Java Interview Preparation Tracker

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String-Based Problems

1. Longest substring without repeating characters
2. Longest palindromic substring
3. Check if two strings are anagrams
4. Valid palindrome check
5. String compression (e.g., aabccccccaaa -> a2b1c5a3)
6. Count and say sequence
7. Implement string to integer (atoi)
8. Implement strstr() / indexOf()
9. Group anagrams
10. Reverse words in a string
11. Check if two strings are isomorphic
12. Longest common prefix
13. Minimum window substring
14. Permutation in string
15. Count palindromic substrings
16. All unique characters in a string
17. Remove duplicate characters
18. First non-repeating character
19. Generate all permutations of a string
20. Convert Roman numeral to integer
21. Generate valid parentheses combinations
22. Multiply two large numbers represented as strings
23. Zigzag conversion of a string
24. Check if one string is a rotation of another

Array & Two Pointer Problems

1. Two sum problem
2. Three sum problem
3. Move zeroes to the end
4. Find duplicate number without modifying array

5. Merge two sorted arrays
6. Kadane's algorithm for max subarray sum
7. Find the majority element
8. Longest consecutive sequence
9. Product of array except self
10. Next permutation of numbers

Hashing / Map / Set Problems

1. Subarray sum equals k
2. Longest substring with at most k distinct characters
3. Top K frequent elements
4. Word pattern match
5. Design an LRU cache

Stack / Queue Problems

1. Valid parentheses
2. Min stack with getMin in O(1)
3. Evaluate reverse polish notation
4. Implement queue using stacks / stack using queues

Recursion / Backtracking

1. N-Queens problem
2. Sudoku solver
3. Letter combinations of a phone number
4. Word break problem
5. Subsets and combinations of array
6. Find all binary strings without consecutive 1s

Graph & Tree Basics

1. Lowest common ancestor in binary tree
2. Serialize and deserialize binary tree
3. Detect cycle in graph
4. Clone a graph
5. Level order traversal of binary tree
6. Check if binary tree is symmetric
7. Validate a binary search tree

Java-Specific Problems

1. Immutable class implementation
2. Override equals() and hashCode()
3. Implement Comparator for sorting
4. Difference between HashMap, LinkedHashMap, TreeMap
5. Thread-safe Singleton pattern
6. Producer-consumer using BlockingQueue

Spring / Spring Boot Problems

1. REST endpoint to validate palindrome
2. Service for longest substring without repeats
3. REST API to group anagrams
4. Logging filter/interceptor for requests
5. Design rate limiter using Spring + Redis/Guava
6. REST API to compute nth Fibonacci with caching