Master DSA in 14 weeks

Coding Patterns and Roadmap

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DSA questions can be boiled down to 16 patterns! Solve and master those patterns and the problems become easier to solve. What are those patterns.

DSA Patterns :

1. Two Pointers

2. Fast & Slow pointers

3. Sliding Window

4. Merge Intervals

5. Cyclic Sort

6. In-place Reversal of a LinkedList

7. Stack

8. Monotonic Stack

9. Hash Maps

10. Tree Breadth First Search

11. Tree Depth First Search

12. Graphs

13. Island (Matrix traversal)

14. Two Heaps

15. Subsets

16. Modified Binary Search

17. Bitwise XOR

18. Top 'K' Elements

19. K-way merge

20. Greedy Algorithms

21. 0/1 Knapsack (Dynamic Programming)

22. Backtracking

23. Trie

24. Topological Sort (Graph)

25. Union Find

26. Ordered Set

27. Multi-thread

28. Miscellaneous

14 WEEK ROADMAP : Problems have been picked from this link

WEEK 1 : Two Pointers and Fast & Slow pointers

1. Introduction
2. Pair with Target Sum (easy) LeetCode

3. Remove Duplicates (easy) LeetCode LeetCode LeetCode LeetCode LeetCode
4. Squaring a Sorted Array (easy) LeetCode
5. Triplet Sum to Zero (medium) LeetCode
6. Triplet Sum Close to Target (medium) LeetCode
7. Triplets with Smaller Sum (medium) LintCode
8. Subarrays with Product Less than a Target (medium) LeetCode
9. Dutch National Flag Problem (medium) CoderByte
10. Problem Challenge 1: Quadruple Sum to Target (medium) Leetcode
11. Problem Challenge 2: Comparing Strings containing Backspaces (medium) Leetcode
12. Problem Challenge 3: Minimum Window Sort (medium) Leetcode Ideserve
13. Introduction emre.me
14. LinkedList Cycle (easy) Leetcode
15. Start of LinkedList Cycle (medium) Leetcode
16. Happy Number (medium) Leetcode
17. Middle of the LinkedList (easy) Leetcode
18. Problem Challenge 1: Palindrome LinkedList (medium) Leetcode
19. Problem Challenge 2: Rearrange a LinkedList (medium) Leetcode
20. Problem Challenge 3: Cycle in a Circular Array (hard) Leetcode

WEEK 2: Sliding Window and Merge Intervals

1. Introduction
2. Maximum Sum Subarray of Size K (easy)
3. Smallest Subarray with a given sum (easy) Educative.io
4. Longest Substring with K Distinct Characters (medium) Educative.io
5. Fruits into Baskets (medium) LeetCode
6. No-repeat Substring (hard) LeetCode
7. Longest Substring with Same Letters after Replacement (hard) LeetCode

8. Longest Subarray with Ones after Replacement (hard) LeetCode
9. Problem Challenge 1: Permutation in a String (hard) Leetcode
10. Problem Challenge 2: String Anagrams (hard) Leetcode
11. Problem Challenge 3: Smallest Window containing Substring (hard) Leetcode
12. Problem Challenge 4: Words Concatenation (hard) Leetcode
13. Introduction Educative.io
14. Merge Intervals (medium) Educative.io
15. Insert Interval (medium) Educative.io
16. Intervals Intersection (medium) Educative.io
17. Conflicting Appointments (medium) Geeksforgeeks
18. Problem Challenge 1: Minimum Meeting Rooms (hard) Lintcode
19. Problem Challenge 2: Maximum CPU Load (hard) Geeksforgeeks
20. Problem Challenge 3: Employee Free Time (hard) CoderTrain

WEEK 3: Cyclic Sort and In-place reversal of Linked List

1. Introduction emre.me
2. Cyclic Sort (easy) Geeksforgeeks
3. Find the Missing Number (easy) Leetcode
4. Find all Missing Numbers (easy) Leetcode
5. Find the Duplicate Number (easy) Leetcode
6. Find all Duplicate Numbers (easy) Leetcode
7. Problem Challenge 1: Find the Corrupt Pair (easy) TheCodingSimplified
8. Problem Challenge 2: Find the Smallest Missing Positive Number (medium) Leetcode
9. Problem Challenge 3: Find the First K Missing Positive Numbers (hard) TheCodingSimplified
10. Introduction emre.me

