

Data Structure

COURSE

1) Array

- a. What is array
- b. Types of array : 1-D, 2-D and M-D
- c. Programs for Array
 - i. Wap to get the array and display it
 - ii. Wap to get the array and display it in reverse order
 - iii. Wap to get the array and copy it into another array & display the copied array
 - iv. Wap to get the array and sum of the elements of array
 - v. Wap to get two arrays and display the sum of those arrays
 - vi. Wap to insert the new element at the given position
 - vii. Wap to delete the element from the given position
 - viii. Wap to merge two arrays
 - ix. Wap to find the max
 - x. Wap to find the min
 - xi. Wap to find max and min both
 - xii. Wap to find second max
- d. Searching
 - i. Linear Search
 - ii. Binary Search
- e. Sorting
 - i. Selection Sort
 - ii. Bubble Sort
 - iii. Merge Sort
 1. Without recursion
 2. With recursion
 - iv. Insertion Sort

1. With fix values
 2. Dynamic values -> use scanf to get the values
- v. Quick Sort [recursion only]

2) Matrix

- a. Initialization of matrix with diff types
- b. Matrix programs
 - i. Get and display
 - ii. Get and display in reverse
 - iii. Transpose of the matrix
 - iv. Sum of the elements of the matrix
 - v. Sum of two matrix
 - vi. Multiplication of the matrix
- c. Sparse Matrix

3) Stack

- a. What is Stack
 - i. Program
- b. Notations
 - i. Application of the Stack
 - ii. Polish notation
 - iii. Reverse Polish notation
 - iv. Programs

4) Recursion

- a. Programs
- b. Tower of Hanoi

5) Queue

- a. Simple Queue
- b. Circular Queue
- c. Double Ended Queue
- d. Priority Queue

6) Linked List

- a. What is Linked List
- b. Requirements
- c. Types of Linked List
 - i. Singly Linked List
 - ii. Singly Circular Linked List
 - iii. Doubly Linked List
 - iv. Doubly Circular Linked List
 - v. Header Linked List
 - vi. Header Circular Linked List
 - vii. Implementation of Stack using Linked List
 - viii. Implementation of Queue using Linked List

7) Tree

- a. Definitions and Concepts
- b. Representation of binary tree
- c. BST
 - i. Creation of BST
- d. AVL Tree
- e. 2-3 Tree
- f. Threaded binary tree
- g. M-way Tree
- h. B-Tree

- i. B+ - Tree
- j. General Tree
- k. Conversion of General Trees to Binary Trees

8) Graph

- a. Matrix Representation of Graph
- b. Linked List Representation of Graph
- c. Elementary Graph
- d. Operations
 - i. BFS - Breadth First Search
 - ii. DFS - Depth First Search,
- e. Spanning Trees – MST
- f. shortest path

9) FILE STRUCTURES

- a. Sequential approach
- b. Random access
- c. Reading and writing operations
- d. File organization and access methods

10) Hashing

- a. The symbol table
- b. Hashing Functions
- c. Collision
- d. Resolution Technique