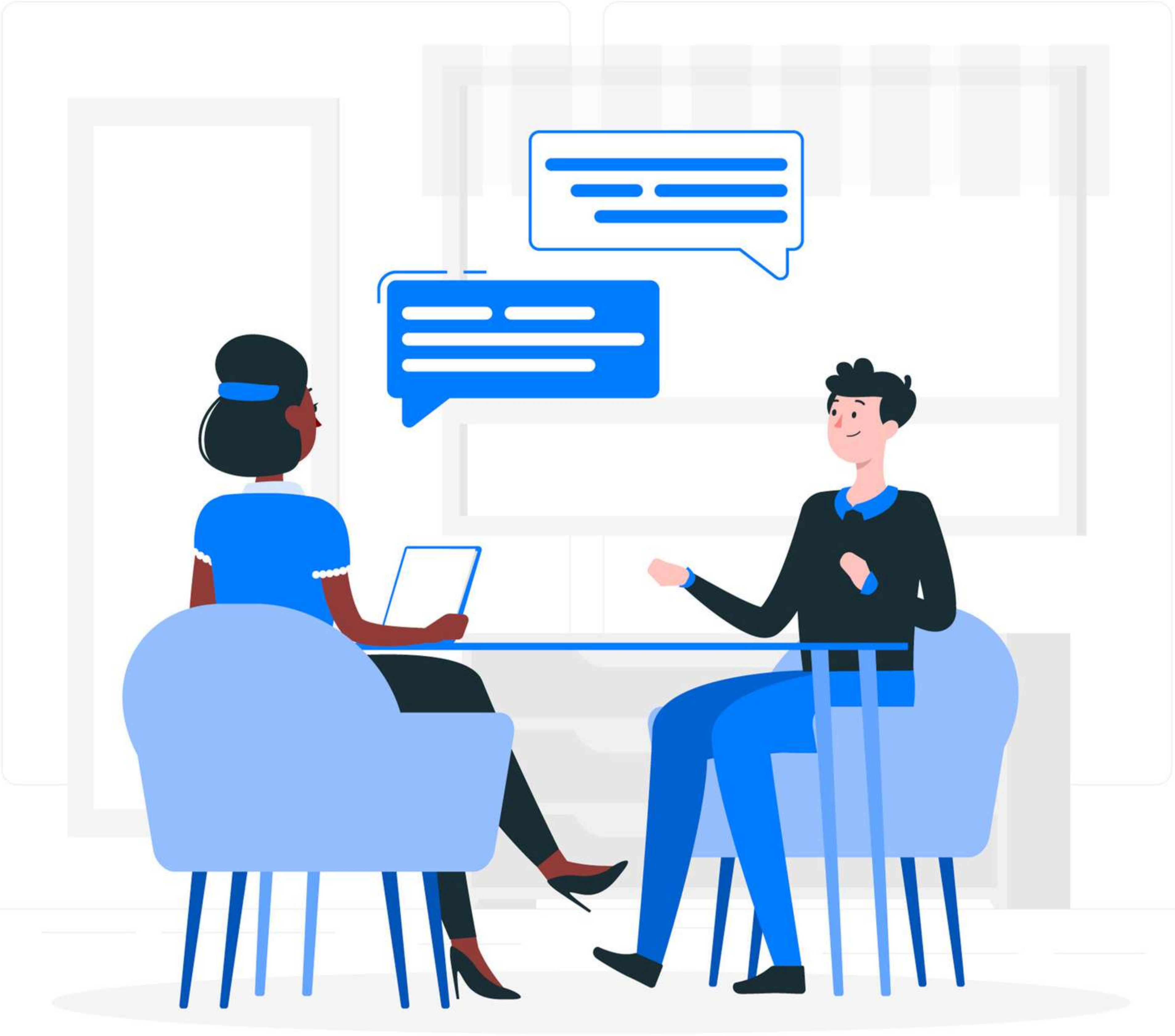
AlgoTutor

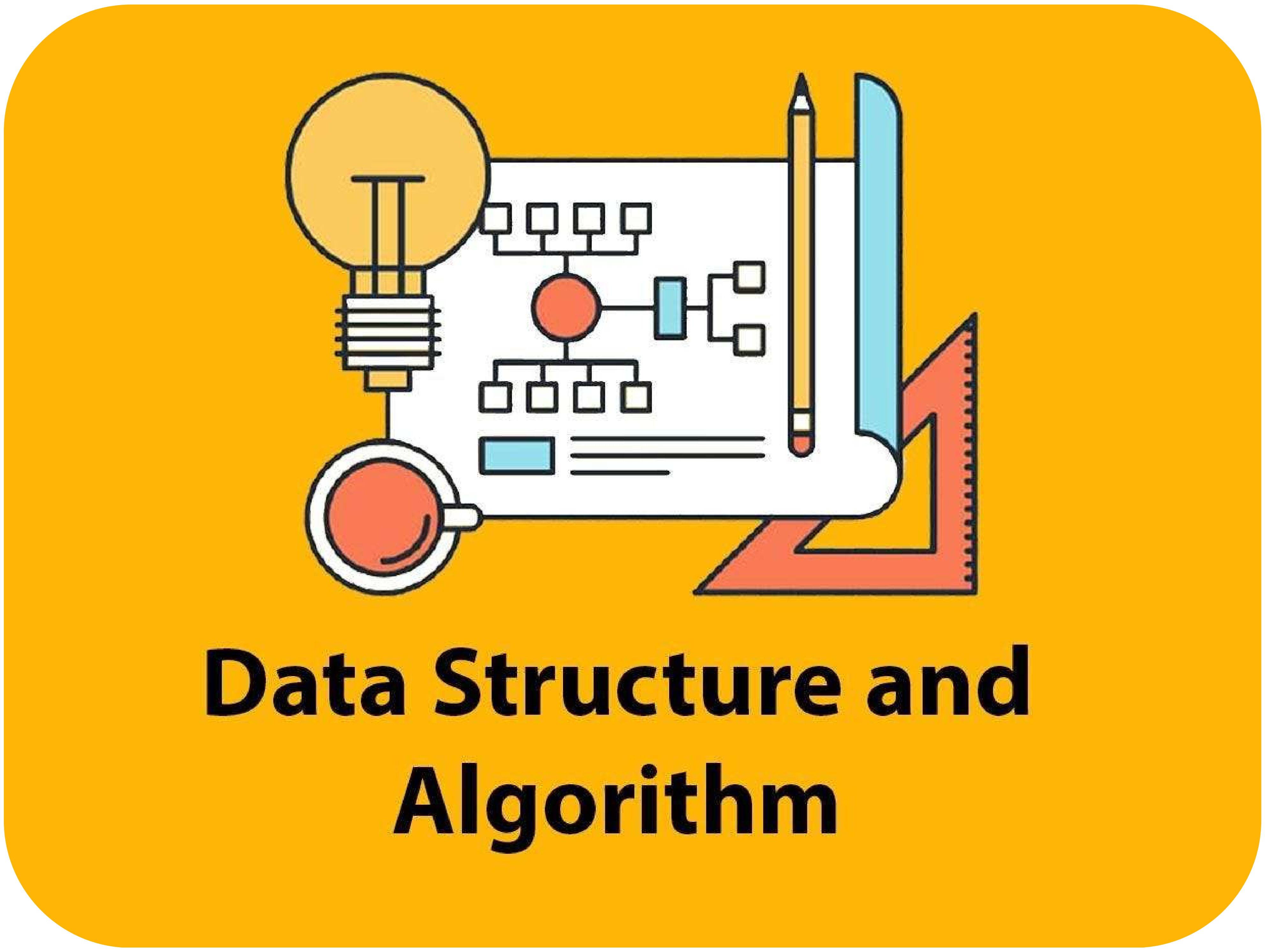
Microsoft

Interview Prepration



Days 1-5: Data Structures and Algorithms Review

- Review core data structures (arrays, linked lists, stacks, queues, trees, graphs).
- Study basic sorting and searching algorithms.
- Solve problems from LeetCode and HackerRank to refresh your knowledge.



