ANURAG ENGINEERING COLLEGE

(An Autonomous Institution)

(CS306PC) DATA STRUCTURES LABORATORY

II Year B.Tech. IT - I Sem

Prerequisites: A Course on " Programming for problem solving".

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Course Objectives:

The objectives of this course are to provide:

- 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.
- It covers various concepts of search trees
- Knowledge on pattern matching 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 implements tack (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) Quick sort ii) Heap sort iii) Merge sort

7. Write a program to implement the tree traversal methods (Recursive and Non Recursive).

8. Write a program to implement

    i) Binary Search tree ii) B Trees iii) B+ Trees iv) AVL trees

    v) Red - Black trees

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

10. Implement a Pattern matching algorithms using Boyer-Moore, Knuth- Morris- Pratt

Course Outcomes:

Upon the successful completion of this course, the student will be able to:

1. Ability to develop C programs for computing and real-life applications using basic elements like control statements, functions, pointers and structures and various linked lists.

2. Ability to develop data structures like stacks and queues using arrays and pointers.

3. Ability to implements the sorting methods like Quick sort, Heap sort and Merge sort.

4. Ability to implement various trees and tree traversal techniques in recursive and non-recursive manner.

5. Gain knowledge on implementing the graph traversal techniques and Pattern matching algorithms like Boyer- Moore, Knuth-Morris-Pratt

Text Books:

1. Fundamentals of Data Structures in C,2ndEdition,E.Horowitz,S.Sahniand Susan Anderson Freed, Universities Press.

2. Data Structures using C – A.S.Tanenbaum, Y. Langsam, and M. J.Augenstein, PHI/Pearson Education.

Reference Books:

1. Data Structures: A Pseudo codeApproachwithC,2ndEdition, R.F. Gilber gand B. Forouzan, Cengage Learning.

CO-PO-PSO Mapping:

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO-1	M	M	L	H							H		H	H
CO-2	M	H	M	M							H		H	H
CO-3	H	H	M	M							M		H	H
CO-4	M	M	M	H							M		M	M
CO-5	M	M	H	L							M		M	M

H-HIGH **M**-MODERATE **L**-LOW