Lab 1

TA Intros!

Logistics

- HW 1 due in exactly one week (Friday Sept 22 at 11:59pm)
- Homework walkthroughs will happen at the end of lab on the due date of each homework
- Please make sure you are on the course Ed and Gradescope!

HTML Review

What is HTML?

HTML (HyperText Markup Language) is the most basic building block of the Web.

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <link rel="icon" href="%PUBLIC_URL%/favicon.ico" />
    <title>Website title here</title>
</head>
<body>
    <div>
        <h1>Hello User</h1>
        <img src="/assets/images/robot.png" alt="robot"/>
        <p>...</p>
    </div>
</body>
</html>
```

What are HTML elements?

- HTML tags: keywords that define how to display and format content
- Give structure and meaning to content
- Elements consist of opening, closing tags with content
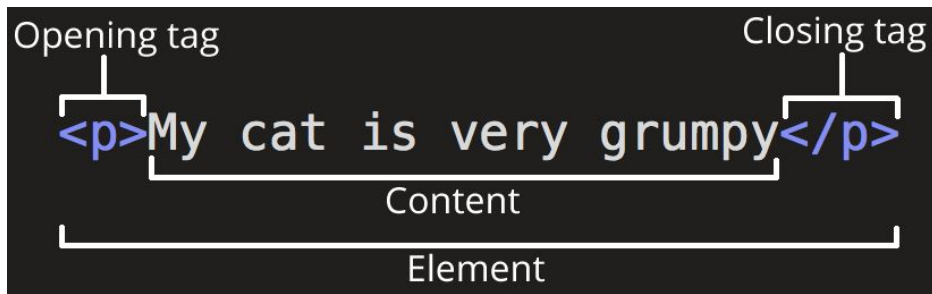
What are HTML elements?

- Different tags display content differently!

```
<h1> This is a header.</h1>
<p> This is a paragraph. </p>
```
*everything highlighted is an HTML tag!

Output

This is a header.

This is a paragraph.

Text elements in HTML

```
<!DOCTYPE html>

<html>

    <head> ... </head>

    <body>

            <h1> Header 1 </h1>

            <h2> Header 2 </h2>

            <h3> Header 3 </h3>

            <p> I'm a paragraph! </p>

    </body>

</html>
```

Output

Header 1

Header 2

Header 3

I'm a paragraph!

Text Formatting

- Bold: `<b> </b>` OR `<strong> </strong>`
- Italics: `<i> </i>` OR `<em> </em>`
- Underline: `<u> </u>`

```
<!DOCTYPE html>
<html>
<head> ... </head>
<body>
    <p>I am <strong>bold!</strong></p>
</body>
</html>
```

Output

I am **bold!**

Note the nested structure!

Attributes

- HTML tags can have attributes, which are parameters that you can into an element
- Attributes adjust the behavior or display of an element

Images

The image tag has a <u>src</u> attribute that specifies the path to the image.

```html
<!DOCTYPE html>
<html>
<head> ... </head>
<body>
      <div>
        <h1> Welcome to Cubstart! </h1>
        <img src="https://calhacks-sierra.amazonaws.com/assets/branding/cubstart.png"
        alt="image"/>
        <img src="/assets/cubstart_logo.png"  alt="image"/>
      </div>
</body>
</html>
```

Specify **alternative** to display text if the image does not get loaded

Links

```
<!DOCTYPE html>

<html>

<head> ... </head>

<body>

    <div>

        <h1> Welcome to Cubstart! </h1>

        <p> Cubstart is Cal Hacks' course for beginner hackers.</p>

        <img src="https://calhacks-sierra.s3-us-west-2.amazonaws.com/assets/branding/cubstart.png">

        <a href="https://calhacks.io/"> Learn more about Cal Hacks </a>

    </div>

</body>

</html>
```

Result: <u>Learn more about Cal Hacks</u>

Unordered Lists

```
<!DOCTYPE html>
<html>
<head> ... </head>
<body>
    <div>
        <h1> Welcome to Cubstart! </h1>
        <p> These are our two tracks: </p>
        <ul>
            <li> iOS Development </li>
            <li> Web Development </li>
        </ul>
        <img
src="https://calhacks-sierra.s3-us-west-2.amazona
ing/cubstart.png">
    </div>
</body>
</html>
```

Welcome to Cubstart!

These are our two tracks:

- iOS Development
- Web Development

Ordered Lists