Days 6-10: Advanced Data Structures and Algorithms

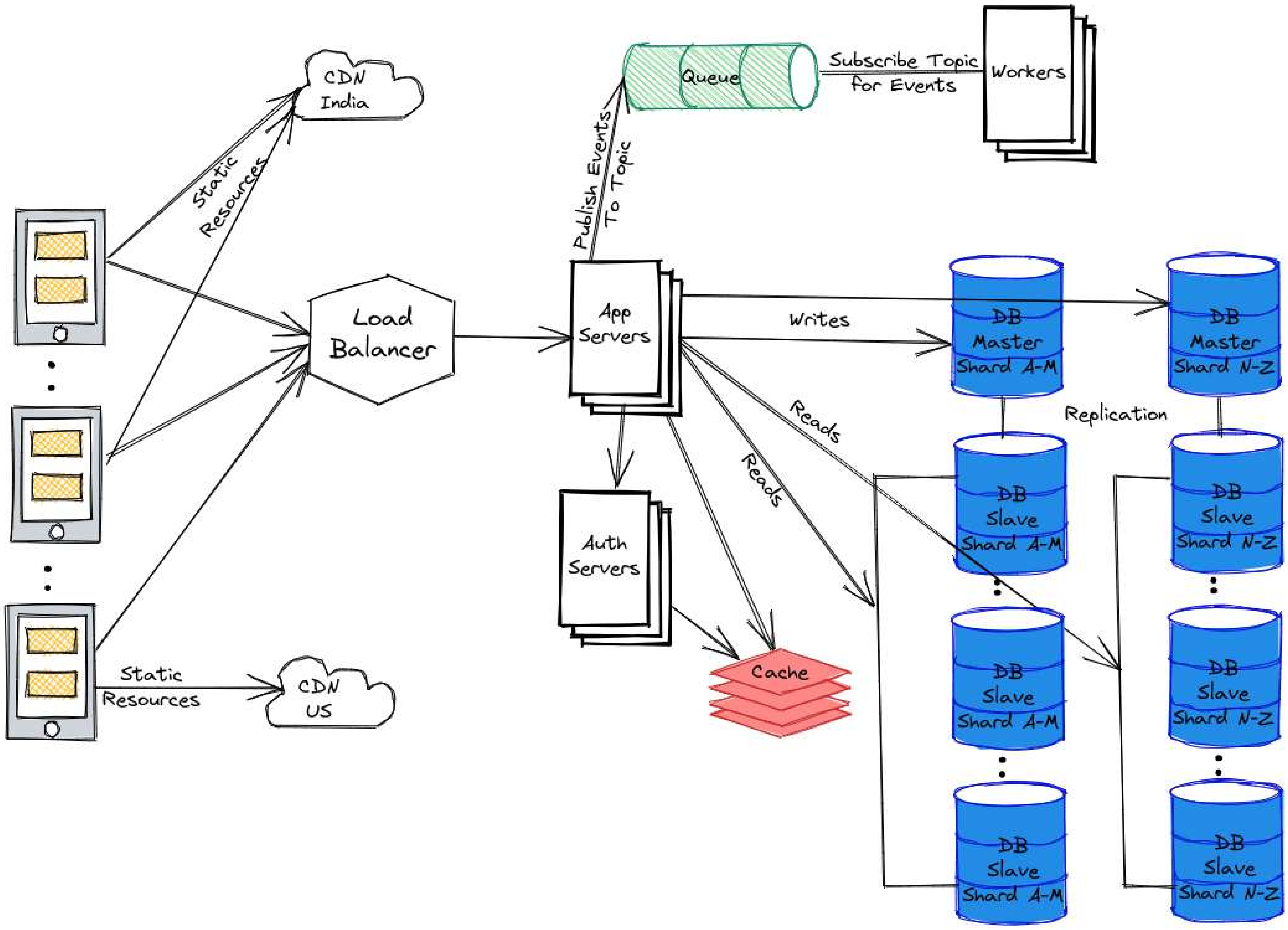
🔷 Study advanced data structures (heaps, hash tables, tries, advanced trees).

🔷 Deepen your understanding of sorting algorithms and dynamic programming.

🔷 Solve more challenging problems, especially those with optimization components.

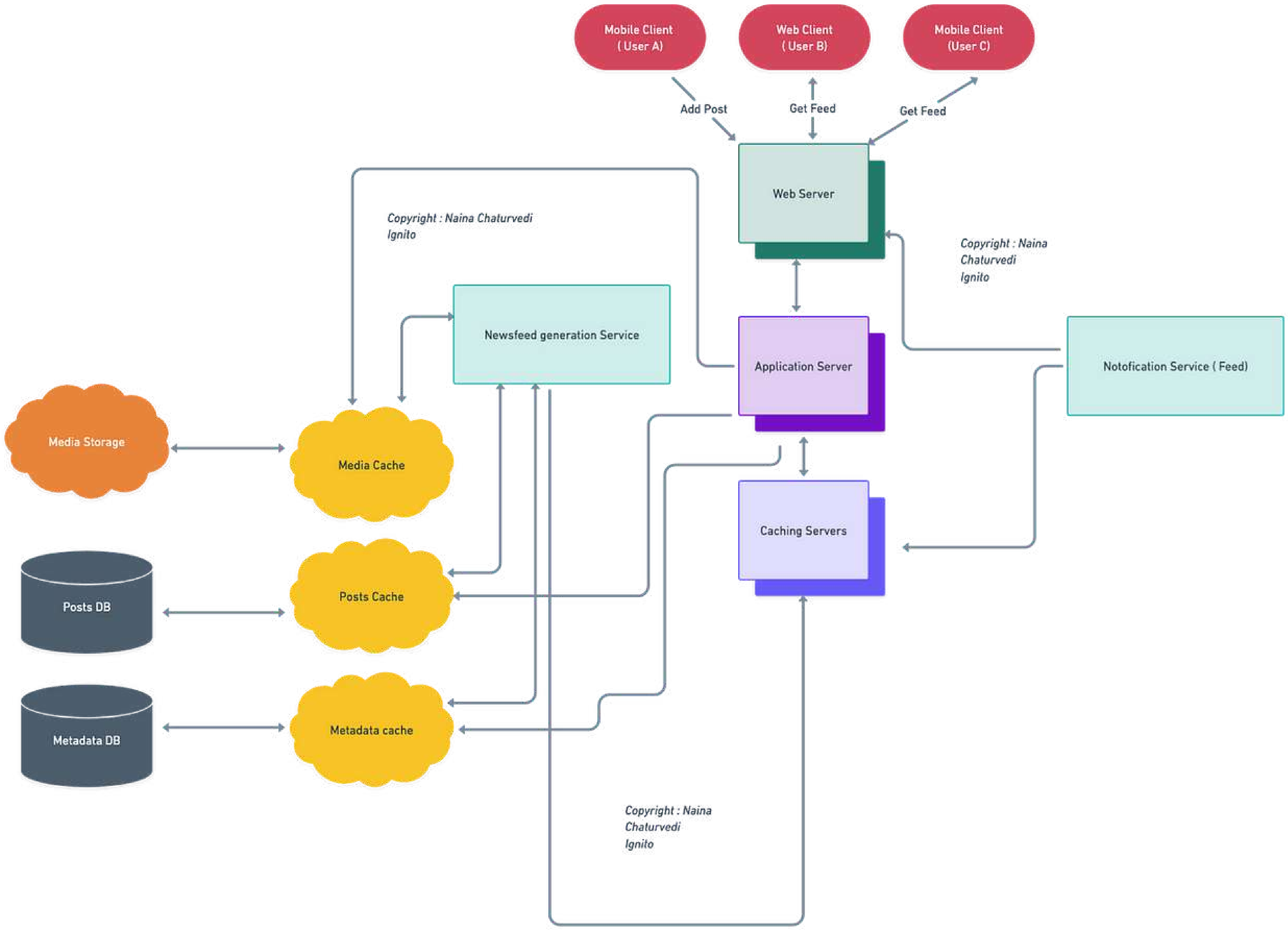
Days 11-15: System Design Basics

- Learn the basics of system design concepts, including scalability, load balancing, and databases.
- Study system design patterns and common architectural principles.



