I Year II Semester   **L   T   P   C**

Code: 17CS211   **0   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:
   a) Write recursive program for the following
   b) Write recursive and non recursive C program for calculation of Factorial of an integer
   c) Write recursive and non recursive C program for calculation of GCD (n, m)
   d) 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.

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 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.
    b) 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.
    c) 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, in order and post order. c) 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.

Projects list:
1. Word Puzzle
2. Text wrapping
3. Weather data for Two Cities
4. Simple Raster-Scan Graphics
5. Polynomial Application
6. Traffic Controller Simulator
7. Stock management
8. Bank Clients Data Processing
9. Birth day remainder
10. Suggestions Box