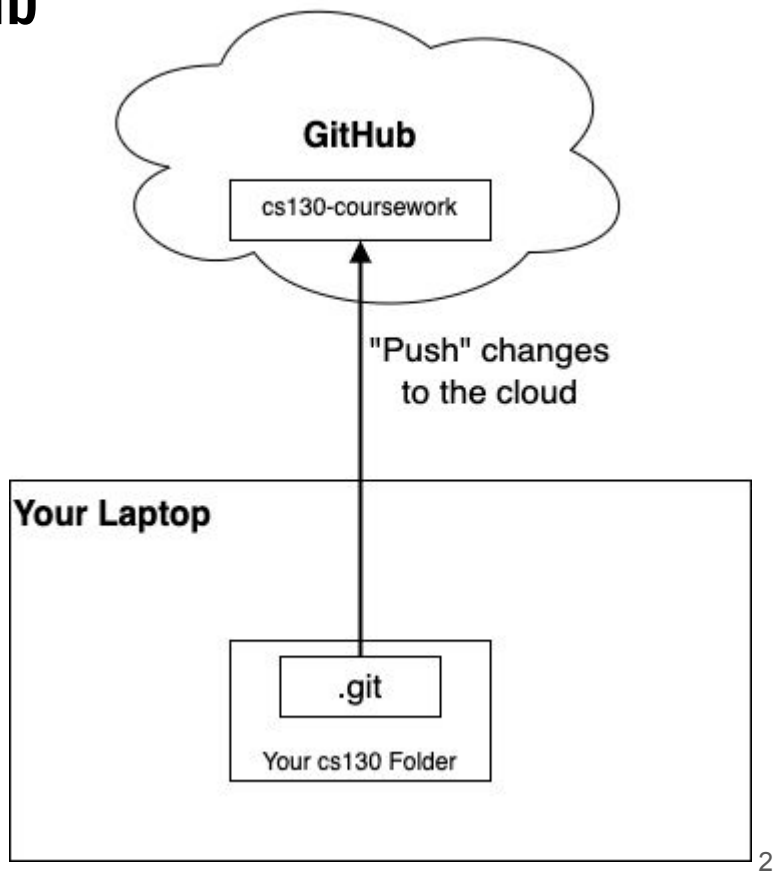# Intro to CSS & the DOM

CS 130:
Tools and Technologies of the World Wide Web
Spring, 2022

Announcements: Lab this Week: GitHub

Using GitHub, you're going to publish your files to the cloud (someone else's computer) so that other people can see your work!

