FRONTEND DEVELOPMENT

Part 4: Javascript and HTML

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JAVASCRIPT INTRO

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

JAVASCRIPT ADVANTAGES WITH HTML

- JavaScript Can Change HTML Content
- JavaScript Can Change HTML Attribute Values
- JavaScript Can Change HTML Styles (CSS)
- JavaScript Can Hide HTML Elements
- JavaScript Can Show HTML Elements

WHERE TO ADD JAVASCRIPT?

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

```
<script>
document.getElementById("demo").innerHTML = "My First JavaScript";
</script>
```

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

- 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

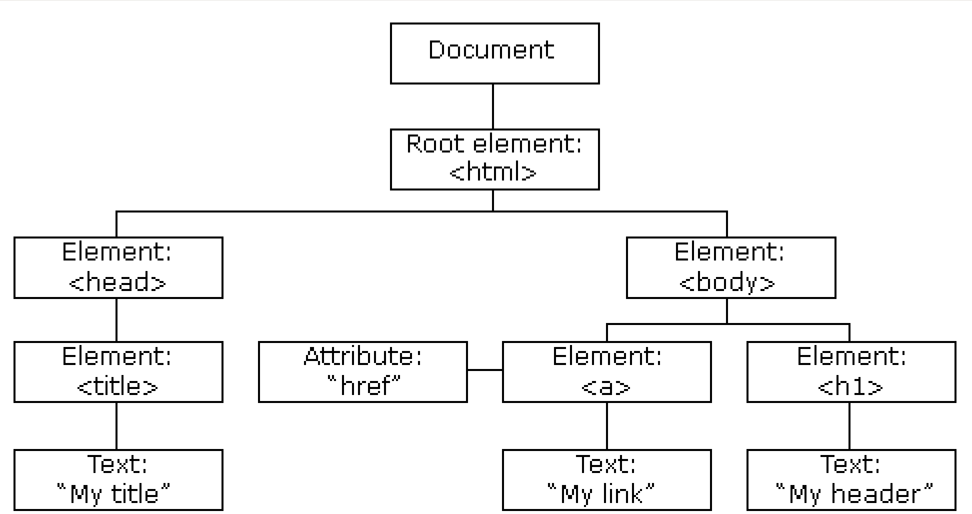
- `<script src="myScript.js"></script>`

JAVASCRIPT DISPLAY POSSIBILITIES

- Writing into an HTML element, using innerHTML.
- Writing into the HTML output using document.write().
- Writing into an alert box, using window.alert().
- Writing into the browser console, using console.log().

THE HTML DOM (DOCUMENT OBJECT MODEL)

- When a web page is loaded, the browser creates a **D**ocument **O**bject **M**odel of the page.
- The **HTML DOM** model is constructed as a tree of **Objects**



Document

Root element: <html>

Element: <head>

Element: <body>

Element: <title>

Attribute: "href"

Element: <a>

Element: <h1>

Text: "My title"

Text: "My link"

Text: "My header"

WITH THE OBJECT MODEL, JAVASCRIPT GETS ALL THE POWER IT NEEDS TO CREATE DYNAMIC HTML

- 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

WHAT IS THE HTML DOM?

The HTML DOM is a standard **object** model and **programming interface** for HTML. It defines:

- The HTML elements as **objects**
- The **properties** of all HTML elements
- The **methods** to access all HTML elements
- The **events** for all HTML elements

In other words: **The HTML DOM is a standard for how to get, change, add, or delete HTML elements.**

JAVASCRIPT - HTML DOM METHODS

- HTML DOM methods are **actions** you can perform (on HTML Elements).
- HTML DOM properties are **values** (of HTML Elements) that you can set or change.

JAVASCRIPT HTML DOM DOCUMENT

Finding HTML Elements

Method	Description
document.getElementById(*id*)	Find an element by element id
document.getElementsByTagName(*name*)	Find elements by tag name
document.getElementsByClassName(*name*)	Find elements by class name

CHANGING HTML ELEMENTS

Property	Description
element.innerHTML = *new html content*	Change the inner HTML of an element
element.attribute = *new value*	Change the attribute value of an HTML element
element.style.*property* = *new style*	Change the style of an HTML element
Method	Description
element.setAttribute*(attribute, value)*	Change the attribute value of an HTML element

ADDING AND DELETING ELEMENTS

Method	Description
document.createElement(*element*)	Create an HTML element
document.removeChild(*element*)	Remove an HTML element
document.appendChild(*element*)	Add an HTML element
document.replaceChild(*new, old*)	Replace an HTML element
document.write(*text*)	Write into the HTML output stream

ADDING EVENTS HANDLERS

Method	Description
document.getElementById(*id*).onclick = function(){*code*}	Adding event handler code to an onclick event

FINDING HTML OBJECTS

- The easiest way to find an HTML element in the DOM, is by using the element id.

- This example finds the element with id="intro"

https://www.w3schools.com/js/js_htmldom_elements.asp

```
<!DOCTYPE html>
<html>
<body>
<h2>JavaScript HTML DOM</h2>
<p id="intro">Finding HTML Elements by Id</p>
<p>This example demonstrates the <b>getElementsById</b> method.</p>
<p id="demo"></p>
<script>
const element = document.getElementById("intro");
document.getElementById("demo").innerHTML =
"The text from the intro paragraph is: " + element.innerHTML;
</script>
</body>
</html>
```

JAVASCRIPT HTML DOM - CHANGING HTML

```
<html>
<body>

<p id="p1">Hello World!</p>

<script>
document.getElementById("p1").innerHTML = "New text!";
</script>

</body>
</html>
```

https://www.w3schools.com/js/js_htmldom_html.asp

JAVASCRIPT FORMS

Validation

```
function validateForm() {
  let x = document.forms["myForm"]["fname"].value;
  if (x == "") {
    alert("Name must be filled out");
    return false;
  }
}
```

https://www.w3schools.com/js/js_validation.asp

JAVASCRIPT HTML DOM - CHANGING CSS

```
<html>
<body>

<p id="p2">Hello World!</p>

<script>
document.getElementById("p2").style.color = "blue";
</script>

</body>
</html>
```

https://www.w3schools.com/js/js_htmldom_css.asp

JAVASCRIPT HTML DOM EVENTS

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

<h1 onclick="this.innerHTML = 'Ooops!'">Click on this text!</h1>

</body>
</html>
```

https://www.w3schools.com/js/js_htmldom_events.asp

JAVASCRIPT HTML DOM EVENTLISTENER

- document.getElementById("myBtn").addEventListener("click", displayDate);

https://www.w3schools.com/js/js_htmldom_eventlistener.asp

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