

[Home](#) / [JavaScript Tutorial](#) / JavaScript Multidimensional Array

# JavaScript Multidimensional Array

ADVERTISEMENT

**Summary:** in this tutorial, you will learn how to work with JavaScript multidimensional array.

## Introduction to JavaScript multidimensional array

JavaScript does not provide the multidimensional array natively. However, you can create a multidimensional array by defining an [array](#) of elements, where each element is also another array.

For this reason, we can say that a JavaScript multidimensional array is an array of arrays. The easiest way to define a multidimensional array is to use the array literal notation.

To declare an empty multidimensional array, you use the same syntax as declaring one-dimensional array:

```
let activities = [];
```



The following example defines a two-dimensional array named `activities` :

```
let activities = [  
  ['Work', 9],  
  ['Eat', 1],  
  ['Commute', 2],  
  ['Play Game', 1],  
];
```



```
    ['Sleep', 7]  
];
```

In the `activities` array, the first dimension represents the activity and the second one shows the number of hours spent per day for each.

To show the `activities` array in the console, you use the `console.table()` method as follows:

```
console.table(activities);
```



The following illustrates the output:

(index)	0	1
0	'Work'	9
1	'Eat'	1
2	'Commute'	2
3	'Play Game'	1
4	'Sleep'	7



Note that the `(index)` column is for the illustration that indicates the indices of the inner array.

To access an element of the multidimensional array, you first use square brackets to access an element of the outer array that returns an inner array; and then use another square bracket to access the element of the inner array.

The following example returns the second element of the first inner array in the `activities` array above:

```
console.log(activities[0][1]); // 9
```



## Adding elements to the JavaScript multidimensional array

You can use the Array methods such as `push()` and `splice()` to manipulate elements of a multidimensional array.

For example, to add a new element at the end of the multidimensional array, you use the `push()` method as follows:

```
activities.push(['Study',2]);
```



```
console.table(activities);
```



(index)	0	1
0	'Work'	9
1	'Eat'	1
2	'Commute'	2
3	'Play Game'	1
4	'Sleep'	7
5	'Study'	2

To insert an element in the middle of the array, you use the `splice()` method. The following inserts an element in the second position of the activities array:

```
activities.splice(1, 0, ['Programming', 2]);
```



```
console.table(activities);
```

Here is the output:



(index)	0	1
0	'Work'	9
1	'Programming'	2
2	'Eat'	1
3	'Commute'	2
4	'Play Game'	1
5	'Sleep'	7
6	'Study'	2

This example calculates the percentage of the hours spent on each activity and appends the percentage to the inner array.



```
activities.forEach(activity => {
    let percentage = ((activity[1] / 24) * 100).toFixed();
    activity[2] = percentage + '%';
});

console.table(activities);
```

The following shows the output in the console:



(index)	0	1	2
0	'Work'	9	'38%'
1	'Programming'	2	'8%'
2	'Eat'	1	'4%'
3	'Commute'	2	'8%'
4	'Play Game'	1	'4%'
5	'Sleep'	7	'29%'

6	'Study'	2	'8%'
---	---------	---	------

## Removing elements from the JavaScript multidimensional array

To remove an element from an array, you use the `pop()` or `splice()` method.

For example, the following statement removes the last element of the `activities` array.

```
activities.pop();
```

```
console.table(activities);
```

Output:


(index)	0	1	2
0	'Work'	9	'38%'
1	'Programming'	2	'8%'
2	'Eat'	1	'4%'
3	'Commute'	2	'8%'
4	'Play Game'	1	'4%'
5	'Sleep'	7	'29%'

Similarly, you can remove the elements from the inner array of the multidimensional array by using the `pop()` method. The following example removes the percentage element from the inner arrays of the `activities` array.

```
activities.forEach((activity) => {
    activity.pop(2);
});
```

```
});  
  
console.table(activities);
```


Output:



(index)	0	1
0	'Work'	9
1	'Programming'	2
2	'Eat'	1
3	'Commute'	2
4	'Play Game'	1
5	'Sleep'	7

## Iterating over elements of the JavaScript multidimensional array

To iterate a multidimensional array, you use a nested **for loop** as in the following example.



```
// Loop the outer array  
for (let i = 0; i < activities.length; i++) {  
    // get the size of the inner array  
    var innerArrayLength = activities[i].length;  
    // Loop the inner array  
    for (let j = 0; j < innerArrayLength; j++) {  
        console.log('[' + i + ', ' + j + '] = ' + activities[i][j]);  
    }  
}
```

The first loop iterates over the elements of the outer array and the nested loop iterates over elements of the inner array.

