

Data Structures & Algorithms

Choose and justify data structures, analyze time/space complexity, and implement tested search, scheduling, and graph operations to crack product interviews.

DURATION
10 Weeks

COMMITMENT
8–10 hrs/week

LEVEL
Intermediate

FORMATS
Online Live · Offline
(Coimbatore) ·
Weekend Batch · Self-
Paced

Tools & tech stack

Arrays & Trees

Graphs

Dynamic Programming

Complexity Analysis

Python

ChatGPT

Claude

Perplexity

Who it's for

- Learners who already have: One programming language, loops, functions and basic algebra.

What you'll learn

- Turn a business request into a testable contract
- Analyze cost through the operation you actually repeat
- Use hash maps for identity and counting
- Distinguish ordered search from priority retrieval

Curriculum

01 Part 1: Programming Problem Solving and Complexity

- Python for Algorithmic Problem Solving
- Complexity Analysis
- Problem Solving Framework and Mathematics

02 Part 2: Arrays Strings and Hashing

- Arrays and Matrix Traversal
- Strings and Pattern Processing
- Hashing Prefix Sums and Sliding Windows

03 Part 3: Pointers and Linear Data Structures

- Two Pointers and Interval Patterns
- Linked Lists
- Stacks Queues and Deques

04 Part 4: Recursion Backtracking and Divide and Conquer

- Recursion and Call Stack
- Backtracking and Constraint Search
- Divide and Conquer

05 Part 5: Trees Heaps and Tries

- Binary Trees and Traversals
- Binary Search Trees and Balanced Trees
- Heaps Priority Queues and Tries

06 Part 6: Graphs and Connectivity

- Graph Representation and Traversal
- Directed Graphs and Ordering
- Shortest Paths Spanning Trees and Union Find

07 Part 7: Sorting Searching Greedy and Bit Techniques

- Sorting and Selection
- Binary Search and Search on Answer
- Greedy Algorithms and Bit Manipulation

08 Part 8: Dynamic Programming

- Dynamic Programming Foundations
- Grid Subsequence and Knapsack Patterns
- Advanced DP and Optimisation

09 Part 9: Advanced Patterns and Interview Engineering

- Range Queries and Advanced Structures
- Algorithmic Interview Practice
- Practice Analytics and Revision Strategy

10 AI Pro

- Using AI tools (ChatGPT, Claude, Perplexity) to learn data structures and algorithms faster
- Verifying you can actually implement it — not just follow the explanation
- Project: Learn a new algorithm with AI, then implement it cold

Projects

- Dispatch planner with priority scheduling and shortest-route queries