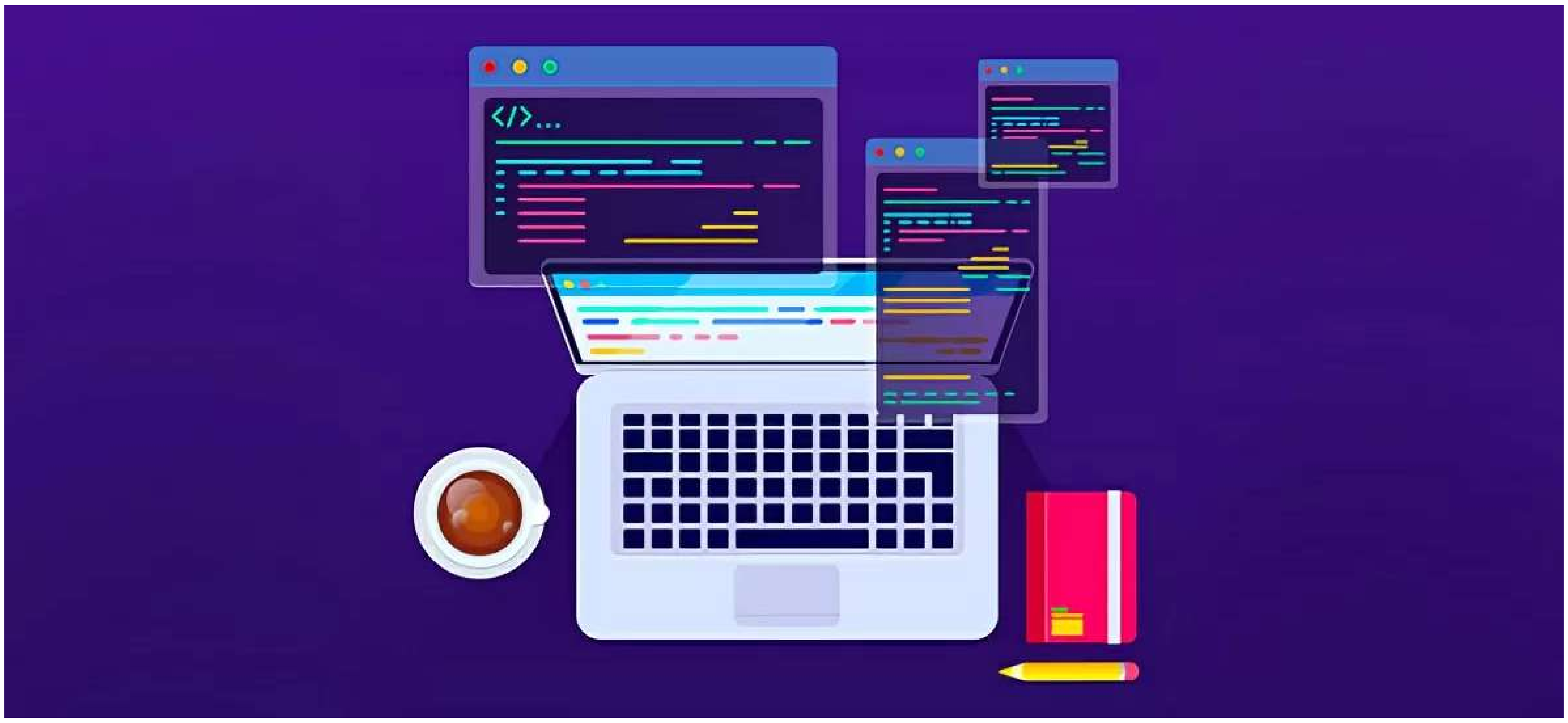
Days 16-20: System Design Case Studies

- Dive into case studies of real-world system designs.
- Analyze and understand the design decisions made in these systems.



Days 21-25: Coding Practice

- Dedicate these days to intense coding practice.
- Focus on problem-solving skills, coding speed, and efficient implementation.



Days 26-30: Mock Interviews and Review

- Simulate mock coding interviews to test your skills.
- Review your performance and improve your weak areas.

Questions Asked in Microsoft Interviews

01. Find Missing Observations

You have observations of n + m 6-sided dice rolls with each face numbered from 1 to 6. n of the observations went missing, and you only have the observations of m rolls. Fortunately, you have also calculated the average value of the n + m rolls.

You are given an integer array rolls of length m where rolls[i] is the value of the ith observation. You are also given the two integers mean and n.

Example 1:

Input: rolls = [3,2,4,3], mean = 4, n = 2

Output: [6,6]

Example 2:

Input: rolls = [1,5,6], mean = 3, n = 4

Output: [2,3,2,2]

Practice

02. LRU Cache

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.

Example 1:

Input

["LRUCache", "put", "put", "get", "put", "get", "put", "get", "get", "get"]

[[2], [1, 1], [2, 2], [1], [3, 3], [2], [4, 4], [1], [3], [4]]

Output

[null, null, null, 1, null, -1, null, -1, 3, 4]

Practice

03. Sign of the Product of an Array

There is a function signFunc(x) that returns:

- 1 if x is positive.
- -1 if x is negative.
- 0 if x is equal to 0.

You are given an integer array nums. Let product be the product of all values in the array nums.

Return signFunc(product).

Example 1:

Input: nums = [-1,-2,-3,-4,3,2,1]

Output: 1

Example 2:

Input: nums = [1,5,0,2,-3]

Output: 0

Example 3:

Input: nums = [-1,1,-1,1,-1]

Output: -1

Practice

04. Number of Islands

Given an m x 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.

Example 1:

Input: grid = [

```
  ["1","1","1","1","0"],
  ["1","1","0","1","0"],
  ["1","1","0","0","0"],
  ["0","0","0","0","0"]
]
```

Output: 1

Practice

05. Two Sum

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.

Example 1:
Input: nums = [2,7,11,15], target = 9
Output: [0,1]

Example 2:
Input: nums = [3,2,4], target = 6
Output: [1,2]

Example 3:
Input: nums = [3,3], target = 6
Output: [0,1]

Practice

06. Reverse Words in a String

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.

Example 1:
Input: s = "the sky is blue"
Output: "blue is sky the"

Example 2:
Input: s = " hello world "
Output: "world hello"

Practice

07. Group Anagrams

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

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.

Example 1:
Input: strs = ["eat","tea","tan","ate","nat","bat"]
Output: [["bat"],["nat","tan"],["ate","eat","tea"]]

Example 2:
Input: strs = [""]
Output: [[""]]

Example 3:
Input: strs = ["a"]
Output: [["a"]]

Practice

08. Longest Substring Without Repeating Characters

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

Example 1:

Input: s = "abcabcbb"

Output: 3

Explanation: The answer is "abc", with the length of 3.

Example 2:

Input: s = "bbbbb"

Output: 1

Explanation: The answer is "b", with the length of 1.

Example 3:

Input: s = "pwwkew"

Output: 3

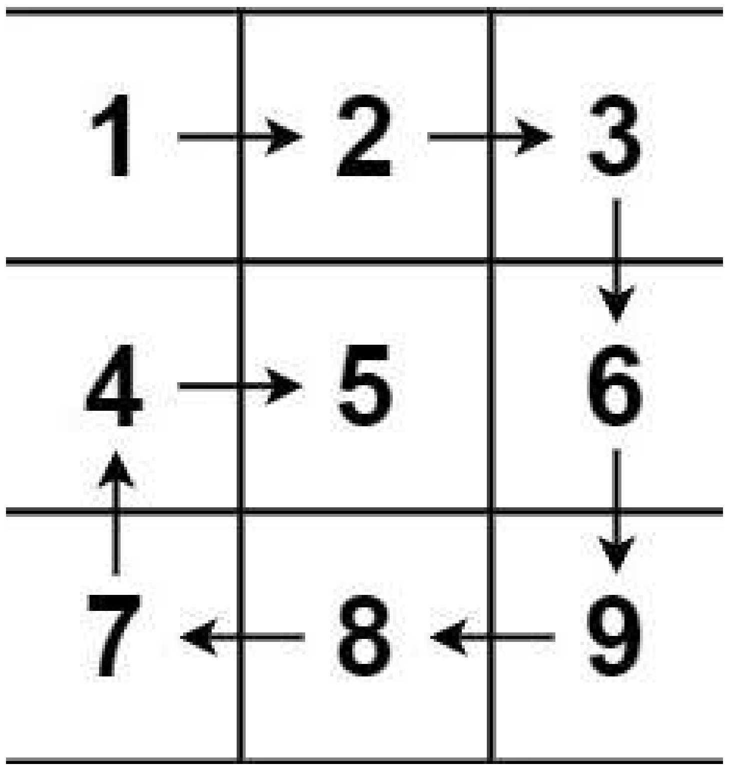
Explanation: The answer is "wke", with the length of 3. Notice that the answer must be a substring, "pwke" is a subsequence and not a substring.

Practice

09. Spiral Matrix

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

Example 1:



Input: matrix = [[1,2,3],[4,5,6],[7,8,9]]

Output: [1,2,3,6,9,8,7,4,5]

Practice

10. Search in Rotated Sorted Array II

There is an integer array nums sorted in non-decreasing order (not necessarily with distinct values).

Before being passed to your function, nums is **rotated** at an unknown pivot index k (0 <= k < 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, [0,1,2,4,4,4,5,6,6,7] might be rotated at pivot index 5 and become [4,5,6,6,7,0,1,2,4,4].

Given the array nums after the rotation and an integer target, return true if target is in nums, or false if it is not in nums.

You must decrease the overall operation steps as much as possible.

Example 1:
Input: nums = [2,5,6,0,0,1,2], target = 0
Output: true

Practice

11. Find N Unique Integers Sum up to Zero

Given an integer n, return any array containing n unique integers such that they add up to 0.

Example 1:
Input: n = 5
Output: [-7,-1,1,3,4]
Explanation: These arrays also are accepted [-5,-1,1,2,3] , [-3,-1,2,-2,4].

Example 2:
Input: n = 3
Output: [-1,0,1]

Example 3:
Input: n = 1
Output: [0]

Practice

12. Valid Parentheses

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.

Example 1:

Input: s = "()"

Output: true

Example 2:

Input: s = "()[]{}"

Output: true

Example 3:

Input: s = "(]"

Output: false

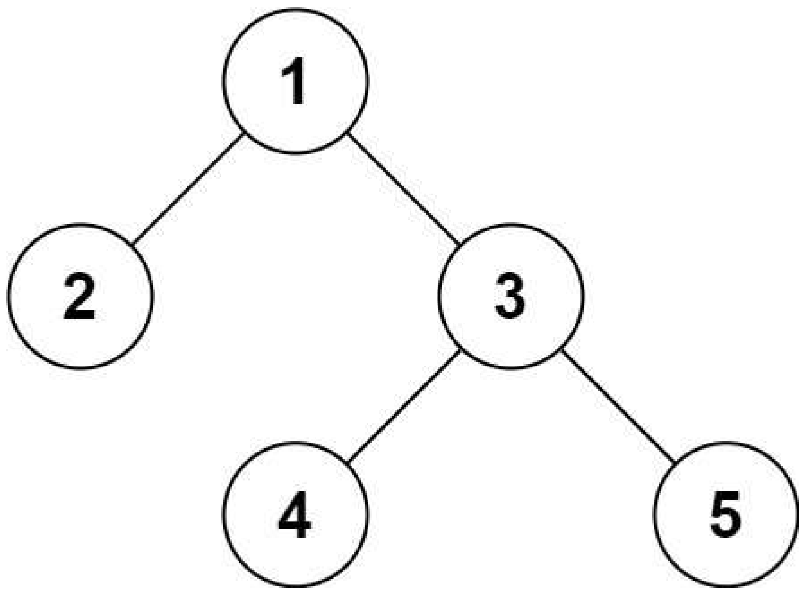
Practice

13. Serialize and Deserialize Binary Tree

Serialization is the process of converting a data structure or object into a sequence of bits so that it can be stored in a file or memory buffer, or transmitted across a network connection link to be reconstructed later in the same or another computer environment.

