Week 1
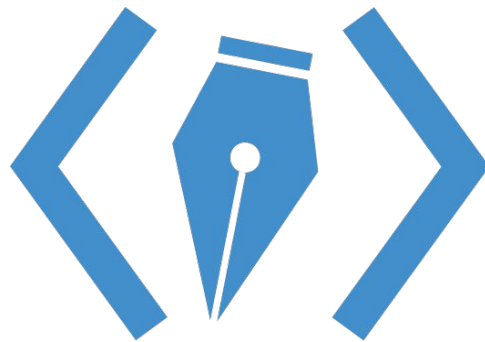
The Structure of Websites

Announcements

- If you haven't already:
    - create your account on **WDD Portal (wdd.io)** by tonight
    - join this class on **Piazza**
    - enroll in CS 198 on **CalCentral**
- Homework 1 will be announced on Piazza, due **next Tuesday, 7:00 PM**
- Post your question on **wdd.io/queue** if you're shy to ask
- Please download a text editor (**Visual Studio Code**) and **Google Chrome** for this class
- If you're DSP, please let us know so we can accomodate

Creative tools

Web Browser
Chrome
Safari
Firefox
Opera
Edge

Code Editor
Visual Studio Code
Atom
Brackets
Sublime

Prototyping
Figma
Adobe XD
Sketch
Illustrator

Structure of Websites

Structure of a Single Webpage

Structure of Content in the Webpage

Basic HTML tags

File Paths

Structure of Websites

Structure of a Single Webpage

Structure of Content in the Webpage
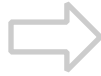
Basic HTML tags

File Paths

What is a website?

A **website** is traditionally a set of web pages served on a single domain

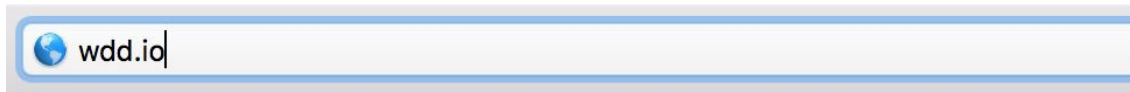A **web page** is a document, usually written in HTML

A **domain** is an address (wdd.io) that represents a server where the files are located