```
<!DOCTYPE html>
<html>
<head> ... </head>
<body>
    <div>
        <h1> Welcome to Cubstart! </h1>
        <p> Here's today's agenda: </p>
        <ol>
            <li> Attendance </li>
            <li> Presentation </li>
            <li> Questions </li>
        </ol>
        <img src="https://calhacks-sierra.s3-u
    </div>
</body>
```

Welcome to Cubstart!

Here's today's agenda:

1. Attendance
2. Presentation
3. Questions

Buttons

```html
<div>
      <h1> Welcome to Cubstart! </h1>
      <p> Cubstart is Cal Hacks' course for beginner hackers. </p>
      <img src="https://calhacks-sierra.s3-us-west-2.amazonaws.com/assets/branding/cubstart.png">

      <button onclick="learnMore"> Learn more about Cal Hacks </button>

</div>
```

Result: Learn more about Cal Hacks

Forms

Sign up here!

name   Submit

```
<form>
    <p> Sign up here! </p>
    <input type="text" placeholder="name">
    <button type="submit">Submit</button>
</form>
```

Form Types:

```
<label for="color">Color:</label>
<input type="color" />
```

Other types:

- password
- text
- date
- radio
- checkbox

Text Input: Hello World

Password Input: ••••••••

Color:

DOB: 09/12/2023

Radio: ○ Male ● Female

Checkbox ✔

What is the <div> tag?

Content Division
- **<*div*>** acts a container for your content
- No styling or effect until you add CSS
- Sorting content/information into groups with classes & ids
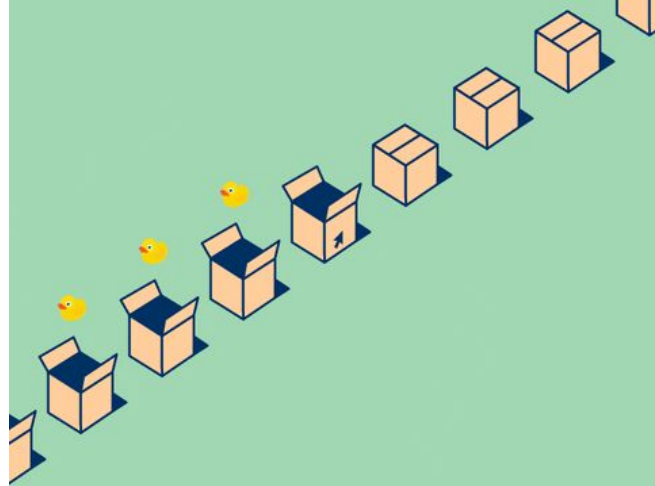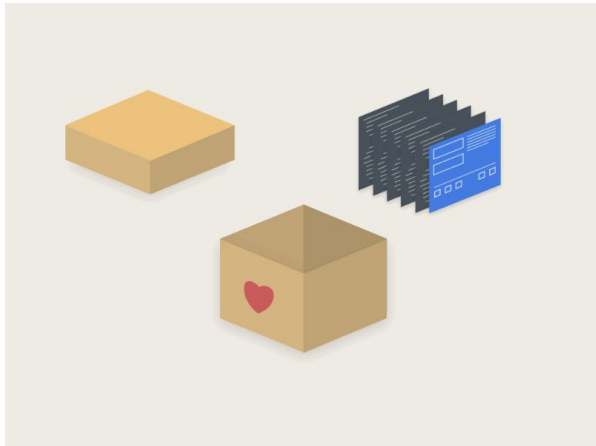
Intro to CSS!

What is CSS?

- CSS = Cascading Style Sheets
- Used to format websites
- Defines the design rules for your website!

Cubstart

Cubstart is Cal Hacks' course for beginner hackers.

Cal Hacks

The world's largest collegiate hackathon.

→

Cubstart

Cubstart is Cal Hacks' course for beginner hackers.

Cal Hacks

The world's largest collegiate hackathon.
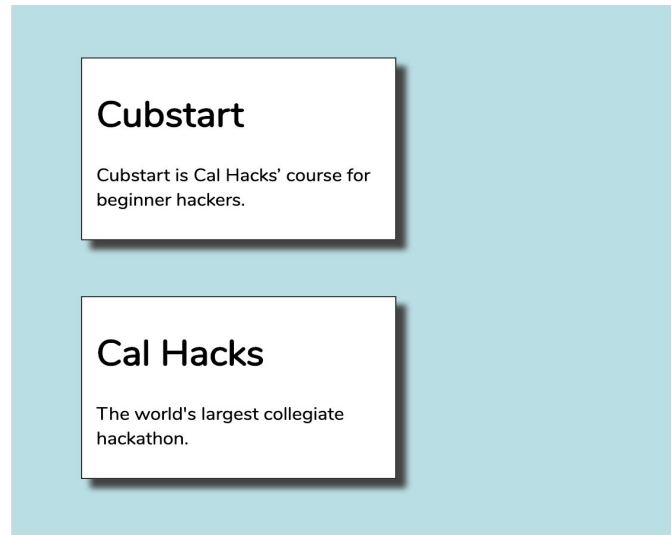
How to Link Your CSS File to HTML

