JavaScript TUTORIAL

Array.prototype.map()

Summary: in this tutorial, you will learn how to use the JavaScript Array `map()` method to create a new array by applying a function to every element in the original array.

Introduction to JavaScript Array map() method

The JavaScript Array `map()` method creates a new array that includes the results by applying a function to every element in the original array.

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

```
map(callbackFn, thisArg);
```

In this syntax:

- `callbackFn` is a function that the `map()` method will call for each element in the calling array. The `map()` method will add the result of the `callbackFn` function to the resulting array.
- `thisArg` is the value used as `this` inside the `callbackFn` .

The `callbackFn()` function has the following form:

```
function callbackFn(currentElement, index, array) {
  // ...
}
```

The `callbackFn()` function takes three arguments:

- `currentElement` is the current element of the array that is being processed.
- `index` is the index of the `currentElement`

- `array` is the array object being traversed.

The `currentElement` is required while the `index` and `array` are optional.

If you pass the `thisArg` to the `map()` method, you can reference the `thisArg` inside the `callbackFn()` function using the `this` keyword.

> Note that the `map()` method does not change the elements in the original array. Instead, it creates a new array of all elements transformed by the callback function.

JavaScript map() method examples

Let’s take some examples of using the `map()` method.

1) Basic JavaScript Array map() method example

The following example takes an array of numbers, multiplies each by 2, and then logs the resulting array in the console:

```
const numbers = [1, 2, 3];
const results = numbers.map((n) => n * 2);

console.log({ results });
```

Output

```
{ results: [ 2, 4, 6 ] }
```

How it works.

First, define an array of numbers including 1, 2, and 3:

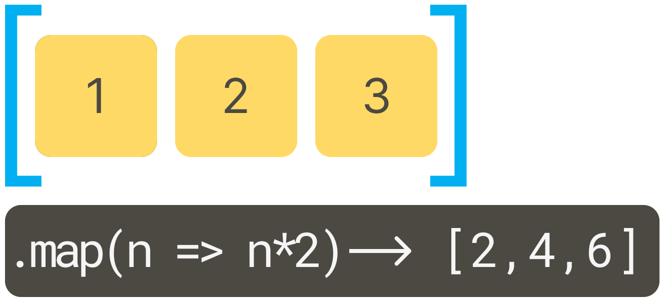
```
const numbers = [1, 2, 3];
```

Second, call the `map()` method on the `numbers` array. The map() method takes a function `n => n * 2`, applies it to each number in the `numbers` array by multiplying each by 2, and includes the result in the `results` array:

```
const results = numbers.map((n) => n * 2);
```

Third, display the `results` array in the console:

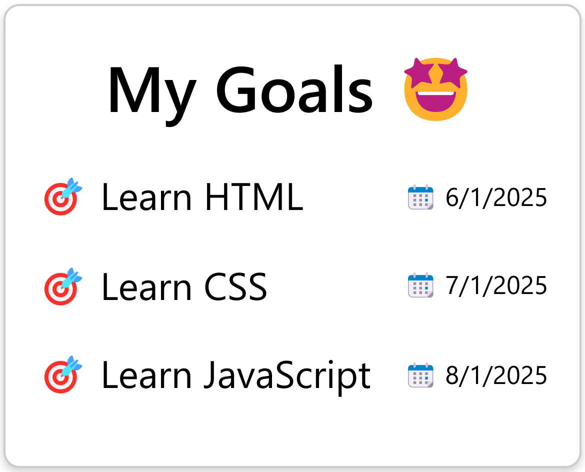
```
console.log({ results });
```



2) Using Array map() method to generate HTML elements

We'll create a page like the following by using the `map()` method to generate HTML dynamically:

Output



My Goals 🤩

🎯 Learn HTML 📅 6/1/2025

🎯 Learn CSS 📅 7/1/2025

🎯 Learn JavaScript 📅 8/1/2025

Step 1. Create an HTML page `index.html` :

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>JavaScript map() Demo</title>
    <link rel="stylesheet" href="style.css" />
    <script src="app.js" defer></script>
  </head>
  <body>
    <div class="root">
      <h1>Goals 🤩</h1>
      <div class="goals"></div>
    </div>
  </body>
</html>
```

The `index.html` links to the `style.css` and `app.js` files.

Step 2. Create a `style.css` file:

▶ style.css file

Step 3. Create an `app.js` file with the following code:

```
const goals = [
  {
    name: 'Learn HTML',
    date: '2025-06-01',
  },
  {
    name: 'Learn CSS',
    date: '2025-07-01',
  },
  {
    name: 'Learn JavaScript',
    date: '2025-08-01',
  },
];

const renderGoal = (goal) => {
  return `
    <div class="goal">
      <p class="goal__name">🎯 ${goal.name}</p>
      <span class="goal__date">📅 ${new Date(
        goal.date
      ).toLocaleDateString()}</span>
    </div>
  `;
};

const goalsEl = document.querySelector('.goals');

goalsEl.innerHTML = goals.map(renderGoal).join('');
```

How it works.

First, define a `goals` array that stores a list of goal objects. Each goal object has two properties `name` and `date`:

```
const goals = [
  {
    name: 'Learn HTML',
    date: '2025-06-01',
  },
  {
    name: 'Learn CSS',
    date: '2025-07-01',
  },
  {
    name: 'Learn JavaScript',
    date: '2024-08-01',
  },
];
```

Second, define a `renderGoal()` function that renders a goal into a piece of HTML:

```
const renderGoal = (goal) => {
  return `
    <div class="goal">
      <p class="goal__name">🎯 ${goal.name}</p>
      <span class="goal__date">📅 ${new Date(
        goal.date
      ).toLocaleDateString()}</span>
    </div>
  `;
};
```

Third, select the `goals` element using the `querySelector()` method:

```
const goalsEl = document.querySelector('.goals');
```

Third, generate an array of HTML snippets using the `map()` method, join the HTML snippets using the join() method, and assign the HTML string to the `innerHTML` property of the `goalsEl` element:

```
goalsEl.innerHTML = goals.map(renderGoal).join('');
```

Summary

- Use the `map()` method to create a new array that includes elements by applying a provided function on every element in the calling array.