11. Reverse a LinkedList (easy) Leetcode
12. Reverse a Sub-list (medium) Leetcode
13. Reverse every K-element Sub-list (medium) Leetcode
14. Problem Challenge 1: Reverse alternating K-element Sub-list (medium) Geeksforgeeks
15. Problem Challenge 2: Rotate a LinkedList (medium) Leetcode

WEEK 4: Stack and Monotonic Stack

1. Introduction to Stack (Operations, Implementation, Applications)
2. Balanced Parentheses Leetcode
3. Reverse a String
4. Decimal to Binary Conversion
5. Next Greater Element Leetcode - I Leetcode -II Leetcode - III (Hard)
6. Sorting a Stack
7. Simplify Path Leetcode
8. Introduction to Monotonic Stack
9. Next Greater Element (easy) Leetcode - I Leetcode -II Leetcode - III (Hard)
10. Daily Temperatures (easy) Leetcode
11. Remove Nodes From Linked List (easy) Leetcode
12. Remove All Adjacent Duplicates In String (easy) Leetcode
13. Remove All Adjacent Duplicates in String II (medium) Leetcode
14. Remove K Digits (hard) Leetcode

WEEK 5: Hash Maps and Tree : BFS

1. Introduction (Hashing, Hash Tables, Issues)
2. First Non-repeating Character (easy) Leetcode
3. Largest Unique Number (easy) Leetcode+
4. Maximum Number of Balloons (easy) Leetcode

5. Longest Palindrome(easy) Leetcode
6. Ransom Note (easy) Leetcode
7. Binary Tree Level Order Traversal (easy) Leetcode
8. Reverse Level Order Traversal (easy) Leetcode
9. Zigzag Traversal (medium) Leetcode
10. Level Averages in a Binary Tree (easy) Leetcode
11. Minimum Depth of a Binary Tree (easy) Leetcode
12. Maximum Depth of a Binary Tree (easy) Leetcode
13. Level Order Successor (easy) Geeksforgeeks
14. Connect Level Order Siblings (medium) Leetcode
15. Problem Challenge 1: Connect All Level Order Siblings (medium) Educative
16. Problem Challenge 2: Right View of a Binary Tree (easy) Leetcode

WEEK 6: Tree : DFS and Graph

1. Introduction
2. Binary Tree Path Sum (easy) Leetcode
3. All Paths for a Sum (medium) Leetcode
4. Sum of Path Numbers (medium) Leetcode
5. Path With Given Sequence (medium) Geeksforgeeks
6. Count Paths for a Sum (medium) Leetcode
7. Problem Challenge 1: Tree Diameter (medium) Leetcode
8. Problem Challenge 2: Path with Maximum Sum (hard) Leetcode
9. Introduction to Graph (Representations, Abstract Data Type (ADT))
10. Graph Traversal: Depth First Search(DFS)
11. Graph Traversal: Breadth First Search (BFS)
12. Find if Path Exists in Graph(easy) Leetcode
13. Number of Provinces (medium) Leetcode
14. Minimum Number of Vertices to Reach All Nodes(medium) Leetcode

WEEK 7: Island and Two Heaps

1. Introduction to Island Pattern
2. Number of Islands (easy) Leetcode
3. Biggest Island (easy)
4. Flood Fill (easy) Leetcode
5. Number of Closed Islands (easy) Leetcode
6. Find the Median of a Number Stream (medium) Leetcode
7. Sliding Window Median (hard) Leetcode
8. Maximize Capital (hard) Leetcode
9. **Maximum Sum Combinations* (medium) InterviewBit

WEEK 8: Subsets and Modified Binary Search

1. Introduction Educative.io
2. Subsets (easy) Educative.io
3. Subsets With Duplicates (easy) Educative.io
4. Permutations (medium) Educative.io
5. Introduction Complete Pattern Theory and Solutions
6. Order-agnostic Binary Search (easy) Geeksforgeeks
7. Ceiling of a Number (medium) Geeksforgeeks-Ceil Geeksforgeeks-Floor
8. Next Letter (medium) Leetcode
9. Number Range (medium) Leetcode
10. Search in a Sorted Infinite Array (medium) Leetcode
11. Minimum Difference Element (medium): Find the floor & ceil take the difference, minimum would be the ans
12. Bitonic Array Maximum (easy) Geeksforgeeks
13. Problem Challenge 1: Search Bitonic Array (medium) Leetcode
14. Problem Challenge 2: Search in Rotated Array (medium) Leetcode
15. Problem Challenge 3: Rotation Count (medium) Geeksforgeeks

