

# TOP 50

## CODING QUESTIONS

FOR     INTERVIEW



## Question 1

## Middle of the Linked List

Easy

Given the `head` of a singly linked list, return the middle node of the linked list.

If there are two middle nodes, return **the second middle** node.

[Practice](#)

Question asked in:



## Question 2

## Maximum Depth of Binary Tree

Easy

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.

[Practice](#)

Question asked in:



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## Question 3

## Add Binary

Easy

Given two binary strings `a` and `b` return *their sum as a binary string.* `s`

**Practice**

Question asked in:



## Question 4

## Diameter of Binary Tree

Easy

Given the `root` of a binary tree, return *the length of the diameter of the tree.*

The diameter of a binary tree is the length of the longest path between any two nodes in a tree. This path may or may not pass through the `root`

**Practice**

Question asked in:



Anjali Joshi

Data Engineer - L2 at Twilio

From



To



## Question 5

### Valid Anagram

Easy

Given two strings `s` and `t`, return `true` if `t` is an anagram of `s`, and `false` otherwise.

An **Anagram** is a word or phrase formed by rearranging the letters of a different word or phrase, typically using all the original letters exactly once.

Practice

Question asked in:



## Question 6

### Binary Search

Easy

Given an array of integers `nums` which is sorted in ascending order, and an integer `target`, write a function to search `target` in `nums`. If `target` exists, then return its index. Otherwise, return `-1`.

You must write an algorithm with  $\Theta(\log n)$  runtime complexity.

Practice

Question asked in:



## Question 7

## Longest Palindrome

Easy

Given a string `s` which consists of lowercase or uppercase letters, return the length of the longest palindrome that can be built with those letters.

Letters are case sensitive, for example, `"Aa"` is not considered a palindrome here.

[Practice](#)

Question asked in:



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## Question 8

### Flood Fill

Easy

An image is represented by an  $m \times n$  integer grid `image` where `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 `image[sr][sc]`.

Return *the modified image after performing the flood fill*.

Practice

Question asked in:



## Question 9

### Lowest Common Ancestor of a Binary Search Tree

Easy

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

According to the [definition of LCA on Wikipedia](#): "The lowest common ancestor is defined between two nodes `p` and `q` as the lowest node in `T` that has both `p` and `q` as descendants (where we allow a node to be a descendant of itself)."

Practice

Question asked in:



## Question 10

## Balanced Binary Tree

Easy

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

**Practice**

Question asked in:



## Question 11

## Linked List Cycle

Easy

Given `head`, the head of a linked list, determine if the linked list has a cycle in it.

There is a cycle in a linked list if there is some node in the list that can be reached again by continuously following the `next` pointer. Internally, `pos` is used to denote the index of the node that tail's `next` pointer is connected to. **Note that `pos` is not passed as a parameter.**

Return `true` if there is a cycle in the linked list. Otherwise, return `false`.

**Practice**

Question asked in:



## Question 12

## First Bad Version

Easy

Suppose you have `n` versions `[1, 2, ..., n]` and you want to find out the first bad one, which causes all the following ones to be bad.

You are given an API `bool isBadVersion(version)` which returns whether `version` is bad. Implement a function to find the first bad version.

Practice

Question asked in:



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## Question 13

### Climbing Stairs

Easy

You are climbing a staircase. It takes `n` steps to reach the top.

Each time you can either climb `1` or `2` steps. In how many distinct ways can you climb to the top?

Practice



Question asked in:



## Question 14

### LRU Cache

Medium

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

Implement the `LRUCache` class:

- `LRUCache(int capacity)` Initialize the LRU cache with positive size `capacity`
- `int get(int key)` Return the value of the `key` if the key exists.
- `void put(int key, int value)` Update the value of the `key`

Practice



Question asked in:



## Question 15

## Container With Most Water

Medium

You are given an integer array `height` of length `n`. There are `n` vertical lines drawn such that the two endpoints of the  $i^{\text{th}}$  line are  $(i, 0)$  and  $(i, \text{height}[i])$

Return *the maximum amount of water a container can store.*

**Practice**

Question asked in:



## Question 16

## Kth Smallest Element in a BST

Medium

Given the `root` of a binary search tree, and an integer `k`, return *the  $k^{\text{th}}$  smallest value (*1-indexed*) of all the values of the nodes in the tree.*

**Practice**

Question asked in:



Best part about this academy is that before joining the program you can talk with the Data Scientist. They have projects from companies so you will work on Real-Time Projects and also got many job referrals from Tutort Academy & got a job as at EY.

