the mouse is moved in the other direction.

21. Ellipse Tool (F7) It is used to draw circular shapes, with this you can make shapes like circles and ovals. Exactly (precisely) To draw Ellipse, pressing the Ctrl button and drawing will keep your object equal in size from all four sides.

22. Graph Paper (D) Graphs are used to place one or more tables on a page.

23. Polygon Tool (Y) By this, you can create polygons with different types of arms, if needed to reduce or increase the arm, you can set the number of point polygons in the property bar.

24. Spiral Tool (A) Used to draw the curved LINE through it.

25. Basics Shape With the help of the basic shape, the rectangular triangle and all other shapes are used to draw. To change the shape style, you can draw by changing the shape by going to the Perfect shape option in the Properties bar.

26. Arrow Shapes Use the arrow shape to draw an object like arrow. To change the arrow style, you can change the shape and draw by going to the Perfect shape option in the Properties bar.

27. Flowchart Shapes With the help of flowchart, cylinders are used to draw shapes like triangles etc. To change the style, you can draw by changing the shape by going to the Perfect shape option in the Properties bar.

28. Star Shapes Stars like shapes are used to draw. To change the style, you can draw by changing the shape by going to the Perfect shape option in the Properties bar.

29. Callout Shapes With the help of its tool, it is used by any person to show things, it is used more in cartoons. You can also write information related to this shape. To change the style, you can draw by changing the shape by going to the Perfect shape option in the Properties bar.

30. Text Tool (F8) Use it to write any kind of text, after taking this tool you can write text even by drawing but after drawing you have to convert to artistic text whose shortcut key is (Ctrl + F8). If you do not want to convert, after taking these tools, click anywhere on the page and start writing direct. Your text will already be converted. Font style or related settings will be found in the properties bar.

31. Interactive Blend Tool Through this tool, two objects on the page are used to blend together. You will find related settings in the Properties bar.

32. Interactive Contour Tool Through this option you use any type of circle

and square to give a framing effect. You will find related settings in the Properties bar.

33. Interactive Distortion Tool Use any selected object to create an opposite design or shape. You will find related settings in the Properties bar.

34. Interactive Drop Shadow Used to apply shadow to any selected object or text. You will find related settings in the Properties bar.

35. Interactive Envelope Tool Used to extend and maintain any created shape or object in different types of angles. It works just like a Shape tool. If you select the shape on which you have used this tool and take the shape tool, you will still get the envelope tool.

36. Interactive Extrude Tool Use any object or text to make 3D, you will find related settings in the Properties bar.

37. Interactive Transparency Tool Used to make any color object transparent. You will find related settings in the Properties bar.

38. Eye Drop Tool With the help of this tool, we use to pick the color of some other object. This can be filled in other objects with the help of paint bucket.

39. Paint Bucket With the help of the Eye Drop Tool, one or more objects use the captured color to fill in another object.

40. Outline Tool (F12) The outer lines of any object are used to thin or thicken and fill color, as well as setting the corner and line caps.

41. Fill Tool (F11) With this help, the selected text or object is used to fill the solid color.

42. Fountain Color With the help of this tool, we use double color for any text or object. Going into custom, you can fill many colors simultaneously in any object. If you want a pre-made color, you can select any color by going to the Presets option and you can also change the color as per your choice.

43. Interactive Fill Tool Through this tool, any type of color can be filled in any object, including fountain color, texture, uniform etc. Just like you get when you open the fill tool, you will find it in the file type in the properties

bar.

44. Interactive Mesh Fill Tool It is also used for coloring but in this the color is filled with the help of grids. To increase the grid reduction, we will customize the grid size in the Properties bar. In this, after applying the grid, you can click anywhere on the object to fill any color, which will be like a fountain, the only difference is that it has a grid and it is simple.

Using Menu Bar

Description of File Menu Option

1. New This option is used to get a new blank page.
2. New From Template Through this, we use to take the default template design which is already given to us in the Corel draw by Corel company.
3. Open This option is used to open a CDR file previously saved to a hard disk.
4. Close This option is used to close Active current page of Corel Draw.
5. Close All This option is used to close all open pages.
6. Save this option is used to save CorelDraw file in the computer Hard disk.
7. Save As Through this, we save the already saved document in a different name and can also be saved in any other format.
8. Revert Through this, after taking the file which we have already created, there is some mistake while editing, then use it again to make it like new.
9. Acquire Image With the help of a camera or scanner, ACQUIRE IMAGE is used to insert any type of image in Corel Draw.
10. Import Use some kind of image and some other file to fetch in CorelDraw.
11. Export In this option you can export your graphic into any other format.
12. Export for Office This option is used to export your graphics into png format and send it to MS office.

13. Send to The files created through this option are used for any other Drive, Mail, Zipped file and fax.

14. Prepare for service Bureau This option is mostly used when sending a design created in Corel Draw from one server to another. It is used by people whose work is mostly to design and send online designs. In this, when you save the file, then you can save the pdf in addition to cdr and also which font you have used, this information is also saved. You can also save the font if needed.

15. Publish to the Web Used to publish any design in HTML or Flash file on internet.

16. Publish to the PDF It uses any type of graphics to create a PDF file.

Description of Edit Menu

1. Undo uses this to do a step backwards.

2. Redo uses it to do a step forward, it only goes ahead when undo is high.

3. Repeat can repeat a task using it. You can also use Ctrl+R.

4. Cut is used to cut (transfer) any selected graphics or text.

5. Copy uses this to copy the selected text or a graphic.

6. Paste is used to paste cut or copied objects or text.

7. Paste Special paste properly or properly when objects or text copied from another software are pasted under Paste Special.

8. Delete is used to erase any selected text or guides.

9. Symbol uses any graphics on the page as symbols to be kept in a hard disk forever.

10. Duplicate use to copy any object

11. Copy Properties From Within any object created through it, the filtered color and the outline color are used to fill the same color on the other object.

12. Over Print Out It is mostly used to print outlines of any type of object accurately.

13. Over Print Fill It is used to properly print the color filled in any object.

14. Select All uses to select any text, object, guides, nudge through it.

15. Find and Replace use it to search for a graphic or text after converting.

16. Insert Barcode is used for inserting any type of barcode through it.

17. Insert New Object is used to draw files from any other software in Corel Draw and after creation.

18. Object When a PDF file is imported into Corel Draw then it shows the option. This option contains a link that will open from your PDF Acrobat or through software that will be installed in your computer.

19. Links

20. Properties use to bring Docker through it which is related to the feel, outline, and link.

Description of View Menu

Note: In this menu all options are used to show and hide.

1. Simple Wire frame/ Wire Frame Used to display the outline of a graph drawn on any pixel.

2. Draft/ Normal/ Enhanced Used to display any graph created on a pixel in actual form.

3. Full Screen Preview (F9) Through this, all graphics created on the page are used to view in full screen mode.

4. Preview Selected Only Through this, we use only to view the selected object in full screen mode.

5. Page Sorter View Used to display all inserted pages in the same window.

6. Rulers It is used to hide and show the ruler.

7. Grid It is used to hide and show the grid.

8. Guideline It is used to hide and show the guideline.

9. Show In this, you will find options related to the page in which settings related to the border, bleed, printable area, etc. of the page will be found.

10. Enable Rollover Used to turn on rollover.

11. Snap to Grid/Snap to Guidelines/Snap to Object/Dynamic Guides It is used to turn all these options on and off. Its function is used to see its angle point while drawing any object. It only appears when an object or line is drawn.

12. Grid and Ruler Setup/Guidelines Setup/Snap to Objects

Setup/Dynamic Guides Setup All these are used to change the settings.

Description of Layout Menu

1. Insert Page It uses to insert more than one page.
2. Delete Page Use to delete a page that has been inserted.
3. Rename Page By this, we use to rename a page and write the name of the page.
4. Go To Page Let's use it to go to a page. It is mostly used to visit a single page when there are more pages.
5. Switch Page Orientation Using it, you can make the page Portrait or landscape.
6. Page Setup Using this option we can edit page sizes.
7. Page Background Through this, they are used to give solid color and the effect of an image on any page like a Background.

Description Of Arrange Menu

1. Transformation The position size of any object can give the effect of angle and all other things, that is, it can set its rotation according to itself.
2. Clear Transformation Use to eradicate the effect applied with the help of transformation.
3. Align and Distribute Used to set any object from another object to the left right center and other distributes.

If after selecting any two objects, what will work on pressing the button according to the image below is written in the left side.

Note- If you want to use for an object, then first select the object you want to Align, then select the second object with the Shift button between which to Align, then use the shortcut keys.

4. Order With the help of this option, you can set your selected object up and down and can be read in detail below-

1. To Front Used to top the selected object from all the objects at once.
2. To Back Used to lower the selected object from all the objects at once.
3. Forward One The selected object is used to top all the objects one by one.
4. Back One Used to lower the selected object from all the objects one by one.
5. In Front of Use the selected object to move above any other object. As soon as you select this option, your cursor will become an arrow and your object will be above the object you click that arrow.
6. Behind It is also like the In front of mentioned above but it is used to rear an object.
7. Reverse Reverse means that like you have drawn 5 objects which have been drawn first, it will be at the bottom as soon as you select everyone and reverse it will just reverse.

5. Combine Used to combine one or more objects in parallel.
6. Break Apart Used to un-combine a combined object.
7. Lock Object Used to lock any object, it keeps that object in its place.
8. Unlock Used to unlock a locked object. You can also unlock it by pressing the right button of the mouse and clicking on the unlock option.
9. Convert To Curve After using rectangular, circle and all other objects to convert them to curve, it is used to create different design with shape tool.
10. Convert Outline to object After breaking the outline of any object, use the outline to use it as an object.
11. Close Path To make a drawn line a complete line, we use a closed path.

So that the two ends of the line join together. Or you can also say that after drawing a single line, you can use it as an object.

Description of Effect Menu

1. Adjust jpg, jpeg, png, bmp and others use various types of effects on image files like contrast, enhanced, Tone Curve Colors balance Hue saturation
2. Transform In this also, color effects on any Png and JPG files are used to color the opposite.
 - DeInterlace (lets you remove lines from scanned or interlaced images) Sometimes while scanning an image, the effect starts coming like a lining, using the same line to remove it with the help of it, although more or less it becomes a mild mesh.

You can set it according to the odd and even line.

 - Invert Use it to opposite the color of your image, you can also call it negative.
 - Posterize lets you reduce the number of tonal values in an image. Posterize removes gradations and creates larger areas of flat color.
3. Correction Used to reduce scratches and dust on any Bmp, Jpg, Png file.
4. Artistic Media Artistic media is used to set the brush, as soon as you take a shape, the artistic brush will immediately turn into Artistic and you will see the last used brush at the top as soon as you open it.
5. Blend Use of it has been told in the tool box itself, however, if you open from here, a docker will open in which you can blend according to the number of steps.
6. Contour Its use has also been mentioned in the tool box, on opening it, the docker will open in which after selecting To Center, Inside, Outside, you write to keep the offset in inches, and other steps in it, the layer you need It is written as it is. If you want to use it without this docker, after selecting it from your tool box, after going to the property bar and setting a point, the object on which you drag it will come with a Framing Effect.
7. Envelope Like Blend, Contour mentioned above, it will also open in this, after selecting any object you have to use it like a Shape tool, but if you are using Docker. Then you will get the

option of Add New and Add Preset in which you can create your own shape with the help of Add New and using the pre-made shape with the help of Add Preset. Which the company keeps adding to it at the time of software development.

8. Extrude It has been told to you in the tool box that if you want to use from here, on opening, a docker will open in which after selecting the object or text, you can click on the edit button and apply the vanishing point by applying the 3D effect. And you can also see its preview. After applying all the effects, the effect is applied to the text or object.

9. Lens It is used as a layer that shows the trailing object or text in effect while any trailing object makes a difference. As soon as Frozen is clicked, it is copied and added to the layer above it. Which you can re-group and add your effect or any color. In this, you will get a lot of effects, whose name is- Brighten, Color Add, Color Limit Custom Color Map, Fish Eye, Heat Map, Invert, Magnify, Tinted Gray Scale, Transparency, Wire Frame.

10. Add Perspective It is used on converted artistic text. By applying it on any shape, it feels like it is stuck. While using it, you will see four nudges in which you use to apply it according to the shape.

11. Power Clip Inside It is used to place text or photos inside any shape. You can also drag it with the right button of the mouse, in this you will get the power clip inside which is used for most images. If you want to use any change in the image after applying it to reduce the size, then right-click on it, after editing the content, adjust the image and right-click again and click on Finish Editing. Or click on the power clipped image with Ctrl After editing, click on any empty part of the page with Ctrl.

12. Add Rollover With this help, we use to add hyperlinks to any object. Which you have to use while staying in the coral draw. After applying it, you have to right click and click on Jump to Hyperlink in Browser, which will open the hyperlink you have added to the Internet Explorer.

13. Clear Effect Used to remove the effect applied.

14. Copy Effect/Clone Effect With the help of these two, we use the effect to copy. It is used by taking a simple shape and if you select the shape with the effect applied and go to this option, then it will look like a head. Just like you have taken two objects and have written some text for both, give a Perspective effect on one while nothing on the other. Now you can click on the

simple text and select that text by clicking on the perspective from the copy effect from the effect menu. If you click on the effect, as soon as you click, your simple text will also be changed to the same effect as before.

Description of Text Menu

1. Format Text It is mostly used to create selected text or paragraphs in style and model.
2. Edit Text Use to edit certain letters or text in any text or paragraph written.
3. Insert Character Use any type of outline word or a symbol to insert.
4. Fit Text To Path It uses the object to place the converted text on any object on the object's outline, or drag and hold the text on the object with the right button of the mouse and then release the mouse, an option opens. In which you can apply text by selecting Fit Text to Path.
5. Fit Text to Frame Any paragraphs that are not converted to artistic are used to fit their text frame, which automatically sets the font size.
6. Align To Baseline Any paragraph, word is used below the shape tool to set it in a line.
7. Straighten Text If any paragraph, word is slanted with the shape tool, then use it to straighten it.
8. Writing tool With the help of its option, you use any paragraph to write it accurately and set the spelling as a whole.
9. Encode With the help of this option, you can use it to change the encoding of the typed text, but keep in mind that when you use this option, then you will select another font then there is little chance of changing the font style.
10. Change Case Through this option, you can change the case of written text in which Sentence case, lowercase, UPPERCASE, Title Case, tOGGLE cASE.
11. Web text Compatible When you select this option, you can change the text style in HTML to Publish to the Web document.
12. Convert To Artistic Text Through this, the text written in the text frame is used to convert it into artistic text which you can then resize according to your own.
13. Text Statistics Through this option, you can see how many words have been written in your entire page, which font has been written from it, you can also see the artistic text in it.
14. Show Non-Printing Character Selecting any text and clicking on this option will show you the character that will not print, such as space and inter (change paragraph).

15. Link\ Unlink Use to convert and break one or more text boxes into a single box, or drag the text to another text box by pressing and dragging it with the right button of the mouse, then releasing the mouse will open an option in which You can keep the text according to yourself.

Description of Tools Menu

1. Options / Customization Use these two to change the settings, commands, etc. in the software. And through this you can also assign your command to run from shortcut

key.

2. Color Management Through this colors are managed and color can be selected according to the quality. RGB, HSB, CMYK are the main ones.

3. Save Settings As Default It is used to change the changed settings in the software as before.

Note Save Settings as default followed by 7 options which are Object Manager, Object Data Manager, View Manager, Link Manager, Undo Docker, Internet

Bookmarks Manager, Color Style. All these are used to bring Docker. And after bringing Docker you can control the tools and settings.

4. Palette Editor Through this, you use to change the color in Corel Draw and with this you can set the preset as well.

5. Graphic and Text Styles It is used for text style. In this, you have to apply the settings after selecting the text. Similarly, we can apply any object.

6. Scrapbook Through this, you use to insert any clipart and insert any clipart through the Internet.

7. Create Inside it you will find 3 options Arrow, Character, Pattern, all three are used separately. Arrow uses any shape drawn on the page through it to create an arrow. You have to use it in an arrow option in a straight line or smooth line.

Character also has the same function as Arrow but it will only apply to the font you have created.

8. Run Script It is used for script code that is related to binary systems.

9. Visual Basic Visual Basic This is a small VBS software that is very useful, you also get it in MS Office. It is used in the Developer menu to record the current work, as soon as you start the record this VBA program. It will run and is recording the command you are doing, after all the work is done you have to stop by clicking the stop button again. If you want to run and then you have to go to play and select your recorded macro and press the run button, as soon as you press the button your graphic will be created by taking a small load.

Note VBA is like a command which has a different code. The macro you record is recorded as a code as you can see in the image below.

Description of Window Menu

1. New Window It is used to use an existing page in two windows. By doing this, nothing is deleted from the page but both remain the same.
2. Cascade/Tile horizontally/Tile Vertically These three are used to view one or more pages, in which you will get to see different previews of all three.
3. Arrange Icons
4. Color Palettes It is used to add or replace a color box.
5. Dockers Use to fetch and remove any Docker.
6. Toolbars Use any tool to fetch and hide. For this, you can also use this option by right clicking on the menu bar or status bar.
7. Close Use to close the currently opened page.
8. Close All It is used to close all the open pages in Corel Draw.
9. Refresh Window It is used to refresh the Corel Draw.

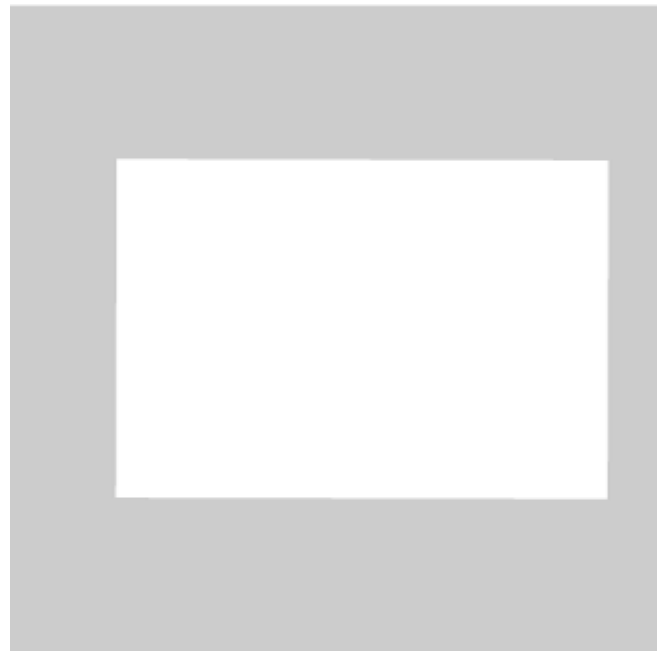
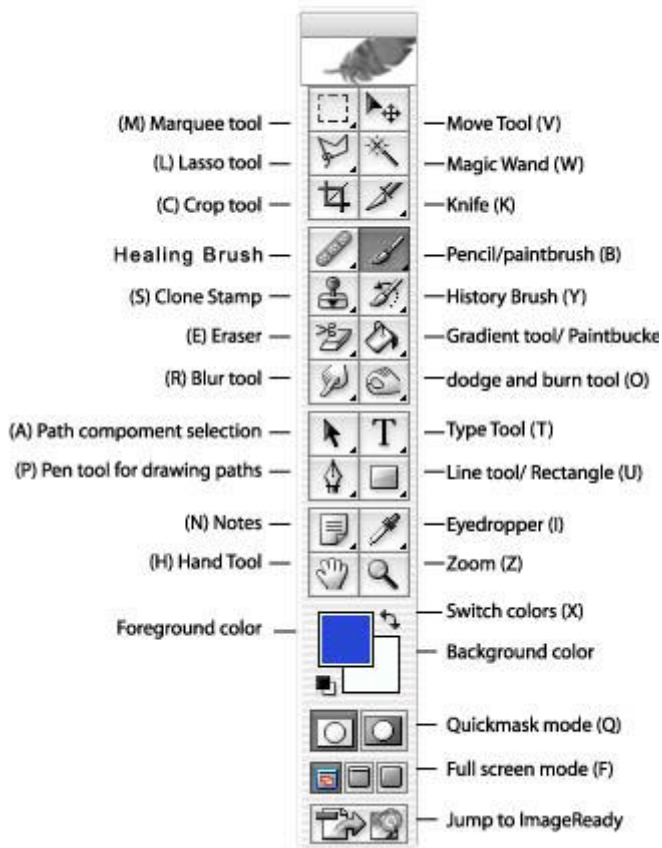
Photoshop

Introduction to Photoshop

Interface



Photoshop is unlike other common software interfaces which emulate virtual typewriters or graphing paper. Photoshop creates an artist's virtual studio/darkroom. When you open the program you see a toolbox on the left with tools you will use to manipulate your images, and on the right, a white square which is your "canvas" or work area. The gray area surrounding the canvas is not part of your image, but only defines its edges.


To change the canvas dimensions, go to Image > Canvas size. You can type in any dimensions you like, but remember that the area of the image is directly proportional to the file size.





Basic Tools [Back to top](#)


(You can use the letter next to each tool to switch between tools quickly)

Marquee Tool :  The images in Photoshop are stored pixel by pixel, with a code indicating the color of each. The image is just a big mosaic of dots. Therefore, before you can do anything in Photoshop, you first need to indicate which pixels you want to change. The selection tool is one way of doing this. Click on this tool to select it, then click and drag on your image to make a dotted selection box. Hold shift while you drag if you want a perfect square or circle. Any pixels within the box will be affected when you make your next move. If you click and hold on this tool with your mouse button down, you will see that there is also an oval selection shape, and a crop tool .




Crop Tool: . To crop your image, draw a box with the crop tool. Adjust the selection with the selection points, and then hit return to crop.


Lasso Tool :  The lasso tool lets you select freeform shapes, rather than just rectangles and ovals.


Magic Wand:  Yet another way to select pixels is with the magic wand. When you click on an area of the image with this tool, all pixels that are the same color as the pixel you clicked will be selected. Double click on the tool to set the level of tolerance you would like (i.e. how similar in color the pixels must be to your original pixel color. A higher tolerance means a broader color range).

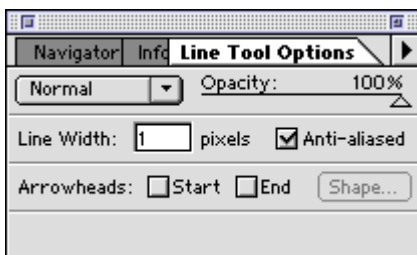
The Move Tool:  This is a very important tool, because up until now all you have been able to do is select pixels, and not actually move them. The move tool not only allows you to move areas you have selected, but also to move entire layers


without first making a selection. If you hold the **option** (or **alt**) key while clicking and dragging with the move tool, you can copy the selection.


Airbrush  Paintbrush  and Pencil tools  can be used to draw with the foreground color on whichever layer is selected. To change the foreground color, double-click on it in the toolbox. You will then see a palette of colors from which to choose. Select one and click OK. To change the brush size, go to Window > Show Brushes.


Eraser Tool:  Erases anything on the selected layer. You can change the eraser size by going to Window > Show Brushes.


Line Tool:  Can be used to draw straight lines. Click on the tool to select it, then click with the tool on the canvas area and drag to draw a line. When you release the mouse button, the line will end. You can change the thickness of the line or add arrowheads to it by double clicking on the tool to see this dialog box:



Text tool:  Click on this tool to select it, then click in the Canvas area. You will be given a dialog box in which to type your text, and choose its attributes. Each new block of text goes on its own layer, so you can move it around with the Move Tool. Once you have placed the text, however, it is no longer editable. To correct mistakes, you must delete the old version (by deleting its layer) and replace it.

Eyedropper:  Click with this tool on any color in the canvas to make that color the foreground color. (You can then paint or type with it).

Magnifier:  Click with this tool on a part of your image you want to see closer, or drag with it to define the area you want to expand to the size of the window. Hold down the Option or Alt key to make it a "reducer" instead and zoom back out.

Grabber:  Click with this and drag to move the entire page for better viewing.

Options Bar



The Options bar appears at the top of the screen and is context sensitive, changing as you change tools. The tool in use is shown in the left corner, and options relating to the tool appear to the right of that.

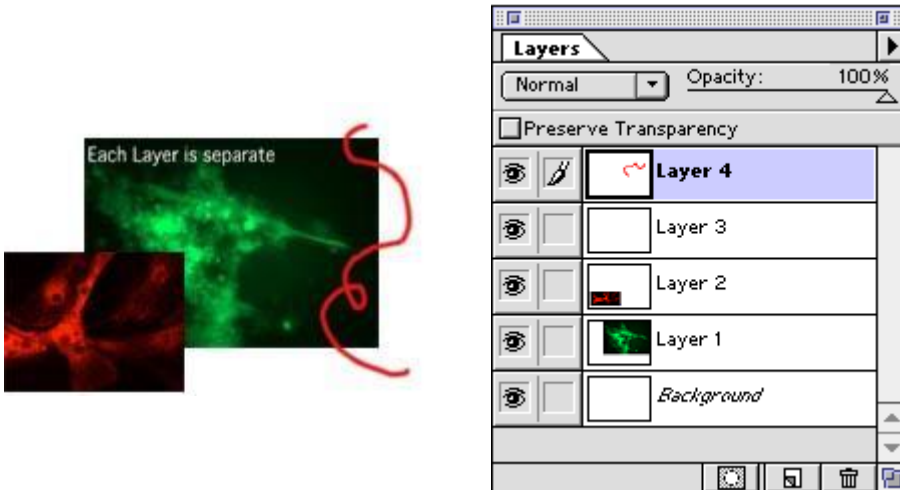
For example, in the snapshot above, the move tool is selected.

Auto Select Layer when checked means that the move tool will switch layers automatically depending where you click on the canvas. This makes it feel almost like a vector program when you are selecting objects. The layer palette still shows you what is on each layer and you can use it to select objects as well.

Show Bounding Box makes it easy to rotate or transform an object when you click on it. When the cursor is held over the corners of the bounding box, it turns into a curved arrow. Click and drag to rotate.

Layers [Back to top](#)

Photoshop works on a system of layers, which are like sheets of transparency. When you place objects on a layer, they become part of the layer, just as if you had drawn on a transparency with a marker. If two objects are on the same layer and you want to move them closer to each other, you need to cut them out with the lasso or marquee tool and physically move them together. If they are on different transparent layers, however, all you have to do is move the layers with the move tool until the objects are closer to each other.



In a file with overlapping elements, putting them on different layers allows me to move them around without having to select them first.

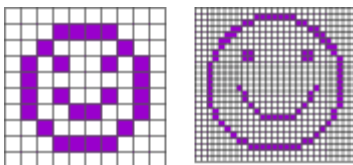
To see all the layers in your document, go to **Window > Show Layers**. Here are the layers for the image on the left. The eye icon on the left indicates that the layer is visible. Click on the eye to make a layer invisible. Select a layer and then click the trash icon at the bottom to delete a layer. Click and drag on layers to change their stacking order.

Resolution / Dimensions of Image / Size of File

Pixels per Inch

Photoshop files are made up of tiny squares of color called pixels. Using large pixels will make a grainy image, and using tiny pixels to make the same image will be much smoother. However, the smaller the pixels, the more of them there are in the file, and the larger the file size will be. If the file size is large, it opens slower, takes longer to save, and takes up more room on a disk. The key in choosing a resolution is finding the balance between image quality and file size.

For example, if I want to re-tile my bathroom floor to make a smiley face, I can either use large tiles or small tiles. On the left I use 10 tiles on each side for a total of 100 tiles. On the right I use 25 tiles on each side, for a total of 625 tiles.

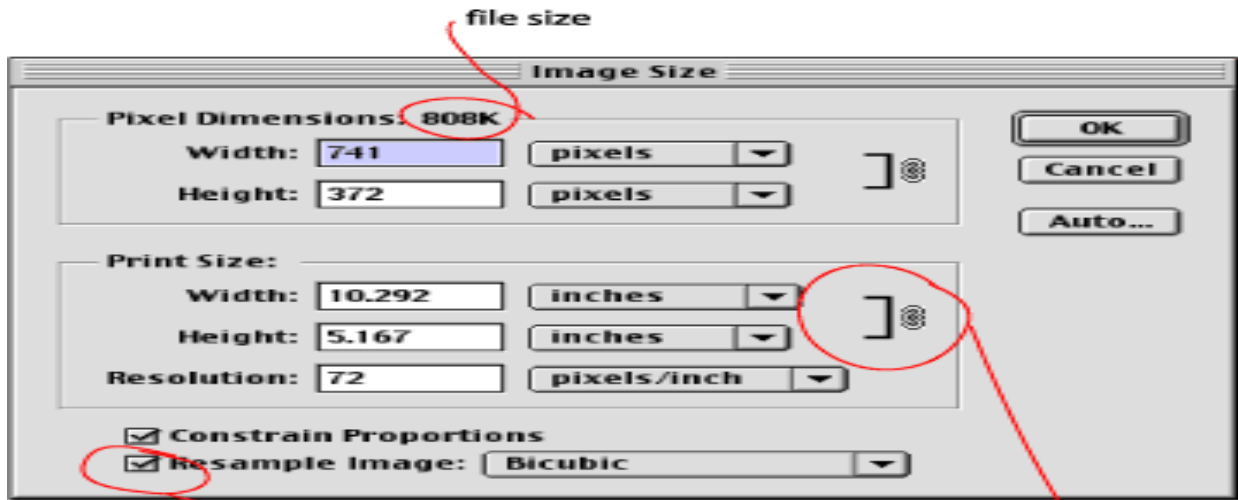


If each of these images measures an inch on each side and each tile is a pixel, the image on the left would have a resolution of 10 pixels per inch, or 10 ppi. The image on the right would be 25 ppi. Notice how a small increase in resolution corresponds to a much larger increase in file size, because the increase is exponential.

You can begin to see why images of different resolutions sometimes change size when combined in one file, or when brought into other programs. For instance, what if I wanted to draw the image on the right in tiles the size of the image on the left? I would have a much larger image in the end. This is what happens when you bring an image with a high resolution into a file which has a lower resolution. There can only be one resolution per file, so the pixels of the image coming in are resized to the size of the existing pixels in the file.

