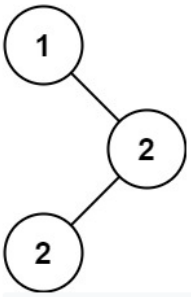
Sr.	Problem Definition	Difficulty
1	WAP to find a sum of even number into 1D array.	3
2	WAP to find whether string is palindrome or not.	3
3	WAP to find a Factor of a given number (iterative and recursive)	4
4	WAP to find a factorial of a given integer (iterative and recursive)	4
5	WAP to find a summation of a digit of a given number. (Iterative and recursive)	5
6	Print a following pattern 1 1 2 1 2 3 1 2 3 4	5
7	WAP to find a Fibonacci series up to n terms (n is entered by user) (iterative and recursive)	6
8	WAP to find a total odd and total even digit of a given number.	7
9	WAP to find whether a number is Odd or Even without using a % operator.	7
10	WAP to find a prime number between range (range should be entered by user).	8
11	WAP to find weather given number is Armstrong number is not.	8
12	WAP to find Max, Min, Average of n numbers, n should be taken from user and all n value should be taken from user (Note that you are not allowed to use an array for this)	8
13	WAP to find a Multiplication of 2 Matrix (dimension and value should be entered by user)	8
14	WAP to calculate an angle between hour and minute hand. (Hours and minutes should be taken from user).	8
15	WAP to convert a Decimal number to BCD.	8
16	WAP to sort an Array using Bubble sort.	8
17	WAP to sort an Array using insertion sort.	8
18	WAP to sort an Array using Selection sort.	8
19	WAP to sort an Array using Bucket sort.	8
20	WAP to find a power a^b (without using power and multiplication operation).	9
21	WAP to sort an Array using Radix sort.	9
22	Print a following patterns 1 A B 2 3 4 C D E F ********* ******* ***** *** * ********* **** **** *** *** ** ** * *	9
23	WAP to enter an element at specific position into array. (Do not take a new array)	9
24	WAP to delete an element from array specified by user. if element is not found print a message “Element is not found” (do not take a new array).	9
25	WAP to check weather number is present in array or not (using recursion only) and the function’s syntax is given below Int isInArray(int a[],int m); Where int a[] is Array of integer and m is element to be searched.	9
26	WAP to convert a Binary to Decimal.	9
27	WAP to sort an Array using Counting sort.	9
28	WAP to sort an Array using Tree sort.	10
29	WAP to find a quotient and reminder of 2 number (bigger number should be divided by lower number) and you are not allowed to use a division and quotient operator.	10
30	WAP to convert a Decimal to Binary.	10
31	WAP to sort an Array using shell sort.	10
32	WAP to sort an Array using Quick sort.	10

33	WAP to sort an Array using Heap sort.	10
34	Print a Leaf Nodes in Binary search tree.	10
35	Given two integer arrays nums1 and nums2, return an array of their intersection. Each element in the result must appear as many times as it shows in both arrays and you may return the result in sorted order.	10
36	WAP to sort an Array using Merge sort.	11
37	WAP to sort a number in ascending order in singly linked list.	11
38	WAP to add an element into already sorted singly linked list.	11
39	Given an array, rotate the array to the right by k steps, where k is non-negative. Example 1: Input: nums = [1,2,3,4,5,6,7], k = 3 Output: [5,6,7,1,2,3,4] Explanation: rotate 1 step to the right: [7,1,2,3,4,5,6] rotate 2 steps to the right: [6,7,1,2,3,4,5] rotate 3 steps to the right: [5,6,7,1,2,3,4]	11
40	Given an array nums with n integers, your task is to check if it could become non-decreasing by modifying at most one Input: nums = [4,2,3] Output: true Explanation: You could modify the first 4 to 1 to get a non-decreasing array.	11
41	You are given an integer num. Rearrange the digits of num such that its value is minimized and it does not contain any leading zeros. Return the rearranged number with minimal value. Note that the sign of the number does not change after rearranging the digits. Input: num = 310 Output: 103 Explanation: The possible arrangements for the digits of 310 are 013, 031, 103, 130, 301, 310. The arrangement with the smallest value that does not contain any leading zeros is 103.	11
42	WAP to implement a sliding window problem. You are given an array of integers nums, there is a sliding window of size k which is moving from the very left of the array to the very right. You can only see the k numbers in the window. Each time the sliding window moves right by one position. Input: nums = [1,3, -1, -3,5,3,6,7], k = 3 Output: [3,3,5,5,6,7] Explanation: Window position Max --- --- [1 3 -1] -3 5 3 6 7 3 1 [3 -1 -3] 5 3 6 7 3 1 3 [-1 -3 5] 3 6 7 5	12

