



C++ Curriculum

Introduction to C++ Programming

- What is C++, C vs C++
- Features of C++ and its Basic Structure
- Installation of C++
- Simple C++ program structure
- Keywords in C++
- Hello World program using C++
- Comments in C++

Operators and Expressions in C++

- Arithmetic Operators
- Relational and Logical Operators
- The Conditional Operator
- The Increment and Decrement Operators
- The Precedence of Operators

Data Types and Input/Output in C++

- Basic Input/Output
- Using iostream functions like cin, cout
- Variables & Rules for naming Variables
- Basic Data Types- int,char,float,double
- Derived & Enumerated data types
- User defined Data Types



Flow Control Statements and Decision Making in C++

- The if statement
- The if-else statement
- Nesting of if statements
- The conditional expression
- The switch statement
- The while loop The do...while loop, The for loop
- The nesting of for loops
- The break statement and continue statement.
- The goto statement.

Functions in C++

- Function Basics
- Function Prototypes
- Passing Parameters
- Call by Value & Call by Reference
- Passing string to function
- Functions Recursion
- Inline Functions
- Friend Functions

Arrays and Strings in C++

- One Dimensional Arrays
- Multidimensional Arrays
- Passing array to function
- Strings Introduction
- String Built-in functions



Pointers in C++

- Basics of Pointers
- Pointers and Arrays
- Void pointers
- Memory Management in C++
- Malloc() vs new() in C++
- Free() vs delete() in C++

Structures and Unions in C++

- Basics of Structures
- Structures in C++
- Unions in C++

Object Oriented Programming in C++

- Defining a Class
- Creating Objects
- Access specifiers
- Accessing Class Members
- Scope Resolution Operator (::)
- Defining Member Functions
- Member function with argument
- This pointer
- Passing Objects as Arguments
- Returning Objects



Constructors & Destructors in C++

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

Inheritance in C++

- Class hierarchies
- Base classes
- Derived Classes
- Types of Inheritance & Programs
 - Single inheritance
 - Multiple inheritance
 - Hierarchical inheritance
 - Multi-level inheritance
 - Hybrid inheritance



Polymorphism and Virtual Functions in C++

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

Exception Handling in C++

- 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 Handling in C++

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