Arrays

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

Answer 1: An **array** is a special data structure in JavaScript used to store multiple values in a single variable. The values (called elements) are stored in an ordered way, and each element has an index starting from 0.

**Declaring and Initializing an Array:**

1. **Declare an Array:**  
   Use square brackets [] to create an array.

**Syntax:**

let arrayName = [];

1. **Initialize an Array with Values:**  
   You can add elements to the array when you declare it.

**Syntax:**

let arrayName = [value1, value2, value3];

**Examples:**

**Empty Array:**

let fruits = [];

**Array with Values:**

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

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

**Accessing Elements:**

console.log(fruits[0]); // Output: "Apple" (first element)

console.log(fruits[1]); // Output: "Banana"

**Explanation:**

* Arrays store multiple values in one variable.
* Elements are accessed using their **index** (e.g., fruits[0]).
* Arrays are flexible and can hold values of different types (e.g., numbers, strings, objects).

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

Answer 2:

**Array Methods:** Push(), Pop(), Shift(), and Unshift()

These methods are used to **add** or **remove elements** in an array.

### **Push()**

* Adds one or more elements **to the end** of the array.
* The new length of the array.
* **Example:**

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

fruits.push("Cherry");

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

### **Pop()**

* Removes the **last element** from the array.
* The removed element.
* **Example:**

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

let removed = fruits.pop();

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

console.log(removed); // Output: "Cherry"

### **Shift()**

* Removes the **first element** from the array.
* The removed element.
* **Example:**

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

let removed = fruits.shift();

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

console.log(removed); // Output: "Apple"

### **Unshift()**

* Adds one or more elements **to the beginning** of the array.
* The new length of the array.
* **Example:**

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

fruits.unshift("Apple");

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

**Sort Explanation:**

| **Method** | **Action** | **Adds/Removes** | **Position** |
| --- | --- | --- | --- |
| push() | Adds elements | Adds | End |
| pop() | Removes the last element | Removes | End |
| shift() | Removes the first element | Removes | Beginning |
| unshift() | Adds elements | Adds | Beginning |