Image Size Dialog Box

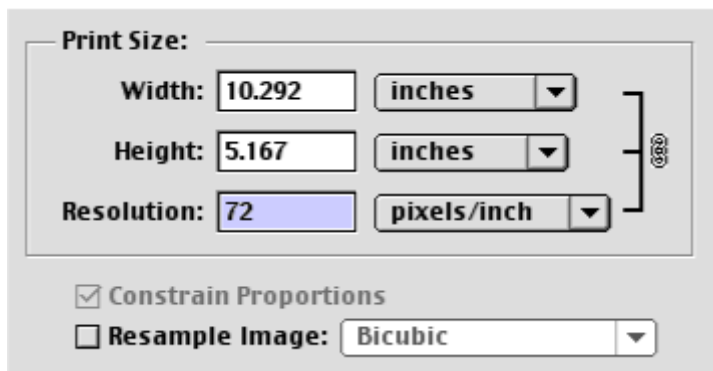
JPEG images from the Internet have a low resolution of 72 dpi. However there is no reason that your JPEG images have to have such a low resolution. Image files generated by digital cameras often begin with a low resolution but very large dimensions. You can use that to your advantage by trading area for resolution. To change the resolution or the size of your image, go to File > Image Size. It will look something like this.



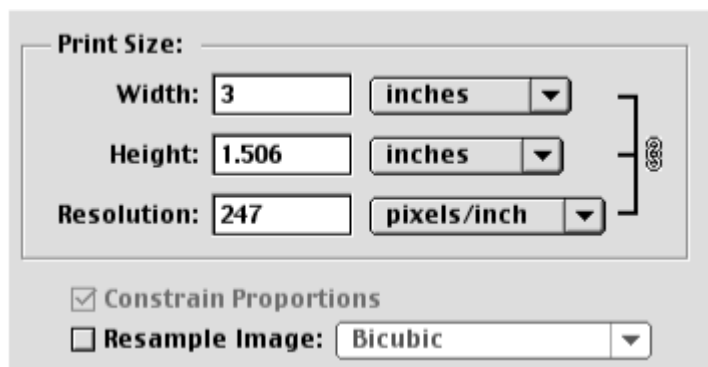
Resample means that resolution will not change if the width and height are altered. (and width and height won't change if resolution is altered).

At the bottom of the window there is a box marked "Resample Image". This box determines whether or not area can be exchanged for resolution. When it is checked, resolution remains independent of the image dimensions. If you change the dimensions or the resolution, you will see the file size change accordingly.

To exchange area for resolution, uncheck the Resample Image box:



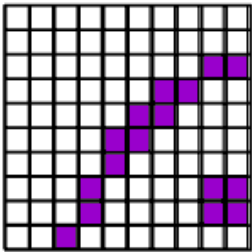
You can see that the linking symbol on the right now encompasses width, height and resolution. Perhaps you don't need a 10 inch wide image. If you make the width smaller, look what happens to the resolution:



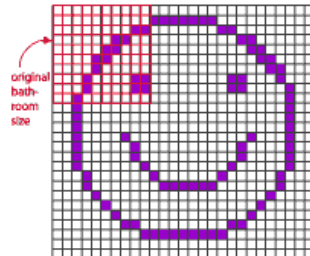
What is happening is simply that the pixels in your image have been decreased in size. The total number of pixels and therefore the file size remains the same. If you had used the resample option, pixels would have been added or removed from the image and the file size would have increased or decreased.

What resolution is best?: 300 is optimal, between 200 and 300 is okay, but below 200 the image will begin to show pixelation.

When to resample: When you have two images of different resolutions that you want to combine in Photoshop and you don't want either of them to change in dimension, you will have to resample one of them to bring them to the same resolution before combining them. This is because a single file can have only one resolution. When you bring in an image from a file with pixels of a different size, Photoshop will enlarge or shrink the pixels to match those in the file into which the image is going. Bringing an image with a resolution of 300 ppi into a file with 72 ppi will make the first image appear much larger when it arrives in the new file. Why? It is the same as if I decided to make my detailed smiley face in the larger tiles instead of the small ones. I would need a much bigger bathroom!



Tiling my detailed face in larger tiles



This is why I really need to change the tile size first!

Also, if you have an extremely high resolution that you don't need, you can resample down to 300 to save disk space.

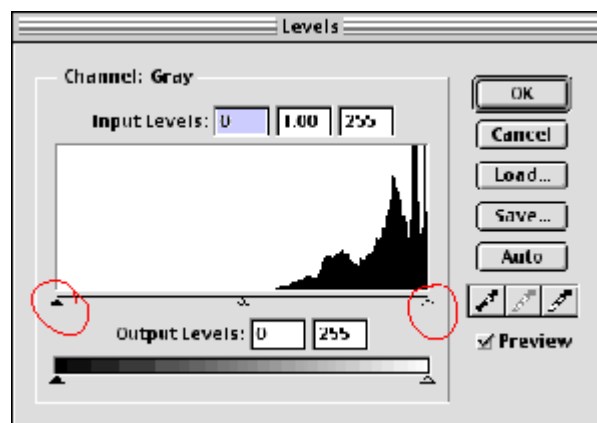
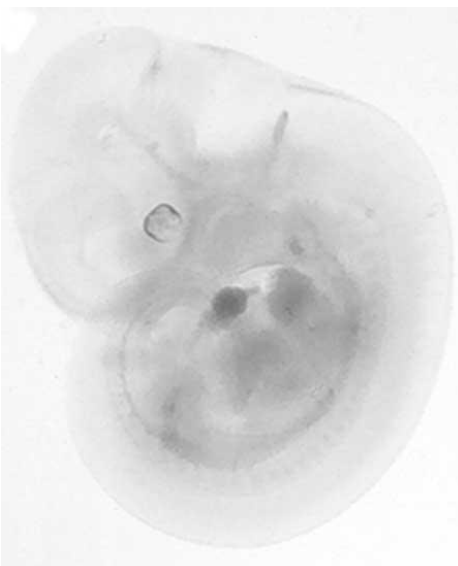
Tonal Adjustment

[Back to top](#)

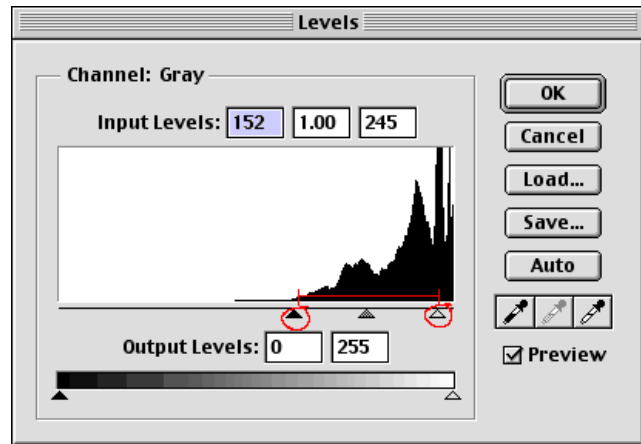
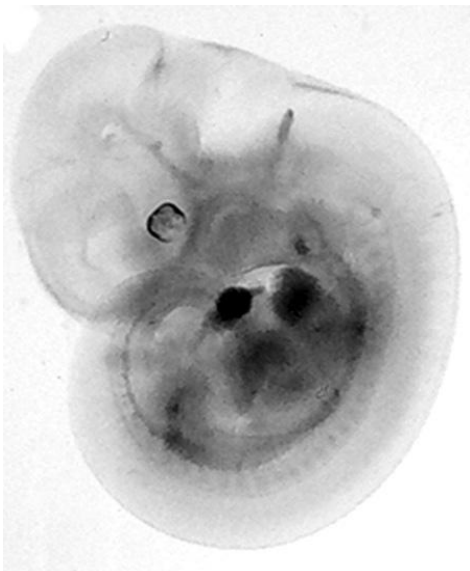
Sometimes a scan or even a digital photo won't look like what you saw under the microscope. There are some easy ways to adjust the color in an image. As long as the adjustment is made to the entire image, and not to selected parts, it should be OK ethically, although you should use your own judgment.

Levels

Sometimes an image will seem faded or washed-out. Using the Levels adjustment can increase the contrast in the image. Go to **Image > Adjust > Levels**. You will see this dialog box with a histogram showing the tonal values in the image. Here the curve is shifted to the right, which corresponds to what we can see--the image is too light.



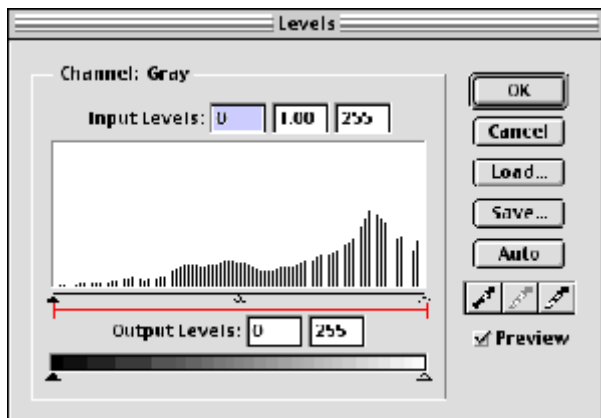
By moving the circled sliders toward the bell-shaped part of the curve, we can reset the value of the darkest and lightest pixels in the image. Moving the black arrow to the right will darken the darkest values in the image, and moving the white slider to the left will lighten the lightest values in the image.



Watching how the changes affect the image, let's gradually move the sliders inward to the edges of the curve.

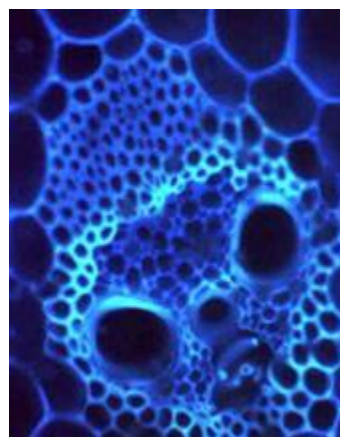
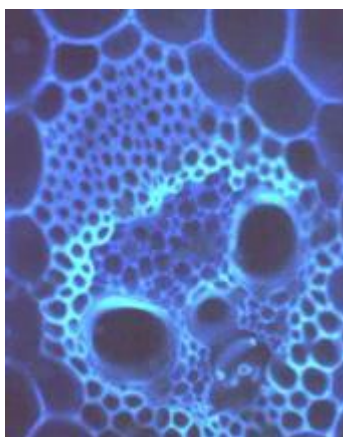
When we click OK, Photoshop will reset the curve, with our placed arrows as endpoints:

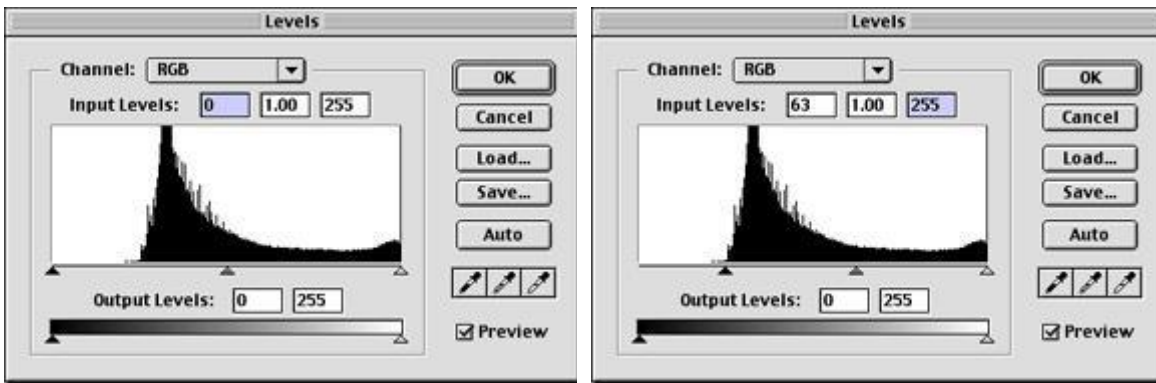
(Going back into Levels, we can see our new tonal values curve)



As you can see, what the levels adjustment did was take a segment of the tonal range and reassign the values from black to white. In the readjusted levels dialog box, you can see spaces indicating values that no longer exist. This is the difficulty in making image adjustments. When you over-adjust, you begin to leave gaps in the tonal range, and this will eventually cause a posterized look (too much black & white and not enough middle gray tones). The only way to avoid this is to capture a large range of tonal values when scanning or taking a picture, and to use only subtle adjustments to the images.

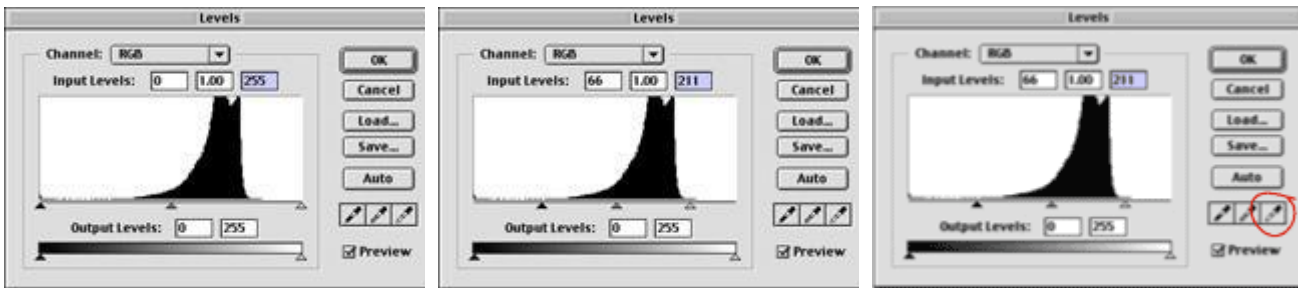
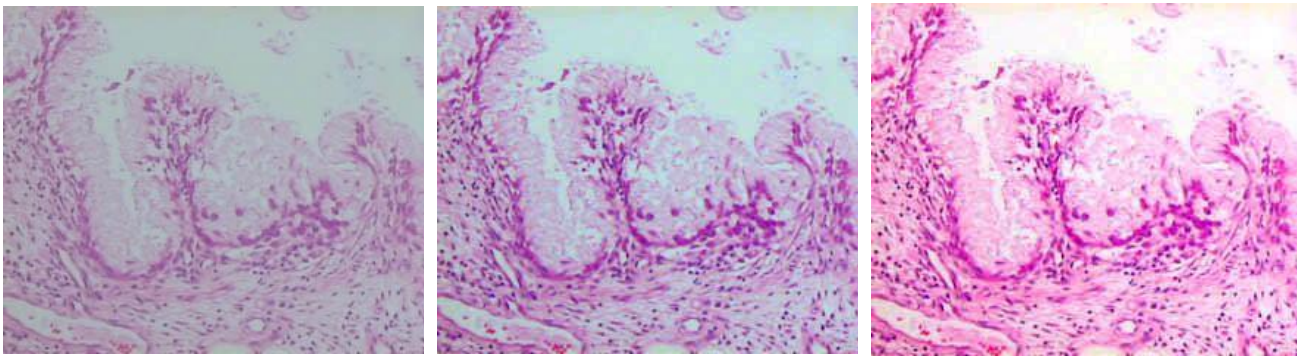
Using Levels on color images:





In this image the background wasn't quite black.

Moving the dark slider to the right deepened the darks.



Values are lacking at both ends of the curve.

Move sliders inward

Click with highlight dropper in the lightest part of the image to correct color imbalance.

CCTV Installation (CCCCTVI)

Objective

This program will enable the students to get overview of CCTV camera installation and configuration

Benefit

After doing this course, you can install new cameras and do the installation and configuration of the old camera.

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus

- Tools and Equipment
- Introducing CCTV
- Understand the fundamental element that make up CCTV system.
- Different types of cameras.
- SMPS power supply.
- Connectors and Cables
- Rj45 connector making.
- Dc connector making.
- BNC connector making.
- Power male connector.
- Basics of Networking
- Coaxial cable.
- Color code splicing security camera wiring.
- POE switch.
- Cat5/cat6 connector making.
- Configuration junction box.
- UPS installation.
- CCTV camera installation and configuration.
- Planning for CCTV Camera Installation
- NVR installation and configuration.
- DVR installation and configuration.
- Ip camera installation and configuration.
- Checking the Camera Function

Project

Student makes a project during training period.

Certification

Certificate in CCTV installation.

CCTV Study Material (CCCCTVI)**Tools and Equipment**

Types of Cameras for Photography

Compact Digital/Point and Shoot Cameras.

Bridge Cameras.

Action Cameras.

360 Cameras.

Film Cameras.

Smartphone Cameras.

Rugged Cameras.

Digital Cinema Cameras.

SMPS power supply

transfers power from a source — usually an AC outlet — to a DC device

an SMPS initially converts the ac source voltage into a dc voltage through a rectifier and an input filter



Connectors and Cables

Connectors are used where wire lines need to be attached or disconnected



The following sections discuss the types of cables used in networks and other related topics.

Unshielded Twisted Pair (UTP) Cable.

Shielded Twisted Pair (STP) Cable.

Coaxial Cable.

Fiber Optic Cable.

Cable Installation Guides.

Wireless LANs.

Unshielded Twisted Pair (UTP) Cable.

Rj45 connector making.

This is the perfect assortment of tools for someone learning to make their own network cables.



Step 1 – Spool out your length of cable. ...

Step 2 – Strip off the outer jacket. ...

Step 3 – Separate your wire pairs. ...

Step 4 – Arrange wires according to diagram. ...

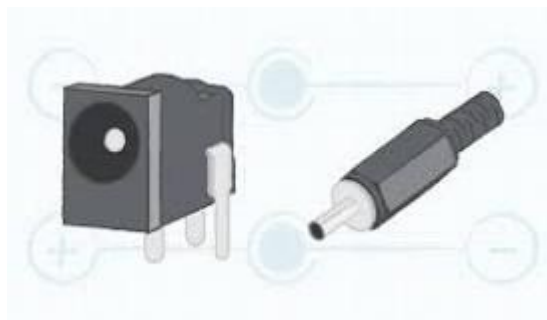
Step 5 – Cut the wires. ...

Step 6 – Insert wires into connector.

RJ45 cables have 8 color-coded wires, and the plugs have 8 pins and conductors. Eight wires are used as 4 pairs, each representing positive and negative polarity

Dc connector making

How do DC connectors work?



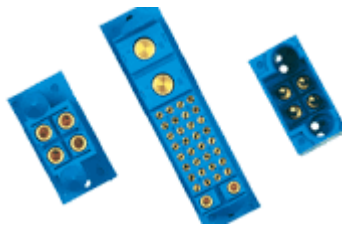
The standard dc barrel plug or jack has two conductors, one each for power and ground.



It uses an outer conductor with slots and some plastic dielectric on each gender

The BNC connector features two bayonet lugs on the female connector; mating is fully achieved with a quarter turn of the coupling nut

What is a power connector?



Power connectors act as the vital link between a device and its source of power. In consumer electronics, power connectors are what you plug into the wall receptacle.

Basics of Networking

connect nodes like computers, routers, and switches using cables, fiber optics, or wireless signals.



There are four types of wireless networks --

Five key elements of effective network security.

Identity. Accurate and positive identification of network users, hosts, applications, services, and resources is a must. ...

Perimeter security. ...

Data privacy. ...

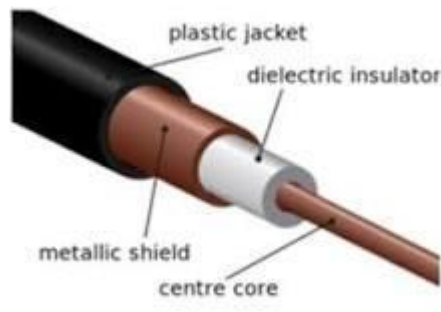
Security monitoring. ...

Policy management.

Private	Public
<ul style="list-style-type: none"> Addresses are used only within a local network. Cannot be used to access other networks. Addresses can be reused for networks. Addresses are not used for routing. Have a small number of available addresses. 	<ul style="list-style-type: none"> Used to communicate with the global Internet. Address is unique globally. Addresses are unique and cannot be reused. Assigned from IANA. Addresses can be used to communicate with any other device on the Internet.

What is an IP address (Internet Protocol address)? An Internet Protocol (IP) address is a unique numerical identifier for every device or network that connects to the internet.

Coaxial cable.



There are two main types of coaxial cables –

ones with an impedance of 75 Ohm (Ω) and ones with an impedance of 50 Ohm.

Color code splicing security camera wiring. □

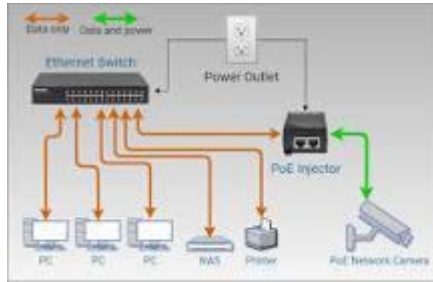
Connect red to red and black to black,



The Easiest Method for Splicing Security Camera Wires
Simply

find a compatible coupler and either insert or screw the ends of the cables into the coupler.

POE switch



A PoE switch

allows compatible devices to work in places where power outlets or network connections don't exist.
 some devices you connect to a PoE+ switch may use up to 30 watts per port, some may also not use that much.

power-over-ethernet



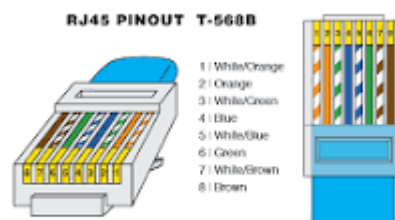
Cat5/cat6 connector making.

it is possible to mix and match Cat5e and Cat6 if necessary

HOW TO MAKE A Cat6 PATCH ETHERNET CABLE

1. This procedure generally applies to Cat 6 RJ45 connectors. ...
2. Cut the cable to the length needed. ...
3. Strip back the cable jacket approximately 1 inch. ...
4. Use the 568-B wiring scheme on both ends for a standard patch cable.
5. Bring all of the wires together as closely as possible.

⋮



Configuration junction box.

an enclosure housing electrical connections.



An electrical junction box (also known as a "jbox") is



A junction box i

an electrical box used to house splices

It ensures that the job is done right the first time.

Metal and Plastic Junction Boxes. Most boxes are manufactured using either metal or plastic materials. ...

Octagon and Round Junction Boxes. ...

Ceiling Fan-Rated Electrical Box. ...

4-Inch Square Box. ...

Junction Box. ...

Junction Box Covers. ...

Box Extenders. ...

Outdoor Junction Boxes.

UPS installation



The three major types of UPS system configurations are online double conversion, li

Installation Procedure

1. Remove the Empty Classic Battery Cabinet from the Pallet.
2. Position the Empty Classic Battery Cabinet.
3. Mechanical installation. Follow one of the procedures: ...
4. Connect the Signal Cables.
5. Connect the Power Cables from the UPS.
6. Install and Connect the Batteries.
7. Final Installation.



CCTV camera installation and configuration

Once the cameras have been installed and connected then:

1. Unpack the DVR or NVR from the box.
2. Remove the cover of the DVR by removing screws.
3. Connect the power and data cable from DVR/NVR to hard disk.
4. Close and secure the DVR case.
5. Connect the DVR to a power socket and then turn on the DVR.

How to Install CCTV Cameras

1. Mark the spot where you'll attach the bracket for mounting. ...
2. Attach and secure the camera. ...
3. Install the DVR (Digital Video Recorder) in a secure spot. ...
4. Plan the cable pathways from the cameras to the DVR. ...
5. Connect the network cable to the internet router. ...
6. Connect each camera to the DVR or NVR.

What are the Components of CCTV Camera

- VISOR:
- IRIS:
- OPTICS:
- BOX CAMERA:
- ANTI-VANDAL PROTECTION:
- POWER SUPPLY:



What are the 4 types of CCTV cameras?



Different Types of CCTV

- Dome Camera.
- Bullet Camera.
- C-mount Camera.
- Day/Night Camera.
- PTZ Camera.

Planning for CCTV Camera Installation

Carrying out a location survey

1. The level of risk in and around the site. ...
2. The contents of the property or area where you'll be installing your CCTV cameras. ...
3. The layout and structure of the building. ...
4. The levels of supervision you expect to deploy to support the CCTV camera system.



Know about each type in detail below.

- Dome CCTV.
- Bullet CCTV.
- C-Mount CCTV.
- PTZ Pan-tilt CCTV.
- Day/Night CCTV.
- Infrared CCTV.
- IP CCTV.
- Wireless CCTV.



What are the first thing to remember during installing CCTV?

Installing CCTV? Things you need to do first

- Step one: Think about how you'll respect people's privacy and uphold their rights. ...
- Step two: Consider if you need to use audio. ...
- Step three: Create a document which explains your decision. ...
- Step four: Update your policies. ...

- Step five: Pay attention to how your CCTV is set-up.

10 Common CCTV Problems and How to Fix Them

- Verify camera power and connection. ...
- Discover and ping camera. ...
- Know username / password. ...
- Check ARP tables. ...
- Confirm no IP conflict. ...
- Upgrade firmware. ...
- Reboot camera. ...
- Check cabling.

What are the Components of CCTV Camera

- VISOR:
- IRIS:
- OPTICS:
- BOX CAMERA:
- ANTI-VANDAL PROTECTION:
- POWER SUPPLY:

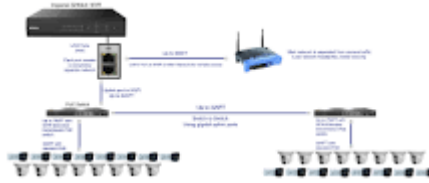
NVR installation and configuration

How to configure DVR and NVR?

Step 1 of 1: Add the DVR to the Timeline

1. Tap New Camera under Admin (top right), Cameras.
2. Select the DVR/NVR tab.
3. Give this DVR/NVR a name.
4. Enter the correct IP of the DVR/NVR, you can find it in the DVR/NVR's network configuration.
5. Select the correct vendor and required number of cameras.

How do I enable Poe in NVR?



Instructions for Connecting A POE Switch to a POE NVR

1. Step 1: Get a POE Switch. The first thing you want to do is to get a POE switch. ...
2. Step 2: Connect your IP Cameras to the POE Switch. ...
3. Step 3: Plug Your POE Switch into the Router. ...
4. Step 4: Now Power on the POE Switch. ...
5. Step 5: Add the Cameras to Your NVR

How do I open ports in NVR?

Virtual Servers

1. Make sure the NVR is connected to your router.
2. Login the NVR web management, change the HTTP port number to 8081. Change the RTSP port to 5554.
3. Access to the router's LAN IP address "192.168. 1.1". ...
4. Once logged into your router, follow the tips below. ...
5. The same as HTTP, add a new rule of RTSP.

DVR installation and configuration.

DVR Viewer Setup

1. Assign your DVR an IP Address.
2. Connect to your DVR on your LAN - Local Area Network.
3. Setting up Port Forwarding on your Router.
4. Setting up a Static DHCP IP address for your DVR.
5. Remote Internet Setup.
6. Creating and Configuring a Dymamic DNS Account.
7. Setting up Dynamic DNS on your Router.

A 4 Channel DVR System or a digital video recorder (DVR) works with analog cameras to receive video feed which it then records onto a hard drive.



A digital video recorder (DVR) is an electronic device that records video in a digital format to a disk drive, USB flash drive, SD memory card, SSD or other local or networked mass storage device.



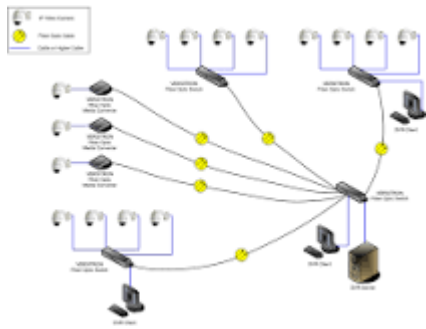
Ip camera installation and configuration

How to configure IP camera step by step?

1. Use a Command Prompt with the Ipconfig command. The easiest way to find out the IP address scheme of a network is by using the Command Prompt program. ...
2. Change the network settings on the PC to a 192.168. ...
3. Login to the camera and configure it for the main network scheme. ...
4. Change the computer network settings back to default

Here is how to proceed:

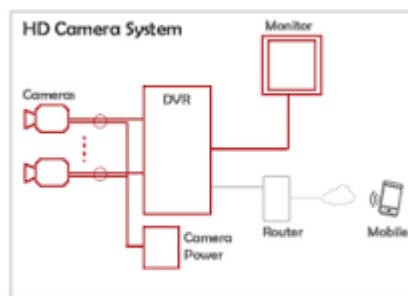
1. Take an Ethernet cable to connect the LAN port on the external PoE switch and the router. Then connect the router with the non-PoE NVR.
2. Use Ethernet cables to connect all IP cameras to the PoE switch RJ45 ports. ...
3. Use an HDMI cable or VGA cable to connect the monitor and the NVR.



What is required for IP cameras?



The IP camera requires a PoE (Power over Ethernet) network connection. Installation requires running the network cables, adding switches, and adjusting the cameras to view the areas you want to see. Run the network cable through the walls and ceilings to all the locations where you would like to install the IP cameras.



IP cameras have the advantage over HD Over Coax systems in terms of cabling and resolutions; however, a

What is the price of 12 MP IP camera?



12MP Hikvision CCTV Camera at Rs 11500 | Hikvision CCTV Camera in Faridabad | ID: 22369415588.

Checking the Camera Function

How to Test My Webcam (Online)

1. Open your web browser.
2. Type webcammictest.com into your browser's address bar.
3. Click the Check My Webcam button on the website's landing page.
4. When the pop-up permission box appears, click Allow.

How to test your microphone

1. Ensure that your microphone is connected to your computer.
2. Open the Start menu and select settings.
3. In the settings menu, select System and then choose Sound.
4. In the Sound settings, go to Input and check your connected microphones and select the microphone that you want to test.

How can I check my CCTV camera on my laptop?

How to View Recorded CCTV Camera Footage Saved in an FTP Server and Cloud

1. Step 1: Log into your FTP server or Cloud account at the Cloud service website.
2. Step 2: Choose the device and the date on which you want to watch the CCTV footage.
3. Step 3: Click a specific video clip to see the CCTV security camera footage.



Programming C/C++ (CCPCCPP)

Objective

The objective of course is to learn the fundamental programming concepts and methodologies which are essential to building good C/C++ programs.

Benefit

Core concepts to design, implement, debug and test programs using the fundamental elements of C/C++ which enables student to get basics of programming

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus

Fundamentals of object oriented programming.

