

JavaScript Objects

Module 2 - Array Objects in JavaScript

JavaScript Array is also like a data type that is used to store one or more than one value of a similar type or different types together. It's like a container which is used to store values in a single variable. We can use an array to store values of string type, or integer type, or an object or any other valid data type in JavaScript, or everything together.

An array in JavaScript is "not" provided contiguous memory locations to store its values. In JavaScript, we do not have to provide the length of the array while declaring an array, yes, we can simply declare an empty array and then add as many elements in it as we want. Arrays are list-like objects which have many built-in functions defined in its prototype for accessing elements, adding elements, array traversal, etc.

Creating an Array

There are two main ways to create an array in JavaScript:

Method 1: Using Square Brackets ([])

```
let fruits = ["Apple", "Banana", "Mango"];  
document.write(fruits); // Outputs: ["Apple", "Banana", "Mango"]
```

Method 2: Using the new Array() Constructor

```
let colors = new Array("Red", "Blue", "Green");  
console.log(colors); // Outputs: ["Red", "Blue", "Green"]
```

Note: The square bracket [] method is preferred because it's shorter and clearer.

Accessing Array Elements

We can access array elements by using index value of the stored data elements. Ever data element stored in an array is stored at an index.

The array index starts from 0 and goes upto the value (Array.length - 1). So, the first element will be stored at index value 0 and the last element is stored at index value (Array.length - 1)

```
let fruits = ["mango", "apple", "orange", "guava"]; // Array having elements
```

```
console.log(fruits[0]); // Accessing element  
console.log(fruits[1]); // Accessing element  
console.log(fruits[fruits.length-1]); // Accessing element
```

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Modifying Array Elements

You can change the value of an array element by accessing its index.
let numbers = [10, 20, 30];
numbers[1] = 25; // Changing the second element (index 1)
document.write(numbers); // Outputs: [10, 25, 30]

List of JavaScript Array Object methods

Concat()

- Syntax: array1.concat(array2, array3, ...)
- Description: Combines two or more arrays into one new array.

Example:
let result = [1, 2].concat([3, 4]);
document.write(result); // [1, 2, 3, 4]

indexOf()

- Syntax: array.indexOf(searchElement)
- Description: Returns the index of the first occurrence of a specified value.

Example:
let result = [1, 2, 3].indexOf(2);
document.write (result); // 1

join()

- Syntax: array.join(separator)
- Description: Joins all elements of an array into a string, separated by the specified separator.

Example:
let result = ['a', 'b', 'c'].join('-');
document.write (result); // 'a-b-c'

pop()

- Syntax: array.pop()
- Description: Removes the last element from an array and returns it.

Example:



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```
let result = [1, 2, 3].pop();  
document.write(result); // 3
```

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push()

- Syntax: array.push(element)
- Description: Adds one or more elements to the end of an array.

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Example:
let result = [1, 2].push(3);
document.write(result); // [1, 2, 3]

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reverse()

- Syntax: array.reverse()
- Description: Reverses the order of the elements in the array.

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Example:
let result = [1, 2, 3].reverse();
document.write(result); // [3, 2, 1]

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unshift()

- Syntax: array.unshift(element)
- Description: Adds one or more elements to the beginning of an array.

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Example:
let result = [1, 2].unshift(0);
document.write (result); // [0, 1, 2]

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Solved Example:

Ques: Write a JavaScript program that adds a new element to the beginning of an array, reverses the array, and then joins all elements of the array into a string with a custom separator.

Steps:

- Start with an array of numbers.
- Use the unshift() method to add a new number at the beginning of the array.
- Use the reverse() method to reverse the order of the elements in the array.
- Use the join() method to concatenate the array elements into a string, with a custom separator.

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Solution:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Array Methods Example</title>
</head>
<body>
  <h1>JavaScript Array Methods Example</h1>
  <p>Check the console for the result of the array operations.</p>

  <script>
    // Initial array of numbers
    let numbers = [1, 2, 3, 4];

    // Step 1: Use unshift() to add a number at the beginning
    numbers.unshift(0);

    // Step 2: Reverse the array using reverse()
    numbers.reverse();

    // Step 3: Join the elements of the array into a string with a custom
    separator
    let result = numbers.join(" - "); // Custom separator: " - "

    // Output the final result
    Document.write(result); // Output: "4 - 3 - 2 - 1 - 0"
  </script>
</body>
</html>
```

JavaScript Array Methods Example

Check the console for the result of the array operations.

4 - 3 - 2 - 1 - 0

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Assignment

Ques 1: Array Manipulation with push() and pop()
You have an array representing car brands: ['Toyota', 'Honda', 'Ford'].

- Use the push() method to add a new brand at the end of the array.
- Use the pop() method to remove the last brand from the array.
- Display the modified array using document.write()

Expected Behavior: The last brand should be removed after adding a new one.

Ques 2: Combining Two Arrays with concat()

- You have two arrays of bikes:
- let bikes1 = ['Yamaha', 'Suzuki'];
- let bikes2 = ['Honda', 'Kawasaki'];
- Use the concat() method to combine both arrays into a single array.
- Display the combined array using document.write()

Expected Behavior: The two arrays should be merged into one without modifying the original arrays.

Ques 3: Join Array Elements with Custom Separator using join()

- You have an array of car models:
- let cars = ['BMW', 'Audi', 'Mercedes', 'Tesla'];
- Use the join() method to join the elements of the array into a single string, separated by " | ".
- Display the result using document.write()

Expected Behavior: The car models should be displayed as a single string with a " | " separator.



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