

# **Most Important 100 Problems for DSA**

## **Topic 1: Maths and Bit Manipulation**

### **Problem 1: Sieve of Eratosthenes:**

<https://leetcode.com/problems/count-primes/solutions/918259/c-beats-9578-finding-prime-numbers-sieve-of-eratosthenes/>

### **Problem 2: GCD of array**

<https://leetcode.com/problems/find-greatest-common-divisor-of-array/description/>

### **Problem 3: Single Number**

<https://leetcode.com/problems/single-number/description/?envType=problem-list-v2&envId=bit-manipulation>

### **Problem 4: Counting Bits**

<https://leetcode.com/problems/counting-bits/description/?envType=problem-list-v2&envId=bit-manipulation>

### **Problem 5: Reverse Bits**

<https://leetcode.com/problems/reverse-bits/description/?envType=problem-list-v2&envId=bit-manipulation>

### **Problem 6: Number of set bits**

<https://leetcode.com/problems/number-of-1-bits/description/?envType=problem-list-v2&envId=bit-manipulation>

### **Problem 7: Power of two**

<https://leetcode.com/problems/power-of-two/description/?envType=problem-list-v2&envId=bit-manipulation>

### **Problem 8: Missing Number**

<https://leetcode.com/problems/missing-number/description/?envType=problem-list-v2&envId=bit-manipulation>

### **Problem 9: Set Kth bit**

<https://www.geeksforgeeks.org/problems/check-whether-k-th-bit-is-set-or-not/0>

## Topic 2: Recursion

### Problem 10: Fibonacci Number

<https://leetcode.com/problems/fibonacci-number>

### Problem 11: Tower of Hanoi

<https://www.geeksforgeeks.org/problems/tower-of-hanoi-1587115621/1>

### Problem 12: Power of Two

<https://leetcode.com/problems/power-of-two>

### Problem 13: Power Function

<https://leetcode.com/problems/powx-n>

## Topic 3: Arrays

### Task 1: Watch videos for below Problems 1 to Problem 5.

#### Problem 14: Insert, Delete, and Search in an array.

[https://youtu.be/PyTK\\_g1l8V8?feature=shared](https://youtu.be/PyTK_g1l8V8?feature=shared)

#### Problem 15: Insert, Delete, and Search in the 2-D array.

<https://youtu.be/Xx1tWbb37hY?feature=shared>

#### Problem 16: Row major and column-major order traversal.

<https://youtu.be/dJ2kPBNhCK4?feature=shared>

#### Problem 17: Linear Search and Binary Search of an array.

<https://youtu.be/13ocRMSJy5M?feature=shared>

#### Problem 18: Implementation of vector in C++ and function associated with it.

<https://youtu.be/wKDvMcJiEPM?feature=shared>

### Task 2: Solve all the problems given below using the above knowledge.

#### Problem 19: Leader in an array

<https://leetcode.com/problems/replace-elements-with-greatest-element-on-right-side/description/>

**Problem 20: Sort an array of 0,1 & 2.**

<https://leetcode.com/problems/sort-colors/solutions/1745096/sort-colors-or-sort-an-array-of-0s-1s-and-2s/>

**Problem 21: Kadanes Algorithm**

<https://leetcode.com/problems/maximum-subarray/description/>

**Problem 22: Stock Buy and Sell**

<https://leetcode.com/problems/best-time-to-buy-and-sell-stock/description/>

**Problem 23: Trapping Rain Water**

<https://leetcode.com/problems/container-with-most-water/>

**Problem 24: Reverse array in groups**

<https://www.geeksforgeeks.org/problems/reverse-array-in-groups/0>

**Problem 25: Minimum Platforms**

<https://www.geeksforgeeks.org/problems/minimum-platforms/0>

## **Topic 4: Searching & Sorting**

**Problem 26: Merge Sort**

<https://www.geeksforgeeks.org/problems/merge-sort/1>

**Problem 27: Quick Sort**

<https://www.geeksforgeeks.org/problems/quick-sort/1>

**Problem 28: Merge 2 sorted arrays**

<https://leetcode.com/problems/merge-sorted-array/description/>

**Problem 29: Allocate minimum number of pages**

<https://www.geeksforgeeks.org/problems/allocate-minimum-number-of-pages0937/1/>

**Problem 30: kth smallest element**

<https://leetcode.com/problems/kth-smallest-element-in-a-sorted-matrix/description/>

## Topic 5: Strings

### Problem 31: Find the first repeating character

Link 1:

