

TCS 007D: Web Design

Instructor: Jesse Smith

Logistics

Time

12:30-5:30 Monday, August 14th

12:30-5:30 Tuesday, August 15th

Location

Art Annex 103

Course Website

www.hjessmith.com/teaching/tcs007a

Credits

– 1 Credit

Contact Information

Instructor: Jesse Smith

E-mail Address: hjsmith@ucdavis.edu (preferred method)

Course Text

- Not required for you to buy, but if you want it for reference:
HTML And CSS - Design And Build Websites



Grading Policy

1. Grades will be exclusively determined by series of in-class assignments (6-8) (~15% each)
 - Not hard, meant to reinforce concepts and break up the lectures

Jesse Smith

2010-2013 - Web Designer/Developer

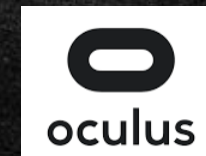
Enforcement & Compliance History Online

<https://echo.epa.gov/?redirect=echo>

Dietary Supplement Label Database

<http://www.dsld.nlm.nih.gov/dsld/>

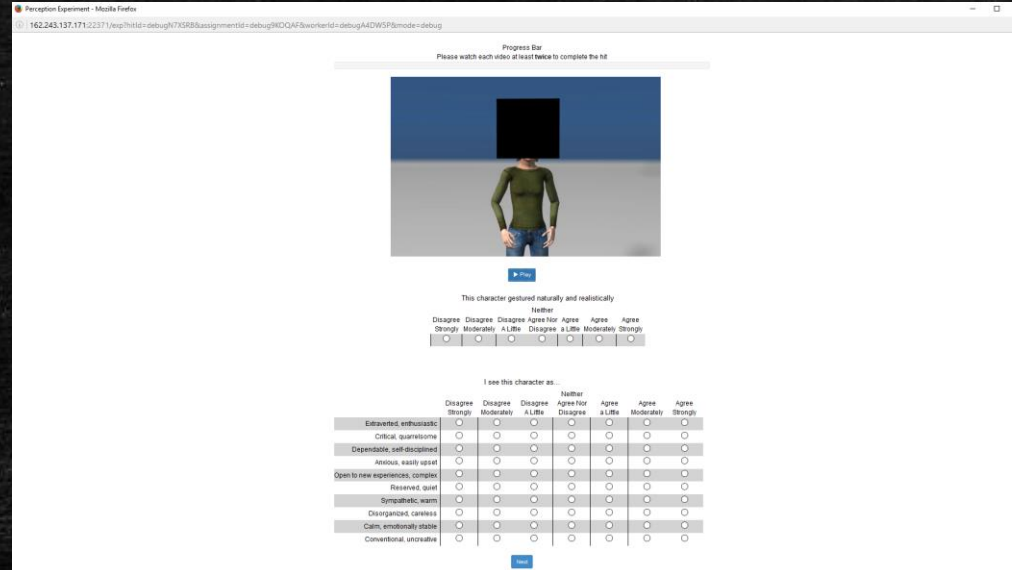
2016-2017 – Research Intern at Facebook/Oculus



Jesse Smith

2013 – Present

- UC Davis PhD Student Computer Graphics & Animation
- Write lots of web applications to collect online participant data



Introduce Yourself!

- Your Name
- Your Degree and Year
- Your Experience with Web Design and Development
- Fill in the blank:
 “If I were to learn _____ in this class, I would consider it a good use of my time.”

Course Outline

- Day 1:
 - Very Brief Overview of the Web
 - Structure of HTML
 - A Word on Development Tools , HTML Text
 - Lists and Links
 - Images

