ASIGNMENT TWO

***Data Types and Variables:***

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

Integers -let myKiswahiliMarks = 67;

Strings -let sname = "John";

  Objects - let info = { fname: 'Titus', sname: 'Kimutai', age: 23, isStudent: true, countryInfo, marks };

  Boolean- let isAdmin = false;

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

var is function scoped and can be reassigned. let is block scoped and can be reassigned. const is block scoped and cannot be reassigned.

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

JavaScript is dynamically typed; the type of variables is checked at runtime based on the value it holds rather than being explicitly defined at the time of declaration.

JavaScript is loosely typed. It does not enforce strict datatypes.

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

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

Example:

let name;

console.log(“ name”);

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

They make it easier to read and understand code.

In JavaScript they are preceded by keyword let, const or var. There are naming conventions in JavaScript where the variable names are written in camel case, they should start with a letter or underscore, they should be descriptive and concise and they should not be reserved words.

***Numeric Data Types:***

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

Integers eg. 67

Floating point numbers eg. 3.14

Infinity

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

Integers are whole numbers like 6 and 60

Doubles are numbers with decimal points like 3.142

Infinity is a value representing numbers larger than JavaScript can represent. Eg the results of division by zero

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

JavaScript automatically converts between integers and floats.

***String Data Type:***

1. *How are strings represented in JavaScript?*

Strings in JavaScript are enclosed in single quotes, double quotes or backticks.

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

*There is no technical difference in using single quotes or double quotes.*

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

There is no specific char type in JavaScript.

***Boolean and Undefined Data Types:***

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

They represent logical values: true or false. They are used in conditional statements to control

the flow of the program.

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

Undefined means that a variable has been declared but has not been assigned a value yet .

This means the variable exists, but it doesn’t hold any meaningful data yet.

Example:

let name;

console.log(“ name”);

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

They are key in controlling logic in if, while and other control flow statements.

***Null Data Type:***

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

Null represents the intentional absence of any value.

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

Null is a value assigned intentionally to indicate "no value."while undefined indicates that a variable has been declared but not yet assigned a value.

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

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

***Object Data Type:***

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

Objects in JavaScript are used to store collections of data in the form of key-value pairs.

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

let countryInfo = { citizenShip: 'Kenyan', idNumber: 44455567 };

citizenship is a key that holds a string value 'Kenyan', representing the person's citizenship.idNumber is a key that holds a numeric value 44455567, representing the person's identification number.

The purpose of the countryInfo object is to group together related information about a person’s citizenship status and ID number. By using an object, both pieces of information are stored together in a structured format, making it easier to work with the data

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

In JavaScript, objects can be nested within other objects by assigning an object as the value of a property within another object.

***Array Data Type:***

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

Arrays in JavaScript are versatile and widely used to store and manipulate ordered collections of values.

Arrays are used to store multiple values in a single variable.

Structure:

let arr = [ ]

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

let marks = [34, 56, 67, 78] – this array contains integer data type.

let myRoom = ['bed', 'chair', 'gas cooker', 'table', 'tv'] – this array contains the string data type.

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

Array of array allow you to store arrays within arrays.

***Variable Naming Conventions:***

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

Use camel case for naming variables

Start with a letter, underscore or dollar sign.

They should be descriptive and concise.

Reserved word should not be used.

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

Meaningful names improve code readability and maintainability. For example, let studentName is more descriptive than let x.

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

let myRoom – the camel case naming convention is followed in the naming of this variable.

let myName = 78999; - the camel case naming convention is followed in the naming of this variable. But the name is not descriptive as it contains an integer yet names are known to be strings.

let bankBalance = 23.78 - the camel case naming convention is followed in the naming of this variable and its descriptive and concise.

let firstChar = 'A' - the camel case naming convention is followed in the naming of this variable and its descriptive and concise.

var first\_name – the camel case naming convention is violated in the naming of the variable.

***Constants in JavaScript:***

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

The const keyword is used to declare variables that cannot be reassigned after initialization.

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

In JavaScript, trying to reassign a const variable results in an error because const is used to declare variables whose value cannot be reassigned after initialization. When you use const, you're telling JavaScript that this variable will be a constant reference, and its reference in memory should not be changed. Therefore reassigning a value to a constant results to an error.

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