K. K. Wagh of Institute of Engineering Education & Research,Nashik

Department of MCA

MCA [FY-Div. B]- SEM (I) A.Y. 2023 – 2024

MCA221002: Data Structures and Algorithms Laboratory

Assignment List and Submission Schedule

Sr. No.	Title	Assign Date	Submit Date	CO Mapping
1	Write a program to represent sparse matrix using array and perform simple and fast transpose	A1:04/09/2023 A2:05/09/2023 A3:06/09/2023	A1:11/09/2023 A2:12/09/2023 A3:13/09/2023	CO1
2	Write a menu driven program to perform following operations on singly linked list: Create, Insert, Delete, reverse, search, count and Display	A1:11/09/2023 A2:12/09/2023 A3:13/09/2023	A1:18/09/2023 A2:22/09/2023 A3:20/09/2023	CO1
3	Write a menu driven program which will maintain a list of car models, their price, name of the manufacture, engine capacity etc. as a doubly linked list. The menu should make provisions for inserting information pertaining to new car models, delete obsolete models, update data such as price besides answering queries such as listing all car models within a price range specified by the client and listing all details given a car model	A1:18/09/2023 A2:22/09/2023 A3:20/09/2023	A1:25/09/2023 A2:26/09/2023 A3:27/09/2023	CO1
4	Write a program to implement stack as an ADT. Use this ADT to perform expression conversion and evaluation. (Infix – Postfix)	A1:25/09/2023 A2:26/09/2023 A3:27/09/2023	A1:05/10/2023 A2:03/10/2023 A3:04/10/2023	CO2
5	Write a program to implement circular queue using arrays	A1:05/10/2023 A2:03/10/2023 A3:04/10/2023	A1:09/10/2023 A2:10/10/2023 A3:11/10/2023	CO2
6	Write a program to create binary tree. Find height of the tree and print leaf nodes. Find mirror image, print original and mirror image using level-wise printing	A1:09/10/2023 A2:10/10/2023 A3:11/10/2023	A1:16/10/2023 A2:17/10/2023 A3:18/10/2023	CO3
7	Write a program that reads a list of names and telephone numbers from user and insert into a BST tree. Once the tree has been built, present the user with a menu that allows him to search the list for a specified name, insert new name, delete an existing name or print the entire phone list	A1:16/10/2023 A2:17/10/2023 A3:18/10/2023	A1:23/10/2023 A2:27/10/2023 A3:28/10/2023	CO3
8	Write a program to create graph, use the map of any city as the graph. Represent graph using adjacency list/adjacency matrix and perform Depth First Search and Breadth First Search	A1:23/10/2023 A2:27/10/2023 A3:28/10/2023	A1:30/10/2023 A2:31/10/2023 A3:01/11/2023	CO3
9	Write a program to represent a graph of any city using adjacency matrix /adjacency list. Nodes should represent the various areas in the city and links should represent the distance between them. Find the shortest path of your college from your home using Dijkstra's algorithm	A1:30/10/2023 A2:31/10/2023 A3:01/11/2023	A1:06/11/2023 A2:07/11/2023 A3:08/11/2023	CO3
10	Write a program to create student database. Database contains different fields of student like Roll No, Name and percentage. Search a particular student according to roll number using binary search.	A1:06/11/2023 A2:07/11/2023 A3:08/11/2023	A1:20/11/2023 A2:21/11/2023 A3:22/11/2023	CO4
11	Write a program to arrange list of students to find out first ten toppers from a class using Bubble sort. (refer the student database given in assignment 10)	A1:20/11/2023 A2:21/11/2023 A3:22/11/2023	A1:30/11/2023 A2:28/11/2023 A3:29/11/2023	CO4
12	Write a program to implement Merge sort / Quick sort method	A1:27/11/2023 A2:28/11/2023 A3:29/11/2023	A1:30/11/2023 A2:01/12/2023 A3:02/12/2023	CO4
13	Beyond Syllabus : Create student's database. The file contains roll number, name, division and address. Write a program to create a sequential file to store and maintain student data. It should allow the user to add, delete information of student. Display information of particular student.	A1:30/11/2023 A2:01/12/2023 A3:02/12/2023	A1:04/12/2023 A2:05/12/2023 A3:06/12/2023	CO1

M. E. Maniyar
Course Incharge

Dr. V. C. Bagal
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Assignment	Objective	Outcome
1	To understand array and its application	To use array to represent sparse matrix
2	To learn linked list	To implement singly linked list and perform operations on it
3	To study doubly linked list	To solve real life application using doubly linked list
4	To understand use of stack data structure	To use stack data structure in infix to postfix conversion
5	To learn manipulation of circular queue	To implement circular queue using array
6	To learn non linear data structure	To demonstrate tree data structure
7	To study operations on binary search tree	To implement insert , delete and traversal operations on BST
8	To learn graph non linear data structure	To demonstrate graph data structure
9	To study Dijkstra's algorithm for shortest path	To apply Dijkstra's algorithm to find shortest path for real life example
10	To Understand searching methods	To use binary search algorithm to search specific record in the given database
11	To learn sorting methods	To apply bubble sort algorithm to sort real life example
12	To learn sorting methods	To differentiate sorting algorithm
13	To study operations on sequential file organization	To implement insert, delete operations on sequential file