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

* **String**: "John", "A", 'Eluid Murithi'

**char:**  firstchar,sname

**Number**: myKiswahiliMarks, bankBalance

* **Array**: marks,moreInfo
* **Boolean**: isAdmin, isPermited
* **Object**: countryInfo,info
* **Undefined**: student
* **Null**: age = null

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

**var** can be redeclared and updated within the same scope.

eg var name=”james”

**const** cannot be redeclared or updated

eg dateOfBirth=’1992’

**let** variable can be updated

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

avaScript variables assigned a value of a certain type can be re-assigned a value of a different type because they are dynamically used by the JavaScript engine.

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

If you don't specify an initial value for a variable with the var statement, the variable is declared, but its initial value is undefined until your code stores a value into it.

**2 Numeric Data Types:**

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

· **Integer**: Whole numbers like 67 or 789

· **Float/Double**: Decimal numbers like 23.78

· **Infinity**: A special value that represents an unbounded number, such as Infinity

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

**Integers**: These are whole numbers, both positive and negative

let myKiswahiliMarks = 67;

**Doubles:** numbers that contains decimal points

let bankBalance = 23.78;

**Infinity**: Represents a number that exceeds the upper bound of the JavaScript number type.

let yearsInHeaven = Infinity;

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

the results depends on the type of the operation used

eg float+integer=float;

integer/infinity=infinity

integer\*infinity=infinity

**·Strings** ·

**How are strings represented in JavaScript?**

Strings are represented using “” or ‘’

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

**single vs double quotes:**both are used for the same purpose to represents a string

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

JavaScript has no separate character type; a single character is treated as a string of length one for simplicity.

**Boolean and Undefined Data Types:**

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

Boolean variables in JavaScript represent one of two values: true or false

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

variable that has been declared but not assigned a value is undefined. It indicates the absence of a value.

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

Boolen controls the flow of the conditions determining whether to break or not depending on whether the condition is true or false

**Null Data Type:**

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

Null is used to represent an intentiona absense of a object value

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

Null:

Represents an intentional absence of a value.

It is an object type.

Example: let a = null; indicates that a is explicitly set to have no value.

Undefined:

Indicates that a variable has been declared but not assigned a value.

It is a type of its own.

Example: let b; means b is declared but not initialized, so its value is undefined.

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

let user = null;

function getUser() {

return user;}

if (getUser() === null) {

console.log("No user found.");} else {

console.log("User exists.");

}

**Object Data Type**:

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

const objName={

name:”Jotham”

age:30

}

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

The countryInfo object you provided contains information about a person's citizenship and their identification number

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

let countryInfo = {

citizenShip: 'Kenyan',

idNumber: 44455567,

address: {

city: 'Nairobi',

postalCode: '00100',

street: 'Moi Avenue'

}

};

**Array Data Type:**

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

Arrays in JavaScript are used to store multiple values in a single variable. They are ordered collections of elements, which can be of any data type, including numbers, strings, objects, and even other arrays. Arrays are indexed, meaning each element has a numerical index starting from 0.

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

let myRoom = ['bed', 'chair', 'gas cooker', 'table', 'tv'];

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

An "array of arrays" is a nested structure where each element of the main array is itself an array. This is useful for representing multi-dimensional data

**Variable Naming Conventions:**

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

camelCase

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

Enhances code readability and maintainability.

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

Constants in JavaScript:

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

The const keyword is used to declare variables cannot be reassigned after their initial assignment.

eg const pi=3.14;

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

This is because const enforces immutability for the variable binding, not the value itself

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

const dateOfBirth = 1990;

if(dateOfBirth<=2000){console.log(“Qualified for the id”)}