21CS307PC	DATA STRUCTURES LAB	L	T	P	C
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PRE-REQUISITE: 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: After completion of the Course, the students will be able to:

CO1: Develop C programs for computing and real-life applications using basic elements like control statements, arrays, functions, pointers and strings, and data structures like stacks, queues and linked lists.

CO2: 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 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
7. Write a program to implement the tree traversal methods.
8. Write a program that implements the Bubble sort method to sort a given list of integers in ascending order.
9. Write a program that sorts the given array of integers using selection sort in descending order
10. Write a program that sorts the given array of integers using insertion sort in ascending order

TEXT BOOKS:

1. E. Horowitz, S. Sahni and Susan Anderson Freed, Fundamentals of Data Structures in C, 2nd Edition, Universities Press, 2017.
2. S. Tanenbaum, Y. Langsam, and M.J. Augenstein, Data Structures using C, Second Edition, PHI/Pearson Education, 2006.

REFERENCE BOOK:

1. R. F. Gilberg and B.A. Forouzan, Data Structures: A Pseudocode Approach with C, 2nd Edition, Cengage Learning, 2004.