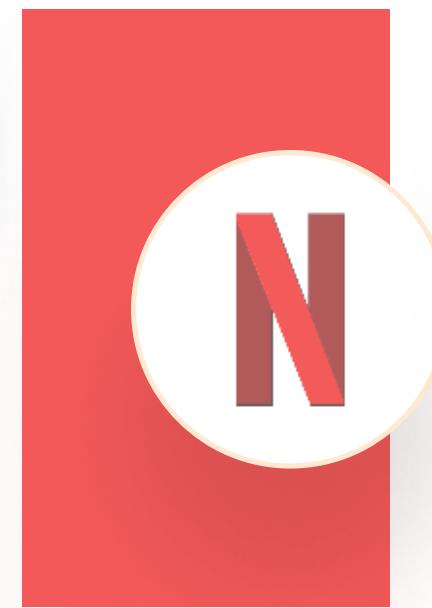
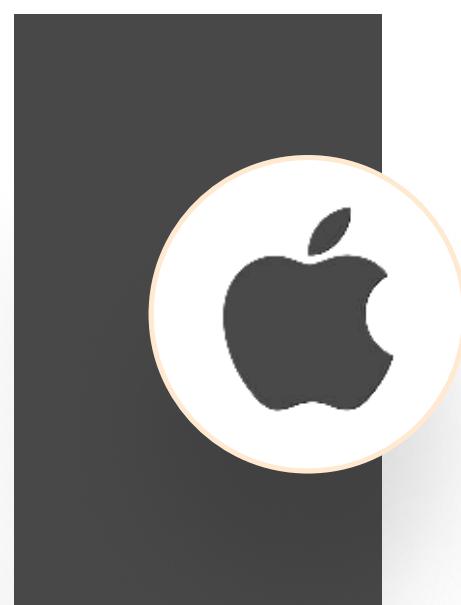


Top 50 DSA

Interview Questions

— for MAANG —





Disclaimer

Everyone learns at a different pace and plan.

It is not the number of questions that you solve but gaining the ability to analyse, identify and come up with solutions for related problems is what matters.

Arrays

Question 1.

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

[Practice Here](#)

Asked in :    

Question 2.

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

[Practice Here](#)

Asked in :  

Question 3.

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.

[Practice Here](#)

Asked in :  

Question 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.

$nums[a] + nums[b] + nums[c] + nums[d] == \text{target}$

[Practice Here](#)

Asked in :



Question 5.

You are given an array of prices where $\text{prices}[i]$ is the price of a given stock on an i th day. You want to maximise your profit by choosing a single day to buy one stock and choosing a different day in the future to sell that stock. Return the maximum profit you can achieve from this transaction. If you cannot achieve any profit, return 0.

[Practice Here](#)

Asked in :



Strings

Question 1.

Write a function that reverses a string. The input string is given as an array of characters s. You must do this by modifying the input array in-place with O(1) extra memory.

[Practice Here](#)

Asked in :



Question 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.

[Practice Here](#)

Asked in :



Question 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 .

[Practice Here](#)

Asked in :



Question 4.

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

[Practice Here](#)

Asked in :



Question 5.

You are given a string s and an integer k . You can choose any character of the string and change it to any other uppercase English character. You can perform this operation at most k times.

[Practice Here](#)

Asked in :



Recursion

Question 1.

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.

[Practice Here](#)

Asked in :  

Question 2.

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

[Practice Here](#)

Asked in :   



Question 3.

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

[Practice Here](#)

Asked in :



Question 4.

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

[Practice Here](#)

Asked in :



Hashing

Question 1.

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

[Practice Here](#)

Asked in :



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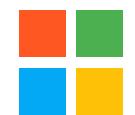
Question 2.

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.

[Practice Here](#)

Asked in :



Matrices

Question 1.

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

[Practice Here](#)

Asked in :



Question 2.

Determine if a 9×9 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 3×3 sub-boxes of the grid must contain the digits 1-9 without repetition.

[Practice Here](#)

Asked in :



Question 3.

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.

[Practice Here](#)

Asked in :



Linked List

Question 1.

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.

[Practice Here](#)

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Question 2.