GitHub

cs130-coursework

"Push" changes to the cloud

Your Laptop

.git

Your cs130 Folder

Outline

1. The DOM
2. Intro to CSS
3. Selectors
4. The box model
5. Specificity and the cascade
6. Some common properties
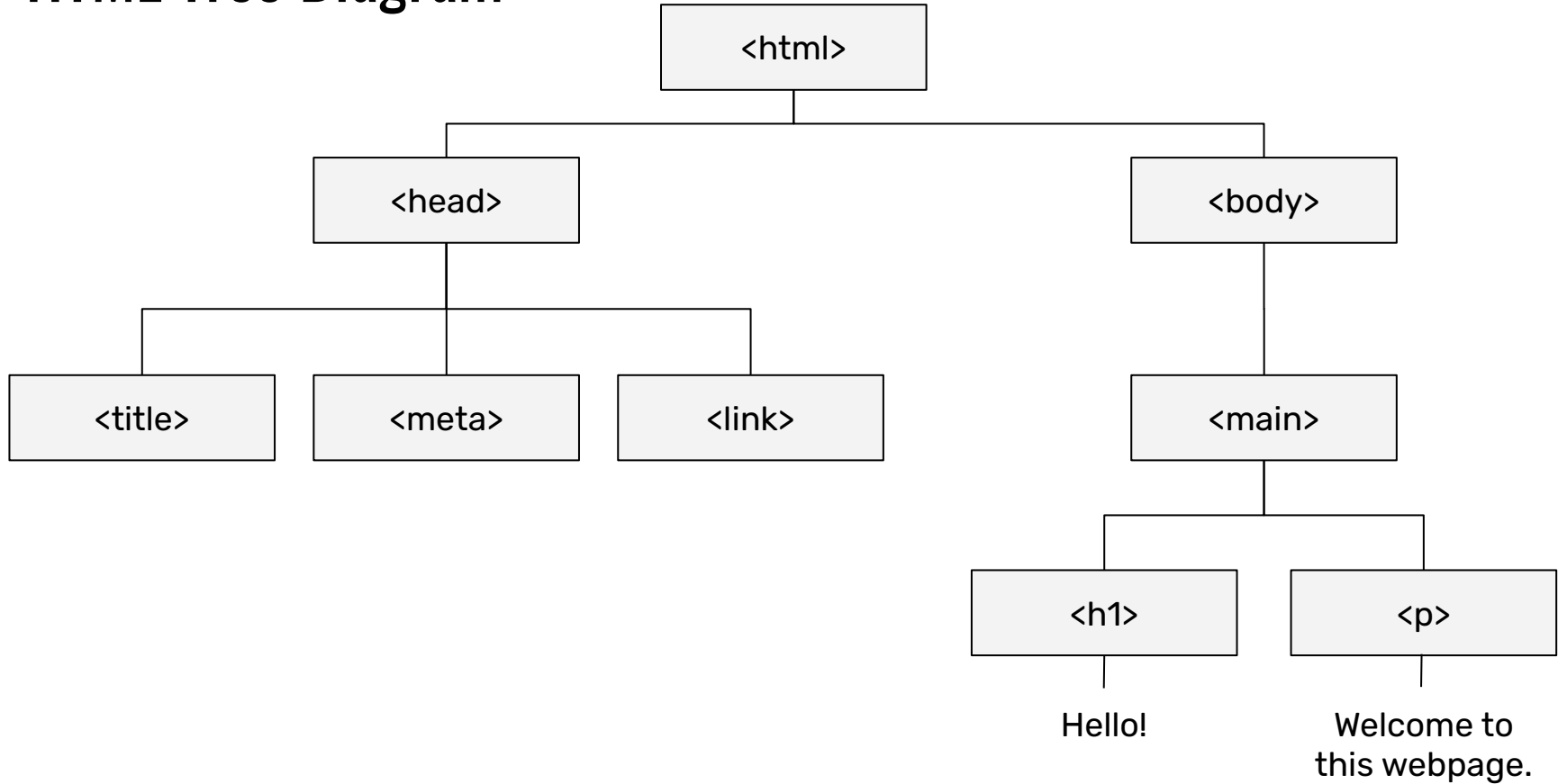
Document Object Model (DOM)

(n.) a way of representing a document, like a web page, in a way that can be understood by a human and by a computer. Typically, a DOM is created using HTML. Declarative languages like CSS are used to style it, and programming languages like Javascript allow us to change it.

Convert this [Simple HTML Page](#) to a DOM Diagram

```html
<html lang="en">
<head>
  <title>DOM Example</title>
  <meta name="author" content="EECS 130">
  <link rel="stylesheet" href="main.css">
</head>

<body>
  <main>
    <h1>Hello!</h1>
    <p>Welcome to this webpage.</p>
  </main>
</body>
</html>
```
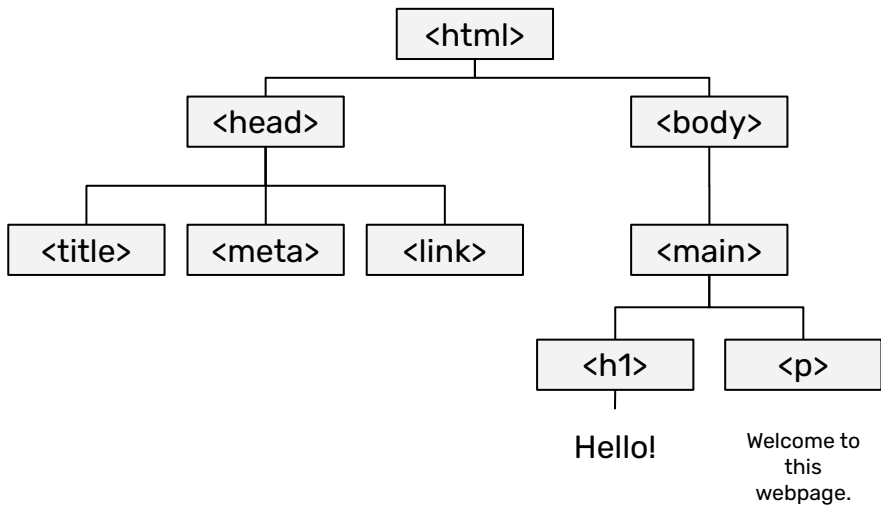
HTML Tree Diagram

