Cornell Webdev Club

Workshop #1: Introduction to Web Development & Frontend Basics (HTML & CSS)

February 25, 2025

Attendance

Agenda:

1.	• Web Development Overview
2.	• HTML Basics + Essentials
3.	• CSS Fundamentals
4.	• Homework

Goal:

Understand the structure of web pages, create semantic HTML content, and apply visual styling with CSS.

1. Web Development Overview

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Web Development = "the process of building, programming, and maintaining websites and web applications" (WebFX)

To develop web pages, we use programming languages such as:

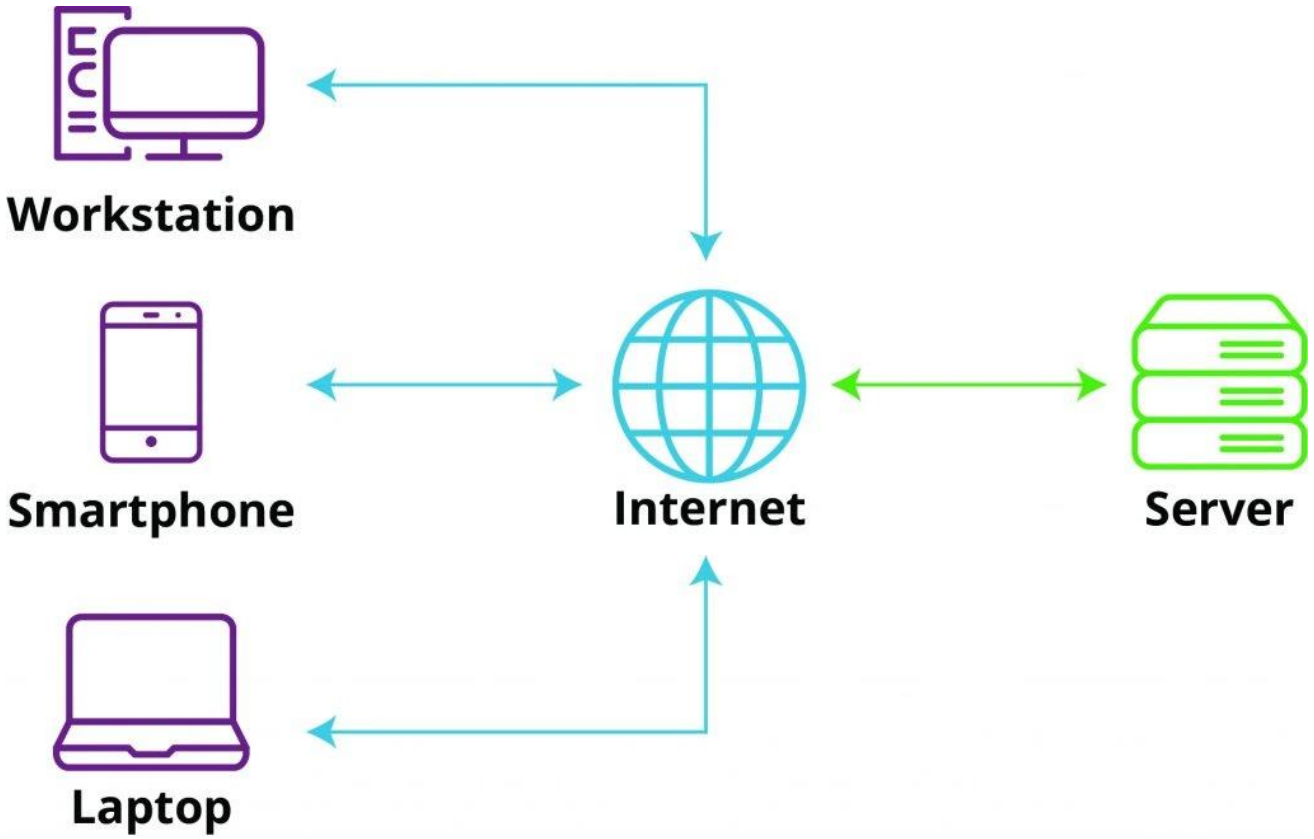
- HTML
- CSS
- JavaScript

Types of Web Pages:

STATIC Websites	DYNAMIC Websites
• Fixed content that is the same each time the page is loaded	• Content is generated based on user interactions and real-time data
• Languages Used: HTML, CSS	• Languages Used: HTML, CSS, JS, PHP, MySQL
• Example: About Us page with relevant background mission, vision, etc.	• Example: Upcoming events on a home page pulling from a calendar and changing each day

