

Medium:

- Write a program that takes a string, string should be of even length. Divide the string into two equals parts, check the number of vowels in both the parts of the string. If both parts of string have same number of vowels then return true otherwise return false.

Testcase1 : rebels

Output : true

Explanation : Given string rebels divided into two parts, reb and els. In both parts vowels count is same that is 1(e is presented in both the parts) so it returns true.

Testcase2 : apples

Output : true

Testcase1 : mars

Output : false

- Write a program that takes array of numbers as input, among the numbers in array, check how many numbers starts with the same digit and ends with the same digits. Print the count of such kind of numbers in the given array.

Testcase1 : [34, 88, 423, 121, 2382, 10]

Output : 3

Explanation : In the given array of number [34, 88, 423, 121, 2382, 10], the numbers 88, 121 and 2382 started with same digit and ended with the same digit. The count is 3.

Testcase1 : [102, 56, 42, 11, 64, 10]

Output : 1

Explanation : In the given array of number [34, 88, 423, 121, 2382, 10], the number 11 started with same digit and ended with the same digit. The count is 1.

- Write a program that takes array of numbers as input, among the numbers in array, print the numbers which forms a prime number by adding one to it. Print such numbers in the given array separated by spaces.

Testcase1 : [7, 4, 7, 23, 10]

Output : 4 10

Explanation : In the given array of number [7, 4, 7, 23, 10] the numbers 4 and 10 by adding one to these numbers, they formed prime number 5 and 11. So the output is 4 10.

- o Write a program that takes array of numbers as input and a number as second input. Check the position of the factorial of the second input number in the given array. Print the position of it. If the factorial of given second input number is not presented in the array then print factorial of the number is not presented.

Testcase1 : [61, 4, 6, 7, 120 , 10]

Input : 5

Output : 4

Explanation : In the given array of numbers[61, 4, 6, 7, 120 , 10], the factorial of second input number 5 is 120, it is presented at 4th position. So output is 5.

Testcase1 : [61, 4, 6, 7, 120 , 10]

Input 2: 7

Output : Factorial of 7 is not presented.

Explanation : Factorial of the second input number 7 is not presented in the given array of numbers.

- Write a program that takes a number as input, print the sum of duplicate numbers in the given number.

Testcase1 : 7473183

Output : 10

Explanation : In the given number 747383, duplicate digits are 7 and 3 because they occurred more than once in the number. So the sum of 7 and 3 are 10.

Testcase1 : 234234

Output : 9

Explanation : In the given number 234234, duplicate digits are 2, 3 and 4 because they occurred more than once in the number. So the sum of 2, 3 and 4 are 9.

- Write a program that takes array of numbers are input, print the second duplicate number and it's occurrence.

Testcase1 : [64, 1, 2, 7, 79, 7, 7, 1, 22]

Output : Second duplicate number is 7 and it is occurred 3 times

Explanation : In the given array [64, 1, 2, 7, 79, 7, 7, 1, 22], the second duplicate number is 7 and it is occurred for 3 times.

Testcase1 : [121, 8, 1, 4, 5, 4, 8, 1]

Output : Second duplicate number is 1 and it is occurred 2 times

Explanation : In the given array [121, 8, 1, 4, 5, 4, 8, 1] the second duplicate number is 1 and it is occurred for 2 times.

- Write a program that takes number of rows as input and print below respective pattern.

Testcase1 : Enter number of rows: 4

Output :

```
1
1 2
1 2 3
1 2 3 4
```

- Write a program that takes number of rows as input and print below respective pattern.

Testcase1 : Enter number of rows: 4

Output :

```
4 3 2 1
4 3 2
4 3
4
```

- Write a program that takes number of rows as input and print below respective pattern.

Testcase1 : Enter number of rows: 4

Output :

```
1 1  
1 2 3  
1 2 3 6  
1 2 3 4 10
```

- Write a program that takes number of rows as input and print below respective pattern.

Testcase1 : Enter number of rows: 3

Output :

```
1  
1 2  
1 2 3
```

- Write a program that takes number of rows as input and print below respective pattern.

Testcase1 : Enter number of rows: 4

Output :

```
1+  
12++  
123+++  
1234++++
```

- Write a program that takes number of rows as input and print below respective pattern.

Testcase1 : Enter number of rows: 4

Output :

```
+1  
++2  
+++3  
++++4
```

- Write a program that takes number of rows as input and print below respective pattern.

Testcase1 : Enter number of rows: 4

Output :

```
+1  
++12  
+++123  
++++1234
```

- Write a program that takes number of rows as input and print below respective pattern.

