**Assessment Questions**

**Set 1:**

**HTML and CSS (Landing Page)**

1. <https://shop-pickbazar-rest.vercel.app/makeup>

**JavaScript applications**

1. Captcha generator - <https://648be28f4f8e7d24b6ff3ee0--singular-panda-8b635c.netlify.app/>
2. Personal Assistant - <https://648be31b63785e258a0ac470--singular-panda-8b635c.netlify.app/>

**Logical Programs**

1. Subarray Sum Equals K: Given an array of integers and a target sum k, write a function that returns the total number of continuous subarrays whose sum equals k. For example, for the input array [1, 1, 1] and k = 2, the output should be 2.
2. Merge Intervals: Given an array of intervals representing start and end times, write a function that merges overlapping intervals and returns a new array of non-overlapping intervals. For example, for the input array [[1, 3], [2, 6], [8, 10], [15, 18]], the output should be [[1, 6], [8, 10], [15, 18]].
3. Climbing Stairs: Write a function that calculates the number of distinct ways to climb to the top of a staircase with n steps. You can either climb 1 or 2 steps at a time. For example, for n = 3, the output should be 3.
4. Longest Substring Without Repeating Characters: Given a string, write a function that returns the length of the longest substring without repeating characters. For example, for the input "abcabcbb", the output should be 3.
5. Container With Most Water: Given an array of non-negative integers representing the heights of vertical lines, write a function that calculates the maximum area of water that can be contained between two lines. For example, for the input [1, 8, 6, 2, 5, 4, 8, 3, 7], the output should be 49.
6. Next Permutation: Implement a function that generates the next permutation of a given sequence of integers in lexicographic order. If there is no next permutation, return the permutations in ascending order. For example, for the input [1, 2, 3], the output should be [1, 3, 2].
7. First Missing Positive: Given an unsorted integer array, write a function that finds the smallest missing positive integer. For example, for the input [3, 4, -1, 1], the output should be 2.
8. Meeting Rooms: Given an array of meeting time intervals, write a function that determines if a person could attend all meetings without any overlap. For example, for the input [[0, 30], [5, 10], [15, 20]], the output should be false
9. Implement a function to get elements by tag name (document.getElementsByTagName() method)

* The getElementsByTagName method of Document interface returns an HTMLCollection of elements with the given tag name.
* For example, document.getElementsByTagName('div') returns a collection of all div elements in the document.

1. Find the missing letter

* Write a method that takes an array of consecutive (increasing) letters as input and that returns the missing letter in the array.
* You will always get an valid array. And it will be always exactly one letter be missing. The length of the array will always be at least 2.
* The array will always contain letters in only one case.

**Example:**

['a','b','c','d','f'] -> 'e'

['O','Q','R','S'] -> 'P'

**Set 2:**

**HTML and CSS (Landing Page)**

1. <https://shop-pickbazar-rest.vercel.app/bakery>

**Javascript applications**

1. Resume Builder- https://648be39d4f8e7d24faff3f78--singular-panda-8b635c.netlify.app/
2. Library management - <https://648be7ba1ebecc2becdd5e20--playful-yeot-06566f.netlify.app/>

**Logical Programs**

1. String Compression: Write a function that takes a string as input and compresses it by replacing consecutive repeated characters with the character followed by the count. If the compressed string is longer than the original string, return the original string. For example, if the input is "aabcccccaaa", the output should be "a2b1c5a3".
2. Longest Common Prefix: Write a function that takes an array of strings as input and returns the longest common prefix among them. If there is no common prefix, return an empty string. For example, if the input is ["flower", "flow", "flight"], the output should be "fl".
3. Unique Paths: Given a grid of m x n size, write a function to find the number of unique paths from the top-left corner to the bottom-right corner. You can only move down or right at any point. For example, for a 3x3 grid, the output should be 6.
4. Balanced Brackets: Write a function that takes a string containing only brackets ('(', ')', '{', '}', '[', ']') as input and determines if the brackets are balanced. The function should return true if the brackets are balanced and false otherwise. For example, if the input is "{[()()]}", the output should be true, but if the input is "([)]", the output should be false.
5. Prime Numbers: Write a function that takes an integer n as input and returns an array of prime numbers up to n. For example, if the input is 10, the output should be [2, 3, 5, 7].
6. Matrix Spiral Order: Given a matrix of m x n size, write a function that returns the elements of the matrix in spiral order. For example, for a 3x3 matrix [[1, 2, 3], [4, 5, 6], [7, 8, 9]], the output should be [1, 2, 3, 6, 9, 8, 7, 4, 5].
7. Anagram Check: Write a function that takes two strings as input and determines if they are anagrams of each other. Anagrams are words or phrases formed by rearranging the letters of another word or phrase. For example, "listen" and "silent" are anagrams.
8. Nearest Smaller Element: Given an array of integers, write a function that returns an array where each element is the index of the nearest smaller element on the left side. If there is no smaller element, the index should be -1. For example, for the input [4, 5, 2, 10, 8], the output should be [-1, 0, -1, 2, 3].
9. Create and Append Elements: Write a function that creates a new HTML element, sets its attributes and content, and appends it to an existing element in the DOM. For example, create a new paragraph element with the text "Hello, World!" and append it to a div with the id "container".
10. You are given a string for example:

