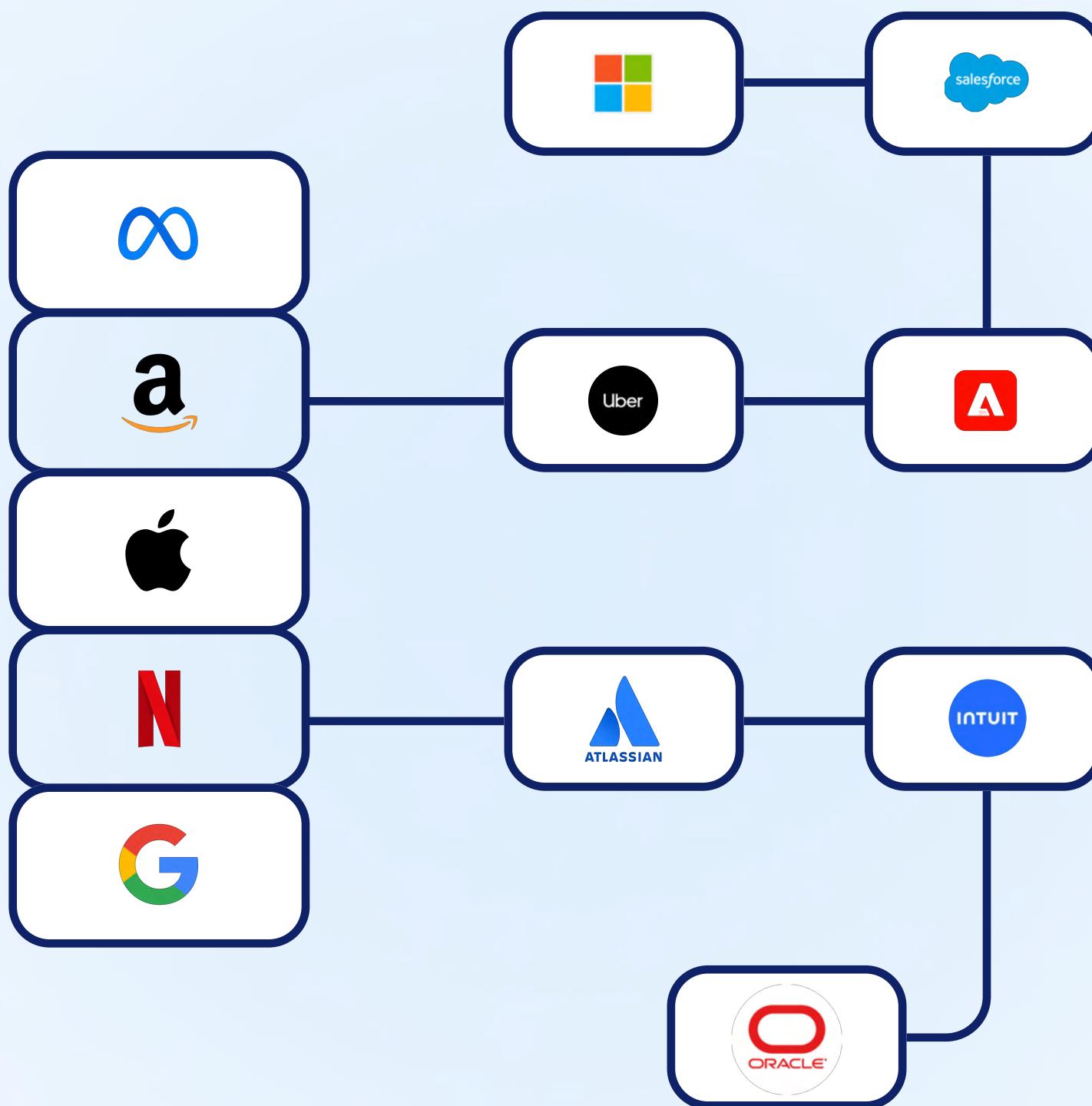


# TOP 150

## DSA Interview Questions





## \*Disclaimer\*

**Interviews test problem-solving, not memory.**

Your ability to analyze, reason, and optimize  
matters more than rote learning.

This doc is a step towards building that  
mindset.

# Array/String

## 1. Merge Sorted Array (Easy)

You are given two integer arrays `nums1` and `nums2`, sorted in non-decreasing order, and two integers `m` and `n`, representing the number of elements in `nums1` and `nums2` respectively.

Merge `nums1` and `nums2` into a single array sorted in non-decreasing order.

The final sorted array should not be returned by the function, but instead be stored inside the array `nums1`. To accommodate this, `nums1` has a length of `m + n`, where the first `m` elements denote the elements that should be merged, and the last `n` elements are set to 0 and should be ignored. `nums2` has a length of `n`.

**Practice**

## 2. Remove Element (Easy)

Given an integer array `nums` and an integer `val`, remove all occurrences of `val` in `nums` in-place. The order of the elements may be changed. Then return the number of elements in `nums` which are not equal to `val`.

Consider the number of elements in `nums` which are not equal to `val` be `k`, to get accepted, you need to do the following things:

- Change the array `nums` such that the first `k` elements of `nums` contain the - elements which are not equal to `val`. The remaining elements of `nums` are not important as well as the size of `nums`.
- Return `k`.

**Practice**

### 3. Remove Duplicates from Sorted Array (Easy)

Given an integer array `nums` sorted in non-decreasing order, remove the duplicates in-place such that each unique element appears only once. The relative order of the elements should be kept the same. Then return the number of unique elements in `nums`.

Consider the number of unique elements of `nums` to be  $k$ , to get accepted, you need to do the following things:

- Change the array `nums` such that the first  $k$  elements of `nums` contain the elements which are not equal to `val`. The remaining elements of `nums` are not important as well as the size of `nums`.
- Return  $k$ .

**Practice**

### 4. Remove Duplicates from Sorted Array II (Medium)

Given an integer array `nums` sorted in non-decreasing order, remove some duplicates in-place such that each unique element appears at most twice. The relative order of the elements should be kept the same.

Since it is impossible to change the length of the array in some languages, you must instead have the result be placed in the first part of the array `nums`. More formally, if there are  $k$  elements after removing the duplicates, then the first  $k$  elements of `nums` should hold the final result. It does not matter what you leave beyond the first  $k$  elements.