Testcase1 : Enter number of rows: 4

Output :

```
A  
AB  
ABC  
ABCD
```

- Write a program that takes number of rows as input and print below respective pattern.

Testcase1 : Enter number of rows: 3

Output :

A
A B
A B C

- Write a program that takes number of rows as input and print below respective pattern.

Testcase1 : Enter number of rows: 4

Output :

A1
AB12
ABC123
ABCD1234

- Write a program that takes number of rows as input and print below respective pattern.

Testcase1 : Enter number of rows: 4

Output :

A
ab
ABC
abcd

Array-Based Questions

- Rotate an Array

Problem: Write a function that rotates an array to the right by a given number of steps.

Testcase 1:

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

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

- Intersection of Two Arrays

Problem: Write a function that returns the common elements between two arrays.

Testcase 1:

Input: [1, 2, 3], [2, 3, 4]

Output: [2, 3]

- Find Missing Number

Problem: Given an array of consecutive numbers with one missing, find the missing number.

Testcase 1:

Input: [1, 2, 4, 5]

Output: [3]

- Find the Maximum Product of Two Elements

Problem: Write a function to find the maximum product of two elements in an array.

Testcase 1:

Input: [3, 5, -2, 8, 11]

Output: $8 * 11 \rightarrow 88$

- Move Zeros to End

Problem: Write a function that moves all zeros in an array to the end while maintaining the order of other elements.

Testcase 1:

Input: [0, 1, 0, 3, 12]

Output: [1, 3, 12, 0, 0]

- Pair Sum

Problem: Write a function to find all pairs in an array whose sum is equal to a given target.

Testcase 1:

Input: [2, 4, 3, 5, 7, 8, 9], 7

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

- Find Peak Element

Problem: Write a function to find a peak element in an array. An element is a peak if it is not smaller than its neighbours.

Testcase 1:

Input: [1, 3, 20, 4, 1, 0]

Output: 20

- Find the First Duplicate

Problem: Write a function to return the first duplicate value in an array.

Testcase 1:

Input: [2, 1, 3, 5, 3, 2]

Output: 3

- Flatten a Nested Array

Problem: Write a function to flatten a nested array into a single array.

Testcase 1: Improvements : Very slow in improving

Target date for completion :

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

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

- Group Anagrams

Problem: Write a function to group anagrams from an array of strings.

Testcase 1:

Input: ["eat", "tea", "tan", "ate", "nat", "bat"]

Output: [["eat", "tea", "ate"], ["tan", "nat"], ["bat"]]

Longest Increasing subsequence in an array.

Testcase 1:

Input: [10, 9, 2, 5, 3, 7, 101, 18]

Output: 4

Convert the given Input Empty String into the given Output

Testcase 1:

Input : []

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

Input: [3, 1, 2, 4, 7, 6, 5]

You are given an array of integers. Rearrange the array such that:

1. All even numbers appear before all odd numbers.
2. Within the even and odd groups, numbers should maintain their relative order from the original array.
3. The rearrangement must be done **in-place** (without using extra arrays).

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

String-Based Questions

-
- Find the Longest Word

Problem: Write a function to find the longest word in a string.

Testcase 1:

Input: "The quick brown fox jumps over the lazy dog"

Output: "jumps"

- Check for Anagrams

Problem: Write a function to check if two strings are anagrams of each other.

Testcase 1:

Input: "listen", "silent"

Output: true

- Find the First Non-Repeating Character

Problem: Write a function to find the first non-repeating character in a string.

Testcase 1:

Input: "swiss"

Output: 'w'

- Check if String is a Valid Number

Problem: Write a function to check if a string is a valid number.

Testcase 1:

Input: "123 .45"

Output: true

- Check if a String is a Rotation of Another String

Problem: Write a function to check if one string is a rotation of another string.

Testcase 1:

Input: "abcde" , "cdeab"

Output: true

- Reverse Words in a String

Problem: Write a function to reverse the order of words in a given string.

Testcase 1:

Input: "hello world"

Output: "world hello"

- String Compression

Problem: Write a function to perform basic string compression using the counts of repeated characters.

Testcase 1:

Input: "aabccccaaa"

Output: "a2b1c5a3"

- Find All Permutations of a String

Problem: Write a function to find all permutations of a given string.

Testcase 1:

Input: "abc"

Output: ["abc", "acb", "bac", "bca", "cab", "cba"]

- Find the Longest Substring Without Repeating Characters

Problem: Write a function to find the length of the longest substring without repeating characters.

