



PROGRAMMING FOR NON-PROGRAMMERS

FRONT-END EDITION

General Assembly Workshop



WHO I AM

- Co-Founder of kinsights.com
- Associate Director of UI Design and Development at Corporate Executive Board
- Started Front-end Development team at Viget Labs in Washington, DC. Worked for many consumer-facing clients in both app and marketing space.
- Worked on the Army.mil Web Team for L3 Communications



TOPICS

- What is programming
- How the web works
- Web development process
- Types of web development
- Languages
- HTML/CSS
- Javascript

WHAT IS PROGRAMMING?



WHAT IS PROGRAMMING

- Communicate an idea that we have with a computer
- Solve real problems
- Make our ideas come to life



The Snowboarding Page

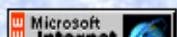


Because " A day without a snowboard is like a day on skis " - A friend of mine said that.

Thanks for stopping by. This site is for snowboarders. If you're a skier I guess you're allowed in here because some of the links have skiing info. Look around at the pictures and links so you can get where and what you want easily. Remember that this page is always under construction so bookmark it and you can come back to see the changes.

Links

- [Snowboard Companies](#)
- [Boarding Pictures](#)
- [SOL \(Snowboarding Online\)](#)
- [TransWORLD Snowboarding](#)
- [Heckler](#)



WHAT IS PROGRAMMING

- Communicate our human ideas with a computer
- Solve real problems
- Make our ideas come to life
- Can be frustrating but also rewarding



