COURSE FILE

FACULTY OF ENGINEERING

TEERTHANKERMAHAVEERUNIVERSITY

DelhiRoad,Moradabad,UttarPradesh-244001

Website: www.tmu.ac.in

DEPARTMENT OF COMPUTER SCIENCE& ENGINEERING

Course Name	:	Data Structure using C Lab
Course Code	:	ECS355
Faculty Member	:	Mr. Rupal Gupta
Program	:	B.Tech. (CSE)
Semester	:	III
Academic Year	:	2018-19

Index

S.No.	Description	Yes	No
1	Academic calendar	√	
2	Syllabus	√	
3	Individual Time Table	√	
4	Internal award list:	√	
5	Rubrics List for Internal Practical Assessment*(Only for Lab Courses)*	√	
6	Assignments	√	

Director
Faculty of Engineering
Teerthanker Mahaveer University
Moradabad.

COLLEGE OF COMPUTING SCIENCES & INFORMATION TCHNOLOGY
TEERTHANKER MAHAVEER UNIVERSITY
Academic Calendar for the Session 2018-19

Activity	Odd Semester	Even Semester
Commencement of Semester	August 01, 2018 *(All odd semester programs except 1st Sem.)* August 10, 2018 *(1st semester of all programs)*	January 14, 2019 *(All even Semester Programs)*
Last date of depositing Semester Tuition Fee (without late fee fine)	**August 18, 2018**	**February 12, 2019**
Founders Day	September 14, 2018	-
CT-I	September 27 - 29, 2018	February 26 – 28, 2019
Sports Events	***College teams & trials***: October 04-06, 2018	***TMU Intercollegiate*** **:** February 11 – 23, 2019
Last day of Submission of Examination Form	October 10, 2018	March 12, 2019
CT-II	November 01 - 03, 2018	April 11 – 13, 2019
Last Teaching Day of Semester	December 07, 2018	May 04, 2019
Preparatory Leave & CT-III	December 08 – 13, 2018	May 06 – 10, 2019
External Examination (Theory & Practical)	December 14 – 29, 2018	May 11 – 31, 2019
Vacation/Education Tour/Training for students/ FDPs	December 30, 2018 – January 12, 2019	June 01 – July 31, 2019

B.Tech (CSE) Semester III
DATA STRUCTURE USING C (LAB)

Course Code: ECS355

L	T	P	C
0	0	4	2

CO1.	***Applying*** the concept of different data types and their usage using C++ Programs.
CO2.	***Applying*** the concept of recursion for problem solving.
CO3.	***Applying*** the programming constructs and their usage for problem solving.
CO4.	***Applying*** the understanding to solve basic operations searching, sorting, insertion, deletion on data structures.
CO5.	***Developing*** programming skills to solve problems with various storage structures like stack, queue, linked list and tree.

LIST OF EXPERIMENTS

1. To write programs implementing Sorting programs: Bubble sort, Merge sort, Insertion sort, Selection sort, and Quick sort.
2. To write programs implementing Searching programs: Linear Search, Binary Search.
3. To write programs Array implementation of Stack, Queue, Circular Queue, Linked List.
4. To write programs implementing Stack, Queue, Circular Queue, Linked List using dynamic memory allocation.
5. To write program implementing Binary tree.
6. To write programs implementing Tree Traversals (pre-order, in-order, post-order).
7. To write programs implementing graph traversal (BFS, DFS).
8. To write programs implementing minimum cost spanning tree, shortest path.

AWARDLIST

Sr. No.	Enrollment No.	Name	ECS355	
			EXTERNAL	INTERNAL
1	TCA1709001	RISHABH JAIN	36	34
2	TCA1709002	SHRUTIKA JAIN	44	44
3	TCA1709003	ASHI JAIN	41	35
4	TCA1709005	HARSHIT JAIN	41	40
5	TCA1709006	SARTHAK JAIN	44	39
6	TCA1709007	RITIK SHARMA	38	38
7	TCA1709008	VIJENDRA SINGH BORA	30	30
8	TCA1709010	PRASHANSA JAIN	44	42
9	TCA1709011	RASHI JAIN	45	42
10	TCA1709012	SWAPNIL JAIN	38	40
11	TCA1709013	PUSHPENDRA SINGH		
12	TCA1709017	HIMANSHU JAIN	41	42
13	TCA1709018	SHAH PRIYANK DINESH	45	44
14	TCA1709019	DIWAKAR JHA	42	42
15	TCA1709020	VINEET JAIN	43	44
16	TCA1709021	SAMYAK JAIN	42	43
17	TCA1709024	JASPAL		
18	TCA1709025	SANYAM JAIN	40	36
19	TCA1709027	AMAN JAIN	45	43
20	TCA1709028	SAURABH AGARKAR	42	42
21	TCA1709030	SAMYAK JAIN	42	41
22	TCA1709031	UTKARSH RASTOGI	41	42
23	TCA1709032	SHUBHAM MANDAL	43	42
24	TCA1709089	HIMANSHU JAIN	43	43
25	TCA1709092	SAURABH KUMAR JAIN	45	46
26	TCA1709094	PUNIT JAIN	42	35
27	TCA1709095	GARBHIT JAIN	40	37
28	TCA1709099	RISHABH JAIN	41	34
29	TCA1709100	RITIK JAIN	41	36
30	TCA1709103	GOPAL JAIN	44	44

