Algo topic list [top interviews]

BigTech and Quant/HFT

Core

1. Arrays / Strings patterns (two pointers, sliding window, prefix sums, counting)

2. Hashing / Sets / Maps

3. Binary Search (including binary search on answer)

4. Sorting + Sweep line + Interval patterns

5. Stack / Queue (including monotonic stack/queue)

6. Heaps / Priority Queue

7. Greedy (including prove of correctness)

8. Recursion + Backtracking

9. Trees / BST (traversals, LCA, path patterns, serialization)

10. Graphs (BFS/DFS, topo, shortest paths, DSU, MST)

11. Dynamic Programming (1D/2D, knapsack, string, interval, tree, bitmask)

12. Bit Manipulation (masks, subset iteration, XOR tricks)

13. Math / Probability basics (gcd/mod, combinatorics, expected value basics)

Advanced Data Structures

14. Fenwick Tree (BIT) / Segment Tree

15. Sparse Table / RMQ / Binary Lifting

16. Trie (prefix, XOR-trie, dictionary DP)

17. Advanced Strings (KMP, Z-function, rolling hash, optional suffix structures)

BigTech add-on

18. Design (LRU/LFU, time-based store, iterators, rate limiter, API design)

19. System Design (scaling, caching, queues, consistency, tradeoffs)

20. Behavioral + Communication (STAR, solution explanation, clean code under pressure)

Quant/HFT add-on

21. Probability / Statistics (Bayes, variance/covariance, distributions, puzzles)

22. Optimization / Linear Algebra basics (gradients, least squares, eigen basics)

23. Low-latency C++ / Performance (memory/cache, allocs, profiling mindset)

24. Concurrency (threads, locks, atomics basics, producer-consumer)

25. OS / Networking interview basics (Linux basics, TCP/UDP, time measurement)