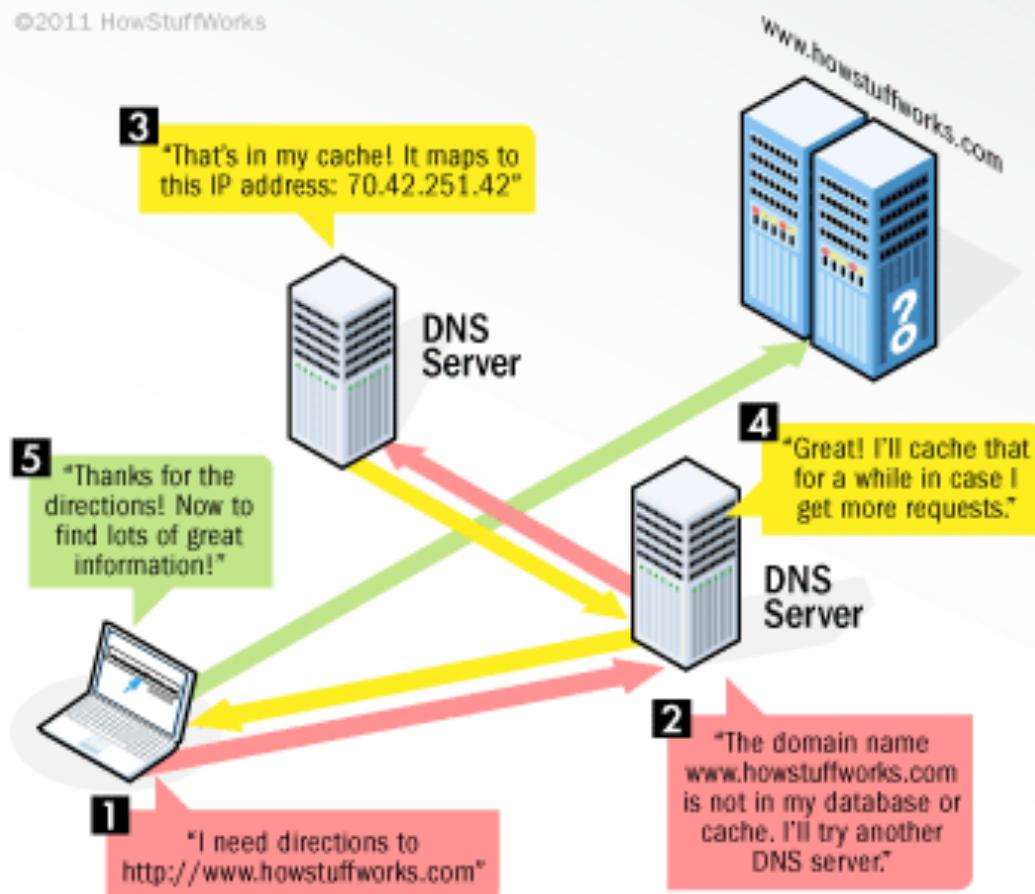
HOW THE WEB WORKS

- Request/Response
- Rendering in the browser
- Local / Remote servers

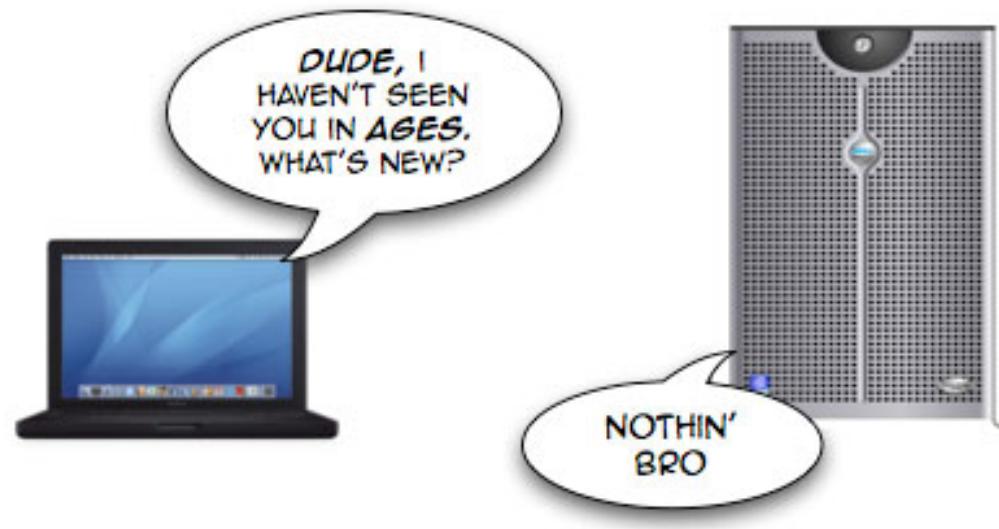


REQUEST / RESPONSE

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CONVERSATION: PASSING HTML, CSS, & JS