## Question 17

## K Closest Points to Origin

Medium

Given an array of `points` , where `points[i] = [xi, yi]` represents a point on the X-Y plane and an integer `k` , return the `k` closest points to the origin `(0, 0)`

You may return the answer in **any order.** ,

**Practice**

Question asked in:



## Question 18

## Longest Substring Without Repeating Characters

Medium

Given a string `s` find the length of the longest substring without repeating characters.

**Practice**

Question asked in:



## Question 19

### 3Sum

Medium

Given an integer array `nums`, return all the triplets

`[nums[i], nums[j], nums[k]]` such that `i != j`, `i != k` and `j != k`,  
and `nums[i] + nums[j] + nums[k] == 0`

Notice that the solution set must not contain duplicate triplets.

Practice

Question asked in:



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## Question 20

## Binary Tree Level Order Traversal

Medium

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).

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Question asked in:



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## Question 21

## Clone Graph

Medium

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

Return a deep copy (clone) of the graph.

[Practice](#)

Question asked in:



## Question 22

## Evaluate Reverse Polish Notation

Medium

You are given an array of strings `tokens` that represents an arithmetic expression in a Reverse Polish Notation.

Evaluate the expression. Return an integer that represents the value of the expression.

[Practice](#)

Question asked in:



Basant Pratap Singh  
Software Engineer at Google

From  
**TiDA**



To  
**Google**

## Question 23

## Course Schedule

Medium

There are a total of `numCourses` courses you have to take, labeled from `0` to `numCourses - 1`. You are given an array `prerequisites` where `prerequisites[i] = [ai, bi]` indicates that you must take course `bi` first if you want to take course `ai`.

Return `true` if you can finish all courses. Otherwise, return `false`.

**Practice**

Question asked in:



## Question 24

## Implement Trie (Prefix Tree)

Medium

Implement the Trie class:

- `Trie()` Initializes the trie object.
- `void insert(String word)` Inserts the string `word` into the trie.
- `boolean search(String word)` Returns `true` if the string `word` is in the trie
- `boolean startsWith(String prefix)` Returns `true` if there is a previously inserted string `word` that has the prefix.

**Practice**

Question asked in:



## Question 25

### Coin Change

Medium

You are given an integer array `coins` representing coins of different denominations and an integer `amount` representing a total amount of money.

Return *the fewest number of coins that you need to make up that amount*. If that amount of money cannot be made up by any combination of the coins, return `-1`.

Practice

Question asked in:



## Question 26

### Product of Array Except Self

Medium

Given an integer array `nums`, return an array `answer` such that `answer[i]` is equal to the product of all the elements of `nums` except `nums[i]`.

You must write an algorithm that runs in  $O(n)$  time and without using the division operation.

Practice

Question asked in:



## Question 27

### Min Stack

Medium

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

Implement the `MinStack` class:

- `MinStack()` initializes the stack object.
- `void push(int val)` pushes the element `val` onto the stack.
- `void pop()` removes the element on the top of the stack.
- `int top()` gets the top element of the stack.
- `int getMin()` retrieves the minimum element in the stack.

You must implement a solution with  $O(1)$  time complexity for each function.:

Practice

Question asked in:



## Question 28

### Validate Binary Search Tree

Medium

Given the `root` of a binary tree, determine if it is a valid binary search tree (BST).

Practice

Question asked in:



## Question 29

## Number of Islands

Medium

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.

**Practice**

Question asked in:



## Question 30

## Rotting Oranges

Medium

You are given an  $m \times n$  `grid` where each cell can have one of three values:

- 0 representing an empty cell,
- 1 representing a fresh orange, or
- 2 representing a rotten orange.

Return the minimum number of minutes that must elapse until no cell has a fresh orange. If this is impossible, return -1

**Practice**

Question asked in:



## Question 31

## Search in Rotated Sorted Array

Medium

There is an integer array `nums` sorted in ascending order (with distinct values).

Given the array `nums` after the possible rotation and an integer `target` return *the index of `target` if it is in `nums`, or `-1` if it is not in `nums`*

You must write an algorithm with  $O(\log n)$  runtime complexity.