"exam(unwanted thing)ple():-)"

Your task is to remove everything inside the parentheses as well as the parentheses themselves. If there are unbalanced parentheses, please remove only pairs of balanced parentheses and what's between them.

The example above would return:

"example:-)"

**Set 3:**

**HTML and CSS (Landing Page)**

1. <https://shop-pickbazar-rest.vercel.app/bags>

**Javascript Applications**

1. Country details - <https://648be8f60a37172bcd0bd7d5--playful-yeot-06566f.netlify.app/>

(API Link - <https://restcountries.com/v2/all>).

Whatsapp sender - <https://64902c398dad3b4839d61c9a--glittery-yeot-0eaa80.netlify.app/>

**Logical Programs**

1. Counting Valleys: Given a string representing a hike where 'U' denotes an uphill step and 'D' denotes a downhill step, write a function that counts the number of valleys the hiker passes through. A valley is a sequence of steps that starts and ends at sea level but goes below sea level in between. For example, for the input "UDDDUDUU", the output should be 1.
2. Array Rotation: Write a function that rotates an array of integers by a given number of positions to the right. For example, if the input is [1, 2, 3, 4, 5] and the number of positions is 2, the output should be [4, 5, 1, 2, 3].
3. Two City Scheduling: Given an array of costs for attending a conference, where the i-th element represents the cost of flying a person to city A and the (n + i)-th element represents the cost of flying the person to city B, write a function that minimizes the total cost by flying half the people to city A and the other half to city B.
4. Largest Rectangle in Histogram: Given an array representing the heights of bars in a histogram, write a function that calculates the area of the largest rectangle that can be formed within the histogram. For example, for the input [2, 1, 5, 6, 2, 3], the output should be 10.
5. Word Search: Given a 2D grid of characters and a word, write a function that determines if the word exists in the grid. The word can be constructed from adjacent characters (horizontally or vertically) in the grid. For example, for the grid [["A", "B", "C", "E"], ["S", "F", "C", "S"], ["A", "D", "E", "E"]] and the word "ABCCED", the output should be true.
6. Two City Scheduling: Given an array of costs representing the cost of flying a person to city A or city B, write a function that minimizes the total cost of flying all people to the two cities, where half of the people fly to city A and the other half fly to city B. For example, for the input [[10, 20], [30, 200], [400, 50], [30, 20]], the output should be 110.
7. Reconstruct Itinerary: Given a list of airline tickets represented by pairs of departure and arrival airports, write a function that reconstructs the itinerary in order. The starting airport is "JFK". For example, for the input [["MUC", "LHR"], ["JFK", "MUC"], ["SFO", "SJC"], ["LHR", "SFO"]], the output should be ["JFK", "MUC", "LHR", "SFO", "SJC"].
8. Insert Interval: Given a sorted list of non-overlapping intervals and a new interval, write a function that inserts the new interval into the list and merges any overlapping intervals if necessary. For example, for the input intervals [[1, 3], [6, 9]] and the new interval [2, 5], the output should be [[1, 5], [6, 9]].
9. Filter Elements: Write a JavaScript function called filterElementsByTagName that takes a tag name and a filtering function as parameters. The filtering function should receive each element and return true or false based on some custom criteria. The filterElementsByTagName function should return an array of elements with the given tag name that pass the filtering function.
10. If we write out the digits of "60" as English words we get "sixzero"; the number of letters in "sixzero" is seven. The number of letters in "seven" is five. The number of letters in "five" is four. The number of letters in "four" is four: we have reached a stable equilibrium.

* Note: for integers larger than 9, write out the names of each digit in a single word (instead of the proper name of the number in English). For example, write 12 as "onetwo" (instead of twelve), and 999 as "nineninenine" (instead of nine hundred and ninety-nine).
* For any integer between 0 and 999, return an array showing the path from that integer to a stable equilibrium:

**Example:**

numbersOfLetters(60) --> ["sixzero", "seven", "five", "four"]

numbersOfLetters(1) --> ["one", "three", "five", "four"]