QubitCoders

DSA Roadmap

It provides:

- 14 weeks roadmap that takes you from beginner to advance
- Data Structure with specific difficulty for each week
- Tasks (Problems) for every single day

Week # 01

Array & Hashing (Easy)

Before jumping to exercises, if you have little/no knowledge of Array or Hashmap (dictionary) data structure make sure to watch 10/15 mins video on it.

- Day 1: **Two Sum**
- Day 2: **Valid Anagram**
- Day 3: **Contain Duplicate**
- Day 4: **Unique Email Addresses**
- Day 5: **Longest Common Prefix**
- Day 6: **Next Greater Element**
- Day 7: **Majority Element**

Week # 02

Two Pointers (Easy & Medium)

Before jumping to exercises, if you have little/no knowledge of Two Pointers Algorithm make sure to watch 10/15 mins video on it.

- Day 1: **Valid Palindrome**
- Day 2: **Merge Sorted Arrays**
- Day 3: **Reverse String**
- Day 4: **Valid Palindrome II**
- Day 5: **Move Zeroes**
- Day 6: **3 Sum**
- Day 7: **Boats to Save People**

Week # 03

Sliding Window + Array (Easy & Medium)

Before jumping to exercises, if you have little/no knowledge of Sliding Window Algorithm make sure to watch 10/15 mins video on it.

- Day 1: **Best time to buy and sell stocks**
- Day 2: **Longest Substring without repeating characters**
- Day 3: **Contain Duplicate II**
- Day 4: **Numbers of sub-arrays**
- Day 5: **Permutation in a String**
- Day 6: **Best time to buy and sell a stock II**
- Day 7: **Sort Colors**

Week # 04

Stack (Easy & Medium)

Before jumping to exercises, if you have little/no knowledge of Stack Data Structure make sure to watch 10/15 mins video on it.

- Day 1: Valid Parentheses
- Day 2: Asteroid Collision
- Day 3: Daily Temperature
- Day 4: Car fleet
- Day 5: Evaluate Reverse Polish Notation
- Day 6: Generate Parentheses
- Day 7: Remove k digits

Week # 05

Binary Search (Easy)

Before jumping to exercises, if you have little/no knowledge of Binary Search Algorithm make sure to watch 10/15 mins video on it.

- Day 1: **Binary Search**
- Day 2: **Search Insert Position**
- Day 3: **Guess Number Higher or Lower**
- Day 4: **Squares of a Sorted Array**
- Day 5: **Valid Perfect Square**
- Day 6: **Arranging Coins**
- Day 7: Take Rest 😊

Congratulations on completing 5 weeks, it reflects how consistent you are !

Week # 06

Linked List (Easy)

Before jumping to exercises, if you have little/no knowledge of Linked List Data Structure make sure to watch 10/15 mins video on it.

- Day 1: **Merge Two Sorted Lists**
- Day 2: **Reverse Linked List**
- Day 3: **Remove Linked List Elements**
- Day 4: **Palindrome Linked List**
- Day 5: **Remove Duplicates from Sorted List**
- Day 6: **Intersection of Two Linked Lists**
- Day 7: **Middle of the Linked List**

Week # 07

Tree (Easy)

Before jumping to exercises, if you have little/no knowledge of Tree Data Structure make sure to watch 10/15 mins video on it.

- Day 1: **Binary Tree Inorder Traversal**
- Day 2: **Binary Tree Preorder Traversal**
- Day 3: **Binary Tree Postorder Traversal**
- Day 4: **Symmetric Tree**
- Day 5: **Diameter of Binary Tree**
- Day 6: **Path Sum**
- Day 7: **Maximum Depth of Binary Tree**

Week # 08

Binary Search Tree + Tree (Easy & Medium)

Before jumping to exercises, if you have little/no knowledge of **BST** Data Structure make sure to watch 10/15 mins video on it.