31	TCA1709104	VIRAM JAIN	45	45
32	TCA1709107	PRIYANSH JAIN	44	41
33	TCA1709114	MOHIT PRASAD	40	34
34	TCA1709115	SUDARSHAN JHA	43	41
35	TCA1709117	RISHI BAJJ	43	42
36	TCA1709119	AARJAV KUMAR JAIN	47	47
37	TCA1709120	TARUN KUMAR JAIN	44	46
38	TCA1709121	SHUBHAM SINGHAI	44	45
39	TCA1709122	PALAK JAIN	44	40
40	TCA1709123	PRAVEEN KUMAR JAIN	42	40
41	TCA1709124	SHUBHAM JAIN	40	42
42	TCA1709127	ADITYA JAIN	40	40
43	TCA1709128	SAGAR JAIN	40	38
44	TCA1709131	AKSHAY JAIN	41	38
45	TCA1709132	YASH JAIN	40	38
46	TCA1709133	ANUKUL JAIN	41	43
47	TCA1709134	SAMBHAV JAIN	41	38
48	TCA1709135	VAIBHAV JAIN	43	32
49	TCA1709136	SAMBHAV JAIN	40	41
50	TCA1709137	DIVYANSH JAIN	37	39
51	TCA1709139	ROHIT JAIN	41	42
52	TCA1709140	NAMAN BHANDARI	35	37
53	TCA1709142	SAMYAK JAIN	43	43
54	TCA1709144	RISHABH JAIN	42	40
55	TCA1709145	SHUBHAM SINGH BHADAURIYA	40	36
56	TCA1709146	APOORVA JAIN	34	34
57	TCA1709148	SAGAR JAIN	44	40
58	TCA1709150	ATISHAY JAIN		
59	TCA1709153	SAKSHI JAIN	34	36
60	TCA1709155	VISHESH JAIN	35	30
61	**TCA1811002**	**ANU CHAUDHARY**	40	40
62	**TCA1811003**	**YAMIKA RAJPUT**	40	39
63	**TCA1811004**	**REETESH JAIN**	41	34
64	**TCA1811005**	**PUSHPANE SINGH CHOUDHARY**	47	43
65	**TCA1811006**	**KUNAL YADAV**	44	44

TIME TABLE 18-19 Session ODD Semester

RG TT	9:00-9:55	9:55-10:50	10:50-11:40	11:40-12:30	12:30-1:30	1:30-2:20	2:20-3:10	3:10-4:00
MON	ECS 355	ECS 355			LUNCH			
TUE	ECS 305							
WED		ECS 305	ECS 355					
THU								
FRI			ECS 305 RG			ECS 305 RG		
SAT								

Rubrics

Criteria for Continuous Evaluation:

1. Proper attendance in the labs
2. Maintained the lab records and got them signed timely.
3. Executed assigned programs in the lab on time.
4. Satisfactory performance in regular viva.

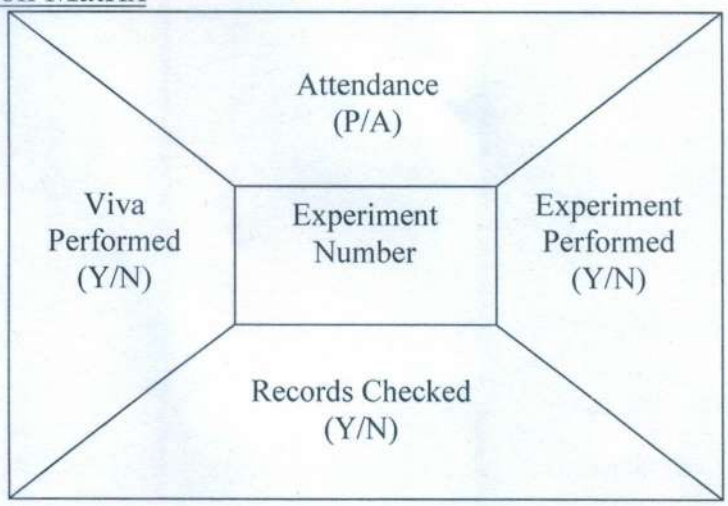
Max. Marks	Criteria
50/50	Satisfies #1, 2 , 3 & 4
40/50	Satisfies #1, 2 & 3
20/50	Satisfies #1&2
10/50	Satisfies #1

Rubrics for Internal Practical Assessments

Criteria wise Score	No	Partially	Yes
1. Attending the lab	0	5*	10
2. Maintained the lab records and got them signed timely.	0	5	10
3. Executed assigned programs in the lab on time.	0	10	20
4. Satisfactory performance in regular viva.	0	5	10

*Late-Comers

Description of Evaluation Matrix



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Teerthanker Mahaveer University
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Faculty of Engineering

Department of Computer Science & Engineering

Course Code: ECS 355 Course Name: Data structure using C Class: B.Tech 3rd Sem CSE

Sl. No	Roll No	Name / Date	1 10/Sep/18	2 17/Sep/18	3 24/Sep/18	4 01/10/18	5 8/10/18	6 22/10/18	7 29/10/18	8 05/11/18	9 19/11/18	10 26/11/18
1	TCA1709001	RISHABH JAIN	P	P	A	P	P	P	A	P	P	P
2	TCA1709002	SHRUTIKA JAIN	P	P	P	P	P	P	P	A	P	P
3	TCA1709003	ASHI JAIN	P	P	P	P	P	P	P	A	P	A
4	TCA1709005	HARSHIT JAIN	P	A	P	P	P	P	P	P	P	P
5	TCA1709006	SARTHAK JAIN	P	P	A	P	P	P	P	P	P	P
6	TCA1709007	RITIK SHARMA	A	P	P	P	P	P	P	P	P	P
7	TCA1709008	VIJENDRA SINGH BO	P	P	P	A	P	P	P	P	P	P
8	TCA1709010	PRASHANSA JAIN	P	P	P	P	A	P	P	P	P	P
9	TCA1709011	RASHI JAIN	A	P	D	P	P	P	P	P	A	P
10	TCA1709012	SWAPNIL JAIN	P	P	P	P	P	A	P	P	P	P

