**Javascript Loops:**

**While Loop:**

* **Problem 1: Print Numbers 1 to 10**

**Statement:**  
Using a while loop, print numbers from 1 to 10.

**Example Output:**  
1 2 3 4 5 6 7 8 9 10

### Problem 2: Print Even Numbers from 1 to 20

**Statement:**  
Use a while loop to print all even numbers between 1 and 20.

**Example Output:**  
2 4 6 8 10 12 14 16 18 20

### Problem 3: Sum of First N Natural Numbers

**Statement:**  
Take an input N and calculate the sum of first N natural numbers using a while loop.

**Example Input:** 5  
**Output:** 15

### Problem 4: Factorial of a Number

**Statement:**  
Take an input number and find its factorial using a while loop.

**Example Input:** 4  
**Output:** 24

### Problem 5: Reverse Digits of a Number

**Statement:**  
Using a while loop, reverse the digits of a given number.

**Example Input:** 1234  
**Output:** 4321

### Problem 6: Count Digits in a Number

**Statement:**  
Write a while loop to count the number of digits in a given number.

**Example Input:** 12345  
**Output:** 5

### Problem 7: Check for Palindrome Number

**Statement:**  
Using a while loop, check whether a number is a palindrome or not.

**Example Input:** 121  
**Output:** Palindrome

### Problem 8: Generate Fibonacci Series

**Statement:**  
Generate the first N terms of the Fibonacci series using a while loop.

**Example Input:** 5  
**Output:** 0 1 1 2 3

### Problem 9: Check if a Number is Prime

**Statement:**  
Take a number and check whether it is a prime number using a while loop.

**Example Input:** 7  
**Output:** Prime

### Problem 10: GCD of Two Numbers

**Statement:**  
Find the greatest common divisor (GCD) of two numbers using a while loop.

**Example Input:** 20, 28  
**Output:** 4

**For Loop :**

### Problem 1: Multiplication Table

**Statement:**  
Take a number from the user and print its multiplication table (1 to 10) using a for loop.

**Example Input:** 5  
**Output:**  
5 × 1 = 5  
5 × 2 = 10  
...  
5 × 10 = 50

### Problem 2: Print Odd Numbers from 1 to N

**Statement:**  
Print all odd numbers from 1 to N using a for loop.

**Example Input:** 10  
**Output:** 1 3 5 7 9

### Problem 3: Power of a Number

**Statement:**  
Take base and exponent as input and calculate the result using a for loop.

**Example Input:** Base = 2, Exponent = 3  
**Output:** 8

### Problem 4: Sum of Squares of First N Natural Numbers

**Statement:**  
Calculate the sum of squares from 1 to N using a for loop.

**Example Input:** 3  
**Output:** 14 (1² + 2² + 3²)

### Problem 5: Print Characters of a String

**Statement:**  
Take a string as input and print each character on a new line using a for loop.

**Example Input:** "hello"  
**Output:**  
h  
e  
l  
l  
o

### Problem 6: Find Maximum in an Array

**Statement:**  
Find the largest element in an array using a for loop.

**Example Input:** [5, 8, 2, 10, 4]  
**Output:** 10

### Problem 7: Count Vowels in a String

**Statement:**  
Count the number of vowels in a given string using a for loop.

**Example Input:** "Javascript"  
**Output:** 3

### Problem 8: Prime Numbers from 1 to 100

**Statement:**  
Use a for loop to print all prime numbers between 1 and 100.

**Example Output (partial):**  
2, 3, 5, 7, 11, 13, 17, ...

### Problem 9: Reverse a String

**Statement:**  
Take a string input and reverse it using a for loop.

**Example Input:** "world"  
**Output:** "dlrow"

### Problem 10: Check if a String is Palindrome

**Statement:**  
Take a string and check whether it is a palindrome using a for loop.

**Example Input:** "madam"  
**Output:** Palindrome

**Do-While Loop :**

### Problem 1: Print Numbers 1 to 5

**Statement:**  
Use a do...while loop to print numbers from 1 to 5.

