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ICT Trainings Institute – Engineering Your Career

C/C++



Course Guide

This course provides a foundation in C Language and then C++ syntax and usage, as well as object-oriented programming. With this training, you learn how to use C++ functions and variables, leverage advanced features — including constructors, destructors, inheritance, and polymorphism and gain an understanding of how C++ offers greater ability than C.



C/C++ is globally accepted language

The language is trusted and accepted by leading employers, educational institutions and governments worldwide.

For a full list of organizations using these market-leading language, go to www.google.com



C/C++ Course Contents

C/C++ training curriculum covers the structured programming as well as OOPs Programming standards. Curriculum is designed to meet all the requirements of core programming.

Introduction and Overview

- Relating C, C++, Java, and C#
- The in-class development environment
- Other development environments

C/C++ Programming Building Blocks

The main function and standard I/O

- Displaying values and strings to cout / printf
- Reading values from cin / scanf
- Formatting with stream manipulators

Objects, constants, and references

- Declaring and initializing variables
- Utilizing C++ new keywords
- Integer and floating-point data types
- Performing calculations and displaying results
- Utilizing references for efficiency and constants for safety

Defining and calling functions

- Passing arguments to functions and returning values from functions
- Call-by-value vs. call-by-reference vs. call-by-address
- Scope, duration, and initial values variables

Decisions, loops, and logic

- Making decisions with if/else
- bool vs. int logical values
- if/else statement "chains"
- Performing loops with while and for
- Implementing C++ range-based for loops
- Equality, relational, and logical operators

Arrays, pointers, and strings

- Declaring and using arrays and pointers
- Storing strings in character arrays
- Accessing array elements via pointers
- Pointers vs. references
- Standard string class and functions

Defining C++ Classes and Objects

Encapsulating higher-level data types

- Public member functions and private data members
- Protected class members
- Constructors and destructors
- Self-reference: this pointer
- The class member operator (::)

Declaring, accessing, and modifying objects

- Manipulating arrays of objects, pointers to objects and references to objects
- Invoking member functions
- const member functions
- Passing objects by value and by reference

Overloading and templates

- Simplifying class interfaces
- Function signatures
- Overloading assignment (=)
- friend functions and classes

Separating interfaces and implementations

- How separation supports code reuse
- Building header files and code files

Extending Classes via Inheritance

Deriving new classes from existing classes

- Construction and destruction of derived objects
- Reusability via incremental extensions
- Base classes and derived classes

Utilizing polymorphic functions

- Overriding virtual base-class member functions in derived classes

Managing dynamic data

- Allocating and deallocating memory with new and delete
- Handling errors with try and catch
- Avoiding memory leaks

Practical Approach

Practical examples will be given for design, analysis, implementation and maintenance.

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