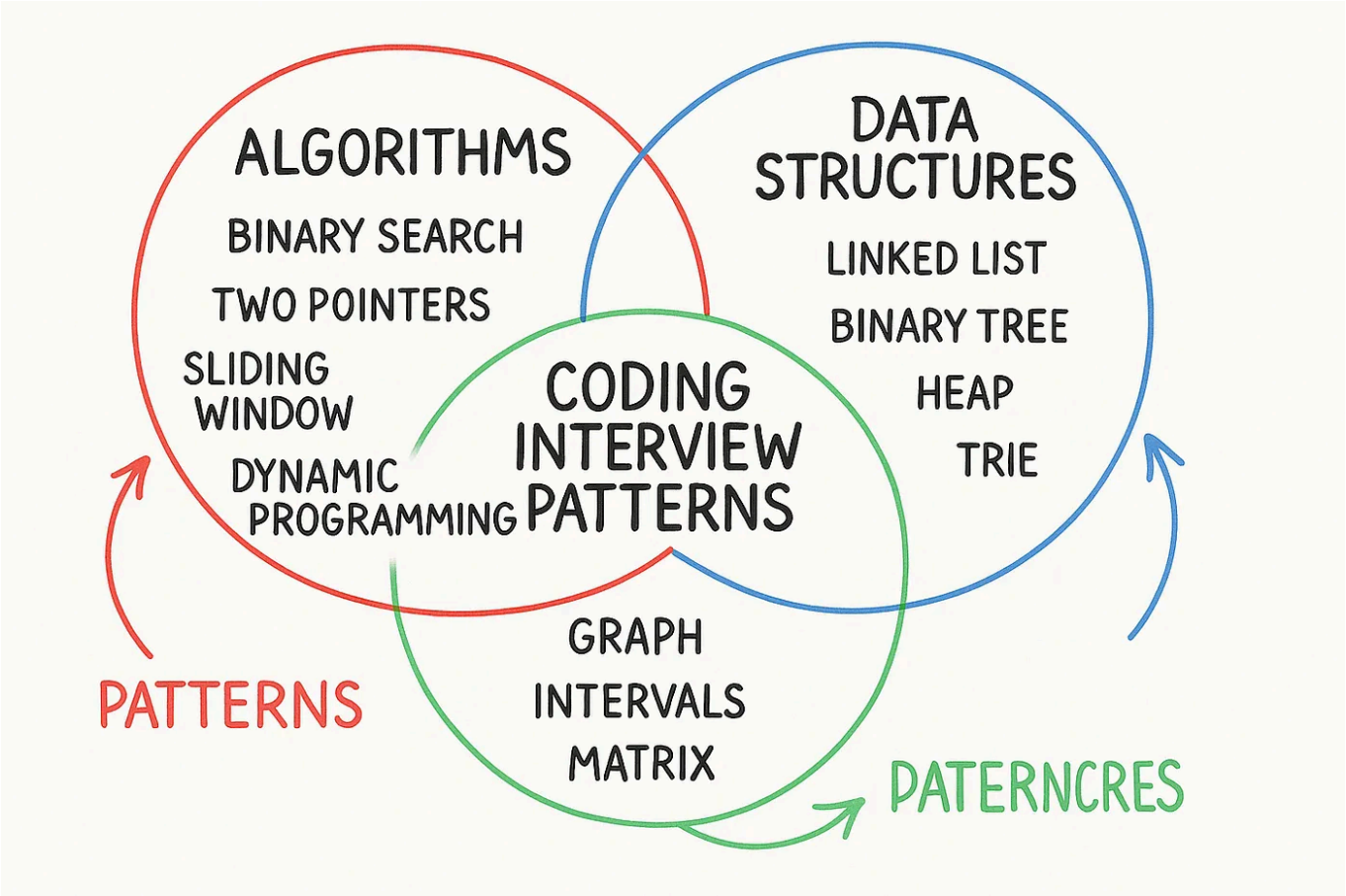
The Ultimate Guide to Coding Patterns for Cracking Top Tech Interviews (2025)

Anurag Goel Follow 5 min read · Jun 7, 2025

When it comes to cracking coding interviews at FAANG and top-tier startups, it's not about solving 1000+ questions — it's about mastering a **core set of patterns** that map to **150–200 high-yield problems.** This guide combines questions from Blind 75, Meta, Google, and top-sourced LeetCode patterns into one structured cheat sheet.



🚀 Why Patterns Over Problems?

