This list covers all the topics of Data Structures and Algorithms. In every topic, all the questions have been ranked from low to high with few exceptions. There are more than 330+ problems in this list.

In the bootcamp, we will be going through 225+ problems from this list. We are going to solve all the problems of the topics that are there in the bootcamp. There are few practice problems that I will add with time.

1) Tree Data Structure

1) Inorder Traversal of a Binary Tree using Recursion
2) Inorder Traversal of a Binary Tree without Recursion
3) Preorder Traversal of a Binary Tree using Recursion
4) Preorder Traversal of a Binary Tree without Recursion
5) Postorder Traversal of a Binary Tree using Recursion
6) Postorder Traversal of a Binary Tree without Recursion
7) Level Order Traversal of a Binary Tree
8) Reverse Level Order Traversal of a Binary Tree
9) Height of a Binary Tree
10) Mirror of a Tree
11) Invert Binary Tree
12) Cousins in a Binary Tree
13) Left view of a Tree
14) Right view of a Tree
15) Top view of a Tree
16) Bottom view of a Tree
17) Boundary Traversal of a tree
18) Diagonal Traversal of a tree
19) Diameter of a binary Tree
20) LCA of a binary tree
21) Convert binary tree into sum tree
22) *Sum root to leaf numbers*
23) Path sum
24) Min Depth of binary Tree
25) Check if all leaf nodes are present on the same level or not
26) Check if a binary tree is a subtree of another tree
27) Construct Binary Tree from given inorder and preorder traversal
28) Construct Binary Tree from given inorder and postorder
29) Binary Tree into DLL
30) Kth ancestor of a node in a Binary Tree
31) Check if a tree is balanced or not

2) Binary Search Trees

1) Find a value in a Binary Search Tree
2) Insertion of a node in a Binary Search Tree
3) Deletion of a node in Binary Search Tree
4) Find minimum value in a Binary Search Tree
5) Find maximum value in a Binary Search Tree
6) Find inorder successor in a Binary Search Tree
7) Find inorder predecessor in a Binary Search Tree
8) Check if a binary tree is a BST or not
9) LCA of 2 nodes in a BST
10) Kth smallest element in a BST
11) Kth largest element in a BST
12) Count pairs from 2 BSTs such that given sum is equal to target
13) Find the median of BST
14) Count BST nodes that lie in a given range
15) Largest BST in a binary tree
16) Flatten BST to sorted linked list
17) Construct BST from preorder traversal
18) Convert BST into balanced BST
19) Merge two BSTs
20) Replace every node with the least greatest node in the BST

3) Graph Data Structure

1) Construct a graph from given data and run DFS
2) Implement BFS algorithm
3) Detect cycle in directed graph using DFS
4) Detect cycle in directed graph using BFS
5) Detect cycle in undirected graph using DFS
6) Detect cycle in undirected graph using BFS
7) Find the town judge
8) Flood fill
9) Word Search
10) Knight on chess board
11) Word Ladder 1
12) Word Ladder 2
13) Connected Components
14) Count islands
15) Count enclosed islands
16) Clone a graph
17) Dijkstra's algorithm
18) Network Delay Time
19) Cheapest flights within k stops
20) Bellman Ford Algorithms
21) Detecting negative cycle using Bellman Ford Algorithm
22) Floyd Warshall Algorithm
23) Implement Topological Sort
24) Course Schedule 1
25) Course Schedule 2
26) Alien Dictionary
27) Water Jug Problem using BFS
28) Prim's Algorithm
29) Min Cost to connect all points
30) Min cost to connect all servers
31) Disjoint set Union
32) Kruskal's algorithm
33) Tarjan's algorithm
34) Find articulation point in a network
35) Check whether a graph contains cycle or not using graph colouring technique
36) Check whether a graph is a tree or not
37) All Paths from source to target
38) Bipartite graph
39) Ants and the community problem
40) Stepping Numbers
41) Largest Distance between two nodes of a tree