```
...
<head>
    <link rel="stylesheet" href="styles.css" />
</head>
...
```

Relative File Paths

Keep in mind that the path is always relative to the file making the reference

`href="styles.css"` -> The "styles.css" file is located in the same folder as the current page
`href="styles/styles.css"` -> The file is located in the styles folder in the current folder
`href="/styles/styles.css"` -> The file is located in the styles folder at the root of the current web
`href="../styles.css"` -> The file is located in the folder one level up from the current folder

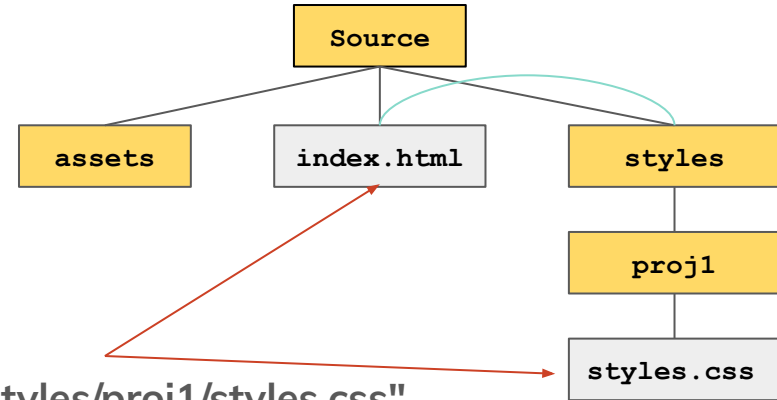Suggestion: use Visual Studio or Atom, it will make it easier to navigate

Diagrams:


```
          Source
   ┌────────┼────────┐
 assets  index.html  styles.css
```
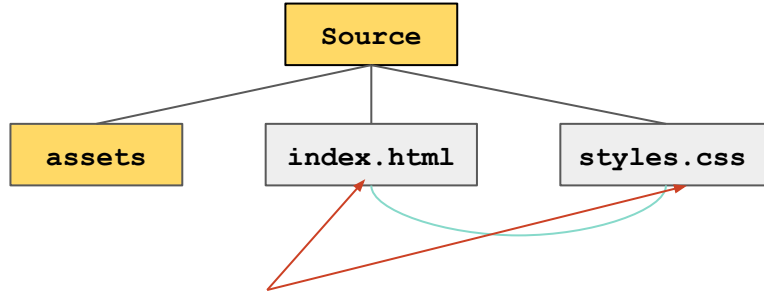
Path: **href="styles.css" OR href="./styles.css"**

./ refers to the **current** directory, which is "Source" in this case