Very Brief Overview of Web

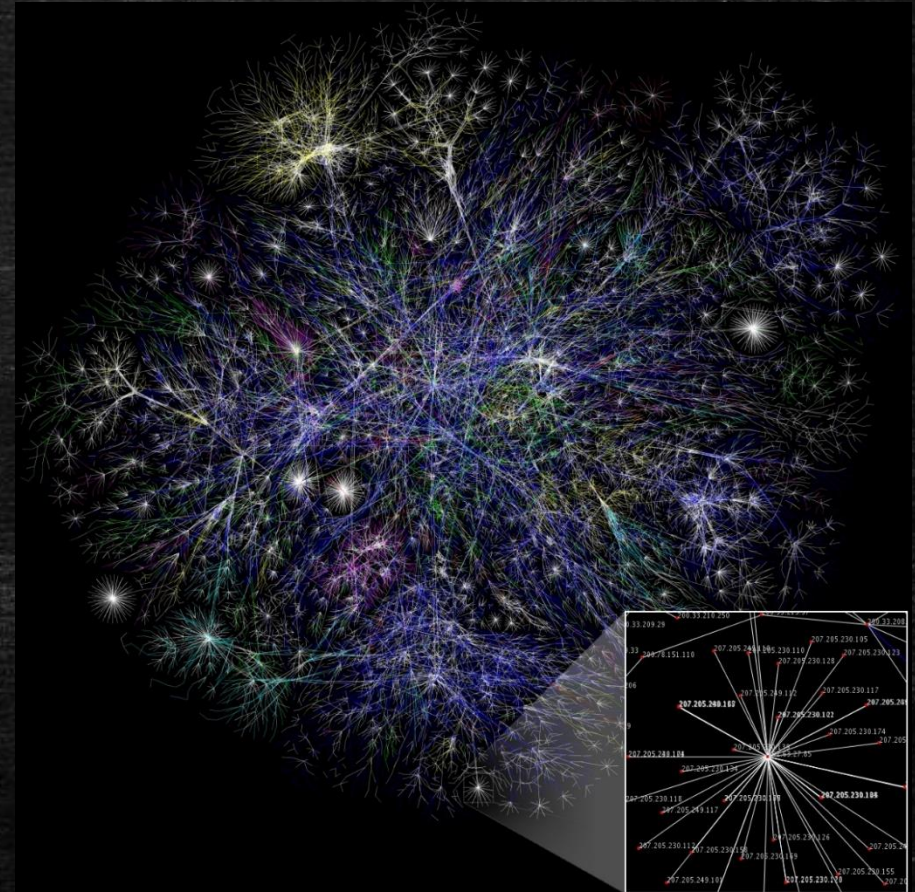
What is the Internet?

A Network of Networks

Packet sharing envisioned in the early 1960's by MIT researchers.

First two nodes were computers in UCLA and Stanford, and funded by US Military (ARPA).

In the 80's many nodes added thanks to NSF funding and eventually commercial Internet Service Providers arose and took over.



Many ways to access the internet

Simple Mail Transfer Protocol (SMTP) for email

Secure Shell (SSH) for operating command line on different computers

File Transfer Protocol (FTP) for sending files

Short Message Service (SMS) for sending text messages

HyperText Transfer Protocol (HTTP)

Secure HyperText Transfer Protocol (HTTPS)

What is the Web?

Invented in 1989 by Sir Tim Berners-Lee at CERN

One of the networks that makes up the web.

4 main parts

- Web servers
- Client software
- HTTP, the way servers and clients communicate
- HyperText Markup Language (HTML), which provided structure to the information and allowed pages to be 'linked' together

What is the Web?

Web Servers

- When you ask your browser for a web page, the request is sent across the Internet to a special computer known as a **web server** which hosts the website.
- Web servers are special computers that are constantly connected to the Internet, and are optimized to send web pages out to people who request them.
- Some big companies run their own web servers, but it is more common to use the services of a **web hosting** company who charge a fee to host your site.
- Digital Ocean is a web hosting company
<https://www.digitalocean.com/>

What is the Web?

Client Software



- People access websites using software called a **web browser**. Popular examples include Firefox, Internet Explorer, Safari, Chrome, and Opera.
- **Screen readers** are programs that read out the contents of a computer screen to a user. They are commonly used by people with visual impairments, but could be used when jogging or driving.
- There are many types of web browsers, and many different devices on which they are viewed. They are all slightly different, and sometimes don't act the same way.

What is the Web?

HTTP – Hyper Text Transfer Protocol

- The language by which clients and servers send data back and forth to each other.
- See it for yourself. Type this into a terminal:
`curl -v www.facebook.com`
- HTTP contains information about your browser, which can be identifiable.

How do clients know how to find servers?

- Client browsers know the location of Domain Name Servers (DNS), which are like big digital phone books. Converts human-readable urls to IP addresses.
- First your browser contacts the DNS and then, using the IP address obtained, contacts the correct server.
- <http://162.243.137.171/teaching/tcs007a>
- <http://hjessmith.com/teaching/tcs007a/>
- DNS Poisoning, Hijacking



