JavaScript TUTORIAL

Array.prototype.flat()

Summary: in this tutorial, you'll learn how to use the JavaScript Array `flat()` method to flatten an array.

Introduction to the JavaScript Array flat() method

ES2019 introduced the `Array.prototype.flat()` method that creates a new array with all the elements of the subarrays concatenated to it recursively up to a specified depth.

Here's the syntax of the `flat()` method:

```
let newArray = array.flat(depth)
```

In this syntax:

- `depth` : This optional parameter specifies how deep the method should flatten the nested arrays. The default is 1.

In practice, you'll find the `flat()` method useful when working with nested arrays.

JavaScript Array flat() method examples

Let's take some examples of using the `flat()` method.

Basic flat() method example

The following example uses the `flat()` method to flatten an array of numbers:

```
const numbers = [1, 2, [3, 4, 5]];
const flatNumbers = numbers.flat();
```

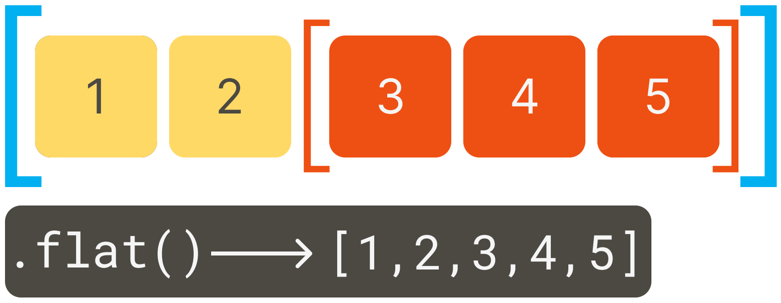
```
console.log({ flatNumbers });
console.log({ numbers });
```

Output:

```
{ flatNumbers: [ 1, 2, 3, 4, 5 ] }
{ numbers: [ 1, 2, [ 3, 4, 5 ] ] }
```

In this example, we don't pass the `depth` argument into the `flat()` method so it defaults to 1.

The `flat()` method concatenates all the elements of the nested array `[3,4,5]` to the elements of the new array:



Note that the `flat()` method creates a new array and doesn't change the original array.

Using the depth argument

The following example uses the flat() method to flatten an array with two-level depth by using a `depth` argument:

```
const numbers = [1, 2, [3, 4, 5, [6, 7]]];
const flatNumbers = numbers.flat(2);

console.log(flatNumbers);
```

Output:

```
[1, 2, 3, 4, 5, 6, 7]
```

When you don't know the `depth` level, you can pass the `Infinity` into the `flat()` method to recursively concatenate all elements of the sub-arrays into the new array:

```
const numbers = [1, 2, [3, 4, 5, [6, 7, [8, 9]]]];
const flatNumbers = numbers.flat(Infinity);

console.log(flatNumbers);
```

Output:

```
[ 1, 2, 3, 4, 5, 6, 7, 8, 9 ]
```

Working with arrays with empty slots

If an array has empty slots, you can use the `flat()` method to remove them, like this:

```
const numbers = [1, 2, , 4, , 5, [6, 7]];
const sequence = numbers.flat();

console.log(sequence);
```

Output:

```
[ 1, 2, 4, 5, 6, 7 ]
```

Flatting API response data

Some API responds with nested arrays. The `flat()` method can help you to process this data easily. For example:

```
const data = [
  { id: 1, tags: ['javascript', 'es6'] },
  { id: 2, tags: ['html', 'css'] },
  { id: 3, tags: ['react', ['redux', 'hooks']] },
];
```

```
const allTags = data.map((item) => item.tags).flat(Infinity);
console.log(allTags);
```

Output:

```
[ 'javascript', 'es6', 'html', 'css', 'react', 'redux', 'hooks' ]
```

In this example, we use the `map()` method to return arrays of tags from the `data` array and call the `flat()` method to flatten the nested arrays.

Note that JavaScript also offers the flatMap() which is more efficient than calling the `map()` and `flat()` consecutively.

Summary

- Use the Array `flat()` method to flatten an array with the nested arrays.
- Use the `depth` argument to specify how deep the nested arrays should be flattened.