JavaScript Basic Problems

This document contains 40 basic JavaScript problems designed to reinforce fundamental programming concepts. The problems are similar in difficulty and scope to those found in introductory programming assignments, covering topics such as input/output, conditional logic, loops, and basic arithmetic operations.

Problem Set

Section 1: Basic Input/Output and Conditionals

1. **Problem:** Write a program that prompts the user to enter their name and then prints a greeting message including their name.
    - **Example:**
        - **Input:** `Alice`
        - **Output:** `Hello, Alice! Welcome to the program.`
2. **Problem:** Write a program that takes two numbers from the user and prints their sum.
    - **Example:**
        - **Input:** `10`, `25`
        - **Output:** `The sum is: 35`
3. **Problem:** Write a program that asks the user for a number and determines if it's positive, negative, or zero.
    - **Example 1:**
        - **Input:** `7`
        - **Output:** `The number is positive.`
    - **Example 2:**
        - **Input:** `-3`

        - **Output:** `The number is negative.`
    - **Example 3:**
        - **Input:** `0`
        - **Output:** `The number is zero.`

4. **Problem:** Write a program that takes an integer from the user and prints "Even" if it's an even number, and "Odd" if it's an odd number.
    - **Example 1:**
        - **Input:** `4`
        - **Output:** `Even`
    - **Example 2:**
        - **Input:** `9`
        - **Output:** `Odd`
5. **Problem:** Write a program that takes three numbers from the user and prints the largest among them.
    - **Example:**
        - **Input:** `15`, `8`, `22`
        - **Output:** `The largest number is: 22`
6. **Problem:** Write a program that takes a single character from the user. If the character is a digit (0-9), print "Digit"; otherwise, print "Not a Digit".
    - **Example 1:**
        - **Input:** `5`
        - **Output:** `Digit`
    - **Example 2:**
        - **Input:** `a`
        - **Output:** `Not a Digit`
7. **Problem:** Write a program that takes a year as input and checks if it is a leap year. A leap year is divisible by 4, but not by 100 unless it is also divisible by 400.
    - **Example 1:**

        - **Input:** `2000`
        - **Output:** `2000 is a leap year.`
    - **Example 2:**
        - **Input:** `1900`
        - **Output:** `1900 is not a leap year.`
    - **Example 3:**
        - **Input:** `2024`
        - **Output:** `2024 is a leap year.`

8. **Problem:** Write a program that calculates the area of a rectangle. It should prompt the user for the length and width, then print the calculated area.
    - **Example:**
        - **Input:** `Length: 10`, `Width: 5`
        - **Output:** `The area of the rectangle is: 50`

9. **Problem:** Write a program that converts a temperature from Celsius to Fahrenheit. Prompt the user for the temperature in Celsius.
    - **Formula:** `Fahrenheit = (Celsius * 9/5) + 32`
    - **Example:**
        - **Input:** `25`
        - **Output:** `25 Celsius is 77 Fahrenheit.`

10. **Problem:** Write a program that takes a number representing a day of the week (1 for Monday, 2 for Tuesday, etc.) and prints the corresponding day name. If the number is not between 1 and 7, print "Invalid Day".
    - **Example 1:**
        - **Input:** `3`
        - **Output:** `Wednesday`
    - **Example 2:**
        - **Input:** `8`
        - **Output:** `Invalid Day`

Section 2: Loops and Iteration

1. **Problem:** Write a program that prints all numbers from 1 to 10 using a `for` loop.
    - **Output:** `1 2 3 4 5 6 7 8 9 10`
2. **Problem:** Write a program that calculates the sum of all numbers from 1 to 100 using a `while` loop.
    - **Output:** `The sum of numbers from 1 to 100 is: 5050`
3. **Problem:** Write a program that takes a positive integer from the user and prints its factorial. (e.g., factorial of 5 is 5 * 4 * 3 * 2 * 1 = 120)
    - **Example:**
        - **Input:** `5`
        - **Output:** `The factorial of 5 is: 120`
4. **Problem:** Write a program that takes a number from the user and prints its multiplication table up to 10.
    - **Example:**
        - **Input:** `7`
        - **Output:** `7 x 1 = 7 7 x 2 = 14 ... 7 x 10 = 70`
5. **Problem:** Write a program that prompts the user to enter numbers repeatedly until they enter 0. After they enter 0, print the sum of all the numbers entered (excluding 0).
    - **Example:**
        - **Input:** `5`, `10`, `3`, `0`
        - **Output:** `The sum of the numbers is: 18`
6. **Problem:** Write a program that prints the first 10 Fibonacci numbers. (Fibonacci sequence starts with 0 and 1, and each subsequent number is the sum of the two preceding ones: 0, 1, 1, 2, 3, 5, ...)
    - **Output:** `0 1 1 2 3 5 8 13 21 34`
7. **Problem:** Write a program that takes a string from the user and prints each character on a new line.

