Interview-Focused DSA Topics

This document contains ONLY the Data Structures & Algorithms topics you need to cover for technical interviews (college & fresher roles).

1. Fundamentals

- Time Complexity (Big-O)
- Space Complexity
- Best / Worst / Average Case
- Brute Force vs Optimized Thinking

2. Arrays

- Array Traversal
- Subarrays
- Prefix Sum
- Rotate Array
- Kadane’s Algorithm
- Merge Intervals (basic)

3. Strings

- String Traversal
- Frequency Counting
- Palindrome Checks
- Substring Problems
- Anagram Logic

4. Hashing

- HashMap / HashSet
- Frequency Maps
- Duplicate Detection
- Two-Sum Style Problems

5. Two Pointers & Sliding Window

- Left–Right Pointers
- Fast–Slow Pointers
- Fixed Window
- Variable Window

6. Stack

- Stack Operations
- Valid Parentheses
- Next Greater Element

- Monotonic Stack (basic)

7. Queue & Deque

- Queue Basics
- Circular Queue
- Deque Usage

8. Linked List

- Traversal
- Reverse Linked List
- Cycle Detection
- Middle of Linked List
- Merge Two Sorted Lists

9. Sorting

- Bubble / Selection / Insertion (concepts)
- Merge Sort
- Quick Sort
- When to use which sorting algorithm

10. Binary Search

- Binary Search on Array
- First & Last Occurrence
- Binary Search on Answer
- Edge Case Handling

11. Recursion & Backtracking

- Recursion Basics
- Subsets
- Permutations
- Combination Problems

12. Trees

- Binary Tree
- Tree Traversals (DFS, BFS)
- Height / Depth
- Lowest Common Ancestor
- Binary Search Tree (BST)

13. Heaps (Priority Queue)

- Min Heap / Max Heap

- Top-K Problems
- Heap vs Sorting

14. Graphs (Basic)

- Graph Representation
- BFS
- DFS
- Basic Cycle Detection

15. Dynamic Programming (Limited Scope)

- 1D DP
- 2D DP
- Knapsack Pattern
- Subsequence Problems