

COURSE CONTENTS

Basics in C++

- Procedure Oriented Programming
- Principle of Object Oriented Programming
- Software evaluation
- Oop paradigm
- Basic concept of Oop
- Benefit of Oop
- Application of Oop
- Programming Methods
- Introduction to C++
- Tokens
- Keywords
- Identifiers
- Constants
- Operators
- Scope Resolution operator(::)
- Memory Management Operators
- Manipulators

Control Structures

- Sequential Control Structure
- Selective Control Structure
- If, if...else, if....else if, nested if
- Switch case statement
- Nested Switch
- Repetitive Control Structure
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- While Loop
- Do while Loop
- Continue and break
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Arrays and Strings

- Single dimensional array
- Two dimensional array
- Multi-dimensional array
- What are strings?
- String Manipulation Functions

Functions

- Introduction
- Defining a function
- Function Prototypes
- Return type in main Prototype
- Call by value and call by Reference
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- Inline Function
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- Functions with default arguments
- Function Overloading
- Default arguments
- Actual and Formal Parameter
- Function overloading

Basic concepts of Object Oriented Programming

- Object
- Class
- Inheritance
- Polymorphism
- Data Abstraction
- Data Encapsulation
- Dynamic Binding
- Message Passing

Classes and Objects

- Introduction
- C structure Revisited
- Defining Classes in C++
- Class declaration
- Access specifiers
- Classes and Encapsulation
- Member Functions
- Instantiating and Using Classes
- Objects as arguments
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- Returning objects
- Static member Data and Static Member Function
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- Defining constructor
- Using Constructors
- Multiple Constructors and Initialization Lists
- Constructor overloading
- Default constructor
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- Defining Destructor
- Using Destructors to Destroy Instances

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- What is Inheritance?
- Features or Advantages of Inheritance
- Private, Public, Protected Members
- Types of inheritance
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- Multi-level inheritance
- Hierarchical Inheritance
- Hybrid Inheritance
- Defining Base and Derived Classes
- Constructor and Destructor Calls
- Inheritance scope

Pointers

- Reference Pointer(&)
- Dereference Pointer(*)
- Declaring variables of pointer types
- Pointer Initialization
- Pointers and Arrays
- Pointer Arithmetic
- Pointers to Functions
- Pointers to pointers
- This pointer
- Void pointer
- Null pointer
- Dynamic memory allocation

- New, delete operator

Operator Overloading

- Need of overloading
- Defining operator overloading
- Overloading unary operators
- Overloading binary operators
- Overloading binary operators using friend function
- Rules for operator overloading
- Overloading other operators

Polymorphism and Virtual function

- Types of polymorphism
- Early binding
- Dynamic binding
- Virtual Functions
- Pure Virtual function
- Null virtual function

Templates

- Introduction
- Templates
- Function Templates
- Class Templates
- Member function Templates
- Template Arguments

Exception Handling

- Introduction
- Syntax of Exception Handling Code
- Exception handling mechanism
- Try, catch, throw keywords

File Handling

- Introduction
- Classes for File Stream Operations
- Opening and closing a file
- Ifstream, Ofstream, Fstream
- Detecting End of file
- Sequential Access files
- Random Access files
- Binary Files

- Command line arguments

DATA STRUCTURES

Linear Data Structures

Linked List

- Single Linked List
- Double Linked List
- Single circular Linked list
- Double Circular Linked list

Stack

- Stack ADT using an Array
- Stack ADT using a single linked list

Queues

- Queue ADT using an Array
- Queue ADT using a single linked list
- Circular Queues
- De Queues

Non Linear Data Structures

- Binary Tree ADT using linked list
- Binary tree traversal methods
- Preorder, In-order, Post-ordered traversal
- Operation of Binary trees
- Insert, Delete & modify
- Binary Search Trees

Device Driver Programming

FAQ