Return  $k$  after placing the final result in the first  $k$  slots of `nums`.

Do not allocate extra space for another array. You must do this by modifying the input array in-place with  $O(1)$  extra memory.

**Practice**

## 5. Majority Element (Easy)

Given an array `nums` of size  $n$ , return the majority element.

The majority element is the element that appears more than  $\lfloor n / 2 \rfloor$  times. You may assume that the majority element always exists in the array.

**Practice**

## 6. Rotate Array (Medium)

Given an integer array `nums`, rotate the array to the right by  $k$  steps, where  $k$  is non-negative.

**Practice**

## 7. Best Time to Buy and Sell Stock (Easy)

You are given an array `prices` where `prices[i]` is the price of a given stock on the  $i$ th day.

You want to maximize 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**

## 8. Best Time to Buy and Sell Stock II (Medium)

You are given an integer array `prices` where `prices[i]` is the price of a given stock on the  $i$ th day.

On each day, you may decide to buy and/or sell the stock. You can only hold at most one share of the stock at any time. However, you can buy it then immediately sell it on the same day.

Find and return the maximum profit you can achieve.

**Practice**

## 9. Jump Game (Medium)

You are given an integer array `nums`. You are initially positioned at the array's first index, and each element in the array represents your maximum jump length at that position.

Return true if you can reach the last index, or false otherwise.

**Practice**

## 10. Jump Game II (Medium)

You are given a 0-indexed array of integers `nums` of length  $n$ . You are initially positioned at index 0.

Each element `nums[i]` represents the maximum length of a forward jump from index  $i$ . In other words, if you are at index  $i$ , you can jump to any index  $(i + j)$  where:

- $0 \leq j \leq \text{nums}[i]$  and
- $i + j < n$

Return the minimum number of jumps to reach index  $n - 1$ . The test cases are generated such that you can reach index  $n - 1$ .

## Practice ➤

### 11. H-Index (Medium)

Given an array of integers `citations` where `citations[i]` is the number of citations a researcher received for their  $i$ th paper, return the researcher's h-index.

According to the definition of h-index on Wikipedia: The h-index is defined as the maximum value of  $h$  such that the given researcher has published at least  $h$  papers that have each been cited at least  $h$  times.

## Practice ➤

### 12. Insert Delete GetRandom O(1) (Medium)

Implement the `RandomizedSet` class:

- `RandomizedSet()` Initializes the `RandomizedSet` object.
- `bool insert(int val)` Inserts an item `val` into the set if not present. Returns `true` if the item was not present, `false` otherwise.
- `bool remove(int val)` Removes an item `val` from the set if present. Returns `true` if the item was present, `false` otherwise.
- `int getRandom()` Returns a random element from the current set of elements (it's guaranteed that at least one element exists when this method is called). Each element must have the same probability of being returned.

You must implement the functions of the class such that each function works in average  $O(1)$  time complexity.

## Practice ➤

## 13. 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]`.

The product of any prefix or suffix of `nums` is guaranteed to fit in a 32-bit integer.

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

**Practice**

## 14. Gas Station (Medium)

There are  $n$  gas stations along a circular route, where the amount of gas at the  $i$ th station is `gas[i]`.

You have a car with an unlimited gas tank and it costs `cost[i]` of gas to travel from the  $i$ th station to its next  $(i + 1)$ th station. You begin the journey with an empty tank at one of the gas stations.

Given two integer arrays `gas` and `cost`, return the starting gas station's index if you can travel around the circuit once in the clockwise direction, otherwise return -1. If there exists a solution, it is guaranteed to be unique.

**Practice**

## 15. Candy (Hard)

There are  $n$  children standing in a line. Each child is assigned a rating value given in the integer array `ratings`.

You are giving candies to these children subjected to the following requirements:

- Each child must have at least one candy.
- Children with a higher rating get more candies than their neighbors.

Return the minimum number of candies you need to have to distribute the candies to the children.

**Practice**

## 16. Trapping Rain Water (Hard)

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**

## 17. Roman to Integer (Easy)

Roman numerals are represented by seven different symbols: I, V, X, L, C, D and M.

(in a table here 

Symbol	Value
I	1
V	5
X	10
L	50
C	100
D	500
M	1000

For example, 2 is written as II in Roman numeral, just two ones added together. 12 is written as XII, which is simply X + II. The number 27 is written as XXVII, which is XX + V + II.

Roman numerals are usually written largest to smallest from left to right. However, the numeral for four is not IIII. Instead, the number four is written as IV. Because the one is before the five we subtract it making four. The same principle applies to the number nine, which is written as IX. There are six instances where subtraction is used:

- I can be placed before V (5) and X (10) to make 4 and 9.
- X can be placed before L (50) and C (100) to make 40 and 90.
- C can be placed before D (500) and M (1000) to make 400 and 900.

Given a roman numeral, convert it to an integer.

**Practice**

## 18. Integer to Roman (Medium)

Like the last question, but reversed this time. Given an integer, convert it to a Roman numeral.

**Practice**

## 19. Length of Last Word (Easy)

Given a string s consisting of words and spaces, return the length of the last word in the string.

A word is a maximal substring consisting of non-space characters only.

**Practice**

## 20. Longest Common Prefix (Easy)

Write a function to find the longest common prefix string amongst an array of strings.

If there is no common prefix, return an empty string "".

Practice ➞

## 21. Reverse Words in a String (Medium)

Given an input string s, reverse the order of the words.

A word is defined as a sequence of non-space characters. The words in s will be separated by at least one space.

Return a string of the words in reverse order concatenated by a single space.

Note that s may contain leading or trailing spaces or multiple spaces between two words. The returned string should only have a single space separating the words. Do not include any extra spaces.

Practice ➞

## 22. Zigzag Conversion (Medium)

Practice ➞

## 23. Find the Index of the First Occurrence in a String (Easy)

The string "PAYPALISHIRING" is written in a zigzag pattern on a given number of rows like this: (you may want to display this pattern in a fixed font for better legibility)

P A H N

A P L S I I G

Y I R

And then read line by line: "PAHNAPLSIIGYIR"

Write the code that will take a string and make this conversion given a number of rows:

```
string convert(string s, int numRows);
```

## Practice ➤

## 24. Text Justification (Hard)

Given an array of strings words and a width maxWidth, format the text such that each line has exactly maxWidth characters and is fully (left and right) justified.