DOM Schema

```
                        <html>
                 ┌─────────┴─────────┐
             <head>                <body>
        ┌──────┼──────┐              │
    <title> <meta> <link>         <main>
                                ┌────┴────┐
                              <h1>       <p>
                               │
                            Hello!   Welcome to
                                        this
                                      webpage.
```

HTML

```html
<html lang="en">
<head>
  <title>DOM Example</title>
  <meta name="author" content="EECS 130">
  <link rel="stylesheet" href="main.css">
</head>

<body>
  <main>
    <h1>Hello!</h1>
     <p>Welcome to this webpage.</p>
  </main>
</body>
</html>
```

The DOM (Document Object Model)

A way to manipulate elements and styles on a web page using CSS and JavaScript

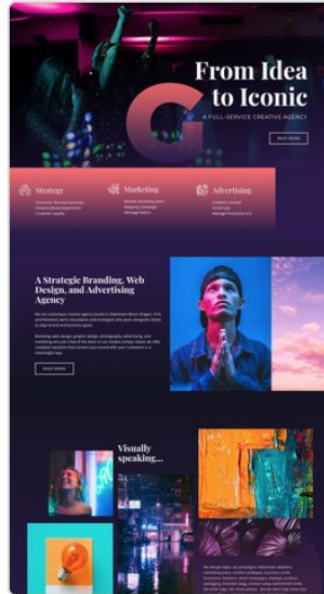Open your console and type:

> `document`

Outline

1. The DOM
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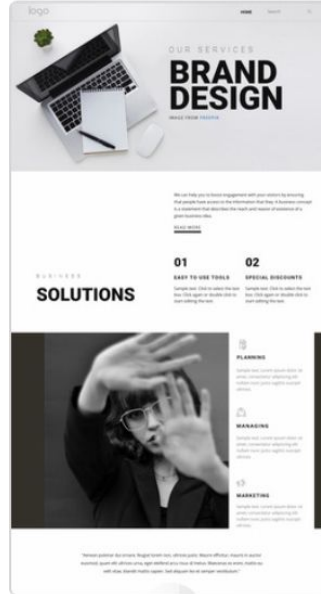6. Some common properties
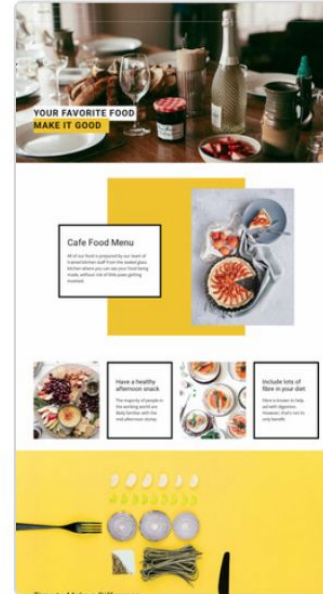
But how do you make stuff look nice?

Technology

Art & Design

Business & Law

Food & Restaurant

Architecture & Buil...

CSS Files: Style & Layout

- Controls the page style & layout

- Stylesheets can either be internal (within style tags) or external (in a separate *.css file)

- You can include as many stylesheets as you want!