```
          Source
   ┌────────┼────────┐
 assets  index.html  styles
                         │
                       proj1
                         │
                     styles.css
```

Path: **href="/styles/proj1/styles.css"**

The file is located in the styles folder at the **root** of the current web

Diagrams:
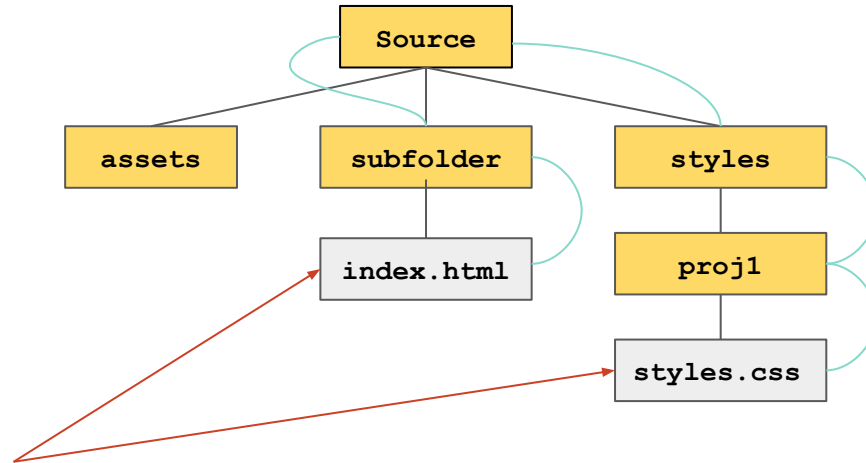
Path: **href="../styles/proj1/styles.css"**

../ moves **one level up** from the **current** directory (subfolder) to the **parent** directory (Source)

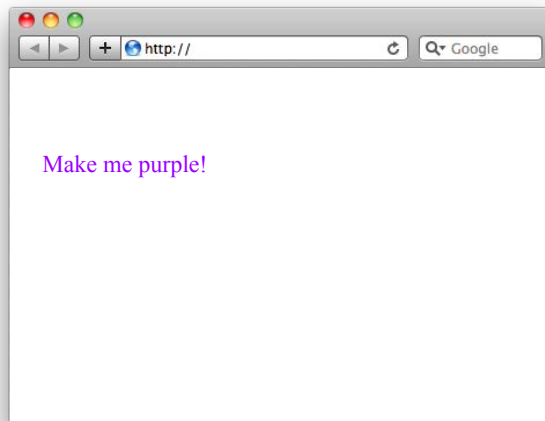# Selecting by Tag

To select or "find" the HTML elements you want to style you can call directly using HTML tags (i.e. p, h1, h2, etc.)

HTML file:

```
<p>
     Make me purple!
</p>
```

CSS file:

```
p {
     color: rgb(128,0,128);
}
```

Make me purple!

Selecting by Class

HTML file:

```
<p class="scary"> This is a red paragraph.  </p>

<p> I'm not red!  </p>
```

What if we only want one of an element to have a style?

- Add a "**class**" attribute
- class="*name*" → In CSS, use "**.name**" to style

CSS file:

```
.scary {

    color: red;

}
```

This is a red paragraph.

I'm not red!
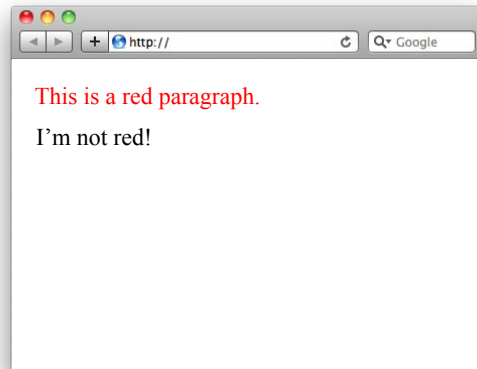
Selecting by ID

Add an "**id**" attribute

- `id="name"` → In CSS, use "**#name**" to select
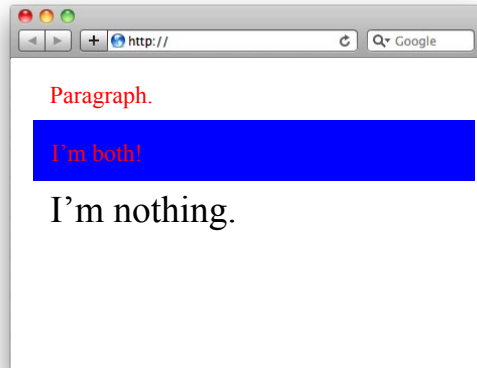- They are unique and are only used once

CSS file:

HTML file:

