C & C++ Programming at Brainwave AI

Duration: 2 Months

C & C++ Programming at Brainwave AI is designed to build strong programming fundamentals and logical thinking, which are essential for careers in software development, system programming, competitive coding, and advanced technologies. The training starts from core concepts of C such as variables, data types, operators, control structures, functions, arrays, pointers, and memory management and gradually advances to C++ programming, covering Object-Oriented Programming (OOP) concepts including classes, objects, inheritance, polymorphism, encapsulation, and abstraction.

The program emphasizes hands-on coding, problem-solving, and practical assignments, helping learners understand how programs work at a low level and how to write efficient, optimized code. Students practice with real coding problems, logic-building exercises, and mini projects, supported by structured course material, short notes, PPTs, and regular tests. With guidance from experienced IT professionals, C & C++ training at Brainwave AI builds a strong base for learning Data Structures, Algorithms, Python, Java, system-level programming, and AI-related technologies, along with an official certification upon completion.

C Programming – Course Contents

Introduction to C Programming

History of C, features, applications, program structure, and compilation process.

C Basics & Syntax

Variables, data types, constants, keywords, operators, and input/output functions.

Control Statements

`if`, `if-else`, `switch`, `for`, `while`, and `do-while` loops with examples.

Functions in C

User-defined functions, function calls, recursion, and parameter passing.

Arrays & Strings

One-dimensional and multi-dimensional arrays, string handling functions.

Pointers

Pointer concepts, pointer arithmetic, arrays with pointers, and functions with pointers.

Structures & Unions

Creating user-defined data types and real-world data modeling.

File Handling in C

Reading and writing files using file pointers and file operations.

Dynamic Memory Allocation

`malloc()`, `calloc()`, `realloc()`, and `free()` functions.

C Programming Mini Projects

Logic-building programs and real-world problem-solving exercises.

C++ Programming – Course Contents

Introduction to C++

Differences between C and C++, basic syntax, and program structure.

C++ Basics & Data Types

Variables, operators, type casting, and input/output using `cin` and `cout`.

Object-Oriented Programming (OOP) Concepts

Classes, objects, encapsulation, abstraction, inheritance, and polymorphism.

Constructors & Destructors

Object initialization, cleanup, and memory management.

Inheritance in C++

Single, multiple, multilevel, hierarchical, and hybrid inheritance.

Polymorphism

Function overloading, operator overloading, and virtual functions.

Templates & Standard Template Library (STL)

Templates, vectors, lists, maps, sets, and iterators.

Exception Handling

`try`, `catch`, `throw` for runtime error handling.

File Handling in C++

File streams (`ifstream`, `ofstream`, `fstream`) and file operations.

C++ Programming Mini Projects

OOP-based mini applications and problem-solving projects.

Mentor: Bijay Chowdhury

Bijay Chowdhury brings over 30 years of teaching and academic experience to the field of Artificial Intelligence and emerging technologies. As the Founder & Lead Mentor at Brainwave AI, he has dedicated his career to blending strong theoretical foundations with hands-on, lab-driven learning. He has published and written numerous research papers, contributed to theses and academic research, and authored multiple books on Artificial Intelligence and allied domains, making complex concepts accessible to students, educators, and professionals. His mentorship philosophy emphasizes ethical AI, real-world problem solving, project-based learning, and industry readiness, ensuring interns gain not only technical skills but also clarity, confidence, and long-term career direction in AI, Machine Learning, NLP, Generative AI, and Time Series Analytics.

Key Highlights

- 30+ years of teaching & academic mentoring
- Extensive research publications (papers, thesis)
- Author of multiple AI-focused books
- Strong focus on practical labs, projects, and ethics
- Proven mentor for student internships and career growth

For Further Details, Contact:

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