"Fire station" ⇨

2680 Shattuck Ave, Berkeley, CA 94704

Look up the address

wdd.io ⟹ 207.38.86.245

Look up the address

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0
Transitional//EN""http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en" lang="en">
<head>
    <title>Web Design DeCal</title>
    <meta name="description" content="A 2 unit course in UC Berkeley for anyone who wants to create a
beautiful website." />
    <meta property="og:title" content="Web Design DeCal" />
    <meta property="og:url" content="http://www.wdd.io/" />
    <meta property="og:image" content="http://www.wdd.io/static/thumbnails/logo.png" />
    <meta property="og:description" content="A 2 unit course in UC Berkeley for anyone who wants to
create a beautiful website." />
    <meta property="og:site_name" content="Web Design DeCal" />
    <meta name="twitter:title" content="Web Design DeCal">
    <meta name="twitter:description" content="A 2 unit course in UC Berkeley for anyone who wants to
create a beautiful website.">
    <meta name="twitter:image" content="http://www.wdd.io/static/thumbnails/logo.png">
    <link href='http://fonts.googleapis.com/css?family=Lato:300,400,700' rel='stylesheet'
type='text/css'>
    <link rel="stylesheet" type="text/css" href="/static/css/promotional.css" />
    <link rel="shortcut icon" href="/static/icons/favicon.ico" />
    <script type="text/javascript" src="/static/js/vendor/jquery-1.8.3.min.js" charset="utf-8"></script>
    <script type="text/javascript" src="/static/js/vendor/jquery-ui-1.9.2.min.js"
charset="utf-8"></script>
```
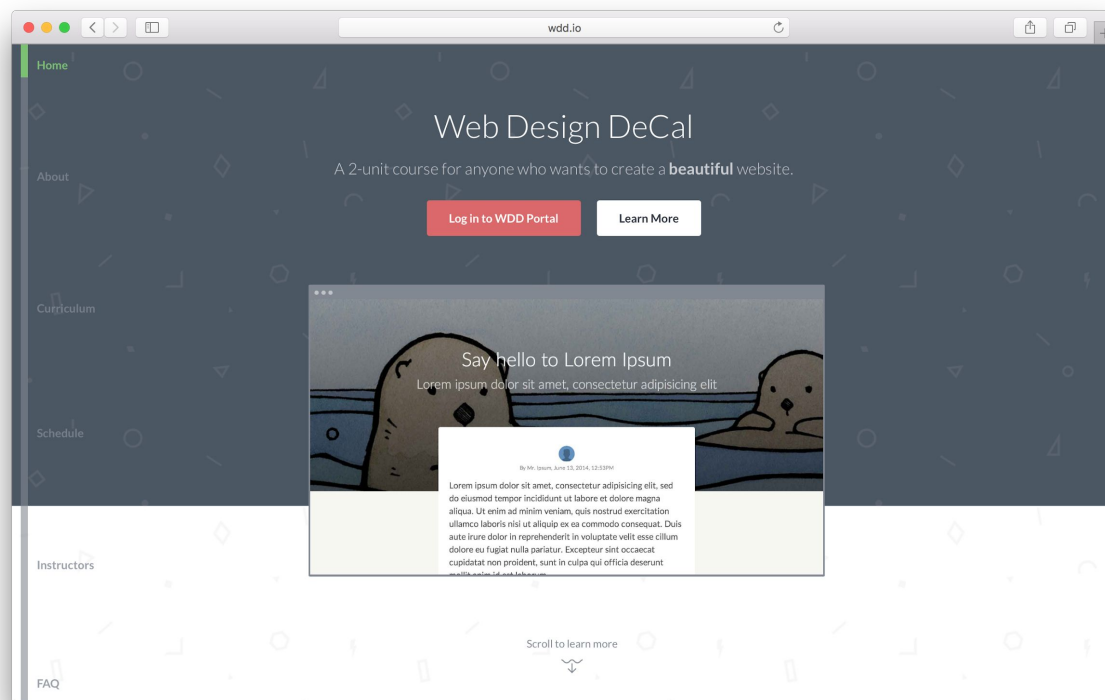
Fetch the file

Render code on canvas

Two ends of a website (*roughly speaking*)

Front end

What users can see &

what happens in your web browser

e.g. text, images, buttons

Back end

What users can't see &

beyond your web browser

e.g. databases

What websites are made of

HTML

Structure

CSS

Design

JavaScript

Function

HTML provides the structure of the page

HTML files defines the content on the page, like text, links, and images

HTML = Hypertext Markup Language

```
<div id="nav" class="nav-active-cover">
    <div id="nav-progress"></div>
    <div id="nav-spine"></div>
    <div id="nav-content">
        <div id="nav-item-cover" class="nav-item nav-item-active">Home</div>
        <div id="nav-item-about" class="nav-item">About</div>
        <div id="nav-item-curriculum" class="nav-item">Curriculum</div>
        <div id="nav-item-schedule" class="nav-item">Schedule</div>
        <div id="nav-item-instructor" class="nav-item">Instructors</div>
        <div id="nav-item-faq" class="nav-item">FAQ</div>
    </div>
    <div class="clear"></div>
</div>
<div id="guide">
    <div id="guide-caption">Scroll to learn more</div>
    <div id="guide-icon"><img class="img-scaled" src="/static/icons/arrow_down.svg"
/></div>
</div>
```

CSS provides the **design** of the page

CSS files define rules for the appearance of content

CSS = Cascading Stylesheets

```css
body {
    margin: 0;
    font-family: 'Lato', sans-serif;
    background: #f7f5f2;
    -webkit-font-smoothing: antialiased;
}

a {
    color: inherit;
    text-decoration: none;
}

.img-scaled {
    width: 100%;
}

.img-scaled-wh {
    width: 100%;
    height: 100%;
    object-fit: cover;
}

.clear {
    clear: both;
```

JavaScript provides the **function** of the page

Examples: dropdown menus, tabs, anything where something on the webpage reacts to human interaction

