II Year – I SEMESTER

T	P	C
0	3	2

DATA STRUCTURES LAB

Exercise 1:
Write recursive program which computes the n^{th} Fibonacci number, for appropriate values of n.
Analyze behavior of the program Obtain the frequency count of the statement for various values of n.

Exercise 2:
Write recursive program for the following

a) Write recursive and non recursive C program for calculation of Factorial of an integer
b) Write recursive and non recursive C program for calculation of GCD (n, m)
c) Write recursive and non recursive C program for Towers of Hanoi : N disks are to be transferred from peg S to peg D with Peg I as the intermediate peg.

Exercise 3:

a) Write C program that use both recursive and non recursive functions to perform Linear search for a Key value in a given list.
b) Write C program that use both recursive and non recursive functions to perform Binary search for a Key value in a given list.
c) Write C program that use both recursive and non recursive functions to perform Fibonacci search for a Key value in a given list.

Exercise 4:

a) Write C program that implement Bubble sort, to sort a given list of integers in ascending order
b) Write C program that implement Quick sort, to sort a given list of integers in ascending order
c) Write C program that implement Insertion sort,to sort a given list of integers in ascending order

Exercise 5:

a) Write C program that implement heap sort, to sort a given list of integers in ascending order
b) Write C program that implement radix sort, to sort a given list of integers in ascending order
c) Write C program that implement merge sort, to sort a given list of integers in ascending order

Exercise 6:

a) Write C program that implement stack (its operations) using arrays
b) Write C program that implement stack (its operations) using Linked list

Exercise 7:

a) Write a C program that uses Stack operations to Convert infix expression into postfix expression
a) Write C program that implement Queue (its operations) using arrays.
b) Write C program that implement Queue (its operations) using linked lists

Exercise 8:

a) Write a C program that uses functions to create a singly linked list
b) Write a C program that uses functions to perform insertion operation on a singly linked list
c) Write a C program that uses functions to perform deletion operation on a singly linked list

Exercise 9:

a) Adding two large integers which are represented in linked list fashion.
b) Write a C program to reverse elements of a single linked list.
c) Write a C program to store a polynomial expression in memory using linked list
d) Write a C program to representation the given Sparse matrix using arrays.
e) Write a C program to representation the given Sparse matrix using linked list

Exercise10:

a) Write a C program to Create a Binary Tree of integers
b) Write a recursive C program for Traversing a binary tree in preorder, inorder and postorder.
c) Write a non recursive C program for Traversing a binary tree in preorder, inorder and postorder.
d) Program to check balance property of a tree.

Exercise 11:

a) Write a C program to Create a BST
b) Write a C program to insert a node into a BST.
c) Write a C program to delete a node from a BST.