How to include a stylesheet in your HTML

```html
1  <html>
2  <head>
3      <meta http-equiv="Content-Type" content="text/html;charset=ISO-8859-8">
4      <title>$5 Challenge</title>
5      <link href="style.css" rel="stylesheet" />
6  </head>
7  <body>
8      <div id="navBar">
9          <h2>Youth Radio <img src="assets/logo.png" id="logo"></h2>
10         <form id="fixedNavSearch">
11             <input type="text" name="location" placeholder="Where would you like
12             <input type="submit" value="Submit" />
13         </form>
14     </div>
15
16     <div id="map"></div>
17
18     <div class="infoBox"></div>
19
20     <div class="footer" id="socialMediaIcons">
21         <img src="assets/socialMediaIcons.png" alt="social media icons" />
22     </div>
23
```
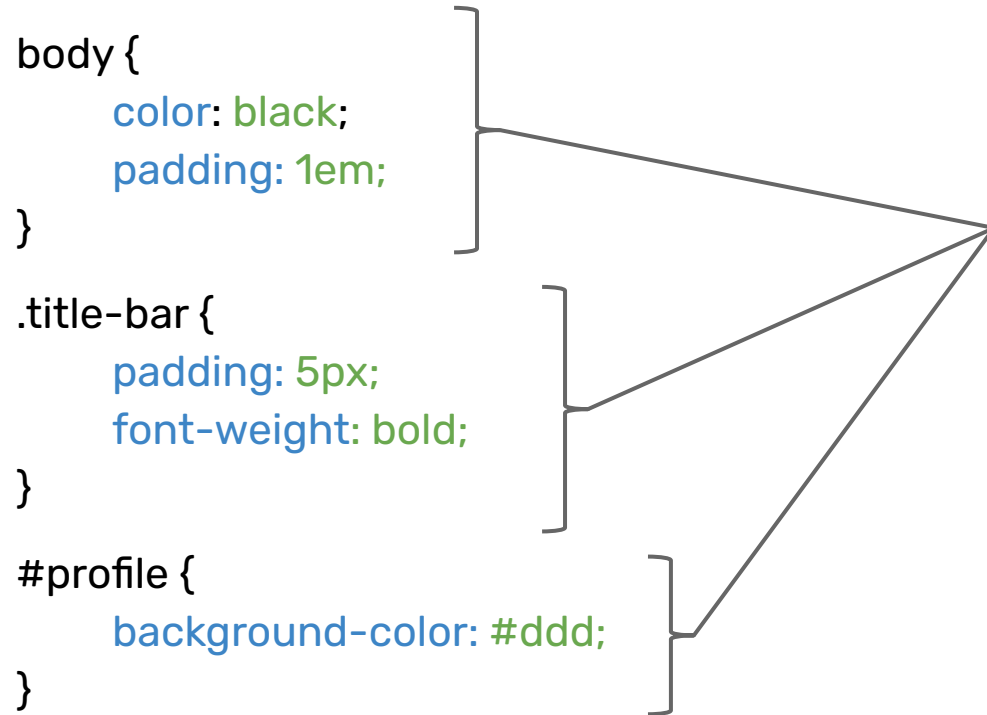
```css
2
3  body {
4      font-family: 'Montserrat', sans-serif;
5      margin: 0;
6      margin-bottom: 30px;
7      padding: 0;
8  }
9
10 h2, h3 {
11     font-weight: 400;
12     margin: 0px;
13 }
```
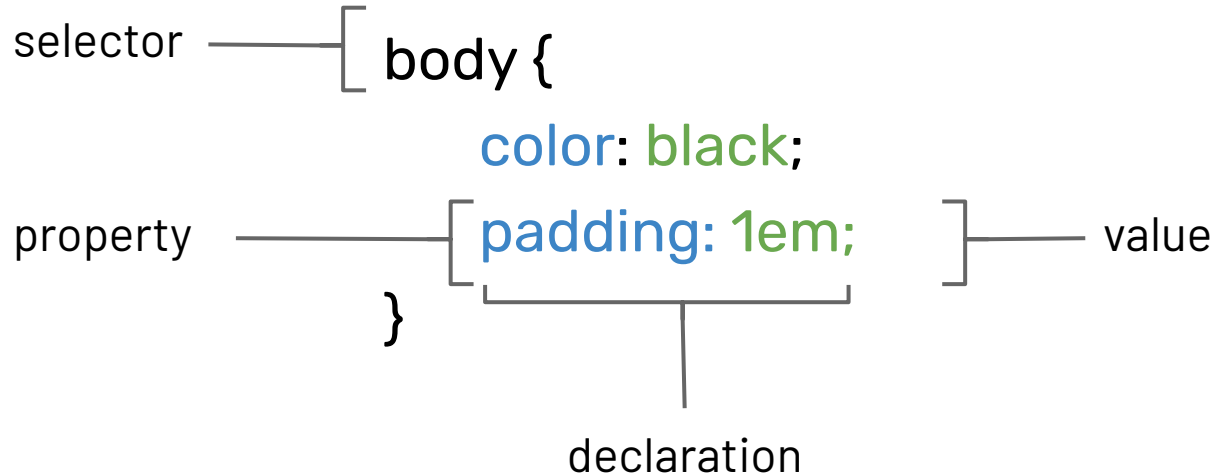
External stylesheets are stored in a separate *.css
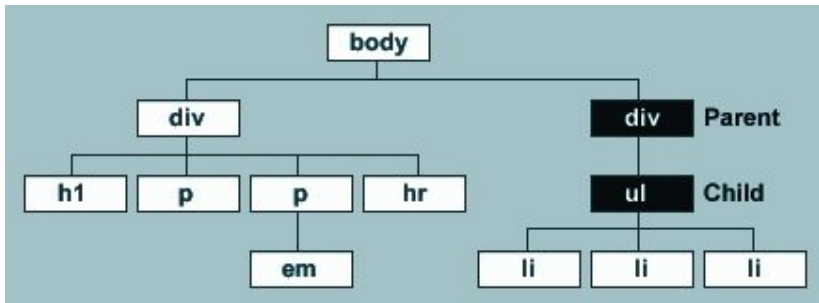
Anatomy of a Stylesheet

```css
body {
    color: black;
    padding: 1em;
}

.title-bar {
    padding: 5px;
    font-weight: bold;
}

#profile {
    background-color: #ddd;
}
```