You should pack your words in a greedy approach; that is, pack as many words as you can in each line. Pad extra spaces '' when necessary so that each line has exactly maxWidth characters.

Extra spaces between words should be distributed as evenly as possible. If the number of spaces on a line does not divide evenly between words, the empty slots on the left will be assigned more spaces than the slots on the right.

For the last line of text, it should be left-justified, and no extra space is inserted between words.

**Note:**

- A word is defined as a character sequence consisting of non-space characters only.
- Each word's length is guaranteed to be greater than 0 and not exceed maxWidth.
- The input array words contains at least one word.

**Practice** ➞

## Two Pointers

### 25. Valid Palindrome (Easy)

A phrase is a palindrome if, after converting all uppercase letters into lowercase letters and removing all non-alphanumeric characters, it reads the same forward and backward. Alphanumeric characters include letters and numbers.

Given a string  $s$ , return true if it is a palindrome, or false otherwise.

Practice ➔

### 26. Is Subsequence (Easy)

Given two strings  $s$  and  $t$ , return true if  $s$  is a subsequence of  $t$ , or false otherwise.

A subsequence of a string is a new string that is formed from the original string by deleting some (can be none) of the characters without disturbing the relative positions of the remaining characters. (i.e., "ace" is a subsequence of "abcde" while "aec" is not).

Practice ➔

### 27. Two Sum II - Input Array Is Sorted (Medium)

Given a 1-indexed array of integers numbers that is already sorted in non-decreasing order, find two numbers such that they add up to a specific target number. Let these two numbers be  $\text{numbers}[\text{index1}]$  and  $\text{numbers}[\text{index2}]$  where  $1 \leq \text{index1} < \text{index2} \leq \text{numbers.length}$ .

Return the indices of the two numbers, `index1` and `index2`, added by one as an integer array `[index1, index2]` of length 2.

The tests are generated such that there is exactly one solution. You may not use the same element twice.

Your solution must use only constant extra space.

**Practice**

## 28. 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`th line are  $(i, 0)$  and  $(i, \text{height}[i])$ .

Find two lines that together with the x-axis form a container, such that the container contains the most water.

Return the maximum amount of water a container can store.

Notice that you may not slant the container.

**Practice**

## 29. 3Sum (Medium)

Given an integer array `nums`, return all the triplets `[nums[i], nums[j], nums[k]]` such that  $i \neq j$ ,  $i \neq k$ , and  $j \neq k$ , and  $\text{nums}[i] + \text{nums}[j] + \text{nums}[k] == 0$ .

Notice that the solution set must not contain duplicate triplets.

**Practice**

## Sliding Window

### 30. Minimum Size Subarray Sum (Medium)

Given an array of positive integers `nums` and a positive integer `target`, return the minimal length of a subarray whose sum is greater than or equal to `target`. If there is no such subarray, return 0 instead.

Practice ➞

### 31. Longest Substring Without Repeating Characters (Medium)

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

Practice ➞

### 32. Substring with Concatenation of All Words (Hard)

You are given a string `s` and an array of strings `words`. All the strings of `words` are of the same length.

A concatenated string is a string that exactly contains all the strings of any permutation of `words` concatenated.

For example, if `words` = `["ab", "cd", "ef"]`, then `"abcdef"`, `"abefcd"`, `"cdabef"`, `"cdefab"`, `"efabcd"`, and `"efcdab"` are all concatenated strings. `"acdbef"` is not a concatenated string because it is not the concatenation of any permutation of `words`.

Return an array of the starting indices of all the concatenated substrings in s. You can return the answer in any order.

**Practice**

### **33. Minimum Window Substring (Hard)**

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 "".

The testcases will be generated such that the answer is unique.

**Practice**

# Matrix

## 34. Valid Sudoku (Medium)

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

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

**Note:**

- A Sudoku board (partially filled) could be valid but is not necessarily solvable.
- Only the filled cells need to be validated according to the mentioned rules.

**Practice**

## 35. Spiral Matrix (Medium)

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

**Practice**

## 36. Rotate Image (Medium)

You are given an  $n \times n$  2D matrix representing an image, rotate the image by 90 degrees (clockwise).

You have to rotate the image in-place, which means you have to modify the input 2D matrix directly. DO NOT allocate another 2D matrix and do the rotation.

## Practice

### 37. Set Matrix Zeroes (Medium)

Given an  $m \times n$  integer matrix  $\text{matrix}$ , if an element is 0, set its entire row and column to 0's.

You must do it in place.

## Practice

### 38. Game of Life (Medium)

According to Wikipedia's article: "The Game of Life, also known simply as Life, is a cellular automaton devised by the British mathematician John Horton Conway in 1970."

The board is made up of an  $m \times n$  grid of cells, where each cell has an initial state: live (represented by a 1) or dead (represented by a 0). Each cell interacts with its eight neighbors (horizontal, vertical, diagonal) using the following four rules (taken from the above Wikipedia article):

1. Any live cell with fewer than two live neighbors dies as if caused by under-population.
2. Any live cell with two or three live neighbors lives on to the next generation.
3. Any live cell with more than three live neighbors dies, as if by over-population.
4. Any dead cell with exactly three live neighbors becomes a live cell, as if by reproduction.

The next state of the board is determined by applying the above rules simultaneously to every cell in the current state of the  $m \times n$  grid board. In this process, births and deaths occur simultaneously.

Given the current state of the board, update the board to reflect its next state.

Note that you do not need to return anything.

## Practice

# Hashmap

## 39. Ransom Note (Easy)

Given two strings `ransomNote` and `magazine`, return true if `ransomNote` can be constructed by using the letters from `magazine` and false otherwise.

Each letter in `magazine` can only be used once in `ransomNote`.

Practice ➔

## 40. Isomorphic Strings (Easy)

Given two strings `s` and `t`, determine if they are isomorphic.

Two strings `s` and `t` are isomorphic if the characters in `s` can be replaced to get `t`.

