



C++ Programming

Duration- 4 Weeks

Introduction

- What Is Object-Oriented Programming?
- C++ and Object-Oriented Programming
- Why C++?
- Features of C++
- Pros and Cons of C++

The Language of Object-Orientation

- What Is an Object?
- What Is a Class?
- Encapsulation
- Data Hiding
- The Public Interface
- Relationships among Classes
- Inheritance
- Polymorphism
- Object-Oriented Design

C vs. C++

- Comments
- Namespaces
- Simple Output
- Simple Input
- Definitions Near to First Use
- Function Prototypes
- The inline Specifier
- Const
- Structure Members
- The Reference Type
- Overloading Function Names
- Default Parameters
- The Scope Resolution Operator
- Aggregates
- Operators new and delete
- The bool Data Type
- The string Data Type

Fundamentals of Classes

- Data Types
- User Defined Data Types
- Using the Class Concept
- Defining a Class
- public and private Access Levels
- The Scope Resolution Operator ::
- Using Class Objects Like Built-in Types
- Scope
- Constructors
- Member Initialization Lists
- Destructors
- Array of Objects
- Pointers
- The this Pointer
- Passing Objects to Functions
- Returning Objects From Functions
- static Class Members

Operator Overloading

- Introduction
- Rules for Operator Overloading
- Rationale for Operator Overloading
- Overloading Member Functions
- Overloading Non-Member Functions
- Friend Functions
- The Copy Constructor
- The Assignment Operator
- Overloading []
- Overloading Increment and Decrement Operators
- const Objects and References

Composition of Classes

- Relationships
- Composition of Classes
- The Point Class
- The Line Class
- Member Initialization Lists
- An Application With Composition
- The Copy Constructor Under Composition
- operator= Under Composition

Inheritance

- Introduction
- Public Base Classes
- The protected Access Level
- Member Initialization Lists
- What Isn't Inherited
- Assignments Between Base and Derived Objects
- Compile-Time vs. Run-Time Binding
- virtual Functions
- Polymorphism
- virtual Destructors
- Pure virtual Functions
- Abstract Base Classes
- An Extended Inheritance Example

I/O in C++

- The iostream Library
- Predefined Streams
- Overloading operator<<
- Overloading operator>>
- Manipulators
- Stream States
- Formatted I/O
- Disk Files
- Reading and Writing Objects