<https://www.geeksforgeeks.org/problems/find-first-repeated-character/0>

Link 2: <https://leetcode.com/problems/first-unique-character-in-a-string/description/>

### Problem 32: Reverse word in a string

<https://leetcode.com/problems/reverse-words-in-a-string/description/>

### Problem 33: Anagram

<https://leetcode.com/problems/valid-anagram/description/>

### Problem 34: Remove Duplicates

<https://leetcode.com/problems/remove-duplicate-letters/description/>

### Problem 35: Implement the strstr function

<https://leetcode.com/problems/find-the-index-of-the-first-occurrence-in-a-string/description/>

## Topic 6: Matrix

### Problem 36: Rotate a matrix

<https://leetcode.com/problems/rotate-image/description/>

### Problem 37: Spirally traverse a matrix

<https://leetcode.com/problems/find-the-index-of-the-first-occurrence-in-a-string/description/>

### Problem 38: Search in a sorted matrix

<https://leetcode.com/problems/search-a-2d-matrix/description/>

## Topic 7: Hashing

### Problem 39: Different types of Hashing playlist

<https://www.youtube.com/watch?v=W5q0xqxmRd8&list=PLxM5rzs4f4fwOPORqEZZhaaY5OG0WMZfF>

### Problem 40: Hashing in C++

<https://youtu.be/oGqjEx6hrl8?feature=shared>

### Problem 41: Two Sum

<https://leetcode.com/problems/two-sum>

### Problem 42: Contains Duplicate

<https://leetcode.com/problems/contains-duplicate>

### Problem 43: k different pairs

<https://leetcode.com/problems/k-diff-pairs-in-an-array/description/>

## Topic 8: Linked List

### Problem 44: Create a linked list and perform several operations given below

- a) Insert at the beginning and end.
- b) Delete from beginning and end.
- c) Search an element in a linked list.

Task 2: Repeat Task 1 for the doubly linked and circular linked lists.

### Problem 45: Middle of the linked list

<https://leetcode.com/problems/middle-of-the-linked-list/description/>

### Problem 46: Rotate List

<https://leetcode.com/problems/rotate-list?envType=problem-list-v2&envId=linked-list>

