Course code: CSL 201 Course Name: Data Structures Lab

L-T-P-Credits 0-0-3-2

Pre-requisite: CST 201 Data Structures, EST 102 C programming skills.

Operating System to Use in Lab: Linux

Compiler/Software to Use in Lab: gcc

Programming Language to Use in Lab: Ansi C

Preamble: The aim of the Course is to give hands-on experience for Learners on creating and using different Data Structures. Data Structures are used to process data and arrange data in different formats for many applications. The most commonly performed operations on data structures are traversing, searching, inserting, deleting and few special operations like merging and sorting.

Lab Cycle-1

Learning Outcome: Learn to use arrays and develop application programs.

Date of submission: on or before 29-09-2022

(Do not write these programs in fair record-show the output in lab and get it signed by the staff in charge)

Write C programs to do the following:

1) Write a function rotate (int a[], int n, char d, int cr) to rotate given array elements.
   The function will take the array, number of elements in the array, direction of rotation(l-left r-right) and count of rotation(how many times to rotate)
   Eg:
   Input array a[]=2 3 4 5 6 7
   rotate(a,6,l,2)
   output:4 5 6 7 2 3
   rotate(a,6,r,2)
   output:6 7 2 3 4 5

2) Find the mean, median and mode of list of elements. Use array to implement the same.
   l=[1,2,3,5,4,5,6,3,1,1]

Mean-3.1

Median-3.0

Mode-1

3) Find the frequency of occurrence of each character in the string (histogram)
   Eg: input: This is a test string
   Output: t-3, h-1,i-3,s-4,' '-4…….etc

4) Consider two sets S1={1,2,3,4}, and S2={3,4,5}. Find the intersection of S1 and S2={3,4}.

Implement the set operation intersection using arrays.

5) An nx4 array stores 4 bit binary numbers. Read the matrix and print the hexadecimal equivalent of the same.

Example:

Input:

1 0 1 1
1 1 0 1
1 0 0 1

Output:
B
D
9