	1 3 -1 [-3 5 3] 6 7 5 1 3 -1 -3 [5 3 6] 7 6 1 3 -1 -3 5 [3 6 7] 7	
43	Given an array of N integers, and an integer K, find the number of pairs of elements in the array whose sum is equal to K. e.g. Input: N = 4, K = 6 arr[] = {1, 5, 7, 1} Output: 2 Explanation: arr[0] + arr[1] = 1 + 5 = 6 and arr[1] + arr[3] = 5 + 1 = 6.	12
44	WAP to convert an Octal into hexa-decimal.	12
45	WAP to convert a hexa-decimal to Octal.	12
46	WAP to Convert a Decimal to Octal and Vice versa.	12
47	WAP to Convert a Decimal to Hexa-decimal and vice versa.	12
48	WAP to implement a BFS traversal technique in a Graph.	12
49	WAP to implement a DFS traversal technique in a Graph.	12
50	WAP to count the degree of each vertex in a directed Graph (where graph is created using edges means if user input 1 2 then there is a directed edge from node 1 to node 2 user enter -1 for stop entering the edge)	12
51	In a Given BST (Binary) search tree find the 2nd min value.	12
52	Given a non-negative integer x, compute and return the square root of x. Since the return type is an integer, the decimal digits are truncated, and only the integer part of the result is returned. Note: You are not allowed to use any built-in exponent function or operator, such as pow(x, 0.5) or x ** 0.5.	12
53	Write a program to take 2 numbers from user and find out the distance between them. (How to compute distance: If number is 10 and 18 then 10 in binary 1010 and 18 in binary is 10010 and distance is 2 means total number of bits that needs to be changed when 10 is converted into 18 or 18 is converted into 10, do not convert the number into binary)	12
54	You have n super washing machines on a line. Initially, each washing machine has some dresses or is empty. For each move, you could choose any m (1 <= m <= n) washing machines, and pass one dress of each washing machine to one of its adjacent washing machines at the same time. Given an integer array machine representing the number of dresses in each washing machine from left to right on the line, return the minimum number of moves to make all the washing machines have the same number of dresses. If it is not possible to do it, return -1. Input: machines = [1,0,5] Output: 3 Explanation: 1st move: 1 0 <-- 5 => 1 1 4 2nd move: 1 <-- 1 <-- 4 => 2 1 3 3rd move: 2 1 <-- 3 => 2 2 2 Input: machines = [0,3,0] Output: 2 Explanation:	12