- Data Representation
 - Introduction
 - Digital Number System
 - Number Conversions
 - Binary Representation of Integers
 - Binary Representation of Real Numbers
 - Representing Characters in memory
 - ISCII

- General OOP Concepts
 - Introduction
 - Evolution of Software
 - Basic concept of OOP
 - Encapsulation
 - Modularity
 - Advantage and Disadvantages of OOP

- Getting Started with C++
 - Introduction

- C++ Character Set
- Token (Lexical Units)
- A First Look at C++ Program
- Using I/O operators
- Typing and Executing Programs
- Data Handling
 - Introduction
 - Concept of Data Types
 - C++ Data Types
 - Variables
 - Formatting Output
- Operators and Expressions in C++
 - Introduction
 - Operators
 - Expressions
 - Assignment Statements
 - C++ Standards
- Flow of control
 - Introduction
 - Statements
 - Statements flow control
 - Selection Statements
 - Iteration Statements
- Standard Library Function.
 - Introduction
 - Header Files
 - String and Character Related Function
 - Mathematical Functions
- Structure Data Type Array
 - Introduction
 - Needs of Array
 - Types of Array
- Practical Implementation
 - Data Types
 - Lops
 - Iteration Statements
 - Function
 - Array
 - Structures

Project

Student makes a project during training period.

Certification

Study Material of C++ (CCPCCPP)

What is C++?

C++ is a cross-platform language that can be used to create high-performance applications.

C++ was developed by Bjarne Stroustrup, as an extension to the [C language](#).

C++ gives programmers a high level of control over system resources and memory.

The language was updated 4 major times in 2011, 2014, 2017, and 2020 to C++11, C++14, C++17, C++20.

Why Use C++

C++ is one of the world's most popular programming languages.

C++ can be found in today's operating systems, Graphical User Interfaces, and embedded systems.

C++ is an object-oriented programming language which gives a clear structure to programs and allows code to be reused, lowering development costs.

C++ is portable and can be used to develop applications that can be adapted to multiple platforms.

C++ is fun and easy to learn!

As C++ is close to [C](#), [C#](#) and [Java](#), it makes it easy for programmers to switch to C++ or vice versa.

Difference between C and C++

C++ was developed as an extension of [C](#), and both languages have almost the same syntax.

The main difference between C and C++ is that C++ support classes and objects, while C does not.

C++ Install IDE

An IDE (Integrated Development Environment) is used to edit AND compile the code.

Popular IDE's include Code::Blocks, Eclipse, and Visual Studio. These are all free, and they can be used to both edit and debug C++ code.

Note: Web-based IDE's can work as well, but functionality is limited.

We will use **Code::Blocks** in our tutorial, which we believe is a good place to start.

You can find the latest version of Codeblocks at <http://www.codeblocks.org/>. Download the `mingw-setup.exe` file, which will install the text editor with a compiler.

C++ Quickstart

Let's create our first C++ file.

Open Codeblocks and go to **File > New > Empty File**.

Write the following C++ code and save the file as `myfirstprogram.cpp` (**File > Save File as**):

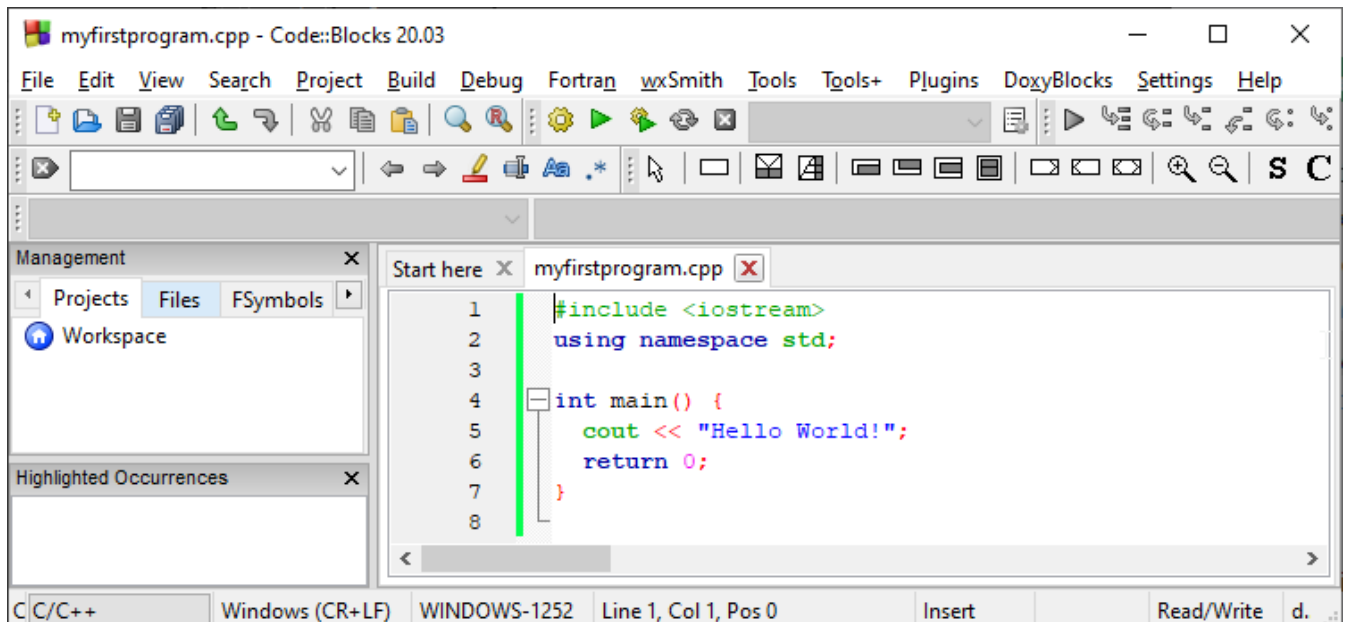
myfirstprogram.cpp

```
#include <iostream>
using namespace std;
```

```
int main() {
    cout << "Hello World!";
    return 0;
}
```

Don't worry if you don't understand the code above - we will discuss it in detail in later chapters. For now, focus on how to run the code.

In Codeblocks, it should look like this:



Then, go to **Build > Build and Run** to run (execute) the program. The result will look something to this:

```
Hello World!
Process returned 0 (0x0) execution time : 0.011 s
Press any key to continue.
```

Congratulations! You have now written and executed your first C++ program.

myfirstprogram.cpp

Code:

```
#include <iostream>
using namespace std;

int main() {
    cout << "Hello World!";
    return 0;
}
```

Result:

Hello World!

C++ Syntax

Let's break up the following code to understand it better:

Example

```
#include <iostream>
using namespace std;

int main() {
    cout << "Hello World!";
    return 0;
}
```

Example explained

Line 1: `#include <iostream>` is a **header file library** that lets us work with input and output objects, such as `cout` (used in line 5). Header files add functionality to C++ programs.

Line 2: `using namespace std` means that we can use names for objects and variables from the standard library.

Don't worry if you don't understand how `#include <iostream>` and `using namespace std` works. Just think of it as something that (almost) always appears in your program.

Line 3: A blank line. C++ ignores white space. But we use it to make the code more readable.

Line 4: Another thing that always appear in a C++ program, is `int main()`. This is called a **function**. Any code inside its curly brackets `{ }` will be executed.

Line 5: `cout` (pronounced "see-out") is an **object** used together with the *insertion operator* (`<<`) to output/print text. In our example it will output "Hello World!".

Note: Every C++ statement ends with a semicolon `;`.

Note: The body of `int main()` could also been written as:

```
int main () { cout << "Hello World! "; return 0; }
```

Remember: The compiler ignores white spaces. However, multiple lines makes the code more readable.

Line 6: `return 0` ends the main function.

Line 7: Do not forget to add the closing curly bracket `}` to actually end the main function.

Omitting Namespace

You might see some C++ programs that runs without the standard namespace library. The `using namespace std` line can be omitted and replaced with the `std` keyword, followed by the `::` operator for some objects:

Example

```
#include <iostream>

int main() {
    std::cout << "Hello World!";
    return 0;
}
```

C++ Variables

Variables are containers for storing data values.

In C++, there are different **types** of variables (defined with different keywords), for example:

- **int** - stores integers (whole numbers), without decimals, such as 123 or -123
 - **double** - stores floating point numbers, with decimals, such as 19.99 or -19.99
 - **char** - stores single characters, such as 'a' or 'B'. Char values are surrounded by single quotes
 - **string** - stores text, such as "Hello World". String values are surrounded by double quotes
 - **bool** - stores values with two states: true or false
-

Declaring (Creating) Variables

To create a variable, specify the type and assign it a value:

Syntax

```
type variableName = value;
```

Where *type* is one of C++ types (such as **int**), and *variableName* is the name of the variable (such as **x** or **myName**). The **equal sign** is used to assign values to the variable.

To create a variable that should store a number, look at the following example:

Example

Create a variable called **myNum** of type **int** and assign it the value **15**:

```
int myNum = 15;
cout << myNum;
```

You can also declare a variable without assigning the value, and assign the value later:

Example

```
int myNum;
myNum = 15;
cout << myNum;
```

Note that if you assign a new value to an existing variable, it will overwrite the previous value:

Example

```
int myNum = 15; // myNum is 15
myNum = 10; // Now myNum is 10
cout << myNum; // Outputs 10
```

Other Types

A demonstration of other data types:

Example

```
int myNum = 5; // Integer (whole number without decimals)
double myFloatNum = 5.99; // Floating point number (with decimals)
char myLetter = 'D'; // Character
string myText = "Hello"; // String (text)
bool myBoolean = true; // Boolean (true or false)
```

You will learn more about the individual types in the [Data Types](#) chapter.

Display Variables

The `cout` object is used together with the `<<` operator to display variables.

To combine both text and a variable, separate them with the `<<` operator:

Example

```
int myAge = 35;
cout << "I am " << myAge << " years old.";
```

Add Variables Together

To add a variable to another variable, you can use the `+` operator:

Example

```
int x = 5;
int y = 6;
int sum = x + y;
cout << sum;
```

C++ User Input

You have already learned that `cout` is used to output (print) values. Now we will use `cin` to get user input.

`cin` is a predefined variable that reads data from the keyboard with the extraction operator (`>>`).

In the following example, the user can input a number, which is stored in the variable `x`. Then we print the value of `x`:

Example

```
int x;
cout << "Type a number: "; // Type a number and press enter
cin >> x; // Get user input from the keyboard
cout << "Your number is: " << x; // Display the input value
```

Good To Know

`cout` is pronounced "see-out". Used for **output**, and uses the insertion operator (`<<`)

`cin` is pronounced "see-in". Used for **input**, and uses the extraction operator (`>>`)

Creating a Simple Calculator

In this example, the user must input two numbers. Then we print the sum by calculating (adding) the two numbers:

Example

```
int x, y;
int sum;
cout << "Type a number: ";
cin >> x;
cout << "Type another number: ";
cin >> y;
sum = x + y;
cout << "Sum is: " << sum;
```

C++ Data Types

As explained in the [Variables](#) chapter, a variable in C++ must be a specified data type:

Example

```
int myNum = 5;           // Integer (whole number)
float myFloatNum = 5.99; // Floating point number
double myDoubleNum = 9.98; // Floating point number
char myLetter = 'D';    // Character
bool myBoolean = true;  // Boolean
string myText = "Hello"; // String
```

Basic Data Types

The data type specifies the size and type of information the variable will store:

Data Type	Size	Description
boolean	1 byte	Stores true or false values
char	1 byte	Stores a single character/letter/number, or ASCII values
int	2 or 4 bytes	Stores whole numbers, without decimals
float	4 bytes	Stores fractional numbers, containing one or more decimals. Sufficient for storing 6-7 decimal digits
double	8 bytes	Stores fractional numbers, containing one or more decimals. Sufficient for storing 15 decimal digits

C++ Operators

Operators are used to perform operations on variables and values.

In the example below, we use the **+** operator to add together two values:

Example

```
int x = 100 + 50;
```

Although the **+** operator is often used to add together two values, like in the example above, it can also be used to add together a variable and a value, or a variable and another variable:

Example

```
int sum1 = 100 + 50;    // 150 (100 + 50)
int sum2 = sum1 + 250;  // 400 (150 + 250)
int sum3 = sum2 + sum2; // 800 (400 + 400)
```

C++ divides the operators into the following groups:

- [Arithmetic operators](#)
- [Assignment operators](#)
- [Comparison operators](#)
- [Logical operators](#)
- Bitwise operators

Arithmetic Operators

Arithmetic operators are used to perform common mathematical operations.

Operator	Name	Description	Example
+	Addition	Adds together two values	$x + y$
-	Subtraction	Subtracts one value from another	$x - y$

*	Multiplication	Multiplies two values	$x * y$
/	Division	Divides one value by another	x / y
%	Modulus	Returns the division remainder	$x \% y$
++	Increment	Increases the value of a variable by 1	++x
--	Decrement	Decreases the value of a variable by 1	--x

C++ Strings

Strings are used for storing text.

A **string** variable contains a collection of characters surrounded by double quotes:

Example

Create a variable of type **string** and assign it a value:

```
string greeting = "Hello";
```

To use strings, you must include an additional header file in the source code, the `<string>` library:

Example

```
// Include the string library
#include <string>
```

```
// Create a string variable
string greeting = "Hello";
```

C++ Conditions and If Statements

You already know that C++ supports the usual logical conditions from mathematics:

- Less than: $a < b$
- Less than or equal to: $a \leq b$
- Greater than: $a > b$
- Greater than or equal to: $a \geq b$
- Equal to: $a == b$
- Not Equal to: $a != b$

You can use these conditions to perform different actions for different decisions.

C++ has the following conditional statements:

- Use **if** to specify a block of code to be executed, if a specified condition is true
- Use **else** to specify a block of code to be executed, if the same condition is false
- Use **else if** to specify a new condition to test, if the first condition is false
- Use **switch** to specify many alternative blocks of code to be executed

The if Statement

Use the **if** statement to specify a block of C++ code to be executed if a condition is **true**.

Syntax

```
if (condition) {  
    // block of code to be executed if the condition is true  
}
```

Note that **if** is in lowercase letters. Uppercase letters (If or IF) will generate an error.

In the example below, we test two values to find out if 20 is greater than 18. If the condition is **true**, print some text:

Example

```
if (20 > 18) {  
    cout << "20 is greater than 18";  
}
```

We can also test variables:

Example

```
int x = 20;  
int y = 18;  
if (x > y) {  
    cout << "x is greater than y";  
}
```

The else if Statement

Use the **else if** statement to specify a new condition if the first condition is **false**.

Syntax

```
if (condition1) {  
    // block of code to be executed if condition1 is true  
} else if (condition2) {
```

```
// block of code to be executed if the condition1 is false and condition2 is true
} else {
// block of code to be executed if the condition1 is false and condition2 is false
}
```

Example

```
int time = 22;
if (time < 10) {
    cout << "Good morning.";
} else if (time < 20) {
    cout << "Good day.";
} else {
    cout << "Good evening.";
}
// Outputs "Good evening."
```

Example explained

In the example above, time (22) is greater than 10, so the **first condition** is **false**. The next condition, in the **else if** statement, is also **false**, so we move on to the **else** condition since **condition1** and **condition2** is both **false** - and print to the screen "Good evening".

C++ Switch Statements

Use the **switch** statement to select one of many code blocks to be executed.

Syntax

```
switch(expression) {
    case x:
        // code block
        break;
    case y:
        // code block
        break;
    default:
        // code block
}
```

This is how it works:

- The **switch** expression is evaluated once
- The value of the expression is compared with the values of each **case**
- If there is a match, the associated block of code is executed
- The **break** and **default** keywords are optional, and will be described later in this chapter

The example below uses the weekday number to calculate the weekday name:

Example

```
int day = 4;
switch (day) {
```



```

case 1:
    cout << "Monday";
    break;
case 2:
    cout << "Tuesday";
    break;
case 3:
    cout << "Wednesday";
    break;
case 4:
    cout << "Thursday";
    break;
case 5:
    cout << "Friday";
    break;
case 6:
    cout << "Saturday";
    break;
case 7:
    cout << "Sunday";
    break;
}
// Outputs "Thursday" (day 4)

```

The break Keyword

When C++ reaches a **break** keyword, it breaks out of the switch block.

This will stop the execution of more code and case testing inside the block.

When a match is found, and the job is done, it's time for a break. There is no need for more testing.

A break can save a lot of execution time because it "ignores" the execution of all the rest of the code in the switch block.

The default Keyword

The **default** keyword specifies some code to run if there is no case match:

Example

```

int day = 4;
switch (day) {
    case 6:
        cout << "Today is Saturday";
        break;
    case 7:
        cout << "Today is Sunday";
        break;
    default:
        cout << "Looking forward to the Weekend";
}

```

```
}  
// Outputs "Looking forward to the Weekend"
```

C++ While Loop

The **while** loop loops through a block of code as long as a specified condition is **true**:

Syntax

```
while (condition) {  
    // code block to be executed  
}
```

In the example below, the code in the loop will run, over and over again, as long as a variable (**i**) is less than 5:

Example

```
int i = 0;  
while (i < 5) {  
    cout << i << "\n";  
    i++;  
}
```

C++ For Loop

When you know exactly how many times you want to loop through a block of code, use the **for** loop instead of a **while** loop:

Syntax

```
for (statement 1; statement 2; statement 3) {  
    // code block to be executed  
}
```

Statement 1 is executed (one time) before the execution of the code block.

Statement 2 defines the condition for executing the code block.

Statement 3 is executed (every time) after the code block has been executed.

The example below will print the numbers 0 to 4:

Example

```
for (int i = 0; i < 5; i++) {  
    cout << i << "\n";  
}
```

Example explained

Statement 1 sets a variable before the loop starts (int i = 0).

Statement 2 defines the condition for the loop to run (i must be less than 5). If the condition is true, the loop will start over again, if it is false, the loop will end.

Statement 3 increases a value (i++) each time the code block in the loop has been executed.

Another Example

This example will only print even values between 0 and 10:

Example

```
for (int i = 0; i <= 10; i = i + 2) {  
    cout << i << "\n";  
}
```

Nested Loops

It is also possible to place a loop inside another loop. This is called a **nested loop**.

The "inner loop" will be executed one time for each iteration of the "outer loop":

Example

```
// Outer loop  
for (int i = 1; i <= 2; ++i) {  
    cout << "Outer: " << i << "\n"; // Executes 2 times  
  
    // Inner loop  
    for (int j = 1; j <= 3; ++j) {  
        cout << " Inner: " << j << "\n"; // Executes 6 times (2 * 3)  
    }  
}
```


The for-each Loop

There is also a "**for-each** loop" (introduced in C++ version 11 (2011), which is used exclusively to loop through elements in an [array](#) (or other data sets):

Syntax

```
for (type variableName : arrayName) {  
    // code block to be executed  
}
```

The following example outputs all elements in an array, using a "**for-each** loop":

Example

```
int myNumbers[5] = {10, 20, 30, 40, 50};  
for (int i : myNumbers) {  
    cout << i << "\n";  
}
```

C++ Arrays

Arrays are used to store multiple values in a single variable, instead of declaring separate variables for each value.

To declare an array, define the variable type, specify the name of the array followed by **square brackets** and specify the number of elements it should store:

```
string cars[4];
```

We have now declared a variable that holds an array of four strings. To insert values to it, we can use an array literal - place the values in a comma-separated list, inside curly braces:

```
string cars[4] = {"Volvo", "BMW", "Ford", "Mazda"};
```

To create an array of three integers, you could write:

```
int myNum[3] = {10, 20, 30};
```

Access the Elements of an Array

You access an array element by referring to the index number inside square brackets `[]`.

This statement accesses the value of the **first element** in **cars**:

Example

```
string cars[4] = {"Volvo", "BMW", "Ford", "Mazda"};
cout << cars[0];
// Outputs Volvo
```

Note: Array indexes start with 0: [0] is the first element. [1] is the second element, etc.

Change an Array Element

To change the value of a specific element, refer to the index number:

```
cars[0] = "Opel";
```

Example

```
string cars[4] = {"Volvo", "BMW", "Ford", "Mazda"};
cars[0] = "Opel";
cout << cars[0];
```

Loop Through an Array

You can loop through the array elements with the **for** loop.

The following example outputs all elements in the **cars** array:

Example

```
string cars[5] = {"Volvo", "BMW", "Ford", "Mazda", "Tesla"};
for (int i = 0; i < 5; i++) {
    cout << cars[i] << "\n";
}
```

C++ Functions

A function is a block of code which only runs when it is called.

You can pass data, known as parameters, into a function.

Functions are used to perform certain actions, and they are important for reusing code: Define the code once, and use it many times.

Create a Function

C++ provides some pre-defined functions, such as `main()`, which is used to execute code. But you can also create your own functions to perform certain actions.

To create (often referred to as *declare*) a function, specify the name of the function, followed by parentheses `()`:

Syntax

```
void myFunction() {  
    // code to be executed  
}
```

Example Explained

- `myFunction()` is the name of the function
- `void` means that the function does not have a return value. You will learn more about return values later in the next chapter
- inside the function (the body), add code that defines what the function should do

Call a Function

Declared functions are not executed immediately. They are "saved for later use", and will be executed later, when they are called.

To call a function, write the function's name followed by two parentheses `()` and a semicolon `;`

In the following example, `myFunction()` is used to print a text (the action), when it is called:

Example

Inside `main`, call `myFunction()`:

```
// Create a function  
void myFunction() {  
    cout << "I just got executed!";  
}  
  
int main() {  
    myFunction(); // call the function  
    return 0;  
}
```



```
}  
  
// Outputs "I just got executed!"
```

A function can be called multiple times:

Example

```
void myFunction() {  
    cout << "I just got executed!\n";  
}
```

```
int main() {  
    myFunction();  
    myFunction();  
    myFunction();  
    return 0;  
}
```

```
// I just got executed!  
// I just got executed!  
// I just got executed!
```

Function Declaration and Definition

A C++ function consist of two parts:

- **Declaration:** the return type, the name of the function, and parameters (if any)
- **Definition:** the body of the function (code to be executed)

```
void myFunction() { // declaration  
    // the body of the function (definition)  
}
```

Note: If a user-defined function, such as `myFunction()` is declared after the `main()` function, **an error will occur:**

Example

```
int main() {  
    myFunction();  
    return 0;  
}
```

```
void myFunction() {  
    cout << "I just got executed!";  
}
```

```
// Error
```

However, it is possible to separate the declaration and the definition of the function - for code optimization.

You will often see C++ programs that have function declaration above `main()`, and function definition below `main()`. This will make the code better organized and easier to read:

Example

```
// Function declaration
void myFunction();

// The main method
int main() {
    myFunction(); // call the function
    return 0;
}

// Function definition
void myFunction() {
    cout << "I just got executed!";
}
```

C++ What is OOP?

OOP stands for Object-Oriented Programming.

Procedural programming is about writing procedures or functions that perform operations on the data, while object-oriented programming is about creating objects that contain both data and functions.

Object-oriented programming has several advantages over procedural programming:

- OOP is faster and easier to execute
- OOP provides a clear structure for the programs
- OOP helps to keep the C++ code DRY "Don't Repeat Yourself", and makes the code easier to maintain, modify and debug
- OOP makes it possible to create full reusable applications with less code and shorter development time

Tip: The "Don't Repeat Yourself" (DRY) principle is about reducing the repetition of code. You should extract out the codes that are common for the application, and place them at a single place and reuse them instead of repeating it.

C++ What are Classes and Objects?

Classes and objects are the two main aspects of object-oriented programming.

Look at the following illustration to see the difference between class and objects:

class

Fruit

objects

Apple

Banana

Mango

Another example:

class

Car

objects

Volvo

Audi

Toyota

So, a class is a template for objects, and an object is an instance of a class.

When the individual objects are created, they inherit all the variables and functions from the class.

Certificate Course in Yoga and Diet Management

Code: CCYDM

Duration: 40 Hours

Three Months – One Lecture per Day

Aims:

- To optimize body weight with appropriate protein.
- To prevent chronic diseases by improving dietary habits.

Objectives:

- To achieve a state of positive health.
- Prevention of deficiency diseases.
- Increasing the life expectancy.

Module I

1. Yoga Therapy

- 1.1 Yoga Therapy: Area and Role Of Lifestyle and Diet in Yoga Therapy, Yoga for Health.
- 1.2 Yoga Management:- Arthritis, Cervical Spondylosis, Back Pain, Sciatica Pain, Hernia
- 1.3 Kidney Disease, Thyroid, Obesity, Liver Related Problem, Diabetes, Constipation.
- 1.4 Hypertension, Heart Disease, Vision Defects, Insomnia, Headache, Mental Stress.

Module 2. Diet and Nutrition

- 2.1 Knowledge of Yogic Principles -Ahara, Vihar, Achar- Vichar.
- 2.2 Alternative Therapy: Basic principles of Ayurveda, Naturopathy.
- 2.3 Yogic concept of healthy living: Tridosha.
- 2.4 Therapeutic importance of Dincharya and Ritucarya,
- 2.5 Importance of Diet (Aahara).
- 2.6 Yoga as preventive and promotive health care

Module III

3. Bandha and Mudra

- 3.1 JalandharaBandha, UddiyanaBandha, MaulaBandha, Tri Bandha
- 3.2 Yoga Mudra, Shanmukhi Mudra, Shambhavi Mudra, VipareetKarni Mudra

Course Outcomes: By the end of Course, the students will be able to:

- Utilize knowledge from the physical and biological sciences as a basis for understanding the role of food and nutrients in health and disease processes.
- Provide nutrition counseling and education to individuals, groups, and communities throughout the lifespan using a variety of communication strategies.
- Apply technical skills, knowledge of health behavior, clinical judgment, and decision-making skills when assessing and evaluating the nutritional status of individuals and communities and their response to nutrition intervention.
- Implement strategies for food access, procurement, preparation, and safety for individuals, families, and communities.

Assessment with Pen and Paper:

Possible assessment methods include: quizzes, tests, collected assignments, group activities and demonstration of skills and performance. Such assessments and related assignments will develop critical thinking techniques and reading, along with developing classical music skills.

Grading System will be adopted for Certification.

Marks	Grades	Grade Point
>90 and <=100	A1	10
>80 and <=90	A2	9
>70 and <=80	B1	8
>60 and <=70	B2	7
>50 and <=60	C1	6
>40 and <=50	C2	5

Accounting On Computer (AOCAC)

Objective

The objective of course is to learn the aspect the computer applications in accounting and Taxation.

Benefit

Students are expert in basic norms and procedures of taxation and computer in general and accounting which enables student to get knowledge of their useand role in Accounting.

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus Accounting on Computer

- MS-Word & MS-Excel
 - Basic knowledge of working on MS Word and Excel Sheet
 - Creating Macros and Opening non-excel sheet in excel.
 - Import of excel data sheet
 - Attaching spreadsheets in MS Word

- Data Bases
 - Basic of Data Base
 - Working with Forms
 - Reports and Macros

- Financial Analysis Tools
 - Cash flow/fund flow analysis
 - Ratio Analysis
 - Frequently used checks/validation of inputs
- Use of Internet
 - Introduction to www and search engine
 - Netscape Navigator, e-commerce and E-marketing
 - Advertising and online marketing, electronic payment system
 - Different types of Payment and useful job hunting sites

- Security in MS office
 - Protection of documents and worksheets

- Income Tax
 - Income Heads under Income Tax Act
 - Classification of Assesses, Deduction and Exemption
 - Computation of taxable Income and Tax, Advance Tax
 - Basic concepts of Service Tax

- Taxable Services under Service Tax Act
- Basic concept of Comprehend VAT, Its registration, Rules and Procedures

- Banking Fundamental
 - Knowledge of banking procedure and instrumentation
 - Interest calculation and usage of plastic money
 - Knowledge of Phone Banking and internet banking
 - Debit Card & Credit Card
 - Understanding financial projections and project preparation

- ESIC
 - Introduction of ESIC law
 - ESIC rules for contribution

- EPF
 - Introduction of EPF Provisions
 - Information about Gratuity Act and Bonus Act

Project

Students make a project during training period.

Certification

Certificate in Accounting on Computer.

Study Material of Accounting on Computer (AOCAC)

COMPUTERIZED ACCOUNTING

UNIT - I

Computerized Accounting:

Computerised accounting system refers to the system of maintaining accounts using computers. It involves the processing of accounting transactions through the use of hardware and software in order to keep and produce accounting records and reports.

Features of computerized accounting Simple and integrated

It is designed to automate and integrate all the business operations such as purchase, sales, finance, inventory and manufacturing. The CAS may be integrated with enhanced Management Information System (MIS), multi-lingual and data organisation capabilities to simplify all the business processes of the organisation easily and cost-effectively.

ii) Speed

It can perform functions at much higher speed than doing the same manually.

iii) Accuracy

Computers perform functions with high degree of accuracy. If hardware, software and input by people are proper, the computerised accounting system can assure of accurate outcome.

iv) Reliability

Computers are used to process large volumes of data and hence, data provided by it are reliable.

v) Versatility

Computer and accounting software have the ability to perform diverse tasks. For example, by simply recording accounting entries through accounting software, one can get trial balance, trading account, profit and loss account, balance sheet and diverse reports.

vi) Transparency

With computerised accounting, the organisation will have greater transparency of day-today business operations and access to the vital information.

vii) Scalability

computerized accounting enables processing of any volume of data in tune with the change in the size of the business.

viii) On-line facility

computerized accounting offers online facility to store and process transaction and data so as to retrieve information to generate and view financial reports in any part of the world.

ix) Security

In computerized accounting, only the authorised users are permitted to have access to accounting data. Under manual accounting system, it is very difficult to secure such information as it is open to inspection by any person dealing with the books of accounts.

Components of Computerised Accounting System

Components of Computerised Accounting can be classified into six categories, namely,

i) Hardware ii) Software iii) People iv) Procedure v) Data and vi) Connectivity.

i) Hardware

The physical components of a computer constitute its hardware. Hardware consists of input devices and output devices that make a complete computer system. Examples of input devices are keyboard, optical scanner, mouse, joystick, touch screen and slylus which are used to feed data into the computer. Output devices such as monitor and printer are media to get the output from the computer.

ii) Software

A set of programs that form an interface between the hardware and the user of a computer system are referred to as software. The following are the various types of software:

a) **System software:** A set of programs to control the internal operations such as reading data from input devices, giving results to output devices and ensuring proper functioning of components is called system software. The system software includes the following:

(1) **Operating system:** A set of tools and programs to manage the overall working of a computer using a defined set of hardware components is called an operating system. It is the interface between the user and the computer system. Example: DOS, Windows, UBUNTU, imac, etc.

(2) **Programming software:** Special software to accept data and interpret them in the form of machine/assembly language understandable by a computer. Example: C, PASCAL, COBOL, etc.

(3) **Utility software:** These are designed specifically for managing the computer device and its resources. Example: File manager, Anti-virus software, etc.

b) **Application software:** Programs designed to perform a specific function for a user. An application software can be classified as follows:

(i) General purpose software: This type of application can be used for a variety of tasks and not limited to one particular function. Example: MS-Office.

