Patterns of Problems for the Whole DSA

1. Fast & Slow Pointer

- Cycle in a data structure
- O (1) space efficiency
- Linked list problems

2. Sorted Data Structures

- Tree Map, Tree Set, will be used by complex O(n) problems.
- Two pointer approach will be used.
- Divide and Conquer algorithm will be followed (Binary Search, Marge Short).

3. Sliding Window

- Fixed size of window/length especially used while dealing with subarray problems.
- O(n) f.c
- Subarray/Substring problems.

4. Merge intervals (merge sort approach)

- Sort & merge
- O(nlogn)
- Overlapping problems

5. Unique, Duplicate, Separating for even or odd items

- Bit Manipulation
- XOR operation
- & with 1

6. Depth First Search

- Recursive backtracking approach
- Use stack
- Tree graph transversal

7. Breadth List Search

- Level by level traversal
- Queue data structure will be used
- Shortest path problem

8. Subsets

- Generate all Subsets
- Recursion on iterative
- Backtracking will be used

9. Modified Binary Search

- Search Variation
- O (logn) time
- Rotated/ StackLised Arrays

10. Top K Elements

- Use heap/sorting/recursive iteration
- O(nlogk) time