	1st move: 0 <-- 3 0 => 1 2 0 2nd move: 1 2 --> 0 => 1 1 1	
55	You are given several boxes with different colors represented by different positive numbers. You may experience several rounds to remove boxes until there is no box left. Each time you can choose some continuous boxes with the same color (i.e., composed of k boxes, k >= 1), remove them and get k * k points. Return the maximum points you can get. Input: boxes = [1,3,2,2,2,3,4,3,1] Output: 23 Explanation: [1, 3, 2, 2, 2, 3, 4, 3, 1] ----> [1, 3, 3, 4, 3, 1] (3*3=9 points) ----> [1, 3, 3, 3, 1] (1*1=1 points) ----> [1, 1] (3*3=9 points) ----> [] (2*2=4 points)	12
56	You are given a 0-indexed integer array nums of length n. The average difference of the index i is the absolute difference between the average of the first i + 1 elements of nums and the average of the last n - i - 1 elements. Both averages should be rounded down to the nearest integer. Return the index with the minimum average difference. If there are multiple such indices, return the smallest one. Note: The absolute difference of two numbers is the absolute value of their difference. The average of n elements is the sum of the n elements divided (integer division) by n. The average of 0 elements is considered to be 0. Input: nums = [2,5,3,9,5,3] Output: 3 Explanation: - The average difference of index 0 is: |2 / 1 - (5 + 3 + 9 + 5 + 3) / 5| = |2 / 1 - 25 / 5| = |2 - 5| = 3. - The average difference of index 1 is: |(2 + 5) / 2 - (3 + 9 + 5 + 3) / 4| = |7 / 2 - 20 / 4| = |3 - 5| = 2. - The average difference of index 2 is: |(2 + 5 + 3) / 3 - (9 + 5 + 3) / 3| = |10 / 3 - 17 / 3| = |3 - 5| = 2. - The average difference of index 3 is: |(2 + 5 + 3 + 9) / 4 - (5 + 3) / 2| = |19 / 4 - 8 / 2| = |4 - 4| = 0. - The average difference of index 4 is: |(2 + 5 + 3 + 9 + 5) / 5 - 3 / 1| = |24 / 5 - 3 / 1| = |4 - 3| = 1. - The average difference of index 5 is: |(2 + 5 + 3 + 9 + 5 + 3) / 6 - 0| = |27 / 6 - 0| = |4 - 0| = 4. The average difference of index 3 is the minimum average difference so return 3.	12
57	Write a Function that returns either 1 or 0 based on following condition if the array is in ascending order and occurrence of that number at least 3 then it should return 1 otherwise it should return 0. e.g. if A=[1,1,1,2,2] it should return 0 if A=[1,1,1,3,3,3,3] it should return 1 if A=[2,2,2,1,1,1] it should return 0	13

58	Write a program to check weather number is happy number is not, happy number are those number whose digit's square summation eventually reaches to 1, if the sequence start repeating then it is not a happy number, to store this sequence, use a dynamic data structure. E.g., 49 is a happy number whose sequence is 49 97 130 10 1 E.g., 50 is not a happy number whose sequence is 50 25 29 85 89 145 42 20 4 16 37 58 89 it should stop when 89 is detected 2nd time and print 50 is not a happy number.	13
59	WAP to demerge a doubly linked list into 2 list, one list will hold the odd numbers while another list will hold only even number.	13
60	Write a program to implement job sequencing algorithm using greedy approach.	13

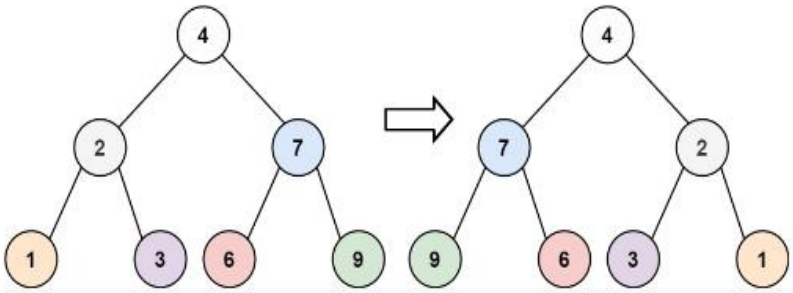
61	Given the root of a binary search tree (BST) with duplicates, return all the node(s) (i.e., the most frequently occurred element) in it.
	Example 1:
	 
