

C++ Language Contents:

- Introduction to C++ Language
- Difference and Similarities between C and C++
- Role Of Compilers and Assemblers
- Introduction to C++ Basic
- Flow Control Statements
- Jump statements
- Conditional Statements
- Iteration statements

Arrays:

- Introduction to Arrays
- Several examples of Arrays like insert, delete, counter occurrence of items etc.
- Searching
- Sorting
- 2 D Array
- Several Examples of 2 D arrays
- Multidimensional Array s

Strings:

- Introduction to Strings
- String handling built in functions
- Several examples of Strings
- Array of Strings
- Searching in Array of Strings
- Sorting in Array of Strings

POINTERS

- Introduction to pointers
- Pointer expressions
- Types of Pointers
- Void Pointer
- NULL Pointer
- Wild Pointer
- Dangling Pointer
- Various examples of pointers
- Pointer Arithmetic's
- Array using pointers
- Array of pointer
- chaining pointer
- String using pointers

- Pointers in Functions

FUNCTIONS

- Introduction to functions
- Types of functions
- Nesting of functions
- Various examples of functions
- Strings passing in functions
- Array Passing in Functions
- Pointer passing in functions
- Function Returning Address
- Function returning address
- Recursion
- Various Examples and Interview Questions on Recursion and Function
- Storage classes

STRUCTURE

- Introduction to structure
- Advantages of structure
- Array of structure
- Structure using pointer
- Structure with functions
- Applications of structure

DYNAMIC MEMORY ALLOCATION

- Introduction to dynamic memory allocation
- Advantage of dynamic memory allocation
- New and delete operators
- Array implementation using dynamic memory allocation

Oops Introduction

- Oops vs. Procedural Programming Approach
- Oops Implementation
- Accessing class members
- Array of objects
- Types of members of class
- Instance members
- Static members
- Scope resolution Operator (::)
- Oops Approaches
- Encapsulation
- Nesting of Class(i.e. Outer Class, Inner Class, Local Class)
- Polymorphism

- Function Overloading
- Constructor & Destructor
- Deep Copy
- Shallow Copy
- Operator Overloading
- Function Overriding
- Reference variable

Pointers

- Class object using pointer
- Array of objects using pointer
- This pointer Etc.

Inheritance

- Single Inheritance
- Multiple Inheritance
- Multilevel Inheritance
- Hierarchical inheritance
- Hybrid Inheritance
- Need of Virtual

Friend Function and Friend Class

- Function Overriding
- Binding Types
- Static Binding and Dynamic Binding
- Up casting and Down casting
- Virtual Function
- Abstraction
- Data Abstraction
- Abstract Class
- Pure Virtual Function
- Inline Functions
- Composition and Aggregation

Exception Handling

- Introduction to Exception Handling
- Need of Exception Handling
- try, throw, catch
- Multiple catch blocks

FILE MANAGEMENT

- Introduction to file management
- File opening modes
- Opening and closing a file

- Input output operations on file
- Error handling
- Applications of file management

Multithreading:

- Thread introduction
- Thread Synchronization
- Life cycle of thread
- Deal Lock situation

Templates (Generic Programming):

- Introduction to Templates and Generic Programming
- Advantages of template
- Template function and Template class

Standard Templates Library

- Container
- Class
- Functions
- Iterators
- List class
- Stack class
- Queue Class
- De Queue Etc.

DATA STRUCTURE AND ALGORITHMS CONTENT (using C++)

INTRODUCTION TO DATA STRUCTURE AND ALGORITHMS

- What is data structure
- Benefits of data structure
- Types of data structure
- Introduction to algorithms
- Types of Algorithms
- Time and Space Complexity
- Interview Questions

LINEAR DATA STRUCTURE

- Array
- String
- Link list
- Introduction to link list
- Array vs. link lists
- Types of link lists
- Implementation of link list
- Singly link list

- Insertion(at first position, last position and at used specific position) , deletion(at first position, last position and at used specific position) , traversing operations in Singly linked list
- Doubly link list
- Insertion (at first position, last position and at used specific position), deletion(at first position, last position and at used specific position) , traversing operations in Doubly linked list
- Circular link list
- Insertion(at first position, last position and at used specific position) , deletion(at first position, last position and at used specific position) , traversing operations in Circular linked list
- Application of link list
- Interview Questions

Stack

- Introduction to stack
- Stack using array
- Stack using linked list
- Applications of stack
- Reverse Polish Notations(Infix to Postfix and Infix to Prefix)
- Interview Questions

Queue

- Introduction to queue
- Queue using array
- Queue using linked list
- Applications of queue
- Introduction to circular queue
- Application of Circular queue
- Introduction to DeQueue(Double Ended Queue)
- Application of Dequeue
- Priority Queue
- Interview Questions

Non-linear data structure

Tree

- Introduction to trees
- Types of trees
- Implementation of tress
- Binary tree
- Binary search tree
- AVL tree
- Threaded binary tree
- M way tree
- M way search tree



ALTALUNE TECHNOLOGY

- B tree
- Heap
- Various operations on trees
- Application of trees
- Interview Questions

Searching and sorting

- Searching in arrays
- Searching in strings
- Linear Search
- Binary Search
- Sorting
- Various sorting techniques
- Selection sort
- Bubble sort
- Insertion sort
- Quick sort
- Heap sort
- Merge sort
- Radix Sort

Graph

- Introduction of graph
- Types of graphs
- Implementation of graph using Adj. Matrix and Adj. list
- Various operations on graphs
- Shortest path search in graph
- Floyd Warshall Algorithm
- Dijkstra Algorithm
- Minimum spanning tree
- Kruskal's Algorithm
- Prims Algorithm
- Applications of graphs
- Interview Questions

Hashing

- Introduction of hashing
- Hash table
- Applications of hashing
- Interview Questions

PROJECT