JavaScript

JavaScript is the world's most popular programming language.

JavaScript is the programming language of the Web.

JavaScript is a dynamic programming language that's used for web development, in web applications, for game development, and lots more. It allows you to implement dynamic features on web pages that cannot be done with only HTML and CSS.

Many browsers use JavaScript as a scripting language for doing dynamic things on the web. Any time you see a click-to-show dropdown menu, extra content added to a page, and dynamically changing element colors on a page, to name a few features, you're seeing the effects of JavaScript.

## What Would the Web Look Like Without JavaScript?

Without JavaScript, all you would have on the web would be HTML and CSS. These alone limit you to a few web page implementations. 90% (if not more) of your webpages would be static, and you'd only have the dynamic changes like animations that CSS provides.

## How JavaScript Makes Things Dynamic

HTML defines the structure of your web document and the content therein. CSS declares various styles for the contents provided on the web document.

HTML and CSS are often called markup languages rather than programming languages, because they, at their core, provide markups for documents with very little dynamism.

JavaScript, on the other hand, is a dynamic programming language that supports Math calculations, allows you to dynamically add HTML contents to the [DOM](https://thewebfor5.com/p/javascript/the-dom/), creates dynamic style declarations, fetches contents from another website, and lots more.

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| <!DOCTYPE html>  <html>  <body>  <h2>My First JavaScript</h2>  <button type="button"  onclick="document.getElementById('demo').innerHTML = Date()">  Click me to display Date and Time.</button>  <p id="demo"></p>  </body>  </html> |
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| <!DOCTYPE html>  <html>  <body>  <h2>JavaScript in Body</h2>  <p id="demo"></p>  <script>  document.getElementById("demo").innerHTML = "My First JavaScript";  </script>  </body>  </html> |
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Why Study JavaScript?

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

   1. [**HTML**](https://www.w3schools.com/html/default.asp) to define the content of web pages

   2. [**CSS**](https://www.w3schools.com/css/default.asp) to specify the layout of web pages

   3. **JavaScript** to program the behavior of web pages

## 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.

JavaScript in <head>

In this example, a JavaScript function is placed in the <head> section of an HTML page.

The function is invoked (called) when a button is clicked:

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| --- |
| <!DOCTYPE html> <html> <head> <script> function myFunction() {   document.getElementById("demo").innerHTML = "Paragraph changed."; } </script> </head> <body>  <h2>Demo JavaScript in Head</h2>  <p id="demo">A Paragraph</p> <button type="button" onclick="myFunction()">Try it</button>  </body> </html> |

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## JavaScript in <body>

In this example, a JavaScript function is placed in the <body> section of an HTML page.

The function is invoked (called) when a button is clicked:

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| --- |
| <!DOCTYPE html> <html> <body>  <h2>Demo JavaScript in Body</h2>  <p id="demo">A Paragraph</p>  <button type="button" onclick="myFunction()">Try it</button>  <script> function myFunction() {   document.getElementById("demo").innerHTML = "Paragraph changed."; } </script>  </body> </html> |

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## External JavaScript

Scripts can also be placed in external files:

### External file: myScript.js

|  |
| --- |
| function myFunction() {   document.getElementById("demo").innerHTML = "Paragraph changed."; } |

External scripts are practical when the same code is used in many different web pages.

JavaScript files have 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:

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| <!DOCTYPE html>  <html>  <body>  <h2>Demo External JavaScript</h2>  <p id="demo">A Paragraph.</p>  <button type="button" onclick="myFunction()">Try it</button>  <p>This example links to "myScript.js".</p>  <p>(myFunction is stored in "myScript.js")</p>  <script src="myScript.js"></script>  </body>  </html> |

You can place an external script reference in <head> or <body> as you like.

The script will behave as if it was located exactly where the <script> tag is located.

External scripts cannot contain <script> tags.

## External JavaScript Advantages

Placing scripts in external files has some advantages:

* It separates HTML and code
* It makes HTML and JavaScript easier to read and maintain
* Cached JavaScript files can speed up page loads

To add several script files to one page  - use several script tags:

### Example

<script src="myScript1.js"></script>  
<script src="myScript2.js"></script>

External References

An external script can be referenced in 3 different ways:

* With a full URL (a full web address)
* With a file path (like /js/)
* Without any path

This example uses a **full URL** to link to myScript.js:

|  |
| --- |
| <!DOCTYPE html>  <html>  <body>  <h2>External JavaScript</h2>  <p id="demo">A Paragraph.</p>  <button type="button" onclick="myFunction()">Click Me</button>  <p>This example uses a full web URL to link to "myScript.js".</p>  <p>(myFunction is stored in "myScript.js")</p>  <script src="https://www.w3schools.com/js/myScript.js"></script>  </body>  </html> |
|  |

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This example uses a **file path** to link to myScript.js:

|  |
| --- |
| <!DOCTYPE html>  <html>  <body>  <h2>External JavaScript</h2>  <p id="demo">A Paragraph.</p>  <button type="button" onclick="myFunction()">Try it</button>  <p>This example uses a file path to link to "myScript.js".</p>  <p>(myFunction is stored in "myScript.js")</p>  <script src="/js/myScript.js"></script>  </body>  </html> |