



BOSSCODER  
ACADEMY

— 50 —

# Most Asked

## CODING PROBLEMS



Crack Your Next Tech Interview

## \*Disclaimer\*

Everyone learns uniquely.

What matters is developing the problem solving ability to solve new problems.

This Doc will help you with the same.

# 1. Arrays

- Given an array of integers and an integer target, return indices of the two numbers such that they add up to target.

Asked in :    

**Practice**

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- Given an integer array nums, find the subarray with the largest sum, and return its sum.

Asked in :  

**Practice**

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- Given an array nums with n objects colored red, white, or blue, sort them in-place so that objects of the same color are adjacent, with the colors in the order red, white, and blue.

Asked in :   

**Practice**

4. Given an array `nums` of  $n$  integers, return an array of all the unique quadruplets  $[nums[a], nums[b], nums[c], nums[d]]$  such that:
- $0 \leq a, b, c, d < n$
- $a, b, c,$  and  $d$  are distinct.
- $nums[a] + nums[b] + nums[c] + nums[d] == \text{target}$

Asked in :  

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5. Given an array of intervals where  $\text{intervals}[i] = [\text{start}_i, \text{end}_i]$ , merge all overlapping intervals, and return an array of the non-overlapping intervals that cover all the intervals in the input.

Asked in :    

**Practice**

## 2. Strings

1. Given a string  $s$  of ' $($ ' , ' $)$ ' and lowercase English characters.  
Your task is to remove the minimum number of parentheses ( $'($  or  $)'$ , in any positions ) so that the resulting parentheses string is valid and return any valid string.

Asked in :    

**Practice**

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2. Given a string  $s$ , sort it in decreasing order based on the frequency of the characters. The frequency of a character is the number of times it appears in the string.  
Return the sorted string. If there are multiple answers, return any of them.

Asked in :    

**Practice**

3. Given two strings  $s_1$  and  $s_2$ , return true if  $s_2$  contains a permutation of  $s_1$ , or false otherwise.  
In other words, return true if one of  $s_1$ 's permutations is the substring of  $s_2$ .

Asked in :  

**Practice**

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4. Given a string  $s$ , partition  $s$  such that every Substring of the partition is a Palindrome. Return all possible palindrome partitioning of  $s$ .

Asked in :     

**Practice**

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5. Given two strings  $s$  and  $t$  of lengths  $m$  and  $n$  respectively, return the minimum window Substring of  $s$  such that every character in  $t$  (including duplicates) is included in the window. If there is no such substring, return the empty string "".

Asked in :   

**Practice**

## 3. Recursion

- Given the head of a linked list and an integer val, remove all the nodes of the linked list that has `Node.val == val`, and return the new head.

Asked in :  

**Practice**

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- Given the head of a singly linked list, reverse the list, and return the reversed list.

Asked in :   

**Practice**

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- Given an integer array `nums` of unique elements, return all possible Subsets (the power set).

The solution set must not contain duplicate subsets. Return the solution in any order

Asked in :  

**Practice**

4. Given n pairs of parentheses, write a function to generate all combinations of well-formed parentheses.

Asked in :    

**Practice**

## 4. Hashing

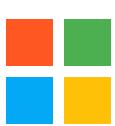
1. Design a data structure that follows the constraints of a Least Recently Used (LRU) cache.

Asked in :   

**Practice**

2. Given an unsorted integer array `nums`, return the smallest missing positive integer.

You must implement an algorithm that runs in  $O(n)$  time and uses constant extra space.

Asked in :   

**Practice**

## 5. Matrices

- Given an  $m \times n$  matrix, return all elements of the matrix in spiral order.

Asked in :    

**Practice**

- Determine if a  $9 \times 9$  Sudoku board is valid. Only the filled cells need to be validated according to the following rules:

Each row must contain the digits 1-9 without repetition.

Each column must contain the digits 1-9 without repetition.

Each of the nine  $3 \times 3$  sub-boxes of the grid must contain the digits 1-9 without repetition.

Asked in :    

**Practice**

- Given an  $m \times n$  grid of characters board and a string word, return true if word exists in the grid. The word can be constructed from letters of sequentially adjacent cells, where adjacent cells are horizontally or vertically neighboring. The same letter cell may not be used more than once.

Asked in :   

**Practice**

## 6. Linked List

- Given the root of a binary tree, flatten the tree into a "linked list":  
The "linked list" should use the same TreeNode class where the right child pointer points to the next node in the list and the left child pointer is always null.  
The "linked list" should be in the same order as a pre-order traversal of the binary tree.

Asked in :  

**Practice**

- Given the head of a singly linked list, return true if it is a palindrome or false otherwise.

Asked in :    

**Practice**

3. Given the head of a linked list, reverse the nodes of the list k at a time, and return the modified list. k is a positive integer and is less than or equal to the length of the linked list. If the number of nodes is not a multiple of k then left-out nodes, in the end, should remain as it is.

You may not alter the values in the list's nodes, only nodes themselves may be changed.

Asked in :   

**Practice**

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4. You are given the heads of two sorted linked lists list1 and list2. Merge the two lists in a one sorted list. The list should be made by splicing together the nodes of the first two lists. Return the head of the merged linked list.

Asked in :    

**Practice**

5. You are given two non-empty linked lists representing two non-negative integers. The digits are stored in reverse order, and each of their nodes contains a single digit. Add the two numbers and return the sum as a linked list.

You may assume the two numbers do not contain any leading zero, except the number 0 itself.