(ii) Specific purpose software: This software is created to execute one specific task and they are customised to the needs of user. Example: Accounting software, payroll software, etc.

iii) People

The most important element of a computer system is its users. They are also called live-ware of the computer system. The following types of people interact with a computer system.

a) System analysts: People who design the operation and processing of the system.

b) System programmers: People who write codes and programs to implement the working of the system.

c) System operators: People who operate the system and use it for different purposes.

iv) Procedure

Procedure is a step by step series of instructions to perform a specific function and achieve desired output. In a computer system there are three types of procedures.

a) Hardware oriented procedure: It defines the working of a hardware component.

b) Software oriented procedure: It is a set of detailed instructions for using the software.

c) Internal procedure: It maintains the overall working of each part of a computer system by directing the flow of information.

v) Data

The facts and figures that are fed into a computer for further processing are called data. Data are raw input until the computer system interprets them using machine language, stores them in memory, classifies them for processing and produces results in conformance with the instructions given to it. Processed and useful data are called information which is used for decision making.

vi) Connectivity

When two or more computers are connected to each other, they can share information and resources such as sharing of files (data/music, etc), sharing of printer, sharing of facilities like the internet. This sharing is possible using wires, cables, satellite, infra-red, bluetooth, microwave transmission, etc.

Advantages of Computerised Accounting

- 1. Better Quality Work:** The accounts prepared with the use of computerized accounting system are usually uniform, neat, accurate, and more legible than a manual job.
- 2. Lower Operating Costs:** Computer is a reliable and time-saving device. The [volume](#) of job handled with the help of computerized system results in economy and lower operating costs. The overall operating [cost](#) of this system is low in comparison to the traditional system.
- 3. Improves Efficiency:** This system is more efficient in comparison to the traditional system. The computer makes sure speed and accuracy in preparing the records and accounts and thus, increases the efficiency of employees.
- 4. Facilitates Better Control:** From the management point of view, there is greater control possible and more information may be available with the use of the computer in accounting. It ensures efficient performance in accounting records.
- 5. Greater Accuracy:** Computerized accounting make sure accuracy in accounting records and statements. It prevents clerical errors and omissions in records.
- 6. Relieve Monotony:** Computerized accounting reduces the monotony of doing repetitive accounting jobs. Which are tiresome and time-consuming.
- 7. Facilitates Standardization:** Computerised accounting provides standardization of [accounting](#) routines and procedures. Therefore, it ensures standardization in the accounting records.
- 8. Minimizes Mathematical Errors:** While doing mathematical work with computers, errors are virtually eliminated unless the [data](#) is entered improperly in the system.

- 9. Legibility** : The data displayed on computer monitor is legible. This is because the characters (alphabets, numerals, etc.) are type written using standard fonts. This helps in avoiding errors caused by untidy written figures in a manual accounting system.
- 10. Efficiency** : The computer based accounting systems ensure better use of resources and time. This brings about efficiency in generating decisions, useful informations and reports.
- 11. Quality Reports** : The inbuilt checks and untouchable features of data handling facilitate hygienic and true accounting reports that are highly objective and can be relied upon.
- 12. speed** : Accounting data is processed faster by using a computerized accounting system than it is achieved through manual efforts. This is because computers require far less time than human beings in performing a task.

Disadvantages of Computerized Accounting:

1. Reduction of Manpower:

The introduction of computers in accounting work reduces the number of employees in an organization. Thus, it leads to greater amount of unemployment.

2. High Cost:

A small firm cannot install a computer accounting system because of its high installation and maintenance cost. To be more economical there should be large volume of work. If the system is not used to its full capacity, then it would be highly uneconomical.

3. Require Special Skills:

Computer system calls for highly specialized operators. The availability of such skilled personnel is very scarce and very costly.

4. Other Problems:

Frequent repair and power failure may affect the accounting work very much. Computers are prone to viruses. Often time's people will assume the computer is doing things correctly and problems will go unchecked for long period of time.

5. Cost of Training:

The sophisticated computerised accounting packages generally require specialised staff personnel. As a result, a huge training costs are incurred to understand the use of hardware and software on a continuous basis because newer types of hardware and software areacquired to ensure efficient and effective use of computerised accounting systems.

6. Staff Opposition :

Whenever the accounting system is computerised, there is a significant degree of resistance from the existing accounting staff, partly because of the fear that they shall be made redundant and largely because of the perception that they shall be less important to the organisation.

7. Disruption :

The accounting processes suffer a significant loss of worktime when an organisation switches over to the computerised accounting system. This is due to changes in the working environment that requires accounting staff to adapt to new systems and procedures

8. System Failure :

The danger of the system crashing due to hardware failures and the subsequent loss of work is a serious limitation of computerized accounting system. However, providing for back-up arrangements can obviate this limitation. Software damage and failure may occur due to attacks by viruses. This is of particular relevance to accounting systems that extensively use Internet facility for their online operations. No full-proof solutions are available as of now to tackle the menace of attacks on software by viruses.

Difference Between Manual Accounting and Computerized Accounting

Basis for Comparison	Manual Accounting	Computerized Accounting

Meaning	Manual Accounting is a system of accounting that uses physical registers and account books, for keeping financial records.	Computerized Accounting is an accounting system that uses an accounting software, for recording financial transactions electronically.
Recording	Recording is possible through book of original entry.	Data content is recorded in customized database.
Calculation	All the calculation is performed manually.	Only data input is required, the calculations are performed by computer system.
Speed	Slow	Comparatively faster.
Adjusting entries	It is made for rectification of errors.	It cannot be made for rectification of errors.
Backup	Not possible	Entries of transactions can be saved and backed up
Trial Balance	Prepared when necessary.	Instant trial balance is provided on daily basis.
Financial Statement	It is prepared at the end of the period, or quarter.	It is provided at the click of button.

Grouping

In any organisation, the main unit of classification is the major head which is further divided into minor heads. Each minor head may have number of sub-heads. After classification of accounts into various groups namely, major, minor and sub-heads and allotting codes to each account these are programmed into the computer system.

VOUCHERS

Meaning:

‘Voucher’ is the original documentary evidence in support of any payment or receipt of money by the business. It would be with the help of the voucher that the accuracy of entry can be checked. Voucher alone can tell us about the nature and sources of the transaction, its value and authority.

Types of Accounting Vouchers

- Sales Voucher
- Purchase Voucher
- Payment Voucher
- Receipt Voucher
- Contra Voucher
- Journal Voucher
- Credit Note Voucher
- Debit Note Voucher

• Sales Voucher in Tally

Sales voucher is one of the most used accounting vouchers in Tally. Users can create this voucher in two different formats; as an invoice, or as a voucher. The invoice format enables users to print a copy of invoices for customers.

• Purchase Voucher in Tally

Like sales vouchers, purchase voucher belongs to the accounting category and is available in both invoice and voucher formats. Editing and modifying receipt entries in Tally are easy, as its voucher format helps accountants to do so quickly.

• Payment Voucher in Tally

The payment voucher is another accounting voucher in Tally that helps create and print cheques against the order. Once the payment voucher gets passed, the corresponding cheque can be printed by clicking on 'banking' and then on 'cheque printing'.

- **Receipt Voucher in Tally**

When accountants make a receipt voucher in Tally, all the invoices which have pending payments pop up as a reminder. As soon as the client makes the payment through any mode, the receipt can be updated with the [payment method](#) details.

- **Contra Voucher in Tally**

Contra vouchers are used to withdraw or deposit money in banks with the help of instruments such as cheques/ATM/DD or e-transfer to another account through NEFT/IMPS. With the help of contra vouchers in Tally, accountants can also generate deposit slips for recordkeeping.

- **Journal Voucher in Tally**

Unlike other vouchers, a journal voucher in Tally can come under the roof of both accounting and inventory vouchers. There are multiple uses of a journal voucher in Tally depending on the type of business it is being used for.

- **Credit Note Voucher in Tally**

Credit note voucher in Tally has to be enabled manually. It is usually enabled by pressing F11 and they manually configuring its features. Credit note can also be passed by checking the original invoice. When a client is selected, Tally shows the transaction invoice history that have been raised.

- **Debit Note Voucher in Tally**

Debit note voucher is one of the most-used types of voucher in Tally ERP 9, that is used for managing purchase returns. With the help of this, accountants can generate a debit note for invoicing as well as a voucher.

How do you create, Edit and delete of voucher TYPE?

Create Voucher Type

- Gateway of Tally
- Inventory info
- Voucher Type

- Create
- Enter Voucher type
- press Yes to save

Edit Voucher Type

- Gateway of Tally
- Inventory info
- Voucher Type
- Alter
- Enter Voucher type
- press Yes to save

Delete Voucher Type

- Gateway of Tally
- Inventory info
- Voucher Type
- Alter
- Enter Voucher type
- Press Alt + D
- press Yes

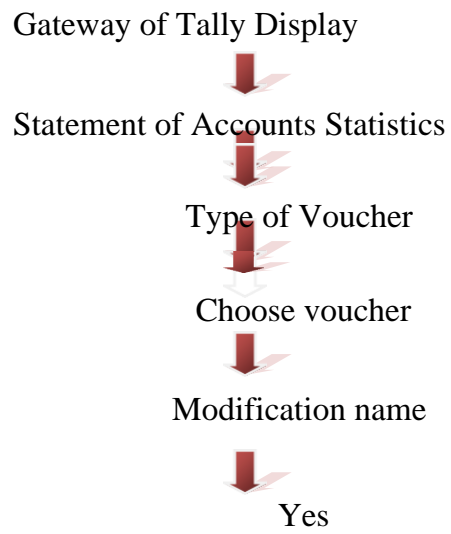
How do you create, Edit and delete of voucher?

Create Voucher

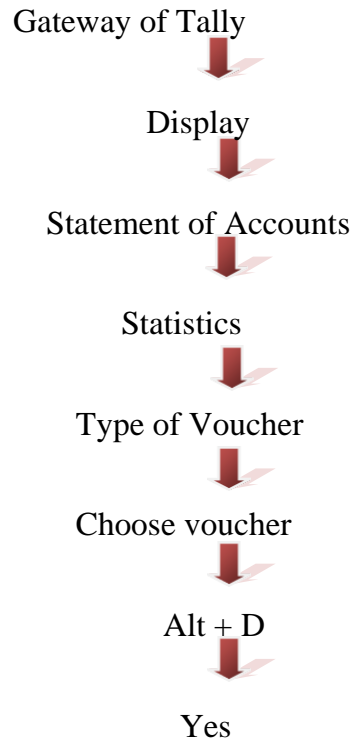


Voucher

Edit Voucher



Delete Voucher



UNIT – II

1. Computerised accounting system

Computerised accounting system refers to the system of maintaining accounts using computers. It involves the processing of accounting transactions through the use of hardware and software in order to keep and produce accounting records and reports. Computerised accounting system takes accounting transactions as inputs that are processed through accounting software to generate the following reports:

- Day books /Journals
- Ledger
- Trial balance
- Trading account
- Profit and loss account
- Balance sheet, etc.

In accounting, computer is commonly used in the following areas:

- a) Recording of business transactions
- b) Payroll accounting
- c) Stores accounting and
- d) Generation of accounting reports

It is to be noted that the fundamentals of accounting do not change whether books of accounts are maintained manually or computerised. The same principles of debit and credit are equally applicable in a computerised environment.

2. Accounting software

The main function of CAS is to perform the accounting activities in an organisation and generate reports as per the requirements of the users. To obtain the desired results optimally, need based software or packages are to be installed in the organisation. Depending upon the suitability of business requirements there are three types of software, namely,

(i) Readymade software, (ii) Customised software and (iii) Tailormade software.

(i) Readymade software

These packages are standardised or readymade packages which can be used by the business enterprises immediately on procurement. These packages are used by small and conventional business enterprises. Cost of installation and maintenance is very low. Training cost is negligible and sometimes the vendor provides free of cost training. These softwares are used by those enterprises where financial transactions are simple, uniform and routine in nature. Few examples of such type of software are Tally, Busy, Marg, Profitbooks.

(ii) Customised software

Many a time, it is not possible that ready-to-use packages suit the requirements of the business enterprise. In such circumstances, customised packages may help the business enterprise for fulfilling their requirements. Customised packages can be modified according to the need of the enterprise. For example, software can record attendance of the employees and on the requirement of the customer it can also count the absence of employees in a month, etc.

These packages are used by medium or large business enterprises. Cost of installation, maintenance and training is relatively higher than that of ready-to-use packages. These softwares are used by those enterprises where financial transactions are somewhat peculiar in nature.

(iii) Tailormade software

Large enterprises have their own way of functioning. For effective management information system, varied and specific information is frequently required by many users which may not be needed in case of small or medium scale enterprises. In such enterprises, depending upon their functioning, need based softwares known as tailored packages are installed. The cost of these packages is very high and specific training for using these packages is also required.

3. Preparing Trial Balance In Tally

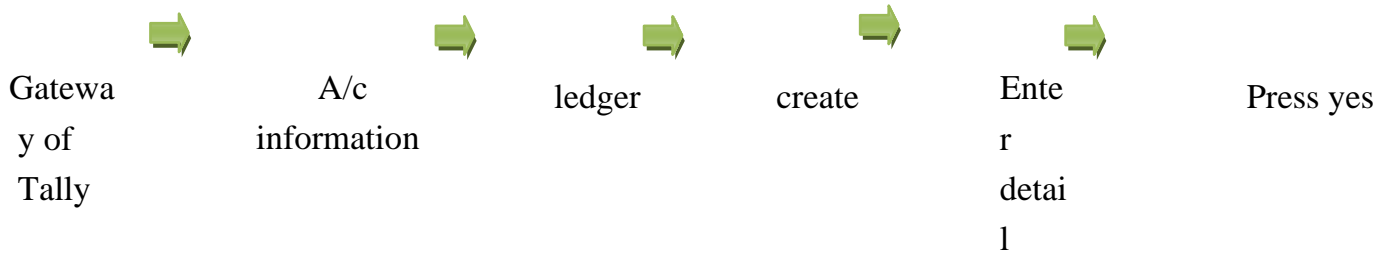
The trial balance is a worksheet on which you list all your general ledger accounts and their debit or credit balance. The total debits must equal the total credits. If they don't equal, you know you have an error that must be tracked down. When closing out your books at the end of an accounting period, you will prepare three trial balances:

1. A preliminary trial balance is prepared using your general ledger account balances before you make adjusting entries.
2. An adjusted trial balance is done after preparing adjusting entries and posting them to your general ledger. This will help ensure that the books used to prepare your financial

statements are in balance.

3. A post-closing trial balance is done after preparing and posting your closing entries. This trial balance, which should contain only balance sheet accounts, will help guarantee that your books are in balance for the beginning of the new accounting period.

Prepare Trial Balance

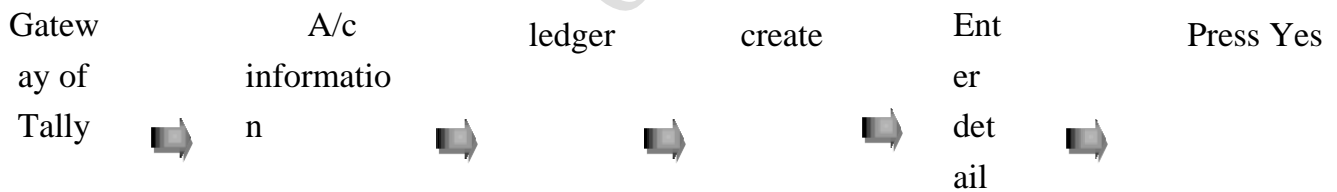


Show Trail Balance

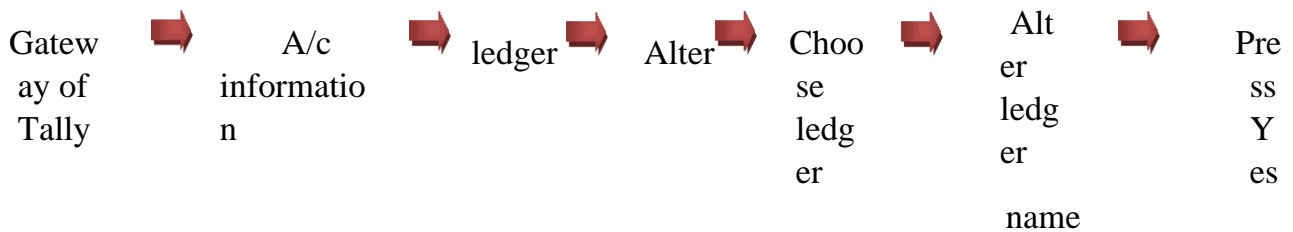


1. How to create, Alter and Delete of Ledger account

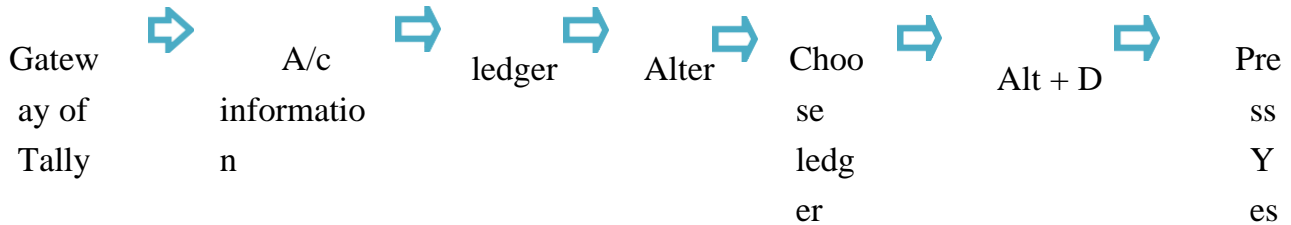
Create Ledger



Alter Ledger



Delete Ledger



4. Maintaining Hierarchy of Ledgers

- ❖ Accounting master files are created with codes and description of account.
- ❖ In a hierarchical coded system reports can be generated based on codes
- ❖ General ledger, Debtors ledger and creditors ledger are automatically created by any standard software.
- ❖ At the time of creation, some of the account heads are indicated to the system as cash, bank, debtors and creditors.
- ❖ The system then automatically posts sales to debtors a/c & purchases to creditors a/c

Codification

A proper codification requires a

systematic grouping of accounts. The major groups or heads could be Assets, Liabilities, Revenues and Expenses. The sub-groups or minor heads could be capital, non-current liabilities, current assets, sales and so on.

Codification refers to allotting code numbers to accounts in a hierarchical structure. Accounts are first systematically grouped in Major Heads such as:

- ❖ Assets
- ❖ Liabilities
- ❖ Revenue Receipts
- ❖ Capital Receipts
- ❖ Revenue Expenditure
- ❖ Capital Expenditure etc.

- The sub-groups or Minor Heads could be cash or receivables or payables so on.
- The detailed head is often termed as an object classification for control purposes Ex.

- ❖ Salaries
- ❖ Office Expenses
- ❖ Salesman Expenses
- ❖ Workshop Overhead, etc

- The classification system should be approved by the top management and auditor before coding and computerization

Types of Reports

List of Reports

Following reports are common to most s/w:

- Cash Book
- Cash Sales Book
- Sales Return register
- Credit Note Register
- Bank Book
- Cash Purchase Book
- Purchase Return register
- Stock movement register
- Journal Book
- Petty Cash Book
- General Ledger
- Stock Ledger
- Purchase Book
- Creditors Ledger
- Subsidiary Ledger
- Production register
- Sales Book
- Debit Note Register
- Debtors Ledger
- Consumption Register

UNIT- III

3.1 Starting Tally

- Click start Button
- Choose Programs
- Click Tally or
- Double click Tally icon on Desktop
- Create company

3.2 Menu's of Gateway of Tally

- Accounts info
- Inventory info
- Import of Data
- Balance sheet
- Profit & Loss A/c
- Stock Summary
- Ratio Analysis
- Display
- Quit

3.3 Exit or Quit from Tally

Press Escape till it reaches the option quit and Press Y (yes) or Enter to quit(Ctrl+Q)

3.4 Select Company

Tally software by double clicking on Tally icon

- Press Alt + F3 key to Select the company,
- Choose Select Company option in the company information.

3.5 How to Create, Alter & Deleting Company?

3.5.1 Company Creation

- Select Tally
- Press Alt + F3 Option from Gateway of Tally
- Press 'Create company' option
- Enter the Company Name, and use the enter key and / or Tab and / or the arrow keys.
- After entering all the details press enter.
- Select the Yes option from the accept Yes/NO

3.5.2 Alteration of a company

- **Company information** Press Alt + F3 key to Alter
- , Choose Select Company option in the company information.
- Change company name
- After entering all the details press enter.
- Select the Yes option from the accept Yes/NO

3.5.3 Deleted of a company

- **Company information** Press Alt + F3 key to Alter
- Choose Select Company option in the company information.
- Press select company name

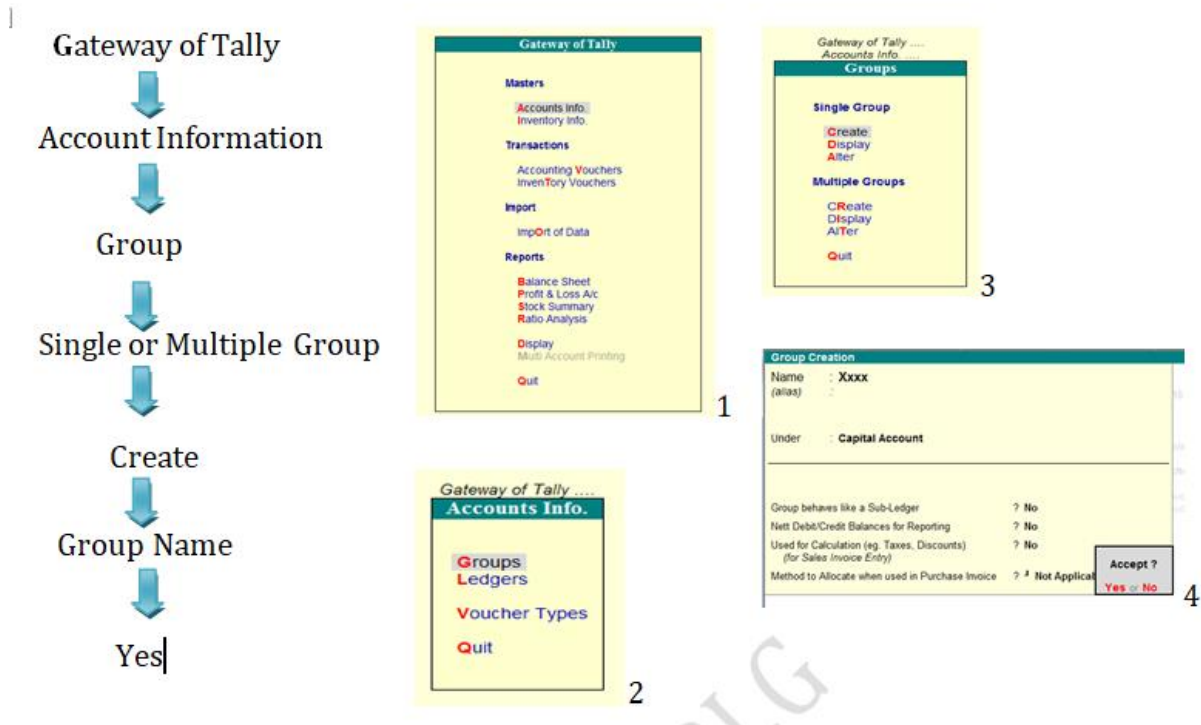
➤ Press Alt + D select Yes

➤ Then Press Yes the company deleted.

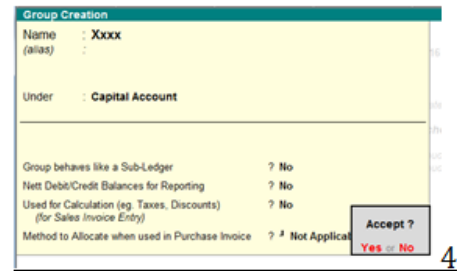
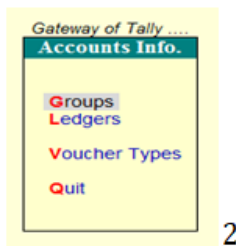
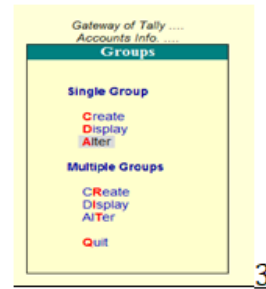
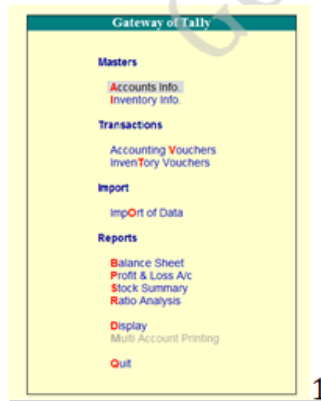
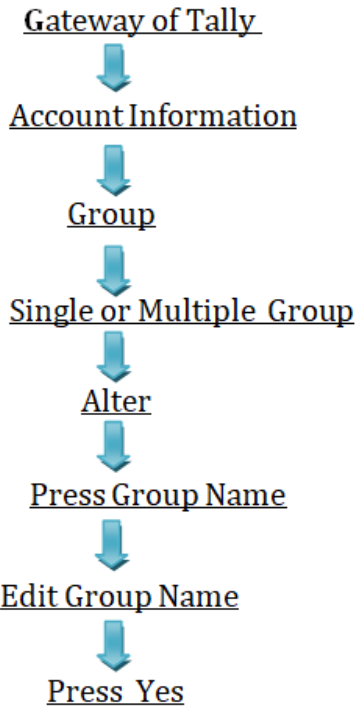
3.6 How to create, Alter & Deleting of Group?

2. An adjusted trial balance is done after preparing adjusting entries and posting them to your general ledger. This will help ensure that the books used to prepare your financial statements are in balance.
3. A post-closing trial balance is done after preparing and posting your closing entries. This trial balance, which should contain only balance sheet accounts, will help guarantee that your books are in balance for the beginning of the new accounting period.

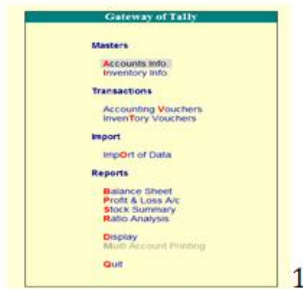
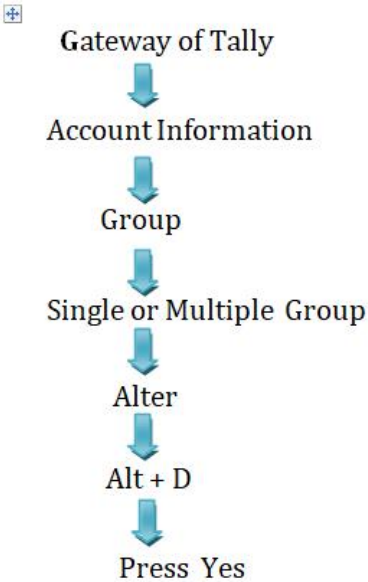
3.6.1 Creation of Group



3.6.2 Edit or Alter Group



3.6.3 Deleting Group



3.7 Show or Display Balance sheet, Profit & loss A/c, Ratio, Cash & Fund flow statement.

3.7.1. Balance sheet

Gateway of Tally



Click **Balance sheet**

Change period (F2)

Click print option

Enter Yes



3.7.2 Profit & Loss Account

Gateway of Tally



Click **Profit & Loss Account**



Change period (F2)

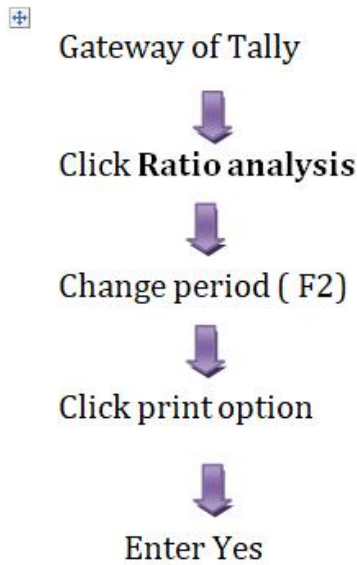
Click print option



Enter Yes

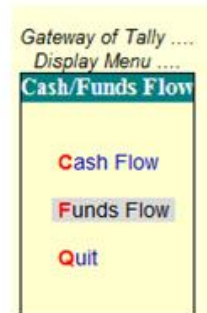
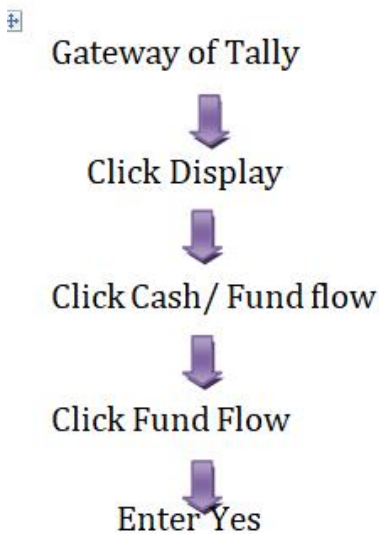


3.7.3. Ratio Analysis



□

3.7.5 Fund flow statement



Android Development (CCAD22)

Objective

The objective of course is to learn the Android Development.

Benefit

Students can know about developing android apps from basic level.

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus of Android Development

Java Basics and overview

- o Using variables
- o Flow Control
- o Arrays and matrices
- o Working with Strings
- o Basic OOP
- o Array List and collections
- o Static variables and methods
- o Basic Threading

First Android App

- o What is Android
- o First Android app
- o How to run and debug applications (Emulator vs. Real device)
- o Android project structure
- o XML files
- o Enhancing the first app

Basic Android concepts

- o Activity
- o Menus
- o Intents
- o Context

Android capabilities

- o IntelliJIDEA / Android Studio
- o Permissions
- o Working with files
- o Working with the network
- o Debugging Android apps

Project

Student makes a project during training period.

Certification

Certificate in Android Developmen

Study Material of Android Development **(CCAD22)**

Introduction to Android:

Android is an operating system developed by Google. It is modified version of Linux kernel and other open source software. Today android used in many electronic devices like touchscreen mobile, tablets, android TV, Android Auto for cars, and Android watches, each with a specialized user interface. Android are also used on game, digital cameras other electronics.

