

Data Structure Laboratory (ID) (IT-3005)

Course Code	(ID) IT - 3005	Credits-2	L -0, T-0, P-2
Name of the Course	Data Structure Laboratory		
Lectures to be Delivered	26 hours of Lab work (2 hours per week)		
Semester End Examination	<i>Max. Marks: 50</i>	<i>Min. Pass Marks: 20</i>	Maximum Time:3hrs
Laboratory Continuous Assessment	Lab work 30%, Lab Record 25%, Viva/ Hands on 25%, Attendance 20%)	<i>Max. Marks: 50</i>	<i>Min. Pass Marks: 25</i>

Instructions for paper setter/ Candidates

Laboratory examination will consist of two parts:

- (i) Performing a practical examination assigned by the examiner (25 marks)
- (ii) Viva-voce examination (25 marks)

Viva-voce examination will be related to the practicals performed / projects executed by the candidate related to the paper during the course of the semester.

List of Experiments:

1. Write a program to search an element in a two-dimensional array using linear search.
2. Using iteration & recursion concepts write programs for finding the element in the array using Binary Search Method.
3. Write a program to perform following operations on tables using functions only
 - a) Addition
 - b) Subtraction
 - c) Multiplication
 - d) Transpose
4. Using iteration & recursion concepts write the programs for Quick Sort Technique.
5. Write a program to implement various operations on string such as length of string concatenation, reverse of a string & copy of a string to another.
6. Write a program for swapping of two numbers using 'call by value' and 'call by reference strategies.
7. Write a program to implement Binary Search Tree.
(Insertion and Deletion in Binary Search Tree)
8. Write a program to create a linked list & perform operations such as insert, delete, update, reverse in the link list.
9. Write the program for implementation of a file and performing operations such as insert, delete, update a record in the file.
10. Create a double linked list and perform the following operations on it.
 - a) Add a node
 - b) Delete a node
 - c) count no. of nodes
 - d) Sum of nodes
11. Write a program to simulate various searching & sorting algorithms and compare their timings for a list of 1000 elements.
12. Write a program to simulate various graph traversing algorithms.
13. Write a program which simulates various tree traversal algorithms.
14. Circular Double Linked list
15. Sorting
 - a) Bubble Sort
 - b) Merge Sort
 - c) Insection Sort
 - d) Selection Sort
16. Write down a program to Implement Polynomial Equation Addition in a Single linked list.
17. Stack Implementation using
 - a) Array
 - b) Linked List
18. Queue Implementation using
 - a) Array
 - b) Linked List

Note: At least 5 to 10 more exercises to be given by the teacher concerned.