Stylesheets are comprised of rulesets

13

Anatomy of a Ruleset

selector ⎯⎯⎯⎯ ⌐ **body {**

            color: **black**;

property ⎯⎯⎯⎯ ⌐ **padding: 1em;** ⌐ ⎯⎯ value

      }

declaration

Relationships

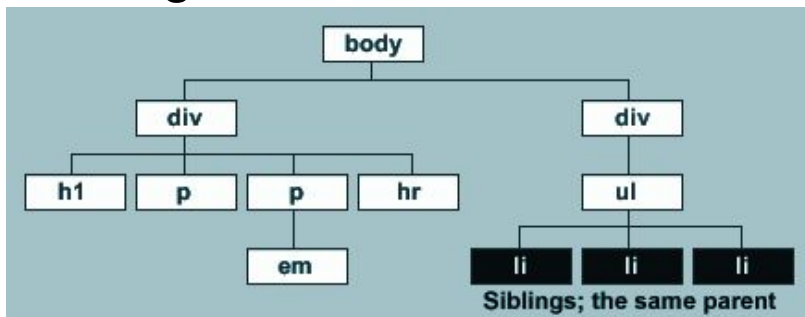## Parent & Child

Siblings


```
1  <html>
2  <head><title>Hello!</title></head>
3  <body>
4      <div>
5          <h1>Left</h1>
6          <p>hi!</p>
7          <p><em>hello</em></p>
8          <hr>
9      </div>
10     <div>Right
11         <ul>
12             <li>list item 1</li>
13             <li>list item 2</li>
14             <li>list item 3</li>
15         </ul>
16     </div>
17 </body>
18 </html>
```

Relationships

Descendants

Ancestors


```html
1   <html>
2   <head><title>Hello!</title></head>
3   <body>
4      <div>
5          <h1>Left</h1>
6          <p>hi!</p>
7          <p><em>hello</em></p>
8          <hr>
9      </div>
10     <div>Right
11         <ul>
12             <li>list item 1</li>
13             <li>list item 2</li>
14             <li>list item 3</li>
15         </ul>
16     </div>
17  </body>
18  </html>
```
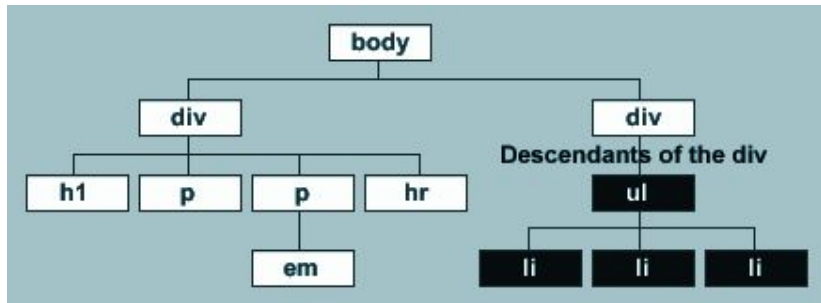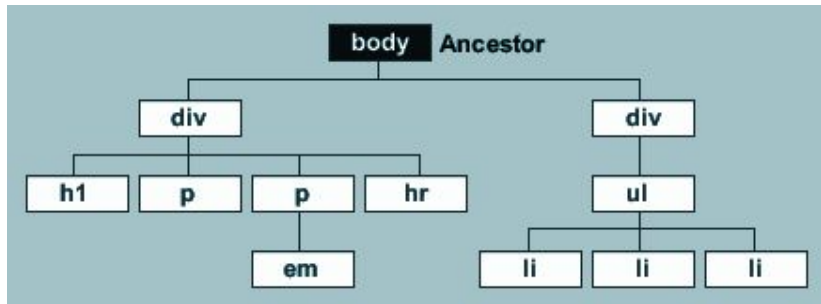
Outline