Important points:

1. Initially, Google's supported integrated development environment (IDE) or development tool was Eclipse using the Android Development Tools (ADT) plugin, In December 2014, Google released Android Studio, based on IntelliJ IDEA, Now its primary IDE for Android application development.
2. Android App are written using the Android software development kit (SDK). We extend the functionality of devices using SDK.
3. The SDK includes a complete set of following development tools:
 - Debugger
 - Software libraries
 - Handset emulator based on QEMU
 - Documentation
 - Sample code
4. There are 2.8 million apps(March 2017) available on Google Play store, which can be use by users by downloading and installing the application's APK (Android application package) file, or by downloading them using an application store program that allows users to install, update, and remove applications from their devices. Google Play Store is the primary application store installed on Android devices that comply with Google's compatibility requirements and license the Google Mobile Services software. Google Play Store allows users to look, download and update applications published by Google and third-party developers.
5. User devices are digitally signed with certificates whose private keys need to be kept very carefully by the developer of the applications. By certificates of application, the

Android OS identify the author of an application and relationships between developers and their applications.

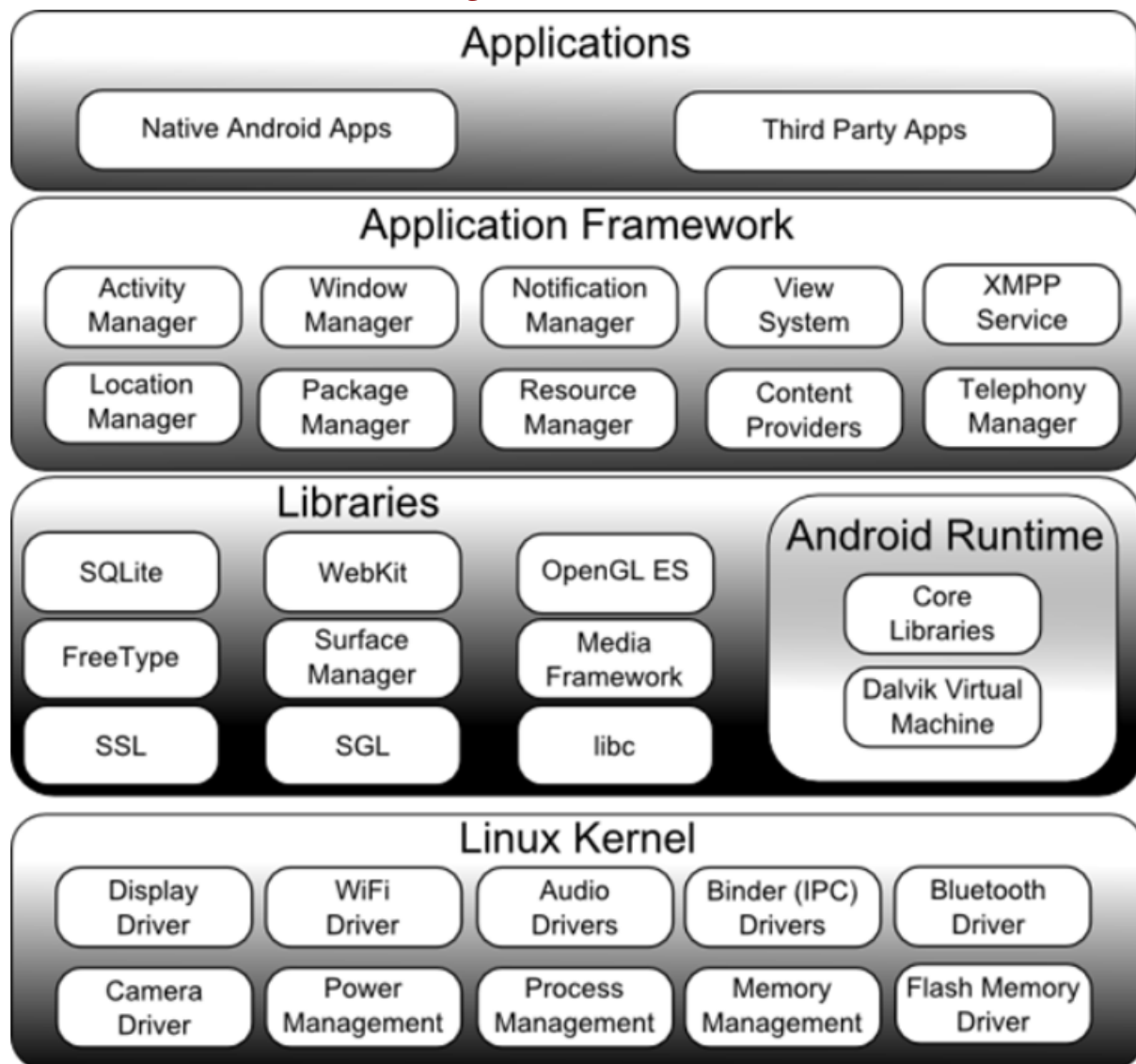
Android features:

- **Messaging:** Android provides the Android Push Messaging services which includes SMS, MMS, threaded text messaging, Android Cloud To Device Messaging (C2DM) and Android Google Cloud Messaging (GCM).
- **Auto Correction and Dictionary:** Android Operating System provides the Auto Correction feature. When any word is misspelled, then Android recommends the meaningful and correct words matching the words that are available in Dictionary. Users can add, edit and remove words from Dictionary as per their wish.
- **Web browser:** The web browser available in Android is based on the open-source Blink layout engine, coupled with Chrome's V8 JavaScript engine. The browser is variably known as 'Android Browser', 'AOSP browser', 'stock browser', 'native browser', and 'default browser'. Starting with Android 4.4 KitKat, Google has mandated that the default browser for Android proper be Google Chrome. Since Android 5.0 Lollipop, the WebView browser that apps can use to display web content without leaving the app has been separated from the rest of the Android firmware in order to facilitate separate security updates by Google.
- **Voice-based:** Android provides the voice actions for calling, texting, navigation, etc.
- **Multi-touch:** Android provides the native support for multi-touch. It was initially made available in handsets such as the HTC Hero. The feature was originally disabled at the kernel level. Google has since released an update for the Nexus One and the Motorola Droid which enables multi-touch natively.
- **Multitasking:** Android provides the multitasking of applications with unique handling of memory allocation.
- **Screen capture:** Android provides the facility of capturing a screenshot by pressing the power and home-screen buttons at the same time.
- **TV recording:** Android TV provides the facility of capturing video and replaying it.
- **Video calling:** Android does not support native video calling but some handsets have a customized version of the operating system that supports it, either via the UMTS network or over IP. Video calling is available through Google Talk, Skype etc.
- **Multiple language support:** Android supports multiple languages.
- **Connectivity:** Android supports connectivity through technologies like GSM/EDGE, Bluetooth, LTE, CDMA, EV-DO, UMTS, NFC, IDEN and WiMAX.
- **Bluetooth:** Android supports bluetooth for voice dialing and sending contacts between phones, playing music, sending files (OPP), accessing the phone book (PBAP), A2DP and AVRCP.
- **Streaming media support:** Android supports the RTP/RTSP streaming (3GPP PSS, ISMA), HTML progressive download (HTML5 video tag). Adobe Flash Streaming (RTMP) and HTTP Dynamic Streaming are supported by the Flash plugin.
- **Media support:** Android supports the WebM, H.263, H.264, AAC, HE-AAC (in 3GP or MP4 container), MPEG-4 SP, AMR, AMR-WB (in 3GP container), MP3, MIDI, Ogg Vorbis, FLAC, WAV, JPEG, PNG, GIF, BMP, and WebP.
- **Storage:** Android used SQLite for data storage purposes. It is a lightweight relational database.
- **Native Apps:** Android apps are also written in HTML.

Android Application Fundamental:

An archive file with .apk extension, an Android package. One APK file contains all the contents of an Android app and is the file that Android-powered devices use to install the app. Android SDK tools compile your application code along with data and resource files into an APK.

Android Architecture Diagram:



Android can be simply understood as a software package. It is a Linux based operating system for mobile devices. Here, we are going to understand the architecture of Android in detail. Android architecture is also known as the Android software stack. It can be categorized into five parts:

- Linux kernel
- native libraries (middleware)
- Android Runtime

- Application Framework
- Applications

Linux kernel:

Linux kernel exists at the root of android architecture and is thus also called as the heart of the android architecture. The device drivers, power management, memory management, device management, and resource access comes under the responsibility of the Linux Kernel.

Native Libraries:

Native libraries such as WebKit, OpenGL, FreeType, SQLite, Media, C runtime library (libc), etc are on top of the Linux kernel.

Sl.No.	Library	Responsibility
1	WebKit library	Browser support
2	SQLite	Database
3	FreeType	Font support
4	Media	Playing and recording audio and video formats

Android Runtime:

The core libraries and DVM (Dalvik Virtual Machine) are there in android runtime. They are responsible for running android applications. Originally being like JVM, DVM is optimized for mobile devices to consume less memory and to facilitate a fast performance.

Android Framework:

The Android framework is on the top of Native libraries and android runtime. Android APIs like UI (User Interface), telephony, resources, locations, Content Providers (data) and package managers are a part of the Android framework. For the development of the android application, the Android framework facilitates a lot of classes and interfaces.

Applications:

Applications are present on the top of the android framework. The Android framework is used by all the applications including home, contact, settings, games, browsers. The android framework itself uses android runtime and libraries. While the Linux kernel is used by the Android runtime and native libraries. Linux kernel is the heart of the android architecture.

Android Hide Title Bar and Full Screen Example:

Code to hide the title bar in android.

activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

</android.support.constraint.ConstraintLayout>
```

Activity class:

File: MainActivity.java

```
package com.example.app1;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.Window;
import android.view.WindowManager;

public class MainActivity extends AppCompatActivity {

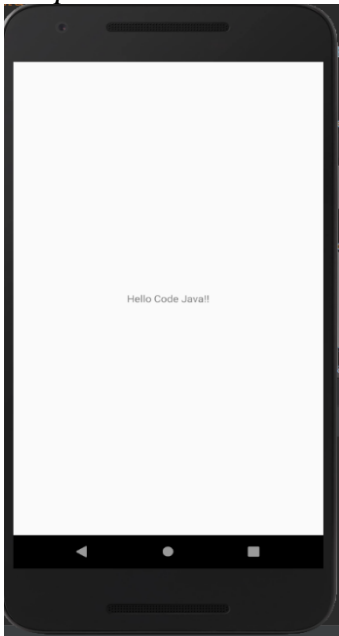
    @Override
```

```

protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    requestWindowFeature(Window.FEATURE_NO_TITLE); //will hide the title
    getSupportActionBar().hide(); // hide the title bar
    this.getWindow().setFlags(WindowManager.LayoutParams.FLAG_FULLSCREEN,
        WindowManager.LayoutParams.FLAG_FULLSCREEN); //enable full screen
    setContentView(R.layout.activity_main);
}
}

```

Output:



Android Button Example with Listener:

The below example is to create two text fields and one button to display the additional result of two numbers. The sum of two input values is displayed on the Toast, on clicking the button. We can act on a button by calling the listener on the button or adding the `onClick` property of a button in the XML file of the activity.

Syntax 1:

```

button.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        //code
    }
}

```

```
    }  
});
```

Syntax 2:

```
<Button  
    android:onClick="methodName"  
>
```

Drag the component or write the code for UI in activity_main.xml:

Here, we will drag two text fields from the Text Fields palette and one button from the Form Widgets palette. For the UI components the generated code then will be:

File: activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>  
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"  
    xmlns:tools="http://schemas.android.com/tools"  
    android:layout_width="match_parent"  
    android:layout_height="match_parent"  
    tools:context=".MainActivity">  
  
    <EditText  
        android:id="@+id/editText1"  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content"  
        android:layout_alignParentTop="true"  
        android:layout_centerHorizontal="true"  
        android:layout_marginTop="61dp"  
        android:ems="10"  
        android:inputType="number"  
        tools:layout_editor_absoluteX="84dp"  
        tools:layout_editor_absoluteY="53dp" />  
  
    <EditText  
        android:id="@+id/editText2"  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content"
```



```
android:layout_below="@+id/editText1"  
android:layout_centerHorizontal="true"  
android:layout_marginTop="32dp"  
android:ems="10"  
android:inputType="number"  
tools:layout_editor_absoluteX="84dp"  
tools:layout_editor_absoluteY="127dp" />
```

```
<Button
```

```
android:id="@+id/button"  
android:layout_width="wrap_content"  
android:layout_height="wrap_content"  
android:layout_below="@+id/editText2"  
android:layout_centerHorizontal="true"  
android:layout_marginTop="109dp"  
android:text="ADD"  
tools:layout_editor_absoluteX="148dp"  
tools:layout_editor_absoluteY="266dp" />
```

```
</RelativeLayout>
```

Activity class:

The code of the MainActivity.java file is to display the added value of the two numbers entered by the user.

```
package com.example.app1;  
  
import android.support.v7.app.AppCompatActivity;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.Toast;  
  
public class MainActivity extends AppCompatActivity {  
    private EditText edittext1, edittext2;  
    private Button buttonSum;
```

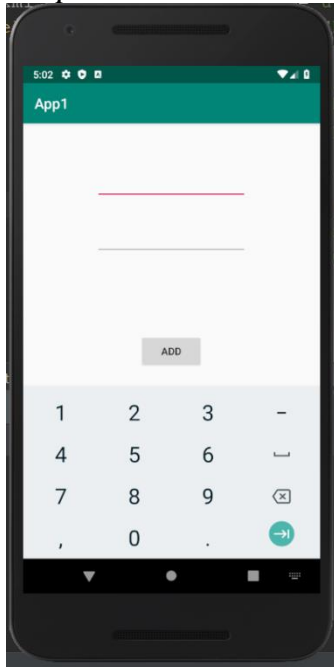
```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    addListenerOnButton();
}

public void addListenerOnButton() {
    editText1 = (EditText) findViewById(R.id.editText1);
    editText2 = (EditText) findViewById(R.id.editText2);
    buttonSum = (Button) findViewById(R.id.button);

    buttonSum.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            String value1=editText1.getText().toString();
            String value2=editText2.getText().toString();
            int a=Integer.parseInt(value1);
            int b=Integer.parseInt(value2);
            int sum=a+b;
            Toast.makeText(getApplicationContext(),String.valueOf(sum), Toast.LENGTH_LONG).show();
        }
    });
}
}
```

Output:



Certificate Course on Shatkarma, Pranayam and Meditation

Code: CCSKPM

Duration: 40 Hours

Three Months – One Lecture per Day

Aims:

- To acquaint students with the practical knowledge of Shatkarma.
- To provide appropriate information about benefits of Pranayama .
- Learning skills to develop meditation techniques.

Objectives:

- To remove gross impurities.
- To cure a range of impurities.
- To enhance the vital energy Prana.

Module I

Yoga Kriya Pranayama and Dhyana

Shatkarma: Knowledge and ability to perform the following practices:

- 1.1 Neti (Jal and Sutra)
- 1.2 Dhauti (Vaman + Vastra)
- 1.3 Nauli
- 1.4 Agnisara
- 1.5 Trataka
- 1.6 Kapalbhata

Module II

2. Pranayama

- 2.1 Breath Awareness.
- 2.2 Yogic Breathing.
- 2.3 Nadishodhan Pranayama
- 2.4 Suryabhedhi
- 2.5 Ujjayi

2.6 Shitali

2.7 Sitkari

2.8 Bhastrika

2.9 Bhramari

Module III

3. Bandha and Mudra

3.1 JalandharaBandha, UddiyanaBandha, MaulaBandha, Tri Bandha

3.2 Yoga Mudra, Shanmukhi Mudra, Shambhavi Mudra, VipareetKarni Mudra

Course Outcomes: By the end of Course, the students will be able to:

- CO1: Develop techniques of concentration.
- CO2: Eradicates all diseases, fatigue and sloth and close the doorway creating these problems.
- CO3: Understand the concept and principles of Shatkarmas.
- CO4: Develop understanding about breathing practice.

Assessment with Pen and Paper:

Possible assessment methods include: quizzes, tests, collected assignments, group activities and demonstration of skills and performance. Such assessments and related assignments will develop critical thinking techniques and reading, along with developing classical music skills.

Grading System will be adopted for Certification.

Marks	Grades	Grade Point
>90 and <=100	A1	10
>80 and <=90	A2	9
>70 and <=80	B1	8
>60 and <=70	B2	7
>50 and <=60	C1	6
>40 and <=50	C2	5

Java Script (CCJS22)

Objective

The objective of course is to learn the Java Script.

Benefit

Students can know about responsive website by using JavaScript language.

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus of Java Script

● **Basic JavaScript Introduction**

- What is JavaScript?
- Evolution of JavaScript
- Features of JavaScript
- Advantages and Disadvantages of JavaScript
- How does JavaScript works?
- Structure of a JavaScript program
- How to write JavaScript in Notepad++, Visual Studio Code, and Eclipse IDE?
- How to add JavaScript in HTML?
- How to include External JavaScript in HTML?

● **JavaScript Data Types and Variables**

- Data Types in JavaScript
- JavaScript Variables
- Types of Variables in JavaScript
- Key Difference between Var, Let, and Const

- **JavaScript Operators**
 - What are Operators in JavaScript?
 - Assignment Operator
 - Comparison Operators
 - Logical Operators
 - Conditional Operators

- **JavaScript Statement**
 - Conditional Statement
 - Loop statements

- **Objects in JavaScript**
 - What is an Object?
 - Types of Objects
 - Array Object
 - String Object
 - Date Object
 - Number Object

Project

Student makes a project during training period.

Certification

Certificate in Java Script.

Study Material of java Script (CCJS22)

JavaScript Can Change HTML Content

One of many JavaScript HTML methods is `getElementById()`.

The example below "finds" an HTML element (with `id="demo"`), and changes the element content (`innerHTML`) to "Hello JavaScript":

Example

```
document.getElementById("demo").innerHTML = "Hello JavaScript";
```

JavaScript accepts both double and single quotes:

Example

```
document.getElementById('demo').innerHTML = 'Hello JavaScript';
```

JavaScript Can Change HTML Attribute Values

In this example JavaScript changes the value of the `src` (source) attribute of an `` tag:

The Light Bulb



Turn on the light

Turn off the light

JavaScript Can Change HTML Styles (CSS)

Changing the style of an HTML element, is a variant of changing an HTML attribute:

Example

```
document.getElementById("demo").style.fontSize = "35px";
```

JavaScript Can Hide HTML Elements

Hiding HTML elements can be done by changing the `display` style:

Example

```
document.getElementById("demo").style.display = "none";
```

JavaScript Can Show HTML Elements

Showing hidden HTML elements can also be done by changing the `display` style:

Example

```
document.getElementById("demo").style.display = "block";
```

JavaScript Where To

The `<script>` Tag

In HTML, JavaScript code is inserted between `<script>` and `</script>` tags.

Example

```
<script>  
document.getElementById("demo").innerHTML = "My First JavaScript";  
</script>
```

Old JavaScript examples may use a type attribute: `<script type="text/javascript">`.
The type attribute is not required. JavaScript is the default scripting language in HTML.

JavaScript Functions and Events

A JavaScript `function` is a block of JavaScript code, that can be executed when "called" for.

For example, a function can be called when an `event` occurs, like when the user clicks a button.

JavaScript in <head> or <body>

You can place any number of scripts in an HTML document.

Scripts can be placed in the <body>, or in the <head> section of an HTML page, or in both.

JavaScript in <head>

In this example, a JavaScript **function** is placed in the <head> section of an HTML page.

The function is invoked (called) when a button is clicked:

Example

```
<!DOCTYPE html>
<html>
<head>
<script>
function myFunction() {
  document.getElementById("demo").innerHTML = "Paragraph changed.";
}
</script>
</head>
<body>

<h2>Demo JavaScript in Head</h2>

<p id="demo">A Paragraph</p>
<button type="button" onclick="myFunction()">Try it</button>

</body>
</html>
```

JavaScript in <body>

In this example, a JavaScript **function** is placed in the <body> section of an HTML page.

The function is invoked (called) when a button is clicked:

Example

```
<!DOCTYPE html>
<html>
```

```
<body>

<h2>Demo JavaScript in Body</h2>

<p id="demo">A Paragraph</p>

<button type="button" onclick="myFunction()">Try it</button>

<script>
function myFunction() {
  document.getElementById("demo").innerHTML = "Paragraph changed.";
}
</script>

</body>
</html>
```

Placing scripts at the bottom of the `<body>` element improves the display speed, because script interpretation slows down the display.

External JavaScript

Scripts can also be placed in external files:

External file: myScript.js

```
function myFunction() {
  document.getElementById("demo").innerHTML = "Paragraph changed.";
}
```

External scripts are practical when the same code is used in many different web pages.

JavaScript files have the file extension `.js`.

To use an external script, put the name of the script file in the `src` (source) attribute of a `<script>` tag:

Example

```
<script src="myScript.js"></script>
```

You can place an external script reference in `<head>` or `<body>` as you like.

The script will behave as if it was located exactly where the `<script>` tag is located.

External scripts cannot contain `<script>` tags.

External JavaScript Advantages

Placing scripts in external files has some advantages:

- It separates HTML and code
- It makes HTML and JavaScript easier to read and maintain
- Cached JavaScript files can speed up page loads

To add several script files to one page - use several script tags:

Example

```
<script src="myScript1.js"></script>  
<script src="myScript2.js"></script>
```

External References

An external script can be referenced in 3 different ways:

- With a full URL (a full web address)
- With a file path (like /js/)
- Without any path

This example uses a **full URL** to link to myScript.js:

Example

```
<script src="https://www.w3schools.com/js/myScript.js"></script>
```

JavaScript Programs

A **computer program** is a list of "instructions" to be "executed" by a computer.

In a programming language, these programming instructions are called **statements**.

A **JavaScript program** is a list of programming **statements**.

In HTML, JavaScript programs are executed by the web browser.

JavaScript Statements

JavaScript statements are composed of:

Values, Operators, Expressions, Keywords, and Comments.

This statement tells the browser to write "Hello Dolly." inside an HTML element with id="demo":

Example

```
document.getElementById("demo").innerHTML = "Hello Dolly.";
```

Most JavaScript programs contain many JavaScript statements.

The statements are executed, one by one, in the same order as they are written.

JavaScript programs (and JavaScript statements) are often called JavaScript code.

Semicolons ;

Semicolons separate JavaScript statements.

Add a semicolon at the end of each executable statement:

Examples

```
let a, b, c; // Declare 3 variables
a = 5;      // Assign the value 5 to a
b = 6;      // Assign the value 6 to b
c = a + b;  // Assign the sum of a and b to c
```

When separated by semicolons, multiple statements on one line are allowed:

```
a = 5; b = 6; c = a + b;
```

JavaScript Syntax

JavaScript syntax is the set of rules, how JavaScript programs are constructed:

```
// How to create variables:
```

```
var x;
```

```
let y;
```

```
// How to use variables:
```

```
x = 5;
```

```
y = 6;
```

```
let z = x + y;
```

JavaScript Values

The JavaScript syntax defines two types of values:

- Fixed values
- Variable values

Fixed values are called **Literals**.

Variable values are called **Variables**.

JavaScript Literals

The two most important syntax rules for fixed values are:

1. **Numbers** are written with or without decimals:

```
10.50
```

```
1001
```

2. **Strings** are text, written within double or single quotes:

```
"John Doe"
```

```
'John Doe'
```

JavaScript Variables

In a programming language, **variables** are used to **store** data values.

JavaScript uses the keywords **var**, **let** and **const** to **declare** variables.

An **equal sign** is used to **assign values** to variables.

In this example, x is defined as a variable. Then, x is assigned (given) the value 6:

```
let x;  
x = 6;
```

JavaScript Operators

JavaScript uses **arithmetic operators** (+ - * /) to **compute** values:

```
(5 + 6) * 10
```

JavaScript uses an **assignment operator** (=) to **assign** values to variables:

```
let x, y;  
x = 5;  
y = 6;
```

JavaScript Expressions

An expression is a combination of values, variables, and operators, which computes to a value.

The computation is called an evaluation.

For example, 5 * 10 evaluates to 50:

```
5 * 10
```

Expressions can also contain variable values:

```
x * 10
```

The values can be of various types, such as numbers and strings.

For example, "John" + " " + "Doe", evaluates to "John Doe":

```
"John" + " " + "Doe"
```

JavaScript Keywords

JavaScript **keywords** are used to identify actions to be performed.

The **let** keyword tells the browser to create variables:


```
let x, y;  
x = 5 + 6;  
y = x * 10;
```

The `var` keyword also tells the browser to create variables:

```
var x, y;  
x = 5 + 6;  
y = x * 10;
```

In these examples, using `var` or `let` will produce the same result.

You will learn more about `var` and `let` later in this tutorial.

JavaScript Comments

Not all JavaScript statements are "executed".

Code after double slashes `//` or between `/*` and `*/` is treated as a **comment**.

Comments are ignored, and will not be executed:

```
let x = 5; // I will be executed
```

```
// x = 6; I will NOT be executed
```

You will learn more about comments in a later chapter.

JavaScript Identifiers / Names

Identifiers are JavaScript names.

Identifiers are used to name variables and keywords, and functions.

The rules for legal names are the same in most programming languages.

A JavaScript name must begin with:

- A letter (A-Z or a-z)
- A dollar sign (\$)
- Or an underscore (_)

Subsequent characters may be letters, digits, underscores, or dollar signs.

Note

Numbers are not allowed as the first character in names.

This way JavaScript can easily distinguish identifiers from numbers.

JavaScript is Case Sensitive

All JavaScript identifiers are **case sensitive**.

The variables `lastName` and `lastname`, are two different variables:

```
let lastname, lastName;  
lastName = "Doe";  
lastname = "Peterson";
```

JavaScript does not interpret **LET** or **Let** as the keyword **let**.

JavaScript and Camel Case

Historically, programmers have used different ways of joining multiple words into one variable name:

Hyphens:

first-name, last-name, master-card, inter-city.

Hyphens are not allowed in JavaScript. They are reserved for subtractions.

Underscore:

first_name, last_name, master_card, inter_city.

Upper Camel Case (Pascal Case):

FirstName, LastName, MasterCard, InterCity.

Lower Camel Case:

JavaScript programmers tend to use camel case that starts with a lowercase letter:

firstName, lastName, masterCard, interCity.

JavaScript Character Set

JavaScript uses the **Unicode** character set.

Unicode covers (almost) all the characters, punctuations, and symbols in the world.

For a closer look, please study our [Complete Unicode Reference](#).

JavaScript Variables

4 Ways to Declare a JavaScript Variable:

- Using **var**
- Using **let**
- Using **const**
- Using nothing

What are Variables?

Variables are containers for storing data (storing data values).

In this example, **x**, **y**, and **z**, are variables, declared with the **var** keyword:

Example

```
var x = 5;  
var y = 6;  
var z = x + y;
```

In this example, **x**, **y**, and **z**, are variables, declared with the **let** keyword:

Example

```
let x = 5;  
let y = 6;  
let z = x + y;
```

In this example, **x**, **y**, and **z**, are undeclared variables:

Example

```
x = 5;  
y = 6;  
z = x + y;
```


From all the examples above, you can guess:

- x stores the value 5
 - y stores the value 6
 - z stores the value 11
-

When to Use JavaScript var?

Always declare JavaScript variables with **var**, **let**, or **const**.

The **var** keyword is used in all JavaScript code from 1995 to 2015.

The **let** and **const** keywords were added to JavaScript in 2015.

If you want your code to run in older browsers, you must use **var**.

When to Use JavaScript const?

If you want a general rule: always declare variables with **const**.

If you think the value of the variable can change, use **let**.

In this example, **price1**, **price2**, and **total**, are variables:

Example

```
const price1 = 5;
const price2 = 6;
let total = price1 + price2;
```

The two variables **price1** and **price2** are declared with the **const** keyword.

These are constant values and cannot be changed.

The variable **total** is declared with the **let** keyword.

This is a value that can be changed.

Just Like Algebra

Just like in algebra, variables hold values:

```
let x = 5;  
let y = 6;
```

Just like in algebra, variables are used in expressions:

```
let z = x + y;
```

From the example above, you can guess that the total is calculated to be 11.

Note

Variables are containers for storing values.

JavaScript Identifiers

All JavaScript **variables** must be **identified** with **unique names**.

These unique names are called **identifiers**.

Identifiers can be short names (like x and y) or more descriptive names (age, sum, totalVolume).

The general rules for constructing names for variables (unique identifiers) are:

- Names can contain letters, digits, underscores, and dollar signs.
- Names must begin with a letter.
- Names can also begin with \$ and _ (but we will not use it in this tutorial).
- Names are case sensitive (y and Y are different variables).
- Reserved words (like JavaScript keywords) cannot be used as names.

Note

JavaScript identifiers are case-sensitive.

The Assignment Operator

In JavaScript, the equal sign (=) is an "assignment" operator, not an "equal to" operator.

This is different from algebra. The following does not make sense in algebra:

```
x = x + 5
```

In JavaScript, however, it makes perfect sense: it assigns the value of x + 5 to x.

(It calculates the value of x + 5 and puts the result into x. The value of x is incremented by 5.)

Note

The "equal to" operator is written like `==` in JavaScript.

JavaScript Data Types

JavaScript variables can hold numbers like 100 and text values like "John Doe".

In programming, text values are called text strings.

JavaScript can handle many types of data, but for now, just think of numbers and strings.

Strings are written inside double or single quotes. Numbers are written without quotes.

If you put a number in quotes, it will be treated as a text string.

Example

```
const pi = 3.14;  
let person = "John Doe";  
let answer = 'Yes I am!';
```

Declaring a JavaScript Variable

Creating a variable in JavaScript is called "declaring" a variable.

You declare a JavaScript variable with the `var` or the `let` keyword:

```
var carName;
```

or:

```
let carName;
```

After the declaration, the variable has no value (technically it is `undefined`).

To **assign** a value to the variable, use the equal sign:

```
carName = "Volvo";
```

You can also assign a value to the variable when you declare it:

```
let carName = "Volvo";
```


In the example below, we create a variable called `carName` and assign the value "Volvo" to it.

Then we "output" the value inside an HTML paragraph with `id="demo"`:

Example

```
<p id="demo"></p>
```

```
<script>  
let carName = "Volvo";  
document.getElementById("demo").innerHTML = carName;  
</script>
```

Note

It's a good programming practice to declare all variables at the beginning of a script.

One Statement, Many Variables

You can declare many variables in one statement.

Start the statement with `let` and separate the variables by **comma**:

Example

```
let person = "John Doe", carName = "Volvo", price = 200;
```

A declaration can span multiple lines:

Example

```
let person = "John Doe",  
    carName = "Volvo",  
    price = 200;
```

JavaScript Arithmetic

JavaScript Arithmetic Operators

Arithmetic operators perform arithmetic on numbers (literals or variables).

Operator	Description
+	Addition
-	Subtraction
*	Multiplication
**	Exponentiation (ES2016)
/	Division
%	Modulus (Remainder)
++	Increment
--	Decrement

Arithmetic Operations

A typical arithmetic operation operates on two numbers.

