

# Section 01: Introduction to JavaScript

## Learning Outcomes

This section includes a high-level introduction to JavaScript and the Document Object Model or DOM.

- High-level intro to JavaScript features
- Where JavaScript is added in an HTML file
- Intro to Document Object Model (DOM)

## Resources

1. JavaScript Home - <https://www.w3schools.com/js/default.asp>
2. JavaScript Introduction - [https://www.w3schools.com/js/js\\_intro.asp](https://www.w3schools.com/js/js_intro.asp)
3. Where To Add JavaScript? - [https://www.w3schools.com/js/js\\_where.asp](https://www.w3schools.com/js/js_where.asp)
4. Document Object Model (DOM) - [https://www.w3schools.com/js/js\\_htmlDOM.asp](https://www.w3schools.com/js/js_htmlDOM.asp)

## 1. Home: Why Study JavaScript?

- JavaScript is the world's most popular programming language.
- JavaScript is the programming language of the Web.
- JavaScript is easy to learn.

JavaScript is one of the 3 languages all web developers must learn:

1. [HTML](#) to define the content of web pages.
2. [CSS](#) to specify the layout of web pages.
3. [JavaScript](#) to program the behavior of web pages.

## 2. Introduction - What can JavaScript do?

### JavaScript Can Change HTML Content

One of many JavaScript HTML methods is `getElementById()`.

The example below "finds" an HTML element (with id="demo"), and changes the element content (innerHTML) to "Hello JavaScript":

```
document.getElementById("demo").innerHTML = "Hello JavaScript";
```

### JavaScript Can Change HTML Attribute Values

In this example JavaScript changes the value of the `src` (source) attribute of an `<img>` tag:

```
<!DOCTYPE html>
<html>
  <body>

    <!--
      In this case JavaScript changes the value of the src (source)
      attribute of an image.
    -->

    <button onclick="document.getElementById('myImage').src='pic_bulbon.gif'">Turn on the light</button>

    <button onclick="document.getElementById('myImage').src='pic_bulboff.gif'">Turn off the light</button>

  </body>
</html>
```

Link: [https://www.w3schools.com/js/tryit.asp?filename=tryjs\\_intro\\_lightbulb](https://www.w3schools.com/js/tryit.asp?filename=tryjs_intro_lightbulb)

## JavaScript Can Change HTML Styles (CSS)

Changing the style of an HTML element, is a variant of changing an HTML attribute:

```
document.getElementById("demo").style.fontSize = "35px";
```

## JavaScript Can Show / Hide HTML Elements

Showing/Hiding HTML elements can be done by changing the `display` style:

```
document.getElementById("demo").style.display = "none"; // hide
document.getElementById("demo").style.display = "block"; // show
```

# 3. Where To Add JavaScript?

## The `<script>` Tag

In HTML, JavaScript code is inserted between `<script></script>` tags.

## JavaScript Functions and Events

A JavaScript function is a block of JavaScript code, that can be executed when "called" for. For example, a function can be called when an event occurs, like when the user clicks a button.

JavaScript in `<head>` or `<body>`

You can place any number of scripts in an HTML document. Scripts can be placed in the `<body>` , or in the `<head>` section of an HTML page, or in both.

## External JavaScript

Scripts can also be placed in external files. External scripts are practical when the same code is used in multiple web pages.

A JavaScript file has the file extension `.js` . To use an external script, put the name of the script file in the `src` (source) attribute of a `<script>` tag:

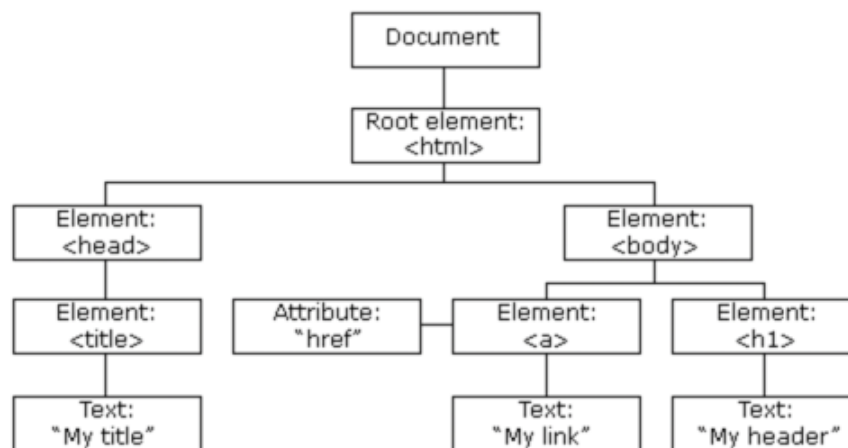
```
<script src="myScript.js"></script>
```

## 4. Document Object Model (DOM)

When a web page is loaded, the browser creates a `Document Object Model` of the page. The `HTML DOM` model is constructed as a tree of `Objects` . Elements are the tree of html tags. Elements can have attributes such as `href` , `id` , or `class` .

Dynamic web applications use JavaScript to access and manipulate objects in the DOM in different ways.

### The HTML DOM Tree of Objects



- JavaScript can change all the HTML elements in the page
- JavaScript can change all the HTML attributes in the page
- JavaScript can change all the CSS styles in the page
- JavaScript can remove existing HTML elements and attributes
- JavaScript can add new HTML elements and attributes
- JavaScript can react to all existing HTML events in the page
- JavaScript can create new HTML events in the page

More Info: [https://developer.mozilla.org/en-US/docs/Web/API/Document\\_Object\\_Model/Introduction](https://developer.mozilla.org/en-US/docs/Web/API/Document_Object_Model/Introduction)