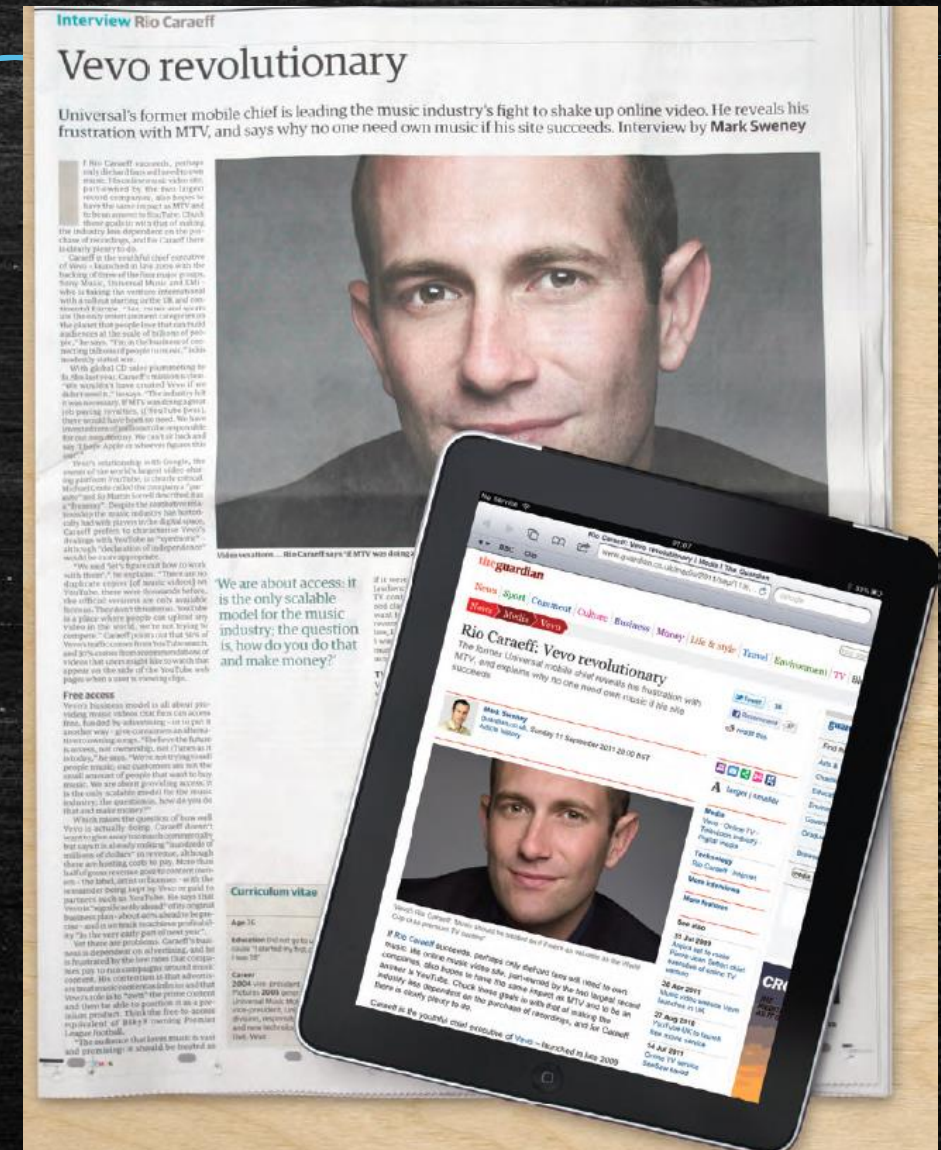
How are websites created?

- When you see a website, your browser has received HTML and CSS from a web server. The web browser then interprets the HTML and CSS code to create the page you see. If a page contains an image, the web browser can embed the image inside the HTML page.
- Small sites are written using HTML and CSS along (like in this class)
- Larger websites use content management systems (CMS) with databases to create new HTML pages every time one is requested.