- **Example:**
  - **Input:** `Hello`
  - **Output:** `H e l l o`

8. **Problem:** Write a program that counts the number of vowels (a, e, i, o, u) in a given string. The program should be case-insensitive.
   - **Example:**
     - **Input:** `Programming`
     - **Output:** `Number of vowels: 3`
9. **Problem:** Write a program that reverses a given string.
   - **Example:**
     - **Input:** `JavaScript`
     - **Output:** `tpircSavaJ`
10. **Problem:** Write a program that takes a number from the user and checks if it is a prime number. (A prime number is a natural number greater than 1 that has no positive divisors other than 1 and itself.)
    - **Example 1:**
      - **Input:** `7`
      - **Output:** `7 is a prime number.`
    - **Example 2:**
      - **Input:** `10`
      - **Output:** `10 is not a prime number.`

Section 3: Arrays and Basic Functions

1. **Problem:** Write a program that creates an array of five numbers and prints each element.
   - **Example:**
     - **Input:** `[10, 20, 30, 40, 50]`
     - **Output:** `10 20 30 40 50`

2. **Problem:** Write a program that finds the sum of all elements in an array of numbers.
    - **Example:**
        - **Input:** `[1, 2, 3, 4, 5]`
        - **Output:** `The sum of array elements is: 15`
3. **Problem:** Write a program that finds the largest element in an array of numbers.
    - **Example:**
        - **Input:** `[12, 45, 6, 78, 23]`
        - **Output:** `The largest element is: 78`
4. **Problem:** Write a program that takes an array of strings and prints each string in uppercase.
    - **Example:**
        - **Input:** `["apple", "banana", "cherry"]`
        - **Output:** `APPLE BANANA CHERRY`
5. **Problem:** Write a function that takes two numbers as arguments and returns their product.
    - **Example:**
        - **Input:** `multiply(5, 7)`
        - **Output:** `35`
6. **Problem:** Write a function that takes a string as an argument and returns the string with its first letter capitalized.
    - **Example:**
        - **Input:** `capitalize("javascript")`
        - **Output:** `Javascript`
7. **Problem:** Write a program that checks if a given element exists in an array. If it exists, print its index; otherwise, print "Element not found."
    - **Example 1:**
        - **Input:** `array = [10, 20, 30, 40], element = 30`

        - **Output:** `Element found at index: 2`
    - **Example 2:**
        - **Input:** `array = [10, 20, 30, 40], element = 50`
        - **Output:** `Element not found.`

8. **Problem:** Write a program that removes a specific element from an array.
    - **Example:**
        - **Input:** `array = [1, 2, 3, 4, 5], element_to_remove = 3`
        - **Output:** `[1, 2, 4, 5]`

9. **Problem:** Write a function that takes an array of numbers and returns a new array containing only the even numbers.
    - **Example:**
        - **Input:** `getEvenNumbers([1, 2, 3, 4, 5, 6])`
        - **Output:** `[2, 4, 6]`

10. **Problem:** Write a function that calculates the average of numbers in an array.
    - **Example:**
        - **Input:** `calculateAverage([10, 20, 30, 40, 50])`
        - **Output:** `30`

Section 4: Basic String and Array Manipulation

1. **Problem:** Write a program that checks if a given string is a palindrome (reads the same forwards and backward, e.g., "madam"). The check should be case-insensitive.
    - **Example 1:**
        - **Input:** `madam`
        - **Output:** `"madam" is a palindrome.`
    - **Example 2:**
        - **Input:** `hello`
        - **Output:** `"hello" is not a palindrome.`

2. **Problem:** Write a program that counts the occurrences of a specific character in a given string.
    - **Example:**
        - **Input:** `string = "programming", char = "m"`
        - **Output:** `The character 'm' appears 2 times.`
3. **Problem:** Write a program that concatenates two strings provided by the user.
    - **Example:**
        - **Input:** `string1 = "Hello", string2 = "World"`
        - **Output:** `HelloWorld`
4. **Problem:** Write a program that takes an array of numbers and sorts them in ascending order.
    - **Example:**
        - **Input:** `[5, 2, 8, 1, 9]`
        - **Output:** `[1, 2, 5, 8, 9]`
5. **Problem:** Write a program that takes an array of numbers and returns the second largest number.
    - **Example:**
        - **Input:** `[10, 5, 20, 15, 25]`
        - **Output:** `The second largest number is: 20`
6. **Problem:** Write a program that removes duplicate elements from an array.
    - **Example:**
        - **Input:** `[1, 2, 2, 3, 4, 4, 5]`
        - **Output:** `[1, 2, 3, 4, 5]`
7. **Problem:** Write a program that takes a sentence (string) and counts the number of words in it.
    - **Example:**
        - **Input:** `"This is a sample sentence."`
        - **Output:** `The sentence has 5 words.`

8. **Problem:** Write a program that converts a given string to title case (the first letter of each word capitalized).
    - **Example:**
        - **Input:** `"hello world from javascript"`
        - **Output:** `"Hello World From Javascript"`
9. **Problem:** Write a program that takes an array of strings and joins them into a single string, separated by a comma and a space.
    - **Example:**
        - **Input:** `["apple", "banana", "cherry"]`
        - **Output:** `"apple, banana, cherry"`
10. **Problem:** Write a program that takes a number from the user and prints all its divisors.
    - **Example:**
        - **Input:** `12`
        - **Output:** `The divisors of 12 are: 1, 2, 3, 4, 6, 12`