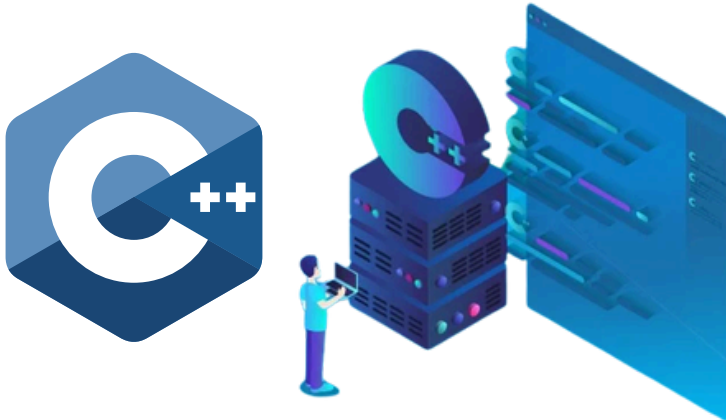


C++ & DSA

From Beginner to Interview-Ready In Just 16 Weeks



PHASE

1

C++ FOUNDATION

WEEK 1 — C++ Basics

C++ Introduction, Compiler Setup, Program Structure, Variables & Constants, Data Types, I/O, Operators

Practice: 25–30 basic programs

WEEK 2 — Control Flow

if/else, Nested if, switch, for, while, do-while, break & continue

Practice: 30–40 logic programs

WEEK 3 — Functions & Arrays

Functions, Parameters, Return Values, Function Overloading, 1D/2D Arrays, Strings, Character Arrays

Practice: 35–40 array & string problems

WEEK 4 — Pointers & Memory

Pointers, Pointer Arithmetic, References, Dynamic Memory, Structures, Enumerations, Namespaces

Practice: 30–35 problems + Mini Project

PHASE

2

C++ FOR DSA

WEEK 5 — Object-Oriented Programming

Classes & Objects, Constructors & Destructors, Encapsulation, Inheritance, Polymorphism, Abstraction

Outcome: Build structured C++ applications

WEEK 6 — STL & DSA Foundations

Time & Space Complexity, Big-O, Recursion, Templates, STL, vector, pair, iterator, algorithm, stack, queue

Outcome: Ready for formal DSA

PHASE

3

CORE DSA

WEEK 7 — Arrays & Vectors

Concepts: Traversal, Insertion, Deletion, Prefix Sum, Sliding Window, Two Pointers

WEEK 8 — Searching & Sorting

Concepts: Linear Search, Binary Search, Bubble, Selection, Insertion, Merge & Quick Sort

WEEK 9 — Strings & Hashing

Concepts: String Manipulation, Character Frequency, Hash Maps, Sets, Anagrams, Pattern Matching

WEEK 10 — Linked Lists

Concepts: Singly, Doubly & Circular Lists, Reverse List, Cycle Detection, Fast & Slow Pointer

WEEK 11 — Stack & Queue

Concepts: Stack, Queue, Deque, Priority Queue, Parentheses Problems, Monotonic Stack

WEEK 12 — Recursion & Backtracking

Concepts: Recursive Thinking, Subsets, Permutations, Combinations, Maze Problems, N-Queens, Sudoku Solver

PHASE

4

ADVANCED DSA

WEEK 13 — Trees & BST

Concepts: Binary Trees, Traversals, Height & Depth, BST, Insert/Delete/Search, Lowest Common Ancestor

WEEK 14 — Heap & Priority Queue

Concepts: Min Heap, Max Heap, Heapify, Priority Queue, Top-K Problems, Heap-based Sorting

WEEK 15 — Graphs

Concepts: Graph Representation, Adjacency List/Matrix, BFS, DFS, Connected Components, Cycle Detection

WEEK 16 — Dynamic Programming

+ Revision

Concepts: Memoization, Tabulation, 1D DP, 2D DP, Classic DP Problems, Interview Revision, Mock Coding Tests