Design an algorithm to serialize and deserialize a binary tree. There is no restriction on how your serialization/deserialization algorithm should work. You just need to ensure that a binary tree can be serialized to a string and this string can be deserialized to the original tree structure.

Example 1:



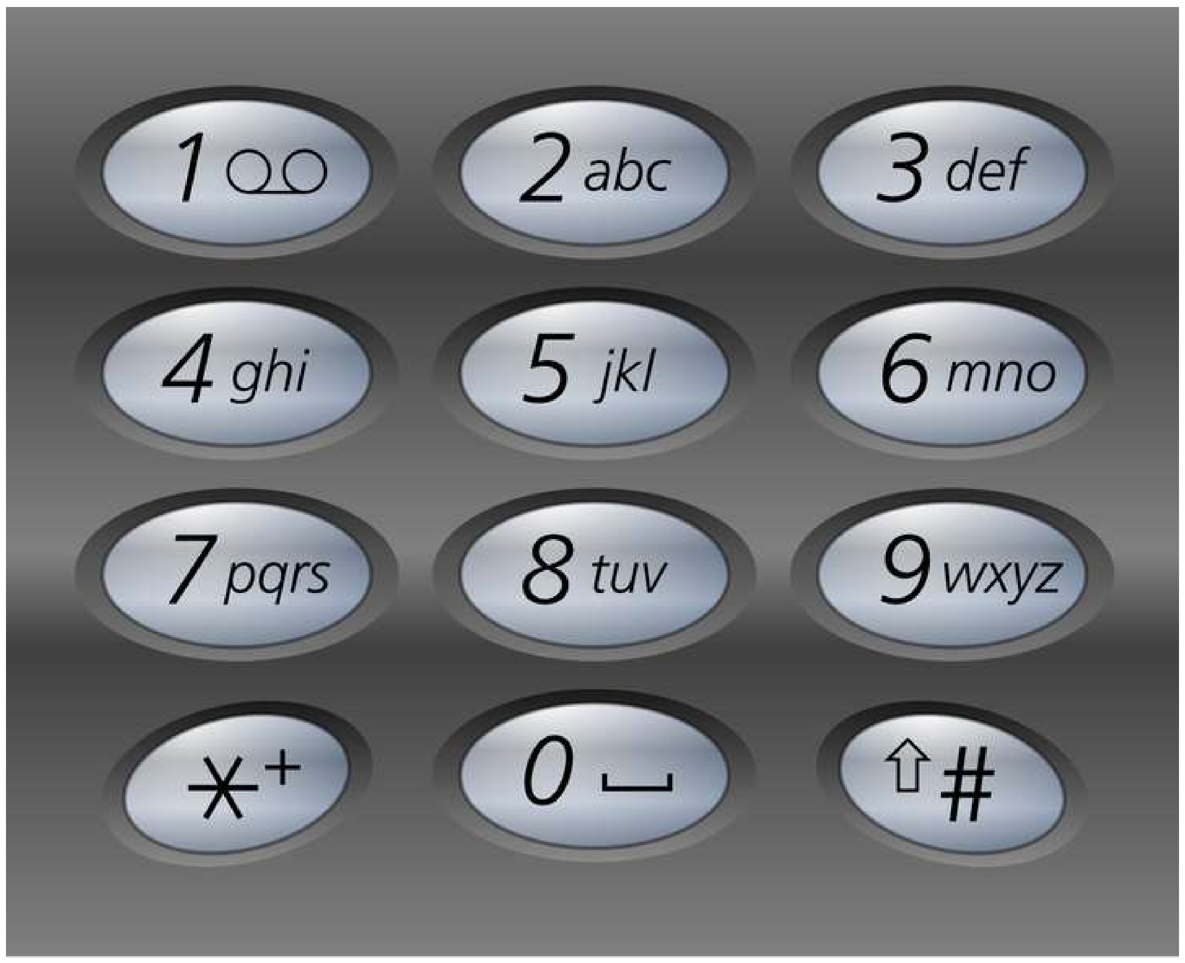
Input: root = [1,2,3,null,null,4,5]
Output: [1,2,3,null,null,4,5]

Practice

14. Letter Combinations of a Phone Number

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.



Example 1:

Input: digits = "23"

Output: ["ad","ae","af","bd","be","bf","cd","ce","cf"]

Practice

15. 3Sum

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.

Example 1:
Input: nums = [-1,0,1,2,-1,-4]
Output: [[-1,-1,2],[-1,0,1]]

Example 2:
Input: nums = [0,1,1]
Output: []

Example 3:
Input: nums = [0,0,0]
Output: [[0,0,0]]

Practice

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16. Longest Palindromic Substring

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

Example 1:

Input: s = "babad"

Output: "bab"

Explanation: "aba" is also a valid answer.

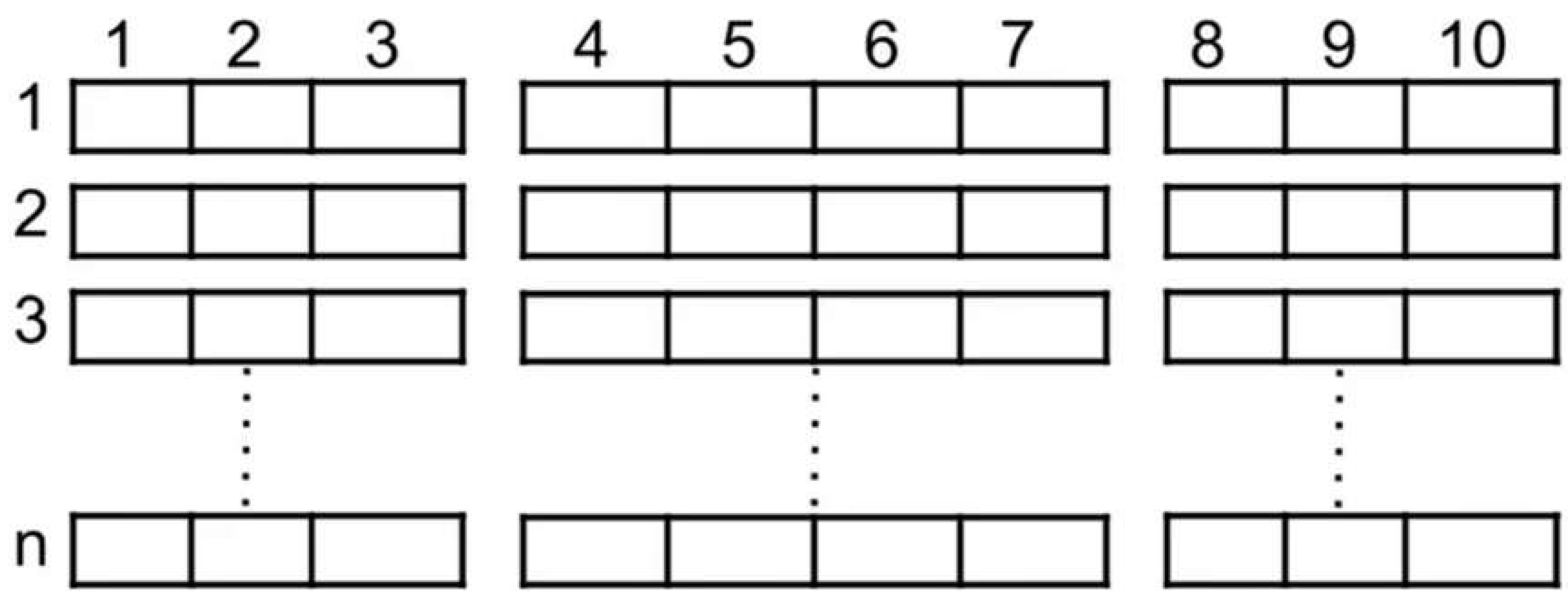
Example 2:

Input: s = "cbbd"

Output: "bb"

Practice

17. Cinema Seat Allocation



A cinema has n rows of seats, numbered from 1 to n and there are ten seats in each row, labelled from 1 to 10 as shown in the figure above.

Given the array reservedSeats containing the numbers of seats already reserved, for example, reservedSeats[i] = [3,8] means the seat located in row 3 and labelled with 8 is already reserved.

Example 1:

Input: n = 3, reservedSeats = [[1,2],[1,3],[1,8],[2,6],[3,1],[3,10]]

Output: 4

Practice

18. Merge k Sorted Lists

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.