	`Input: root = [1,null,2,2]`
	`Output: [2]`
		13

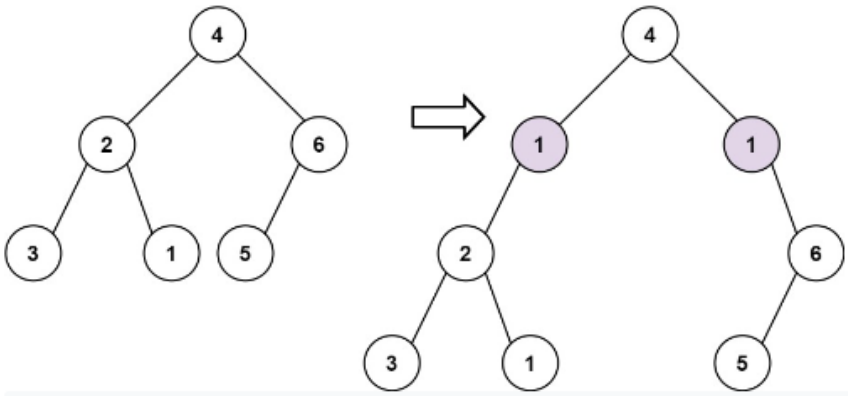
62	Find a next lexicographical order string from a given string, if input is abc output is acb (2 condition must be followed 1st the string must be greater than the inputted string and the outputted string must be the smallest string from all possible string. Suppose there another string possible from this is acb, bac, bca, etc., but smallest is acb)	13
63	Given an array nums of distinct integers, return all the possible permutations. You can return the answer in any order. Input: nums = [1,2,3] Output: [[1,2,3],[1,3,2],[2,1,3],[2,3,1],[3,1,2],[3,2,1]]	13
64	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?	13
65	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. Input: l1 = [2,4,3], l2 = [5,6,4] Output: [7,0,8] Explanation: 342 + 465 = 807.	13
66	Given an integer array, return the k-th smallest distance among all the pairs. The distance of a pair (A, B) is defined as the absolute difference between A and B. E.g. nums = [1,3,1,2] k = 3 Output: 1 Explanation: Here are all the pairs:	13

	(1,3) -> 2 (1,1) -> 0 (1,2) -> 1 (3,1) -> 2 (3,2) -> 1 (1,2) -> 1 Then the 3rd smallest distance pair is (1,3) and its distance is 2.	
67	Given a string s which represents an expression, evaluate this expression and return its value. Value should be taken from the user.	13
68	Given an integer n, return the least number of perfect square numbers that sum to n. Input: n = 12 Output: 3 Explanation: 12 = 4 + 4 + 4. Input: n = 13 Output: 2 Explanation: 13 = 4 + 9.	13
69	Given an integer n, return the nth digit of the infinite integer sequence [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, ...] Input: n = 11 Output: 0 Explanation: The 11th digit of the sequence 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, ... is a 0, which is part of the number 10.	13
70	Given a positive integer n, return the number of the integers in the range [0, n] whose binary representations do not contain consecutive ones.	13
71	You are given an integer array nums and an integer target. You want to build an expression out of nums by adding one of the symbols '+' and '-' before each integer in nums and then concatenate all the integers. For example, if nums = [2, 1], you can add a '+' before 2 and a '-' before 1 and concatenate them to build the expression "+2-1". Return the number of different expressions that you can build, which evaluates to target. Input: nums = [1,1,1,1,1], target = 3 Output: 5 Explanation: There are 5 ways to assign symbols to make the sum of nums be target 3. -1 + 1 + 1 + 1 + 1 = 3 +1 - 1 + 1 + 1 + 1 = 3 +1 + 1 - 1 + 1 + 1 = 3 +1 + 1 + 1 - 1 + 1 = 3 +1 + 1 + 1 + 1 - 1 = 3	13
72	You are given a 0-indexed array nums consisting of positive integers. You can choose two indices i and j, such that i != j, and the sum of digits of the number nums[i] is equal to that of nums[j]. Return the maximum value of nums[i] + nums[j] that you can obtain over all possible indices i and j that satisfy the conditions. Input: nums = [18,43,36,13,7] Output: 54 Explanation: The pairs (i, j) that satisfy the conditions are: - (0, 2), both numbers have a sum of digits equal to 9, and their sum is 18 + 36 = 54. - (1, 4), both numbers have a sum of digits equal to 7, and their sum is 43 + 7 = 50. So the maximum sum that we can obtain is 54.	13