4) Linked List

1) 206. Reverse Linked List
2) 876. Middle of the Linked List
3) 237. Delete Node in a Linked List
4) 21. Merge Two Sorted Lists:
5) 83. Remove Duplicates from Sorted List
6) 160. Intersection of Two Linked Lists
7) 141. Linked List Cycle
8) 234. Palindrome Linked List
9) 1721. Swapping Nodes in a Linked List
10) 328. Odd Even Linked List
11) 19. Remove Nth Node From End of List
12) 2. Add Two Numbers
13) 1721. Swapping Nodes in a Linked List
14) 725.Split Linked List in Parts
15) 148 Insertion sort on Linked List
16) 148 Merge sort on Linked List
17) 138Copy list with random pointers
18) 1171 Remove zero sum from consecutive nodes from linked list
19) 23Merge k sorted Linked List
20) 25. Reverse Nodes in k-Group
21) 707Doubly Linked List
22) Adding a node at the front, at the end, after a node or before a node
23) Deleting a node from the front, from the end, after a node or before a node
24) Circular Doubly Linked List
25) Adding a node at the front, at the end, after a node or before a node
26) Deleting a node from the front, from the end, after a node or before a node
27) 146.LRU Cache
28) 460.LFU Cache

5) Dynamic Programming

1) Climbing Stairs
2) Min Cost Climbing Stairs
3) Max Cost Climbing Stairs
4) House Robbery 1 (House Robber2)
5) Fibonacci Number
6) Tribonacci Number
7) 0-1 Knapsack (gfg)
8) Subset sum problem
9) Target Sum Problem
10) Equal Sum Partition Problem
11) Count the number of subsets with a given difference
12) Unbounded Knapsack
13) Rod Cutting
14) Coin Change 1
15) Coin change 2
16) Buy and Sell Stock 1
17) Buy and Sell Stock 2
18) Buy and Sell Stock 3
19) Buy and Sell Stock 4
20) Buy and Sell Stock with cooldown
21) Buy and Sell Stock with transaction fees
22) Count number of ways to reach given score
23) Jump Game 1
24) Jump Game 2
25) Nth Catalan Number (unique bst)
26) Combination of Balanced Parenthesis Problem
27) Maximum size square sub matrix with all 1s
28) Total number of ways to reach last cell
29) Minimum Falling Path Sum
30) Count number of ways to reach given score
31) **Unique Paths**
32) **Unique Paths II**
33) Dice Roll With a Target Sum
34) Palindrome Partitioning 1
35) Palindrome Partitioning 2
36) Palindrome Partitioning 3
37) Palindrome Partitioning 4
38) Counting Bits
39) Decode Ways (Decode ways ii)
40) LIS
41) MSIS
42) Maximum Length Chain of Pairs
43) Largest Sum Continuous Subarray
44) Smallest Sum Continuous Subarray

45) Maximum Product Subarray

46) LCS

47) LPS

48) Edit Distance

49) LCS

50) LPS

6) Backtracking

1) Rat in a Maze Problem
2) N- Queen Problem
3) Print all solutions of N – queen
4) Remove Invalid parenthesis
5) Subset sum Problem
6) Combinational Sum
7) Print all permutations of an array
8) Print all permutations of a string
9) Tug of War
10) The Knight Tour Problem

7) Heap

1) Implement a Max Heap
2) Implement a Min Heap
3) Implement Heap sort
4) Kth largest element in array
5) Kth smallest element in an array
6) Merge 2 sorted arrays
7) Maximum of all subarrays of size k
8) Merge k sorted arrays
9) Merge k sorted linked list
10) Connect n ropes with minimum cost
11) Check if a binary tree is a heap or not
12) Rearrange characters in a string such that not two characters are adjacent
13) Running median

8) Searching and sorting

1) Binary Search Iterative
2) Binary Search Recursive
3) Find the index of first occurrence in a sorted array
4) Find the index of last occurrence in a sorted array
5) Find a fixed point i.e. value equal to index in a sorted array
6) Square root of an integer
7) Count of occurrences of x in sorted element
8) Count of 1s in a sorted array
9) Peak element
10) Find an element in an infinite size sorted array
11) Find the repeating and missing
12) Find majority element
13) Insertion sort
14) Counting sort
15) Merge sort
16) Quick sort
17) Find a pair with given difference
18) Find three values that sum to 0
19) Find three values that sum closest to target
20) Find four elements that sum to a given value
21) Search in a rotated sorted array
22) Median of two sorted arrays of same size
23) Median of two sorted arrays of different size