```
<p class="scary"> Paragraph. </p>
<p id="ocean" class="scary"> I'm both! </p>
<h1> I'm nothing. </h1>
```

```
#ocean {

        background-color: blue;

}

.scary  {

        color: red;

}
```

CSS Basic Properties

Color Values

`p { color: value; }`

- CSS has default colors by name (i.e. `red`, `blue`, `green`, etc.)
  - Only certain colors work; Doesn't give you access to all possibilities.
- RGB = Three numbers between 0 and 255
  - All colors are combinations of red, green, blue
  - Specifies amount of each base color
  - `rgb(255,0,0)`, `rgb(210,105,30,.5)`
- Hex = 6 digit combo of letters and numbers with "`#`"
  - Essentially a shorter representation of RGB
  - `#ff0000`, `#0effe3`, `#000000`
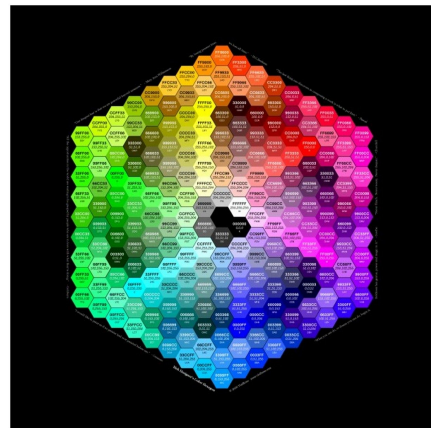
Color Properties

- Changing text color using:
  - **color**
- Changing background color of element using:
  - **background-color**

