Variables and Data Types

Question 1: What are variables in JavaScript? How do you declare a variable using var, let, and const?

Answer 1:

* A variable is a named container that store values, such as numbers, strings,or object. Variables can be used to store information that may be referenced multiple times in a program.
* Variables are named values and can store any type of JavaScript value.

**In JavaScript, you can declare variables using the keywords var, let, and const**:

* **Var:** Can declare both local and global variables, depending on the execution context. Var declarations can be reassigned.
* **Let:** Declares a block-scope local variable. Let declarations can be reassigned.
* **Const:** Declares a block-scope constant that cannot be reassigned after initialization. Const declarations must be initialized at the moment of declaration.

**Sort Explanations** **:-**

**Var :** Redeclare and Reassign both Possibles

**Let :** Can’t Redeclare but Reassign Possibles

**Const :** We Can’t Redeclare and Reassign

Question 2: Explain the different data types in JavaScript. Provide examples for each.

Answer 2: The Following **2 Data types** in JavaScript:-

1. Primitive DataTypes
2. Non-Primitive DataTypes

**1.Primitive DataTypes:-**

1) Number

2) String

3) Boolean

4) Null

5) Undefined

6) Symbols

**2.Non-Primitive DataTypes:-**

1) Array

2) Object

3) Function

Example:-

1.Primitive DataTypes:-

1)Number:

* Represents numeric values (both integers and floating-point numbers).
* Example:

let age = 25; // integer

let price = 19.99; // floating-point

2)String:

* Represents textual data, enclosed in single, double, or backticks.
* Example:

let name = "Alice"; // double quotes

let greeting = 'Hello'; // single quotes

let message = `Hi, ${name}`; // template literal

3)Boolean:

* Represents a logical value: true or false.
* Example:

let isLoggedIn = true;

let hasAccess = false;

4)Null:

* Represents an intentional absence of value.
* Example:

let emptyValue = null;

5)Undefined:

* A variable that has been declared but not assigned a value.
* Example:

let x;

console.log(x); // undefined

6)Symbol:

* Represents a unique and immutable value, often used as object keys.
* Example:

let id = Symbol('uniqueID');

2) Non-Primitive DataTypes:-

1)Array:

* Represents an ordered list of values.
* Example:

let fruits = ["apple", "banana", "cherry"];

2)Object:

* Represents a collection of key-value pairs.
* Example:

let person = {

name: "John",

age: 30

};

3)Function:

* Represents reusable blocks of code.
* Example:

function greet() {

return "Hello!";

}

Question 3: What is the difference between undefined and null in JavaScript?

Answer 3:

1. Undefined:

* A variable is declared but has not been assigned a value.
* JavaScript automatically assign Undefined to variables that are declared but not initialized.

1. Null:

* Represents an intentional absence of a value.
* Used to explicitly indicate that a variable should have no value.

**Diffrrence:**

| **Aspect** | **undefined** | **null** |
| --- | --- | --- |
| **Meaning** | Variable declared but no value. | Intentional absence of a value. |
| **Who Sets It?** | JavaScript (automatically). | Programmer (explicitly). |
| **Type** | undefined (primitive). | object (primitive bug). |
| **Purpose** | Uninitialized variables. | Used to represent "nothing." |
| **Example** | let x; // undefined. | let x = null; // null. |