Example 1:
Input: lists = [[1,4,5],[1,3,4],[2,6]]
Output: [1,1,2,3,4,4,5,6]

Example 2:
Input: lists = []
Output: []

Example 3:
Input: lists = [[]]
Output: []

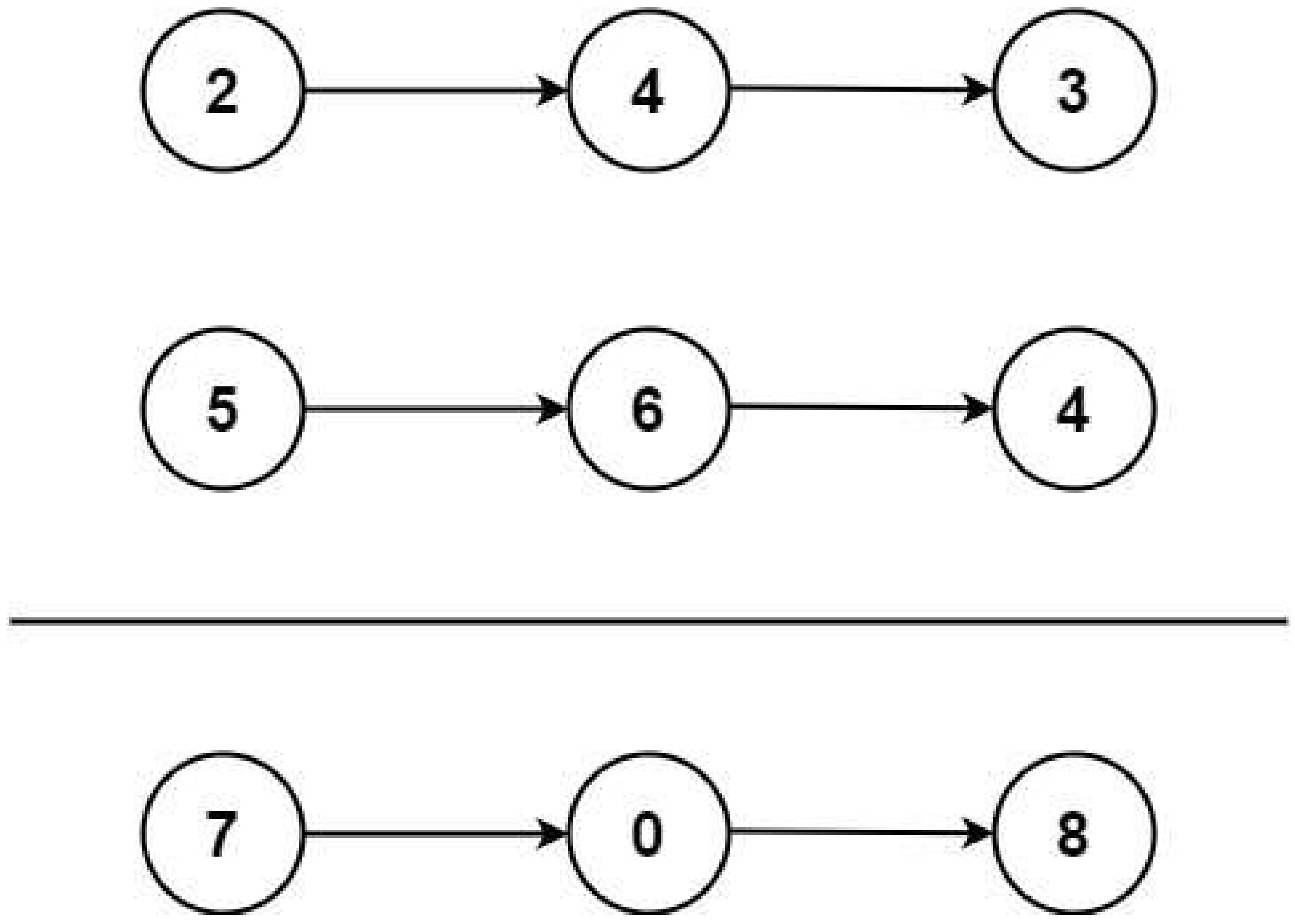
Practice

19. Add Two Numbers

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.

Example 1:



Input: l1 = [2,4,3], l2 = [5,6,4]
Output: [7,0,8]

Practice

20. Word Search

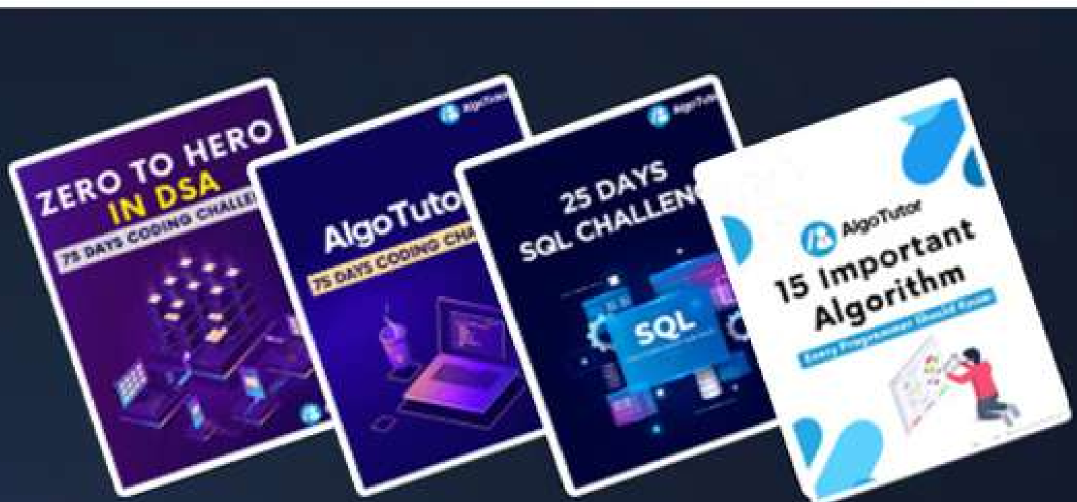
Given an m x n grid of characters board and a string word, return true if word exists in the grid.

Example 1:

A	B	C	E
S	F	C	S
A	D	E	E

Input: board = [["A","B","C","E"],["S","F","C","S"],["A","D","E","E"]], word = "ABCCED"
Output: true

Practice



21. First Missing Positive

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 O(1) auxiliary space.

Example 1:

Input: nums = [1,2,0]

Output: 3

Explanation: The numbers in the range [1,2] are all in the array.

Example 2:

Input: nums = [3,4,-1,1]

Output: 2

Example 3:

Input: nums = [7,8,9,11,12]

Output: 1

Practice

22. String to Integer (atoi)

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

The algorithm for myAtoi(string s) is as follows:

1. Read in and ignore any leading whitespace.
2. Check if the next character (if not already at the end of the string) is '-' or '+'. Read this character in if it is either. This determines if the final result is negative or positive respectively. Assume the result is positive if neither is present.
3. Read in next the characters until the next non-digit character or the end of the input is reached. The rest of the string is ignored.
4. Convert these digits into an integer (i.e. "123" -> 123, "0032" -> 32). If no digits were read, then the integer is 0. Change the sign as necessary (from step 2).

Example 1:

Input: s = "42"

Output: 42

Practice

23. Product of Array Except Self

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.

Example 1:
Input: nums = [1,2,3,4]
Output: [24,12,8,6]

Example 2:
Input: nums = [-1,1,0,-3,3]
Output: [0,0,9,0,0]

Practice

24. Merge Intervals

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.

Example 1:
Input: intervals = [[1,3],[2,6],[8,10],[15,18]]
Output: [[1,6],[8,10],[15,18]]
Explanation: Since intervals [1,3] and [2,6] overlap, merge them into [1,6].

Example 2:
Input: intervals = [[1,4],[4,5]]
Output: [[1,5]]
Explanation: Intervals [1,4] and [4,5] are considered overlapping.

Practice

25. Maximum Subarray

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

Example 1:

Input: nums = [-2,1,-3,4,-1,2,1,-5,4]

Output: 6

Explanation: The subarray [4,-1,2,1] has the largest sum 6.

Example 2:

Input: nums = [1]

Output: 1

Explanation: The subarray [1] has the largest sum 1.

Example 3:

Input: nums = [5,4,-1,7,8]

Output: 23

Explanation: The subarray [5,4,-1,7,8] has the largest sum 23.

Practice

26. Median of Two Sorted Arrays

Given two sorted arrays nums1 and 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)).

Example 1:

Input: nums1 = [1,3], nums2 = [2]

Output: 2.00000

Explanation: merged array = [1,2,3] and median is 2.

Example 2:

Input: nums1 = [1,2], nums2 = [3,4]

Output: 2.50000

Explanation: merged array = [1,2,3,4] and median is (2 + 3) / 2 = 2.5.

Practice

27. Decode String

Given an encoded string, return its decoded string.
The encoding rule is: k[encoded_string], where the encoded_string inside the square brackets is being repeated exactly k times. Note that k is guaranteed to be a positive integer.