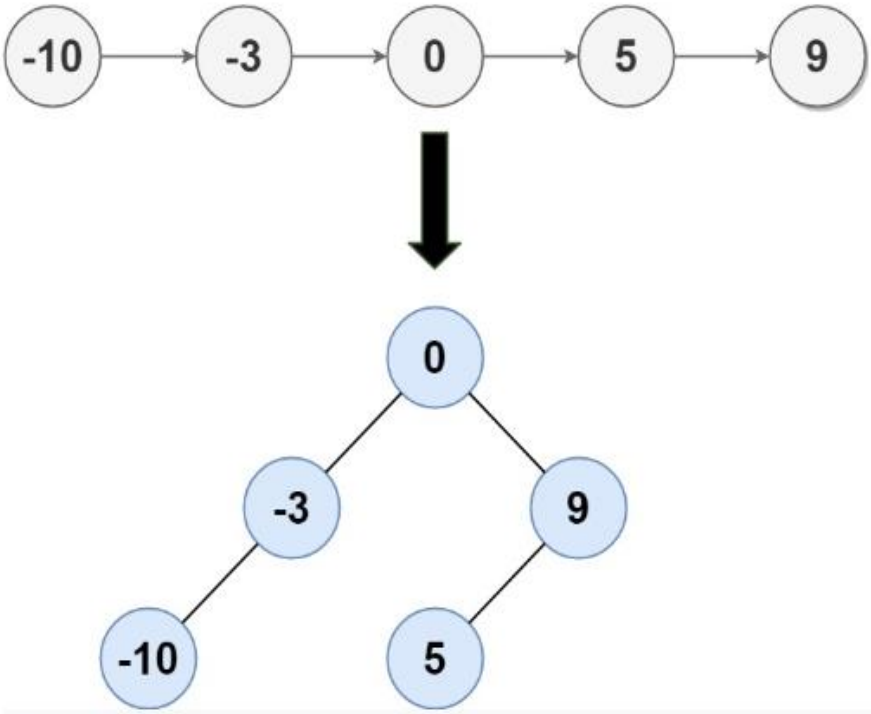
73	You are given a 0-indexed binary string s which represents the types of buildings along a street where: s[i] = '0' denotes that the ith building is an office and s[i] = '1' denotes that the ith building is a restaurant. As a city official, you would like to select 3 buildings for random inspection. However, to ensure variety, no two consecutive buildings out of the selected buildings can be of the same type. For example, given s = "001101", we cannot select the 1st, 3rd, and 5th buildings as that would form "011" which is not allowed due to having two consecutive buildings of the same type. Return the number of valid ways to select 3 buildings. Input: s = "001101" Output: 6 Explanation: The following sets of indices selected are valid: - [0,2,4] from "001101" forms "010" - [0,3,4] from "001101" forms "010" - [1,2,4] from "001101" forms "010" - [1,3,4] from "001101" forms "010" - [2,4,5] from "001101" forms "101" - [3,4,5] from "001101" forms "101" No other selection is valid. Thus, there are 6 total ways.	13
74	You are given a 0-indexed integer array nums representing the contents of a pile, where nums[0] is the topmost element of the pile. In one move, you can perform either of the following: If the pile is not empty, remove the topmost element of the pile. If there are one or more removed elements, add any one of them back onto the pile. This element becomes the new topmost element. You are also given an integer k, which denotes the total number of moves to be made. Return the maximum value of the topmost element of the pile possible after exactly k moves. In case it is not possible to obtain a non-empty pile after k moves, return -1.	13
75	There are n different online courses numbered from 1 to n. You are given an array course where courses[i] = [durationi, lastDayi] indicate that the ith course should be taken continuously for $duration_i$ days and must be finished before or on $lastDay_i$. You will start on the 1st day and you cannot take two or more courses simultaneously. Return the maximum number of courses that you can take. Input: courses = [[100,200],[200,1300],[1000,1250],[2000,3200]] Output: 3 Explanation: There are totally 4 courses, but you can take 3 courses at most: First, take the 1st course, it costs 100 days so you will finish it on the 100th day, and ready to take the next course on the 101st day.	13

