



## 1. JavaScript Basics



### Direct Challenge:

**Task:**

Declare a variable `name` with your name and print `"Hello, [name]!"` to the console.



### Scenario-Based Challenges:

**1. Greeting System:**

Create a script that asks for the user's name using `prompt()` and displays a personalized greeting using `alert()`.

**2. Simple Calculator:**

Build a basic calculator that reads two numbers using `prompt()`, adds them, and displays the result in an `alert()` box.



## 2. Control Flow



### Direct Challenge:

**Task:**

Write a JavaScript program to check if a number is even or odd using an `if-else` statement.



### Scenario-Based Challenges:

**1. Grading System:**

Accept a student's score (0–100) and display their grade using `if-else if` ladder: A, B, C, D, or F.

**2. Login Attempts:**

Allow a user to enter a password with a maximum of 3 attempts. Use a `for` or `while` loop and `break` when successful.



## 3. Functions and Scope



### Direct Challenge:

**Task:**

Write a function `square(n)` that returns the square of a number.



### Scenario-Based Challenges:

**1. Tip Calculator Function:**

Create a function `calculateTip(billAmount, tipPercent)` that returns the tip value and total amount.

**2. User Login Function:**

Write a function `login(username, password)` that checks if username is "admin" and password is "1234" and returns a success or failure message.



## 4. Objects and the Document Object Model (DOM)



### Direct Challenge:

**Task:**

Create a button in HTML. Write JavaScript to change the button text to "Clicked!" when it's pressed.



### Scenario-Based Challenges:

**1. To-Do List DOM Update:**

Create an input field and a button. When the button is clicked, the entered text should be added as a new list item to a `<ul>`.

**2. Form Validation:**

Create a form with a name and email field. On submission, prevent the form if either field is empty and show an error message below the form.



## 5. Arrays and Array Methods



### Direct Challenge:

**Task:**

Create an array of 5 numbers and use `forEach()` to print each number doubled.



### Scenario-Based Challenges:

**1. Shopping Cart Total:**

Given an array of prices, use `reduce()` to calculate and display the total bill amount.

**2. Filter Even Numbers:**

Write a function that accepts an array and returns a new array containing only even numbers using `filter()`.



## 6. Asynchronous JavaScript

## ◆ Direct Challenge:

### Task:

Use `setTimeout ( )` to print "Hello after 2 seconds" to the console.

## ◆ Scenario-Based Challenges:

### 1. Simulated API Fetch:

Use `fetch ( )` to retrieve JSON data from a public API (like `https://jsonplaceholder.typicode.com/posts`) and display the titles in a list on the page.

### 2. Chained Delayed Messages:

Display three messages in sequence using `setTimeout ( )`, each after 1 second gap:

- “Loading...”
- “Almost there...”
- “Done!”