Signature

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Department of Computer Science & Engineering

Course Code: ECS 305 Course Name: Data structure using C Class: B.Tech CSE 3rd sem

Sl. No	Roll No	Name / Date	1	2	3	4	5	6	7	8
1	TCA1709013	PUSHPENDRA SINGH								
2	TCA1709017	HIMANSHU JAIN	P	P	A	P	P	P	P	P
3	TCA1709018	SHAH PRIYANK DINE	P	P	P	A	P	P	P	P
4	TCA1709019	DIWAKAR JHA	P	P	P	P	A	P	P	P
5	TCA1709020	VINEET JAIN	P	P	P	P	P	A	P	P
6	TCA1709021	SAMYAK JAIN	P	P	P	P	P	P	A	P
7	TCA1709024	JASPAL								
8	TCA1709025	SANYAM JAIN	A	P	P	P	P	P	P	A

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Faculty of Engineering

Department of Computer Science & Engineering

Course Code: ECS 305 Course Name: Data structure using C Class: B.Tech CSE 3rd sem

Sl. No	Roll No	Name / Date	1	2	3	4	5	6	7	8	9	10
1	TCA1709030	SAMYAK JAIN	P	P	A	P	P	P	P	A	P	P
2	TCA1709031	UTKARSH RASTOGI	P	P	P	A	P	P	P	P	A	P
3	TCA1709032	SHUBHAM MANDAL	P	P	P	P	A	P	P	P	P	P
4	TCA1709089	HIMANSHU JAIN	P	P	P	P	P	P	P	P	P	P
5	TCA1709092	SAURABH KUMAR JA	P	P	P	P	P	A	P	P	P	P
6	TCA1709094	PUNIT JAIN	P	P	P	P	P	P	P	P	P	P
7	TCA1709095	GARBHIT JAIN	A	P	P	P	P	P	P	A	P	P
8	TCA1709099	RISHABH JAIN	P	P	P	P	P	P	P	P	P	A
9	TCA1709100	RITIK JAIN	P	P	P	P	P	P	P	P	P	P
10	TCA1709103	GOPAL JAIN	P	A	P	P	P	P	A	P	P	P

Signature

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Department of Computer Science & Engineering

Course Code: E-53 05 Course Name: Data Structure Using C Class: B Tech CSE 3rd Sem

Sl. No	Roll No	Name / Date	1	2	3	4	5	6	7	8	9	10
1	TCA1709104	VIRAM JAIN	P Y	P Y	A NO	P Y	P Y	P Y	P Y	A NO	P Y	P Y
2	TCA1709107	PRIYANSH JAIN	P Y	P Y	P Y	A NO	P Y	P Y	P Y	P Y	P Y	P Y
3	TCA1709114	MOHIT PRASAD	P Y	P Y	P Y	P Y	A NO	P Y	P Y	P Y	P Y	P Y
4	TCA1709115	SUDARSHAN JHA	P Y	P Y	P Y	P Y	P Y	A NO	P Y	A NO	P Y	P Y
5	TCA1709117	RISHI BAJJ	P Y	P Y	P Y	P Y	P Y	P Y	P Y	A NO	P Y	P Y
6	TCA1709119	AARJAV KUMAR JAIN	P Y	P Y	P Y	P Y	P Y	P Y	A NO	A NO	P Y	P Y
7	TCA1709120	TARUN KUMAR JAIN	P Y	P Y	P Y	P Y	P Y	P Y	P Y	A NO	P Y	P Y
8	TCA1709121	SHUBHAM SINGHAI	A NO	P Y	P Y	P Y	P Y	P Y	P Y	P Y	P Y	P Y
9	TCA1709122	PALAK JAIN	P Y	P Y	P Y	P Y	P Y	A NO	P Y	P Y	P Y	P Y
10	TCA1709123	PRAVEEN KUMAR JA	P Y	A NO	P Y	P Y	P Y	P Y	P Y	P Y	P Y	P Y

Signature

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Teerthanker Mahaveer University

Faculty of Engineering

Department of Computer Science & Engineering

Course Code: EC 305 Course Name: ~~Data~~ Structure using C Class: B. Tech CSE 3rd Sem

Sl. No	Roll No	Name / Date	1	2	3	4	5	6	7	8	9	10
1	TCA1709124	SHUBHAM JAIN										
2	TCA1709127	ADITYA JAIN										
3	TCA1709128	SAGAR JAIN										
4	TCA1709131	AKSHAY JAIN										
5	TCA1709132	YASH JAIN										
6	TCA1709133	ANUKUL JAIN										
7	TCA1709134	SAMBHAV JAIN										
8	TCA1709135	VAIBHAV JAIN										
9	TCA1709136	SAMBHAV JAIN										
10	TCA1709137	DIVYANSH JAIN										