You may assume that the input string is always valid; there are no extra white spaces, square brackets are well-formed, etc. Furthermore, you may assume that the original data does not contain any digits and that digits are only for those repeat numbers, k. For example, there will not be input like 3a or 2[4].

The test cases are generated so that the length of the output will never exceed 105.

Example 1:
Input: s = "3[a]2[bc]"
Output: "aaabcbc"

Practice

28. Coin Change

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.

Example 1:
Input: coins = [1,2,5], amount = 11
Output: 3

Example 2:
Input: coins = [2], amount = 3
Output: -1

Practice

29. Best Time to Buy and Sell Stock

You are given an array prices where prices[i] is the price of a given stock on the ith 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.

Example 1:
Input: prices = [7,1,5,3,6,4]
Output: 5

Example 2:
Input: prices = [7,6,4,3,1]
Output: 0

Practice

30. Wildcard Matching

Given an input string (s) and a pattern (p), implement wildcard pattern matching with support for '?' and '*' where:

- '?' Matches any single character.
- '*' Matches any sequence of characters (including the empty sequence).

The matching should cover the entire input string (not partial).

Example 1:

Input: s = "aa", p = "a"

Output: false

Example 2:

Input: s = "aa", p = "*"

Output: true

Example 3:

Input: s = "cb", p = "?a"

Output: false

Practice

31. Missing Number

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.

Example 1:

Input: nums = [3,0,1]

Output: 2

Explanation: n = 3 since there are 3 numbers, so all numbers are in the range [0,3]. 2 is the missing number in the range since it does not appear in nums.

Example 2:

Input: nums = [0,1]

Output: 2

Explanation: n = 2 since there are 2 numbers, so all numbers are in the range [0,2]. 2 is the missing number in the range since it does not appear in nums.

Example 3:

Input: nums = [9,6,4,2,3,5,7,0,1]

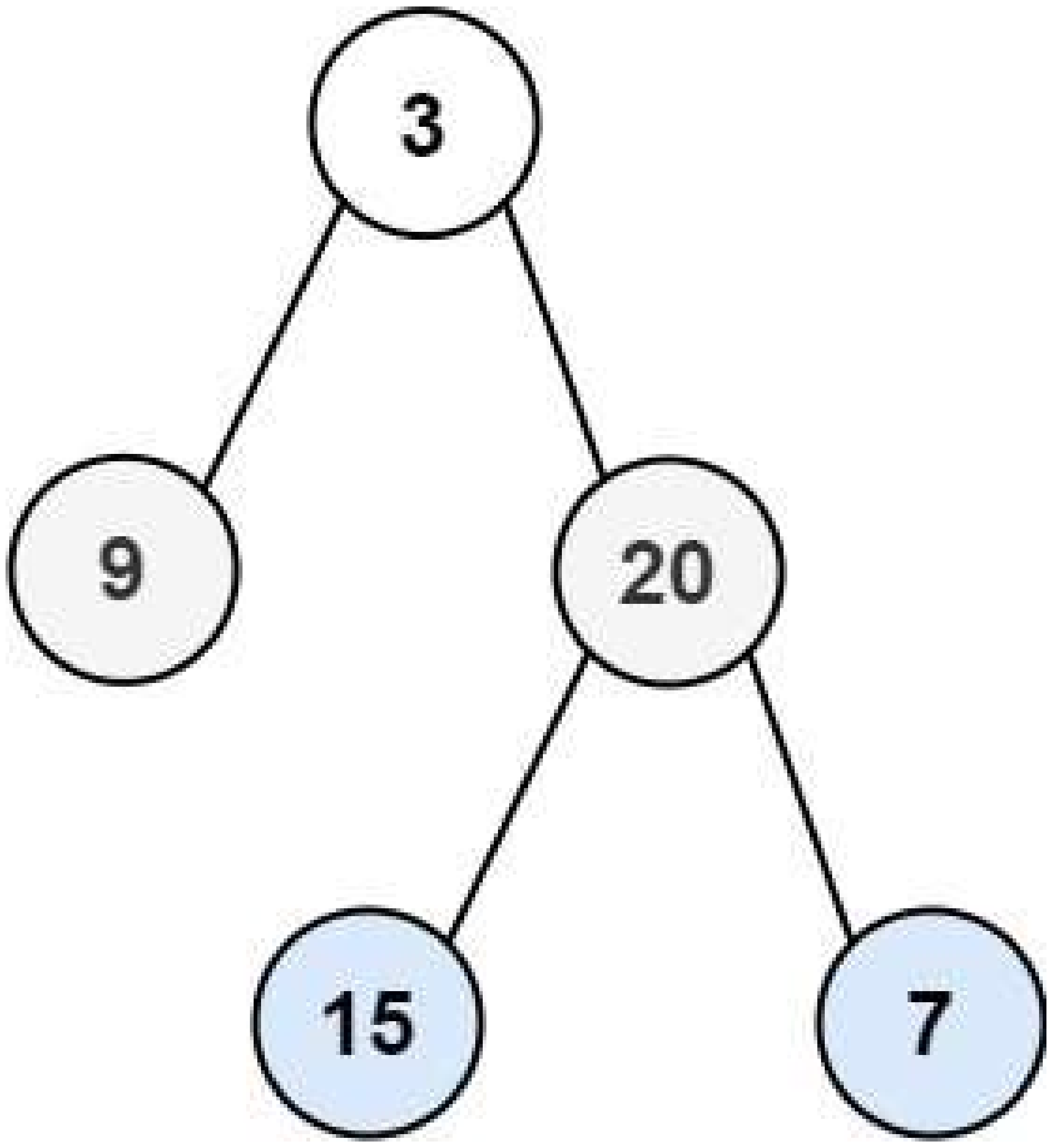
Output: 8

Practice

32. Binary Tree Zigzag Level Order Traversal

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).

Example 1:



Input: root = [3,9,20,null,null,15,7]
Output: [[3],[20,9],[15,7]]

Practice

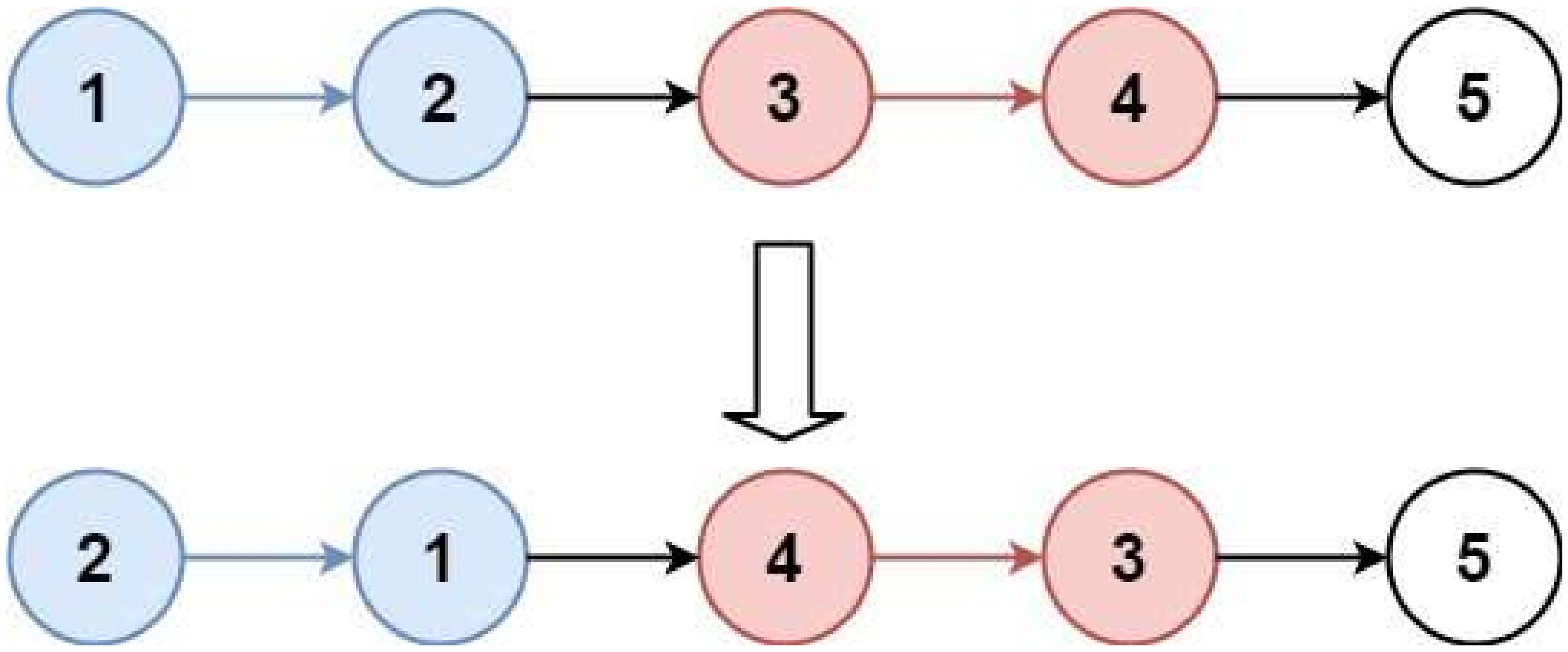
33. Reverse Nodes in k-Group

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.

