Class 1: JavaScript Basics and Variables

Objective
Understand the basics of JavaScript and how it interacts with HTML.
Learn to declare and use variables in JavaScript.

Content Outline

Introduction to JavaScript (10-15 mins)
What is JavaScript?
Brief overview: JavaScript is a versatile scripting language mainly used for web development to make websites interactive.
How JavaScript Works in a Web Page?
script tags (<script>).

Why Use JavaScript?
form validation, animations, and interactive web elements.

Using the Console (10 mins)
What is the Console?
browser's console (F12 or right-click and select "Inspect", then go to the Console tab).
Basic Console Commands
console.log: Introduce this as a way to display messages and debug.

Exercise: Print "Hello World!" to the console.
```
console.log("Hello World!");
```

Variables and Data Types (20 mins)
Declaring Variables:

Introduce var, let, and const, and when to use each.
Explain variable naming rules and conventions.

Data Types:
strings, numbers, booleans, undefined, and null.

Variable Initialization:
initializing variables with each data type.

Code Examples:
```
let name = "Alice";   // string
const age = 25;       // number
var isStudent = true; // boolean
let job;              // undefined
let address = null;   // null
```

Type Checking (5 mins)
typeof Operator: typeof is used to check data types.

Exercise:
Have students try typeof on different variables to see the results.
```
console.log(typeof name);      // "string"
console.log(typeof age);       // "number"
console.log(typeof isStudent); // "boolean"
```

Exercises
Variable Declaration and Initialization (15 mins)
Declare variables with different data types and print them to the console.
Instructions:
Declare a variable fullName and assign it your name.
Declare a variable currentYear and assign it the current year.
Declare a variable isLearningJavaScript and set it to true.
Print each variable and its type to the console.

```
let fullName = "John Doe";
const currentYear = 2024;
let isLearningJavaScript = true;
console.log(fullName, typeof fullName);          // John Doe, string
console.log(currentYear, typeof currentYear);     // 2024, number
console.log(isLearningJavaScript, typeof isLearningJavaScript); // true, boolean
```

Simple Profile Exercise (15 mins)
Instructions:
Create variables for name, age, hobby, and isStudent.
Print a statement that introduces the user based on these variables, such as: "My name is John, I am 25 years old, I love coding, and it's true that I am a student."

Solution:
```
let name = "John"; let age = 25; let hobby = "coding"; let isStudent = true;
```
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Bonus Exercise: Experimenting with const and let (5 mins)
Instructions:

Create a const variable for birthYear and try changing it. Observe the error in the console.
Create a let variable for favoriteColor and try reassigning a new value to it. Observe the result in the console.

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Summary (5 mins)
Recap the basics of JavaScript, how to use the console, and variable declaration.
Highlight the importance of understanding data types and variables as they are fundamental to all programming.