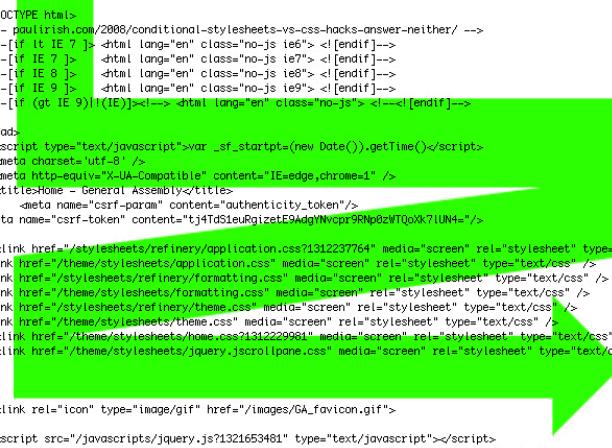
RENDERING IN THE BROWSER

- Each browser has its own rendering engine to interpret and display the markup



RENDERING IN THE BROWSER

- Top to bottom, left to right



```
<!DOCTYPE html>
<!-- paulirish.com/2008/conditional-style-sheets-vs-css-hacks-answer-neither/ -->
<!--[if IE 7 ]><html lang="en" class="no-js ie6"><![endif]-->
<!--[if IE 7 ]><html lang="en" class="no-js ie7"><![endif]-->
<!--[if IE 8 ]><html lang="en" class="no-js ie8"><![endif]-->
<!--[if IE 9 ]><html lang="en" class="no-js ie9"><![endif]-->
<!--[if (gt IE 9 )|(IE)]><html lang="en" class="no-js"><!--<![endif]-->

<head>
  <script type="text/javascript">var _sf_startpt=(new Date()).getTime()</script>
  <meta charset='utf-8' />
  <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1" />
  <title>Home - General Assembly</title>
  <meta name="csrf-param" content="authenticity_token"/>
  <meta name="csrf-token" content="jJtDSteu@jizteE9I4dgNWcpf9RNp8zVTQo@K7lUM4"/>

  <link href="/styleSheets/refinery/application.css?1312237764" media="screen" rel="stylesheet" type="text/css" />
  <link href="/theme/styleSheets/application.css" media="screen" rel="stylesheet" type="text/css" />
  <link href="/styleSheets/refinery/formatting.css" media="screen" rel="stylesheet" type="text/css" />
  <link href="/theme/styleSheets/refinery/theme.css" media="screen" rel="stylesheet" type="text/css" />
  <link href="/theme/styleSheets/theme.css" media="screen" rel="stylesheet" type="text/css" />
  <link href="/theme/styleSheets/home.css?1312229981" media="screen" rel="stylesheet" type="text/css" />
  <link href="/theme/styleSheets/jquery.jscrollpane.css" media="screen" rel="stylesheet" type="text/css" />

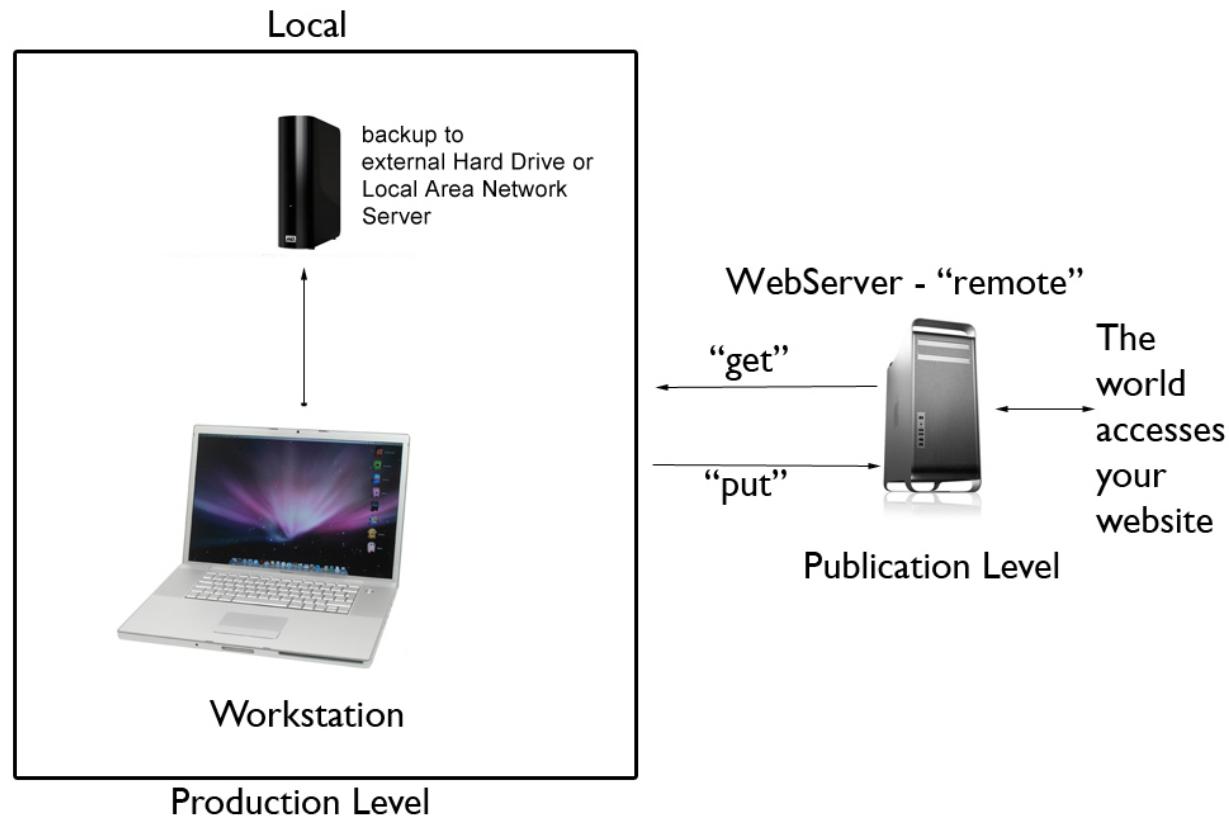
  <link rel="icon" type="image/gif" href="/images/GA_favicon.gif">

  <script src="/javascripts/jquery.js?1321653481" type="text/javascript"></script>
  <script src="/javascripts/jquery.tools.min.js?1312229981" type="text/javascript"></script>
  <script src="/javascripts/date.js?1312229981" type="text/javascript"></script>
  <script src="/javascripts/pretty.js?1312229981" type="text/javascript"></script>
  <script src="/javascripts/rails.js?1312229981" type="text/javascript"></script>
  <script src="/javascripts/application.js?1321653481" type="text/javascript"></script>
  <script src="/javascripts/bootstrap-twipsy.js?1321653481" type="text/javascript"></script>
  <script src="/javascripts/slider.js?1321653481" type="text/javascript"></script>
  <script src="/javascripts/checkbox.js?1321653481" type="text/javascript"></script>
  <script src="/javascripts/modernizr-min.js" type="text/javascript"></script>
</head>

<body>
  <div id="status_bar">
    <div class="status_message">
      <div class="login_status">
        <ul>
          <li></li>
          <li class="fr">
            <a href="https://generalassemblyly/users/signup">Member Sign In</a>
          </li>
        <li class="fr">
      
```