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3. **Selectors**
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Selectors: Most Important Ones

Selector	Example	Description
.class	.intro	Selects all elements with class="intro"
#id	#firstname	Selects the element with id="firstname"
*	*	Selects all elements
element	p	Selects all <p> elements

MEMORIZE
THIS SLIDE

Selectors: Also Useful

Selector	Example	Description
element, element	div, p	Selects all <div> elements and all <p> elements
element element	div p	Selects all <p> elements inside <div> elements
element > element	div > p	Selects all <p> elements where the parent is a <div> element
element + element	div + p	Selects all <p> elements that are placed immediately after <div> elements
element~element	p ~ ul	Selects every element that is preceded by a <p> element

Selectors & Cascades

```css
body {
    color: grey;
}

h1, li {
    text-transform: uppercase;
    display: inline-block;
    color: #999999;
}

.title-bar {
    padding: 5px;
    background-color: #EEEEEE;
}

#profile {
    width: 100px;
    float: left;
    margin-right: 20px;
}
```
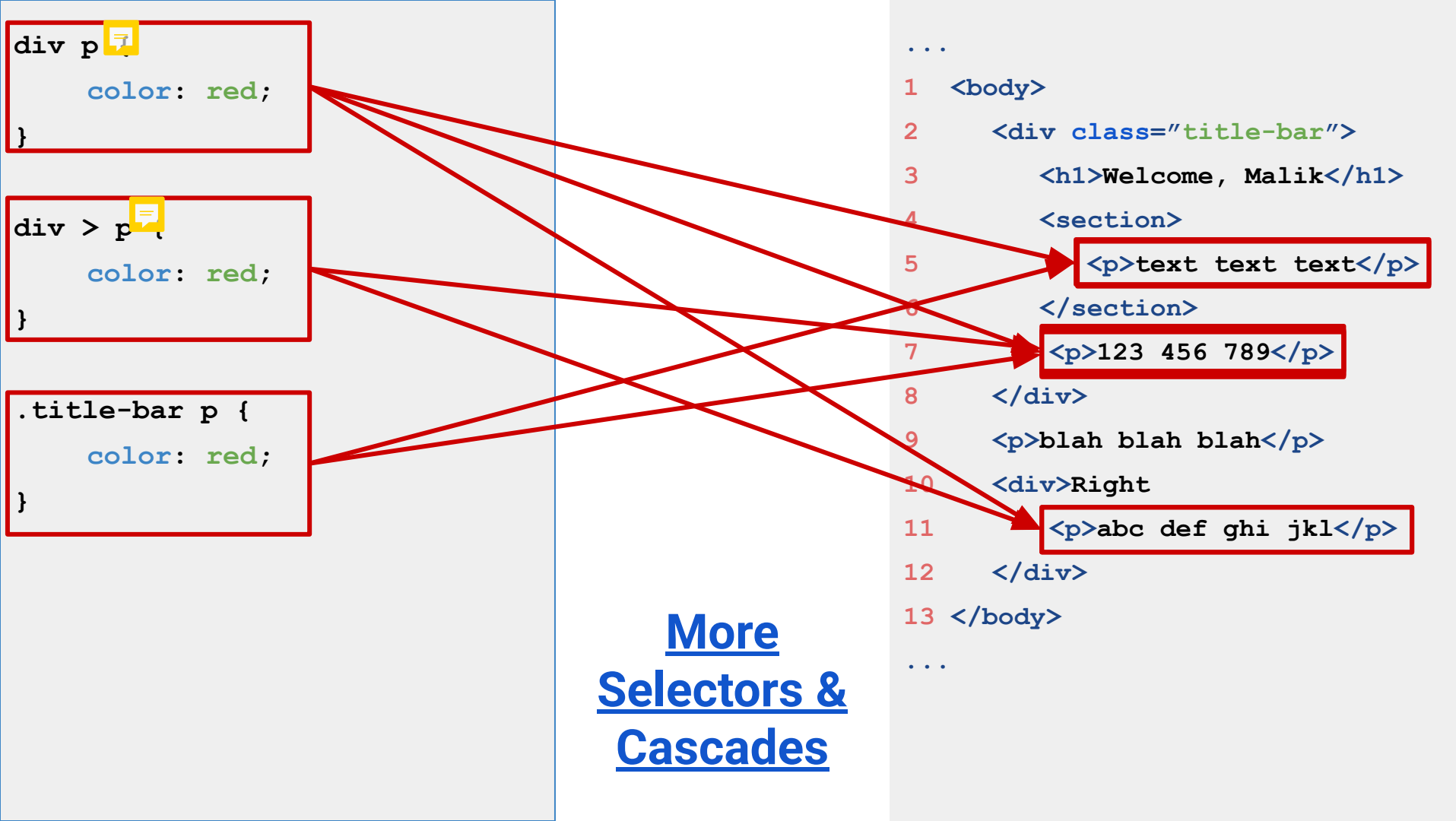
```html
...
1   <body>
2       <div class="title-bar">
3           <h1>Welcome, Malik</h1>
4           <img id="profile"
src="images/pic.png" />
5           <hr>
6       </div>
7   <div>Right
8       <ul>
9           <li>list item 1</li>
10          <li>list item 2</li>
11          <li>list item 3</li>
12      </ul>
13  </div>
14 </body>
...
```

