DSA (Data Structures & Algorithms) Checklist

Basic Preparation

[ ] Master time & space complexity

[ ] Big O notation understanding

[ ] Master recursion basics

[ ] Basic sorting (Bubble, Selection, Insertion)

Arrays & Strings

[ ] Two pointers technique

[ ] Sliding window problems

[ ] Prefix sums & difference arrays

[ ] Kadane's algorithm (max subarray)

[ ] Spiral matrix & rotation problems

Hashing

[ ] HashMaps/HashSets basic usage

[ ] Frequency counters

[ ] Group anagrams

[ ] Longest consecutive sequence

[ ] Subarrays with sum k

Linked Lists

[ ] Reverse a linked list

[ ] Detect cycle (Floyd's algorithm)

[ ] Merge two sorted lists

[ ] Middle of linked list

[ ] Intersection of two lists

Stacks & Queues

[ ] Balanced parentheses

[ ] Next greater/smaller element

[ ] Monotonic stack

[ ] Queue using stacks

[ ] LRU Cache (design problem)

Trees & Binary Trees

[ ] Inorder, Preorder, Postorder

[ ] Level order traversal

[ ] DFS & BFS

[ ] Diameter of binary tree

[ ] Lowest common ancestor (LCA)

Binary Search & Bit Manipulation

[ ] Binary search (lower/upper bound)

[ ] Search in rotated array

[ ] Bitwise AND/OR/XOR

[ ] Count set bits

[ ] Power of 2/3/4 problems

Heaps & Priority Queue

[ ] Heap implementation (Min/Max)

[ ] Top K frequent elements

[ ] Kth largest/smallest element

[ ] Merge K sorted lists

[ ] Sliding window maximum

Backtracking

[ ] N-Queens problem

[ ] Sudoku solver

[ ] Subset & permutation generation

[ ] Word search

[ ] Palindrome partitioning

Dynamic Programming

[ ] 0/1 Knapsack

[ ] Fibonacci (Memoization/Tabulation)

[ ] Longest increasing subsequence

[ ] Longest common subsequence

[ ] Matrix chain multiplication

Graphs

[ ] Graph representation (adj list/matrix)

[ ] DFS & BFS in graphs

[ ] Cycle detection

[ ] Dijkstra's algorithm

[ ] Topological sort

Advanced Topics

[ ] Tries (Prefix Tree)

[ ] Disjoint Set Union (DSU)

[ ] Segment Tree / Binary Indexed Tree

[ ] Articulation Points & Bridges

[ ] Mo's algorithm