

# JavaScript Basics

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## Learning Objectives

- Connect a JavaScript file with `<script>`
  - Log to the console
  - Select elements with `querySelector`
  - Add, remove and toggle CSS classes on `click` with `addEventListener`
- 

## Connect a JavaScript file

```
<head>
  ...
  <script src="./index.js" defer></script>
</head>
<body>
  ...
</body>
```

The `script` tag has two attributes:

`src="./index.js"` sets the URL to our JavaScript file

`defer` tells the browser to delay the loading of the script until all HTML elements are loaded.

💡 Alternative: `script` tag at the end of the body element, so `defer` attribute is not necessary. Less modern.

```
<head>
  ...
</head>
<body>
  ...
  <script src="./index.js"></script>
</body>
```

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## Hello World: `console.log()`

In JavaScript we can print text to the console of the web browser. We can use this for debugging or error logging for example.

```
console.log("Hello World!"); // logs into console
console.clear(); // clears console
```

```
console.error("Error!"); // logs as error into console
```

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## Selecting HTML Elements: `.querySelector()`

Before we can add interactivity, we need to select the necessary HTML-Elements:

```
<body>
  <main class="main" id="main" data-js="main">...</main>
</body>
```

There are multiple ways to select the above main section within our JavaScript. A good practice is to use a `data-* attribute`, like the **data-js** in the following example:

```
const mainElement = document.querySelector('[data-js="main"]');
```

Other css selectors work as well, but the `data-*` attribute selectors should be preferred.

```
// tag as identifier
const mainElement = document.querySelector("main");
// class as identifier -> .
const mainElement = document.querySelector(".main");
// id as identifier -> #
const mainElement = document.querySelector("#main");
```

💡 We try to separate our concerns: Classes are for CSS and `data-*` attributes are for JavaScript.

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## Add Interaction: `.addEventListener()`

We can listen to **events** like **clicks** on an Element and execute code when the event is triggered. The method `addEventListener` is used to react to events.

```
<button type="button" data-js="button">Log into console</button>
```

```
const button = document.querySelector('[data-js="button"]');
button.addEventListener("click", () => {});
```

First you specify the kind of event, e.g. **click**, then you define what code should be executed when the event is triggered. You write that code between the `{ }` brackets, e.g. a `console.log`.

```
const button = document.querySelector('[data-js="button"]');
button.addEventListener("click", () => {
  console.log("Yeah");
});
```

There different events you can listen to, for example:

```
button.addEventListener("mouseover", () => {});
```

```
button.addEventListener("keydown", () => {});
```

💡 Here you can find a [list of event types](#).

💡 You don't have to understand the syntax for now, we will cover this in a later session.

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## Add/remove & toggle classes: `.classList`.

You can add, remove and toggle classes, e.g. to change the styling of an element.

```
<main data-js="main">
  <button type="button" data-js="button">Add a class</button>
</main>
```

Add **page--primary** class to the above main section by using the `selectedElement.classList.add` method:

```
const main = document.querySelector('[data-js="main"]');
const button = document.querySelector('[data-js="button"]');

button.addEventListener("click", () => {
  main.classList.add("page--primary");
});
```

A click on the button adds the class **page--primary** to the main element:

```
<main data-js="main" class="page--primary">
  <button type="button" data-js="button">Add a class</button>
</main>
```

You can also remove or toggle a class in the same way:

```
main.classList.remove("page--primary");
```

```
main.classList.toggle("page--primary");
```

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## Resources

Connect a JavaScript file

[The Script element](#)

Hello World

[Console](#)

Selecting HTML Elements

[Document](#)

[Using data attributes](#)

[document.querySelector](#)

[data-\\* attribute](#)

Add Interaction

[.addEventListener\(\)](#)

[Event reference](#)

Add/remove & toggle classes

[classList](#)