SREENIVASA INSTITUTE of TECHNOLOGY and MANAGEMENT STUDIES

I MCA - II Semester	**L**	**P**	**C**
	0	**3**	**2**

16MCA126 DATA STRUCTURES LAB

Course Objective:

1. Stack operations to perform the following: Converting infix expression into postfix expression, Evaluating the postfix expression
2. Implement Bubble Sort, selection sort and insertion sort method to sort a given list of integers.
3. Demonstrate familiarity with major algorithms and data structures.

Syllabus:

Exercise 1

1. Write C programs that implement stack (its operations) using Arrays.
2. Write C programs that implement Queue (its operations) using Arrays.

Exercise 2

1. Write C Program that implement operations on Stack using Pointers.
2. Write C Program that implement operations on Queue using pointers

Exercise 3

Write a C program that uses functions to perform the following operations using singly linked list

i) Creation ii) insertion iii) Deletion iv) Traversal

Exercise 4

Write a C program that uses functions to perform the following operations using double linked list

i) Creation ii) insertion iii) Deletion iv) Traversal

Exercise 5

Write a C program that uses functions to perform the following operations using Circular linked list

i) Creation ii) insertion iii) Deletion iv) Traversal

Exercise 6

Write a Program that uses Stack Operations to perform the following

1. Converting infix expression to postfix expression
2. Evaluation the postfix expression

Exercise 7

Write a C program that implements the following sorting methods to sort a given list of integers in ascending order

1. Bubble sort 2. Selection sort

Exercise 8

Write a C program that implements the following sorting methods to sort a given list of integers in ascending order

1. Quick sort 2. Merge sort

Exercise 9

Write a C program using recursive functions to perform the following searching operations for a key value in a given list of integers.

1. Linear Search 2. Binary Search

Exercise 10

Write a C programs using non - recursive functions to perform the following searching operations for a key value in a given list of integers.

1. Linear Search 2. Binary Search

Exercise 11

Write a program to create BST and perform operations on it

Exercise 12

1. Write a C program to demonstrate insert operation in binary search tree
2. Write a C Program to Find the Shortest Path Between Two Vertices Using Dijkstra's Algorithm
3. Write a C Program to Apply the Prim's Algorithm to Find the Minimum Spanning Tree of a Graph

Course Outcome:

1. Acquire knowledge about the basic concept of writing a C-program.
2. The ability to write C-language code according to a problem specification
3. Acquire Knowledge to know which algorithm or data structure to use in different scenarios.
4. Ability to trace and implement code recursive functions.
5. Acquire knowledge to implement various data structures in more than one manner.
6. Write complex applications using structured programming methods and know the effective utilization of the algorithms.