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JavaScript Array Methods

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Basic Array Methods

<u>Array length</u>	Returns the length (size) of an array		
Array toString()	Converts an array to a comma separated string of values		
Array at()	Returns an indexed element from an array		
<u>Array join()</u>	Joins all array elements into a string		
<u>Array_pop()</u>	Removes the last element from an array		
<u>Array push()</u>	Adds a new element to an array		
<u>Array shift()</u>	Removes the first array element		
<u>Array unshift()</u>	Adds a new element at the beginning of an array		
<u>Array delete()</u>	Creates undefined holes in the array		
<u>Array concat()</u>	Creates a new array by merging existing arrays		
Array copyWithin()	Copies array elements to another position in the array		
<u>Array flat()</u>	Creates a new array from sub-array elements		
Array slice()	Slices out a part of an array		
<u>Array splice()</u>	Adds new items to an array		
Array toSpliced()	Adds new items to an array in a new array		



I JavaScript Array length

The length property returns the length (size) of an array:

Example

```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
let size = fruits.length;
Try it Yourself »
```

The length property can also be used to **set the length** of an array:

Example

```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
fruits.length = 2;
Try it Yourself »
```

JavaScript Array toString()

The toString() method returns the elements of an array as a comma separated string.

Note

Every JavaScript object has a toString() method.

The toString() method is used internally by JavaScript when an object needs to be displayed as a text (like in HTML), or when an object needs to be used as a string.

JavaScript Array at()

<u>ES2022</u> intoduced the array method at():

Examples

Get the third element of fruits using at():

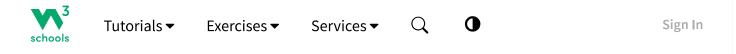
```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
let fruit = fruits.at(2);

Try it Yourself >>

Get the third element of fruits using []:

const fruits = ["Banana", "Orange", "Apple", "Mango"];
let fruit = fruits[2];
```

Try it Yourself »



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The at() method is supported in all modern browsers since March 2022:

SQL

Chrome 92	Edge 92	Firefox 90	Safari 15.4	Opera 78
Apr 2021	Jul 2021	Jul 2021	Mar 2022	Aug 2021

Note

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Many languages allow negative bracket indexing like [-1] to access elements from the end of an object / array / string.

This is not possible in JavaScript, because [] is used for accessing both arrays and objects. obj[-1] refers to the value of key -1, not to the last property of the object.

The at() method was introduced in ES2022 to solve this problem.

JavaScript Array join()

The join() method also joins all array elements into a string.

It behaves just like toString(), but in addition you can specify the separator:

Example

```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
document.getElementById("demo").innerHTML = fruits.join(" * ");
```

Result:

```
Banana * Orange * Apple * Mango
```

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Popping and Pushing

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When you work with arrays, it is easy to remove elements and add new elements.

This is what popping and pushing is:

Popping items **out** of an array, or pushing items **into** an array.

SQL

JavaScript Array pop()

The pop() method removes the last element from an array:

Example

```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
fruits.pop();
```

Try it Yourself »

The pop() method returns the value that was "popped out":

Example

```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
let fruit = fruits.pop();
```

Try it Yourself »



Example

```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
fruits.push("Kiwi");

Try it Yourself »
```

The push() method returns the new array length:

Example

```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
let length = fruits.push("Kiwi");

Try it Yourself »
```

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Shifting Elements

Shifting is equivalent to popping, but working on the first element instead of the last.

JavaScript Array shift()

The shift() method removes the first array element and "shifts" all other elements
to a lower index.



The shift() method returns the value that was "shifted out":

Example

```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
let fruit = fruits.shift();

Try it Yourself »
```

JavaScript Array unshift()

The unshift() method adds a new element to an array (at the beginning), and "unshifts" older elements:

Example

```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
fruits.unshift("Lemon");

Try it Yourself »
```

The unshift() method returns the new array length:

```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
fruits.unshift("Lemon");
```

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Changing Elements

JAVASCRIPT

Array elements are accessed using their **index number**:

SQL

```
Array indexes start with 0:

[0] is the first array element
[1] is the second
[2] is the third ...
```

CSS

Example

```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
fruits[0] = "Kiwi";

Try it Yourself »
```

JavaScript Array length

The length property provides an easy way to append a new element to an array:

```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
fruits[fruits.length] = "Kiwi";

Try it Yourself »
```

Warning!

```
Using delete() leaves undefined holes in the array.
```

Use pop() or shift() instead.

Example

```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
delete fruits[0];
```

Try it Yourself »

Merging Arrays (Concatenating)

In programming languages, concatenation means joining strings end-to-end.

Concatenation "snow" and "ball" gives "snowball".

Concatenating arrays means joining arrays end-to-end.

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JavaScript Array concat()

The concat() method creates a new array by merging (concatenating) existing arrays:

Example (Merging Two Arrays)

```
const myGirls = ["Cecilie", "Lone"];
const myBoys = ["Emil", "Tobias", "Linus"];
```



Note

The concat() method does not change the existing arrays. It always returns a new array.

The concat() method can take any number of array arguments.