All occurrences of a character must be replaced with another character while preserving the order of characters. No two characters may map to the same character, but a character may map to itself.

Practice ➔

## 41. Word Pattern (Easy)

Given a pattern and a string `s`, find if `s` follows the same pattern.

Here follow means a full match, such that there is a bijection between a letter in pattern and a non-empty word in `s`. Specifically:

- Each letter in pattern maps to exactly one unique word in s.
- Each unique word in s maps to exactly one letter in pattern.
- No two letters map to the same word, and no two words map to the same letter.

Practice ➤

## 42. Valid Anagram (Easy)

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

Practice ➤

## 43. Group Anagrams (Medium)

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

Practice ➤

## 44. Two Sum (Easy)

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

You may assume that each input would have exactly one solution, and you may not use the same element twice.

You can return the answer in any order.

Practice ➤

## 45. Happy Number (Easy)

Write an algorithm to determine if a number  $n$  is happy.

A happy number is a number defined by the following process:

- Starting with any positive integer, replace the number by the sum of the squares of its digits.
- Repeat the process until the number equals 1 (where it will stay), or it loops endlessly in a cycle which does not include 1.
- Those numbers for which this process ends in 1 are happy.

Return true if  $n$  is a happy number, and false if not.

**Practice**

## 46. Contains Duplicate II (Easy)

Given an integer array  $\text{nums}$  and an integer  $k$ , return true if there are two distinct indices  $i$  and  $j$  in the array such that  $\text{nums}[i] == \text{nums}[j]$  and  $\text{abs}(i - j) \leq k$ .

**Practice**

## 47. Longest Consecutive Sequence (Medium)

Given an unsorted array of integers  $\text{nums}$ , return the length of the longest consecutive elements sequence.

You must write an algorithm that runs in  $O(n)$  time.

**Practice**

## Intervals

### 48. Summary Ranges (Easy)

You are given a sorted unique integer array `nums`.

A range  $[a,b]$  is the set of all integers from  $a$  to  $b$  (inclusive).

Return the smallest sorted list of ranges that cover all the numbers in the array exactly. That is, each element of `nums` is covered by exactly one of the ranges, and there is no integer  $x$  such that  $x$  is in one of the ranges but not in `nums`.

Each range  $[a,b]$  in the list should be output as:

- " $a \rightarrow b$ " if  $a \neq b$
- " $a$ " if  $a == b$

**Practice**

### 49. Merge Intervals (Medium)

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.

**Practice**

## 50. Insert Interval (Medium)

You are given an array of non-overlapping intervals `intervals` where `intervals[i] = [starti, endi]` represent the start and the end of the *i*th interval and `intervals` is sorted in ascending order by `starti`. You are also given an interval `newInterval = [start, end]` that represents the start and end of another interval.

Insert `newInterval` into `intervals` such that `intervals` is still sorted in ascending order by `starti` and `intervals` still does not have any overlapping intervals (merge overlapping intervals if necessary).

Return intervals after the insertion.

Note that you don't need to modify `intervals` in-place. You can make a new array and return it.

**Practice**

## 51. Minimum Number of Arrows to Burst Balloons (Medium)

There are some spherical balloons taped onto a flat wall that represents the XY-plane. The balloons are represented as a 2D integer array `points` where `points[i] = [xstart, xend]` denotes a balloon whose horizontal diameter stretches between `xstart` and `xend`. You do not know the exact y-coordinates of the balloons.

Arrows can be shot up directly vertically (in the positive y-direction) from different points along the x-axis. A balloon with `xstart` and `xend` is burst by an arrow shot at `x` if `xstart <= x <= xend`. There is no limit to the number of arrows that can be shot. A shot arrow keeps traveling up infinitely, bursting any balloons in its path.

Given the array points, return the minimum number of arrows that must be shot to burst all balloons.

**Practice**

## 52. Valid Parentheses (Easy)

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

An input string is valid if:

1. Open brackets must be closed by the same type of brackets.
2. Open brackets must be closed in the correct order.
3. Every close bracket has a corresponding open bracket of the same type.

## Practice

## 53. Simplify Path (Medium)

You are given an absolute path for a Unix-style file system, which always begins with a slash '/'. Your task is to transform this absolute path into its simplified canonical path.

The rules of a Unix-style file system are as follows:

- A single period '.' represents the current directory.
- A double period '..' represents the previous/parent directory.
- Multiple consecutive slashes such as '//' and '///' are treated as a single slash '/'.
- Any sequence of periods that does not match the rules above should be treated as a valid directory or file name. For example, '...' and '....' are valid directory or file names.

The simplified canonical path should follow these rules:

- The path must start with a single slash '/'.
- Directories within the path must be separated by exactly one slash '/'.

- The path must not end with a slash '/', unless it is the root directory.
- The path must not have any single or double periods ('.' and '..') used to denote current or parent directories.

Return the simplified canonical path.

## Practice ➔

### 54. 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 ➔

### 55. 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.

**Note:**

- The valid operators are '+', '-', '\*', and '/'.
- Each operand may be an integer or another expression.

- The division between two integers always truncates toward zero.
- There will not be any division by zero.
- The input represents a valid arithmetic expression in a reverse polish notation.
- The answer and all the intermediate calculations can be represented in a 32-bit integer.

**Practice** ➤

## 56. 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.

**Note:**

You are not allowed to use any built-in function which evaluates strings as mathematical expressions, such as eval().

**Practice** ➤

## Linked List

### 57. 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 ➔

### 58. Add Two Numbers (Medium)

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.

Practice ➔

### 59. Merge Two Sorted Lists (Easy)

You are given the heads of two sorted linked lists list1 and list2.

Merge the two lists into 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 ➤

### 60. Copy List with Random Pointer (Medium)

A linked list of length n is given such that each node contains an additional random pointer, which could point to any node in the list, or null.

Construct a deep copy of the list. The deep copy should consist of exactly n brand new nodes, where each new node has its value set to the value of its corresponding original node. Both the next and random pointer of the new nodes should point to new nodes in the copied list such that the pointers in the original list and copied list represent the same list state. None of the pointers in the new list should point to nodes in the original list.