HTML and Structure

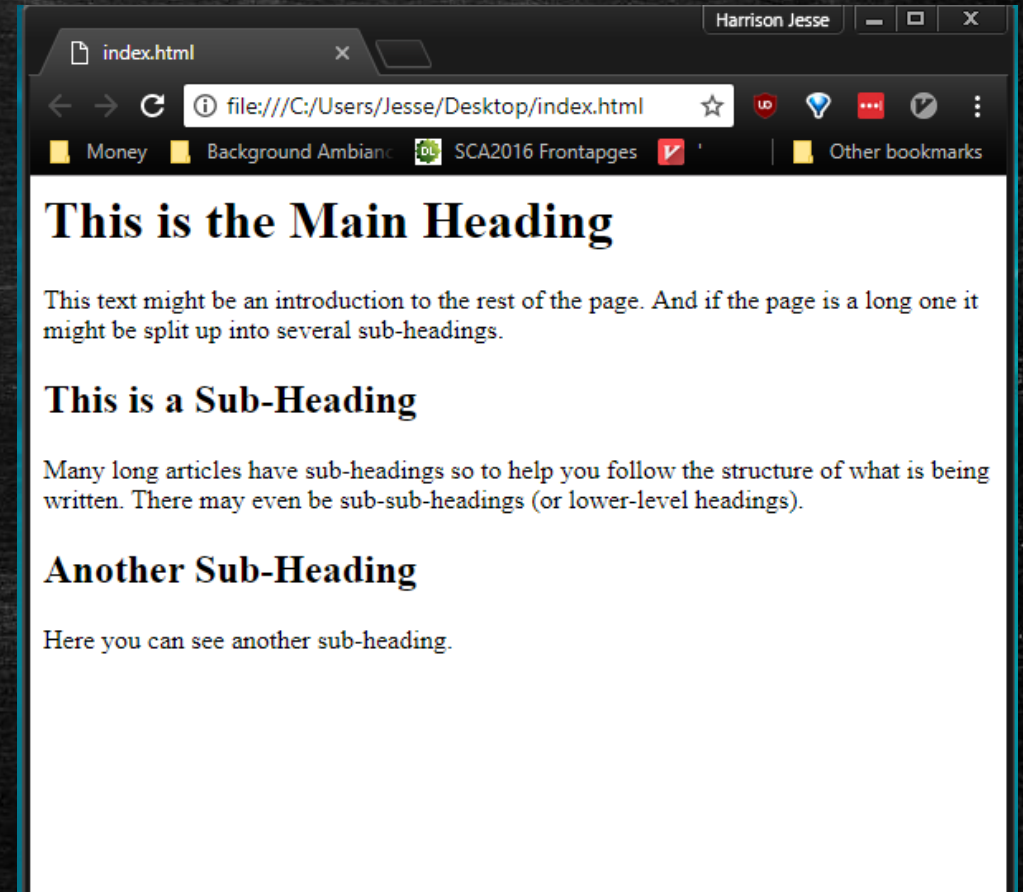
What do we mean by structure?

- Think about newspaper stories. Each has a headline, some text, and maybe images. If it's long, possibly subheadings.
- Structure heads the reader quickly understand the story in the newspaper.
- Any good document contains structure, and HTML is used to describe this structure so a computer can understand it.



HTML describes the structure of pages

```
<html>
  <body>
    <h1>This is the Main Heading</h1>
    <p>This text might be an introduction to the rest of
      the page. And if the page is a long one it might
      be split up into several sub-headings.</p>
    <h2>This is a Sub-Heading</h2>
    <p>Many long articles have sub-headings so to help
      you follow the structure of what is being written.
      There may even be sub-sub-headings (or lower-level
      headings).</p>
    <h2>Another Sub-Heading</h2>
    <p>Here you can see another sub-heading.</p>
  </body>
</html>
```



`<html>`

The opening `<html>` tag indicates that anything between it and a closing `</html>` tag is HTML code.

`<body>`

The `<body>` tag indicates that anything between it and the closing `</body>` tag should be shown inside the main browser window.

`<h1>This is the Main Heading</h1>`

Words between `<h1>` and `</h1>` are a main heading.

`<p>This text might be an introduction to the rest of the page. And if the page is a long one it might be split up into several sub-headings.</p>`

A paragraph of text appears between these `<p>` and `</p>` tags.

`<h2>This is a Sub-Heading</h2>`

Words between `<h2>` and `</h2>` form a sub-heading.

`<p>Many long articles have sub-headings so to help you follow the structure of what is being written. There may even be sub-sub-headings (or lower-level headings).</p>`

Here is another paragraph between opening `<p>` and closing `</p>` tags.

`<h2>Another Sub-Heading</h2>`

Another sub-heading inside `<h2>` and `</h2>` tags.

`<p>Here you can see another sub-heading.</p>`

Another paragraph inside `<p>` and `</p>` tags.

`</body>`

The closing `</body>` tag indicates the end of what should appear in the main browser window.

`</html>`

The closing `</html>` tag indicates that it is the end of the HTML code.



LEFT-ANGLE BRACKET
(LESS-THAN SIGN)

RIGHT-ANGLE BRACKET
(MORE-THAN SIGN)

OPENING TAG



LEFT-ANGLE BRACKET
(LESS-THAN SIGN)

FORWARD SLASH

RIGHT-ANGLE BRACKET
(MORE-THAN SIGN)