The two numbers can be literals:

Example

```
let x = 100 + 50;
```

or variables:

Example

```
let x = a + b;
```

or expressions:

Example

```
let x = (100 + 50) * a;
```

Operators and Operands

The numbers (in an arithmetic operation) are called **operands**.

The operation (to be performed between the two operands) is defined by an **operator**.

Operand	Operator	Operand
100	+	50

Adding

The **addition** operator (+) adds numbers:

Example

```
let x = 5;
```

```
let y = 2;
```

```
let z = x + y;
```

Subtracting

The **subtraction** operator (-) subtracts numbers.

Example

```
let x = 5;  
let y = 2;  
let z = x - y;
```

Multiplying

The **multiplication** operator (*) multiplies numbers.

Example

```
let x = 5;  
let y = 2;  
let z = x * y;
```

Dividing

The **division** operator (/) divides numbers.

Example

```
let x = 5;  
let y = 2;  
let z = x / y;
```

JavaScript Data Types

JavaScript has 8 Datatypes

1. String
2. Number
3. BigInt
4. Boolean
5. Undefined
6. Null
7. Symbol
8. Object

The Object Datatype

The object data type can contain:

1. An object
2. An array
3. A date

Examples

// Numbers:

```
let length = 16;  
let weight = 7.5;
```

// Strings:

```
let color = "Yellow";  
let lastName = "Johnson";
```

// Booleans

```
let x = true;  
let y = false;
```

// Object:

```
const person = { firstName: "John", lastName: "Doe" };
```

// Array object:

```
const cars = ["Saab", "Volvo", "BMW"];
```

// Date object:

```
const date = new Date("2022-03-25");
```

JavaScript Arrays

An array is a special variable, which can hold more than one value:

```
const cars = ["Saab", "Volvo", "BMW"];
```

Why Use Arrays?

If you have a list of items (a list of car names, for example), storing the cars in single variables could look like this:

```
let car1 = "Saab";  
let car2 = "Volvo";  
let car3 = "BMW";
```

However, what if you want to loop through the cars and find a specific one? And what if you had not 3 cars, but 300?

The solution is an array!

An array can hold many values under a single name, and you can access the values by referring to an index number.

Creating an Array

Using an array literal is the easiest way to create a JavaScript Array.

Syntax:

```
const array_name = [item1, item2, ...];
```

It is a common practice to declare arrays with the **const** keyword.

Learn more about **const** with arrays in the chapter: [JS Array Const](#).

Example

```
const cars = ["Saab", "Volvo", "BMW"];
```

JavaScript For Loop

Loops can execute a block of code a number of times.

JavaScript Loops

Loops are handy, if you want to run the same code over and over again, each time with a different value.

Often this is the case when working with arrays:

Instead of writing:

```
text += cars[0] + "<br>";  
text += cars[1] + "<br>";  
text += cars[2] + "<br>";  
text += cars[3] + "<br>";  
text += cars[4] + "<br>";  
text += cars[5] + "<br>";
```


You can write:

```
for (let i = 0; i < cars.length; i++) {  
  text += cars[i] + "<br>";  
}
```

Different Kinds of Loops

JavaScript supports different kinds of loops:

- **for** - loops through a block of code a number of times
 - **for/in** - loops through the properties of an object
 - **for/of** - loops through the values of an iterable object
 - **while** - loops through a block of code while a specified condition is true
 - **do/while** - also loops through a block of code while a specified condition is true
-

The For Loop

The **for** statement creates a loop with 3 optional expressions:

```
for (expression 1; expression 2; expression 3) {  
  // code block to be executed  
}
```

Expression 1 is executed (one time) before the execution of the code block.

Expression 2 defines the condition for executing the code block.

Expression 3 is executed (every time) after the code block has been executed.

Example

```
for (let i = 0; i < 5; i++) {  
  text += "The number is " + i + "<br>";  
}
```

From the example above, you can read:

Expression 1 sets a variable before the loop starts (let i = 0).

Expression 2 defines the condition for the loop to run (i must be less than 5).

Expression 3 increases a value (i++) each time the code block in the loop has been executed.

Expression 1

Normally you will use expression 1 to initialize the variable used in the loop (let i = 0).

This is not always the case. JavaScript doesn't care. Expression 1 is optional.

You can initiate many values in expression 1 (separated by comma):

Example

```
for (let i = 0, len = cars.length, text = ""; i < len; i++) {  
  text += cars[i] + "<br>";  
}
```

And you can omit expression 1 (like when your values are set before the loop starts):

Example

```
let i = 2;  
let len = cars.length;  
let text = "";  
for (; i < len; i++) {  
  text += cars[i] + "<br>";  
}
```

Expression 2

Often expression 2 is used to evaluate the condition of the initial variable.

This is not always the case. JavaScript doesn't care. Expression 2 is also optional.

If expression 2 returns true, the loop will start over again. If it returns false, the loop will end.

If you omit expression 2, you must provide a **break** inside the loop. Otherwise the loop will never end. This will crash your browser. Read about breaks in a later chapter of this tutorial.

Expression 3

Often expression 3 increments the value of the initial variable.

This is not always the case. JavaScript doesn't care. Expression 3 is optional.

Expression 3 can do anything like negative increment (i--), positive increment (i = i + 15), or anything else.

Expression 3 can also be omitted (like when you increment your values inside the loop):

Example

```
let i = 0;
let len = cars.length;
let text = "";
for (; i < len; ) {
  text += cars[i] + "<br>";
  i++;
}
```

Loop Scope

Using **var** in a loop:

Example

```
var i = 5;

for (var i = 0; i < 10; i++) {
  // some code
}

// Here i is 10
```

Using **let** in a loop:

Example

```
let i = 5;

for (let i = 0; i < 10; i++) {
  // some code
}

// Here i is 5
```

In the first example, using **var**, the variable declared in the loop redeclares the variable outside the loop.

In the second example, using **let**, the variable declared in the loop does not redeclare the variable outside the loop.

When **let** is used to declare the *i* variable in a loop, the *i* variable will only be visible within the loop.

For/Of and For/In Loops

The `for/in` loop and the `for/of` loop are explained in the next chapter.

JavaScript Classes

ECMAScript 2015, also known as ES6, introduced JavaScript Classes.

JavaScript Classes are templates for JavaScript Objects.

JavaScript Class Syntax

Use the keyword `class` to create a class.

Always add a method named `constructor()`:

Syntax

```
class ClassName {  
  constructor() { ... }  
}
```

Example

```
class Car {  
  constructor(name, year) {  
    this.name = name;  
    this.year = year;  
  }  
}
```

The example above creates a class named "Car".

The class has two initial properties: "name" and "year".

A JavaScript class is **not** an object.

It is a **template** for JavaScript objects.

Using a Class

When you have a class, you can use the class to create objects:

Example

```
const myCar1 = new Car("Ford", 2014);
const myCar2 = new Car("Audi", 2019);
```

The example above uses the **Car class** to create two **Car objects**.

The constructor method is called automatically when a new object is created.

The Constructor Method

The constructor method is a special method:

- It has to have the exact name "constructor"
- It is executed automatically when a new object is created
- It is used to initialize object properties

If you do not define a constructor method, JavaScript will add an empty constructor method.

Class Methods

Class methods are created with the same syntax as object methods.

Use the keyword **class** to create a class.

Always add a **constructor()** method.

Then add any number of methods.

Syntax

```
class ClassName {
  constructor() { ... }
  method_1() { ... }
  method_2() { ... }
  method_3() { ... }
}
```

Create a Class method named "age", that returns the Car age:

Example

```
class Car {
  constructor(name, year) {
    this.name = name;
    this.year = year;
  }
}
```

```
}  
age() {  
  const date = new Date();  
  return date.getFullYear() - this.year;  
}  
}
```

```
const myCar = new Car("Ford", 2014);  
document.getElementById("demo").innerHTML =  
"My car is " + myCar.age() + " years old.";
```

You can send parameters to Class methods:

Example

```
class Car {  
  constructor(name, year) {  
    this.name = name;  
    this.year = year;  
  }  
  age(x) {  
    return x - this.year;  
  }  
}
```

```
const date = new Date();  
let year = date.getFullYear();
```

```
const myCar = new Car("Ford", 2014);  
document.getElementById("demo").innerHTML =  
"My car is " + myCar.age(year) + " years old.";
```

JavaScript Object Properties

Properties are the most important part of any JavaScript object.

JavaScript Properties

Properties are the values associated with a JavaScript object.

A JavaScript object is a collection of unordered properties.

Properties can usually be changed, added, and deleted, but some are read only.

Accessing JavaScript Properties

The syntax for accessing the property of an object is:

```
objectName.property // person.age
```

or

```
objectName["property"] // person["age"]
```

or

```
objectName[expression] // x = "age"; person[x]
```

The expression must evaluate to a property name.

Example 1

```
person.firstname + " is " + person.age + " years old.";
```

Example 2

```
person["firstname"] + " is " + person["age"] + " years old.";
```

JavaScript for...in Loop

The JavaScript **for...in** statement loops through the properties of an object.

Syntax

```
for (let variable in object) {  
  // code to be executed  
}
```

The block of code inside of the **for...in** loop will be executed once for each property.

Looping through the properties of an object:

Example

```
const person = {
  fname: "John",
  lname: "Doe",
  age: 25
};

for (let x in person) {
  txt += person[x];
}
```

Adding New Properties

You can add new properties to an existing object by simply giving it a value.

Assume that the person object already exists - you can then give it new properties:

Example

```
person.nationality = "English";
```

Deleting Properties

The `delete` keyword deletes a property from an object:

Example

```
const person = {
  firstName: "John",
  lastName: "Doe",
  age: 50,
  eyeColor: "blue"
};
```

```
delete person.age;
```

```
or delete person["age"];
```

Example

```
const person = {
  firstName: "John",
  lastName: "Doe",
  age: 50,
  eyeColor: "blue"
};
```

```
delete person["age"];
```

The `delete` keyword deletes both the value of the property and the property itself.

After deletion, the property cannot be used before it is added back again.

The `delete` operator is designed to be used on object properties. It has no effect on variables or functions.

The `delete` operator should not be used on predefined JavaScript object properties. It can crash your application.

Nested Objects

Values in an object can be another object:

Example

```
myObj = {  
  name:"John",  
  age:30,  
  cars: {  
    car1:"Ford",  
    car2:"BMW",  
    car3:"Fiat"  
  }  
}
```

You can access nested objects using the dot notation or the bracket notation:

Example

```
myObj.cars.car2;
```

or:

Example

```
myObj.cars["car2"];
```

or:

Example

```
myObj["cars"]["car2"];
```

or:

Example

```
let p1 = "cars";
let p2 = "car2";
myObj[p1][p2];
```

Nested Arrays and Objects

Values in objects can be arrays, and values in arrays can be objects:

Example

```
const myObj = {
  name: "John",
  age: 30,
  cars: [
    {name:"Ford", models:["Fiesta", "Focus", "Mustang"]},
    {name:"BMW", models:["320", "X3", "X5"]},
    {name:"Fiat", models:["500", "Panda"]}
  ]
}
```

To access arrays inside arrays, use a for-in loop for each array:

Example

```
for (let i in myObj.cars) {
  x += "<h1>" + myObj.cars[i].name + "</h1>";
  for (let j in myObj.cars[i].models) {
    x += myObj.cars[i].models[j];
  }
}
```

JavaScript Function Parameters

A JavaScript **function** does not perform any checking on parameter values (arguments).

Function Parameters and Arguments

Earlier in this tutorial, you learned that functions can have **parameters**:

```
function functionName(parameter1, parameter2, parameter3) {  
  // code to be executed  
}
```

Function **parameters** are the **names** listed in the function definition.

Function **arguments** are the real **values** passed to (and received by) the function.

Parameter Rules

JavaScript function definitions do not specify data types for parameters.

JavaScript functions do not perform type checking on the passed arguments.

JavaScript functions do not check the number of arguments received.

Default Parameters

If a function is called with **missing arguments** (less than declared), the missing values are set to **undefined**.

Sometimes this is acceptable, but sometimes it is better to assign a default value to the parameter:

Example

```
function myFunction(x, y) {  
  if (y === undefined) {  
    y = 2;  
  }  
}
```

Default Parameter Values

[ES6](#) allows function parameters to have default values.

Example

If y is not passed or undefined, then y = 10.

```
function myFunction(x, y = 10) {  
  return x + y;  
}  
myFunction(5);
```

Function Rest Parameter

The rest parameter (...) allows a function to treat an indefinite number of arguments as an array:

Example

```
function sum(...args) {  
  let sum = 0;  
  for (let arg of args) sum += arg;  
  return sum;  
}
```

```
let x = sum(4, 9, 16, 25, 29, 100, 66, 77);
```

The Arguments Object

JavaScript functions have a built-in object called the arguments object.

The argument object contains an array of the arguments used when the function was called (invoked).

This way you can simply use a function to find (for instance) the highest value in a list of numbers:

Example

```
x = findMax(1, 123, 500, 115, 44, 88);
```

```
function findMax() {  
  let max = -Infinity;  
  for (let i = 0; i < arguments.length; i++) {  
    if (arguments[i] > max) {  
      max = arguments[i];  
    }  
  }  
  return max;  
}
```

Or create a function to sum all input values:

Example

```
x = sumAll(1, 123, 500, 115, 44, 88);
```

```
function sumAll() {  
  let sum = 0;  
  for (let i = 0; i < arguments.length; i++) {  
    sum += arguments[i];  
  }  
}
```



```
return sum;
}
```

If a function is called with **too many arguments** (more than declared), these arguments can be reached using **the arguments object**.

Arguments are Passed by Value

The parameters, in a function call, are the function's arguments.

JavaScript arguments are passed by **value**: The function only gets to know the values, not the argument's locations.

If a function changes an argument's value, it does not change the parameter's original value.

Changes to arguments are not visible (reflected) outside the function.

Objects are Passed by Reference

In JavaScript, object references are values.

Because of this, objects will behave like they are passed by **reference**:

If a function changes an object property, it changes the original value.

Changes to object properties are visible (reflected) outside the function.

JavaScript Function call()

Method Reuse

With the **call()** method, you can write a method that can be used on different objects.

All Functions are Methods

In JavaScript all functions are object methods.

If a function is not a method of a JavaScript object, it is a function of the global object (see previous chapter).

The example below creates an object with 3 properties, firstName, lastName, fullName.

Example

```
const person = {
  firstName:"John",
  lastName: "Doe",
  fullName: function () {
    return this.firstName + " " + this.lastName;
  }
}
```

```
// This will return "John Doe":
person.fullName();
```

JavaScript Classes

ECMAScript 2015, also known as ES6, introduced JavaScript Classes.

JavaScript Classes are templates for JavaScript Objects.

JavaScript Class Syntax

Use the keyword **class** to create a class.

Always add a method named **constructor()**:

Syntax

```
class ClassName {
  constructor() { ... }
}
```

Example

```
class Car {
  constructor(name, year) {
    this.name = name;
    this.year = year;
  }
}
```

Certificate Course in Bhav Sangeet

Code: CCBS

Duration: 40 Hours

Three Months – One Lecture per Day

Aims:

- To promote Indian Classical Music.
- To understand the culture of music.
- To spread the traditional culture of music among society.
- To focus on global recognition and participation in Indian Classical Music.

Objectives:

- To create interest in classical music .
- To enable students to appreciate classical music .
- To enable students to sing classical music with fair skills .

Module-I

- 1.1 Sangeet, Swara, Aaroh, Avaroh, Sam, Tali, Khali.
- 1.2 Knowledge of Shuddha and Vikrit Swaras.
- 1.3 Knowledge of Sawar- Mallika.
- 1.4 Sthai, Antara, Sanchari, Abhog, Vadi, Samvadi, Taal, Matra and Thaata.

Module-II

- 2.1 Five simple Alankars in each of the prescribed raga.
- 2.2 Raaga Prescribed: Bilawal, Alahiya Bilawal, Yaman and Bhupali.
- 2.3 One drut (fast) Khyal, One Lakshan Geet and two Swar Mallika in ragas.
- 2.4 Taals prescribed: Keharva and Teen Taal..

Module-III

- 3.1 Knowledge of the notation system.
- 3.2 Knowledge of the prescribed ragas.
- 3.3 Five simple Alankars in each of the prescribed raga..

Module-IV

- 4.1 Knowledge of Aaroh and Avaroh in Ekgun , Dugun and Chaugun layakari.
- 4.2 Two swar Mallika, One Lakshan Geet and Two Drut(Fast) Khyal.
- 4.3 Raaga Prescribed: Kafi, Khamaj and Bhairav.
- 4.4 Taals prescribed: Dadra, Teen and Jhap.

Course Outcomes: By the end of the course, the student will be able to:

CO1: Gain understanding of vocal dynamics

CO2: Understand nuances of Raga Sangeet

CO3: Have an enhanced perspective of raga interpretation.

CO4: Acquire a holistic perspective towards learning classical music

Assessment with Pen and Paper:

Possible assessment methods include: quizzes, tests, collected assignments, group activities and demonstration of skills and performance. Such assessments and related assignments will develop critical thinking techniques and reading, along with developing classical music skills.

Grading System will be adopted for Certification.

Marks	Grades	Grade Point
>90 and <=100	A1	10
>80 and <=90	A2	9
>70 and <=80	B1	8
>60 and <=70	B2	7
>50 and <=60	C1	6
>40 and <=50	C2	5

Web Development Using PHP (CCWDPHP22)

Objective

The objective of course is to learn the fundamental Website Development using PHP which are essential to design a Website.

Benefit

Core concepts to design, implement and test website using the fundamental Elements of Website Designing which enables student to get knowledge of web development

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus of Web Development using PHP

- **HTML with CSS**
 - Basic structure of HTML,
 - designing a web page,
 - inserting links images,
 - horizontal rules,
 - Formatting text, title, headings,
 - colors, fonts, sizes, simple tables and forms.
 - HTML tags, hyperlinks
 - Adding graphics and images,
 - image maps, imagefiles.
 - Using tables, forms, style sheets and frames.
 - Floating of web sites/pages.

- **PHP Tutorial**
 - PHP - Introduction
 - PHP - Environment Setup
 - PHP - Syntax Overview
 - PHP - Variable Types
 - PHP - Constants

- PHP - Operator Types
- PHP - Decision Making
- PHP - Loop Types
- PHP - Arrays
- PHP - Strings
- PHP - Web Concepts
- PHP - GET & POST
- PHP - File Inclusion
- PHP - Files & I/O
- PHP - Functions
- PHP - Cookies
- PHP - Sessions

Project

Student makes a project during training period.

Certification

Certificate in Web Development using PHP

Study Material of Web Development Using PHP (CCWDPHP22)

What is PHP?

- PHP is an acronym for "PHP: Hypertext Preprocessor"
- PHP is a widely-used, open source scripting language
- PHP scripts are executed on the server
- PHP is free to download and use

PHP is an amazing and popular language!

It is powerful enough to be at the core of the biggest blogging system on the web (WordPress)!

It is deep enough to run large social networks!

It is also easy enough to be a beginner's first server side language!

What is a PHP File?

- PHP files can contain text, HTML, CSS, JavaScript, and PHP code
 - PHP code is executed on the server, and the result is returned to the browser as plain HTML
 - PHP files have extension ".php"
-

What Can PHP Do?

- PHP can generate dynamic page content
- PHP can create, open, read, write, delete, and close files on the server
- PHP can collect form data
- PHP can send and receive cookies
- PHP can add, delete, modify data in your database
- PHP can be used to control user-access
- PHP can encrypt data

With PHP you are not limited to output HTML. You can output images or PDF files. You can also output any text, such as XHTML and XML.

Why PHP?

- PHP runs on various platforms (Windows, Linux, Unix, Mac OS X, etc.)
- PHP is compatible with almost all servers used today (Apache, IIS, etc.)
- PHP supports a wide range of databases

- PHP is free. Download it from the official PHP resource: www.php.net
 - PHP is easy to learn and runs efficiently on the server side
-

What's new in PHP 7

- PHP 7 is much faster than the previous popular stable release (PHP 5.6)
- PHP 7 has improved Error Handling
- PHP 7 supports stricter Type Declarations for function arguments
- PHP 7 supports new operators (like the spaceship operator: `<=>`)

Basic PHP Syntax

A PHP script can be placed anywhere in the document.

A PHP script starts with `<?php` and ends with `?>`:

```
<?php
// PHP code goes here
?>
```

The default file extension for PHP files is `.php`.

A PHP file normally contains HTML tags, and some PHP scripting code.

Below, we have an example of a simple PHP file, with a PHP script that uses a built-in PHP function `echo` to output the text "Hello World!" on a web page:

Example

```
<!DOCTYPE html>
<html>
<body>

<h1>My first PHP page</h1>

<?php
echo "Hello World!";
?>

</body>
</html>
```

Creating (Declaring) PHP Variables

In PHP, a variable starts with the \$ sign, followed by the name of the variable:

Example

```
<?php  
$txt = "Hello world!";  
$x = 5;  
$y = 10.5;  
?>
```

After the execution of the statements above, the variable \$txt will hold the value Hello world!, the variable \$x will hold the value 5, and the variable \$y will hold the value 10.5.

Note: When you assign a text value to a variable, put quotes around the value.

Note: Unlike other programming languages, PHP has no command for declaring a variable. It is created the moment you first assign a value to it.

Think of variables as containers for storing data.

PHP Variables

A variable can have a short name (like x and y) or a more descriptive name (age, carname, total_volume).

Rules for PHP variables:

- A variable starts with the \$ sign, followed by the name of the variable
- A variable name must start with a letter or the underscore character
- A variable name cannot start with a number
- A variable name can only contain alpha-numeric characters and underscores (A-z, 0-9, and _)
- Variable names are case-sensitive (\$age and \$AGE are two different variables)

PHP Data Types

Variables can store data of different types, and different data types can do different things.

PHP supports the following data types:

- String
 - Integer
 - Float (floating point numbers - also called double)
 - Boolean
 - Array
 - Object
 - NULL
 - Resource
-

PHP String

A string is a sequence of characters, like "Hello world!".

A string can be any text inside quotes. You can use single or double quotes:

Example

```
<?php
$x = "Hello world!";
$y = 'Hello world!';

echo $x;
echo "<br>";
echo $y;
?>
```

PHP Integer

An integer data type is a non-decimal number between -2,147,483,648 and 2,147,483,647.

Rules for integers:

- An integer must have at least one digit
- An integer must not have a decimal point
- An integer can be either positive or negative
- Integers can be specified in: decimal (base 10), hexadecimal (base 16), octal (base 8), or binary (base 2) notation

In the following example \$x is an integer. The PHP var_dump() function returns the data type and value:

Example

```
<?php
$x = 5985;
```

```
var_dump($x);  
?>
```

PHP Float

A float (floating point number) is a number with a decimal point or a number in exponential form.

In the following example \$x is a float. The PHP var_dump() function returns the data type and value:

Example

```
<?php  
$x = 10.365;  
var_dump($x);  
?>
```

PHP Boolean

A Boolean represents two possible states: TRUE or FALSE.

```
$x = true;  
$y = false;
```

Booleans are often used in conditional testing. You will learn more about conditional testing in a later chapter of this tutorial.

PHP Array

An array stores multiple values in one single variable.

In the following example \$cars is an array. The PHP var_dump() function returns the data type and value:

Example

```
<?php  
$cars = array("Volvo", "BMW", "Toyota");  
var_dump($cars);  
?>
```

You will learn a lot more about arrays in later chapters of this tutorial.

PHP Object

Classes and objects are the two main aspects of object-oriented programming.

A class is a template for objects, and an object is an instance of a class.

When the individual objects are created, they inherit all the properties and behaviors from the class, but each object will have different values for the properties.

Let's assume we have a class named Car. A Car can have properties like model, color, etc. We can define variables like \$model, \$color, and so on, to hold the values of these properties.

When the individual objects (Volvo, BMW, Toyota, etc.) are created, they inherit all the properties and behaviors from the class, but each object will have different values for the properties.

If you create a __construct() function, PHP will automatically call this function when you create an object from a class.

Example

```
<?php
class Car {
    public $color;
    public $model;
    public function __construct($color, $model) {
        $this->color = $color;
        $this->model = $model;
    }
    public function message() {
        return "My car is a " . $this->color . " " . $this->model . "!";
    }
}

$myCar = new Car("black", "Volvo");
echo $myCar -> message();
echo "<br>";
$myCar = new Car("red", "Toyota");
echo $myCar -> message();
?>
```

PHP NULL Value

Null is a special data type which can have only one value: NULL.

A variable of data type NULL is a variable that has no value assigned to it.

Tip: If a variable is created without a value, it is automatically assigned a value of NULL.

Variables can also be emptied by setting the value to NULL:

Example

```
<?php  
$x = "Hello world!";  
$x = null;  
var_dump($x);  
?>
```

Network Security (CCNS22)

Objective

The objective of course is to learn the Network Security.

Benefit

Students can know about how important is network security is important and its ground concept.

Duration

2 Month (44 Hours)

Examination

Paper – Practical and Theory Exam.

Course content & syllabus of Network Security

Introduction

- o Attacks, Services and Mechanisms
- o Security Attacks, Security Services
- o Integrity check, digital Signature
- o Authentication

Secret Key Cryptography

- o Block Encryption, DES rounds, S-Boxes
- o IDEA: Overview, comparison with DES, Key expansion, IDEA rounds

Public key Cryptography

- o Algorithms
- o **Modular arithmetic (addition, multiplication, inverse, and exponentiation)**
- o RSA: generating keys, encryption and decryption

Authentication

- Password Based,
- Address Based,
- Cryptographic Authentication
- Passwords in distributed systems
- On-line vs offline guessing, storing
- Cryptographic Authentication: passwords as keys, protocols

Network Security

- Electronic mail security
- IP security
- Network management security.

Project

Student makes a project during training period.

Certification

Certificate in Network Security.

Study Material Of Network Security (CCNS22)

Cyber Crime

What is Cyber Crime? Just like regular crime, it also exists on the Internet. Here are some examples of Cyber Crime:

- Identity Theft
 - Online Predators
 - BEC ("Business Email Compromise")
 - Ransomware
 - Stealing of sensitive intellectual property
-

Increasing Crime

Cyber Crime has been increasing regularly every year. Why is Cyber Crime on the rise? Here are some reasons:

- Cyber Crime is easy to accomplish
- Low risks of getting caught
- For little work there is often high returns
- Attackers can target thousands of victims
- Money laundering is easier with Cryptocurrencies

Challenges like identity theft can have significant consequences on an individual, causing not only the potential of financial losses but also a lot of personal grief.

The Internet offers many services to facilitate money laundering, usually making it a trivial process. As money is exchanged in cryptocurrency, services such as tumblers make it hard to track the money.

Tumblers are services which split up cryptocurrency transactions and forward the money through many accounts, with different values, for thousands of people, making them hard to track.

Cyber Criminals

Who are Cyber Criminals? It can be anyone, but let us discuss some common ones we see in the media all the time:

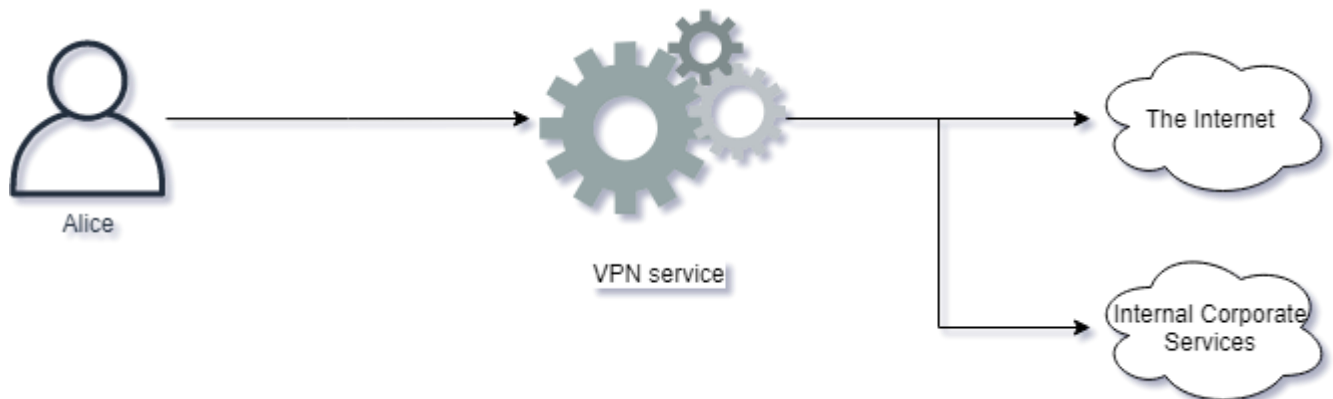
- State-sponsored groups targeting organizations in other countries
- Hacking Groups out to target companies to make them pay ransom
- Kids in their rooms doing illegal hacking

Note: Cryptocurrency is money represented in digital form instead of physical. There are many different Cryptocurrencies, some very widespread like Bitcoin, and others smaller and unknown to most people. These currency models relies on strong cryptography and public ledger systems to keep track of transactions and how much currency is on the market.

Catching Cyber Criminals

Cyber Criminals can stay anonymous with trivial means, and typically easy to avoid getting caught. When attackers do get caught, it is often because of mistakes made by the attackers themselves, for example as a result of becoming complacent. There is also a great deal of potential for law-enforcement to use caught cyber criminals to rat out others in the industry.

Law enforcement do, however, have many challenges in tracking down cyber-crime. You might see attack traffic coming in from a system residing in UK, and when taking down this system, you realize it was being remotely controlled by e.g. another system in India. Cooperating with law-enforcements across borders, you might be able to get to the system in India, but only to realize it was again remotely controlled through e.g. Pakistan.



Protocols and Networking

It is essential for Cyber Security Professionals to have a solid understanding of how computers communicate. There is much more happening behind the scenes of computer networks than what can be observed when using applications.

The OSI Model

The OSI ("Open Systems Interconnection") model represents an easy and intuitive way to standardize the different parts required to communicate across networks.

The model makes it clear what is required to communicate on a network by splitting the requirements into multiple layers.

This is what the OSI Model looks like:

Layer	What it does
7 - Application	Where humans process data and information
6 - Presentation	Ensures data is in a usable format
5 - Session	Capable of maintaining connections
4 - Transport	Data is forwarded to a service capable of handling requests
3 - Network Layer	Responsible for which path packets should travel on a network
2 - Data Link	Responsible for which physical devices packets should go to
1 - Physical	The physical infrastructure to transport data

Layer	Where it is implemented
7 - Application	Software
6 - Presentation	Software
5 - Session	Software

The top 3 layers are typically implemented in software within the Operating System:

The bottom 3 layers are typically implemented in hardware within devices on the network, e.g. Switches, Routers and Firewalls:

Layer	Where it is implemented
3 - Network Layer	Hardware
2 - Data Link	Hardware
1 - Physical	Hardware

Layer 4, the Transport layer, connects the software with the hardware layers.

