

CIS 658 Web Architectures

HTML



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Getting Started: How does the WWW work?

The World Wide Web(WWW) is a system of interlinked hypertext documents and resources, accessed via the internet using a web browser. It allows users to view and interact with websites that contain text, images, videos, and other multimedia.

- All computers use a communication standard: **HTTP**.
- **Web Pages**: Documents written in HTML (Hypertext Markup Language).
- **Web Servers**: Computers that store and deliver web pages.
- **Web Browsers**(clients): Programs like Chrome, Firefox, Safari used to access and display web content.
- **URLs**: Uniform Resource Locators - addresses that identify resources on the web.

Why do we need both HTML and CSS?

Why do we need both HTML and CSS?

HTML → Structure



CSS → Style



History of HTML

- In 1989, at the CERN Lab in Switzerland, Tim Berners-Lee introduced the first version of HTML for sharing research papers.
- In 1991, the WWW Talk showcased the introduction of HTML.
- In 1993, Marc Andreessen from the National Center for Supercomputer Applications had developed the Mosaic browser.
- In 1995, we saw two significant releases: Java by Sun Microsystems and JavaScript by Netscape."



HTML Versions

- 1991: HTML 1.0 introduced with 20 tags/elements.
- 1993: HTML 1.0 is formally released. At this time, web development was still in its infancy, with few developers actively creating websites.
- 1995: HTML 2.0 is published, building upon HTML 1.0 with added features. This version set the standard for web design and creation until 1997.
- 1997: HTML 3.2 arrives with newer, more powerful features, enabling advanced website design. However, some of these features slowed down the browser in applying further improvements.
- 1999: HTML 4.01 is launched, marking the first release with CSS support. This combination proves highly successful.
- 2000: XHTML is introduced, merging HTML with XML to create a XML-based version of HTML, ensuring cleaner coding and better document structure.
- 2014: HTML5, an evolution of HTML 4.01, is rolled out, enhancing multimedia integration and improving semantic elements.
- October 2018: The latest standard at this time, HTML 5.3, is released, further refining and expanding the capabilities of the previous version.

First Website

The ultimate first website

<http://info.cern.ch/>

.ch is country code top-level domain (TLD) for
Switzerland

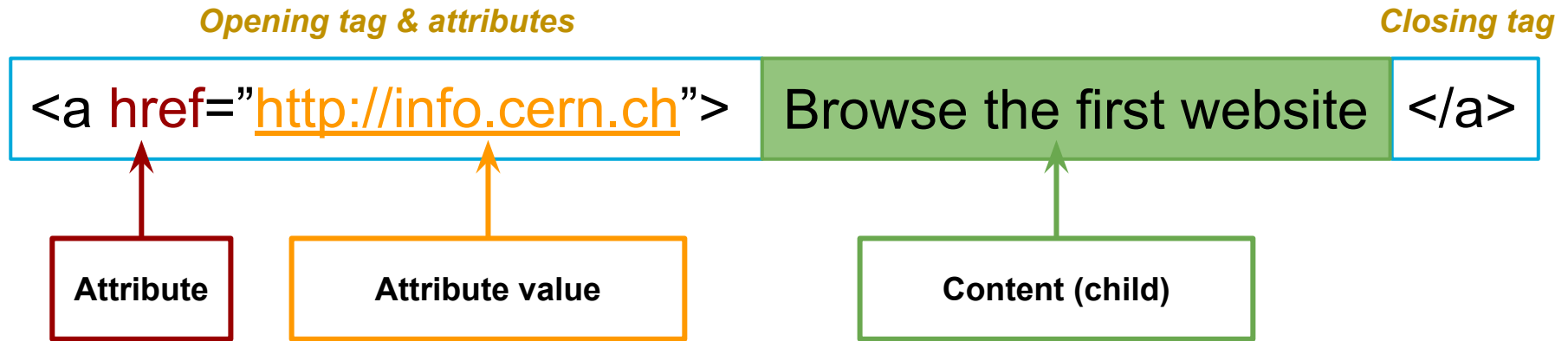
HTML

- Hypertext Markup Language
- Not a programming language, but a presentation language
- Code for structuring and displaying a web document
- An HTML file should have either an **.htm** or **.html** file extension.
- Vocabularies
 - Tags/Elements
 - Attributes
 - key="value"
 - "boolean"

.html vs. .htm

- **Windows systems** typically use the **.htm** extension, while **UNIX systems** generally prefer **.html**.
- Historically, most Web servers ran on Unix and adopted **.html** as the standard file extension. This has led some to view **.htm** as slightly informal.
- Nowadays, most Web servers are configured to recognize **both extensions**.
- To ensure compatibility, always consult the system administrator about the **preferred file extension** they support.