Signature

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Faculty of Engineering

Department of Computer Science & Engineering

Course Code: BECS355 Course Name: Data Analytical using e Class: B.Tech CSE 3rd Year

Sl. No	Roll No	Name / Date	1	2	3	4	5	6	7	8	9	10
1	TCA1709139	ROHIT JAIN	P	P	P	A	P	P	P	P	A	P
2	TCA1709140	NAMAN BHANDARI	P	P	P	P	P	A	P	P	P	P
3	TCA1709142	SAMYAK JAIN	A	P	P	P	P	P	P	P	P	A
4	TCA1709144	RISHABH JAIN	P	P	A	P	P	P	P	P	P	P
5	TCA1709145	SHUBHAM SINGH BHADAURIYA	P	P	P	A	P	P	P	P	P	P
6	TCA1709146	APOORVA JAIN	P	P	P	P	P	P	P	A	P	P
7	TCA1709148	SAGAR JAIN	P	P	P	P	P	P	P	P	A	P
8	TCA1709150	ATISHAY JAIN										
9	TCA1709153	SAKSHI JAIN	P	A	P	P	P	P	P	P	P	P
10	TCA1709155	VISHESH JAIN	P	P	IA	P	P	P	A	P	P	P

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Course Code: EC5350 Course Name: Data Structure using C Class: B.Tech CSE 3rd sem.

Sl. No	Roll No	Name / Date	1	2	3	4	5	6	7	8	9	10
1	TCA1811002	ANU CHAUDHARY	P	P	A	P	P	P	P	A	P	P
2	TCA1811003	YAMIKA RAJPUT	P	A	P	P	P	P	P	P	P	A
3	TCA1811004	REETESH JAIN	P	P	P	P	P	A	P	P	P	P
4	TCA1811005	PUSHPANE SINGH CHOUDHARY	P	P	P	A	P	P	P	P	P	P
5	TCA1811006	KUNAL YADAV	P	A	P	P	P	P	P	P	P	P

Set1.

1. WAP for Bubble Sort.
2. WAP to insert a element at beginning in a Linked List.
3. WAP to concatenate two strings without library function.

Set 2

1. WAP for Insertion Sort.
2. WAP to insert a element at last in a Linked List.
3. WAP to reverse a string without library function.

Set 3

1. WAP for Quick Sort.
2. WAP to delete a element at last in a Linked List.
3. WAP to copy a string without library function.

Set 4

1. WAP for binary search.
2. WAP to delete a element from beginning in a Linked List.
3. WAP to calculate the length of string without library function.

Set 5

1. WAP for Selection Sort.
2. WAP to insert a element from beginning in a doubly Linked List.
3. WAP to Tower of Hanoi.

Set 6

1. WAP for Linear search.
2. WAP to insert a element at beginning in a Singly Linked List.
3. WAP to concatenate two strings without library function.

Set 7

1. WAP for Insert element in between a array.
2. WAP to delete a element from beginning in a Linked List.
3. WAP to Binary Search.

Set 8

1. WAP for Insertion Sort.
2. WAP to insert at last from beginning in a singly Linked List.
3. WAP to Reverse a string without using library function.

Set9.

1. WAP to print a tree using pre-order and post order.
2. WAP to delete an element at beginning in a doubly Linked List.
3. WAP to reverse two strings without library function.

Set 10

1. WAP for Insertion Sort.
2. WAP to insert a element at last in a Linked List.
3. WAP to generate Magic Square.

Set 11

1. WAP for Quick Sort.
2. WAP to delete an element at last in a Linked List.
3. WAP to binary search using recursion.

Set 12

1. WAP for recursive linear search.
2. WAP to delete a element from beginning in a Linked List.
3. WAP to generate 3-tuple system for SPARSE matrix.

Set 13

1. WAP for insertion Sort.
2. WAP to delete a element from beginning in a doubly Linked List.
3. WAP to Tower of Hanoi.

Set 14

1. WAP for implement two way merge sort.
2. WAP to insert a element at beginning in a Singly Linked List.
3. WAP to reverse strings without library function.

Set 15

1. WAP for Insert element in between a array.
2. WAP to delete a element from last in a Linked List.
3. WAP to Binary Search.

Set 16

1. WAP for Quick Sort.
2. WAP to insert at last from beginning in a singly Linked List.
3. WAP to print a tree using pre-order and post order.

Set 17

1. WAP generate Magic Square.
2. WAP to delete specific element in a singly Linked List.
3. WAP to sort element using insertion sort.

LAB ASSIGNMENT REPORT

On

(ECS 355)

(Data Structures LAB)

COLLEGE OF COMPUTING SCIENCES AND INFORMATION TECHNOLOGY

TMU, MORADABAD

Session: 2018-19

Submitted To:

Faculty Name:
Designation :

Submitted By:

Student Name :
Enrollment No.
Course :

Practical List for [redacted] Data structure

1. General

1. WAP to compute the average of given real numbers using all loops.
2. WAP that takes an integer number from user and check it is palindrome or not.
3. WAP to generate the Armstrong numbers from N to M.
4. WAP to calculate the factorial of a number.
5. WAP to calculate the factorial of a number using recursion .
6. WAP to implement the Formula n C r.
7. WAP to print the Pascal Triangle.
8. WAP to print the following sequence of numbers using recursion 0,1,1,2,3,5,8,13,21,34.....
9. WAP for tower of Hanoi.
10. WAP that create a FILE data and perform write and read operation.