	Second, take the 3rd course, it costs 1000 days so you will finish it on the 1100th day, and ready to take the next course on the 1101st day. Third, take the 2nd course, it costs 200 days so you will finish it on the 1300th day. The 4th course cannot be taken now, since you will finish it on the 3300th day, which exceeds the closed date.	
76	As the ruler of a kingdom, you have an army of wizards at your command. You are given a 0-indexed integer array strength, where strength[i] denotes the strength of the ith wizard. For a contiguous group of wizards (i.e. the wizards' strengths form a subarray of strength), the total strength is defined as the product of the following two values: The strength of the weakest wizard in the group. The total of all the individual strengths of the wizards in the group. Return the sum of the total strengths of all contiguous groups of wizards. Since the answer may be very large, return it modulo 109 + 7. A subarray is a contiguous non-empty sequence of elements within an array. Input: strength = [1,3,1,2] Output: 44 Explanation: The following are all the contiguous groups of wizards: - [1] from [1,3,1,2] has a total strength of min([1]) * sum([1]) = 1 * 1 = 1 - [3] from [1,3,1,2] has a total strength of min([3]) * sum([3]) = 3 * 3 = 9 - [1] from [1,3,1,2] has a total strength of min([1]) * sum([1]) = 1 * 1 = 1 - [2] from [1,3,1,2] has a total strength of min([2]) * sum([2]) = 2 * 2 = 4 - [1,3] from [1,3,1,2] has a total strength of min([1,3]) * sum([1,3]) = 1 * 4 = 4 - [3,1] from [1,3,1,2] has a total strength of min([3,1]) * sum([3,1]) = 1 * 4 = 4 - [1,2] from [1,3,1,2] has a total strength of min([1,2]) * sum([1,2]) = 1 * 3 = 3 - [1,3,1] from [1,3,1,2] has a total strength of min([1,3,1]) * sum([1,3,1]) = 1 * 5 = 5 - [3,1,2] from [1,3,1,2] has a total strength of min([3,1,2]) * sum([3,1,2]) = 1 * 6 = 6 - [1,3,1,2] from [1,3,1,2] has a total strength of min([1,3,1,2]) * sum([1,3,1,2]) = 1 * 7 = 7 The sum of all the total strengths is 1 + 9 + 1 + 4 + 4 + 4 + 3 + 5 + 6 + 7 = 44.	13
77	Write a program that recognize strings that contains a pattern wcw^R (where w={a,b} and w^R means reverse of string w)	14
78	WAP to evaluate a given Prefix expression using stack.	14
79	WAP to convert infix expression into postfix expression.	14
80	WAP to Implement Stack using Queues.	14
81	WAP to Implement Queue using Stacks.	14
82	WAP program to Generate a Binary search tree from given multiple node Value. Perform insert and delete operation on BST	14
83	WAP program to perform inorder, preorder and postorder traversal in Binary search tree.	14
84	Given the root of a binary tree, invert the tree, and return its root.	14

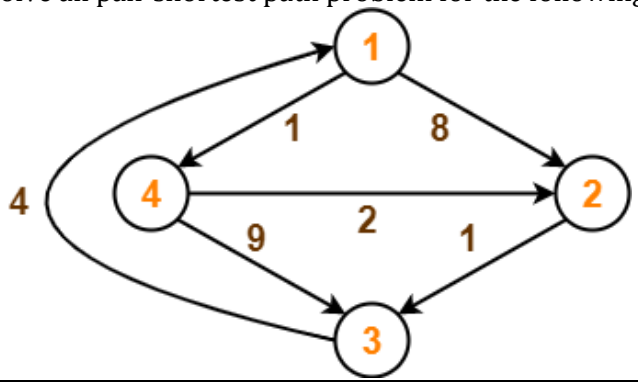
	Example 1:
	 
	`Input: root = [4,2,7,1,3,6,9]`
	`Output: [4,7,2,9,6,3,1]`	

85	Given the root of a binary tree and two integers val and depth, add a row of nodes with value val at the given depth depth.
	 