1. Web Development Overview

Client-Server Model = "network where clients request information from a designated Server, which then provides the request data back to the client" (TechTarget)



Source: Liquid Web

Explanation:

1. Browsers (workstation, smartphone, laptop) send requests to a server

2. Server responds with HTML, CSS, and JavaScript files

3. Browser renders these files into a viewable webpage

2. HTML Basics + Essentials

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HTML (Hypertext Markup Language) = "a markup language for the web that defines the structure of web pages" (freeCodeCamp)

HTML Basic Parts:

- HTML Tags: keywords present on a web page that define how your web browser must format and display your web page.
  - Need both start tags ( ) and end tags ( )
  - ex) tags are used to structure lines/paragraphs

- HTML Element: everything from the start tag to the end tag
  ex) This is an HTML Element

- HTML Attributes: provide additional information about elements
  - Always specified in the **start tag**
  - ex) <a> tag allows hyperlinks. The [href] attribute specifies the URL of the link

- HTML BoilerPlate: given template to start the HTML file
  - Use <!DOCTYPE html>, <html>, <head>, <body>

HTML Essential Tags:

Headings	Example
Tags: <h1>, <h2>, <h3>, <h4>, <h5>, <h6>	Heading 1 Heading 2
Purpose: titles or subtitles that you want to display on a webpage	
• <h1> is the largest heading size • <h6> is the smallest heading size	

Paragraph	Example
Tags:	This is a paragraph. This is another paragraph.
Purpose: paragraph that always starts on a new line	
• Used to structure all texts needed	

HTML Essential Tags (continued):

Images	Example
Tags: <img>	`<img src="url" alt="alternatetext">`
Purpose: embeds image files in the web page	`<img src="pic_trulli.jpg" alt="Italian Trulli">`
2 Required Attributes: - src = specifies the path to the image - alt = specifies an alternate text for the image (accessibility attribute to describe the image when it does not render on the page)	

Links	Example
Tags: <a>	`<a href="url">link text</a>`
Purpose: hyperlinks	`<a href="https://www.w3schools.com/">Visit W3Schools.com!</a>`
1 Required Attribute: - href = indicates the URL address of the link	

HTML Essential Tags (continued):

Lists	Example
Tags: , ,	
Purpose: group a set of related items in lists	
• = unordered list (bullet points) • = ordered list (numbered) • = child tag for each item for BOTH and	

```
<ul>
  <li>Coffee</li>
  <li>Tea</li>
  <li>Milk</li>
</ul>
```

```
<ol>
  <li>Coffee</li>
  <li>Tea</li>
  <li>Milk</li>
</ol>
```

Navigation	Example
Tags: <nav>	
Purpose: a set of navigation links	
• <nav> acts as a parent tag to a set of <a> tags for the links	

```
<nav>
  <a href="/html/">HTML</a> |
  <a href="/css/">CSS</a> |
  <a href="/js/">JavaScript</a> |
  <a href="/python/">Python</a>
</nav>
```

Demo: HTML Document Example

3. CSS Fundamentals

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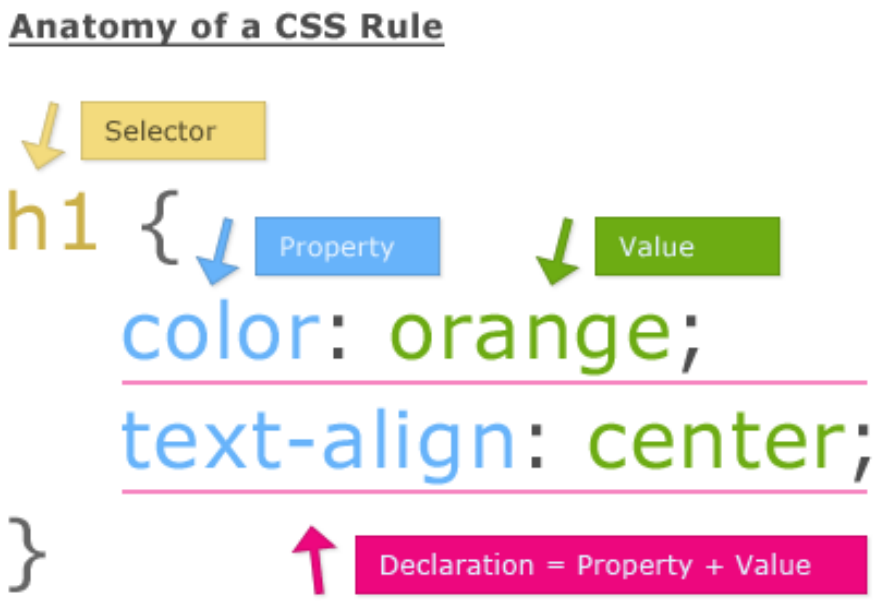
CSS (Cascading Style Sheets) = "style sheet language used for specifying the presentation and styling of a document written in a HTML" (Wikipedia)