More Selectors & Cascades

More Selector Practice

https://eecs130.github.io/spring2021/css-reference/selectors/

1. Which are the selectors?

```css
h1 {
    color: blue;
    margin-top: 1em;
}

.title-bar {
    padding: 5px;
    font-weight: bold;
}

#profile {
    background-color: #ddd;
}
```

3. Name three properties

```css
h1 {
    color: blue;
    margin-top: 1em;
}

.title-bar {
    padding: 5px;
    font-weight: bold;
}

#profile {
    background-color: #ddd;
}
```

4. What will this rule set do to the HTML?

```css
img {
  width: 200px;
}
```

```html
...
1  <body>
2    <div class="nav-bar">
3        <h1>Welcome, Malik</h1>
4        <section>
5            <p>text text text</p>
6        </section>
7        <img src="pic1.png" />
8        <span>123 456 789</span>
9    </div>
10   <img src="pic2.png" />
11   <p>blah blah blah</p>
12   <div>
13       <p>abc def ghi jkl</p>
14   </div>
...
```

5. What will these rule sets do to the HTML?

```css
body {
    text-transform: uppercase;
}
```

```css
div img {
    border: solid 2px #F00;
}
```

```
...
1  <body>
2    <div class="nav-bar">
3      <h1>Welcome, Malik</h1>
4      <section>
5          <p>text text text</p>
6      </section>
7      <img src="pic1.png" />
8      <span>123 456 789</span>
9    </div>
10   <img src="pic2.png" />
11   <p>blah blah blah</p>
12   <div>
13      <p>abc def ghi jkl</p>
14   </div>
...
```

6. What will this rule set do to the HTML?

```css
* {
  color: red;
  text-transform: uppercase;
}
```

```html
...
1   <body>
2     <div class="nav-bar">
3       <h1>Welcome, Malik</h1>
4       <section>
5         <p>text text text</p>
6       </section>
7       <img src="pic1.png" />
8       <span>123 456 789</span>
9     </div>
10    <img src="pic2.png" />
11    <p>blah blah blah</p>
12    <div>
13      <p>abc def ghi jkl</p>
14    </div>
15    <button>Click me</button>
```

