UNDERSTANDING DATASTRUCTURES AND ALGORITHMS (DSA)

The Role of DSA in Technical Interviews

1 Problem-Solving Skills

Here, you'll be presented with a problem and expected to code the the solution on a whiteboard, explaining your thought process and process and chosen data structures structures along the way.

2 Coding Challenges

Online platforms provide a simulated interview environment where you can tackle pre-defined coding problems that often involve DSA concepts.

3 Technical Discussions

Be prepared to discuss your approach to common DSA problems and explain the time explain the time and space complexities of your chosen algorithms.

Prerequisites Before Starting DSA

Fundamental Programming

You should have a base knowledge of any one programming language (CPP, JAVA or PYHTON).

Don’t go too deep into the programming language at first, just basic concepts like conditional statements, loops, pattern printing and basic questions and basic questions (prime, Armstrong, palindrome, etc) are enough.

It will take somewhere between 15–30 days to learn a language.

How to Study for Data-Structures and Algorithms?

- Time and Space Complexity
- Learn one topic at a time
- How to start learning a new topic?
- Retain what you Learn

Solving DSA Problems

1

DON'T FEAR ANY PROBLEM

Every problem which is given to you (by interviewer or some website) can be SOLVED.

2

Clear your basics.

You cannot solve a Graph problem, if you don't have any idea about Graphs.
Graphs.

3

Implement the Solution

Use Notebook while solving a problem.

4

Try to figure out the topic on that problem. Figure out which Data Structure(s) or Structure(s) or Algorithm(s) can be used.Break down the problem into smaller sub-smaller sub-problems.

Resources for Learning DSA

Textbooks

Cracking the Coding Interview 6th Edition

Elements of Programming Interviews

JavaScript Algorithms

Online Courses

→ *MIT- Introduction To Algorithms*

→ ***Princeton University Algorithms part1 & part2***

Practice Platforms

→ *Hackerank (for beginners)*
→ *Leetcode*
→ *Geeks For Geeks*
→ *InterviewBit*
→ *Hackerearth*

Video Tutorials

→ *Take U Forward*
→ *Code Help — By Babbar*
→ *PepCoding*
→ *Aditya Verma [For DP]*

Scaling Your DSA Knowledge

Prioritize solving problems over theory

Challenge yourself

Understand, don't memorize

Think in Patterns

1

2

How much time to give to each problem?

→ *Easy Problems: 15 –20 mins*
→ *Medium Problems: 30–45 mins*
→ *Hard Problems: 1–1.5 hours*

Knowing when you're ready

3

You'll never feel "ready" no matter how long you study. study. Theres always more topics to dive deeper into or weak or weak areas that could use more practice.

Maintain Consistency in Your DSA Journey

Learning DSA takes time.

Some topics might take weeks or months to master. Be patient with yourself.

And, it's normal to feel stuck or frustrated when solving a challenging problem or trying to understand a complex topic.

Keep going.

If a problem seems too hard, take a break, then try again.

If you need help, check hints or use the LeetCode discussion forum.

JOB OPPURTUNITIES

Competitive Programming: The Next Step

Hone Problem-Solving Skills

Competitive programming challenges push you to develop innovative solutions and optimize your code.

Gain Practical Experience

Participating in coding contests exposes you to real-world problem sets and diverse coding styles.

Build a Strong Portfolio

Successful participation in competitive programming can showcase your skills to potential employers.