Example (Merging Three Arrays)

```
const arr1 = ["Cecilie", "Lone"];
const arr2 = ["Emil", "Tobias", "Linus"];
const arr3 = ["Robin", "Morgan"];
const myChildren = arr1.concat(arr2, arr3);

Try it Yourself »
```

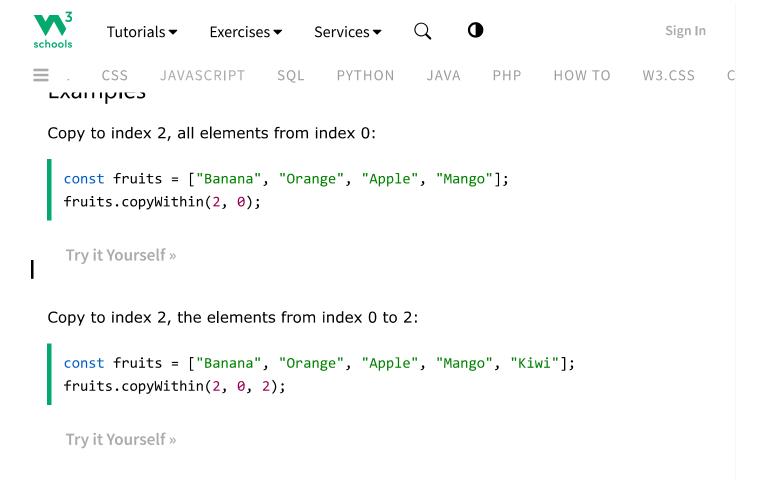
The concat() method can also take strings as arguments:

Example (Merging an Array with Values)

```
const arr1 = ["Emil", "Tobias", "Linus"];
const myChildren = arr1.concat("Peter");

Try it Yourself »
```

Array copyWithin()



Note

```
The copyWithin() method overwrites the existing values.

The copyWithin() method does not add items to the array.

The copyWithin() method does not change the length of the array.
```

Flattening an Array

Flattening an array is the process of reducing the dimensionality of an array.

Flattening is useful when you want to convert a multi-dimensional array into a onedimensional array.

JavaScript Array flat()

Example

```
const myArr = [[1,2],[3,4],[5,6]];
const newArr = myArr.flat();
```

Try it Yourself »

Browser Support

JavaScript Array flat() is supported in all modern browsers since January 2020:

Chrome 69	Edge 79	Firefox 62	Safari 12	Opera 56
Sep 2018	Jan 2020	Sep 2018	Sep 2018	Sep 2018

JavaScript Array flatMap()

ES2019 added the Array flatMap() method to JavaScript.

The flatMap() method first maps all elements of an array and then creates a new array by flattening the array.

Example

```
const myArr = [1, 2, 3, 4, 5, 6];
const newArr = myArr.flatMap(x => [x, x * 10]);
```

Try it Yourself »



Splicing and Slicing Arrays

The splice() method adds new items to an array.

The slice() method slices out a piece of an array.

JavaScript Array splice()

The splice() method can be used to add new items to an array:

Example

```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
fruits.splice(2, 0, "Lemon", "Kiwi");
```

Try it Yourself »

The first parameter (2) defines the position **where** new elements should be **added** (spliced in).

The second parameter (0) defines **how many** elements should be **removed**.

The rest of the parameters ("Lemon", "Kiwi") define the new elements to be added.

The splice() method returns an array with the deleted items:

Using splice() to Remove Elements

With clever parameter setting, you can use splice() to remove elements without leaving "holes" in the array:

Example

Try it Yourself »

```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
fruits.splice(0, 1);

Try it Yourself »
```

The first parameter (0) defines the position where new elements should be **added** (spliced in).

The second parameter (1) defines **how many** elements should be **removed**.

The rest of the parameters are omitted. No new elements will be added.

JavaScript Array toSpliced()

<u>ES2023</u> added the Array toSpliced() method as a safe way to splice an array without altering the original array.

The difference between the new **toSpliced()** method and the old **splice()** method is that the new method creates a new array, keeping the original array unchanged, while the old method altered the original array.

```
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```

JavaScript Array slice()

The slice() method slices out a piece of an array into a new array:

Example

Slice out a part of an array starting from array element 1 ("Orange"):

```
const fruits = ["Banana", "Orange", "Lemon", "Apple", "Mango"];
const citrus = fruits.slice(1);
```

Try it Yourself »

Note

```
The slice() method creates a new array.
```

The slice() method does not remove any elements from the source array.

Example

Slice out a part of an array starting from array element 3 ("Apple"):

```
const fruits = ["Banana", "Orange", "Lemon", "Apple", "Mango"];
const citrus = fruits.slice(3);
```

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Example

```
const fruits = ["Banana", "Orange", "Lemon", "Apple", "Mango"];
const citrus = fruits.slice(1, 3);
```

Try it Yourself »

If the end argument is omitted, like in the first examples, the slice() method slices out the rest of the array.

Example

```
const fruits = ["Banana", "Orange", "Lemon", "Apple", "Mango"];
const citrus = fruits.slice(2);
```

Try it Yourself »

Automatic toString()

JavaScript automatically converts an array to a comma separated string when a primitive value is expected.

This is always the case when you try to output an array.

These two examples will produce the same result:

```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
document.getElementById("demo").innerHTML = fruits.toString();
```

Example

```
const fruits = ["Banana", "Orange", "Apple", "Mango"];
document.getElementById("demo").innerHTML = fruits;
```

Try it Yourself »

Note

All JavaScript objects have a toString() method.

Searching Arrays

<u>Searching arrays</u> are covered in the next chapter of this tutorial.

Sorting Arrays

Sorting arrays covers the methods used to sort arraysg.

Iterating Arrays

<u>Iterating arrays</u> covers methods that operate on all array elements.

Complete Array Reference

For a complete Array reference, go to our:

Complete JavaScript Array Reference.



Exercise?

After executing the following code:

```
const fruits = ['Banana', 'Orange', 'Apple'];
fruits.pop();
```

What will the fruits array look like?

- O ['', 'Banana', 'Orange', 'Apple']
- O ['Banana', 'Orange']
- O ['Orange', 'Apple']

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