2. Array

1. WAP to insert a specific element in an array of size n.
2. WAP to delete the specific element in an array.
3. WAP to to print the sum of the diagonal element of the M*N square matrix
4. WAP to find the maximum element in a array & find how many times it is coming in a array of size n
5. WAP to calculate sum of the element of two square matrix pointer
6. WAP to calculate product of the element of two square matrix using pointer
7. WAP to find the maximum element in an array A of size n (using all loop & recursion)
8. WAP using function to perform the multiplication of matrix by scalar quantity using pointer.
9. WAP to search an element in integer array ,if found then return the position of element of array else return -1.
10. WAP to merge two sorted array and make a combined sorted array. If the input array is not sorted that (firstly sort both the array using insertion sort method).
11. WAP to generate a magic square of size N.
12. WAP which find whether a matrix, input by the user is Magic Square or Not.

13. WAP to implement operations upon sparse matrix

3. Structure

1. WAP that take the details of the Student (Stu_name,Stu_roll, Stu_course, Stu_marks, of three subject).

Then show the show the details of the student as well as their Percentage.

2. WAP that take the details of the Employee (Enamel,Empno,Empdeptno,Empsal,Empmgr,Empjob)

through pointer..

4. Searching

1. WAP to search an element using Binary Search Method.

2. WAP with different Functions for implementing the hashing concept.

5. Sorting

1. WAP to sort a array of given numbers in ascending order using selection sort method.
2. WAP to sort a array of given numbers in ascending order using bubble sort method.
3. WAP to sort a array of given numbers in ascending order using Insertion sort method.(note :- input numbers in an array should be random .)
4. WAP to sort a array of given numbers in ascending order using Quick sort method.
5. WAP to sort a array of given numbers in ascending order using Heap sort method.
6. WAP to sort a array of given numbers in ascending order using Two-way Merge Sort method.
7. WAP to perform a Binary tree Sort.
8. WAP that take the data of B.Tech II Sem student and store it in Ascending order by their names.

Note:- Try to demonstrate the complexity of different sorting algorithm with graph.

6. String

1. WAP a program to check a given string is palindrome or not (the user should give the string
2. WAP for comparison of two string without using strcmp() function. The user should gives the string
3. Find the substring in a string. The string & the length & the starting position of the substring are given by user
4. WAP to calculate the length of string without using library functions
5. WAP to reverse the string without using library function

6. WAP to concatenate the two string without using library function
7. WAP to copy one string to another string without using library function
8. WAP which will read a text & count all occurrences of a particular word in given string .

7. Linked List

1. WAP for making a linear linked list with following operation :- (1) Insertion (at beginning , at end ,at particular position , after particular position , before particular position) (2) Deletion (at beginning , at end , particular position , particular element) (3) Traverse in Reverse order . (4) search an element (5) Sort the elements.

2. WAP with above operations for the doubly linked list .

8. Tree

1. WAP to search the element in a Binary search tree.
2. WAP for Tree Traversal in Pre-order.
3. WAP for Tree Traversal in In-order.
4. WAP for Tree Traversal in Post-order.
5. WAP to insert and delete a node from the BST.

(NOTE:- Make a single program for all operations of a BST)

9. Stack

1. WAP for implement a Stack though Linked List.
2. WAP to perform push & pop operation on the stack. Check the underflow & overflow condition using array.
3. WAP to implement multi Stack with array.
4. WAP a program to evaluate a postfix expression
5. WAP to convert infix to postfix expression
6. WAP to convert infix to prefix expression

10. Queue

1. WAP to implement the Queue using Array.
2. WAP to implement the Queue using Linked List
3. WAP to implement Circular Queue with array.

4. WAP to implement the priority Queue.

11. Graph

1. WAP for Graph Traversal (BFS , DFS)
2. WAP for Minimum cost spanning tree, shortest path.

Assignment-1 (Section 1 & 2)

Assignment-2 (Section 3,4 & 5)

Assignment-3 (Section 6 , 9 &10)

Assignment-4 (Section 7)

Assignment-5 (Section 8 &11)

