ARRAY

# What is Array in JavaScript?

• JavaScript Array is a data structure that allows you to store and organize multiple values within a single variable. It is a versatile and dynamic object. It can hold various data types, including numbers, strings, objects, and even other arrays. Arrays in JavaScript are zero-indexed i.e. the first element is accessed with an index 0, the second element with an index of 1, and so forth.

## **Basic Terminologies of JavaScript Array**

- Array: A data structure in JavaScript that allows you to store multiple values in a single variable.
- Array Element: Each value within an array is called an element.
   Elements are accessed by their index.
- **Array Index:** A numeric representation that indicates the position of an element in the array. JavaScript arrays are zero-indexed, meaning the first element is at index 0.
- Array Length: The number of elements in an array. It can be retrieved using the length property.

## **Declaration of an Array**

There are basically two ways to declare an array i.e. Array Literal and Array Constructor.

### 1. Creating an Array using Array Literal

Creating an array using array literal involves using square brackets
[] to define and initialize the array. This method is concise and widely preferred for its simplicity.

```
// Creating an Empty Array
let names = [];
console.log(names);
// Creating an Array and Initializing with Values
let courses = ["HTML", "CSS", "Javascript", "React"];
console.log(courses);
```

#### 2. Creating an Array using Array Constructor (JavaScript new Keyword)

- The "Array Constructor" refers to a method of creating arrays by invoking the Array constructor function. This approach allows for dynamic initialization and can be used to create arrays with a specified length or elements.
- // Creating and Initializing an array with values
- let courses = new Array("HTML", "CSS", "Javascript", "React");
- console.log(courses);
- // Initializing Array while declaring
- let arr = new Array(3);
- arr[0] = 10;
- arr[1] = 20;
- arr[2] = 30;
- console.log(arr);

### Conversion of an Array to String

```
// Creating an Array and Initializing with Values
let courses = ["HTML", "CSS", "JavaScript", "React"];
// Convert array ot String
console.log(courses.toString())
```

#### There are various operations that can be performed on arrays using JavaScript methods. Some of these methods are

Method	Description
push()	Adds a new element at the very end of an array.
<u>pop()</u>	Removes the last element of an array.
<u>concat()</u>	Joins various arrays into a single array.
shift()	Removes the first element of an array
unShift()	Adds new elements at the beginning of the array
<u>reverse()</u>	Reverses the order of the elements in an array.

<u>slice()</u>	Pulls a copy of a part of an array int
splice()	Adds elements in a particular way and position.
toString()	Converts the array elements into strings.
valueOf()	Returns the primitive value of the given object.
indexOf()	Returns the first index at which a given element is found.
<u>lastIndexOf()</u>	Returns the final index at which a given element appears.
join()	Combines elements of an array into one single string and then returns it
sort()	Sorts the array elements based on some condition.

## Adding Elements to the Array

- Elements can be added to the array using methods like push() and unshift().
- // Creating an Array and Initializing with Values
- let courses = ["HTML", "CSS", "Javascript", "React"];
- // Add Element to the end of Array
- courses.push("Node.js");
- // Add Element to the beginning
- courses.unshift("Web Development");
- console.log(courses);

## Removing Elements from an Array

- Remove elements using methods like pop(), shift(), or splice().
- // Creating an Array and Initializing with Values
- let courses = ["HTML", "CSS", "Javascript", "React", "Node.js"];
- console.log("Original Array: " + courses);
- // Removes and returns the last element
- let lastElement = courses.pop();
- console.log("After Removed the last elements: " + courses);
- // Removes and returns the first element
- let firstElement = courses.shift();
- console.log("After Removed the First elements: " + courses);
- // Removes 2 elements starting from index 1
- courses.splice(1, 2);
- console.log("After Removed 2 elements starting from index 1: " + courses);

## **Modifying the Array Elements**

- Elements in an array can be modified by assigning a new value to their corresponding index.
- // Creating an Array and Initializing with Values
- let courses = ["HTML", "CSS", "Javascript", "React"];
- console.log(courses);

- courses[1]= "Bootstrap";
- console.log(courses);

## **Array Length**

- Get the length of an array using the length property
- // Creating an Array and Initializing with Values
- let courses = ["HTML", "CSS", "Javascript", "React", "Node.js"];
- let len = courses.length;
- console.log("Array Length: " + len);

- . Increase and Decrease the Array Length
- // Creating an Array and Initializing with Values
- let courses = ["HTML", "CSS", "Javascript", "React", "Node.js"];
- // Increase the array length to 7
- courses.length = 7;
- console.log("Array After Increase the Length: ", courses);
- // Decrease the array length to 2
- courses.length = 2;
- console.log("Array After Decrease the Length: ", courses)

## Iterating Through Array Elements

We can iterate array and access array elements using for and forEach loop

```
// Creating an Array and Initializing with Values
```

```
let courses = ["HTML", "CSS", "JavaScript", "React"];
```

```
// Iterating through for loop
```

```
for (let i = 0; i < courses.length; i++) {</pre>
```

console.log(courses[i])

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## Array Concatenation

- Combine two or more arrays using the concat() method. Ir returns new array conaining joined arrays elements.
- // Creating an Array and Initializing with Values
- let courses = ["HTML", "CSS", "JavaScript", "React"];
- let otherCourses = ["Node.js", "Expess.js"];
- // Concatenate both arrays
- let concateArray = courses.concat(otherCourses);
- console.log("Concatenated Array: ", concateArray);

## **Conversion of an Array to String**

- We have a built in method <u>toString()</u> to convert
- // Creating an Array and Initializing with Values
- let courses = ["HTML", "CSS", "JavaScript", "React"];

- // Convert array of String
- console.log(courses.toString());
- s an array to a string.