HTML Elements/Tags/Nodes



Empty Elements

- No closing tag
- No (child) content

```
<link rel="stylesheet" href="....."/>
```

```

```

Type of Elements

Two categories of HTML elements based on their effect on **new line**

- **Block:** induces a new line **before** and **after** its surrounding context
 - Examples: p, h[1-6], ol, ul, pre, blockquote, dl, div, form, hr, table
- **Inline:** contained within block-level elements **without starting newlines**
 - Examples: b, i, tt, code, em, strong, a, br, img, span, sub, sup, button, input, select

Inline vs Block Elements

```
<!-- block elements -->  
<p>I taught myself</p><p>HTML</p>
```



I taught myself
HTML

```
<!-- inline elements -->  
<span>And also</span>  
<span>CSS</span>
```



And also CSS

Overall Structure of HTML Documents

```
<html>
```

```
<head>
```

```
<meta charset="UTF-8">
```

```
<title>Sample Page</title>
```

```
</head>
```

```
<body>
```

```
<h1>Welcome</h1>
```

```
<p>Hello world!</p>
```

```
</body>
```

```
</html>
```

Document is parsed:

- Left-to-right
- Top-to-bottom
- Understanding this order becomes important when you write `<script>s`

`<head>`:

parsed by web browsers,
but **not rendered**

`<body>`:

parsed and rendered by
web browsers

HTML Documents and DOM Tree

```
<html>
```

```
<head>
```

```
  <meta charset="UTF-8">
```

```
  <title>Sample Page</title>
```

```
</head>
```

```
<body>
```

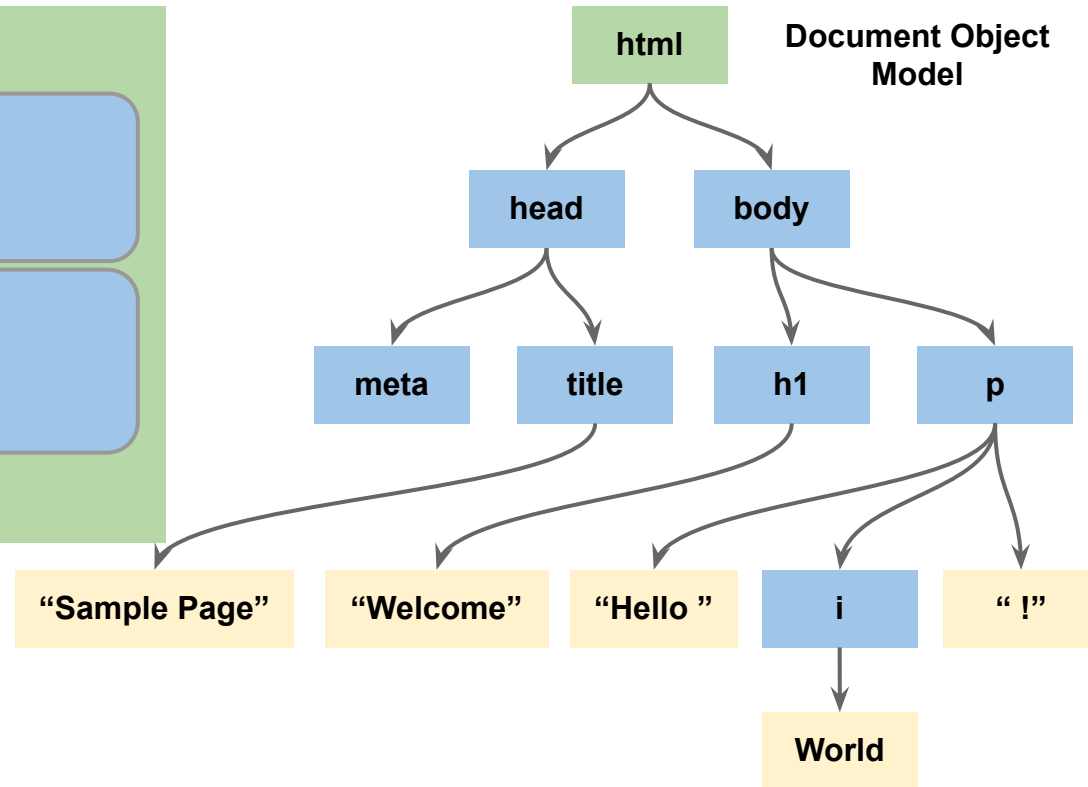
```
  <h1>Welcome</h1>
```

```
  <p>Hello <i>World</i> !</p>
```

```
</body>
```

```
</html>
```