Prepared by:-

Rupal Gupta

Sr. No.	Enrollment No.	Name	ECS355 Max. Marks																	Total				
						B/3+F/5	E/5+F/5	D/3+E/5+F/5	D/3+E/5+F/5	D/3+E/5+F/5			N/5*.6	N/5*.6	M/3	M/3	M/3						
			30	10	10	4	4.0	14.0	14.0	14.0	30	10	50	4	6	14	14	14	8	10	28	28	28
			EXP	VV	File	CO1	CO2	CO3	CO4	CO5	EXP	VV	I	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5
1	TCA1709001	RISHABH JAIN	24	3	9	2.4	2.4	10.4	10.4	10.4	20.4	6.8	45	2.7	4.08	6.8	6.8	6.8	5.12	6.48	17.2	17.2	17.2
2	TCA1709002	SHRUTIKA JAIN	26	8	10	3.6	3.6	12.3	12.3	12.3	26.4	8.8	43	3.5	5.28	8.8	8.8	8.8	7.12	8.88	21.067	21.1	21.1
3	TCA1709003	ASHI JAIN	22	6	13	3.8	3.8	11.1	11.1	11.1	21	7	42	2.8	4.2	7.0	7.0	7.0	5.6	8	18.133	18.1	18.1
4	TCA1709005	HARSHIT JAIN	22	10	9	3.8	3.8	11.1	11.1	11.1	24	8	42	3.2	4.8	8.0	8.0	8.0	7	8.6	19.133	19.1	19.1
5	TCA1709006	SARTHAK JAIN	21	10	13	4.6	4.6	11.6	11.6	11.6	23.4	7.8	44	3.1	4.68	7.8	7.8	7.8	7.72	9.28	19.4	19.4	19.4
6	TCA1709007	RITIK SHARMA	21	9	8	3.4	3.4	10.4	10.4	10.4	22.8	7.6	43	3	4.56	7.6	7.6	7.6	6.44	7.96	18	18.0	18.0
7	TCA1709008	VIJENDRA SINGH BORA	13	10	7	3.4	3.4	7.7	7.7	7.7	18	6	45	2.4	3.6	6.0	6.0	6.0	5.8	7	13.733	13.7	13.7
8	TCA1709010	PRASHANSA JAIN	25	9	10	3.8	3.8	12.1	12.1	12.1	25.2	8.4	45	3.4	5.04	8.4	8.4	8.4	7.16	8.84	20.533	20.5	20.5
9	TCA1709011	RASHI JAIN	26	10	9	3.8	3.8	12.5	12.5	12.5	25.2	8.4	41	3.4	5.04	8.4	8.4	8.4	7.16	8.84	20.867	20.9	20.9
10	TCA1709012	SWAPNIL JAIN	23	10	5	3	3.0	10.7	10.7	10.7	24	8	40	3.2	4.8	8.0	8.0	8.0	6.2	7.8	18.667	18.7	18.7
11	TCA1709013	PUSHPENDRA SINGH			0	0	0.0	0.0	0.0	0.0	0	0											
12	TCA1709017	HIMANSHU JAIN	24	10	7	3.4	3.4	11.4	11.4	11.4	25.2	8.4	41	3.4	5.04	8.4	8.4	8.4	6.76	8.44	19.8	19.8	19.8
13	TCA1709018	SHAH PRIYANK DINESH	26	10	9	3.8	3.8	12.5	12.5	12.5	26.4	8.8	41	3.5	5.28	8.8	8.8	8.8	7.32	9.08	21.267	21.3	21.3
14	TCA1709019	DIWAKAR JHA	25	9	8	3.4	3.4	11.7	11.7	11.7	25.2	8.4	43	3.4	5.04	8.4	8.4	8.4	6.76	8.44	20.133	20.1	20.1
15	TCA1709020	VINEET JAIN	27	8	8	3.2	3.2	12.2	12.2	12.2	26.4	8.8	44	3.5	5.28	8.8	8.8	8.8	6.72	8.48	21	21.0	21.0
16	TCA1709021	SAMYAK JAIN	26	9	7	3.2	3.2	11.9	11.9	11.9	25.8	8.6	41	3.4	5.16	8.6	8.6	8.6	6.64	8.36	20.467	20.5	20.5
17	TCA1709024	JASPAL			0	0	0.0	0.0	0.0	0.0	0	0											
18	TCA1709025	SANYAM JAIN	25	3	12	3	3.0	11.3	11.3	11.3	21.6	7.2	42	2.9	4.32	7.2	7.2	7.2	5.88	7.32	18.533	18.5	18.5
19	TCA1709027	AMAN JAIN	25	10	10	4	4.0	12.3	12.3	12.3	25.8	8.6	41	3.4	5.16	8.6	8.6	8.6	7.44	9.16	20.933	20.9	20.9
20	TCA1709028	SAURABH AGARKAR	25	9	8	3.4	3.4	11.7	11.7	11.7	25.2	8.4	42	3.4	5.04	8.4	8.4	8.4	6.76	8.44	20.133	20.1	20.1
21	TCA1709030	SAMYAK JAIN	21	10	11	4.2	4.2	11.2	11.2	11.2	24.6	8.2	45	3.3	4.92	8.2	8.2	8.2	7.48	9.12	19.4	19.4	19.4
22	TCA1709031	UTKARSH RASTOGI	27	6	8	2.8	2.8	11.8	11.8	11.8	25.2	8.4	43	3.4	5.04	8.4	8.4	8.4	6.16	7.84	20.2	20.2	20.2
23	TCA1709032	SHUBHAM MANDAL	27	7	9	3.2	3.2	12.2	12.2	12.2	25.2	8.4	45	3.4	5.04	8.4	8.4	8.4	6.56	8.24	20.6	20.6	20.6
24	TCA1709089	HIMANSHU JAIN	25	10	8	3.6	3.6	11.9	11.9	11.9	25.8	8.6	43	3.4	5.16	8.6	8.6	8.6	7.04	8.76	20.533	20.5	20.5
25	TCA1709092	SAURABH KUMAR JAIN	30	6	9	3	3.0	13.0	13.0	13.0	27.6	9.2	42	3.7	5.52	9.2	9.2	9.2	6.68	8.52	22.2	22.2	22.2
26	TCA1709094	PUNIT JAIN	17	10	15	5	5.0	10.7	10.7	10.7	21	7	42	2.8	4.2	7.0	7.0	7.0	7.8	9.2	17.667	17.7	17.7
27	TCA1709095	GARBHIT JAIN	22	8	10	3.6	3.6	10.9	10.9	10.9	22.2	7.4	45	3	4.44	7.4	7.4	7.4	6.56	8.04	18.333	18.3	18.3