```
p {
    color: red;
    background-color: #FFA500;
    border-style: solid;
    border-color: blue;
}
```
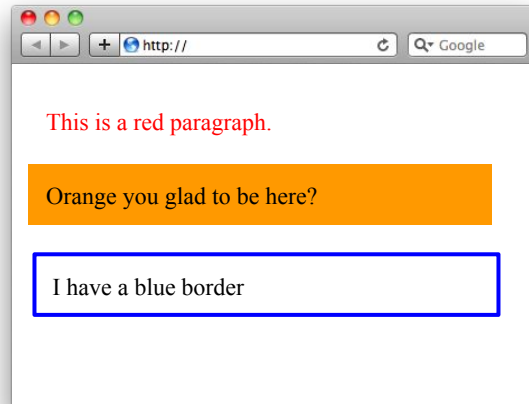
Size Properties
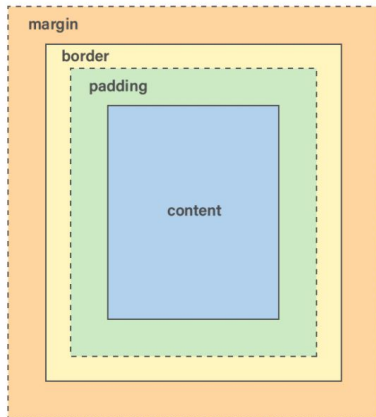
- Dimensions
  - height
  - width
  - max-height, etc.
- Spacing
  - margin
  - padding
  - border

- Units!
  - px: 1 pixel, dependent on resolution of user's screen
  - vw/vh: 1% of window's width/height
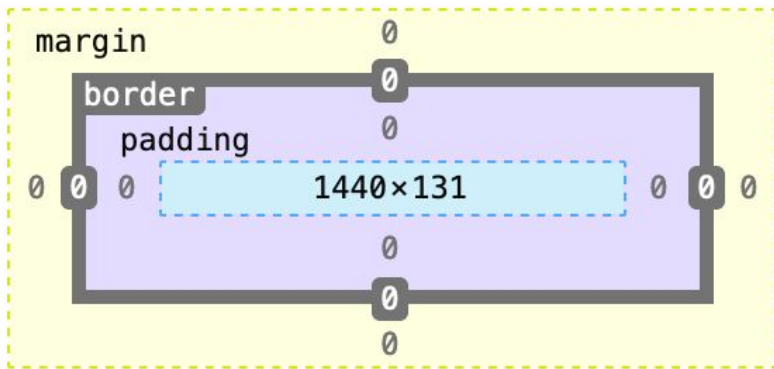 - em: 1x font-size of element
  - rem: 1x font-size of root element

margin
border
padding
content

Box Model

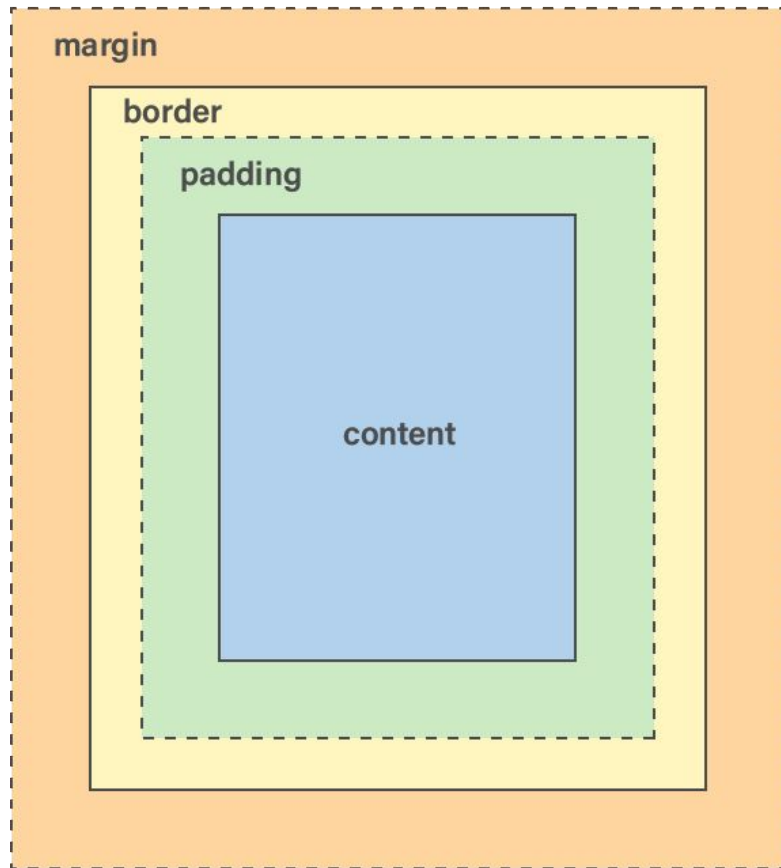This is how CSS thinks about spacing

- `margin`
- `border`
- `padding`

You can view this yourself:

- Go to calhacks.io
- Right-click and select "Inspect Element"
- It should appear on the bottom right of your screen

Box Model

margin
border
padding
1440×131
0 0 0   0   0 0 0
0
0
0
0

box model:

margin

border

padding

content

content
this area contains the "content" of the element,
such as text and images

padding
space around the content area and within
the border box

border
surrounds the content and any padding

margin
outermost layer that controls the spacing between
other elements

Border Properties:

border: 2px solid orange; ⟶

size style color
(order does NOT matter)

border-radius: 10px; ⟶

Other border styles allowed: `dotted`, `dashed`, `double etc.`

CSS Text-Align Property

The `text-align` property specifies the horizontal alignment of text in an element.

`text-align`: `left`;

`text-align`: `center`;

`text-align`: `right`;

Hello World

Hello World

Hello World

Font Properties

- **font-size**
  - Size of text
- **font-weight:**
  - regular, medium, bold, extra bold, etc.

- **font-family**
  - Specifies a font to use, and a default backup if unavailable

```
p {
    font-size: 20px;
    font-family: "Roboto", sans-serif;
}
```

Demo Time!

Lab Exercise: (work in groups!)

Build a layout where you have:

- 3 HTML elements (image, header, hyperlink)
- They all are centered
- Add margin
- You may also add some border style

Use the box-shadow property to add a shadow to your image!

```
box-shadow: 10px 10px 5px 0px rgba(0, 0, 0, 0.72);
```

/* offset-x | offset-y | blur-radius | spread-radius | color */

Pumpkin

Like

Link

Secret word:

https://forms.gle/VZZYR7R9nCQySgAP9