**Output:** 1 2 3 4 5

### Problem 2: Repeat Menu Until Exit

**Statement:**  
Display a menu of choices and repeat it until the user chooses “exit”.

**Example Output:**

1. Start
2. Settings
3. Exit  
   (Repeat until choice = 3)

### Problem 3: Sum Until User Enters 0

**Statement:**  
Keep taking numbers as input and add them until the user enters 0. Use a do...while loop.

**Example Input:** 2, 5, 3, 0  
**Output:** 10

### Problem 4: Print Alphabets A to Z

**Statement:**  
Use a do...while loop to print all uppercase letters from A to Z.

**Output:** A B C ... Z

### Problem 5: Countdown from N to 1

**Statement:**  
Take a number N and count down to 1 using a do...while loop.

**Example Input:** 5  
**Output:** 5 4 3 2 1

### Problem 6: Password Until Correct

**Statement:**  
Prompt the user for a password until the correct password is entered. Use a do...while loop.

**Example Output:**  
"Wrong password. Try again."  
"Correct!"

### Problem 7: Product of Digits

**Statement:**  
Calculate the product of digits of a number using a do...while loop.

**Example Input:** 123  
**Output:** 6

### Problem 8: Print Square Numbers

**Statement:**  
Print the first N square numbers using a do...while loop.

**Example Input:** 5  
**Output:** 1 4 9 16 25

### Problem 9: Prompt Until Yes

**Statement:**  
Keep asking the user "Do you want to continue?" until they answer "yes".

**Example Input:** no, maybe, yes  
**Output:** (Loop ends on "yes")

### Problem 10: Armstrong Number Check

**Statement:**  
Check whether a number is an Armstrong number using a do...while loop.

**Example Input:** 153  
**Output:** Armstrong

**For-In Loop:**

* **Problem 1: Print Object Keys and Values**

**Statement:**  
Use a for...in loop to print all keys and values of a given object.

**Example Input:**{ name: "John", age: 25 }

**Output:**  
name: John  
age: 25

### Problem 2: Count Properties in Object

**Statement:**  
Count the number of keys in a given object using a for...in loop.

**Example Input:**

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

**Output:** 3

### Problem 3: Convert String Values to Uppercase

**Statement:**  
Use a for...in loop to convert all string values in an object to uppercase.

**Example Input:**

{ name: "john", city: "paris", age: 30 }

**Output:**

{ name: "JOHN", city: "PARIS", age: 30 }

### Problem 4: Filter Numeric Properties

**Statement:**  
Create a new object with only numeric properties from the original object using for...in.

**Example Input:**

{ name: "Sam", age: 30, score: 90 }

**Output:**

{ age: 30, score: 90 }

### Problem 5: Check If Key Exists

**Statement:**  
Check manually (using for...in) if a specific key exists in an object.

**Example Input:** key = "email"  
**Output:** Key not found

**For-Of Loop :**

### Problem 1: Print Array Elements

**Statement:**  
Print all elements in an array using a for...of loop.

**Example Input:** [10, 20, 30]  
**Output:** 10 20 30

### Problem 2: Sum Array Elements

**Statement:**  
Calculate the sum of elements in an array using a for...of loop.

**Example Input:** [2, 4, 6]  
**Output:** 12

### Problem 3: Convert Strings to Lowercase

**Statement:**  
Convert all string elements in an array to lowercase using a for...of loop.

**Example Input:** ["HELLO", "WORLD"]  
**Output:** ["hello", "world"]

### Problem 4: Print Characters in a String

**Statement:**  
Print each character of a string using a for...of loop.

**Example Input:** "loop"  
**Output:** l o o p

### Problem 5: Remove Duplicates from Array

**Statement:**  
Use for...of and Set to remove duplicate elements from an array.

**Example Input:** [1, 2, 2, 3, 3, 4]  
**Output:** [1, 2, 3, 4]