Use indentation result as hint



HTML Tags/Elements

- [Alphabetical List](#)
- [Categorical List](#)

<meta>

- Meta tags are used for “machine readable” information about the document
 - Document character encoding
 - Content Description for web bots
- App specific metadata that can be used to customize embedding of web contents into another (app)
 - Facebook
 - Twitter
 - Slack
 - WhatsApp, and many more...

Comments and Special Characters

```
<!-- this is a comment -->
```

Special Character	Encoding
<	<
>	>
&	&
“	"
‘	'

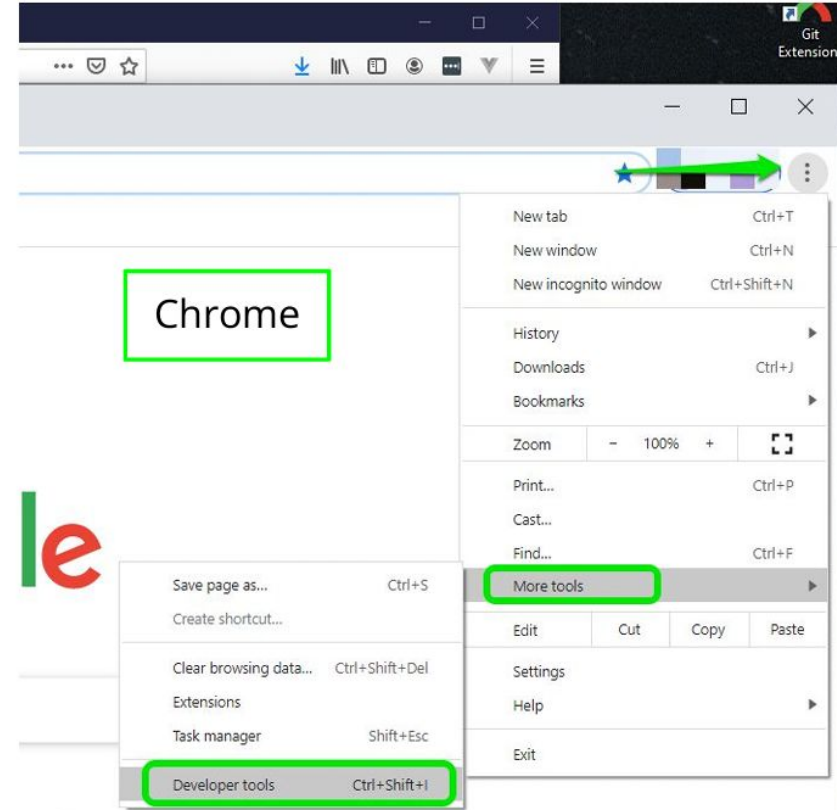
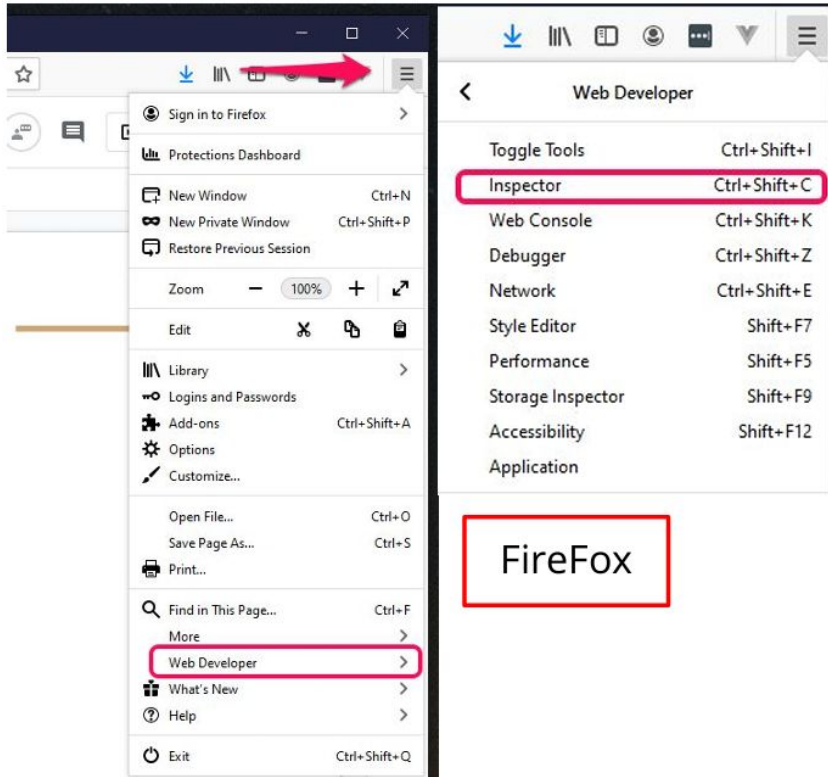
```
<!-- in HTML -->  
Tom &amp; Jerry
```