- Day 1: Search in a Binary Search Tree
- Day 2: Insert into a Binary Search Tree
- Day 3: Delete Node in a BST
- Day 4: Convert Sorted Array to Binary Search Tree
- Day 5: Merge Two Binary Trees
- Day 6: Maximum Width of Binary Tree
- Day 7: Time Needed to Inform All Employees

Week # 09

Heap / Priority Queue + Trie (Easy & Medium)

Before jumping to exercises, if you have little/no knowledge of Heap or Trie Data Structure make sure to watch 10/15 mins video on it.

- Day 1: **Find the Kth Largest Integer in the Array**
- Day 2: **K Closest Points to Origin**
- Day 3: **Last Stone Weight**
- Day 4: **Kth Largest Element in a Stream**
- Day 5: **The K Weakest Rows in a Matrix**
- Day 6: **Maximum Product of Two Elements in an Array**
- Day 7: **Implement Trie (Prefix Tree)**

Week # 10

Backtracking + Tree (Medium & Hard)

Before jumping to exercises, if you have little/no knowledge of Backtracking Algorithm make sure to watch 10/15 mins video on it.

- Day 1: **Subsets**
- Day 2: **Combination Sum**
- Day 3: **Combinations**
- Day 4: **Permutations**
- Day 5: **Matchsticks to Square**
- Day 6: **N-Queens**
- Day 7: Take Rest 😊

Week # 11

Graphs (Easy & Medium)

Before jumping to exercises, if you have little/no knowledge of Heap Data Structure make sure to watch 10/15 mins video on it.

- Day 1: Island Perimeter
- Day 2: Verifying an Alien Dictionary
- Day 3: Number of Islands
- Day 4: Rotting Oranges
- Day 5: Detonate the Maximum Bombs
- Day 6: Max Area of Island
- Day 7: Number of Closed Islands

Week # 12

Dynamic Programming (Easy & Medium)

Before jumping to exercises, if you have little/no knowledge of **DP** Algorithm make sure to watch 10/15 mins video on it.

- Day 1: **Fibonacci Number**
- Day 2: **Pascal's Traingle**
- Day 3: **Climbing Stairs**
- Day 4: **Longest Increasing Subsequence**
- Day 5: **House Robber**
- Day 6: **Coin Change**
- Day 7: **Longest Palindromic Substring**

Week # 13

Greedy Algorithm + Game Theory (Easy, Medium)

Before jumping to exercises, if you have little/no knowledge of Greedy or Game theory Algorithm make sure to watch 10/15 mins video on it.

- Day 1: **Assign Cookies**
- Day 2: **Dota2 Senate**
- Day 3: **Merge Triplets to Form Target Triplet**
- Day 4: **Maximum Subarray**
- Day 5: **Can I Win**
- Day 6: **Predict the winner**
- Day 7: **Maximum Number of Coins You Can Get**

Week # 14

Maths + Bit Manipulation (Easy & Medium)

Before jumping to exercises, if you have little/no knowledge of Bit manipulation make sure to watch 10/15 mins video on it.

- Day 1: **Happy Number**
- Day 2: **Matrix Diagonal Sum**
- Day 3: **Set Matrix Zeroes**
- Day 4: **Fizz Buzz**
- Day 5: **Missing Number**
- Day 6: **Number of 1 Bits**
- Day 7: **Set Mismatch**

So, if you are thinking to start your DSA journey

Always Remember:

- **Consistency** is the key to success
- Focus on **Quality** over **Quantity**
- No need to solve **Hard** Problems (at least in first 100 problems)
- Don’t overwhelm yourself by multiple resources/content
- Start with **WHY** (why you want to excel in DSA) this WHY will motivate you when needed

So, if you are thinking to start your DSA journey

Few Tips:

- It is ok (natural) if you are **unable to solve** even a single problem on your own (in your first 100 problems)
- Don’t spend more than **30 mins** on a problem (jump to YT solution video)
- First solve problem on **paper** then on Laptop
- Solve **single type** (data structure/ algorithm) of problems at one time
- Don’t eager to jump on **fancy** data structures / algorithms