For example, if there are two nodes X and Y in the original list, where  $X.random \rightarrow Y$ , then for the corresponding two nodes x and y in the copied list,  $x.random \rightarrow y$ .

Return the head of the copied linked list.

## Practice ➤

### 61. Reverse Linked List II (Medium)

Given the head of a singly linked list and two integers left and right where  $left \leq right$ , reverse the nodes of the list from position left to position right, and return the reversed list.

## Practice ➤

## 62. Reverse Nodes in k-Group (Hard)

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**

## 63. Remove Nth Node From End of List (Medium)

Given the head of a linked list, remove the  $n$ th node from the end of the list and return its head.

**Practice**

## 64. Remove Duplicates from Sorted List II (Medium)

Given the head of a sorted linked list, delete all nodes that have duplicate numbers, leaving only distinct numbers from the original list. Return the linked list sorted as well.

**Practice**

## 65. Rotate List (Medium)

Given the head of a linked list, rotate the list to the right by  $k$  places.

**Practice**

## 66. Partition List (Medium)

Given the head of a linked list and a value  $x$ , partition it such that all nodes less than  $x$  come before nodes greater than or equal to  $x$ .

You should preserve the original relative order of the nodes in each of the two partitions.

**Practice**

## 67. 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, otherwise return -1.
- `void put(int key, int value)` Update the value of the key if the key exists. Otherwise, add the key-value pair to the cache. If the number of keys exceeds the capacity from this operation, evict the least recently used key.

The functions `get` and `put` must each run in  $O(1)$  average time complexity.

**Practice**

## Binary Tree General

### 68. 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 ➞

### 69. Same Tree (Easy)

Given the roots of two binary trees p and q, write a function to check if they are the same or not.

Two binary trees are considered the same if they are structurally identical, and the nodes have the same value.

Practice ➞

### 70. Invert Binary Tree (Easy)

Given the root of a binary tree, invert the tree, and return its root.

Practice ➞

### 71. Symmetric Tree (Easy)

Given the root of a binary tree, check whether it is a mirror of itself (i.e., symmetric around its center).

## Practice ➤

### 72. Construct Binary Tree from Preorder and Inorder Traversal (Medium)

Given two integer arrays preorder and inorder where preorder is the preorder traversal of a binary tree and inorder is the inorder traversal of the same tree, construct and return the binary tree.

## Practice ➤

### 73. Construct Binary Tree from Inorder and Postorder Traversal (Medium)

Given two integer arrays inorder and postorder where inorder is the inorder traversal of a binary tree and postorder is the postorder traversal of the same tree, construct and return the binary tree.

## Practice ➤

### 74. Populating Next Right Pointers in Each Node II (Medium)

Given a binary tree

```
struct Node {  
    int val;  
    Node *left;  
    Node *right;  
    Node *next;  
}
```

Populate each next pointer to point to its next right node. If there is no next right node, the next pointer should be set to NULL.

Initially, all next pointers are set to NULL.

## Practice ➤

### 75. Flatten Binary Tree to Linked List (Medium)

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 ➤

### 76. Path Sum (Easy)

Given the root of a binary tree and an integer `targetSum`, return true if the tree has a root-to-leaf path such that adding up all the values along the path equals `targetSum`.

A leaf is a node with no children.

## Practice ➤

### 77. Sum Root to Leaf Numbers (Medium)

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.

A leaf node is a node with no children.

## Practice ➔

## 78. Binary Tree Maximum Path Sum (Hard)

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 ➔

## 79. Binary Search Tree Iterator (Medium)

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

- `BSTIterator(TreeNode root)` Initializes an object of the BSTIterator class. The root of the BST is given as part of the constructor. The pointer should be initialized to a non-existent number smaller than any element in the BST.
- `boolean hasNext()` Returns true if there exists a number in the traversal to the right of the pointer, otherwise returns false.
- `int next()` Moves the pointer to the right, then returns the number at the pointer.

Notice that by initializing the pointer to a non-existent smallest number, the first call to next() will return the smallest element in the BST.

You may assume that next() calls will always be valid. That is, there will be at least a next number in the in-order traversal when next() is called.

**Practice**

## 80. Count Complete Tree Nodes (Easy)

Given the root of a complete binary tree, return the number of the nodes in the tree.

According to Wikipedia, every level, except possibly the last, is completely filled in a complete binary tree, and all nodes in the last level are as far left as possible. It can have between 1 and  $2^h$  nodes inclusive at the last level  $h$ .

Design an algorithm that runs in less than  $O(n)$  time complexity.

**Practice**

## 81. 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.

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**

## Binary Tree BFS

### 82. 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 ➞

### 83. Average of Levels in Binary Tree (Easy)

Given the root of a binary tree, return the average value of the nodes on each level in the form of an array. Answers within 10-5 of the actual answer will be accepted.

Practice ➞

### 84. 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).

Practice ➞

### 85. Binary Tree Zigzag Level Order Traversal (Medium)

Given the root of a binary tree, return the zigzag level order traversal of its nodes' values. (i.e., from left to right, then right to left for the next level and alternate between).

Practice ➞

## Binary Tree BFS

### 86. Minimum Absolute Difference in BST (Easy)

Given the root of a Binary Search Tree (BST), return the minimum absolute difference between the values of any two different nodes in the tree.

Practice ➤

### 87. Kth Smallest Element in a BST (Medium)

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 ➤

### 88. Validate Binary Search Tree (Medium)

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

A valid BST is defined as follows:

- The left subtree of a node contains only nodes with keys strictly less than the node's key.
- The right subtree of a node contains only nodes with keys strictly greater than the node's key.
- Both the left and right subtrees must also be binary search trees.

(A subtree of treeName is a tree consisting of a node in treeName and all of its descendants.)

Practice ➤

## Graph General

### 89. Number of Islands (Medium)

Given an  $m \times n$  2D binary grid  $\text{grid}$  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 ➔

### 90. Surrounded Regions (Medium)

You are given an  $m \times n$  matrix  $\text{board}$  containing letters 'X' and 'O', capture regions that are surrounded:

- Connect: A cell is connected to adjacent cells horizontally or vertically.
- Region: To form a region connect every 'O' cell.
- Surround: The region is surrounded with 'X' cells if you can connect the region with 'X' cells and none of the region cells are on the edge of the board.

