Coding Interview Preparation in the AI Era

Let's get started \rightarrow



About Me

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- Open source contributor

Agenda

- Technical Interviews in Al Era
- Fundamentals?
- What Interviewers look for
- Leveraging AI for Preparation
- Preparation strategy
- Learning path
- Data structures overview
- Essential algorithms
- Personal branding

The AI Era: What's Changed?

Old Approach

- Reading documentations
- Google, stack overflow
- Memorize Data structures
- Memorize algorithms
- Solve LeetCode, Hacker rank problems

New Approach

- Chatgpt
- Collaborate with AI tools
- Al-assisted development
- Cursor, windsurf, claud code
- Building side projects
- Participating in hackathons

Fundamentals Still Matter

- Data Structures and Algorithms (DSA) remain crucial.
- Al can help understand concepts and generate examples, but deep understanding is required.
- Practice implementing DSA from scratch to build intuition and problem-solving skills.
- Understand time and space complexity thoroughly.
- Understand Object oriented programming concepts.
- Understand fundamental protocols DNS, TCP/IP, UDP, HTTP, TLS, etc.

What Interviewers Look For

- Problem Decomposition: Can you break down a complex problem into smaller, manageable parts?
- **Critical Thinking:** Do you understand the constraints and edge cases?
- Communication: Can you clearly explain your thought process, design choices, and trade-offs?
- Adaptability: How do you approach a problem when the initial idea doesn't work?



- Break down complex problems
- Think algorithmically
- Communicate your approach clearly
- Handle ambiguity well

Communication Skills

- Explain complex concepts simply
- Ask clarifying questions
- Present trade-offs clearly

Technical Foundation

- Data structures & algorithms
- System design principles
- Code quality & testing
- Performance optimization

Leveraging AI for Preparation

- Understanding Concepts: Use AI to explain complex algorithms, data structures, and design patterns.
- Generating Practice Problems: Ask Al for variations of common interview questions or generate entirely new ones.
- Debugging and Code Review: Use AI to identify errors in your practice code and suggest improvements.
- **Mock Interviews:** Practice explaining your thought process and solutions to an Al.
- Language and Framework Specifics: Get quick explanations and code snippets for syntax or specific library usage.

Essential Preparation Strategies

🛢 Study Plan

- Fundamentals First: Master data structures & algorithms
- Al Tools Practice: Get comfortable with ChatGPT, Claude, Copilot
- Mock Interviews: Practice Al-assisted problem solving
- System Design: Study scalable architecture patterns

Websites to checkout

- GitHub Copilot/Curson/Windsurf: Code completion and IDE
- Gemini/Claude/ChatGPT: Problem explanation and debugging
- Replit/CodeSandbox: Collaborative coding environments
- LeetCode/Hackerrank: Problem solving



Red Flags to Avoid

X Don't Do This

- Blindly copy AI solutions
- Skip understanding the logic
- Ignore edge cases
- Assume AI is always right
- Forget to test your code

✓ Do This Instead

- Explain AI-generated code
- Verify and validate solutions Test DrivenDevelopment
- Consider multiple approaches
- Think critically about AI output

Marning

Companies can detect over-reliance on AI. Show that you understand the fundamentals and can think independently.

Key Takeaways

- Master the fundamentals Al enhances, doesn't replace core skills
- **Embrace AI collaboration** Learn to work effectively with AI tools
- 🗣 Communicate clearly Explain your reasoning
- **Stay adaptable** The interview process is dynamic
- **Keep learning** Continuous improvement is your superpower

Learning paths

- https://www.hackerrank.com/interview/preparation-kits
- https://www.hackerrank.com/domains/data-structures
- https://leetcode.com/problemset/
- https://leetcode.com/studyplan/
- https://neetcode.io/roadmap
- https://roadmap.sh/

Algorithm Visualisation

- https://algorithm-visualizer.org/
- https://dsa-visualizer-delta.vercel.app/

Design Patterns - https://refactoring.guru/design-patterns/catalog

Essential Data Structures

The Building Blocks of Programming

- Arrays & Strings
- Linked lists
- Stacks & Queues
- Heap
- Trees
- Hash tables
- Graphs



Contiguous memory structures for storing elements of the same type

- In mathematics and scientific computing, arrays are used to represent matrices, enabling efficient matrix multiplication, inversion, and other linear algebra operations.
- textual data, User input and output.



Dynamic structures with nodes containing data and pointers to the next node

- Netflix "Continue Watching" episode queue
- Spotify song queue in party playlists
- Instagram Stories viewing sequence



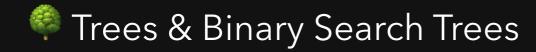
Stack: LIFO (Last In, First Out) data structure **Queue**: FIFO (First In, First Out) data structure

Examples

• **Stack**: Browser back/forward navigation history

Stack: Undo/Redo in Google Docs while writing essays

• **Queue**: Printer queue in computer lab during finals



Hierarchical structures with nodes connected by edges, BST maintains sorted order

- Comment thread hierarchy (parent → child comments)
- Discord server structure (Server → Categories → Channels)
- Database Indexing



Key-value pairs with hash function mapping keys to array indices

- Instagram username to user profile and follower count
- Spotify song ID to track metadata (artist, album, duration)



Networks of vertices (nodes) connected by edges, can be directed or undirected

- Instagram follower network and mutual connections
- LinkedIn professional network recommendations
- DAG workflow in data pipelines Direct acyclic graph



Tree structures optimized for efficient string operations and prefix matching

- Instagram search autocomplete for usernames and hashtags
- Spotify song/artist autocomplete in search bar
- YouTube video title suggestions as you type
- Amazon product search predictions

Essential Algorithms

- Sorting
- Searching
- Dynamic Programming
- Greedy algorithms
- Breadth-First Search
- Depth-First Search
- Dijkstra's Algorithm
- Minimum Spanning Tree

Algorithm Complexity Cheat Sheet

→ Big O Notation

- **O(1)**: O(yeah)
- **O(log n)**: O(nice)
- **O(n)**: O(ok)
- **O(n log n)**: O(no)
- **O(n²)**: O(sh*t)
- **O(2ⁿ)**: O(mg)

Always discuss time and space complexity trade-offs. Interviewers love candidates who can optimize for different constraints!

References and Resources

- Online Platforms
- LeetCode: leetcode.com
- HackerRank: hackerrank.com
- **Neetcode**: neetcode.io
- Systemdesignschool: systemdesignschool.io
- YouTube Channels
- **ByteByteGo**: System design and interview tips https://www.youtube.com/@ByteByteGo
- Back To Back SWE: Algorithm explanations https://www.youtube.com/@BackToBackSWE
- Gaurav Sen: System design concepts https://www.youtube.com/@gkcs
- CS Dojo: Programming interview prep https://www.youtube.com/@CSDojo
- **Jenny's Lectures CS IT** https://www.youtube.com/channel/UCM-yUTYGmrNvKOCcAl21g3w

Personal branding

- 1. Blogging Technical writing, communication
- 2. Side projects build micro products
- 3. Open source contributions(optional)
- 4. 100 days of code

https://www.100daysofcode.com/

https://www.100daysofcode.io/learn/python

Be passionately curious.

Thank You!

Connect With Me

- **LinkedIn**: linkedin.com/in/sureshdsk
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Best of luck with your interviews! Remember: You've got this! 🖋