Example 1:



Input: head = [1,2,3,4,5], k = 2

Output: [2,1,4,3,5]

Practice

34. Generate Parentheses

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

Example 1:

Input: n = 3

Output: ["((()))","(()())","(())()","()(())","()()()"]

Example 2:

Input: n = 1

Output: ["()"]

Practice

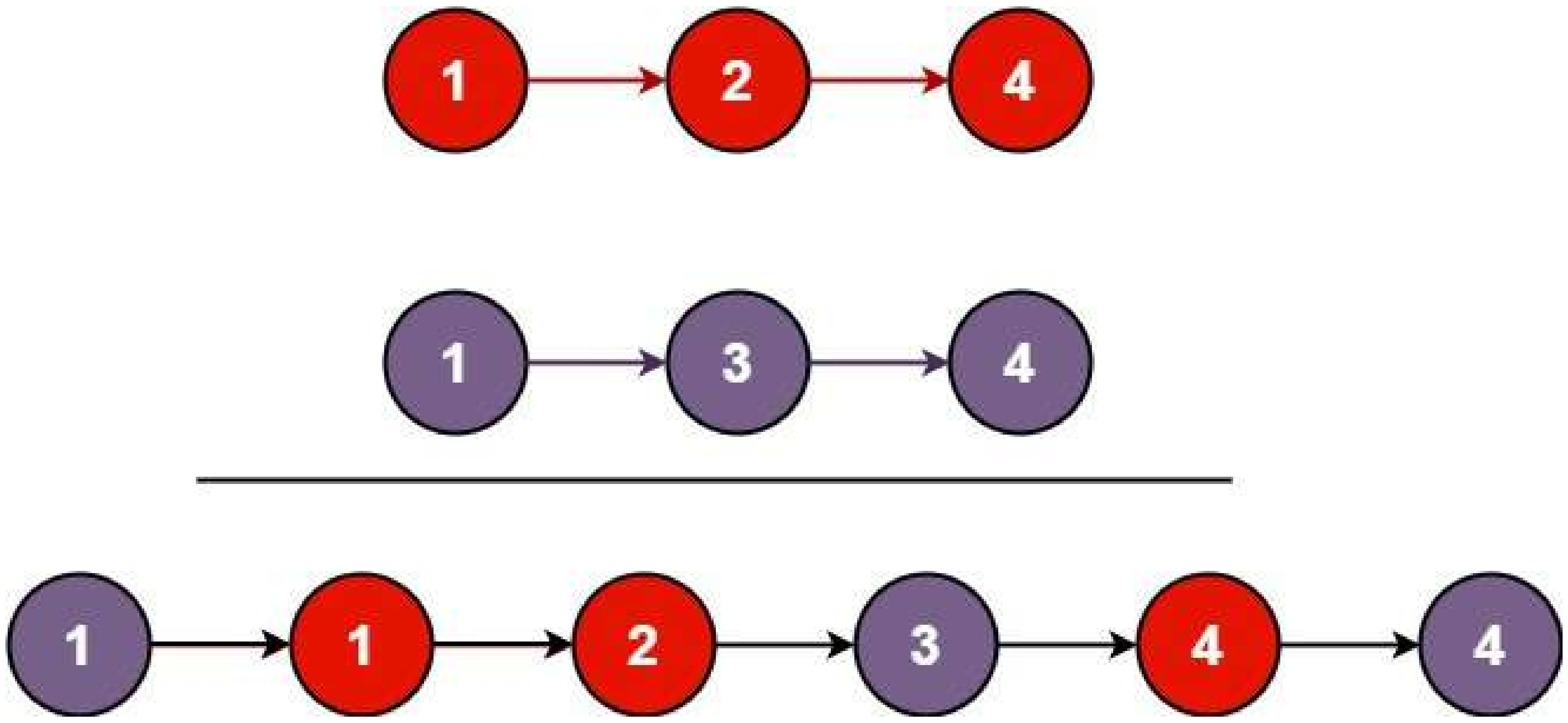
35. Merge Two Sorted Lists

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.

Example 1:



Input: list1 = [1,2,4], list2 = [1,3,4]
Output: [1,1,2,3,4,4]

Practice

36. Rotting Oranges

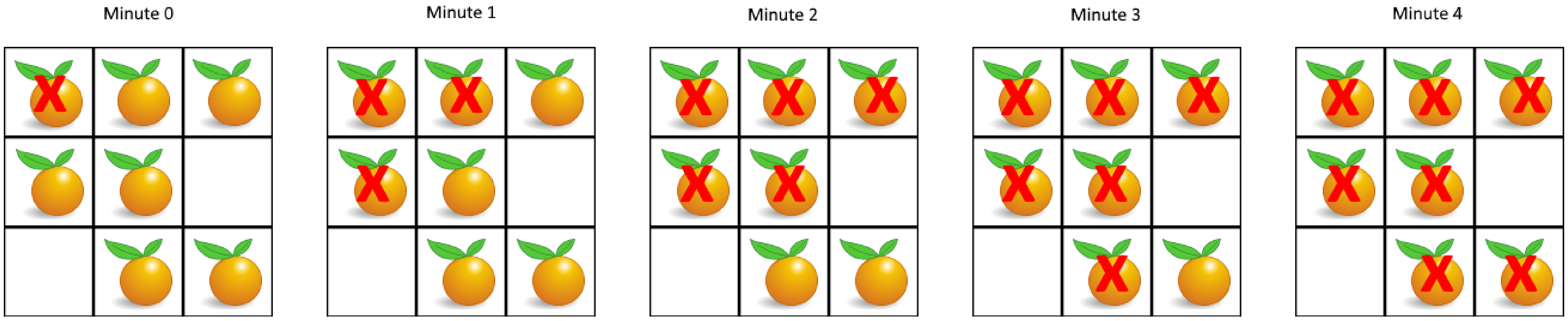
You are given an m x n grid where each cell can have one of three values:

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

Every minute, any fresh orange that is 4-directionally adjacent to a rotten orange becomes rotten.

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

Example 1:



Input: grid = [[2,1,1],[1,1,0],[0,1,1]]

Output: 4

Practice

37. Insert Delete GetRandom O(1)

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).

Example 1:

Input

["RandomizedSet", "insert", "remove", "insert", "getRandom", "remove", "insert", "getRandom"]
[[], [1], [2], [2], [], [1], [2], []]

Output

[null, true, false, true, 2, true, false, 2]

Practice

38. Top K Frequent Elements

Given an integer array nums and an integer k, return the k most frequent elements. You may return the answer in any order.

Example 1:
Input: nums = [1,1,1,2,2,3], k = 2
Output: [1,2]

Example 2:
Input: nums = [1], k = 1
Output: [1]

Practice

39. Kth Largest Element in an Array

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

Note that it is the kth largest element in the sorted order, not the kth distinct element.

Can you solve it without sorting?

Example 1:

Input: nums = [3,2,1,5,6,4], k = 2

Output: 5

Example 2:

Input: nums = [3,2,3,1,2,4,5,5,6], k = 4

Output: 4

Practice

40. Multiply Strings

Given two non-negative integers num1 and num2 represented as strings, return the product of num1 and num2, also represented as a string.

Note: You must not use any built-in BigInteger library or convert the inputs to integer directly.

Example 1:
Input: num1 = "2", num2 = "3"
Output: "6"

Example 2:
Input: num1 = "123", num2 = "456"
Output: "56088"