LOCAL / REMOTE



DEVELOPMENT

Front end (client-side)

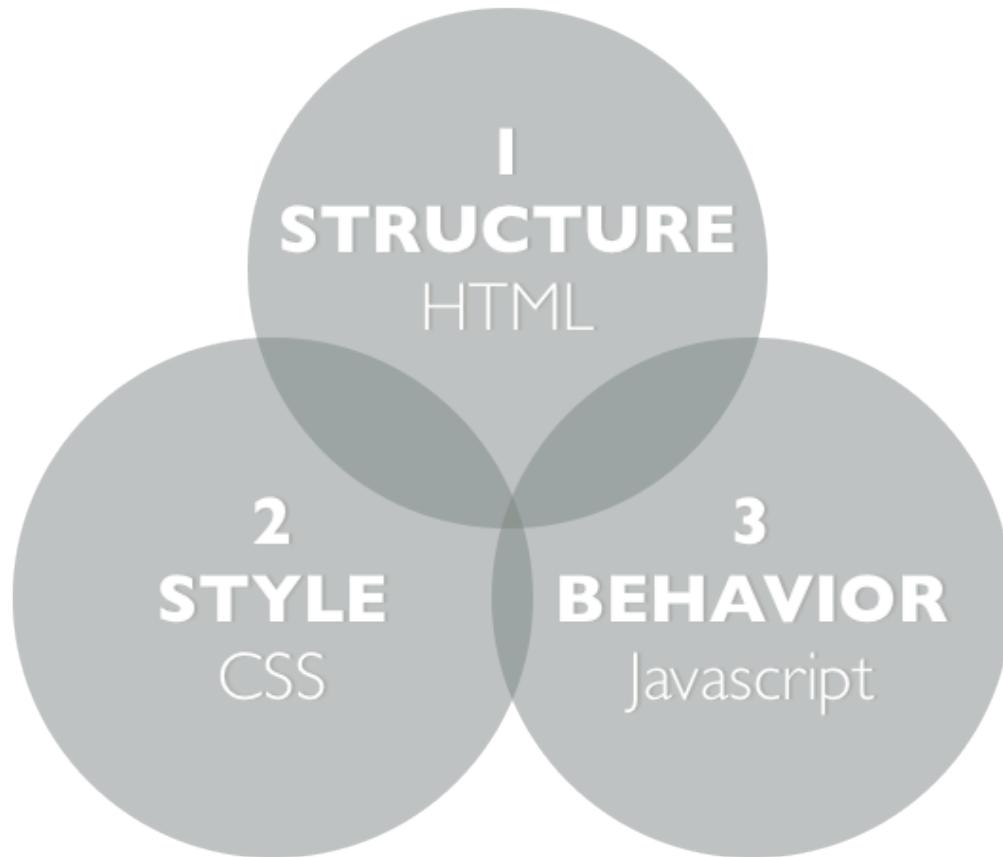
- HTML
- CSS
- Javascript

Back end (server-side)

