**📘 DSA Topics in Order**

**🔹 1. Basics of Programming**

* Time and Space Complexity
* Recursion (very important)
* Bit Manipulation (basic)

**🔹 2. Arrays**

* Basics: Insert, Delete, Traverse
* Prefix Sum
* Sliding Window
* Two Pointer
* Sorting (built-in and custom)
* Important problems: Kadane's Algorithm, Majority Element, etc.

**🔹 3. Strings**

* String Manipulation
* Palindromes, Substrings
* Pattern Matching (KMP, Z-algorithm – optional for now)
* Anagrams, Rotations

**🔹 4. Searching & Sorting**

* Binary Search (VERY IMPORTANT)
* Lower Bound / Upper Bound
* Merge Sort, Quick Sort
* Counting Sort, Radix Sort (just overview)
* Sorting comparator-based questions

**🔹 5. Hashing**

* HashMaps and HashSets
* Frequency Count Problems
* Two Sum / Group Anagrams / Longest Consecutive Sequence

**🔹 6. Stack & Queue**

* Stack (Balanced Parentheses, Next Greater Element)
* Queue (Simple + Circular)
* Deque
* Monotonic Stack/Queue (Advanced sliding window)
* LRU Cache (important for interviews)

**🔹 7. Linked List**

* Singly and Doubly Linked List
* Reversal (Iterative and Recursive)
* Middle, Detect Cycle (Floyd’s algo)
* Merge Sort in LL
* Intersection Point

**🔹 8. Trees**

* Binary Tree & Binary Search Tree (BST)
* Tree Traversals (Inorder, Preorder, Postorder)
* Height / Diameter / Balanced Tree
* Lowest Common Ancestor
* Level Order Traversal
* Top / Bottom / Left / Right View

**🔹 9. Heap / Priority Queue**

* Max Heap / Min Heap
* Heap Sort
* Kth Largest/Smallest Element
* Merge K Sorted Lists

**🔹 10. Tries (Optional, but great for interviews)**

* Insert/Search Words
* Prefix Count
* Word Dictionary / Auto Suggestion

**🔹 11. Backtracking**

* N-Queens, Sudoku Solver
* Rat in a Maze, Word Search
* Subsets, Permutations, Combinations

**🔹 12. Graphs**

* Representations (Adjacency List / Matrix)
* DFS / BFS
* Cycle Detection (Directed/Undirected)
* Topological Sort
* Dijkstra / Bellman Ford
* Minimum Spanning Tree: Prim’s / Kruskal’s
* Disjoint Set (DSU/Union-Find)

**🔹 13. Dynamic Programming (DP)**

* Memoization vs Tabulation
* Fibonacci, Climbing Stairs, 0/1 Knapsack
* Subset Sum / Partition Equal Subset
* Longest Common Subsequence (LCS)
* Longest Increasing Subsequence (LIS)
* Matrix DP
* DP on Trees & DP on Strings (advanced)

**🔹 14. Segment Trees & Binary Indexed Trees (Advanced, optional)**