```javascript
function resize_dom(window_height) {
    $('.schedule-item')
        .css('padding-top', (($(window).height() - window_height) / 2) + 'px');
    $('.schedule-item:nth-child(12)')
        .css('padding-bottom', (($(window).height() - window_height) / 2) + 'px');
    $('#apply-header').css('height', $(window).height() - 180 + 'px');

    setTimeout(function(){
        scheduleOffsetDict = {};
        $('.schedule-item').each(function(i){
            scheduleOffsetDict[$(this).position().top - 120] = i;
        });
    }, 100);
}

function set_cover() {
    var offsetY = $(window).height() * 0.7 - 340;
    $('.window-container').css('top', offsetY);
}

$(document).ready(function(){

    set_cover();
```

JavaScript example from wdd.io

Name	Date	Type	Size	Tags
censustracts.html	2/4/2020 1:15 PM	Chrome HTML Do...	11 KB	
conclusion.html	2/4/2020 1:15 PM	Chrome HTML Do...	4 KB	
evacuation.html	2/4/2020 1:15 PM	Chrome HTML Do...	4 KB	
housing.html	2/4/2020 1:15 PM	Chrome HTML Do...	12 KB	
index.html	2/4/2020 1:15 PM	Chrome HTML Do...	4 KB	
style.css	2/4/2020 1:15 PM	CSS File	3 KB	
markdown-to-html.js	2/4/2020 1:15 PM	JS File	5 KB	
picoModal-3.0.0.min.js	2/4/2020 1:15 PM	JS File	6 KB	
brooklyn1.png	2/4/2020 1:15 PM	PNG File	39 KB	
brooklyn2.png	2/4/2020 1:15 PM	PNG File	37 KB	
brooklyn3.png	2/4/2020 1:15 PM	PNG File	22 KB	
brooklyn4.png	2/4/2020 1:15 PM	PNG File	22 KB	

Example website folder - the html files are each webpage, the css file contains the stylesheet, the js files contain JavaScript, and the image files also need to be present to be displayed on the pages

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What websites are made of

HTML

Structure

CSS

Design

JavaScript

Function

An HTML file

- A plain text file with the file extension .html
  - **index.html** is the starting point / homepage of a website
- Edit with text editors (Sublime, Atom, etc)
- Open in web browser to see result!
- A collection of **tags** related to each other in **parent-child relationships**

Tags

`<strong>`text will be bold`</strong>`

Opening tag

Closing tag (always has slash!)

Tags are the building blocks of HTML
And they *usually* come in pairs

Anatomy of an HTML Document

```html
<!doctype html>
<html>
    <head>
        <title>Welcome Page</title>
    </head>
    <body>
        <!-- your webpage content
            goes inside the body tag -->
        <p>Welcome to WDD!</p>
        <img src="wdd.png" />
    </body>
</html>
```

(size may vary on your screen, but that's ok!)

Welcome to WDD!

Anatomy of an HTML Document: doctype

```html
<!doctype html>
<html>
    <head>
        <title>Welcome Page</
    </head>
    <body>
        <!-- your webpage content
            goes inside the body tag -->
        <p>Welcome to WDD!</p>
        <img src="wdd.png" />
    </body>
</html>
```

Tells the browser that this file contains HTML!

Welcome to WDD!

(size may vary on your screen, but that's ok!)

Anatomy of an HTML Document: `<html>`

```html
<!doctype html>
<html>
    <head>
        <title>Welcome Page</title>
    </head>
    <body>
        <!-- your webpage content
            goes inside the body tag -->
        <p>Welcome to WDD!</p>
        <img src="wdd.png" />
    </body>
</html>
```

(size may vary on your screen, but that's ok!)

Pair of <html> tags, where everything will go inside

Anatomy of an HTML Document: <head>