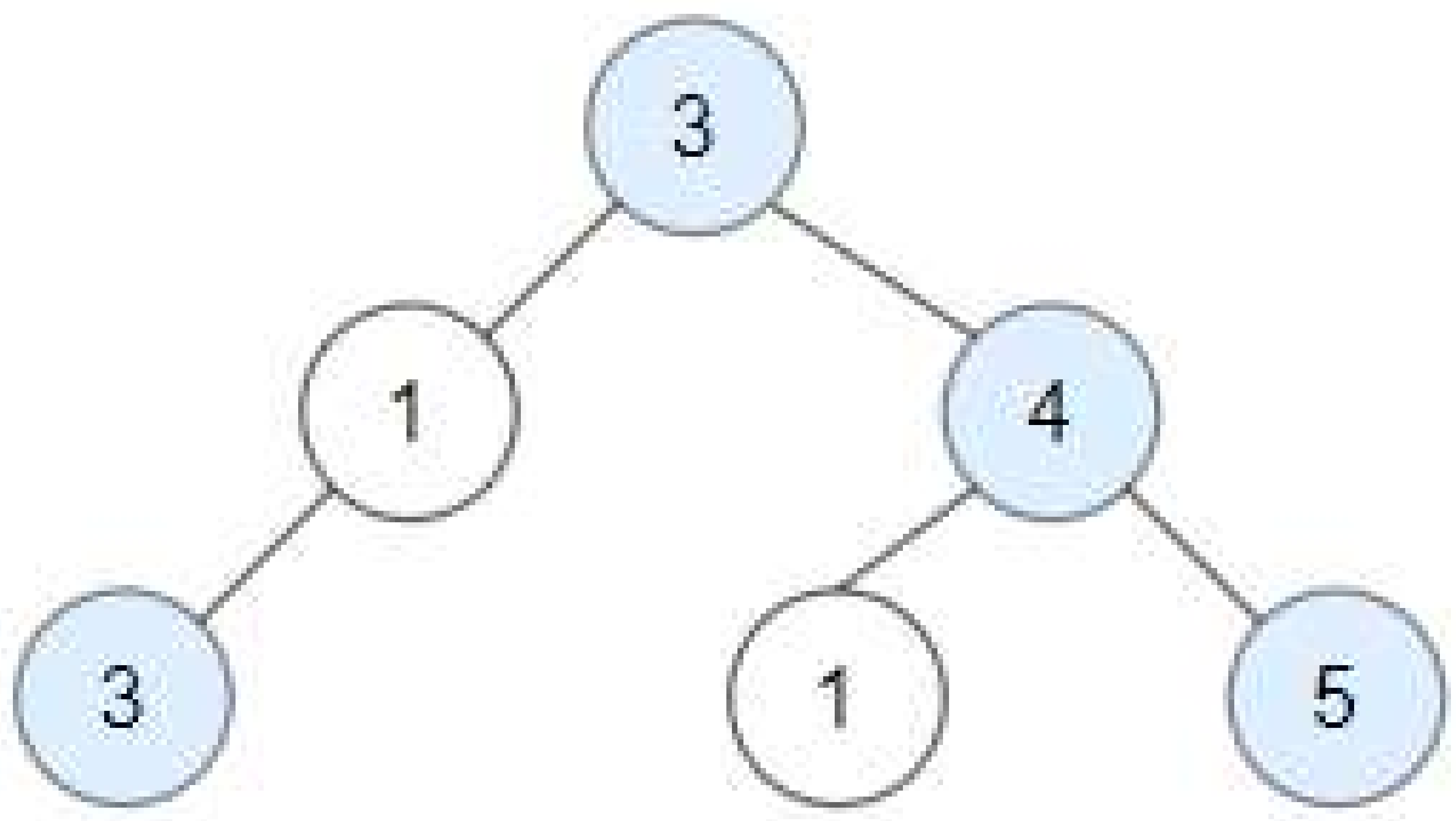
Practice

41. Count Good Nodes in Binary Tree

Given a binary tree root, a node X in the tree is named good if in the path from root to X there are no nodes with a value greater than X.

Return the number of good nodes in the binary tree.

Example 1:



Input: root = [3,1,4,3,null,1,5]
Output: 4

Practice

42. LFU Cache

Design and implement a data structure for a Least Frequently Used (LFU) cache.

Implement the LFUCache class:

- LFUCache(int capacity) Initializes the object with the capacity of the data structure.
- int get(int key) Gets the value of the key if the key exists in the cache. Otherwise, returns -1.
- void put(int key, int value) Update the value of the key if present, or inserts the key if not already present. When the cache reaches its capacity

Example 1:

Input

["LFUCache", "put", "put", "get", "put", "get", "get", "put", "get", "get", "get"]

[[2], [1, 1], [2, 2], [1], [3, 3], [2], [3], [4, 4], [1], [3], [4]]

Output

[null, null, null, 1, null, -1, 3, null, -1, 3, 4]

Practice

43. Find All Anagrams in a String

Given two strings s and p, return an array of all the start indices of p's anagrams in s. You may return the answer in any order.

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.

Example 1:

Input: s = "cbaebabacd", p = "abc"

Output: [0,6]

Example 2:

Input: s = "abab", p = "ab"

Output: [0,1,2]

Explanation:

The substring with start index = 0 is "ab", which is an anagram of "ab".

The substring with start index = 1 is "ba", which is an anagram of "ab".

The substring with start index = 2 is "ab", which is an anagram of "ab".

Practice

44. Find the Duplicate Number

Given an array of integers nums containing n + 1 integers where each integer is in the range [1, n] inclusive.

There is only one repeated number in nums, return this repeated number.

You must solve the problem without modifying the array nums and uses only constant extra space.

Example 1:
Input: nums = [1,3,4,2,2]
Output: 2

Example 2:
Input: nums = [3,1,3,4,2]
Output: 3

Practice

45. Basic Calculator II

Given a string s which represents an expression, evaluate this expression and return its value.

The integer division should truncate toward zero.

You may assume that the given expression is always valid. All intermediate results will be in the range of [-231, 231 - 1].

Example 1:
Input: s = "3+2*2"
Output: 7

Example 2:
Input: s = " 3/2 "
Output: 1

Example 3:
Input: s = " 3+5 / 2 "
Output: 5

Practice

46. Regular Expression Matching

Given an input string s and a pattern p, implement regular expression matching with support for '.' and '*' where:

- '.' Matches any single character.
- '*' Matches zero or more of the preceding element.

The matching should cover the entire input string (not partial).

Example 1:

Input: s = "aa", p = "a"

Output: false

Explanation: "a" does not match the entire string "aa".

Example 2:

Input: s = "aa", p = "a*"

Output: true

Example 3:

Input: s = "ab", p = ".*"

Output: true

Practice

47. Find Winner on a Tic Tac Toe Game

Tic-tac-toe is played by two players A and B on a 3 x 3 grid. The rules of Tic-Tac-Toe are:

- Players take turns placing characters into empty squares ' '.
- The first player A always places 'X' characters, while the second player B always places 'O' characters.
- 'X' and 'O' characters are always placed into empty squares, never on filled ones.
- The game ends when there are three of the same (non-empty) character filling any row, column, or diagonal.

Example 1:

X		
	X	
O	O	X

Input: moves = [[0,0],[2,0],[1,1],[2,1],[2,2]]

Output: "A"

Practice

48. Max Area of Island

You are given an m x n binary matrix grid. An island is a group of 1's (representing land) connected 4-directionally (horizontal or vertical.) You may assume all four edges of the grid are surrounded by water.

The area of an island is the number of cells with a value 1 in the island.

Return the maximum area of an island in grid. If there is no island, return 0.

Example 1:

Input: grid = [[0,0,1,0,0,0,0,1,0,0,0,0,0],[0,0,0,0,0,0,0,1,1,1,0,0,0],[0,1,1,0,1,0,0,0,0,0,0,0,0],[0,1,0,0,1,1,0,0,1,0,1,0,0],[0,1,0,0,1,1,0,0,1,1,1,0,0],[0,0,0,0,0,0,0,0,0,0,1,0,0],[0,0,0,0,0,0,0,1,1,1,0,0,0],[0,0,0,0,0,0,0,1,1,0,0,0,0]]
Output: 6

Practice

49. Move Zeroes

Given an integer array nums, move all 0's to the end of it while maintaining the relative order of the non-zero elements.

Note that you must do this in-place without making a copy of the array.

Example 1:
Input: nums = [0,1,0,3,12]
Output: [1,3,12,0,0]

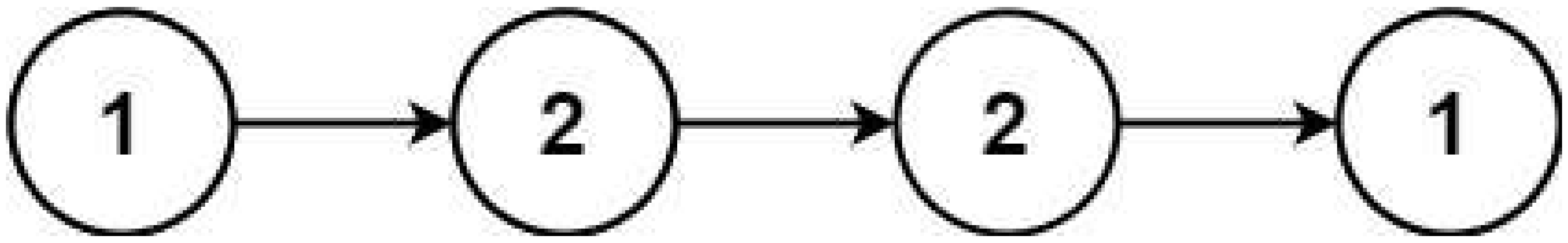
Example 2:
Input: nums = [0]
Output: [0]

Practice

50. Palindrome Linked List

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

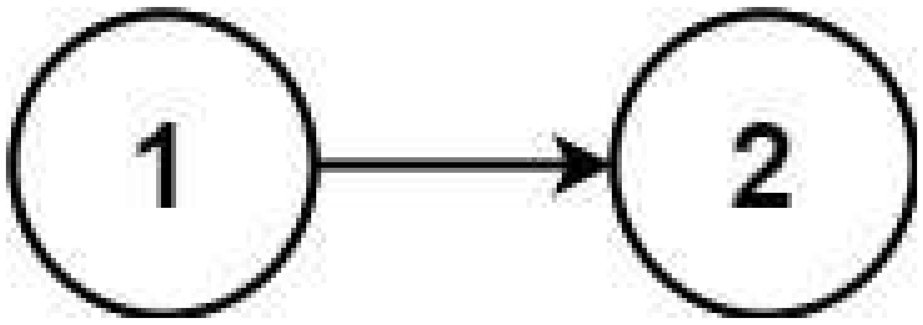
Example 1:



Input: head = [1,2,2,1]

Output: true

Example 1:



Input: head = [1,2]

Output: false

Practice

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