Tom & Jerry

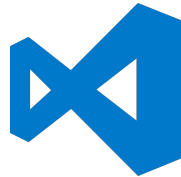
Complete Reference: <https://dev.w3.org/html5/html-author/charref>

Browser DevTools



HTML Editors

- **WYSIWYG** (What You See Is What You Get) editors are available for creating HTML documents. Using them, you design the HTML visually, like a word processor, eliminating the need to write and visualize markup tags manually.
- To become a proficient Web developer, it's advisable to start with a **plain text editor**. This foundational approach ensures you deeply understand HTML at its core.
- In this course, crafting HTML source code from scratch will be our primary method of instruction.



VSCode

Use Open Folder (instead of Open File)

In VSCode, you can open an entire folder as a workspace instead of just individual files. This is particularly helpful for projects where you need to access multiple files and see the project structure.

Search Command Palette

The Command Palette in VSCode provides quick access to commands, features, and functionalities. By pressing `F1` or `Ctrl+Shift+P`, you can search for and execute any command without navigating through menus.

Emmets

Emmet is a toolkit for web developers that streamlines the process of writing HTML and CSS by using abbreviations. For example, in an HTML context, typing an exclamation point (!) and pressing `Tab` will initialize a basic HTML template. Similarly, if you type `div>p*5` and then press `Tab`, it will expand into a `div` element containing five `p` elements.

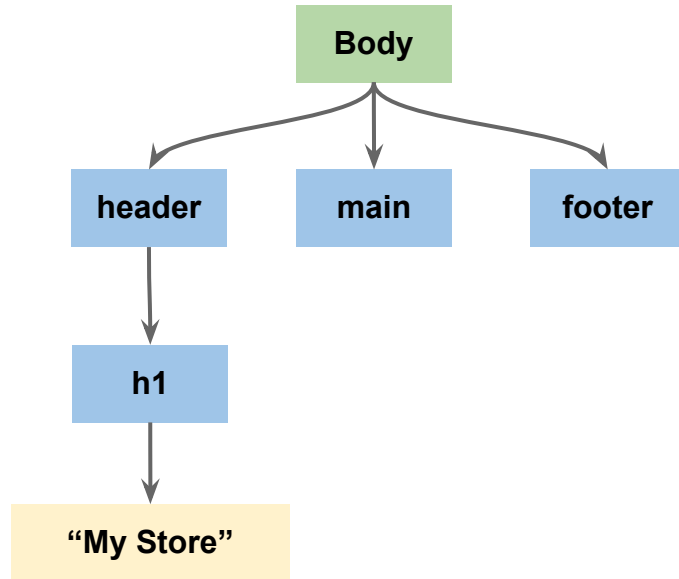
Self Paced Tutorial

<https://www.w3schools.com/html/default.asp>

(try it yourself)

Emmet Exercise

<https://www.youtube.com/watch?v=V8vizNQKtx0>



Practice