Asked in :   

**Practice**

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6. Given a linked list, swap every two adjacent nodes and return its head. You must solve the problem without modifying the values in the list's nodes (i.e., only nodes themselves may be changed.)

Asked in :  

**Practice**

## 7. Bit Manipulation and Math

- Given an array `nums` containing  $n$  distinct numbers in the range  $[0, n]$ , return the only number in the range that is missing from the array.

Asked in :  

**Practice**

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- Given an integer  $n$ , return an array `ans` of length  $n + 1$  such that for each  $i$  ( $0 \leq i \leq n$ ),  $\text{ans}[i]$  is the number of 1's in the binary representation of  $i$ .

Asked in :  

**Practice**

## 8. Stacks and Queues

- Given an array of integers heights representing the histogram's bar height where the width of each bar is 1, return the area of the largest rectangle in the histogram.

Asked in :     

**Practice**

- Design a stack that supports push, pop, top, and retrieving the minimum element in constant time.

Asked in :   

**Practice**

- Implement a last-in-first-out (LIFO) stack using only two queues. The implemented stack should support all the functions of a normal stack (push, top, pop, and empty).

Asked in :   

**Practice**

4. Implement the BSTIterator class that represents an iterator over the in-order traversal of a binary search tree (BST)

Asked in :    

**Practice**

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5. Given n non-negative integers representing an elevation map where the width of each bar is 1, compute how much water it can trap after raining.

Asked in :   

**Practice**

## 9. Trees and Binary Search Trees

- Given the root of a binary tree, return its maximum depth.  
A binary tree's maximum depth is the number of nodes along the longest path from the root node down to the farthest leaf node.

Asked in :   

**Practice**

- Given a binary tree, find the lowest common ancestor (LCA) of two given nodes in the tree.

Asked in :   

**Practice**

- Given the root of a binary search tree, and an integer k, return the kth smallest value (1-indexed) of all the values of the nodes in the tree.

Asked in :  

**Practice**

4. Given the root of a binary tree, return the level order traversal of its nodes' values. (i.e., from left to right, level by level).

Asked in :   

**Practice**

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5. You are given the root of a binary tree containing digits from 0 to 9 only.

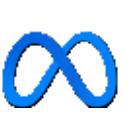
Each root-to-leaf path in the tree represents a number.

For example, the root-to-leaf path  $1 \rightarrow 2 \rightarrow 3$  represents the number 123. Return the total sum of all root-to-leaf numbers. Test cases are generated so that the answer will fit in a 32-bit integer.

Asked in :   

**Practice**

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6. Given the roots of two binary trees root and subRoot, return true if there is a subtree of root with the same structure and node values of subRoot and false otherwise.

Asked in :   

**Practice**

## 10. Tries

1. A trie (pronounced as "try") or prefix tree is a tree data structure used to efficiently store and retrieve keys in a dataset of strings. There are various applications of this data structure, such as autocomplete and spellchecker.  
Implement the Trie.

Asked in :   

**Practice**

2. Given an array of strings strs, group the anagrams together. You can return the answer in any order.

Asked in :    

**Practice**

## 11. Heaps

1. You are given an array of  $k$  linked-lists lists, each linked-list is sorted in ascending order.

Merge all the linked-lists into one sorted linked-list and return it.

Asked in :   

**Practice**

2. The median is the middle value in an ordered integer list. If the size of the list is even, there is no middle value, and the median is the mean of the two middle values.

Implement the MedianFinder class:

Asked in :    

**Practice**

## 12. Graphs

- Given is a 2D adjacency list representation of a graph. Check whether the graph is a Bipartite graph.

Asked in :   

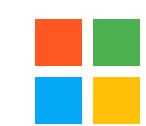
**Practice**

- An image is represented by an  $m \times n$  integer grid image where  $\text{image}[i][j]$  represents the pixel value of the image. You are also given three integers  $sr$ ,  $sc$ , and color. You should perform a flood fill on the image starting from the pixel  $\text{image}[sr][sc]$ .

Asked in :   

**Practice**

- Given an  $m \times n$  2D binary grid grid which represents a map of '1's (land) and '0's (water), return the number of islands. An island is surrounded by water and is formed by connecting adjacent lands horizontally or vertically. You may assume all four edges of the grid are all surrounded by water.

Asked in :   

**Practice**

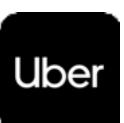
4. Given a reference of a node in a connected undirected graph.  
Return a deep copy (clone) of the graph.

Asked in :    

**Practice**

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5. Given an  $m \times n$  integers matrix, return the length of the longest increasing path in matrix.

From each cell, you can either move in four directions: left, right, up, or down. You may not move diagonally or move outside the boundary (i.e., wrap-around is not allowed).

Asked in :   

**Practice**

## 13. Dynamic Programming

- Given an integer array `nums`, find a subarray that has the largest product, and return the product.

Asked in :  

**Practice**

- Given two strings `text1` and `text2`, return the length of their longest common subsequence. If there is no common subsequence, return 0.

Asked in :   

**Practice**

- There is a robot on an  $m \times n$  grid. The robot is initially located at the top-left corner (i.e., `grid[0][0]`). The robot tries to move to the bottom-right corner (i.e., `grid[m - 1][n - 1]`). The robot can only move either down or right at any point in time.  
Given the two integers  $m$  and  $n$ , return the number of possible unique paths that the robot can take to reach the bottom-right corner.

Asked in :    

**Practice**



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