	`Input: root = [4,2,6,3,1,5], val = 1, depth = 2`
	`Output: [4,1,1,2,null,null,6,3,1,5]`
		14

86	Given the head of a singly linked list where elements are sorted in ascending order, convert it to a height balanced BST.	14

	 **Input:** head = [-10,-3,0,5,9] **Output:** [0,-3,9,-10,null,5]	
87	Write a program to Implement 0/1 knapsack problem using dynamic method.	14
88	Using greedy algorithm find an optimal solution for knapsack instance n=7, M = 15 (P1, P2, P3, P4, P5, P6, P7) = (10,5,15,7,6,18,3) and (w1, w2, w3, w4, w5, w6, w7) = (2,3,5,7,1,4,1)	14
89	WAP to implement a Dijkstra algorithm.	14
90	WAP to find a minimum spanning tree of a graph using Kruskal's algorithm.	14
91	WAP to find a minimum spanning tree of a graph using Prim's algorithm.	14
92	From a given inorder and postorder traversal built a binary tree.	14
93	Given an array of strings strs, group the anagrams together. You can return the answer in any order. Input: strs = ["eat","tea","tan","ate","nat","bat"] Output: [["bat"],["nat","tan"],["ate","eat","tea"]]	14
94	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. **Input:** height = [0,1,0,2,1,0,1,3,2,1,2,1] **Output:** 6 **Explanation:** The above elevation map (black section) is represented by array [0,1,0,2,1,0,1,3,2,1,2,1]. In this case, 6 units of rain water (blue section) are being trapped.	14

95	Given an unsorted integer array nums, return the smallest missing positive integer. You must implement an algorithm that runs in O(n) time and uses constant extra space. Input: nums = [1,2,0] Output: 3 Input: nums = [3,4,-1,1] Output: 2	14
96	You are given an integer array matches where matches[i] = [winneri, loseri] indicates that the player winneri defeated player loseri in a match. Return a list answer of size 2 where: answer [0] is a list of all players that have not lost any matches. answer [1] is a list of all players that have lost exactly one match. The values in the two lists should be returned in increasing order. Note: You should only consider the players that have played at least one match. The testcases will be generated such that no two matches will have the same outcome. Input: matches = [[1,3],[2,3],[3,6],[5,6],[5,7],[4,5],[4,8],[4,9],[10,4],[10,9]] Output: [[1,2,10],[4,5,7,8]] Explanation: Players 1, 2, and 10 have not lost any matches. Players 4, 5, 7, and 8 each have lost one match. Players 3, 6, and 9 each have lost two matches. Thus, answer [0] = [1,2,10] and answer [1] = [4,5,7,8].	14
97	You are given a directed graph of n nodes numbered from 0 to n - 1, where each node has at most one outgoing edge. The graph is represented with a given 0-indexed array edges of size n, indicating that there is a directed edge from node i to node edges[i]. If there is no outgoing edge from node i, then edges[i] == -1. Return the length of the longest cycle in the graph. If no cycle exists, return -1. A cycle is a path that starts and ends at the same node.	14
98	A valid number can be split up into these components (in order): A decimal number or an integer. (Optional) An 'e' or 'E', followed by an integer. A decimal number can be split up into these components (in order): (Optional) A sign character (either '+' or '-'). One of the following formats: One or more digits, followed by a dot '.'. One or more digits, followed by a dot '.', followed by one or more digits. A dot '.', followed by one or more digits. An integer can be split up into these components (in order): (Optional) A sign character (either '+' or '-'). One or more digits.	14

	For example, all the following are valid numbers: ["2", "0089", "-0.1", "+3.14", "4.", "-.9", "2e10", "-90E3", "3e+7", "+6e-1", "53.5e93", "-123.456e789"], while the following are not valid numbers: ["abc", "1a", "1e", "e3", "99e2.5", "--6", "-+3", "95a54e53"]. Given a string s, return true if s is a valid number.	
99	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.	15
100	Solve all pair shortest path problem for the following given graph using Floyd's algorithm. 	15