7. What will this rule set do to the HTML?

```css
h1, span {
    color: red;
    text-transform: uppercase;
}
```

```html
...
1  <body>
2    <div class="nav-bar">
3        <h1>Welcome, Malik</h1>
4        <section>
5            <p>text text text</p>
6        </section>
7        <img src="pic1.png" />
8        <span>123 456 789</span>
9    </div>
10   <img src="pic2.png" />
11   <p>blah blah blah</p>
12   <div>
13       <p>abc def ghi jkl</p>
14   </div>
15   <button>Click me</button>
```
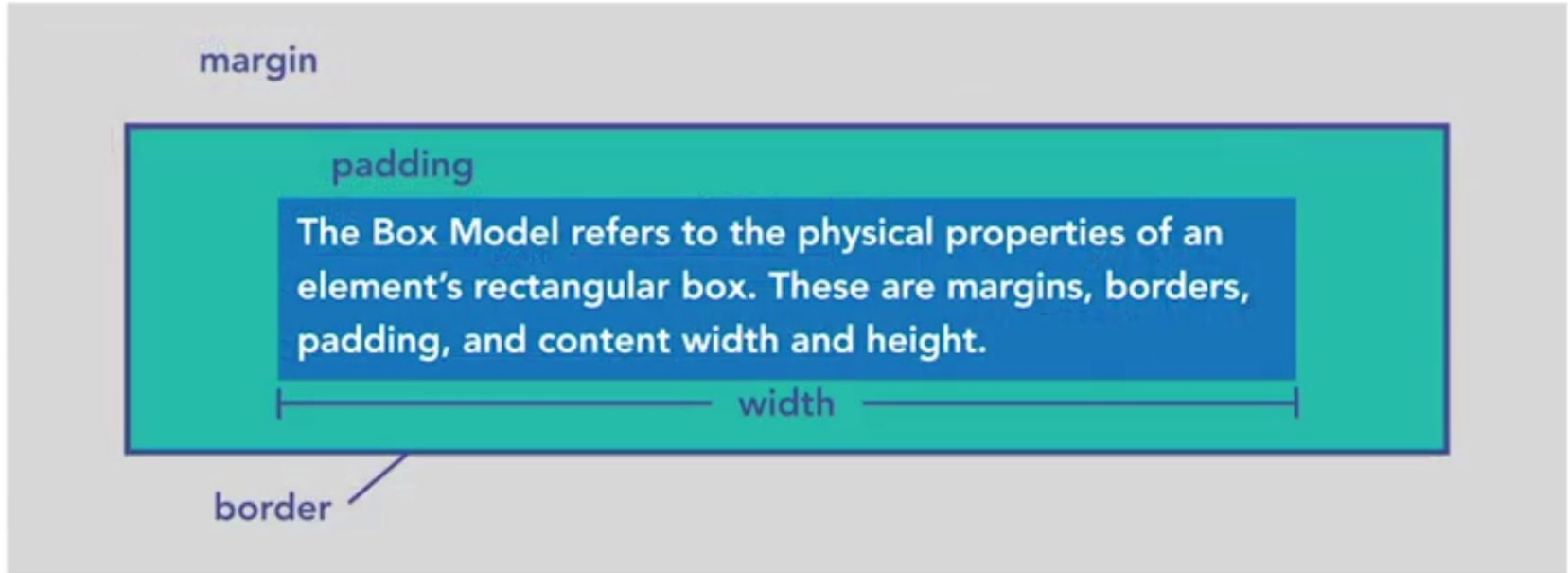
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The Box Model

margin

padding

The Box Model refers to the physical properties of an element's rectangular box. These are margins, borders, padding, and content width and height.

width

border

The Box Model

1. margin
2. padding
3. border
4. width
5. box-sizing (border-box v. content box)
6. display (block, inline-block, inline, grid, none, etc.)

Block-Level Elements

<address> <article> <aside> <blockquote> <canvas> <dd> <div> <dl> <dt> <fieldset> <figcaption> <figure> <footer> <form> <h1>-<h6> <header> <hr> <main> <nav> <noscript> <p> <pre> <section> <table> <tfoot> <video>

Inline Elements

<a> <abbr> <acronym> <b> <bdo> <big>
 <button> <cite>
<code> <dfn> <em> <i> <img> <input> <kbd> <label> <map>
<object> <output> <q> <samp> <script> <select> <small> <span>
<strong> <sub> <sup> <textarea> <time> <tt> <var>

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Specificity and the Cascade

- The "cascade" refers to the way that CSS styles are applied to HTML elements. Styles applied to elements cascade down to their descendants, unless they are overridden.

- Specificity is the means by which browsers decide which CSS property values are the most relevant to an element and, therefore, will be applied.

- You can think of the cascade as a layering of styling rules, in order of specificity.

Specificity and the Cascade

- More specific style declarations take precedence over more "distant" ones:

- If one rule is more specific than another one, the more specific rule wins.

- If two rules share the same specificity, then then the more "recent" rule takes precedence.

- Note: Some properties are not inherited (because it wouldn't make sense if they did). A table of properties that are / are not inherited can be found at the [W3C specification site](#).

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Common CSS Properties and Techniques

1. Fonts
2. Color
3. Box Model (border, margin, padding, width, height)
4. pseudo-classes (:hover, :active, :visited, etc.) 💬

Activity

[CSS Practice](#)