

# JavaScript Logic Building Questions

## Easy-Level Questions

### 1. Console.log & Comments

- Write a program that logs "Hello, World!" in the console. Add a single-line and multi-line comment explaining the code.

### 2. Variables & Data Types

- Declare variables of all primitive data types in JavaScript and log their types using ``typeof``.

### 3. Type Conversions

- Convert the string ``"123"`` into a number and add 10 to it. Log the result and its type.

### 4. Conditional Statements

- Write a program that checks if a number is positive, negative, or zero.

### 5. Loops

- Print all numbers from 1 to 10 using a ``for`` loop.

### 6. Template Literals

- Use a template literal to log a greeting message: "Hello [YourName], Welcome to JavaScript!".

### 7. Functions

- Write a function that takes a name as input and logs a welcome message.

## 8. Objects

- Create an object representing a book with properties: title, author, and year. Log each property.

## 9. Arrays

- Create an array of five numbers and log the third number.

## 10. Date & Time

- Write a program to display the current date and time.

## Intermediate-Level Questions

### 1. Scoping & Variables

- Demonstrate the difference between ``var``, ``let``, and ``const`` with examples of block scope.

### 2. Type Conversions

- Write a program that takes input as a string and converts it to a boolean using explicit conversion.

Check for truthy and falsy values.

### 3. Operators

- Write a program that checks if a number is divisible by both 3 and 5 using logical operators.

### 4. Nested If-Else

- Write a program that grades a student based on their marks (e.g., `>90: A`, `>75: B`, `>50: C`, `<=50: F`).

### 5. Loops

- Use a `while` loop to find the sum of the first 10 natural numbers.

## 6. Recursion

- Write a recursive function to calculate the factorial of a number.

## 7. Default Parameters

- Create a function that calculates the area of a rectangle. If only one parameter is provided, assume it's a square.

## 8. Objects & CRUD

- Add a new property `publisher` to a book object, update the `year`, and then delete the `author`.

## 9. Array Methods

- Write a program to sort an array of numbers in ascending order using `sort`.

## 10. Try-Catch Block

- Write a program to parse a JSON string. If parsing fails, catch and log the error.

## Advanced-Level Questions

### 1. Hoisting

- Write a program to demonstrate function and variable hoisting. Explain the output.

### 2. Arrow Functions

- Write an arrow function to check if a given number is prime.

### 3. IIFE

- Create an IIFE that logs the square of a number.

### 4. Object Destructuring

- Use object destructuring to extract properties from a `user` object.

### 5. Array Destructuring

- Swap two variables using array destructuring.

### 6. Spread Operator

- Merge two arrays using the spread operator and find the maximum value in the merged array.

### 7. For...Of & For...In

- Use `for...of` to iterate over an array of numbers and calculate their sum. Use `for...in` to log all properties of an object.

### 8. SetTimeout & setInterval

- Create a countdown timer from 10 to 0 using `setInterval` and stop it using `clearInterval`.

### 9. JSON

- Write a program to convert a JavaScript object into JSON format and back to an object.

### 10. Date & Time

- Write a program to calculate the number of days between two dates.

### Bonus Questions (Logic-Building)

## 1. Complex Conditionals

- Write a program that takes a day number (1-7) and logs whether it's a weekday or weekend using a ``switch`` statement.

## 2. Array Methods

- Filter all odd numbers from an array and then double them using ``map``.

## 3. CRUD Operations on Objects

- Create a student object. Add subjects and marks as key-value pairs. Calculate the average marks.

## 4. Chaining Methods

- Use ``filter``, ``map``, and ``reduce`` to find the sum of squares of even numbers in an array.

## 5. Recursive Logic

- Write a recursive function to generate the Fibonacci sequence up to a given number.