



COVERAGE

- Introduction
- Array
- Pointer
- Function
- Structure
- Pointer, Structure with Function
- Stack
- Applications of Stack
- Linear Queue & its Operations
- Circular Queue & its Operation
- Linked List (Single, Double, Circular, Header)
- Tree
- Graph
- Hashing & Searching
- Sorting

SYLLABUS IN DETAILS

Introduction:

- Concept Data Structure
- Example
- Need of Data structure
- Advantages of using DS

Algorithm & Pseudocode:

- Algorithm Definition
- Characteristics of algorithm
- Elements of algorithm
- Pseudocode example
- Difference of Algorithm & Pseudocode

Function:

- What is function
- Types of function
- How function works
- Function recursion and how it works.

Array:

- Concept of Array
- Types of array
- Basic Programs
- Array with Functions

- Single & 2-dimensional array in function argument.

Pointer:

- Pointer Basics
- Pointer with functions
- Call by reference
- Array of pointers & pointer to array & Programs

Structure:

- Understanding about Structure
- Pointer structure variable
- Structure as function argument
- using call by member value
- hole structure and call by
- passing reference of structure.

Stack:

- Operations on Stack
- Array & Linked Representation
- Programs on stack
- Push & Pop operations
- Traversing.

Applications of Stack :

- Arithmetic Expression Evaluation
- Notations, Infix
- Postfix, Prefix
- Conversion infix to post fix
- Conversion postfix to infix
- Evaluation of Postfix and Pre fix using stack.

Queue:

- Operations on Queue
- Array & Linked Representation
- Programs on stack
- Insert & Delete operations
- Circular queue
- Rrepresentation
- Deque
- Priority Queue
- Application of queue.

LinkedList:

- Concept of linked list
- Difference of linklist & array
- Single linked list
- Representation
- Operations
- Traversing
- Insertion(first node, last node, at a position, after a node value)
- Deletion(first node, last node, at a position, after a node value)
- Double linked list
- Representation
- Operations, traversing
- Insertion (first node, last node, at a position, after a node value)
- Deletion (first node, last node, at a position, after a node value)
- Circular link list & header link list example

Tree:

- Tree terminology
- Binary tree
- Complete Binary Tree

- Binary search tree
- Tree Traversals
- Creation of Binary Tree from traversal methods
- Expression Tree & expression Manipulation
- Binary Search Tree
- Insertion & deletion in BST(Program)
- AVL Tree, M-way Search Tree
- B+ tree, Insertion & deletion.

Graph:

- Graph terminology
- Representation of graphs
- Path matrix
- Graph Traversal
- BFS (breadth first search)
- DFS (depth first search)
- Minimum spanning Tree
- Kruskal's Algorithm & Prim's Algorithm
- Warshall's algorithm (shortest path algorithm).

Hashing & Searching:

- Linear and binary search methods
- Hash functions
- Hashing techniques & Chaining.

Sorting:

- Bubble sort
- Selection sort
- Insertion sort
- Quick sort
- Merge sort
- Heap sort
- Radix sort