To capture a surrounded region, replace all 'O's with 'X's in-place within the original board. You do not need to return anything.

Practice ➔

### 91. Clone Graph (Medium)

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

Return a deep copy (clone) of the graph.

Each node in the graph contains a value (int) and a list (List[Node]) of its neighbors.

```
class Node {  
    public int val;  
    public List<Node> neighbors;  
}
```

## Practice ➤

### 92. Evaluate Division (Medium)

You are given an array of variable pairs equations and an array of real numbers values, where equations[i] = [Ai, Bi] and values[i] represent the equation  $A_i / B_i = \text{values}[i]$ . Each Ai or Bi is a string that represents a single variable.

You are also given some queries, where queries[j] = [Cj, Dj] represents the jth query where you must find the answer for  $C_j / D_j = ?$ .

Return the answers to all queries. If a single answer cannot be determined, return -1.0.

**Note:**

The input is always valid. You may assume that evaluating the queries will not result in division by zero and that there is no contradiction.

**Note:**

The variables that do not occur in the list of equations are undefined, so the answer cannot be determined for them.

## Practice ➤

## 93. 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.

- For example, the pair [0, 1], indicates that to take course 0 you have to first take course 1.

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

**Practice**

## 94. Course Schedule II (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.

- For example, the pair [0, 1], indicates that to take course 0 you have to first take course 1.

Return the ordering of courses you should take to finish all courses. If there are many valid answers, return any of them. If it is impossible to finish all courses, return an empty array.

**Practice**

## Graph BFS

### 95. Snakes and Ladders (Medium)

You are given an  $n \times n$  integer matrix board where the cells are labeled from 1 to  $n^2$  in a Boustrophedon style starting from the bottom left of the board (i.e. `board[n - 1][0]`) and alternating direction each row.

Return the least number of dice rolls required to reach the square  $n^2$ . If it is not possible to reach the square, return -1.

**Practice** ➔

### 96. Minimum Genetic Mutation (Medium)

A gene string can be represented by an 8-character long string, with choices from 'A', 'C', 'G', and 'T'.

Suppose we need to investigate a mutation from a gene string `startGene` to a gene string `endGene` where one mutation is defined as one single character changed in the gene string.

- For example, "AACCGGTT" → "AACCGGTA" is one mutation.

There is also a gene bank bank that records all the valid gene mutations. A gene must be in bank to make it a valid gene string.

Given the two gene strings `startGene` and `endGene` and the gene bank bank, return the minimum number of mutations needed to mutate from `startGene` to `endGene`. If there is no such a mutation, return -1.

Note that the starting point is assumed to be valid, so it might not be included in the bank.

**Practice** ➔

## 97. Word Ladder (Hard)

A transformation sequence from word beginWord to word endWord using a dictionary wordList is a sequence of words  $\text{beginWord} \rightarrow s_1 \rightarrow s_2 \rightarrow \dots \rightarrow s_k$  such that:

- Every adjacent pair of words differs by a single letter.
- Every  $s_i$  for  $1 \leq i \leq k$  is in wordList. Note that beginWord does not need to be in wordList.
- $s_k == \text{endWord}$

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**

## 98. Implement Trie (Prefix Tree) (Medium)

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 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 (i.e., was inserted before), and false otherwise.
- `boolean startsWith(String prefix)` Returns true if there is a previously inserted string word that has the prefix prefix, and false otherwise.

## Practice

## 99. Design Add and Search Words Data Structure (Medium)

Design a data structure that supports adding new words and finding if a string matches any previously added string.

Implement the WordDictionary class:

- `WordDictionary()` Initializes the object.
- `void addWord(word)` Adds word to the data structure, it can be matched later.
- `bool search(word)` Returns true if there is any string in the data structure that matches word or false otherwise. word may contain dots '.' where dots can be matched with any letter.

## Practice ➤

### 100. Word Search II (Hard)

Given an  $m \times n$  board of characters and a list of strings words, return all words on the board.

Each word must 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 in a word.

## Practice ➤

# Backtracking

## 101. Letter Combinations of a Phone Number (Medium)

Given a string containing digits from 2-9 inclusive, return all possible letter combinations that the number could represent. Return the answer in any order.

A mapping of digits to letters (just like on the telephone buttons) is given below. Note that 1 does not map to any letters.

**Practice** ➤

## 102. Combinations (Medium)

Given two integers n and k, return all possible combinations of k numbers chosen from the range [1, n].

You may return the answer in any order.

**Practice** ➤

## 103. Permutations (Medium)

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

**Practice** ➤

## 104. Combination Sum (Medium)

Given an array of distinct integers candidates and a target integer 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.

The same number may be chosen from candidates an unlimited number of times. Two combinations are unique if the frequency of at least one of the chosen numbers is different.

The test cases are generated such that the number of unique combinations that sum up to target is less than 150 combinations for the given input.

**Practice**

## 105. N-Queens II (Hard)

The n-queens puzzle is the problem of placing n queens on an  $n \times n$  chessboard such that no two queens attack each other.

Given an integer n, return the number of distinct solutions to the n-queens puzzle.

**Practice**

## 106. Generate Parentheses (Medium)

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

**Practice**

## 107. Word Search (Medium)

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**

## Divide & Conquer

### 108. Convert Sorted Array to Binary Search Tree (Easy)

Given an integer array `nums` where the elements are sorted in ascending order, convert it to a height-balanced binary search tree.

(A height-balanced binary tree is a binary tree in which the depth of the two subtrees of every node never differs by more than one.)

**Practice**

### 109. Sort List (Medium)

Given the head of a linked list, return the list after sorting it in ascending order.

**Practice**

### 110. Construct Quad Tree (Medium)

Given a  $n * n$  matrix grid of 0's and 1's only. We want to represent grid with a Quad-Tree.

Return the root of the Quad-Tree representing grid.

**Practice**

## 111. 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**

## Kadane's Algorithm

### 112. Maximum Subarray (Medium)

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

Practice ➞

### 113. Maximum Sum Circular Subarray (Medium)

Given a circular integer array `nums` of length  $n$ , return the maximum possible sum of a non-empty subarray of `nums`.