CSS Functionality: controls how HTML elements are displayed on the screen, whether it's the color of text, the layout of a page, or the spacing between elements

CSS Anatomy:



Source: Monadical

Explanation:

- The selector is the element that is to be styled.
- The property is which styles you want to change, followed by the value of the style
- The entire line of property + value is a declaration

Deep Dive into CSS Anatomy

CSS Selectors = used to select the HTML elements you want to style

Selectors Types:

- Element
  - By using the element as a selector, you style all of the element on the web page
  - ex) Select the tag, all of the tags will be styled
- ID
  - Label only one specific element with an ID to style only that chosen element
  - IDs are attributes to a tag
    - ex) First Name
  - ID CSS Selector syntax = #first-name
  - GOTCHA: no spaces between multiple words (use hyphens or underscores)
- Class
  - Label multiple HTML elements with a class to style only that chosen group
  - Classes are attributes to a tag
    - ex)
  - Class CSS Selector syntax = .group-1
  - GOTCHA: no spaces between multiple words (use hyphens or underscores)

Deep Dive into CSS Anatomy

CSS Properties = used to control and style layout, colors, fonts, and alignment of the selector

Main Categories of Properties:

- Color
  - Specifies color of text and background
  - "color" property = color of text
  - "background-color" property = color of background
  - Property Values
    - RGB values
    - Hexadecimal values
    - Embedded color names

```
<!DOCTYPE html>
<html>
<head>
  <title>CSS Colors</title>
  <style type="text/css">
    h1{
                text-align:center;
              }
              #rgb{
                color:rgb(33,123,156);
              }
              #rgba{
                color:rgba(22,134,231,0.5);
              }
              #hex{
                color:#C269B2;
              }
              #hsl{
                color:hsl(0,60%,50%);
              }
              #hsla{
                color:hsla(0,40%,80%,0.5);
              }
              #built{
                color:green;
              }
  </style>
</head>
<body>
  <h1 id="rgb">This is RGB format.</h1>
  <h1 id="rgba">This is RGBA format.</h1>
  <h1 id="hex">This is Hexadecimal format.</h1>
  <h1 id="hsl">This is HSL format.</h1>
  <h1 id="built">This is Built-in color format.</h1>
</body>
</html>
```

Deep Dive into CSS Anatomy

CSS Properties = used to control and style layout, colors, fonts, and alignment of the selector

Main Categories of Properties (continued):

- Font
  - Style font family type, size, weight (bold), italics, caps
  - "font" property is the shorthand property of:
    - font-style
    - font-variant
    - font-weight
    - font-size
    - font-family

    * all of these listed properties can be used separately, but the "font" property includes all of them into one