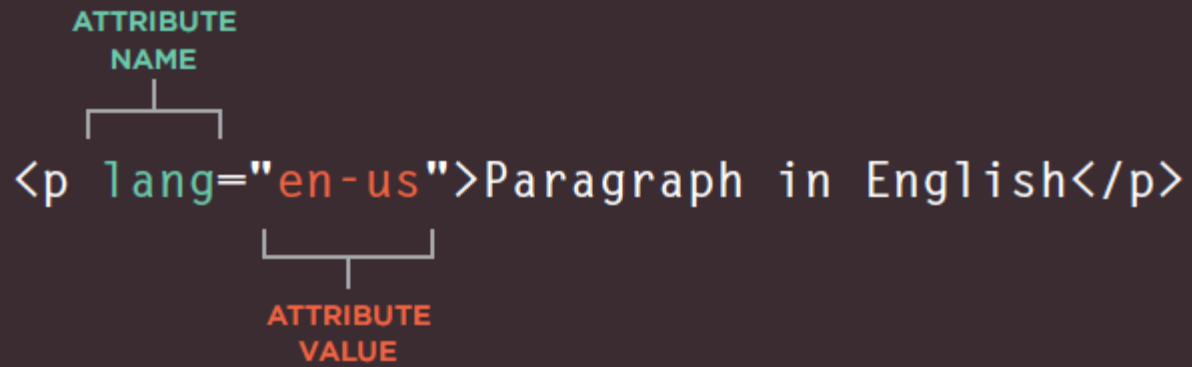
CLOSING TAG

Attributes tell Us More About an Element

ATTRIBUTE
NAME

<p lang="en-us">Paragraph in English</p>

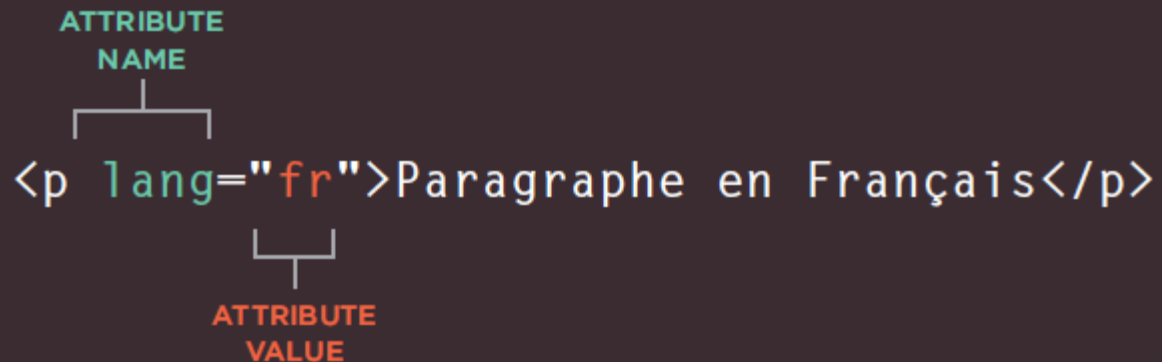
ATTRIBUTE
VALUE



ATTRIBUTE
NAME

<p lang="fr">Paragraphe en Français</p>

ATTRIBUTE
VALUE



HTML Body, Head, and Title Elements

- **<HTML>** - The root element of any HTML document. All other elements go inside of it.
 - **<body>** - Everything inside <body> is shown to the user through the browser window.
 - **<head>** - Contains information about the page, rather than information shown in the browser.
 - **<title>** - Contents of this tag are shown above the browser, or in the tab.
-
- Coding Example

Coding Exercise

- Create your first web page. Open up Notepad++ on your computer and create a new document titled *index.html*.
- Inside the document, create a <html>, <head>, <body>, and <title> tags. Give your web page the title “[Your First Name]’s First Web Page”
- Inside the body of your web page, give your page a main heading and a single paragraph element. Fill these tags with appropriate text content.
- To check that you have correct HTML, navigate to this page in your browser https://validator.w3.org/#validate_by_input and copy/paste the entire contents of your web page into it.
- When you are finished, open your page in Chrome.

Viewing HTML in the Browser

- Right Click > View Page Source
- Developer's Tools
 - Allows you to easily find HTML for things you can see on page
 - Allows you to try changing values of attributes and immediately see changes

Summary

- HTML pages are text documents.
- HTML uses tags to give information inside them special meaning
- Tags usually coming in pairs, with a beginning and ending one:
`<p></p>`
- Opening tags can carry attributes, which tell us more about the content of that element.
- Attributes require a name and a value
- To learn HTML means to learn what tags are available for your use, what they do, and where they can go.

More Resources

- <http://www.internetsociety.org/internet/what-internet/history-internet/brief-history-internet>
- https://en.wikipedia.org/wiki/History_of_the_World_Wide_Web
- <https://developer.mozilla.org/en-US/docs/Web/HTML/Element/p>
- https://developer.mozilla.org/en-US/docs/Web/HTML/Global_attributes
- <http://www.freeformatter.com/html-formatter.html>
- <https://validator.w3.org/>

Exercise1
