**CS307PC: DATA STRUCTURES LAB**

**B.Tech. II Year I Sem. L T/P/D C**

**0 0/3/0 1.5**

**Prerequisites:** A Course on “Programming for problem solving”.

**Course Objectives:**

* It covers various concepts of C programming language
* It introduces searching and sorting algorithms
* It provides an understanding of data structures such as stacks and queues.

**Course Outcomes:**

* Ability to develop C programs for computing and real-life applications using basic elementslike control statements, arrays, functions, pointers and strings, and data structures like stacks,queues and linked lists.
* Ability to Implement searching and sorting algorithms

**LIST OF EXPERIMENTS**

**1.** Write a program that uses functions to perform the following operations on singly linked

list.:

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

**2.** Write a program that uses functions to perform the following operations on doubly linked

list.:

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

**3.** Write a program that uses functions to perform the following operations on circular linked

list.:

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

**4.** Write a program that implement stack (its operations) using

i) Arrays ii) Pointers

**5.** Write a program that implement Queue (its operations) using

i) Arrays ii) Pointers

**6.** Write a program that implements the following sorting methods to sort a given list of

integers in ascending order

i) Bubble sort ii) Selection sort iii) Insertion sort

**7.** Write a program that use both recursive and non recursive functions to perform the

following searching operations for a Key value in a given list of integers:

i) Linear search ii) Binary search

**8.** Write a program to implement the tree traversal methods.

**9.** Write a program to implement the graph traversal methods.

**TEXTBOOKS:**

**1.** Fundamentals of Data Structures in C, 2nd Edition, E. Horowitz, S. Sahni and Susan Anderson Freed, *Universities Press*.

**2.** Data Structures using C – A. S. Tanenbaum, Y. Langsam, and M. J. Augenstein,

*PHI/Pearson Education*.

**REFERENCE:**

**1.** Data Structures: A Pseudocode Approach with C, 2nd Edition, R. F. Gilberg and B. A.

Forouzan, Cengage *Learning*.