**Practice**

Question asked in:



## Question 32

## Combination Sum

Medium

Given an array of distinct integers `candidates` and a target integer `candidates` `target` return *a list of all unique combinations of `candidates` where the chosen numbers sum to `target`* You may return the combinations in **any order**.

**Practice**

Question asked in:



## Question 33

### Permutations

Medium

Given an array `nums` of distinct integers, return all the possible permutations. You can return the answer in **any order**.

Practice



Question asked in:



## Question 34

### Merge Intervals

Medium

Given an array of `intervals` where `intervals[i] = [starti, endi]` merge all overlapping intervals, and return an array of the non-overlapping intervals that cover all the intervals in the input.

Practice



Question asked in:



The courses well structured, and I use them to learn new things every day as well as revise concepts by solving multiple problems. It also helps you a lot when preparing for an interview because most of the questions were similar to which I solved during the course.

## Question 35

# Lowest Common Ancestor of a Binary Tree

Medium

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

Practice

Question asked in:



## Question 36

# Time Based Key-Value Store

Medium

Implement the TimeMap class:

- `TimeMap()` Initializes the trie object.
- `void set(String key, String value, int timestamp)`
- `String get(String key, int timestamp)`

Practice

Question asked in:



## Question 37

## Accounts Merge

Medium

Given a list of `accounts` where each element `accounts[i]` is a list of strings where the first element `accounts[i][0]` is a name, and the rest of the elements are emails representing emails of the account.

After merging the accounts, return the accounts in the following format: the first element of each account is the name, and the rest of the elements are emails **in sorted order**. The accounts themselves can be returned in **any order**.

[Practice](#)

Question asked in:



## Question 38

## Sort Colors

Medium

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.

You must solve this problem without using the library's sort function.

[Practice](#)

Question asked in:



## Question 39

## String to Integer (atoi)

Medium

Implement the `myAtoi(string s)` function, which converts a string string to a 32-bit signed integer (similar to C/C++'s atoi function).

Return the integer as the final result.

**Practice**

Question asked in:



## Question 40

## Spiral Matrix

Medium

Given an `m x n` `matrix` return *all elements of the matrix in spiral order*.

**Practice**

Question asked in:



Avishkar Dalvi

MTS 3 at VMware

From



To

## Question 41

## Subsets

Medium

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](#)

Question asked in:



## Question 42

## Binary Tree Right Side View

Medium

Given the `root` of a binary tree, imagine yourself standing on the right side of it, return *the values of the nodes you can see ordered from top to bottom*.

[Practice](#)

Question asked in:



## Question 43

## Longest Palindromic Substring

Medium

Given a string `s` return the longest Palindromic Substring in `s`

**Practice**

Question asked in:



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## Question 44

## Unique Paths

Medium

There is a robot on an  $m \times n$  grid. The robot is initially located at the **top-left corner**. The robot tries to move to the **bottom-right corner**. 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*.

[Practice](#)

Question asked in:



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## Day 45

## Find Median from Data Stream

Hard

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.

- For example, for `arr = [2,3,4]`, the median is `3`
- For example, for `arr = [2,3]`, the median is `(2 + 3) / 2 = 2.5`

**Practice**

Question asked in:



## Day 46

## Word Ladder

Hard

A **transformation sequence** from word `beginWord` to word `endWord` using a dictionary `wordList` is a sequence of words

`beginWord -> s1 -> s2 -> ... -> sk` such that:

Given two words, `beginWord` and `endWord`, and a dictionary `wordList`, return the **number of words in the shortest transformation sequence** from `beginWord` to `endWord`, or `0` if no such sequence exists.

**Practice**

Question asked in:



Day 47

## Basic Calculator

Hard

Given a string `s` representing a valid expression, implement a basic calculator to evaluate it, and return the result of the evaluation.

**Practice**

Question asked in:



Day 48

## Maximum Profit in Job Scheduling

Hard

We have `n` where every job is scheduled to be done from

`startTime[i]` to `endTime[i]`, obtaining a profit of `profit[i]`

Return the maximum profit you can take such that there are no two jobs in the subset with overlapping time range.

**Practice**

Question asked in:



Two things I love the most about Tutort Academy. First before enrolling your profile is reviewed by a Data Scientist and Secondly real time projects from companies with small batch size you won't find these two things anywhere.

## Day 49

## Merge k Sorted Lists

Hard

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**

Question asked in:



## Day 50

## Largest Rectangle in Histogram

Hard

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**

Question asked in:



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