

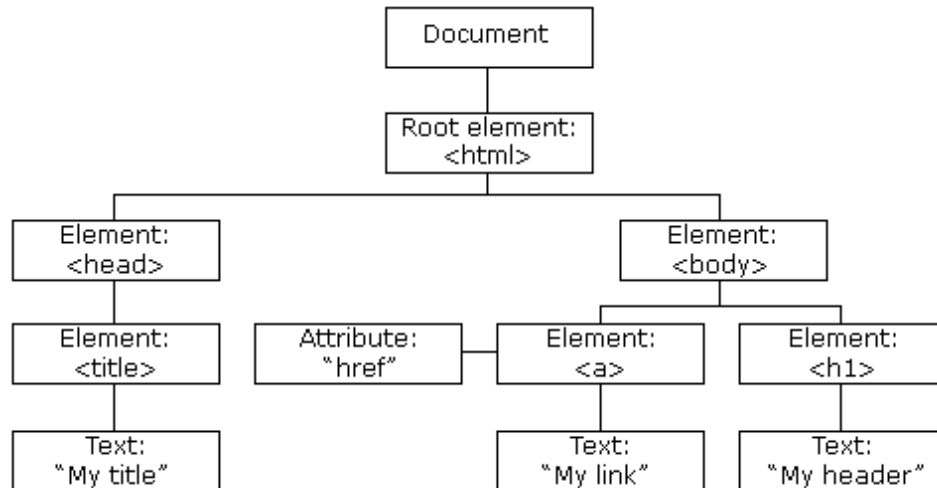
# **Document Object Model**

## The Complete Web Developer in 2018

The Complete Web Developer in 2018  
Zero to Mastery  
Andrei Neagoie  
Lecture Notes by Stephanie

## DOM (Document Object Model)

- object created by browser when web page is loaded, allows us to modify HTML and CSS



The HTML DOM Tree of Objects

## Javascript Engine

- looks at the JavaScript file, reads it line by line and executes the JavaScript.

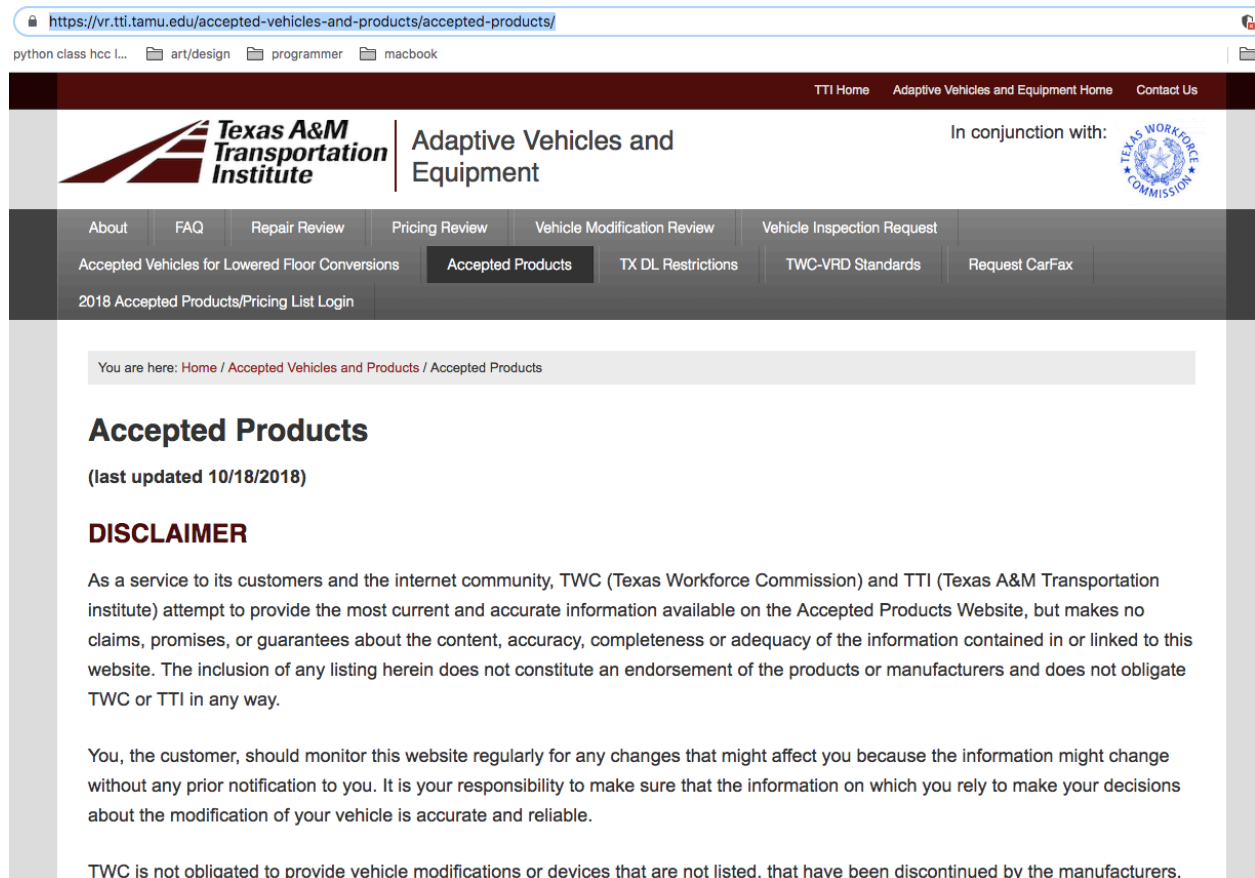
Examples: Chrome has 'V8 engine', Edge has 'Chalker Core', Safari has 'Nitro' and Firefox has 'SpiderMonkey'

Use JavaScript to talk to the DOM

We can now use JavaScript to....