16. *Search a 2D Matrix (medium) Leetcode
17. *Minimum Number of Days to Make m Bouquets (medium) Leetcode
18. *Koko Eating Bananas (medium) Leetcode
19. *Capacity To Ship Packages Within D Days (medium) Leetcode
20. *Median of Two Sorted Arrays (hard) Leetcode

WEEK 9: Bitwise XOR and Top K Elements

1. Single Number (easy)
2. Two Single Numbers (medium)
3. Complement of Base 10 Number (medium)
4. Problem Challenge 1: Flip and Invert an Image (hard)
5. Introduction
6. Top 'K' Numbers (easy) Solution
7. Kth Smallest Number (easy)
8. 'K' Closest Points to the Origin (easy) Leetcode
9. Connect Ropes (easy)
10. Top 'K' Frequent Numbers (medium)
11. Frequency Sort (medium)
12. Kth Largest Number in a Stream (medium) Leetcode

WEEK 10: K-way merge and Greedy Sort

1. Merge K Sorted Lists (medium) Leetcode
2. Kth Smallest Number in M Sorted Lists (Medium) Geeksforgeeks
3. Kth Smallest Number in a Sorted Matrix (Hard) Educative.io
4. Smallest Number Range (Hard) Leetcode
5. Valid Palindrome II (easy) Leetcode
6. Maximum Length of Pair Chain (medium) Leetcode
7. Minimum Add to Make Parentheses Valid (medium) Leetcode

8. Remove Duplicate Letters (medium) Leetcode
9. Largest Palindromic Number (Medium) Leetcode
10. Removing Minimum and Maximum From Array (medium) Leetcode

WEEK 11: 0/1 Knapsack and BackTracking

1. 0/1 Knapsack (medium) Geeksforgeeks
2. Equal Subset Sum Partition (medium) Leetcode
3. Subset Sum (medium) Geeksforgeeks
4. Minimum Subset Sum Difference (hard) Geeksforgeeks
5. Combination Sum (medium) Leetcode - I Leetcode - II Leetcode - III Leetcode - IV
6. Word Search (medium) Leetcode - I Leetcode - II (Hard)
7. Sudoku Solver (hard) Leetcode
8. Factor Combinations (medium) Leetcode+
9. Split a String Into the Max Number of Unique Substrings (medium) Leetcode

WEEK 12: Trie and Topological Sort

1. Implement Trie (Prefix Tree) (medium) Leetcode
2. Index Pairs of a String (easy) Leetcode+
3. Design Add and Search Words Data Structure (medium) Leetcode
4. Extra Characters in a String (medium) Leetcode
5. Search Suggestions System (medium) Leetcode
6. Topological Sort (medium) Youtube
7. Tasks Scheduling (medium) Leetcode-Similar
8. Tasks Scheduling Order (medium) Leetcode-Similar
9. All Tasks Scheduling Orders (hard) Leetcode-Similar
10. Alien Dictionary (hard) Leetcode
11. Problem Challenge 1: Reconstructing a Sequence (hard) Leetcode

12. Problem Challenge 2: Minimum Height Trees (hard) Leetcode

WEEK 13: Union Find , Ordered Set and Multi-thread

1. Redundant Connection (medium) Leetcode - I Leetcode - II (Hard)
2. Number of Provinces (medium) Leetcode
3. Is Graph Bipartite? (medium) Leetcode
4. Path With Minimum Effort (medium) Leetcode
5. Merge Similar Items (easy) Leetcode
6. 132 Pattern (medium) Leetcode
7. My Calendar I (medium) Leetcode Leetcode - II Leetcode - III (Hard)

CREDITS :

I want to give a huge thanks to dipjul for providing the problems for each of these patterns. They also cover Blind75 and Neetcode 150 !

dipjul : link

Write a comment...