Testcase 1:

Input: "abcabcbb"

Output: 3

- Convert Roman Numerals to Integer

Problem: Write a function to convert a Roman numeral string to an integer.

Testcase 1:

Input: "MCMXCV"

Output: 1994

- Find the Longest Palindromic Substring

Problem: Write a function to find the longest palindromic substring in a given string.

Testcase 1:

Input: "babad"

Output: "bab"

- Check if Two Strings are Isomorphic

Problem: Write a function to check if two strings are isomorphic (each character in one string can be mapped to a character in the other string, preserving order).

Testcase 1:

Input: "egg", "add"

Output: true

Object-Based Questions

- Deep Clone an Object

Problem: Write a function to create a deep clone of an object.

Testcase 1:

Input: {a: 1, b: {c: 2}}

Output: {a: 1, b: {c: 2}}

- Check if Two Objects are Equal

Problem: Write a function to check if two objects are equal (deep comparison).

Testcase 1:

Input: {a: 1, b: 2}, {a: 1, b: 2}

Output: true

- Find Common Keys in Two Objects

Problem: Write a function to find the common keys in two objects.

Testcase 1:

Input: {a: 1, b: 2}, {b: 3, c: 4}

Output: ["b"]

- Sum of Values by Key

Problem: Write a function that sums the values of a specific key across an array of objects.

Testcase 1:

Input: [{a: 1}, {a: 2}, {a: 3}], "a"

Output: 6

- Group Objects by a Property

Problem: Write a function that groups an array of objects by a specific property.

Testcase 1:

Input: [{name: "Alice", age: 25}, {name: "Bob", age: 30},

```
{name: "Alice", age: 28}], "name"
```

Output:

```
{
  Alice: [ {name: "Alice", age: 25}, {name: "Alice", age:
28} ],
  Bob: [ {name: "Bob", age: 30} ]
}
```

- Convert Object to Query String

Problem: Write a function to convert an object into a query string format.

Testcase 1:

Input: {name: "Alice", age: 25}

Output: "name=Alice&age=25"

- Find the Deepest Property in an Object

Problem: Write a function to find the deepest (nested) property in an object.

Testcase 1:

Input: {a: {b: {c: 1}}}

Output: ".a.b.c"

- Convert Nested Object to Flat Object

Problem: Write a function to convert a nested object into a flat object.

Testcase 1:

Input: {a: {b: {c: 1}}}

Output: {"a.b.c": 1}

- Create a Lookup Table from an Array of Objects

Problem: Write a function that creates a lookup table (object) from an array of objects, using a specific key as the lookup key.

Testcase 1:

Input: [{id: 1, name: "Alice"}, {id: 2, name: "Bob"}],

"id"

Output:

```
{  
  1: {id: 1, name: "Alice"},  
  2: {id: 2, name: "Bob"}  
}
```

Other Fundamental JavaScript Questions

- Implement a Basic Calculator

Problem: Write a function that takes two numbers and an operator (+, -, *, /) and returns the result.

Testcase 1:

Input: 2, 3, '+'

Output: 5

- FizzBuzz

Problem: Write a program that prints the numbers from 1 to 100. For multiples of three, print "Fizz" instead of the number, and for multiples of five, print "Buzz". For numbers that are multiples of both three and five, print "FizzBuzz".

Testcase 1:

Output:

```
1  
2  
Fizz  
4  
Buzz  
Fizz
```

```
7  
8  
Fizz  
Buzz  
11  
Fizz  
...
```

-
- Generate Fibonacci Sequence

Problem: Write a function that generates the first n numbers in the Fibonacci sequence.

Testcase 1:

Input: 5

Output: [0, 1, 1, 2, 3]

-
- Sum of Digits

Problem: Write a function that takes a number and returns the sum of its digits.

Testcase 1:

Input: 123

Output: 6

- Binary Search Algorithm

Problem: Write a function to perform binary search on a sorted array.

Testcase 1:

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

Output: 2 (the index of number 3 in the array)

- Check for Armstrong Number

Problem: Write a function to check if a number is an Armstrong number (e.g., 153 is an Armstrong number because $1^3 + 5^3 + 3^3 = 153$).

Testcase 1:

Input: 1

Output: true

- Check for Balanced Parentheses

Problem: Write a function to check if a string of parentheses is balanced.

Testcase 1:

Input: "{[()]}"

Output: true

Testcase 2:

Input: "{[()]}"

Output: false

