

Time duration 30 days

Basics

- Introduction to C++
- Different paradigms of problem solving
- POP vs OOP
- Features of Object Oriented Programming Languages
- Object
- Class
- Abstraction
- Encapsulation
- Inheritance
- Polymorphism
- Dynamic Binding
- Message Communication

Constants

Variables

Keywords

Data types

Declaration of Variables

Output Stream (cout) & Manipulators

Input Stream (cin)

Comments

Operators

- Arithmetic operators
- Relational operators
- Logical operators
- Assignment operators & compound assignment operations
- Increment & decrement operators
- Conditional operators
- Bitwise operators
- Shift operators

- Type casting
- Compound assignment operators
- Address operators
- Comma operator
- Pointer operator
- Sizeof operator
- new operator
- delete operator
- .*
- *::
- ::

Control Statements Conditional

Control Statements

- If, if-else
- nested if-else, if-else-if ladder

Multiple Branching Control Structure

- switch-case

Loop Control statements

- while
- do-while
- for

Nested Loops

Jump Control structures

break

continue

goto return

Arrays

Strings

Structures

Pointers

Dynamic memory allocation using new and delete

Functions

- Defining a Function
- Calling a Function
- Return statement
- Function Prototype
- Basic Function Designs
- Scope
- Reference variables
- Recursion
- Parameter Passing Methods
- Call by value
- Call by address
- Call by reference

Function Overloading

Default Arguments

Inline Functions

Classes and Objects

- Defining a Class
- Creating Objects
- Access specifiers
- Accessing Class Members
- Scope Resolution Operator (::)
- Defining Member Functions
- Outside the class
- Inside the class

Member function with argument

This pointer

Passing Objects as Arguments

Returning Objects

Array of objects

Pointer to object

Dynamic objects

Friend Functions

Friend Class

- **Composition**
- Container class
- Contained class
- Programs
- Student Class
- Employee Class
- Complex Class
- Matrix Class
- Rational Class
- Circle Class
- Rectangle Class

Constructors & Destructors

- Constructors
- Properties of constructors
- Types of constructors
- Default Constructors
- Parameterized Constructors
- Copy Constructors

Constructor Overloading

Constructors with Default Arguments

Destructors

Differences between Member functions & Constructors

Differences between Constructors & Destructors

Static Data Members

Static member functions

Constant data members

Constant Member Functions

Operator Overloading

- Defining Operator Overloading Function
- Overloading Unary Operators
- Overloading Binary Operators
- Overloading Unary Operators using Friend Functions

- Overloading Binary Operators using Friend Functions
- Overloading << & >>
- Programs

Inheritance

- Class hierarchies
- Base classes
- Derived Classes
- Derived Class Definition
- Access specifier : protected
- Types of Inheritance & Programs
- Single inheritance
- Multiple inheritance
- Hierarchical inheritance
- Multi-level inheritance
- Hybrid inheritance
- Multi-path inheritance

Constructors in Derived Classes

Destructors in Derived Classes

Polymorphism and Virtual Functions

- Static Binding
- Dynamic Binding
- Virtual Destructor
- Function Overriding
- Accessing Members using Pointers
- Virtual Functions
- Pure Virtual Functions
- Abstract Classes
- Virtual Destructors

Templates

- Introduction

- Advantages
- Function Templates
- Over loading function template
- Class Templates
- Inheritance Class Templates

Exception Handling

- Types of Errors
- Benefits of exception handling
- try, catch, throw keywords
- Throwing an exception
- 'try' block
- Catching an exception
- Exception objects
- Rethrowing an exception
- Exception Handling Mechanism
- Catching all exceptions
- Nested try blocks

Files

- File Streams Classes
- Opening & Closing a File
- Detection End of File
- File Pointers & Their Manipulation
- Sequential Files
- Random Access Files

I-O Streams

- I-O stream Class hierarchies
- Unformatted I-O Operation
- get(), put(), getline()
- write()
- in cout

- cin

Formatted I-O Operations

- width(), precision()
- fill(), setf()
- unsetf()

Manipulators

- Manipulator operators
- Endl, ends
- manipulator functions
- setw(), setfill()
- setprecision()
- setiosflags()
- setbase()
- resetiosflags()
- User defined manipulators
- Operator and Overloading

➔ After completion of course Test is mandatory

Standard Template Libraries[Advanced Concept]

**[ye cpp me nahi hai basically data structure k part hai.
Isko agar padna hai alag se 4500 pay karna padega]**

- Containers
- vector
- list, deque
- arrays
- forward_list
- queue
- priority_queue

- stack
- set, multiset
- map, multimap
- Algorithms
- Sorting, Searching
- Important STL Algorithms
- Useful Array algorithms
- Partition Operations

Iterators