A circular array means the end of the array connects to the beginning of the array. Formally, the next element of  $\text{nums}[i]$  is  $\text{nums}[(i + 1) \% n]$  and the previous element of  $\text{nums}[i]$  is  $\text{nums}[(i - 1 + n) \% n]$ .

A subarray may only include each element of the fixed buffer `nums` at most once. Formally, for a subarray  $\text{nums}[i], \text{nums}[i + 1], \dots, \text{nums}[j]$ , there does not exist  $i \leq k_1, k_2 \leq j$  with  $k_1 \% n == k_2 \% n$ .

Practice ➞

## Binary Search

### 114. Search Insert Position (Easy)

Given a sorted array of distinct integers and a target value, return the index if the target is found. If not, return the index where it would be if it were inserted in order.

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

Practice ➞

### 115. Search a 2D Matrix (Medium)

You are given an  $m \times n$  integer matrix matrix with the following two properties:

- Each row is sorted in non-decreasing order.
- The first integer of each row is greater than the last integer of the previous row.

Given an integer target, return true if target is in matrix or false otherwise.

You must write a solution in  $O(\log(m * n))$  time complexity.

Practice ➞

### 116. Find Peak Element (Medium)

A peak element is an element that is strictly greater than its neighbors.

Given a 0-indexed integer array nums, find a peak element, and return its index. If the array contains multiple peaks, return the index to any of the peaks.

You must write an algorithm that runs in  $O(\log n)$  time.

**Practice**

## 117. Search in Rotated Sorted Array (Medium)

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

Prior to being passed to your function, `nums` is possibly left rotated at an unknown index `k` ( $1 \leq k < \text{nums.length}$ ) such that the resulting array is `[nums[k], nums[k+1], ..., nums[n-1], nums[0], nums[1], ..., nums[k-1]]` (0-indexed). For example, `[0,1,2,4,5,6,7]` might be left rotated by 3 indices and become `[4,5,6,7,0,1,2]`.

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**

## 118. Find First and Last Position of Element in Sorted Array (Medium)

Given an array of integers `nums` sorted in non-decreasing order, find the starting and ending position of a given target value.

If target is not found in the array, return `[-1, -1]`.

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

**Practice**

## 119. Find Minimum in Rotated Sorted Array (Medium)

Suppose an array of length  $n$  sorted in ascending order is rotated between 1 and  $n$  times. For example, the array  $\text{nums} = [0,1,2,4,5,6,7]$  might become:

- $[4,5,6,7,0,1,2]$  if it was rotated 4 times.
- $[0,1,2,4,5,6,7]$  if it was rotated 7 times.

Notice that rotating an array  $[a[0], a[1], a[2], \dots, a[n-1]]$  1 time results in the array  $[a[n-1], a[0], a[1], a[2], \dots, a[n-2]]$ .

Given the sorted rotated array  $\text{nums}$  of unique elements, return the minimum element of this array.

You must write an algorithm that runs in  $O(\log n)$  time.

**Practice**

## 120. Median of Two Sorted Arrays (Hard)

Given two sorted arrays  $\text{nums1}$  and  $\text{nums2}$  of size  $m$  and  $n$  respectively, return the median of the two sorted arrays.

The overall run time complexity should be  $O(\log (m+n))$ .

**Practice**

## Heap

### 121. Kth Largest Element in an Array (Medium)

Given an integer array `nums` and an integer `k`, return the `k`th largest element in the array.

Note that it is the `k`th largest element in the sorted order, not the `k`th distinct element.

Can you solve it without sorting?

## Practice ➞

### 122. IPO (Hard)

Suppose LeetCode will start its IPO soon. In order to sell a good price of its shares to Venture Capital, LeetCode would like to work on some projects to increase its capital before the IPO. Since it has limited resources, it can only finish at most `k` distinct projects before the IPO. Help LeetCode design the best way to maximize its total capital after finishing at most `k` distinct projects.

You are given `n` projects where the `i`th project has a pure profit `profits[i]` and a minimum capital of `capital[i]` is needed to start it.

Initially, you have `w` capital. When you finish a project, you will obtain its pure profit and the profit will be added to your total capital.

Pick a list of at most `k` distinct projects from given projects to maximize your final capital, and return the final maximized capital.

The answer is guaranteed to fit in a 32-bit signed integer.

## Practice ➞

## 123. Find K Pairs with Smallest Sums (Medium)

You are given two integer arrays `nums1` and `nums2` sorted in non-decreasing order and an integer `k`.

Define a pair  $(u, v)$  which consists of one element from the first array and one element from the second array.

Return the `k` pairs  $(u_1, v_1), (u_2, v_2), \dots, (u_k, v_k)$  with the smallest sums.

**Practice** ➞

## 124. 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  $(2 + 3) / 2 = 2.5$ .

Implement the `MedianFinder` class:

- `MedianFinder()` initializes the `MedianFinder` object.
- `void addNum(int num)` adds the integer `num` from the data stream to the data structure.
- `double findMedian()` returns the median of all elements so far. Answers within  $10^{-5}$  of the actual answer will be accepted.

**Practice** ➞

# Bit Manipulation

## 125. Add Binary (Easy)

Given two binary strings  $a$  and  $b$ , return their sum as a binary string.

Practice ➞

## 126. Reverse Bits (Easy)

Reverse bits of a given 32 bits signed integer.

Practice ➞

## 127. Number of 1 Bits (Easy)

Reverse bits of a given 32 bits signed integer.

Given a positive integer  $n$ , write a function that returns the number of set bits in its binary representation (also known as the Hamming weight).

Practice ➞

## 128. Single Number (Easy)

Given a non-empty array of integers  $\text{nums}$ , every element appears twice except for one. Find that single one.

You must implement a solution with a linear runtime complexity and use only constant extra space.

Practice ➞

## 129. Single Number II (Medium)

Given an integer array `nums` where every element appears three times except for one, which appears exactly once. Find the single element and return it.

You must implement a solution with a linear runtime complexity and use only constant extra space.

**Practice**

## 130. Bitwise AND of Numbers Range (Medium)

Given two integers `left` and `right` that represent the range  $[left, right]$ , return the bitwise AND of all numbers in this range, inclusive.