Patterns help you instantly recognize what type of solution a problem needs, saving time and brainpower. Once you learn them, every LeetCode problem becomes a variation of something you already know.

🧠 16+ Must-Know Coding Patterns (with Key Problems + Insights)

Each pattern below includes:

- 💡 When to Use
- 🧪 Sample Problems (including Blind 75 & FAANG picks)
- 📌 Real-world use case (where applicable)

1. Two Pointers

💡 Best for traversing arrays/lists from both ends, especially when sorted.

Use Cases: Palindrome check, reverse operations, finding pair sums.

Key Problems:

- Two Sum II (LC 167)
- 3Sum (LC 15)
- Container With Most Water (LC 11)
- Trapping Rain Water (LC 42)
- Remove Duplicates from Sorted Array (LC 26)
- Move Zeroes (LC 283)
- Valid Palindrome (LC 125)
- Triangle Number (LC 611)
- Number of Subsequences Satisfy the Given Sum Condition (LC 1498)

2. Sliding Window

💡 Used when problems require optimization over subarrays or substrings.

Use Cases: Substring counts, max/min in a range, frequency maps.

Key Problems:

- Longest Substring Without Repeating Characters (LC 3)

- Minimum Window Substring (LC 76)
- Max Sliding Window (LC 239)
- Permutation in String (LC 567)
- Longest Repeating Character Replacement (LC 424)
- Maximum Sum of Subarrays of Size K (GFG)
- Max Consecutive Ones III (LC 1004)

3. Fast & Slow Pointers (Tortoise and Hare)

💡 Best for cycle detection and middle detection in linked structures.

Key Problems:

- Linked List Cycle (LC 141)
- Find Duplicate Number (LC 287)
- Palindrome Linked List (LC 234)
- Happy Number (LC 202)

4. Binary Search + Variants

💡 For sorted/rotated arrays, searching ranges, or optimizations.

Key Problems:

- Search in Rotated Sorted Array (LC 33)
- Find Peak Element (LC 162)

- Koko Eating Bananas (LC 875)
- Capacity to Ship Packages Within D Days (LC 1011)

5. Prefix Sum / Difference Arrays

💡 For range queries or cumulative calculations in O(1) time.

Key Problems:

- Subarray Sum Equals K (LC 560)
- Range Sum Query (LC 303)
- Contiguous Array (LC 525)

6. Dynamic Programming (DP)

💡 Break problems into overlapping subproblems.

Key Classic Problems:

- Climbing Stairs (LC 70)
- Longest Palindromic Substring (LC 5)
- Decode Ways (LC 91)
- Paint House (LC 256)
- Maximum Subarray (LC 53)
- Maximum Product Subarray (LC 152)
- Longest Repeating Substring (LC 1062)

Advanced:

- Longest Increasing Subsequence (LC 300)
- Word Break (LC 139)
- Coin Change (LC 322)
- Edit Distance (LC 72)
- Partition Equal Subset Sum (LC 416)

7. Backtracking

💡 Use when generating combinations, permutations, or exploring decision trees.

Key Problems:

- Subsets (LC 78)
- Permutations (LC 46)
- N-Queens (LC 51)
- Word Search (LC 79)
- Generate Parentheses (LC 22)

8. Greedy

💡 Take the best decision at each step — no going back.

Key Problems:

- Jump Game (LC 55)

- Merge Intervals (LC 56)
- Gas Station (LC 134)
- Candy (LC 135)
- Partition Labels (LC 763)
- Largest Number (LC 179)
- Can Place Flowers (LC 605)

9. Linked List Techniques

💡 Focused on pointer manipulation, reversing, merging, etc.

Key Problems:

- Add Two Numbers (LC 2)
- Merge Two Sorted Lists (LC 21)
- Reverse Linked List (LC 206)
- Copy List with Random Pointer (LC 138)

10. Tree Traversals & Binary Tree Patterns

💡 Recursive or iterative depth/level traversal, LCA, path problems.

Key Problems:

- Inorder Traversal (LC 94)
- Level Order Traversal (LC 102)

- Diameter of Binary Tree (LC 543)
- Lowest Common Ancestor (LC 235)

11. Graphs (BFS / DFS)

💡 For connected components, shortest paths, and graph cloning.

Key Problems:

- Number of Islands (LC 200)
- Number of Distinct Islands (LC 694)
- Clone Graph (LC 133)
- Course Schedule (LC 207)
- Pacific Atlantic Water Flow (LC 417)
- Word Ladder (LC 127)

12. Tries (Prefix Trees)

💡 Fast prefix-based searching. Useful for dictionaries and autocomplete.