```html
<!doctype html>

<html>
    <head>
        <title>Welcome Page</title>
    </head>
    <body>

        <!-- your webpage content
            goes inside the body tag -->

        <p>Welcome to WDD!</p>

        <img src="wdd.png" />

    </body>
</html>
```

(size may vary on your screen, but that's ok!)

<head> contains other info for the browser - later this is where we'll specify CSS and JS files.

Anything in <head> will **not** be displayed on the page!

Anatomy of an HTML Document: `<title>`

```html
<!doctype html>

<html>

    <head>

        <title>Welcome Page</title>

    </head>

    <body>

        <!-- your webpage content

            goes inside the body tag -->

        <p>Welcome to WDD!</p>

        <img src="wdd.png" />

    </body>

</html>
```

`<title>` tag specifies the text that shows on the tab of a web browser, at the top of the window, on a Google search result.

(size may vary on your screen, but that's ok!)

Anatomy of an HTML Document: <body>

```html
<!doctype html>

<html>

    <head>

        <title>Welcome Page</title>

    </head>

    <body>

        <!-- your webpage content

            goes inside the body tag -->

        <p>Welcome to WDD!</p>

        <img src="wdd.png" />

    </body>

</html>
```

(size may vary on your screen, but that's ok!)

Welcome to WDD!

Everything inside <body> is
what will show up on your page!

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Anatomy of an HTML Document

```html
<!doctype html>
<html>
    <head>
        <title>Welcome Page</title>
    </head>
    <body>

        <!-- your webpage content
            goes inside the body tag -->
        <p>Welcome to WDD!</p>
        <img src="wdd.png" />
    </body>
</html>
```

Welcome to WDD!

(size may vary on your screen, but that's ok!)

Anatomy of an HTML Document

```
<!doctype html>

<html>

    <head>

        <title>Welcome Page</title>

    </head>

    <body>

        <!-- your webpage content

            goes inside the body tag -->

        <p>Welcome to WDD!</p>

        <img src="wdd.png" />

    </body>

</html>
```

(size may vary on your screen, but that's ok!)

Anatomy of an HTML Document: <!-- comments -->

```html
<!doctype html>

<html>

    <head>

        <title>Welcome Page</title>

    </head>

    <body>

        <!-- your webpage content

            goes inside the body tag -->

        <p>Welcome to WDD!</p>

        <img src="wdd.png" />

    </body>

</html>
```

(size may vary on your screen, but that's ok!)

Welcome to WDD!
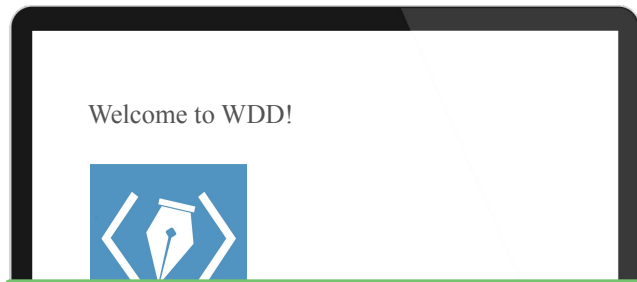
Lines that look like this:
<!-- comment -->
are completely ignored by the browser and do not show up on the webpage, but they're super useful to make notes to yourself or others!

🙋‍♀️🙋‍♂️

Questions?

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Basic forms of content in a document

- Paragraph text
  - bold, italic
- Headings
- Links
- Lists
- Images

Text

```
<p>paragraph of text</p>

<p>second paragraph of text</p>
```

Put text on different lines via paragraph tags

p = paragraph

Bold and italic text

`<strong>`bold text`</strong>` → **bold text**

`<em>`italic text`</em>` → *italic text*

em = emphasized

Nesting tags

`<strong><em>`different`</em>` text`</strong>`

different **text**

Headings

```
<h1>Big bold heading</h1>

<h2>Smaller bold heading</h2>

...

