

FULL CURRICULUM • 2026

DSA with C++

Crack the interview that stands between you and the job.

Every module, every lesson — the complete syllabus, end to end.

20

MODULES

225

LESSONS

5

MONTHS

₹17,000

FULL PROGRAMME

What this course covers

1

Level 1 • Beginner

Introduction • Recursion • Array Representations

1 month • 6 modules • 83 lessons • ₹4,000

2

Level 2 • Intermediate

Sparse matrix and polynomial representation • Linked list • Stack

2 months • 6 modules • 86 lessons • ₹5,500

3

Level 3 • Advanced

Binary search tree • AVL trees • Search trees

2 months • 8 modules • 56 lessons • ₹7,500

The whole journey

This is the complete syllabus for DSA with C++ — 20 modules and 225 lessons, in the order you will learn them. The level markers show how far each stage carries you, but the curriculum runs as one continuous path from the first lesson to the last.

1

LEVEL 1

Beginner

Introduction · Recursion · Array Representations

1 month · 6 modules · 83 lessons · ₹4,000

1. Introduction

7 lessons

- Introduction to the Course
- Setting Up the environment
- Static Memory Allocation
- Dynamic memory allocation
- Physical and logical data structures
- ADT
- Space and time complexity

2. Recursion

18 lessons

- How recursion works, Generalization, Recursion and stack
- Recurrence relation and time complexity
- Code recursion
- Static and global variables in recursion and code
- Tail recursion
- Head recursion
- Tree recursion
- Indirect recursion
- Nested recursion
- Sum of natural numbers using recursion
- Factorial using recursion
- Power using recursion
- Taylor series using recursion approach-1
- Taylor series using recursion approach-2
- Fibonacci series using recursion
- nCr using recursion
- Tower of hanoi
- Tower of Hanoi implementation

3. Array Representations

10 lessons

- Introduction, Declaration, Demo
- Static array vs dynamic array, CODE
- Increase array size, CODE
- 2D array
- 2D array DEMO
- Array representation by compiler
- Row major formula for 2d arrays
- Column major formula for 2d arrays
- Formulas for nD arrays
- Formulas for 3D arrays



4. Array ADT

27 lessons

- Array ADT
- Array ADT - Demo
- Inserting in array
- Inserting in array - DEMO
- Deleting from array
- Deleting from array - DEMO
- Linear search
- Linear search - DEMO
- Binary search
- Binary search - DEMO
- Get, set, avg, max functions
- Get, set, avg, max functions DEMO
- Merging array
- Mergin array demo
- Check if an array is sorted
- Check if an array is sorted - DEMO
- Set operations on arrays
- Single missing element in sorted array
- Multiple missing element in sorted array
- Finding duplicates in sorted array
- Finding duplicates in unsorted array
- Reverse an array
- Reverse array DEMO
- Find duplicates in sorted array usign hashing
- Find a pair of elements with sum as K in unsorted array
- Find a pair of elements with sum as K in sorted array
- Find max and min in one scan



5. Strings

10 lessons

- String introduction
- Length of string
- Changing case of a string
- Counting words and vowels
- Validating a string
- Reversing a string
- Comparing two strings and palindrome
- Finding duplicates
- Check if two strings are anagrams
- Permutations of a given string



6. Matrices

11 lessons

- Diagonal matrix
- Diagonal matrix DEMO
- Class for diagonal matrix
- Class for diagonal matrix - DEMO
- Lower triangular matrix
- Lower triangular matrix code
- Upper triangular matrix
- Symmetric matrix
- Tri digonal and tri band matrix
- Toeplitz marix
- C++ class for matrix