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Sr. No.	Enrollment No.	Name	EC5355																						
			Max. Marks																						
						E/5+I/5	I/5+J/5	D/3+E/5+F/5	D/3+E/5+F/5	D/3+E/5+F/5						M/1	M/1	M/1	Total					
			30	10	10	4	4.0	14.0	14.0	14.0	30	10	50	4	6	14	14	14	8	10	28	28	28
			EXP	VV	File	CO1	CO2	CO3	CO4	CO5	EXP	VV	I	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5
28	TCA1709099	RISHABH JAIN	16	10	15	5	5.0	10.3	10.3	10.3	20.4	6.8	45	2.7	4.08	6.8	6.8	6.8	7.72	9.08	17.133	17.1	17.1
29	TCA1709100	RITIK JAIN	18	10	13	4.6	4.6	10.6	10.6	10.6	21.6	7.2	45	2.9	4.32	7.2	7.2	7.2	7.48	8.92	17.8	17.8	17.8
30	TCA1709103	GOPAL JAIN	30	4	10	2.8	2.8	12.8	12.8	12.8	26.4	8.8	45	3.5	5.28	8.8	8.8	8.8	6.32	8.08	21.6	21.6	21.6
31	TCA1709104	VIRAM JAIN	30	6	9	3	3.0	13.0	13.0	13.0	27	9	43	3.6	5.4	9.0	9.0	9.0	6.6	8.4	22	22.0	22.0
32	TCA1709107	PRIYANSH JAIN	23	10	11	4.2	4.2	11.9	11.9	11.9	24.6	8.2	40	3.3	4.92	8.2	8.2	8.2	7.48	9.12	20.067	20.1	20.1
33	TCA1709114	MOHIT PRASAD	17	10	13	4.6	4.6	10.3	10.3	10.3	20.4	6.8	43	2.7	4.08	6.8	6.8	6.8	7.32	8.68	17.067	17.1	17.1
34	TCA1709115	SUDARSHAN JHA	23	10	10	4	4.0	11.7	11.7	11.7	24.6	8.2	41	3.3	4.92	8.2	8.2	8.2	7.28	8.92	19.867	19.9	19.9
35	TCA1709117	RISHI BALI	23	10	10	4	4.0	11.7	11.7	11.7	25.2	8.4	42	3.4	5.04	8.4	8.4	8.4	7.36	9.04	20.067	20.1	20.1
36	TCA1709119	AARJAV KUMAR JAIN	30	7	10	3.4	3.4	13.4	13.4	13.4	28.2	9.4	42	3.8	5.64	9.4	9.4	9.4	7.16	9.04	22.8	22.8	22.8
37	TCA1709120	TARUN KUMAR JAIN	28	9	7	3.2	3.2	12.5	12.5	12.5	27.6	9.2	44	3.7	5.52	9.2	9.2	9.2	6.88	8.72	21.733	21.7	21.7
38	TCA1709121	SHUBHAM SINGHAI	30	5	9	2.8	2.8	12.8	12.8	12.8	27	9	41	3.6	5.4	9.0	9.0	9.0	6.4	8.2	21.8	21.8	21.8
39	TCA1709122	PALAK JAIN	26	5	13	3.6	3.6	12.3	12.3	12.3	24	8	42	3.2	4.8	8.0	8.0	8.0	6.8	8.4	20.267	20.3	20.3
40	TCA1709123	PRAVEEN KUMAR JAIN	22	10	10	4	4.0	11.3	11.3	11.3	24	8	42	3.2	4.8	8.0	8.0	8.0	7.2	8.8	19.333	19.3	19.3
41	TCA1709124	SHUBHAM JAIN	24	10	6	3.2	3.2	11.2	11.2	11.2	25.2	8.4	43	3.4	5.04	8.4	8.4	8.4	6.56	8.24	19.6	19.6	19.6
42	TCA1709127	ADITYA JAIN	22	10	8	3.6	3.6	10.9	10.9	10.9	24	8	40	3.2	4.8	8.0	8.0	8.0	6.8	8.4	18.933	18.9	18.9
43	TCA1709128	SAGAR JAIN	19	10	11	4.2	4.2	10.5	10.5	10.5	22.8	7.6	42	3	4.56	7.6	7.6	7.6	7.24	8.76	18.133	18.1	18.1
44	TCA1709131	AKSHAY JAIN	20	10	11	4.2	4.2	10.9	10.9	10.9	22.8	7.6	43	3	4.56	7.6	7.6	7.6	7.24	8.76	18.467	18.5	18.5
45	TCA1709132	YASH JAIN	20	10	10	4	4.0	10.7	10.7	10.7	22.8	7.6	39	3	4.56	7.6	7.6	7.6	7.04	8.56	18.267	18.3	18.3
46	TCA1709133	ANUKUL JAIN	24	9	8	3.4	3.4	11.4	11.4	11.4	25.8	8.6	40	3.4	5.16	8.6	8.6	8.6	6.84	8.56	20	20.0	20.0
47	TCA1709134	SAMBHAV JAIN	20	10	11	4.2	4.2	10.9	10.9	10.9	22.8	7.6	40	3	4.56	7.6	7.6	7.6	7.24	8.76	18.467	18.5	18.5
48	TCA1709135	VAIBHAV JAIN	14	10	19	5.8	5.8	10.5	10.5	10.5	19.2	6.4	42	2.6	3.84	6.4	6.4	6.4	8.36	9.64	16.867	16.9	16.9