The following shows the output of the script in the console:

```
[0,0] = Work
[0,1] = 9
[1,0] = Eat
[1,1] = 1
[2,0] = Commute
[2,1] = 2
[3,0] = Play Game
[3,1] = 1
[4,0] = Sleep
[4,1] = 7
[5,0] = Study
[5,1] = 2
```



Or you can use the `forEach()` method twice:

```
activities.forEach((activity) => {
  activity.forEach((data) => {
    console.log(data);
  });
});
```



Output:

```
Work
9
Eat
1
Commute
2
Play Game
1
```



[What is JavaScript](#)

[Install a JavaScript Code Editor](#)

[Meet the Console Tab of Devtools](#)

[JavaScript Hello World](#)

## **JAVASCRIPT FUNDAMENTALS**

[Syntax](#)

[Variables](#)

[Data Types](#)

[Number](#)

[Boolean](#)

## **JAVASCRIPT OPERATORS**

[Unary Operators](#)

[Assignment Operators](#)

[Logical Operators](#)

[Comparison Operators](#)

## **CONTROL FLOW**

[if else](#)

[switch case](#)

[while](#)

[do-while](#)

[for](#)

[break](#)

[continue](#)



Sleep

7

Study

2

In this tutorial, you have learned how to use an array of arrays to create a JavaScript multidimensional array.

Was this tutorial helpful ?



Yes



No

ADVERTISEMENT



Previous

[3 Pragmatic Uses of JavaScript Array slice\(\) Method](#)

Next

[JavaScript Function](#)

ADVERTISEMENT

**GETTING STARTED**

**JAVASCRIPT STRINGS**

JavaScript Strings

String Type

Concatenating Strings: concat()

Splitting a String into Substrings: split()

Locating a Substring Forward: indexOf()

Locating a Substring Backward:

lastIndexOf()

Extracting a Substring from a String:

substring()

Removing Whitespaces from Both Ends:

trim()

Extracting a part of a String: slice()

**JAVASCRIPT ARRAY**

JavaScript Array

Stack

Queue

Manipulate Elements: splice()

Sort Elements: sort()

Locate Elements: indexOf()

Check If Every Element Passes a Test:

every()

Check If At Least One Element Passes a

Test: some()

Filter Array Elements: filter()

Reduce an Array Into a Value: reduce()

[Transform Array Elements: map\(\)](#)

[Loop Through Array: forEach\(\)](#)

[Multidimensional Array](#)

## **JAVASCRIPT FUNCTIONS**

[Functions](#)

[Functions are First-Class Citizens](#)

[Anonymous Functions](#)

[IIFE](#)

[Callback Functions](#)

## **JAVASCRIPT OBJECTS**

[JavaScript Objects](#)

[Object Properties](#)

[Prototype](#)

[Object Creation Patterns](#)

[Prototypal Inheritance](#)

[this Keyword](#)

[for...in Loop](#)

## **ADVANCED FUNCTIONS**

[Passing By Value](#)

[Returning Multiple Values](#)

[Function Type](#)

[The call\(\) Method](#)

[The apply\(\) method](#)

[The bind\(\) Method](#)

[Recursive Functions](#)[Closures](#)

## REGULAR EXPRESSIONS

[Basic Regular Expressions](#)[search\(\)](#)[match\(\)](#)[replace\(\)](#)[Character Classes](#)[Anchors](#)

## JAVASCRIPT RUNTIME

[Execution Context](#)[Call Stack](#)[Event Loop](#)[Hoisting](#)[Variable Scopes](#)

ADVERTISEMENT

## ABOUT JAVASCRIPT TUTORIAL

The JavaScript Tutorial website helps you learn JavaScript programming from scratch quickly and effectively.

## RECENT TUTORIALS

[Npm Publish](#)[Npm Uninstall](#)[Npm View](#)[Npm List](#)

## [Npm Semantic Versioning](#)

### **SITE LINKS**

[About Us](#)

[Contact Us](#)

[Privacy Policy](#)

Copyright © 2020 by JavaScript Tutorial Website. All Right Reserved.