SDN ("Software Defined Networking") is technology which allows more layers of the hardware to be implemented via software.

Layer 7 - Application Layer

The business logic and functionality of the application lies here. This is what the users use to interact with services across a network. Most developers create applications on the Application Layer.

Most of the applications you use are on the Application Layer, with the complexity of the other layers hidden.

Examples of Layer 7 Applications:

- HTTP ("Hypertext Transfer Protocol") - Enables us to access web applications
- FTP ("File Transfer Protocol") - Allows users to transfer files
- SNMP ("Simple Network Management Protocol") - Protocol to read and update network device configurations

There are many applications which uses these protocols like Google Chrome, Microsoft Skype and FileZilla.

You are accessing this class via Layer 7!

Layer 6 - Presentation Layer

Typically an unseen layer, but is responsible of adapting, transforming and translating data. This is to ensure the application and layers beneath can understand one another.

- Encoding Schemes used to represent text and data, for example ASCII(American Standard Code for Information Interchange) and UTF(Unicode Transformation Format).
 - Encryption for services, for example SSL ("Secure Sockets Layer") and TLS ("Transport Security Layer")
 - Compression, for example GZip in use in many implementations of HTTP.
-

Layer 5 - Session Layer

This layer's responsibility is handling connections between the application and the layers below. It involves establishing, maintaining and terminating connections, otherwise referred to as sessions.

Common protocols which represent the Session Layer well are:

- SOCKS - A protocol for sending packets through a proxy server.
 - NetBIOS - An older Windows protocol for establishing sessions and resolving names.
 - SIP ("Session Initiation Protocol") - For engaging in VOIP ("Voice Over IP") communications
-

Layer 4 - Transport

The layer which allows applications to be represented on the network.

Some well known applications on this layer:

- TCP ("Transmission Control Protocol") - Used for many applications, ensuring stability, control of how much data can be sent at any given time, reliability and more.
 - UDP ("User Datagram Protocol") - Lightweight and quick protocol use for many services.
 - QUIC ("Quick UDP Internet Connections") - A protocol designed for faster connections and goes hand-in-hand with the version 2 of the HTTP protocol.
-

Layer 3 - Network

A layer responsible of routing packets between networks via routers.

On this layer, the following protocols reside:

- IP ("Internet Protocol") - Used everyday when accessing the Internet. Comes in two versions, IP version 4 and 6.
 - ICMP ("Internet Control Message Protocol") - Used by network devices and network operators, to diagnose network connections or for devices to send and respond to error conditions and more.
 - IPSec ("Internet Protocol Security") - Allows encrypted and secure connections between two network devices.
-

Layer 2 - Link

Link networks, as the name implies, consist of protocols designed to send packets through the actual links (physical connections) that network nodes are connected to. A simpler way of thinking of it is that the Link Layer is responsible for moving data from physical over to logical (to the network layer).

Protocols on this layer include:

- Ethernet - An essential protocol used by most operating systems when connecting to networks using a physical cable.
 - Wi-Fi ("Wireless Fidelity") - For accessing networks via radio signals. It uses a family of protocols called IEEE 802.11.xx
 - NDP ("Neighbor Discovery Protocol") - IP version 6(IPv6) uses this protocol on the Link Layer to gather information required to communicate via IPv6
-

Layer 1 - Physical

Physical layer represents the signaling which allows bits and bytes to transfer between a physical medium. It can be transferred via radio or signals over a cable, using electrical signals or light, for example fiber.

Examples of the Physical Layer protocols includes:

- CAN Bus ("Controller Area Network") - Used in microcontrollers and other devices to communicate to other similar devices, not involving a computer. Often used in ICS ("Industrial Control Systems").
- Ethernet Physical Layer - Used by Ethernet on the physical layer to send signals with speeds up to many gigabits of traffic per second.
- Bluetooth Physical Layer - Bluetooth also has its own specifications on how radio signals should be sent and received.

Firewalls

Firewalls are a central architectural element to any network. They are designed to keep out all network traffic, except traffic which we allow. Firewalls operate on Layer 4, typically controlling TCP and UDP access to internal assets. Next-Generation Firewalls operate on all the layers of the OSI model, including Layer 7.

Traffic entering a network, e.g. through a Firewall, is called ingress traffic. Traffic leaving is called egress.

Layer 4 Firewall

The traditional Firewall is a Layer 4 Firewall with features such as:

- NAT
- Routing
- Blocking or Allowing traffic
- Track active network connections
- Support VPN connections

Note: These Firewalls are typically cheaper and offers more throughput on the network than a more modern Next-Generation Firewall.

NGFW ("Next-Generation Firewalls")

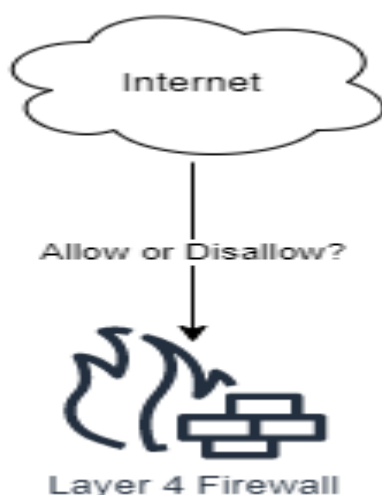
A modern Firewall has capabilities that range much wider than a a Layer 4 Firewall. These capabilities are typically security features.

A NGFW Firewall can also track active network connections, but is also typically capable of tracking:

- Locations via geo-location databases. This means the Firewall can make blocking or allow actions based on the location of users. Location services are not always accurate and can often easily be bypassed using VPN services or by using other services like jump stations for attacks.
- Users
- Applications
- Sessions
- Ports and services
- IP addresses

Other features of a NGFW includes:

- Identify and control applications on the network.
- It can be virtualized to run as a software Firewall.
- Often offers simple and intuitive management.
- Supports protecting against known threats via ("Intrusion Prevention System").
- Potential to detect and prevent unknown threats via sandboxing solutions.
- Offers a potential to manage unknown traffic, e.g. traffic which cannot be attributed to an application.
- Capabilities to terminate and inspect encrypted traffic.
- Can control users, not just system via respective IP addresses.



Segmentation

Firewalls can segment traffic between hosts and systems into segments, sometimes called zones. Each segment holds services which are allowed to communicate between one another.

Any connection to or from the segment should be carefully controlled by the Firewall, preventing any unauthorized connections to make successful connections. Smaller segments offer more segregation, but requires more management.

Without any segmentation, users and systems can talk directly to each other without the Firewalls enforcement. This is called a flat network.

Adding more segmentation we can envision segments representing services, where each segment is a service provided in the organization. Each segment could contain the different servers responsible for making the service operational. Communications within the segment is allowed, but any access in and out from the segment is controlled by the Firewall.

Another segmentation idea would be to control segments based on their functions, for example clustering web applications within a segment with other web-applications, databases within one segment and other kinds of services within their segment.

Note: A very common user directory is Microsoft's Windows Active Directory. It holds information about which users, computers and groupings the organization holds.

The best and most secure kind of segmentation is called zero-trust architecture, forcing all systems on the network to explicitly be allowed to communicate to different services.

To ease management of Firewall rules, the Firewall management is ideally connected to the organizations user directory. This can allow Firewall administrators to create careful rules based on employee responsibilities, allowing the organization to add and remove permissions which are applied on the network without asking the Firewall administrators for changes anytime there is a role change. This is sometimes called user-based policy control. Examples include:

- IT-Administrators should be able to use management protocols to the different services.
- HR employees should be allowed to access HTTPS to the HR platforms.
- Helpdesk employees can only access helpdesk related services.
- Unrecognizable users can be identified and provisioned accordingly.

Nmap - The Network Mapper

Nmap has for a long time been considered as the standard port scanner for both network engineers and security professionals. We can use it to discover assets to attack or defend.

Network Mapping

One way to identify hosts which are active on the network is to send a ping, i.e. ICMP Echo Request, to all IP Addresses in the network. This is often referred to as a Ping Sweep.

This approach is not very good in discovering assets. It is likely that systems on the network will ignore incoming pings, perhaps due to a Firewall blocking them or because of a Host-Based Firewall. A host-based firewall is simply a firewall which is implemented on the system instead of on the network.

A better approach involves sending a different kinds of packets to a system to try ask for any kind of answer to determine if system is alive or not. For example Nmap will send the following packets to the system to try cause a response:

- ICMP Echo Request
- TCP SYN packet to port 443
- TCP ACK packet to port 80
- ICMP Timestamp request

Based on the TCP specifications, that is the rules of communications, a system should always engage in a three-way handshake before starting to communicate. Nmap seems to be intentionally breaking the rules with the packets above. Can you spot which packet is not behaving as systems would expect?

Sending a TCP ACK packet to port 80 is not conforming to the rules of the TCP standard. Nmap does this specifically to try cause the target system to make a reply. In order to send packets which are not following the rules, Nmap must run with the highest level of privileges, e.g. root or local administrator. Most port scanners will be more accurate because of this.

Disabling the Network Mapping can be done with Nmap with the `-Pn` flag. Nmap will now consider all IP/systems to be up and go directly to port scanning.

Try this at home now if you would like to. Careful, if you are at a corporate environment, always get permission before you start running scanners as you do not want to violate any rules of your workspace. To try Nmap now, follow these simple steps:

- Go download Nmap at <https://nmap.org>. Make sure you download the version that matches your operating system
- Install Nmap and launch the tool from a command line terminal
- Find your local IP address and subnet
- Run Nmap to scan it to see what kinds of systems it can discover: `nmap -vv IP/netmask`

We are adding two -v flag to tell Nmap we want verbose output, that makes the scan more fun to watch while it completes.

```
Wireless LAN adapter Wi-Fi 2:

Connection-specific DNS Suffix . : home
IPv6 Address. . . . . : 
Temporary IPv6 Address. . . . . : 
Link-local IPv6 Address . . . . . : fe80::2118:dc0c:2c61:a8cc%21
IPv4 Address. . . . . : 10.0.0.5
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : fe80::763a:efff:fe43:4f62%21
                            10.0.0.138

Ethernet adapter Bluetooth Network Connection 2:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . : 
PS C:\> nmap -vv 10.0.0.0/24
Starting Nmap 7.91 ( https://nmap.org ) at 2021-02-19 21:04 W. Europe Standard Time
Initiating ARP Ping Scan at 21:04
Scanning 255 hosts [1 port/host]
```

ARP Scan

The ARP protocol is contained within a LAN, but if the hosts you need to discover is on the LAN we could use this protocol to try reveal systems on the network. By simply iterating over all available IP addresses on the LAN network with the ARP protocol, we are trying to force systems to reply.

The scan looks like this:

```
Eve: Please Provide Mac Address of system 192.168.0.1
Eve: Please Provide Mac Address of system 192.168.0.2
Eve: Please Provide Mac Address of system 192.168.0.3
Eve: Please Provide Mac Address of system 192.168.0.4
Eve: Please Provide Mac Address of system 192.168.0.5-254
Default Gateway: 192.168.0.1 is me and my MAC Address is AA:BB:CC:12:34:56
Bob: 192.168.0.3 is me and my MAC Address is: BB:CC:DD:12:34:56
Alice: 192.168.0.4 is me and my MAC Address is: CC:DD:EE:12:34:56
```

Note: ARP Scanning is a simple and effective way to find hosts on the LAN, but not outside of the LAN.

Port Scanning

Port Scanning is done to try determine which services we can connect to. Each listening service provides attack surface which could potentially be abused by attackers. As such it is important to learn which ports are open.

Attackers are interested in knowing which applications are listening on the network. These applications represent opportunities for attackers. There might be vulnerabilities enabling them to attack successfully the organization.

Port Scanning works by sending packets to an application and looking for any replies. This is exceptionally easy for TCP, as if a TCP service is available it will always reply with a SYN/ACK packet. For UDP however it is more difficult. In order to detect if the service is available or not, in most cases the attacker must send specific input which forces the application to reply. Most applications hosted in UDP will not reply unless the Clients sends exactly the input required to engage in communications.

TCP Port Scanning

TCP is an easy protocol to scan because the TCP standard dictates that systems should reply with a SYN/ACK when receiving a SYN. We can send a SYN packet to all 65536 ports and record all SYN/ACK's coming back and conclude the ports which are opened based on the reply of a SYN/ACK. When no reply is received, we can assume the port is closed or filtered by for example a Firewall.

With the SYN/ACK on port 445 we have identified the port is open.

UDP Port Scanning

With UDP it is harder to determine if a port is up or not. For UDP ports the scanner can not rely on a SYN/ACK. In fact, the scanner must almost always rely on making the service listening cause some sort of reply.

With so many ports potentially open and different services only replying to the correct kind of data, it becomes time consuming and hard to scan all ports in a reasonable time.

Consider the following conversation where Eve tries to figure out if a UPD port is open:

Eve need to talk the correct protocol, and make sure the packets reach their destination, e.g. no packet loss. Otherwise Eve might not discover the port is open.

Because of this UDP scanning can be very time consuming if we want to scan all ports.

Useful Nmap Scan Types and Options

There are many scanners out there, however in this section we focus on how to utilize Nmap to the full potential.

Nmap can be told to scan the most common ports with the argument `--top-ports`.

```
nmap --top-ports 100 <target>
```

The scanner can try determine versions of the application listening behind a port. This is called service scanning and can be enabled with the `-sV` flag.

```
nmap -sV <target>
```

Nmap has many built-in scripts designed to target a specific service and interact with it. Scripts can do all sorts of things like pull out information from the service or try to exploit it. We can enable the script scanner with the `-sC` flag. This enables only safe checks, as such no denial of service or exploitation attempts.

```
nmap -sC <target>
```

Operating System detection can be done with the scanner, allowing it to try determine which operating system is running. It uses many different parameters to try measure and estimate the likelihood of what operating system it is. This can be enabled with the `-O` argument.

```
nmap -O <target>
```

The aggressive mode of Nmap enables many flags at once. The scanner will do version and OS detection, enable the script scanner and scan the top 1000 most common ports. It can be enabled with the `-A` option.

```
nmap -A <target>
```

Nmap can also scan IPv6 across all of the above flags. It is enabled by adding the `-6` flag.

```
nmap -6 <target>
```

Note: The best way to understand is to practice and get hands on experience. Go ahead and download Nmap and try these different scans against systems in your own environment!

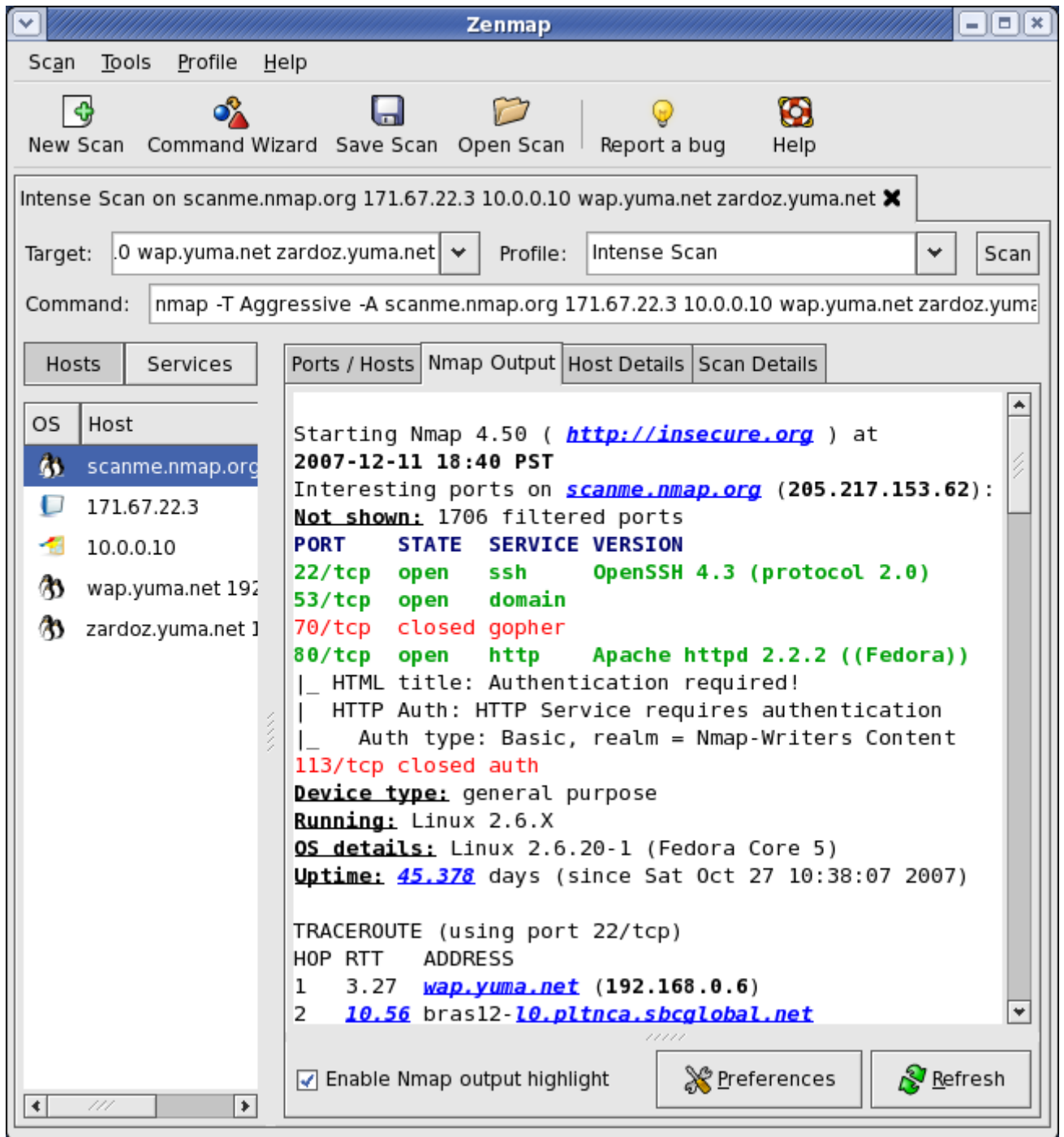
Nmap Timing options

Scanning can be done with different speeds. Slower speeds have a less likelihood to be detected by IDS systems, while a fast scan might overwhelm the system. Nmap supports the following options:

- T0 - Paranoid. This option is for attackers whom do not want to be detected. IDS systems can correlate multiple requests within a certain timespan. The paranoid option will try to circumvent this by only sending very few packets per second.
- T1 - Sneaky. Faster but designed to evade IDS systems.
- T2 - Polite. Slow scan doing its best job not to crash a system.
- T3 - Normal. It's simply the default.
- T4 - Aggressive. Fast scan which gives results fast. Most systems can cope with this.
- T5 - Insane. We are sending at full capacity and performance.

Zenmap

Nmap has a built-in GUI ("Graphical User Interface") along side with other tools too. The GUI can be useful to visualize networks and browse open ports across different hosts. The GUI looks like this:



Network Attacks

Attacks on protocols and applications hosted on the Network are plentiful. Web Applications are covered in its own section in this course.

Services can have inherent bugs in them allowing them to be exploited by attackers. These attacks typically involve using special instructions to the Operating System, via the vulnerable service, to take control of the process operating the network service. Buffer Overflows is a category of such attacks.

A network typically holds many applications, some which holds simple logins and others with complex functionality. One way to gain an overview of the attack surface, and also map out easy to exploit vulnerabilities, is to port scan all the assets in the target environment, then screenshot them.

Tools like EyeWitness (<https://github.com/FortyNorthSecurity/EyeWitness>) accomplish this. The tool allows us to quickly get an overview of which assets are represented on the network, then provides screenshots of each service. By having the screenshots we can easily look and assess quickly which systems we should take a closer look at.

Exploiting a service means to abuse the service in ways it was not intended to. Often this exploitation activity means the attackers are capable of running their own code, this is called RCE ("Remote Code Execution").

Buffer Overflow

Exploitation of network services sometimes involve abusing memory management functions of an application. Memory management? Yes, applications need to move around data within the computers memory in order to make the application work. When programming languages give the developer control of memory, problems like Buffer Overflow might exist. There exists many similar vulnerabilities, and in this section we review Buffer Overflows.

Programming language C and C++ allows developers very much control of how memory is managed. This is ideal for applications which requires developers to program very closely to the hardware, but opens up for vulnerabilities. Programming languages like Java, JavaScript, C#, Ruby, Python and others does not easily allow developers to make these mistakes, making Buffer Overflows less likely in applications written in these languages.

Buffer Overflows happen when un-sanitized input is placed into variables. These variables are represented on the Operating System via a memory structure called a Stack. The attacker can then overwrite a portion of the stack called the Return Pointer.

Note: The stack memory structure is simply where a program stores variables and information it needs to run. The stack will be located within a computers RAM ("Random Access Memory")

The Return Pointer decides where the CPU ("Central Processing Unit") should execute code next. The CPU simply controls which instructions the system should perform at any given moment. The return pointer is simply an address in memory where execution should happen. The CPU must always be told where to execute code, and this is what the return pointer allows it to do.

When attacker is able to control the Return Pointer, it means the attacker can control which instructions the CPU should execute!

For example consider the following code C example (do not worry, you do not have to be a C developer, but do your best to try understand what this simple application does):

```
#include <string.h>
void storeName (char *input) {
    char name[12];
    strcpy(name, input);
}

int main (int argc, char **argv) {
    storeName(argv[1]);
    return 0;
}
```

IDOR ("Insecure Direct Object Reference")

IDOR vulnerabilities happen when developers have not implemented authorization requirements to access resources.

Eve, by simply changing an identifier, e.g. the document Rest parameter, she can access Alice's documents.

This happens when the web application does not enforce authorization between objects, allowing attackers to enumerate values and test access to other points of data.

For example we might have the following pseudo-code showing no signs of authorization:

```
$id = getInputFromUser();
$doc = getDocument($id);
return $doc;
```

The code above asks for input from user, performs no validation or sanitization, then performs a lookup with the `getDocument` function directly and returns the document in question.

A better implementation would be to check the privileges:

```
$id = getInputFromUser();
$user = findUsername();
$doc = "";
if (hasAccessToDocument($user, $id)) {
    $doc = getDocument($id);
} else {
    $doc = "Not authorized for this document";
}
return $doc;
```

WIFI Basics

WIFI as most people know it stems from the IEEE 802.11 protocol. There are other protocols which uses radio for signaling too, for example:

- Bluetooth, for communicating with devices we carry, typically smartphones, headphones etc.
- NFC ("Near Field Communications"), implemented in access badges and credit cards for wireless transmission of data.
- RFID ("Radio Frequency Identification"), used for access cards and other devices, for example a car which can wirelessly transmit its identifier to a toll-road system.
- ZigBee and Z-Wave, used for enterprise and home automation.

Wireless communication is typically done via an AP ("Access Point"), a wireless base station which acts as a switch and router between clients that wish to communicate. Peer-to-peer communications are also possible, but less typical.

The name of a wireless network is known as the SSID ("Service Set Identifier").

Because WIFI signals reach everyone in the vicinity it enables attackers to easily use an antenna to "sniff" communications for anyone transmitting. Sniffing simply means to listen for packets which the network interface can see.

WIFI sometimes allow users to reach internal applications, increasing attack potential. Furthermore, WIFI devices have management interfaces and firmware which can hold vulnerabilities, sometimes not always patched as timely as other assets in the enterprise.

WIFI Security

WIFI have the option of

- No security
- Access list based on MAC addresses
- PSK ("Pre-Shared Key")
- Enterprise authentication

Many WIFI attacks rely on network cards with two primary features, namely:

- Monitor Mode: Makes the network card forward packets destined to all MAC addresses to the Operating System, not just its own.
 - Packet Injection: The network card supports crafting packets with a different source MAC address than its own.
-

Open WIFI Networks

An open WIFI network is a network with no password on it. Communication between AP and Clients is not encrypted and everyone has to rely on their own sources of encryption to protect their traffic. These kinds of networks are very convenient and accessible for users, but makes security compromises.

An attacker on these kinds of networks can easily see what everyone else is doing by simply sniffing packets. Such packets can contain sensitive details or simply details about what the users are doing on the network.

Hidden SSID

AP's can often turn off broadcasting the name of the wireless network. This requires clients to demonstrate knowledge of the SSID to join the network. It is not considered best-practice to enable hidden SSID, because the name of the network is exposed anytime a client joins. Furthermore, the clients now need to ask and broadcast information about the network they want to join, everywhere they travel. An attacker could then sniff the WIFI traffic of clients and potentially learn more information about whom the clients are and where they have joined networks before.

MAC Address Filtering

Some AP's support access control based on MAC Addresses. The AP can create an allow-list of which MAC addresses should be allowed to join and communicate on the network.

This approach is in-secure. An attacker can sniff and observe other systems communicating on the network already. Then record their MAC addresses and update the attackers own MAC address to be one which is already allowed. This effectively bypasses the MAC Address Filtering requirement.

PSK ("Pre-Shared Key")

PSK simply means the network is configured with a password. PSK protection is typically implemented via a protocol called WPA ("WIFI Protected Access"). Older protocols for authentication can also be used, for example WEP ("Wired Equivalent Privacy") but has for a long time been considered obsolete as it is highly in-secure and easy for attackers to crack.

WPA comes in different forms with WPA3 being the latest standard as of the year 2021. WPA is not entirely safe against attackers either, but offers much more protection than WEP. To break into a WPA enabled network the attacker must try to crack the password with a password cracker. This is considered an expensive process in terms of time if the password is reasonably strong.

If an attacker can observe (sniff) anyone whom authenticates to the network, they have enough to engage in password cracking activities. Tools like aircrack-ng ("<https://www.aircrack-ng.org/>") supports cracking WIFI passwords.

Enterprise Authentication

Enterprise Access Points can also support authenticating clients based on certificates, which requires PKI ("Public Key Infrastructure") or enterprise credentials by integrating to a centralized authentication service.

This has some benefits, especially the concept of key management. With a PSK network, the inherent challenge is how passwords are distributed, rotated and revoked.

While Enterprise Authentication provides better security management regarding keys, it also involves a more complex infrastructure and offers other opportunities for attackers.

Fake WIFI Access Points

Attackers can easily start broadcasting networks pretending to be other networks. Often clients will automatically connect to networks in range if they present themselves with the appropriate SSID. This allows attackers to make clients connect to the attackers network, allowing them to sniff and change traffic as the attacker wishes.

SIEM ("Security Information Event Management")

Most systems produces logs often containing important security information.

An event is simply observations we can determine from logs and information from the network, for example:

- Users logging in
- Attacks observed in the network
- Transactions within applications

An incident is something negative we believe will impact our organization. It might be a definitive threat or the potential of such a threat happening. The SOC should do their best to determine which events can be concluded to actual incidents, which should be responded to.

The SIEM processes alerts based on logs from different sensors and monitors in the network, each which might produce alerts that are important for the SOC to respond to. The SIEM can also try to correlate multiple events to determine an alerts.

SIEM's typically allow events from the following areas to be analyzed:

- Network
- Host
- Applications

Events from the network is the most typical, but least valuable as they don't hold the entire context of what has happened. The network typically reveals who is communicating where, over which protocols, and when, but not the intricate details about what happened, to whom and why.

Host events give more information in regards to what actually happened and to whom. Challenges such as encryption is no longer blurred and more visibility is gained into what is taking place. Many SIEM's are enriched with great details about what happens on the hosts themselves, instead of only from the network.

Events from application is where the SOC typically can best understand what is going on. These events give information about the Triple A, AAA ("Authentication, Authorization and Account"), including detailed information about how the application is performing and what the users are doing.

For a SIEM to understand events from applications it typically requires work from the SOC Team to make the SIEM understand these events, as support is often not included "out-of-the-box". Many applications are proprietary to an organization and the SIEM does not already have an understanding of the data the applications forward.

SOC Staffing

How a SOC is staffed greatly varies based on the requirements and structure of an organization. In this section we take a quick look at typical roles involved in operating a SOC. An overview of potential roles:

As in most organized teams, a role is appointed to lead the department. The SOC Chief determines the strategy and tactics involved to counter threats against the organization.

The SOC Architect is responsible for ensuring the systems, platforms and overall architecture is capable of delivering what the team members require to perform their duties. A SOC Architect will help build correlation rules across multiple points of data and ensures incoming data conforms to the platform requirements.

Analyst Lead is responsible that processes, or playbooks, are developed and maintained to ensure analysts are capable to find the information necessary to conclude alerts and potential incidents.

Level 1 Analysts serve as the first responders to alerts. Their duty is, within their capabilities, to conclude alerts and forward any troubles to a higher level analyst.

Level 2 Analysts are distinguished by having more experience and technical knowledge. They should also ensure any troubles in resolving alerts are forwarded to the Analyst Lead to aid the continuous improvement of the SOC. The Level 2, together with the Analyst Lead, escalates incidents to the Incident Response Team.

The IRT ("Incident Response Team") is a natural extension to the SOC Team. The IRT team is deployed to remediate and solve the issues impacting the organization.

Penetration Testers ideally also support the defense. Penetration Testers have intricate knowledge of how attackers operate and can help in root cause analysis and understanding how break-ins occur. Merging attack and defense teams is often referred to as Purple Teaming and is considered a best-practice operation.

Escalation Chains

Some alerts require immediate actions. It is important for the SOC to have defined a process of whom to contact when different incidents occur. Incidents can occur across many different business units, the SOC should know who to contact, when and on which communication mediums.

Example of an escalation chain for incidents impacting one part of a organization:

1. Create an Incident in the appointed Incident Tracking System, assigning it to correct department or person(s)
2. If no direct action happens from department/person(s): send SMS and Email to primary contact
3. If still no direct action: phone call primary contact
4. If still no direct action: call secondary contact

Classification of Incidents

Incidents should be classified according to their:

- Category
- Criticality
- Sensitivity

Depending on the incidents classification and how it is attributed, the SOC might take different measures to solve the issue at hand.

The category of incident will determine how to respond. There exists many kinds of incident and it is important for the SOC to understand what each incident type means for the organization.

Example incidents are listed below:

- Inside Hacking
- Malware on Client workstation
- Worm spreading across the network
- Distributed Denial of Service Attack
- Leaked Credentials

The criticality of an incident is determined based on how many systems is impacted, the potential impact of not stopping the incident, the systems involved and many other things. It is important for the SOC to be able to accurately determine the criticality so the incident can be closed accordingly. Criticality is what determines how fast an incident should be responded to. Should the incident be responded to immediately or can the team wait until tomorrow?