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Sr. No.	Enrollment No.	Name	ECS355																					
			Max. Marks			E/5+F/5	E/5+F/5	D/3+E/5+F/5	D/3+E/5+F/5	D/3+E/5+F/5				N/5*.10	N/5*.60%	M/3	M/3	M/3	Total				
			30	10	10	4	4.0	14.0	14.0	14.0	30	10	50	4	6	14	14	14	8	10	28	28	28
			EXP	VV	File	CO1	CO2	CO3	CO4	CO5	EXP	VV	I	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5
49	TCA1709136	SAMBHAV JAIN	23	10	7	3.4	3.4	11.1	11.1	11.1	24.6	8.2	46	3.3	4.92	8.2	8.2	8.2	6.68	8.32	19.267	19.3	19.3
50	TCA1709137	DIVYANSH JAIN	28	4	5	1.8	1.8	11.1	11.1	11.1	23.4	7.8	45	3.1	4.68	7.8	7.8	7.8	4.92	6.48	18.933	18.9	18.9
51	TCA1709139	ROHIT JAIN	24	10	7	3.4	3.4	11.4	11.4	11.4	25.2	8.4	39	3.4	5.04	8.4	8.4	8.4	6.76	8.44	19.8	19.8	19.8
52	TCA1709140	NAMAN BHANDARI	22	8	5	2.6	2.6	9.9	9.9	9.9	22.2	7.4	40	3	4.44	7.4	7.4	7.4	5.56	7.04	17.333	17.3	17.3
53	TCA1709142	SAMYAK JAIN	27	7	9	3.2	3.2	12.2	12.2	12.2	25.8	8.6	40	3.4	5.16	8.6	8.6	8.6	6.64	8.36	20.8	20.8	20.8
54	TCA1709144	RISHABH JAIN	22	10	10	4	4.0	11.3	11.3	11.3	24	8	43	3.2	4.8	8.0	8.0	8.0	7.2	8.8	19.333	19.3	19.3
55	TCA1709145	SHUBHAM SINGH BHADAURIYA	20	9	11	4	4.0	10.7	10.7	10.7	21.6	7.2	42	2.9	4.32	7.2	7.2	7.2	6.88	8.32	17.867	17.9	17.9
56	TCA1709146	APOORVA JAIN	25	2	7	1.8	1.8	10.1	10.1	10.1	20.4	6.8	42	2.7	4.08	6.8	6.8	6.8	4.52	5.88	16.933	16.9	16.9
57	TCA1709148	SAGAR JAIN	22	10	12	4.4	4.4	11.7	11.7	11.7	24	8	40	3.2	4.8	8.0	8.0	8.0	7.6	9.2	19.733	19.7	19.7
58	TCA1709150	ATISHAY JAIN			0	0	0.0	0.0	0.0	0.0	0	0											
59	TCA1709153	SAKSHI JAIN	18	10	6	3.2	3.2	9.2	9.2	9.2	21.6	7.2		2.9	4.32	7.2	7.2	7.2	6.08	7.52	16.4	16.4	16.4
60	TCA1709155	VISHESH JAIN	20	3	12	3	3.0	9.7	9.7	9.7	18	6		2.4	3.6	6.0	6.0	6.0	5.4	6.6	15.667	15.7	15.7
61	TCA1811002	ANU CHAUDHARY	22	10	8	3.6	3.6	10.9	10.9	10.9	24	8		3.2	4.8	8.0	8.0	8.0	6.8	8.4	18.933	18.9	18.9
62	TCA1811003	YAMIKA RAJPUT	21	10	9	3.8	3.8	10.8	10.8	10.8	23.4	7.8		3.1	4.68	7.8	7.8	7.8	6.92	8.48	18.6	18.6	18.6
63	TCA1811004	REETESH JAIN	14	10	17	5.4	5.4	10.1	10.1	10.1	20.4	6.8		2.7	4.08	6.8	6.8	6.8	8.12	9.48	16.867	16.9	16.9
64	TCA1811005	PUSHPANE SINGH CHOUDHARY	24	10	13	4.6	4.6	12.6	12.6	12.6	25.8	8.6		3.4	5.16	8.6	8.6	8.6	8.04	9.76	21.2	21.2	21.2
65	TCA1811006	KUNAL YADAV	25	10	9	3.8	3.8	12.1	12.1	12.1	26.4	8.8		3.5	5.28	8.8	8.8	8.8	7.32	9.08	20.933	20.9	20.9

Total marks COs

Target values>50

Students achieved target

8	10	28	28	28
CO1	CO2	CO3	CO4	CO5
4	5	14	14	14
62	62	61	61	61

60% of Students get mo	1
70% of Students get mo	2
80% of Students get mo	3

Students Above Threshold

Cos	Students	%	Att.
CO1	62	100	3
CO2	62	100	3
CO3	61	98	3
CO4	61	98	3
CO5	61	98	3

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CO	Statement	PO1	PO 2	PO 3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS O1	PSO2	PSO3
ECS355.1	Applying the concept of different data types and their usage using C Programs.	2	2										1	1		1
ECS355.2	Applying the concept of recursion for problem solving.	1	2										1	1		1
ECS355.3	Applying the programming constructs and their usage for problem solving.	2	3										1	2		1
ECS355.4	Applying the understanding to solve basic operations searching, sorting, insertion, deletion on data structures.	1	3										1	2		1
ECS355.5	Developing programming skills to solve problems with various storage structures like stack, queue, linked list and tree.	2	3										1	2		1
	AVERAGE	1.6	2.6										1	2		1
	ATTAINMENT	1.6	2.6										1	1.6		1

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