Intermediate

Sparse matrix and polynomial representation · Linked list · Stack

2 months · 6 modules · 86 lessons · ₹5,500

- **7. Sparse matrix and polynomial representation** 6 lessons
 - Sparse matrix representation
 - Sparse matrix addition
 - Creation of Sparse matrix
 - Addition of sparse matrix
 - Sparse matrix using
 - Polynomials
- **8. Linked list** 41 lessons
 - Why need dynamic DS LL
 - Linked list introduction
 - Display linked list
 - Display linked list code
 - Counting nodes and sum of all elements of linked list
 - Counting nodes and sum - DEMO
 - Max element in linked list
 - Max element in linked list - DEMO
 - Searching in linked list
 - Searching in linked list - DEMO
 - Insertion
 - Insertion - DEMO
 - Insertion in sorted list
 - Insertion in sorted list - DEMO
 - Check if list is sorted
 - Check if list is sorted - DEMO
 - Deletion
 - Deletion - DEMO
 - Reverse a linked list
 - Concatinating two linked lists
 - Checking for a LOOP
 - Checking for LOOP - DEMO
 - CLL Introduction
 - CLL Introduction - DEMO
 - Insertion in CLL
 - Deletion in CLL
 - CLL insertion and deletion - DEMO
 - Doubly linked list - Introduction
 - Insert in DLL
 - Delete in DLL
 - DLL - DEMO
 - Circular doubly linked list
 - Comparision of linked lsits
 - Max element in LL
 - Creating a LL using insert
 - Creating a LL by inserting at last
 - Removing duplicates from sorted LL
 - Removing duplicates from sorted LL DEMO
 - Recursive reverse for LL
 - Reversign a LL DEMO
 - Reverse a doubly LL DEMO
- **9. Sparse matrix polynomial expression using linked list** 2 lessons
 - Polynomial representation using LL
 - Polynomial representation using LL DEMO



10. Stack

10 lessons

- Stack introduction
- Stack using array - DEMO
- Stack using linked list
- Parenthesis matching
- Parenthesis matching - DEMO
- Infix to postfix conversion
- Infix to postfix - DEMO
- Evaluation of postfix expression
- Postfix evaluation - DEMO
- Stack using LL - DEMO



11. Queue

10 lessons

- Queue introduction
- Queue insertion and deletion - DEMO
- Drawback of queue using array
- Circular queue
- Circular queue - DEMO
- Queue using linked list
- Queue using LL - DEMO
- Priority queue
- Double ended queue DEQUE
- Double ended queue DEQUE - DEMO



12. Trees

17 lessons

- Tree - terminology
- Height vs nodes formulas
- Internal and external nodes
- Strict binary tree
- n-ary trees
- Representation of binary tree
- Full vs complete binary tree
- Strict vs complete binary tree
- Creating a tree
- Creating Binary tree DEMO
- Binary tree traversals
- Iterative traversals DEMO
- Level order traversal DEMO
- Generate binary tree from traversals
- Generate BT from traversals DEMO
- Height and count of BT DEMO
- Count leaf nodes in BT DEMO

3

LEVEL 3

Advanced

Binary search tree · AVL trees · Search trees

2 months · 8 modules · 56 lessons · ₹7,500



13. Binary search tree

7 lessons

- Searching in BST
- Inserting in BST
- Creating a BST
- BST DEMO
- Deleting from BST
- BST drawbacks
- Generate BST from preorder

○	14. AVL trees	6 lessons
	• AVL tree introduction • Insertion in AVL with rotations • General form of AVR rotations • Generating AVL tree • Height analysis AVL trees • AVL rotations DEMO	
○	15. Search trees	6 lessons
	• 2,3 trees • 2,3,4 trees • Red black trees • Red black tree creation • Red black trees vs 2-3-4 trees • Red black tree deletion	
○	16. Heap	8 lessons
	• Heap introduction • Heap insertion • Heap insertion - DEMO • Heap creation • Heap element deletion • Heap sort - DEMO • Heapify • Heap as priority queue	
○	17. Sorting techniques	10 lessons
	• Bubble sort • Bubble sort DEMO • Insertion sort • Insertion sort DEMO • Selection sort • Selection sort DEMO • Quick sort • Quick sort DEMO • Merge sort • Merge sort DEMO	
○	18. Hashing techniques	6 lessons
	• Hashing introduction • Chaining • Chaining - DEMO • Linear probing - Quadratic probing • Linear probing - DEMO • Hash function ideas	
○	19. Graphs	12 lessons
	• Graphs terminology • Representation of undirected graph • Representation of directed graph • Breadth first search • BFS DEMO • Depth first search • DFS - Demo • Minimum cost spanning tree • Prims algorithm • Prims algorithm DEMO • Kruskal_s algorithm • Kruskal algorithm DEMO	
○	20. Asymptotic notation	1 lessons
	• Asymptotic notations	

Certificates & what comes next

You receive a certificate at the end of every level you finish. Join for a single level or the full programme — the choice is yours. Learners who stand out may be invited to work on live client projects as interns; these places are merit-based, limited, and depend on projects being available.