CODE IMPACT ACADEMY

C & C++ Programming Plan

Course Duration : 60 Days

Topics & Details

Introduction to Programming:

- ★ What is programming and why it's essential.
- ★ Overview of algorithms and problem-solving approaches.

Getting Started with C:

- ★ Setting Up the Environment:
  - Installing a C compiler and a simple code editor.
  - Writing and running a basic "Hello, World!" program.
- ★ Understanding C Basics:
  - Basic syntax: **variables**, **constants**, **data types**, **comments** and **operators**.
  - Input and output: using **printf** and **scanf** functions for basic interactions.

Control Structures and Functions in C:

- ★ Decision Making in C:
  - Using **if** statements for simple decision-making.
  - Introduction to logical operators (**&&**, ||, **!**).
  - **Switch** Case statement usage.
- ★ Looping Structures in C:
  - Implementing loops (**for**, **while**, **do-while**) for repetitive tasks.
  - **Break**/**Continue** use case.
  - Simple patterns and shapes using loops.

Functions in C:

- ★ Creating and using functions in C.
- ★ Understanding function parameters and return values.

Structures in C:

- ★ Creating and using Structures using **struct** in C.
- ★ Access, Modify and Copy Structure Members

Arrays, Strings, Enumeration and Pointers in C:

- ★ Arrays in C:
  - Declaring, initializing, and accessing elements in arrays.
  - Basic array operations: finding the sum, average, and maximum element.
- ★ Working with Strings in C:
  - Introduction to character arrays and strings in C.
  - Using string functions for basic manipulations.
- ★ Pointers and Memory Concepts in C:
  - Introduction to pointers: memory addresses and referencing.
  - Simple pointer operations and basic applications.
- ★ Introduction to C Enumeration (enum).
  - Introduction to **enum** in C
  - Practical usage and advantages of using **enum**.

Introduction to C++ Programming:

- ★ C++ Basics:
  - Similarities and differences between C and C++.
  - Classes and objects: defining classes and creating objects in C++.

- ★ C++ Data Structures:
    - Working with arrays, vectors, and strings in C++.
    - Introduction to standard template library (STL) containers.

Object-Oriented Concepts in C++:

- ★ Inheritance, polymorphism, and encapsulation in C++.
- ★ Operator overloading and function overloading.

File Handling and Basic Algorithms:

- ★ File Handling in C and C++:
    - Reading from and writing to files in C and C++.
    - File streams and file manipulation functions.

Practical Applications and Exercises:

- ★ Simple Console Applications:
    - Building basic applications like calculators, simple games, or to-do lists in both C and C++.
    - Encouraging problem-solving through programming exercises.
- ★ Exercises and Mini Projects:
    - Guided exercises and mini projects to reinforce learning in both languages.
    - Applying learned concepts to practical programming tasks.

Examination & Certification:

- ★ At the last step appear in the final examination and get final certificate.