<h6>Smallest bold heading</h6>
```

Links

```html
<a href="https://example.com">Click here</a>
```

url

clickable text

Lists

```html
<ul>
    <li>apples</li>
    <li>oranges</li>
    <li>bananas</li>
</ul>
```


- ul = **u**nordered **l**ist
- li = **l**ist **i**tem

Images

- **EXCEPTION:** only one tag, not a pair! Has a slash *at the end.*
- src = source (where should the web browser go to find the image?)

For your own images:

```
<img src="folder/apple.jpg" />
```

For an image somewhere else on the internet:

```
<img src="https://wdd.io/static/images/ajia.jpg" />
```

Another nesting example

```html
<a href="https://wdd.io">

    <img src="image_folder/logo.png" />

</a>
```

What's the result here?

🙋 🙋‍♂️

Questions?

A lot of the tags seem very specific
What about a *"generic"* tag to structure the content?

What tags can we spot here?

```
<!doctype html>
<html>
    <head></head>
    <body>
        <h1>Department store</h1>
        <div>
            <h2>Fruit</h2>
            <p>We have apples, oranges, pears, etc.</p>
        </div>
        <div>
            <h2>Coffee</h2>
            <p>There is cold brew, decaf, ????</p>
        </div>
    </body>
</html>
```

Department store

Fruit

We have apples, oranges, pears, etc.

Coffee

There is cold brew, decaf, ????

What is a div tag?

- An empty, meaningless box!
- "Divides" up page content for better structure — grouping things

```
<!doctype html>
<html>
    <head></head>
    <body>
        <h1>Department store</h1>
        <div>
            <h2>Fruit</h2>
            <p>We have apples, oranges, pears, etc.</p>
        </div>
        <div>
            <h2>Coffee</h2>
            <p>There is cold brew, decaf, ????</p>
        </div>
    </body>
</html>
```

Summary: HTML for structuring content

- Some tags like <em> or <h1> come with some visual formatting already
  - These defaults (like Times New Roman) come with the browser, but next week we'll introduce CSS to change the appearance!

- But HTML is not for visual formatting, it's for putting your text and images into **meaningful "chunks"**
  - (which is why <div> is so important, even though for now it's just an invisible box)
  - It'll help create layouts later!

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The **most common issue** on the first homework is adding images!!

Problem: image does not show up

The issue:

1. For images and links you need to specify **where the image is,** or **where you want to link to**
2. The image is on your laptop, so you type:

    `<img src="C:\Users\Heidi\Pictures\doggo.jpg" />`
3. The image shows up fine
4. When you submit hw, the image no longer shows up

Why? Our web server has no idea where to find the picture, because the file path is specific to a single laptop!

Instead..

1. Put the image you want in the same folder as your html file
2. Example file structure:
    - `hw1/`
        - `index.html`
        - `images/`
            - `doggo.jpg`
            - `doggo2.jpg`
3. Then, think about how to go from index.html to doggo.jpg:

    `<img src="images/doggo.jpg" />`

Now, no matter where you move the hw1/ folder, the path to the image is still correct!

**Also, our web server is case-sensitive!**

`<img src="images/doggo.jpg" />` will **not** work if the image is actually named `doggo.JPG`

Coding doesn't have to be scary!

- Keep your HTML organized by indenting lines so that you can easily see how opening and closing tags match

- Refresh your webpage often - write one line of HTML, then refresh the browser to see your changes! Work step by step.

- If something doesn't look the way you expect - double check your opening and closing tags, and spelling.

For your homework

- Homework 1 is released tonight and is due **next Tuesday 7pm.**

- It covers basic syntax of HTML and will guide you through making your first website.

- Find it on WDD Portal!

- Feel free to ask questions on Piazza!
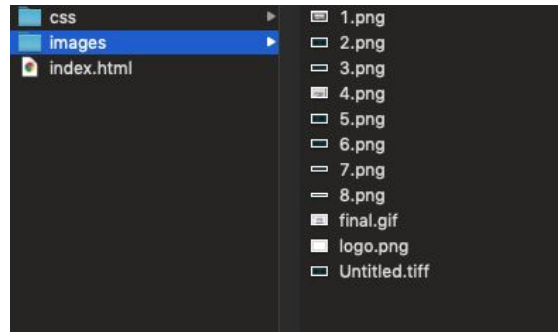
example of a file directory

VSCode Demo