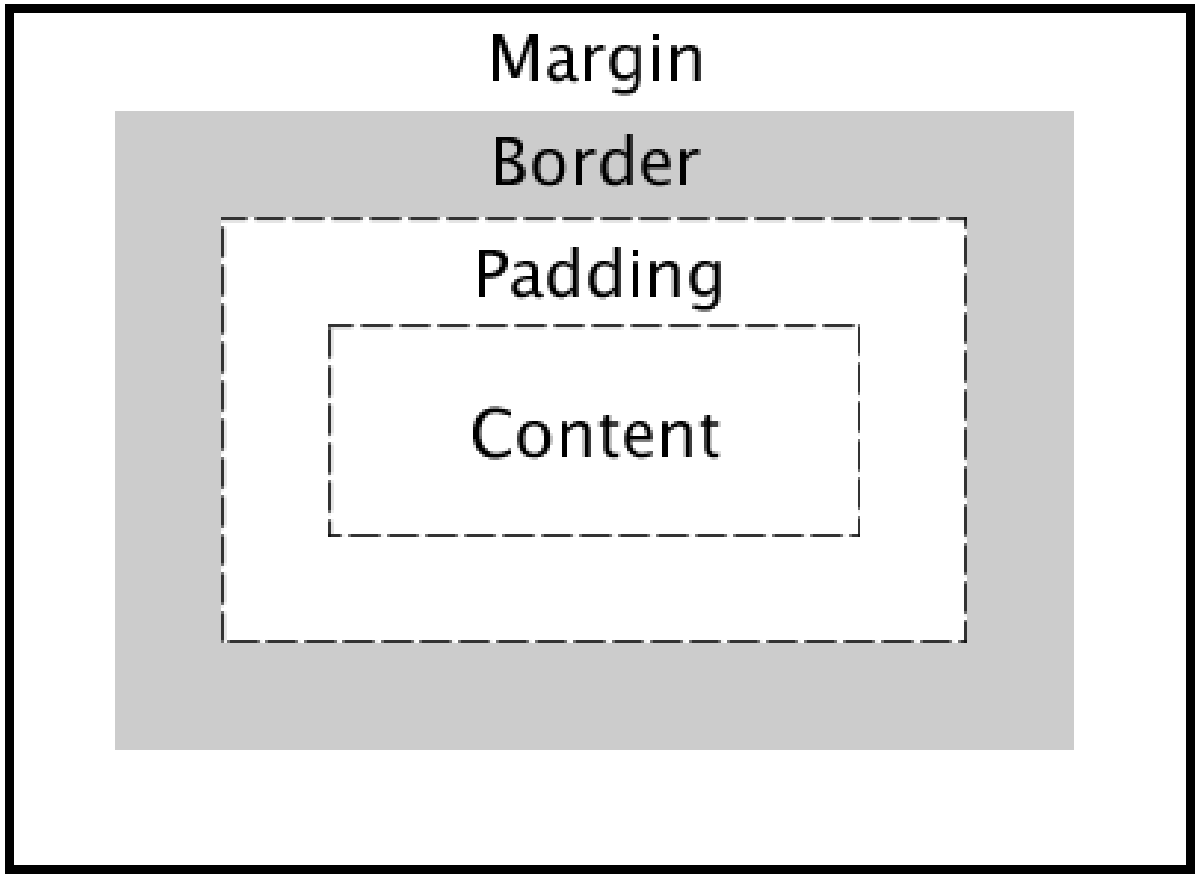
```
p.a {
  font: 15px Arial, sans-serif;
}

p.b {
  font: italic small-caps bold 12px/30px Georgia, serif;
}
```

```
p{
    font-family: Georgia;
    font-weight: bold;
    font-style: italic;
    font-size: 12pt;
}
```

Deep Dive into CSS Anatomy

CSS Box Model: a box that wraps around every HTML element.



Explanation:

- Margin = clears an area outside of the border. The margin is transparent
- Border = a border that goes around the padding and content
  - This can be styled with border properties
- Padding = clears an area around the content. The padding is transparent
- Content = content of the box, where the text and image appear

Source: U of Washington

3. CSS Fundamentals

Different Ways To Apply CSS:

- **Inline CSS =** styling is directly applied to an HTML element using the style attribute

  Example:
  ```
  <p style="color: blue;">This is a paragraph.</p>
  ```

- **Internal CSS =** CSS is written inside a <style> tag within the <head> section of an HTML document

  Example:
  ```
  <head>
    <style type = text/css>
      body {background-color: blue;}
      p { color: yellow;}
    </style>
  </head>
  ```

- **External CSS =** a separate .css file in the root of the repository linked to the HTML document (most common and recommended)

  Link:
  ```
  <head>
    <link rel="stylesheet" type="text/css" href="style.css">
  </head>
  ```

Demo: Styling the HTML w/ CSS

4. Homework

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Homework: Bio Webpage

Instructions:

- Create a simple bio webpage using HTML elements and style it with CSS
- Please include:
  - Your name (heading)
  - A short bio (paragraphs)
  - A link to your favorite website

Example:

```
<!DOCTYPE html>
<html>
<head>
<style>
div {
  background-color: lightgrey;
  width: 300px;
  border: 15px solid green;
  padding: 50px;
  margin: 20px;
}
</style>
</head>
<body>

<h2>Hannah Whang</h2>

<div>
<p> Hello! My name is Hannah Whang, and I am a sophomore majoring in
Information Science and minoring in History in the College of Arts and
Sciences. During my free time, I love watching crime movies, tv shows,
exploring new areas of Ithaca with my friends, and baking. </p>

</div>


<p> Here is a link to my favorite website: <a href =
"https://www.buzzfeed.com/"> BuzzFeed </a> </p>


</body>
</html>
```