**ASSIGNMENT TWO**

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1. **Data Types and Variables**:

**What are the different data types used in JavaScript variables in the provided code?**

String: bed, John, Titus

Number (Integer and Float): 2000, 23.78, 67, 78999, etc.

Boolean: false, true

Undefined: student

Null: age = null

Array

**Explain the difference between var, let, and const in JavaScript.**

Var :value can be changed

Let: values that can be changed or re assigned

Const: value is constant, meaning the value will never change.

**Why does JavaScript allow assigning different data types to the same variable?**

JavaScript is a dynamically typed language, meaning variables are not bound to a specific type. The type can change at runtime based on the assigned value, making it flexible for developers.

**How does JavaScript handle variables declared but not initialized? Illustrate with an example from the code**.

Variables that are declared but not initialized hold the value undefined.

For example:

let student;

console.log(typeof student); // Output: undefined.

**Discuss the significance of variable names in programming and how they are used in JavaScript.**

Variable names should be descriptive to reflect the stored data or function.

This leads to good readability of the code.

1. **Numeric Data Types**:

**What are the various numeric data types used in JavaScript, as shown in the code?**

Integer: 67, 78999

Float/Double: 23.78

Infinity

**Explain the difference between integers, doubles, and Infinity in JavaScript with examples.**

Integer: Whole numbers (e.g., 67)

Double/Float: Decimal numbers (e.g., 23.78)

Infinity: (e.g., let yearsInHeaven = Infinity).

**How does JavaScript handle arithmetic operations involving different numeric data types?**

It performs type conversion and handles arithmetic operations across different numeric type

For example:

let result = 67 + 23.78; // Output: 90.78

1. **String Data Type**:

**How are strings represented in JavaScript?**

Strings are enclosed in single ('') or double quotes (""). And they represent data text

**Discuss the difference between declaring strings with single quotes ('') and double quotes ("") in JavaScript.**

No functional difference between single and double quotes in JavaScript,

**Explain why characters are automatically treated as strings in JavaScript.**

Because JavaScript does not have a separate character type like some other languages.

1. **Boolean and Undefined Data Types**:

**Explain the purpose of boolean variables in JavaScript.**

They represent true or false values and are used in decision-making.

**Discuss the concept of undefined in JavaScript variables and provide examples from the code.**

A variable that has been declared but not assigned a value is undefined. For example;

let student;

console.log(typeof student); // Output: undefined

**How are boolean variables useful in conditional statements and control flow in JavaScript?**

In if, while, and other control statements to drive the logic of the program.

1. **Null Data Type**:

**Describe the significance of the null value in JavaScript.**

Shows absence of any object value. It implies nothing or empty.

**Differentiate between null and undefined in JavaScript.**

undefined: The default value for variables that haven't been initialized.

null: Explicitly represents an empty or non-existent value.

**Provide an example from the code illustrating the use of null.**

// Null value

let age = null;

console.log(age); // Output: null

1. **Object Data Type**:

**Explain how objects are represented in JavaScript.**

Objects are collections of key-value pairs enclosed in curly braces

**Discuss the structure and purpose of the countryInfo object in the provided code.**

The countryInfo object stores personal data with properties like citizenShip and idNumber:

**How can objects be nested within other objects in JavaScript?**

Objects can be nested to represent complex data structures. In the code, countryInfo is nested inside the info object:

1. **Array Data Type**:

**Describe the purpose and structure of arrays in JavaScript.**

Arrays are ordered collections of items, where each item can be of any data type and they are declared using [ ]

**Provide examples from the code demonstrating arrays containing different data types.**

let myRoom = ['bed', 'chair', 'gas cooker', 'table', 'tv']; // Array of strings

let moreInfo = [countryInfo, marks, info]; // Array of objects

**Discuss the concept of "array of arrays" and its significance.**

Arrays can contain other arrays, allowing multi-dimensional data storage.

1. **Variable Naming Conventions**:

**What are the conventions for naming variables in JavaScript?**

Use camelCase for multi-word variable names.

Avoid starting variable names with numbers.

Use meaningful names that describe the data they hold.

**Discuss the importance of choosing meaningful and descriptive variable names.**

They enhance code readability, making it easier for others (and yourself) to understand the purpose of each variable.

**Identify any variable naming conventions followed or violated in the provided code.**

Most variables in the code follow camelCase conventions, like myRoom, first\_name. However, first\_name violates the usual camelCase rule; it should be firstName.

1. **Constants in JavaScript**:

**Explain the use of const keyword in JavaScript.**

is used to declare constants, which are variables that cannot be reassigned once initialized.

**Discuss why reassigning a value to a constant variable results in an error**.

Since constants are meant to hold immutable values, attempting to change them after declaration will cause an error.

**Provide examples from the code demonstrating the declaration and use of constants.**

const phoneNumber = 254789567364;

console.log(phoneNumber); // Output: 254789567364

// phoneNumber = 345564734893; // Error: Assignment to constant variable