### Problem 47: Reverse Linked List

<https://leetcode.com/problems/reverse-linked-list/description/>

### Problem 48: Loop in a list

<https://leetcode.com/problems/linked-list-cycle/description/>

**Problem 49: Intersection of two lists**

<https://leetcode.com/problems/intersection-of-two-linked-lists/description/>

**Problem 50: Merge two sorted list**

<https://leetcode.com/problems/merge-two-sorted-lists/description/>

**Problem 51: n-th node from the end**

<https://leetcode.com/problems/remove-nth-node-from-end-of-list/description/>

**Problem 52: Add two numbers**

<https://leetcode.com/problems/add-two-numbers/>

## **Topic 9: Stack & Queues**

**Problem 53: Stack in C++**

<https://youtu.be/JvuaAgDar1c?feature=shared>

**Problem 54: Stack in STL**

<https://youtu.be/cppd9DhKHyc?feature=shared>

**Problem 55: Implement stack using linked list**

<https://www.geeksforgeeks.org/problems/implement-stack-using-Linked-list/1>

**Problem 56: Queue in C++**

<https://youtu.be/fbonDkYsKj0?feature=shared>

**Problem 57: Queue in STL**

<https://youtu.be/juqhvOyMoel?feature=shared>

**Problem 58: Implement Queue using linked list**

<https://www.geeksforgeeks.org/problems/implement-queue-using-Linked-list/1>

**Problem 59: Deque in STL**

<https://youtu.be/v20YV3jrAIU?feature=shared>

**Problem 60: Implement stack using queues**

<https://leetcode.com/problems/implement-stack-using-queues/description/>

**Problem 61: Implement a queue using a stack**

<https://leetcode.com/problems/implement-queue-using-stacks/description/>

**Problem 62: Valid Parentheses**

<https://leetcode.com/problems/valid-parentheses/description/>

**Problem 63: Merge Interval**

<https://leetcode.com/problems/merge-intervals/description/>

**Problem 64: Stock span problem**

<https://leetcode.com/problems/online-stock-span/description/>

**Topic 10: Trees**

**Problem 64: Preorder of binary tree**

<https://leetcode.com/problems/binary-tree-preorder-traversal/description/>

**Problem 65: Postorder of binary tree**

<https://leetcode.com/problems/binary-tree-postorder-traversal/>

**Problem 66: In order of binary tree**

<https://leetcode.com/problems/binary-tree-inorder-traversal/>

**Problem 67: Height of a Binary Tree**

<https://leetcode.com/problems/maximum-depth-of-binary-tree/description/>

**Problem 68: Count Nodes**

<https://leetcode.com/problems/count-complete-tree-nodes/description/>

**Problem 69: Two trees are identical**

<https://leetcode.com/problems/same-tree/description/>

**Problem 70: Print Left View**

<https://www.geeksforgeeks.org/problems/left-view-of-binary-tree/1>

**Problem 71: Print Right View**

<https://leetcode.com/problems/binary-tree-right-side-view/description/>

**Problem 72: Print Bottom View**

<https://www.geeksforgeeks.org/problems/bottom-view-of-binary-tree/1>

**Problem 73: Diameter of a tree**

<https://leetcode.com/problems/diameter-of-binary-tree/description/>

**Problem 74: Level order traversal**

<https://leetcode.com/problems/binary-tree-level-order-traversal/description/>

**Problem 75: Max Path Sum**

<https://leetcode.com/problems/binary-tree-maximum-path-sum/description/>

**Topic 11: BST (Binary Search Tree)****Problem 76: Create a BST and print Inorder, Preorder, and Postorder.**

<https://youtu.be/UmJT3j26t1I?feature=shared>

**Problem 77: Validate BST**

<https://leetcode.com/problems/validate-binary-search-tree/description/>

**Problem 78: Lowest common ancestor**

<https://leetcode.com/problems/lowest-common-ancestor-of-a-binary-search-tree/description/>

**Problem 79: kth smallest element**

<https://leetcode.com/problems/kth-smallest-element-in-a-bst/description/>

**Problem 80: Merge 2 BST's**

<https://leetcode.com/problems/merge-bsts-to-create-single-bst/solutions/>



## Topic 12: Heap

### Problem 81: Implement Heap from scratch

<https://youtu.be/NKJnHewiGdc?feature=shared>

### Problem 82: kth largest element

<https://leetcode.com/problems/kth-largest-element-in-an-array?envType=problem-list-v2&envId=heap-priority-queue>

## Topic 13: Graph

### Problem 83: List and matrix implementation of graph

<https://youtu.be/ZT2o8iDCk6o?feature=shared>

### Problem 84: DFS on graph

<https://www.geeksforgeeks.org/problems/depth-first-traversal-for-a-graph/1>

### Problem 85: BFS on graph

<https://www.geeksforgeeks.org/problems/bfs-traversal-of-graph/1>

### Problem 86: Topological Sort

<https://www.geeksforgeeks.org/problems/topological-sort/1>

### Problem 87: Detect cycle in undirected graph

<https://www.geeksforgeeks.org/problems/detect-cycle-in-an-undirected-graph/1/>

### Problem 88: Detect cycle in directed graph

<https://www.geeksforgeeks.org/problems/detect-cycle-in-a-directed-graph/1>

### Problem 89: Number of islands

<https://leetcode.com/problems/number-of-islands/description/>

## Topic 14: Greedy

### Problem 90: Activity Selection

<https://www.geeksforgeeks.org/problems/activity-selection/0>

### Problem 91: N meeting in one room

<https://www.geeksforgeeks.org/problems/n-meetings-in-one-room/0>

### Problem 92: Minimize the sum of the product

<https://www.geeksforgeeks.org/problems/minimize-the-sum-of-product/0>

## Topic 15: Dynamic Programming

### Problem 93: Minimum number of coins

<https://leetcode.com/problems/coin-change/description/>

### Problem 94: Matrix chain multiplication

[https://youtu.be/-UPo\\_dzBw1c?feature=shared](https://youtu.be/-UPo_dzBw1c?feature=shared)

### Problem 95: Subset Sum

<https://www.geeksforgeeks.org/problems/subset-sum-problem/0>

### Problem 96: Minimum number of jumps

<https://www.geeksforgeeks.org/problems/minimum-number-of-jumps/0>

### Problem 97: 0/1 Knapsack

<https://www.geeksforgeeks.org/problems/0-1-knapsack-problem/0>

### Problem 98: Edit Distance

<https://www.geeksforgeeks.org/problems/edit-distance/0>

### Problem 99: Longest Increasing Subsequence

<https://www.geeksforgeeks.org/problems/longest-increasing-subsequence/0>

### Problem 100: Egg Dropping Puzzle

<https://www.geeksforgeeks.org/problems/egg-dropping-puzzle/0>