**Practice**

## 131. Palindrome Number (Easy)

Given an integer  $x$ , return true if  $x$  is a palindrome, and false otherwise.

**Practice** ➤

## 132. Plus One (Easy)

You are given a large integer represented as an integer array  $\text{digits}$ , where each  $\text{digits}[i]$  is the  $i$ th digit of the integer. The digits are ordered from most significant to least significant in left-to-right order. The large integer does not contain any leading 0's.

Increment the large integer by one and return the resulting array of digits.

**Practice** ➤

## 133. Factorial Trailing Zeroes (Medium)

Given an integer  $n$ , return the number of trailing zeroes in  $n!$ .

Note that  $n! = n * (n - 1) * (n - 2) * \dots * 3 * 2 * 1$ .

**Practice** ➤

## 134. Sqrt( $x$ ) (Easy)

Given a non-negative integer  $x$ , return the square root of  $x$  rounded down to the nearest integer. The returned integer should be non-negative as well.

You must not use any built-in exponent function or operator.

- For example, do not use `pow(x, 0.5)` in c++ or `x ** 0.5` in python.

**Practice ➞**

## 135. Pow(x, n) (Medium)

Implement `pow(x, n)`, which calculates  $x$  raised to the power  $n$  (i.e.,  $x^n$ ).

**Practice ➞**

## 136. Max Points on a Line (Hard)

Given an array of points where `points[i] = [xi, yi]` represents a point on the X-Y plane, return the maximum number of points that lie on the same straight line.

**Practice ➞**

## 1D DP

### 137. 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 ➞

### 138. House Robber (Medium)

You are a professional robber planning to rob houses along a street. Each house has a certain amount of money stashed, the only constraint stopping you from robbing each of them is that adjacent houses have security systems connected and it will automatically contact the police if two adjacent houses were broken into on the same night.

Given an integer array nums representing the amount of money of each house, return the maximum amount of money you can rob tonight without alerting the police.

Practice ➞

### 139. Word Break (Medium)

Given a string s and a dictionary of strings wordDict, return true if s can be segmented into a space-separated sequence of one or more dictionary words.

Note that the same word in the dictionary may be reused multiple times in the segmentation.

## Practice ➤

### 140. 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.

You may assume that you have an infinite number of each kind of coin.

## Practice ➤

### 141. Longest Increasing Subsequence (Medium)

Given an integer array nums, return the length of the longest strictly increasing subsequence.

## Practice ➤

## Multidimensional DP

### 142. Triangle (Medium)

Given a triangle array, return the minimum path sum from top to bottom.

For each step, you may move to an adjacent number of the row below. More formally, if you are on index  $i$  on the current row, you may move to either index  $i$  or index  $i + 1$  on the next row.

Practice ➞

### 143. Minimum Path Sum (Medium)

Given a  $m \times n$  grid filled with non-negative numbers, find a path from top left to bottom right, which minimizes the sum of all numbers along its path.

Note: You can only move either down or right at any point in time.

Practice ➞

### 144. Unique Paths II (Medium)

You are given an  $m \times n$  integer array grid. There is a robot 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.

An obstacle and space are marked as 1 or 0 respectively in grid. A path that the robot takes cannot include any square that is an obstacle.

Return the number of possible unique paths that the robot can take to reach the bottom-right corner.

The testcases are generated so that the answer will be less than or equal to  $2 * 10^9$ .

**Practice**

## 145. Longest Palindromic Substring (Medium)

Given a string  $s$ , return the longest palindromic substring in  $s$ .

**Practice**

## 146. Interleaving String (Medium)

Given strings  $s_1$ ,  $s_2$ , and  $s_3$ , find whether  $s_3$  is formed by an interleaving of  $s_1$  and  $s_2$ .

An interleaving of two strings  $s$  and  $t$  is a configuration where  $s$  and  $t$  are divided into  $n$  and  $m$  substrings respectively, such that:

- $s = s_1 + s_2 + \dots + s_n$
- $t = t_1 + t_2 + \dots + t_m$
- $|n - m| \leq 1$
- The interleaving is  $s_1 + t_1 + s_2 + t_2 + s_3 + t_3 + \dots$  or  $t_1 + s_1 + t_2 + s_2 + t_3 + s_3 + \dots$

**Note:**

$a + b$  is the concatenation of strings  $a$  and  $b$ .

**Practice**

## 147. Edit Distance (Medium)

Given two strings  $\text{word1}$  and  $\text{word2}$ , return the minimum number of operations required to convert  $\text{word1}$  to  $\text{word2}$ .

You have the following three operations permitted on a word:

- Insert a character
- Delete a character
- Replace a character

## Practice ➤

### 148. Best Time to Buy and Sell Stock III (Hard)

You are given an array prices where  $\text{prices}[i]$  is the price of a given stock on the  $i$ th day.

Find the maximum profit you can achieve. You may complete at most two transactions.

Note: You may not engage in multiple transactions simultaneously (i.e., you must sell the stock before you buy again).

## Practice ➤

### 149. Best Time to Buy and Sell Stock IV (Hard)

You are given an integer array prices where  $\text{prices}[i]$  is the price of a given stock on the  $i$ th day, and an integer  $k$ .

Find the maximum profit you can achieve. You may complete at most  $k$  transactions: i.e. you may buy at most  $k$  times and sell at most  $k$  times.

**Note:**

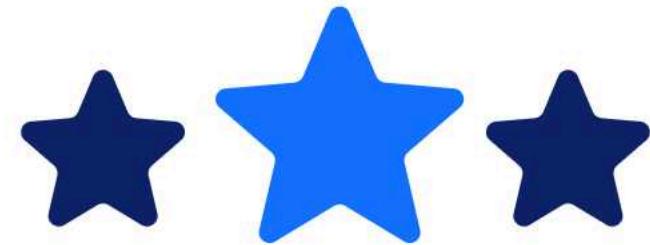
You may not engage in multiple transactions simultaneously (i.e., you must sell the stock before you buy again).

## Practice ➤

## 150. Maximal Square (Medium)

Given an  $m \times n$  binary matrix filled with 0's and 1's, find the largest square containing only 1's and return its area.

Practice ➞



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