Sensitivity determines who should be notified about the incident. Some incidents require extreme discretion.

SOAR ("Security Orchestration, Automation and Response")

To counter the advancements of threat actors, automation is key for a modern SOC to respond fast enough. To facilitate fast response to incidents, the SOC should have tools available to automatically orchestrate solutions to respond to threats in the environment.

The SOAR strategy means ensuring the SOC can use actionable data to help mitigate and stop threats which are developing more real-time than before. In traditional environments it takes attackers very short time from the time of compromise until they have spread to neighboring systems. Contrary to this it takes organizations typically a very long time to detect threats that have entered their environment. SOAR tries to help solve this.

SOAR includes concepts such as IAC "Infrastructure as Code" to help rebuild and remediate threats. SDN ("Software Defined Networking") to control accesses more fluently and easily, and much more.

What to monitor?

Events can be collected across many different devices, but how do we determine what to collect and monitor? We want the logs to have the highest quality. High fidelity logs that are relevant and identifying to quickly stop the threat actors in our networks. We also want to make it hard for attackers to circumvent the alerts we configure.

Indicator	Difficulty to change
File checksums and hashes	Very Easy
IP Addresses	Easy
Domain Names	Simple
Network and Host Artifacts	Annoying
Tools	Challenging
Tactics, Techniques and Procedures	Hard

If we look at different ways to catch attackers, it becomes evident where we should focus. Here is a list of possible indicators we can use to detect attackers, and how hard it is considered for attackers to change.

File checksums and hashes can be used to identify known pieces of malware or tools used by attackers. Changing these signatures are considered to be trivial for attackers as their code can be encoded and changed in multiple different ways, making the checksums and hashes change.

IP Addresses are also easy to change. Attackers can use IP addresses from other compromised hosts or simply use IP addresses within the jungle of different cloud and VPS ("Virtual Private Server") providers.

Domain Names can also be reconfigured quite easily by attackers. An attacker can configure a compromised system to use a DGA ("Domain Generation Algorithm") to continuously use a new DNS name as time passes. One week the compromised system uses one name, but the next week the name has changed automatically.

Network and Host Artifacts are more annoying to change, as this involves more changes for the attackers. Their utilities will have signatures, like a user-agent or the lack of thereof, that can be picked up by the SOC.

Tools become increasingly harder to change for attackers. Not the hashes of the tools, but how the tools behave and operate when attacking. Tools will be leaving traces in logs, loading libraries and other things which we can monitor to detect these anomalies.

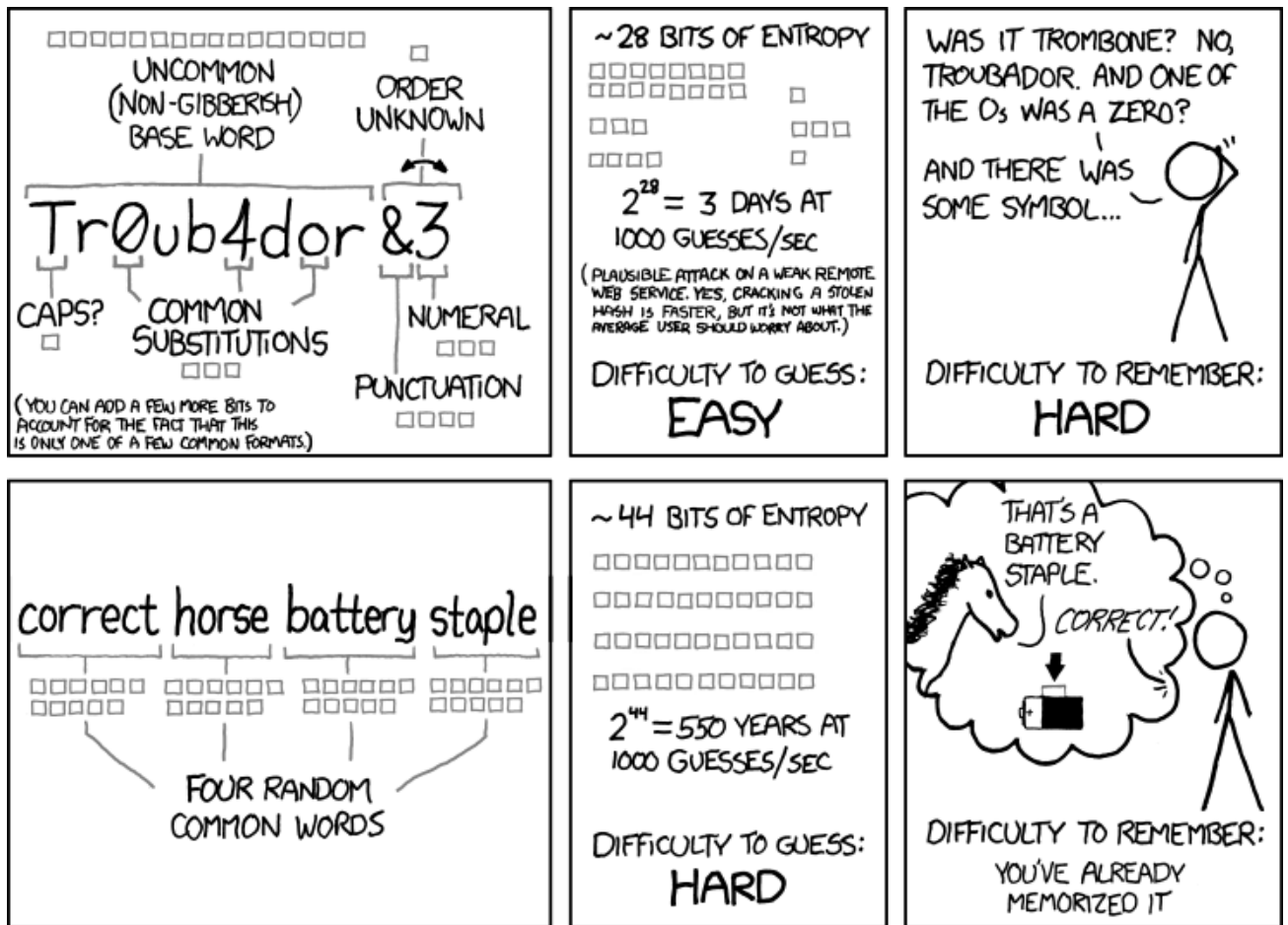
If the defenders are capable of identifying Tactics, Techniques and Procedures threat actors use, it becomes even harder for attackers to get to their objectives. For example, if we know the threat actor likes to use Spear-Phishing and then Pivoting peer-to-peer via to other victim systems, defenders can use this to their advantage. Defenders can focus training to staff at risk for spear-phishing and start implementing barriers to deny peer-to-peer networking.

Password Strength

What determines a strong password? Is it how complex the password is? How many characters it has? The number of special characters?

The famous comic creator xkcd.com brilliantly shows how passwords can be attacked in the comic below. Review it for a second and let us discuss further.

Note: Entropy means the lack of predictability. The higher entropy, the harder to crack via standard means.



THROUGH 20 YEARS OF EFFORT, WE'VE SUCCESSFULLY TRAINED EVERYONE TO USE PASSWORDS THAT ARE HARD FOR HUMANS TO REMEMBER, BUT EASY FOR COMPUTERS TO GUESS.

Comic from XKCD: <https://xkcd.com/936/>

If we consider the first password *Tr0ub4dor&3*, this password will fit most password policy rules, for example having capitalized letter, numbers, special characters and a length of 11 characters. This password has however some problems, it is:

- Hard to remember. Did you replace the first o (the letter) character with a 0 (the number), or was it the second? Did you replace the a character with a 4, or not?
- Hard to type. You have to type in different letters, numbers and special characters in a special order. It will likely not be the fastest words being typed on your keyboard.
- It is not very strong! The password is based off a rather common word and it does not offer much strength, only about 28 bits of entropy.

Instead of selecting passwords which have these negative factors, we can instead greatly increase the entropy of passwords in simple ways. If we consider the password *CorrectHorseBatteryStaple* we see a considerable improvement of the password:

- The password is easy to type. Typing in regular words is for many an everyday activity and you can get really fast at it.

- It is easy to remember. By using a visual picture of the password, a horse, a battery, a staple and the word correct, we can remember it much easier.
- It is significantly stronger against most password cracking activities! It offers about 44 bits of entropy, making it really hard to crack.

Passwords like this one is called passphrases and is generally a much better practice than a simple word with some complexity. Consider how you could improve the password to be even stronger, and to fit password policy rules such as special characters and capital letters! You can even use spaces in your password, making passphrases even more natural to type.

Password Managers

Writing down your password has for many years been considered a bad-practice, but is it really? Using the same password across multiple services online has a significant risk, what if one of those platforms get hacked? Then that password is compromised and attackers can re-use the password across all other services where it is used.

To fight this problem, the recommendation is to not re-use the same password across multiple services. This makes it really hard for users as they are not only required to use unique passwords, but at the same time create strong and robust passwords! A password manager help solve this problem by offering users to, in a secure as possible way, write down passwords in a file, database or other system, making passwords easy accessible and ensuring they are strong and unique across different services.

When implemented correctly, a password manager will:

- Make the use of the Internet a much more secure activity
- Increase productivity as passwords for different services can easily be found, copied and pasted into the respective services the user want to log into
- Offer easy ways to reset and regenerate new passwords when needed.

Writing down passwords is considered a much lower risk for our users rather than having them reusing passwords. Yes, this is not a perfect solution as the password manager could potentially get compromised, however it is considered a much more safe approach.

Passwordless Solutions

What if passwords in themselves could be put to an end? There is always someone who can not type in a longer passphrase as their password every day. There may be several reasons for this, for example:

- Non IT savvy workers in the office

- A doctor who visits many different computers in the hospital, every day while visiting different patients in different rooms
- It is hard to type in the password on the system which requires it

The development and implementation of systems which does not require users to provide a password is developing rapidly. Instead of asking users to authenticate with a password, what if we allowed them to use for example:

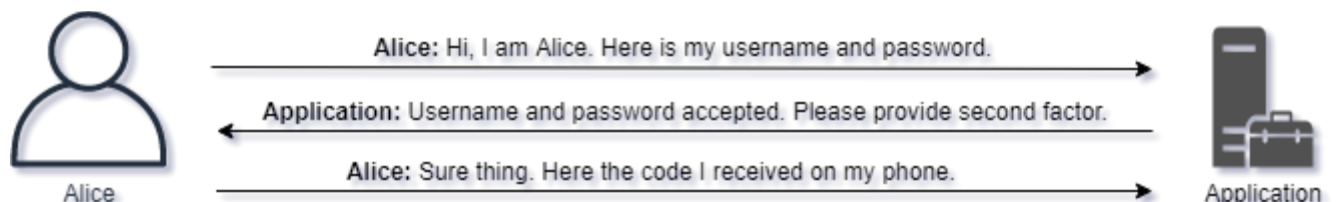
- Something they are, for example their face or fingerprint
- Something they have, for example a token or their cell-phone

There are challenges to this, but in terms of security, are we really making the problem worse, or better for our users? We must remember we are not looking to implement perfect security systems, they are normally outside of reach and not implementable, so instead we must make careful considerations on how we can limit the threats and at the same time make life easier for our users. Passwords are not perfect, and neither is passwordless solutions. Which one will you implement for your users?

Multi-Factor Authentication

As we learn that regardless of what solution is used to verify users, there will still be significant risks associated with their accounts, other solutions can be implemented to help reduce the risk.

Multi-Factor Authentication allows solutions to not only verify a user based on for example their password, but at the same time require the users to present a second factor to prove who they are.



There can be several different ways to ask for a second factor. Here are a few examples:

- Use an authentication application on a smart-phone to provide a secret code
- Receive a secret code via SMS ("Short Message Service") on a phone
- Use a hardware token to provide a secret code
- Present a fingerprint or face to identify the individual

All of the above requires not only a password to be known, but also asks for a second item (a factor) to be provided.

Solutions like these are sometimes considered very invasive to the users. To help solve this problem a concept of DAC ("Discretionary Access Control") can be applied. DAC allows the

login solution to consider whether or not to challenge a user with a multi-factor code. For example a multi-factor might only be necessary when a user:

- Logs in from a new location
 - Uses a different browser or software to access the application
 - Tries to perform a sensitive action in the application, for example change password or perform a money transaction above a certain threshold
-

Password Guessing

When attackers encounter applications and services, there might be the opportunity to do Password Guessing. Password Guessing is an activity which involves attackers interacting with the application over the network, trying lists of different combinations of usernames and passwords.

Password Guessing gives the attacker an opportunity to find accounts with a weak username and password combination.

If the attacker is successful in finding a valid account to log in with, new opportunities is presented to the attacker. Consider what kind of functionality and data is now presented to the attacker. Here are some examples where an attacker successfully guesses someone's password:

- Attacker accesses an email account of an employee. Inside there are thousands of emails ranging years back in history. Within the emails there are passwords communicated, allowing attacker to log into more systems. Furthermore, hundreds of attachments are present, some which may contain very sensitive information.
- Attackers successfully guess the Admin accounts password for an HVAC ("Heating, Ventilation and Air Conditioning") system who's responsibility is to cool down the server room. The attackers are able to change the parameters of the HVAC and through careful modification causes the server-room to overheat.
- A VPN service is available on the Internet, allowing employees to reach internal resources. One of the employees has a weak password which is guessed by an attacker through days of repeated password guessing. The attacker accesses the VPN service and is now on the inside network of the organization. From here, the attacker installs ransomware within the organization.
- A web application is deployed on the Internet. It holds no obvious vulnerabilities from the outside, however attackers were able password guess into a regular users account on the system. Because the company hosting the web application trusts their users, the web security on the inside of the application was poor. From here, the attacker was able to use web exploits to compromise the server.

Many network services have built-in administrator accounts, some even with the default password unchanged since it was installed. For each service on the network, attackers can try to log in with default credentials. Furthermore, the attacker can try typical and weak passwords.

Here are some examples of typical and weak passwords. Notice all of them end with an exclamation mark in order to defeat password policies:

Password	Comment
Summer2021!	Many people, including helpdesks of companies, perform password resets and set the password to the season of the year and the year we are currently in.
W3schools123!	The name of the company is often used as peoples passwords. The number 123 and ! at the end is selected by users to pass password policies and make it a bit more complex.
Rosalynn2006!	Rosalynn, perhaps someone's child? Users often use something of personal affection as their passwords. Names of children and perhaps the year they were born is very popular.
Qwerty123456!	A seemingly random password? This password is someone pressing keyboard keys in order, then using numbers to do the same thing.

A tool which allows us to easily configure lists of usernames and passwords to try against a multitude of different services is THC-Hydra (<https://github.com/vanhauser-thc/thc-hydra>). It supports plenty of protocols to attack such as:

- RDP ("Remote Desktop Protocol")
- FTP ("File Transfer Protocol")
- SMB ("Server Message Block")
- Telnet
- SSH ("Secure Sockets Host")

To use THC-Hydra to target for example FTP, the following command can be used:

```
hydra -L common_usernames.txt -P common_passwords.txt ftp://localhost/
```

This command uses a list of common usernames and common passwords to try each of them against the FTP service at localhost or an IP address of your choice.

Credential Stuffing

A common attack for attackers to use is Credential Stuffing. This involves attackers downloading huge databases of credentials and testing applicable credentials against the network service. A leak of credentials happen when a third party service is hacked, database is stolen and then leaked on the Internet for anyone to download.

Unfortunately many users re-use the same password on different services, allowing Credential Stuffing attacks to become very efficient against organizations.

Note: Anyone, including you, can go about searching the Internet for leaked databases containing credentials and passwords. It is not very hard to hack when people do not change their passwords?!

Password Cracking

While Password Guessing is an online attack, Password Cracking is an offline attack. It involves attackers stealing password representations from a target first.

Passwords are typically represented as a password hash. A hash is way to store users passwords by sending them through a one-way function, making the password impossible to reverse unless password cracking is used.

If the attacker is capable of retrieving credentials from a system, these credentials are likely to be protected via encryption or hashing. Hashing is a one-way function designed to not be reversed into its original value.

Password cracking involves using computing power, that is the CPU ("Central Processing Unit") and GPU ("Graphical Processing Unit"), to try create password guesses which matches the protected credentials retrieved from the system.

Note: The GPU is typically much better in password cracking because it has hundreds of micro cores which are all capable of doing small tasks on their own. This allows a password cracker to become much faster as it can scale the cracking activities over many different cores.

Services Without Authentication

By exploring and discovering applications sometimes you can encounter applications which are not protected with authentication. These applications are useful for attackers to explore, for example taking advantage of a search field hunting for sensitive information.

Many applications on a network can freely be explored, sometimes providing attackers with the exact data they are looking for.

When performing network mapping and port scanning exercises, each discovered system and service should be explored.

Using Existing Credentials

Typically an attacker is already using credentials of users in the environment. For example if an attacker has compromised someone's computer system they can re-use the credentials already in-use by the system.

This provides attackers with many more opportunities. Consider all the applications which could now be abused. For example:

- Email
- SharePoint
- HR and Accounting
- VPN ("Virtual Private Networking")

Once an attacker has access to an application behind access control, vulnerabilities and data is often plentiful.

Credentials from a system can also be extracted via different means, typically involving having administrator access of the system. Mimikatz (<https://github.com/gentilkiwi/mimikatz>) is such a tool which tries to dump the credentials from the system.

Certificate Course on Universal Human Value and Professional Ethics

1. Certificate Course in Universal Human Values & Professional Ethics

Code: CCUIVPE

Duration: 40 Hours

Three Months- One Lecture per day

Aims:

- To enhance the standard of the students beyond those levels specified in academic curriculum.
- Enable the students to acquire a more holistic perspective.
- To facilitate the students to gain innovative and creative skills.

Objectives:

- To improve employability skills of students.
- To bridge the skill gaps and make students industry ready.
- To provide an opportunity to students to develop their interdisciplinary skills.

Module I: Human Values

- 1.1 Morals, values and Ethics – Integrity – Work ethic – Service learning
- 1.2 Civic virtue – Respect for others – Living peacefully – Caring – Sharing
- 1.3 Honesty – Courage – Valuing time – Cooperation – Commitment – Empathy.

Module II: Safety, Responsibilities and Rights

- 2.1 Safety and Risk – Assessment of Safety and Risk, Risk Benefit Analysis
- 2.2 Respect for Authority, Confidentiality, Conflicts of Interest
- 2.3 Occupational Crime, Professional Rights, Employee Rights (IPRs)

Module III: Global Issues

- 3.1 Moral Leadership
- 3.2 Code of Conduct
- 3.3 Corporate Social Responsibility.

Course Outcomes: By the end of the course, the student will be able to:

- CO1: Identify and analyse an ethical issue in the subject matter under investigation or in a relevant field.
- CO2: Assess their own ethical values and the social context of problems.
- CO3: Learn about the ethical responsibilities.
- CO4: Learn about the different professional roles.

Assessment with Pen and Paper:

Possible assessment methods include: quizzes, tests, collected assignments, group activities and demonstration of skills and performance. Such assessments and related assignments will develop critical thinking techniques and reading, along with developing ethics and values

Grading System will be adopted for Certification.

Marks	Grades	Grade Point
>90 and ≤ 100	A1	10
>80 and ≤ 90	A2	9
>70 and ≤ 80	B1	8
>60 and ≤ 70	B2	7
>50 and ≤ 60	C1	6
>40 and ≤ 50	C2	5

Career Advancement Bootcamp

Days	Name of the session	Learning Outcome
1	CAB Introduction	<ul style="list-style-type: none"> Understand the need of 21st-century skills. Become comfortable with trainers and peers
2	Public Speaking, I	<ul style="list-style-type: none"> Experience public speaking Receive positive feedback
3	Public Speaking II	<ul style="list-style-type: none"> Increase confidence to speak in public. Generate ideas/information/topics for speaking. Improve tone, volume, and pacing
4	Group Presentation I	<ul style="list-style-type: none"> Create a compelling storyline for a presentation. Articulate elements of designing and delivering a good presentation
5	Leadership I	<ul style="list-style-type: none"> Experience teamwork
6	Leadership II	<ul style="list-style-type: none"> Understand the principles of effective teamwork. Understand the concept of self-leadership. State actionable to improve leadership
7	Industry Project I	<ul style="list-style-type: none"> Gain awareness about various sectors and job roles
8 & 9	Industry Project II+ III	<ul style="list-style-type: none"> Gain knowledge about formal private sector opportunities available locally. Understand the possible career paths and requirements.
10	Future Planning, I	<ul style="list-style-type: none"> Conduct a career plan reality check. Practice future planning tools
11	Future Planning II	<ul style="list-style-type: none"> Draft a plan to get their job. Map alternatives to traditional career options Learn the concept of smart goals
12	Future Planning III	<ul style="list-style-type: none"> Understand the purpose and benefits of internships. Apply for Internship.
13	Platform Orientation	<ul style="list-style-type: none"> Navigate the job portal effectively. Apply for jobs confidently. Identify potential skill gaps
14	Resume Writing, I	<ul style="list-style-type: none"> Understand the objective and essential sections of a resume
15	Resume Writing II	<ul style="list-style-type: none"> Articulate dos and don'ts of resume writing Learn how to create and update a resume. Make their resume ats friendly
16	Public Speaking III	<ul style="list-style-type: none"> Practice idea generation for public speaking Self-assess public speaking ability
17	Workplace Etiquette 1	<ul style="list-style-type: none"> Cultivate a professional appearance. Learn culturally appropriate behaviour at the workplace
18	Workplace Etiquette 2	<ul style="list-style-type: none"> Know about various Laws applicable at the workplace (POSH, Labour laws) Best practices to safeguard from WP harassment
19	Group Discussion I	<ul style="list-style-type: none"> Understand the parameters of success in a GD round. Conducted during the interview process
20	Group Discussion II	<ul style="list-style-type: none"> Practice GD techniques Self-assess their performance

21	Interview Preparation I	<ul style="list-style-type: none"> • Share the do's and don'ts of the interview. • Practice answering common interview questions
22	Building a Personal Brand Online I	<ul style="list-style-type: none"> • Learn about LinkedIn • Create a Profile on LinkedIn
23	Building a Personal Brand Online II	<ul style="list-style-type: none"> • Review their LinkedIn profiles. • Learn about networking on Linked In and apply for jobs
24	Interview Preparation II	<ul style="list-style-type: none"> • Improve response to common questions through trainer feedback
25	Interview Preparation III	<ul style="list-style-type: none"> • Face real interview scenarios through the external interview
26	Interview Preparation IV	
27	Interview Preparation V	
28	Medhavi Parichay Session	<ul style="list-style-type: none"> • Learn about Medhavi Services
29	Public Speaking IV	<ul style="list-style-type: none"> • Practice public speaking in front of an external audience • Self-assess progress made in cab
30	Reflection	<ul style="list-style-type: none"> • Identify the skills activated in cab + articulate next steps

Certificate Course on Artificial Intelligence and Python Programming

PANTECH SOLUTIONS
Technology Beyond the Dreams

Course Plan

Check out Agenda of this Course!

The Objective of this Webinar Series is to facilitate the participants to get cognizance of the concepts dealt with for substantial utilization of the same into studying, teaching, Research work, and Upgrading.

ARTIFICIAL INTELLIGENCE

DAY – 1 Overview of this course | Introduction to AI | How to create basic AI application (Chat bot using DialogFlow)

DAY – 2 How to install Python & Libraries | Basics of python Programming for AI.

COMPUTER VISION

DAY – 3 Introduction to Computer Vision | How to install computer vision libraries

DAY – 4 Moving Object Detection and tracking using OpenCV

DAY – 5 Face Detection and Tracking using OpenCV

DAY – 6 Object Tracking based on color using OpenCV

DAY – 7 Face Recognition using OpenCV

DAY – 8 Face Emotion recognition using 68-Landmark Predictor OpenCV

DEEP LEARNING

DAY – 9 Introduction to Deep learning | How to install DL libraries

DAY – 10 Designing your First Neural Network

DAY – 11 Object recognition from Pre-trained model

DAY – 12 Image classification using Convolutional Neural Network

DAY – 13 Hand gesture recognition using Deep Learning

DAY – 14 Leaf disease detection using Deep Learning

DAY – 15 Character recognition using Convolutional Neural Network

DAY – 16 Label reading using Optical Character recognition

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DAY – 17 Smart Attendance system using Deep Learning
DAY – 18 Vehicle detection using Deep Learning
DAY – 19 License plate recognition using Deep Learning
DAY – 20 Drowsiness detection using Deep Learning
DAY – 21 Road sign recognition using Deep Learning

MACHINE LEARNING

DAY – 22 Introduction to Machine learning | How to install ML libraries
DAY – 23 Evaluating and Deploying the various ML model
DAY – 24 Fake news detection using ML
DAY – 25 AI snake game design using ML

NATURAL LANGUAGE PROCESSING

DAY – 26 Introduction to NLP & it's Terminology | How to install NLP Libraries NLTK
DAY – 27 Title Formation from the paragraph design using NLP
DAY – 28 Speech emotion analysis using NLP

DEPLOYING AI IN HARDWARE

DAY – 29 Cloud-based AI, Object recognition using Amazon Web Service (AWS) & Imagga
DAY – 30 Deploying AI application in Raspberry Pi with Neural Compute stick & Nvidia Jetson Nano

Malaiyappan.M
Director
Pantech Prolabs India Pvt Ltd,
9840974408



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Certificate Course on TALLY ACE **CERTIFICATION ON TALLY ERP 9**

ELIGIBILITY:

Graduate and Post Graduate students (enrolled and passed out) of any stream can register for the course.

OBJECTIVE:

This Certificate Course will give an opportunity to your career with verifiable digital certificate in Tally's, which will make you job ready and accelerate your professional career in present competitive era.

COURSE CONTENTS

- Fundamentals of Accounting
- Maintaining Chart of Accounts in Tally. ERP
- Maintaining Stock Keeping Units (SKU)
- Recording Day-to-Day Transactions in Tally. ERP 9
- Accounts Receivable and Payable Management
- MIS Reports, Goods and Services Tax (GST)
- Recording Vouchers with TDS (Tax Deducted at Source)

Certificate Course on Communication Skills

Development

The course will cover the following areas that are essential in understanding the importance of Communication Skills and increasing the participants' ability to practice this skill effectively.

Module 1 – Introduction to Effective Communication

- The Characteristics of an Effective Communicator
- Communication Self-Assessment
- Basics of Communication

Module 2 – Core Components of Effective Communication

- Components of Communication
- Verbal Communication
- Importance of the Tone
- Non – Verbal Communication
- Application and Practice

Module 3 – Effective Verbal Communication

- What You Say Matters
- Effect and Impact of Power Words
- Positive Communication

Module 5 – Non-Verbal Communication

- Body Language
- Elements of Non-Verbal Communication
- Do's and Don't

Module 6 – Role of Listening in Communication

- Listening
- The Impact of Listening on Communication
- The 3 Levels of Listening



I.B. (PG) COLLEGE, PANIPAT


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An ISO 9001:2015 & ISO 14001: 2015 Certified Premier Co-Educational Institute
(Affiliated to Kurukshetra University, Kurukshetra)

S. No.	Name of Certificate Course	Assessment Methodology of Certificate Courses
1	Computer Awareness	Written Exam and Practical
2	NUTRITIOUS CUISINE	Quizzes, Tests, Collected Assignments, Group Activities
3	FASHION DESIGNING	Quizzes, Tests, Collected Assignments, Group Activities
4	“EMPLOYABILITY SKILLS” UNDER “LIFESKILLS” PROGRAM RUBICON	Quizzes, Tests, Collected Assignments, Group Activities
5	TALLY ESSENTIAL	Online MCQs, Theory and Practicals
6	ONLINE COURSE ON DIGITAL MARKETING	Quizzes, Tests, Collected Assignments, Group Activities
7	Certificate Course in Internet of Things	Presentation and Viva
8	Certificate Course in Web Designing	Presentation and Viva
9	Certificate Course in Digital Marketing	Presentation and Viva
10	Certificate Course in Stress Management By Yoga	Quizzes, Tests, Collected Assignments, Group Activities
11	Certificate Course in Account Executive	Presentation and Viva
12	Certificate Course in Computer Hardware & Maintenance	Presentation and Viva
13	Certificate Course in Web Designing & Office Automation	Presentation and Viva
14	Certificate Course in Yogasana and Meditation	Quizzes, Tests, Collected Assignments, Group Activities
15	Certificate Course in Accounting & Tax Procedure	Presentation and Viva
16	Certificate Course in Python Programming	Presentation and Viva



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S. No.	Name of Certificate Course	Assessment Methodology of Certificate Courses
17	Certificate Course in Artificial Intelligence & Machine Learning	Presentation and Viva
18	Certificate Course in Cloud Computing	Presentation and Viva
19	Advance Excel and Powerpoint	Presentation and Viva
20	ENGLISH COMMUNICATION & SOFT SKILLS	Quizzes, Tests, Collected Assignments, Group Activities, Mock Tests
21	Certificate Course in Desktop Publishing	Presentation and Viva
22	Certificate Course in CCTV Installation	Presentation and Viva
23	Certificate Course in Programming C/C++	Presentation and Viva
24	Certificate Course in Yoga and Diet Management	Quizzes, Tests, Collected Assignments, Group Activities
25	Certificate Course in Accounting on Computers	Presentation and Viva
26	Certificate Course in Android Development	Presentation and Viva
27	Certificate Course in Shatkarma, Pranayam and Meditation	Quizzes, Tests, Collected Assignments, Group Activities
28	Certificate Course in Java Script	Presentation and Viva
29	Certificate Course in Bhav Sangeet	Quizzes, Tests, Collected Assignments, Group Activities
30	Certificate Course in Web Development using PHP	Presentation and Viva
31	Certificate Course in Network Security	Presentation and Viva
32	Certificate Course on Universal Human Values and Professional Ethics	Quizzes, Tests, Collected Assignments, Group Activities
33	Career Advance Bootcamp	Quizzes, Tests, Group Activities, Mock Tests, Mock Interviews



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S. No.	Name of Certificate Course	Assessment Methodology of Certificate Courses
34	ARTIFICIAL INTELLIGENCE & PYTHON PROGRAMMING	Presentation, Viva and Projects
35	TALLY ACE CERTIFICATION ON TALLY ERP 9	Theory and Practical Exam
36	Communication Skills Development	Quizzes, Tests, Collected Assignments, Group Activities, Mock Tests



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