9) Array and Matrices

1) Find the maximum and minimum element of an array
2) Check if array is sorted or not
3) Leaders in an array
4) Maximum difference problem
5) Frequencies in sorted array
6) Given an array of 0s, 1s and 2s, sort it in O(n) time
7) Move all the negative elements to one side of the array
8) Find the union and intersections of two arrays
9) Cyclic rotation of array
10) Find duplicates in array
11) Next Permutation
12) Count inversions
13) Find common elements in 3 sorted arrays
14) Merge intervals
15) Trapping rainwater problem
16) Spiral traversal on a matrix
17) Search an element in a sorted matrix (row and col are sorted)
18) Search an element in a sorted matrix (sorted as 1d)
19) Find row with maximum number of 1s
20) Find a specific pair in a matrix
21) Rotate matrix by 90 degrees
22) Zero matrix

10) Trie

1) Construct a trie from scratch
2) Design add and search words data structure
3) Replace words
4) Top k frequent words
5) Prefix and suffix search

11) Greedy algorithms

1) Activity Selection
2) Fractional Knapsack
3) Job Sequencing
4) Water connection
5) Minimum Platforms Problem
6) Split a string in Balanced Strings
7) Minimum Cost to move chips to the same position
8) Delete columns to make sorted
9) Last stone weight
10) Lemonade change
11) Minimum add to make parenthesis valid
12) Reduce the array size to half
13) Two city scheduling
14) Previous permutation with one swap
15) Boats to save people
16) Wiggle subsequence
17) Gas station
18) Jump game
19) Jump game 2
20) Remove k digits
21) Candy

12) Stack and Queues

1) Implement stack using linked list
2) Implement queue using linked list
3) Balanced Parenthesis
4) Two stacks in an array
5) K stacks in an array
6) Next Greater element
7) Next Smaller element
8) Min stack
9) Largest Rectangular area in a histogram
10) Stock span
11) Infix to postfix
12) Infix to prefix
13) Reversing a queue
14) Generate numbers with given digits

13) Hashmaps

1) Count of elements in an array
2) Count distinct elements
3) Intersection of two arrays
4) Union of two arrays
5) Reconstruct itinerary
6) Check if array pairs are divisible by k
7) Distinct element in window of size k
8) Largest subarray with 0 sum
9) Count of zero sum subarrays
10) Longest substring without repeating characters
11) Count substrings without repeating characters
12) Longest substring with exactly k distinct characters
13) Maximum consecutive ones
14) Maximum consecutive ones – 2
15) Count of substrings with at most k distinct substrings
16) Subarray sum equals k
17) Find anagrams
18) Count of subarrays with equal number of zeroes and ones
19) Largest subarray with sum divisible by k
20) Longest subarray with equal 0s, 1s, and 2s
21) Count of subarrays with equal 0s, 1s and 2s
22) Fraction to recurring decimal
23) Rabbits in forest
24) Pairs with given sum in sorted matrix

14) Recursion

1. Length of an array using recursion
2. Searching an element using recursion
3. Letter combinations of a Phone number
4. Josephus problem
5. Kth symbol in grammar

15) Strings

1. Reverse a string
2. Check whether a string is a palindrome or not
3. Defanging an IP Address
4. Find duplicate characters in a string
5. Check whether two strings are rotation of each other
6. Count Say Problem
7. Given two strings, check if they are anagrams of each other
8. Given a string, find the leftmost character that repeats
9. Unique Morse Code words
10. Increasing Decreasing String
11. Minimum number of steps to make two strings anagram
12. Robot return to origin
13. Check if a word occurs as a prefix of any word in a sentence
14. Number of substrings containing all the three characters
15. Reverse Only Letters
16. Longest Uncommon Sequence
17. Integer to roman
18. Roman to Integer
19. Construct String from Binary Tree
20. Maximum Number of Vowels in a substring of given length
21. Ransom Note
22. Reorganise string
23. Add strings
24. Add Binary
25. Multiply Strings
26. Most Common Word
27. Reverse Vowels of a string
28. Basic Calculator 2
29. Zigzag conversion
30. Decode Ways