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Programming Fundamentals C++



Course Guide

This course provides a foundation in C++ syntax and usage. With this training, you learn how to use C++ functions and variables, leverage advanced features — including decision making statements, loops, pointers, and dynamic allocation and gain an understanding of how C++ offers greater ability than 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



Programming Fundamentals - C++ Course

Contents

C++ training curriculum covers the structured programming constructs 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

Problem Solving and Programming on Paper

- Computational Problems
- Algorithms and Problem Solving

Simple C++ Programs

- Flowcharts to describe algorithms
- Compiler & Linker
- Data
- Operators
- Expressions and Operator Precedence
- How to Print to Screen and Take Input

If/Else

- Programs with if/else statements
- Programs with nested if/else statements

Loops

- Repetitions using while loops
- Repetitions using while and for loops

Functions

- Function definition and Calling:
- Parameters and return types; types of parameters, stack rolling and unrolling.
- Converting some of the previously written programs into functions.

Collections of data

- How to define and use fixed sized arrays.
- Arrays
- if/else and loops

Examples of programs & CStrings

- Binary Search
- Array Reversal
- Detecting Palindromes
- Character arrays
- CStrings

Arrays, Functions & File I/O

- Functions with 1D array parameters
- Reading and Writing from text files

Programs with nested loops

- Bubble Sort & Selection Sort
- Substring Finding

Multidimensional arrays

- How multidimensional arrays are stored and used
- Programs with multidimensional arrays, e.g. matrix addition and multiplication

Arrays with functions

- Functions with 2D array parameters
- Bitwise Operators

Pointer variables

- Pointers data type, variables, initialization. Operators (Address of and dereferencing).
- Pointers operations and meanings (Assignment, Arithmetic, Logical).

Dynamic Allocation with pointers

- Dynamic Variables new and delete operators. Memory Leak and Dangling Pointers.
- Passing and return pointers from functions by reference and by value.
- Dynamic 1-dimensional arrays, create, delete, grow and shrink.
- Multiple Indirection, Array of pointers, Partial dynamic Multi-dimensional arrays.
- Dynamic Multi-dimensional arrays declaration, and processing.
- Dynamic Handling of C strings.

Practical Approach

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

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