

# JavaScript Hands-On Lab

## Module 1: Introduction to JavaScript

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### Objective

This lab introduces the fundamentals of JavaScript including variables, data types, operators, conditionals, and loops. By the end, you will be able to write and understand basic JavaScript programs.

### 1 Hello JavaScript

**Task:** Open your browser console or use VS Code. Write your first JavaScript code:

```
console.log("Hello, JavaScript!");
```

**Challenge:** Log your name, age, and favorite color.

```
console.log("Name: Alice");  
console.log("Age: 25");  
console.log("Favorite Color: Blue");
```

### 2 Variables and Data Types

#### Task 1: Declare Variables

Use `let` and `const`:

```
let name = "John";  
const age = 30;  
let isStudent = false;
```

#### Task 2: Check Data Types

Use `typeof` to inspect each variable:

```
console.log(typeof name);    // "string"  
console.log(typeof age);    // "number"  
console.log(typeof isStudent); // "boolean"
```

### 3 Operators

**Task:** Use basic operators:

- a) Add two numbers
- b) Calculate the area of a rectangle
- c) Check if two numbers are equal

```
let a = 10;
let b = 5;

console.log(a + b);           // Addition
console.log(a * b);           // Area
console.log(a === b);         // Equality check
```

### 4 Conditionals

**Task 1: if / else**

Write a program that checks if a score is a pass ( $\geq 50$ ).

```
let score = 65;

if (score >= 50) {
  console.log("Pass");
} else {
  console.log("Fail");
}
```

**Task 2: switch Statement**

Display a message based on the day:

```
let day = "Tuesday";

switch(day) {
  case "Monday":
    console.log("Back to work!");
    break;
  case "Friday":
    console.log("Almost weekend!");
    break;
  default:
    console.log("Just another day.");
}
```

## 5 Loops

### Task 1: for Loop – Count 1 to 10

```
for (let i = 1; i <= 10; i++) {  
  console.log(i);  
}
```

### Task 2: while Loop – Even Numbers (0–20)

```
let i = 0;  
while (i <= 20) {  
  if (i % 2 === 0) {  
    console.log(i);  
  }  
  i++;  
}
```

### Task 3: FizzBuzz Challenge

Print numbers 1 to 30. Replace multiples of: - 3 with "Fizz" - 5 with "Buzz" - Both with "FizzBuzz"

```
for (let i = 1; i <= 30; i++) {  
  if (i % 3 === 0 && i % 5 === 0) {  
    console.log("FizzBuzz");  
  } else if (i % 3 === 0) {  
    console.log("Fizz");  
  } else if (i % 5 === 0) {  
    console.log("Buzz");  
  } else {  
    console.log(i);  
  }  
}
```

### Bonus: Simple Calculator

Ask the user for two numbers and an operator ('+', '-', '\*', '/') and return the result using if statements.

*(Use prompt() in browser environments or hardcoded values if using VS Code.)*

```
let a = 10;  
let b = 5;  
let op = "*";  
  
if (op === "+") {  
  console.log(a + b);  
}
```

```
} else if (op === "-") {  
    console.log(a - b);  
} else if (op === "*") {  
    console.log(a * b);  
} else if (op === "/") {  
    console.log(a / b);  
} else {  
    console.log("Invalid operator");  
}
```

## Submission Instructions

- Submit a '.js' file or a zipped folder with your solutions.
- Each section should be labeled clearly in your code.
- **Before submission, let your instructor see your output (e.g., screenshots or a live demo).**
- Bonus challenge is optional but encouraged.