Given elements as nodes of the two linked lists. The task is to multiply these two linked lists, say L1 and L2.

[Practice Here](#)

Asked in :



Question 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.

[Practice Here](#)

Asked in :   

Question 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.

[Practice Here](#)

Asked in :    



Question 5.

You are given the head of a singly linked-list. The list can be represented as:

$L_0 \rightarrow L_1 \rightarrow \dots \rightarrow L_{n-1} \rightarrow L_n$

Reorder the list to be on the following form:

$L_0 \rightarrow L_n \rightarrow L_1 \rightarrow L_{n-1} \rightarrow L_2 \rightarrow L_{n-2} \rightarrow \dots$

You may not modify the values in the list's nodes. Only nodes themselves may be changed.

[Practice Here](#)

Asked in :



Question 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.)

[Practice Here](#)

Asked in :



Bit Manipulation and Math

Question 1.

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.

[Practice Here](#)

Asked in :



Question 2.

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 .

[Practice Here](#)

Asked in :



Stacks and Queues

Question 1.

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.

[Practice Here](#)

Asked in :     

Question 2.

Given a string s containing just the characters '(', ')', '{', '}', '[', and ']', determine if the input string is valid.

[Practice Here](#)

Asked in :   

Question 3.

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).

[Practice Here](#)

Asked in :   



Question 4.

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

[Practice Here](#)

Asked in :    

Question 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.

[Practice Here](#)

Asked in :   



Trees and Binary Search Trees

Question 1.

Given a binary tree, determine if it is height-balanced

[Practice Here](#)

Asked in :   

Question 2.

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

[Practice Here](#)

Asked in :   

Question 3.

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.

[Practice Here](#)

Asked in :  

Question 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).

[Practice Here](#)

Asked in :



Question 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.

[Practice Here](#)

Asked in :



Question 6.

A path in a binary tree is a sequence of nodes where each pair of adjacent nodes in the sequence has an edge connecting them. A node can only appear in the sequence at most once. Note that the path does not need to pass through the root.

The path sum of a path is the sum of the node's values in the path.

Given the root of a binary tree, return the maximum path sum of any non-empty path.

[Practice Here](#)

Asked in :



Tries

Question 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.

[Practice Here](#)

Asked in :



Question 2.

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

[Practice Here](#)

Asked in :



Heaps

Question 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.

[Practice Here](#)

Asked in :



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Question 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:

[Practice Here](#)

Asked in :



Graphs

Question 1.

Given an $m \times n$ binary matrix mat, return the distance of the nearest 0 for each cell.

The distance between two adjacent cells is 1.

[Practice Here](#)

Asked in :



Question 2.

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 $\text{image}[sr][sc]$.

[Practice Here](#)

Asked in :



Question 3.

Given an $m \times n$ 2D binary 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.

[Practice Here](#)Asked in :   

Question 4.

Given a reference of a node in a connected undirected graph.

Return a deep copy (clone) of the graph.

[Practice Here](#)Asked in :    

Question 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).

[Practice Here](#)

Asked in :



Dynamic Programming

Question 1.

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

[Practice Here](#)

Asked in :



Question 2.

Given a non-empty array nums containing only positive integers, find if the array can be partitioned into two subsets such that the sum of elements in both subsets is equal.

[Practice Here](#)

Asked in :



Question 3.

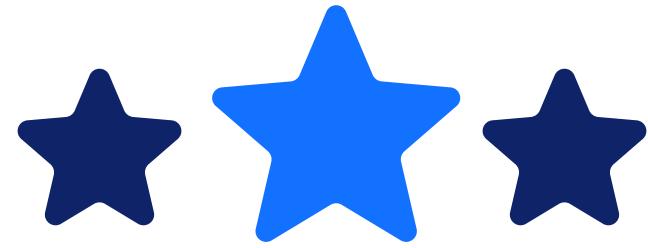
There is a robot on an $m \times n$ grid. The robot is initially located at the top-left corner (i.e., $\text{grid}[0][0]$). The robot tries to move to the bottom-right corner (i.e., $\text{grid}[m - 1][n - 1]$). The robot can only move either down or right at any point in time.

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.

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