**Question 1: What is an array in JavaScript? How do you declare and initialize an array?**

**Arrays in JavaScript**

An array in JavaScript is a special type of object used to store multiple values in a single variable. Arrays allow us to group related data together and manipulate them efficiently.

**Declaring and Initializing an Array**

There are multiple ways to declare and initialize an array in JavaScript:

1. **Using Square Brackets (Recommended)**

let fruits = ["Apple", "Banana", "Mango"];

console.log(fruits); // Output: ["Apple", "Banana", "Mango"]

* This is the most common and preferred way.
* The values inside the brackets are **elements** of the array.
* Each element has an **index**, starting from 0.

1. **Using the new Array() Constructor**

let numbers = new Array(10, 20, 30);

console.log(numbers); // Output: [10, 20, 30]

 Less commonly used, but still valid.

 Can be confusing if only one number is passed: new Array(5) creates an array of length 5, not [5].

1. **Creating an Empty Array and Adding Elements**

let cars = [];

cars[0] = "Toyota";

cars[1] = "BMW";

console.log(cars); // Output: ["Toyota", "BMW"]

**Accessing and Modifying Array Elements**

* Elements in an array are accessed using their **index** (starting from 0).

let colors = ["Red", "Green", "Blue"];

console.log(colors[0]); // Output: "Red"

colors[1] = "Yellow"; // Modifies the second element

console.log(colors); // Output: ["Red", "Yellow", "Blue"]

**Question 2: Explain the methods push(), pop(), shift(), and unshift() used in arrays.**

**Array Methods: push(), pop(), shift(), and unshift() in JavaScript**

These methods allow us to add or remove elements from an array efficiently.

**Example:**

let fruits = ["Apple", "Banana"];

fruits.push("Mango");

console.log(fruits); // Output: ["Apple", "Banana", "Mango"]

**2. pop() – Remove Element from the End**

The pop() method **removes** the **last** element from an array and returns it.

**Example:**

let fruits = ["Apple", "Banana", "Mango"];

let removedFruit = fruits.pop();

console.log(fruits); // Output: ["Apple", "Banana"]

console.log(removedFruit); // Output: "Mango"

**3. shift() – Remove Element from the Beginning**

The shift() method **removes** the **first** element from an array and returns it.

**Example:**

let cars = ["Toyota", "BMW", "Honda"];

let removedCar = cars.shift();

console.log(cars); // Output: ["BMW", "Honda"]

console.log(removedCar); // Output: "Toyota"

**4. unshift() – Add Element to the Beginning**

The unshift() method **adds** one or more elements to the **beginning** of an array and returns the new length.

**Example:**

let cars = ["BMW", "Honda"];

cars.unshift("Toyota");

.log(cars); // Output: ["Toyota", "BMW", "Honda"]