



STELLAR
TECH PRO



C, C++

Programming

Course Duration
35-40 hours

Sessions: 20

Level: Basic | Intermediate | Advanced

Overview to C Programming

- Why use C?
- Uses of C
- A Brief History of C
- C for Personal Computers

Running C Programs

- The Edit-Compile-Link-Execute Process
- Using Microsoft C
- Unix systems

Structure of C Programs

- C's Character Set
- The form of a C Program
- The layout of C Programs
- Pre-processor Directives

Your First Program

- Add Comments to a Program

Data Types

- Integer Number Variables
- Decimal Number Variables
- Character Variables
- Assignment Statement
- Arithmetic Ordering
- Something To Declare
- More On Initialising Variables

Input and Output Functions

- On The Run
- Input and Output Functions in More Detail
- The % Format Specifiers
- Formatting Your Output
- Custom Libraries
- Summing It Up

Conditional Execution

- Program Control
- Logical Expressions
- True and False in C
- Using break and continue Within Loops
- Select Paths with switch

Structure and Nesting

- Think of a number

Functions and Prototypes

- Functions - C's Building Blocks
- Functions and Local Variables

C++ - Programming

- Oops
- Function Prototypes
- Comments
- Typecasting
- Void Pointers
- The :: operator
- The Const Qualifier
- Reference variables

Functions

- Function Prototypes
- Function Overloading
- Default Arguments in Functions
- Call by value, address & reference
- Return by value, by address & By reference
- Inline Functions

Classes in C++

- Member function
- Function Definition Outside The Class
- Classes and Constructors
- Destructors
- Copy Constructor
- The this Pointer
- New and delete Operators
- Using new and delete
- Malloc () / free () versus new/delete
- Classes, Objects and Memory
- Structures vs. Classes

Miscellaneous Class Issues

- Static Class Data
- Static Member Functions
- Data Conversion
- Friend functions & friend Classes
- Data Conversion between Objects of Different Classes

Overloading operators

- Overloading assignment operator
- Overloading ++, --, +, -, *, /, <, > . & Logical operators
- Overloading operators between different objects
- Overloading << and >> (stream operators)

Inheritance

- Constructors in Inheritance
- Private Inheritance
- Protected Inheritance
- Functions That Are Not inherited
- Virtual Function
- Pure virtual functions

- Making The Connections
- Functions and Prototypes
- What is ANSI C?
- The Standard Library Functions
- Throwing The Dice

Data Types Part II

- Global variables
- Constant Data Types

Arrays

- Advanced Data Types
- In Dis-array

Pointers

- Point to Point
- Swap Shop
- Pointers And Arrays

Strings

- Stringing Along
- As easy as... B or C?
- A Sort Of Bubble Program

Structures

- Structures
- Defining A New Type
- Structures and Functions
- Pointers to Structures
- Malloc
- Structures and Linked Lists
- Structures and C++
- Header Files

File Handling

- The Stream File
- Text File Functions
- Binary File Functions
- File System Functions
- Command Line Parameters

C Example Programs

- Input and Output programs
- Control Loop programs
- Conditional Execution programs
- Structure and Nesting programs
- Functions and Prototype programs
- Array programs
- Pointer programs
- String programs
- Structure programs
- File Handling programs

- Virtual Functions in Derived Classes
- Virtual Functions and Constructors
- Destructors and virtual Destructors
- Virtual Base Classes
- Abstract class
- Abstract base class

Advanced Features

- Classes Within Classes
- Friend Functions & classes
- Overloading << and >>.

Input / Output In C++ (File operations)

- Manipulators
- File I/O with Streams
- Opening and closing files
- Creating database with file Operation
- Binary I/O
- Elementary Database Management
- Interacting with
- Text files (ex: .txt, .c, .cpp)
- Non-text files (ex: .dat, .mpg, .avi, .mp3)
- Creating database with file operation

New Advanced Features

- Templates
- Function templates
- Class templates
- Exception handling
- Namespaces
- RTTI (Runtime type information)
- STL (Standard Template library)
- Dynamic cast operator
- typeid operator
- typeid class

Data Structures with C++

- Sorting
- Recursion
- Lists
- Single linked lists
- Double linked lists
- Circular linked lists
- Traversing of linked lists
- Stacks
- Queues
- Adding 2 lists
- Inserting a node in required position
- Deleting a node from required position