Key Problems:

- Implement Trie (LC 208)
- Word Search II (LC 212)
- Replace Words (LC 648)

13. Heap / Priority Queue

💡 Top K problems, stream medians, and multi-way merges.

Key Problems:

- Top K Frequent Elements (LC 347)
- Merge K Sorted Lists (LC 23)
- Find Median from Data Stream (LC 295)

14. Monotonic Stack / Queue

💡 Used to maintain increasing/decreasing order for window problems.

Key Problems:

- Daily Temperatures (LC 739)
- Next Greater Element (LC 496)
- Largest Rectangle in Histogram (LC 84)
- Asteroid Collision (LC 735)
- Remove K Digits (LC 402)
- Finding Number of Visible Mountains (LC 2345)
- Shorted Array with Sum at Least K (LC 862)
- Maximum Width Ramp (LC 962)
- Remove Duplicate Letters (LC 316)
- 132 Pattern (LC 456)
- Sum of Subarray Minimums (LC 907)

- Smallest Subsequence of Distinct Characters (LC 1081)
- Minimum Number of Coins for Fruits (LC 2944)
- Maximum Length of Semi-Decreasing Subarrays (LC 2863)
- Longest Continuous Subarray With Absolute Diff Less Than or Equal to Limit (LC 1438)

15. Intervals

💡 Handling overlapping time or ranges, merging or scheduling.

Key Problems:

- Insert Interval (LC 57)
- Merge Intervals (LC 56)
- Meeting Rooms I/II (LC 252, LC 253)
- Non-overlapping Intervals (LC 435)

16. Bit Manipulation

💡 For toggling bits, single/missing numbers, and binary tricks.

Key Problems:

- Number of 1 Bits (LC 191)
- Reverse Bits (LC 190)
- Single Number (LC 136)
- Missing Number (LC 268)

✍️ Final Words

If you solve 150 problems and **deeply understand** why the pattern works, you don't just pass interviews — you become interview-proof.

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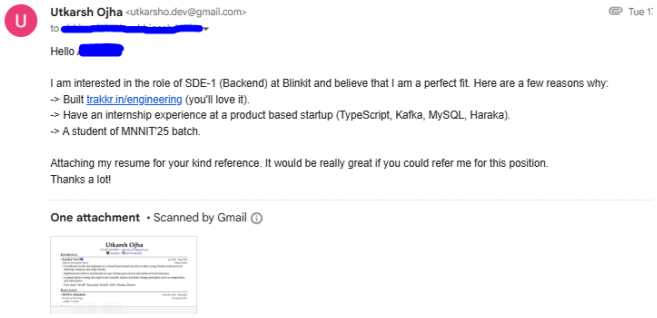

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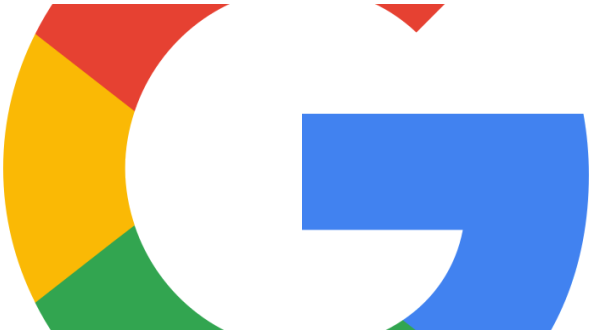

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My Amazon SDE1 Interview Experience

This blog has been long pending! I actually drafted it while going through the interview...

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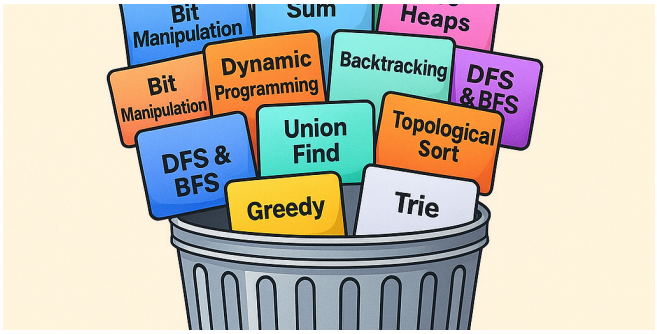

Himanshu Singour

These 16 DSA Patterns Did What 3000 LeetCode Problems Couldn't

When I started with DSA, I did what everyone else does. I opened LeetCode. Picked Easy....

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