

ECS 189

WEB PROGRAMMING

4/3

Introductions

- Me: Prof. Nina Amenta

- TAs:
 - Tara Harini
 - Carlos Rojas
 - Danielle Macedo

Welcome!

- Get to the point where you can build an application that runs over the Web.

- Example Web applications:
 - Banner
 - Expedia
 - Amazon
 - Google
 - Facebook

The Web

- What is the difference between the Web and the internet?

The Web

- What is the difference between the Web and the internet?

- The internet is the network of cables and wireless connections linking computers together, and the software that delivers messages across those connections.

- The World-Wide Web is one of many programs that use the internet.

- To learn about the internet take ECS 192A!

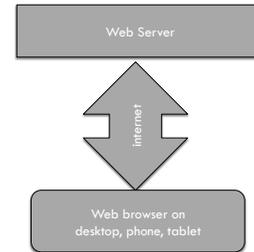
Web application

- What is the difference between a Web page and a Web application?

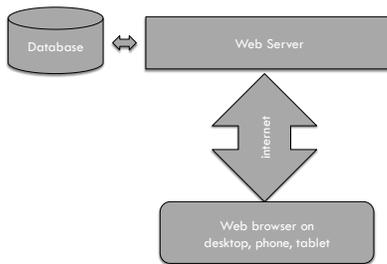
Web application

- What is the difference between a Web page and a Web application?
- You view a Web page in your browser at a fixed moment in time.
- Web application changes what you see, either by producing new Web pages, or by changing the Web page as you interact with it. You need a movie to get a picture of a Web app. A Web app may involve many Web pages, or just one.

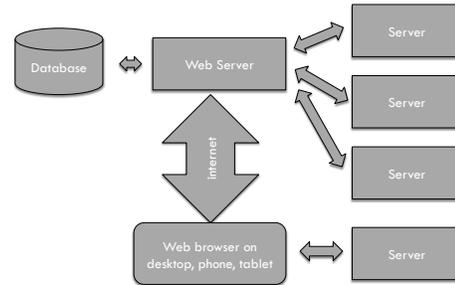
Big picture



Big picture



Big picture



Web application

- How it works
 - ▣ Collection of programs
 - ▣ Some run in the Web browser, on your computer
 - ▣ Some run on a Web server, or a collection of Web servers
 - ▣ Pass information back and forth via internet
 - ▣ Generate new Web pages or alter existing Web pages to interact with the user (register for course, sell books, deliver pizza...)

Many languages and frameworks

- Web pages – HTML5 and CSS3
- Browser programming – Javascript, JQuery.
- Browser frameworks such as Angular, or D3 for visualization.
- Server-side programs – Lots of different Web app frameworks
 - ▣ PHP, Ruby on Rails, node.js (Javascript), Django (Python), ASP.net (Javascript/Perl/VBS),...
- Databases usually use SQL
- APIs for Web services such as Google maps or Facebook
- Authentication for apps and for users
- Any project has to choose some of these

Syllabus

- HTML, CSS, responsive front-end design
- Object-oriented Javascript
- JSON and asynchronous software
- A bit of SVG, Visualization with D3, some GIS
- Server programming with Node.js
- A database (probably SQLite)
- Authentication, probably using the Passport module

Building complexity

- Web programming has the reputation of being easy.
- This is because people often mean “coding” HTML and CSS.
- We'll mostly do that in the first two weeks, then move on to Javascript, APIs, servers...
- Like many classes, later stuff builds on earlier stuff, so it gets harder as we go on.

Labs, discussion section

- Two discussion sections, both meeting 10-10:50 on Wds: Hoagland 168 and Haring 2016.
- TAs and I will hold lab hours in CSIF.
- Labs will focus on doing the homework.
- Watch the Web site for times and which labs.
- This week we will just make sure you are comfortable editing HTML and CSS files, looking at them in the browser, and submitting them through Canvas.

Labs, assignment

- Lab sessions not required
 - You are welcome to just do the work, and ask questions via Piazza.
 - Check the Website for assignments; this week's is up already.
- <http://www.cs.ucdavis.edu/~amenta/s17/ecs189h>
- First assignment will be due Fri 4/7.

Plan for Assignments

- Intro
- Layout (HTML, CSS, Flexbox)
- Quiz (Javascript, UI components)
- App with browser and API (prepositions?)
- Project
 - App with server
 - Adding database
 - Adding API

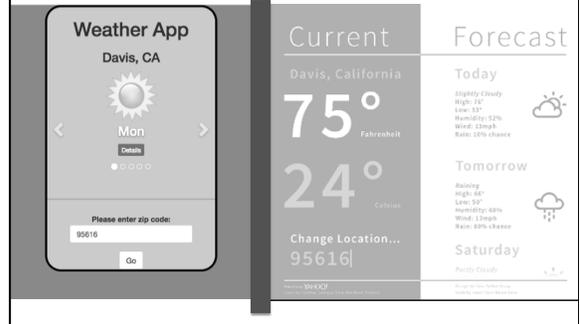
Design

- What is the difference between Web programming and Web design?

Design

- What is the difference between Web programming and Web design?
- Web design is a commercial art form using layout, color, fonts, images, and symbols to convey information and make navigation easy.
- Web programming implements Web design.
- Typically Web designers know some Web programming, but often not the other way around.
- Often they work in teams.

Which one is by a designer?



Design

- Danielle is our designer. She will give us designs to code towards for the early assignments, and advice on our design for the big project part.
- Part of your grade on the early assignments is how close you get to her design. This is surprisingly hard!
- You are welcome to do your own design in addition.

Structure

- This will be a regular 4-unit course. Everyone should sign up for 4 units.
- ECS 30 or equivalent programming experience is required. You need to have some UNIX experience and some programming background.
- This is an upper division course. You may use it as an elective for the major or minor in CS.

Academic dishonesty

- Lots of Web programming is very formulaic.
 - Eg. the command to request something from the server is complicated, and everyone copies and pastes it, and then edits the parameters.
- If you don't understand it while you're doing it, you're cheating.
- Major similarities on assignments will be sent to SJA.
- This shows up on the tests, especially when we ask you to write code snippets.

Midterms, grading

- Two in-class midterms and a final
- Multiple choice and some code
- Open book, open notes, assigned seats

- Assignments and project – 25%
- Midterms – 20% and 20%
- Final – 35%

HTML

- What does this stand for?

HTML

- Hyper-Text Markup Language
- What does this mean?

HTML

- Hyper-Text Markup Language
- Markup Language – add tags to indicate the roles of different parts of the Web page.
- Hyper-text means it includes links.

Example!

Document structure

- Start with `<!doctype HTML>`; this means HTML5.
- Page elements (text, pictures, etc.) need to be nested inside tags, eg. `<head> </head>` and `<body></body>`.
- `<head>` usually includes a `<title>`. The title shows up in the tab, not on the page.
- `<meta charset="utf-8">` is a “self-closing” tag. It just has a start tag, no end tag. The attribute `charset` defines the alphabet for the Web page. Attributes are inside the angle brackets of a tag.

Browsers are lenient!

- The browser will do it's best to render anything you send it.
- It won't produce (obvious) error messages for most mistakes.