- change all the HTML elements in the page
- change all the HTML attributes in the page
- change all the CSS styles in the page
- remove existing HTML elements and attributes
- 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

Lets look at this webpage....




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If we type in Console of webpage...

> document

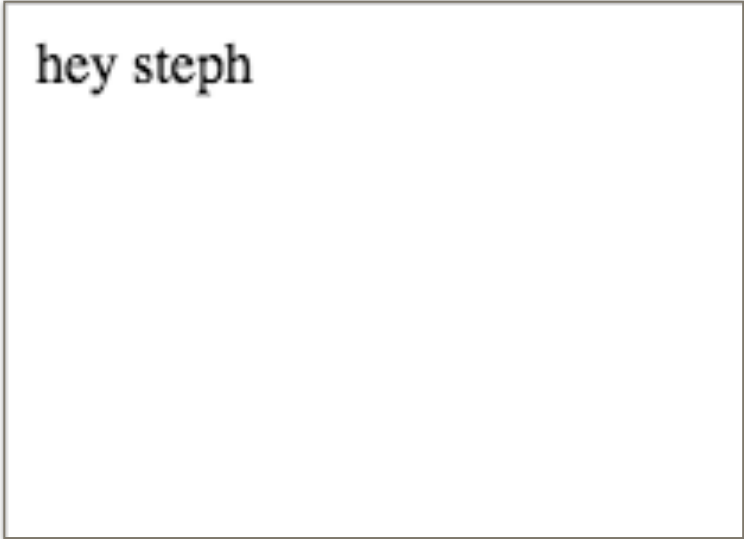
We get the document (DOM). Its displayed as HTML even though it's a javascript object

```
< ▼#document
  <!doctype html>
  <html lang="en-US">
    ><head>...</head>
    ><body class="page-template-default page page-id-7
      page-child parent-pageid-142 full-width-content
      AdaptiveVehiclesandEquipment" itemscope itemtype=
      "https://schema.org/WebPage">...</body>
  </html>
```

If we type...

```
> document.write("hey steph")
```

The entire webpage is replaced by...



hey steph

‘document’ is the screen we see in the browser, and it is just an object.

‘window’ is the parent object of ‘document’.

‘window’ is also parent object of alert() and prompt().

window.alert(“hi”) is same as alert(“hi”) because window is the parent of alert. window has manyyyyyyy properties.....

```
> window
```

```
    ...
  ▶ DOMStringMap: f DOMStringMap()
  ▶ DOMTokenList: f DOMTokenList()
  ▶ DataTransfer: f DataTransfer()
  ▶ DataTransferItem: f DataTransferItem()
  ▶ DataTransferItemList: f DataTransferItemList()
  ▶ DataView: f DataView()
  ▶ Date: f Date()
  ▶ DelayNode: f DelayNode()
  ▶ DeviceMotionEvent: f DeviceMotionEvent()
  ▶ DeviceOrientationEvent: f DeviceOrientationEvent()
  ▶ Document: f Document()
```

## Summary

A web browser has a 'window' object. One of its properties is the object 'document', which specifies what should get displayed. To decide what to display, the document object model (DOM) reads the HTML and CSS. JavaScript (read line by line by something like a JavaScript engine) reads through the document.

If it ever needs to change anything, JavaScript can speak with the document object and modify the HTML and CSS

From <https://eloquentjavascript.net> book:

When you open a web page in your browser, the browser retrieves the page's HTML text and parses it. The browser builds up a model of the document's structure and uses this model to draw the page on the screen.

This representation of the document is one of the toys that a JavaScript program has available in its sandbox. It is a data structure that you can read or modify. It acts as a *live* data structure: when it's modified, the page on the screen is updated to reflect the changes.

...

JavaScript programs may inspect and interfere with the document that the browser is displaying through a data structure called the DOM. This data structure represents the browser's model of the document, and a JavaScript program can modify it to change the visible document.



# JavaScript HTML DOM

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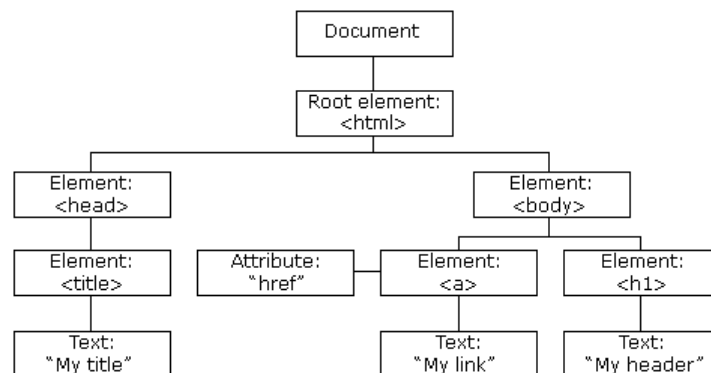
With the HTML DOM, JavaScript can access and change all the elements of an HTML document.

## The HTML DOM (Document Object Model)

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**:

### The HTML DOM Tree of Objects



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 You Will Learn

In the next chapters of this tutorial you will learn:

- How to change the content of HTML elements
  - How to change the style (CSS) of HTML elements
  - How to react to HTML DOM events
  - How to add and delete HTML elements
- 

## What is the DOM?

The DOM is a W3C (World Wide Web Consortium) standard.

The DOM defines a standard for accessing documents:

*"The W3C Document Object Model (DOM) is a platform and language-neutral interface that allows programs and scripts to dynamically access and update the content, structure, and style of a document."*

The W3C DOM standard is separated into 3 different parts:

- Core DOM - standard model for all document types
  - XML DOM - standard model for XML documents
  - HTML DOM - standard model for HTML documents
- 

## 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.**

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