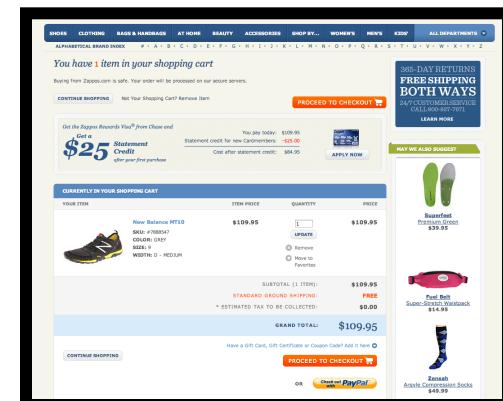
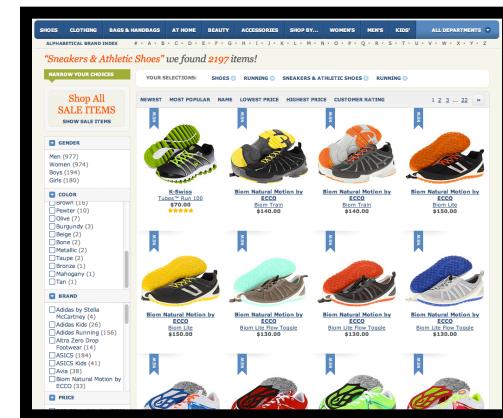
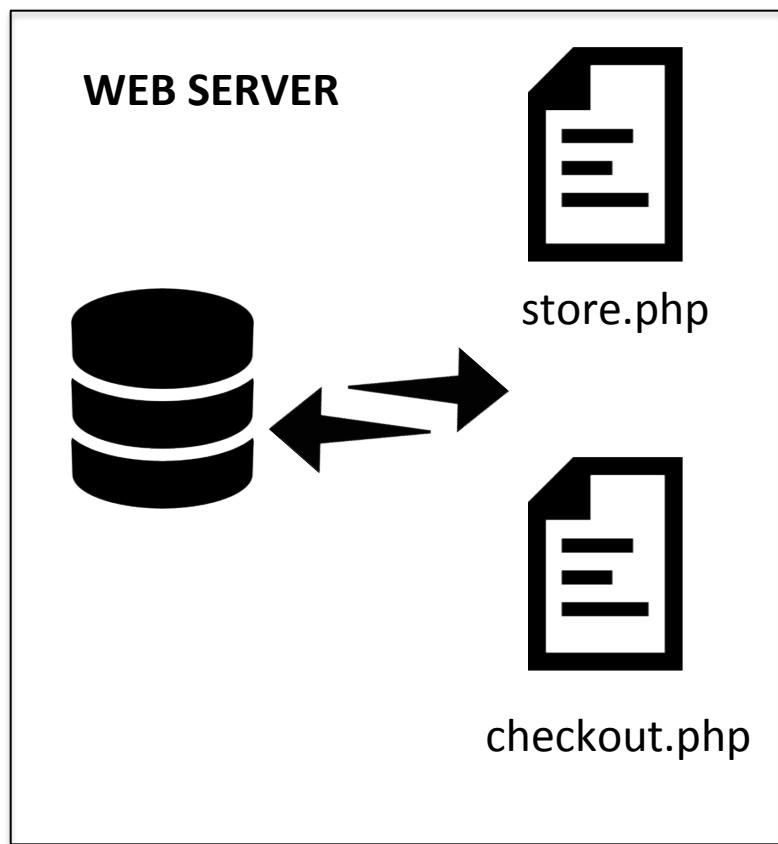
- Ruby
- PHP
- Python
- PERL
- ASP



WHAT MAKES A WEB PAGE



WHAT MAKES A WEB PAGE



WEB DEVELOPMENT PROCESS

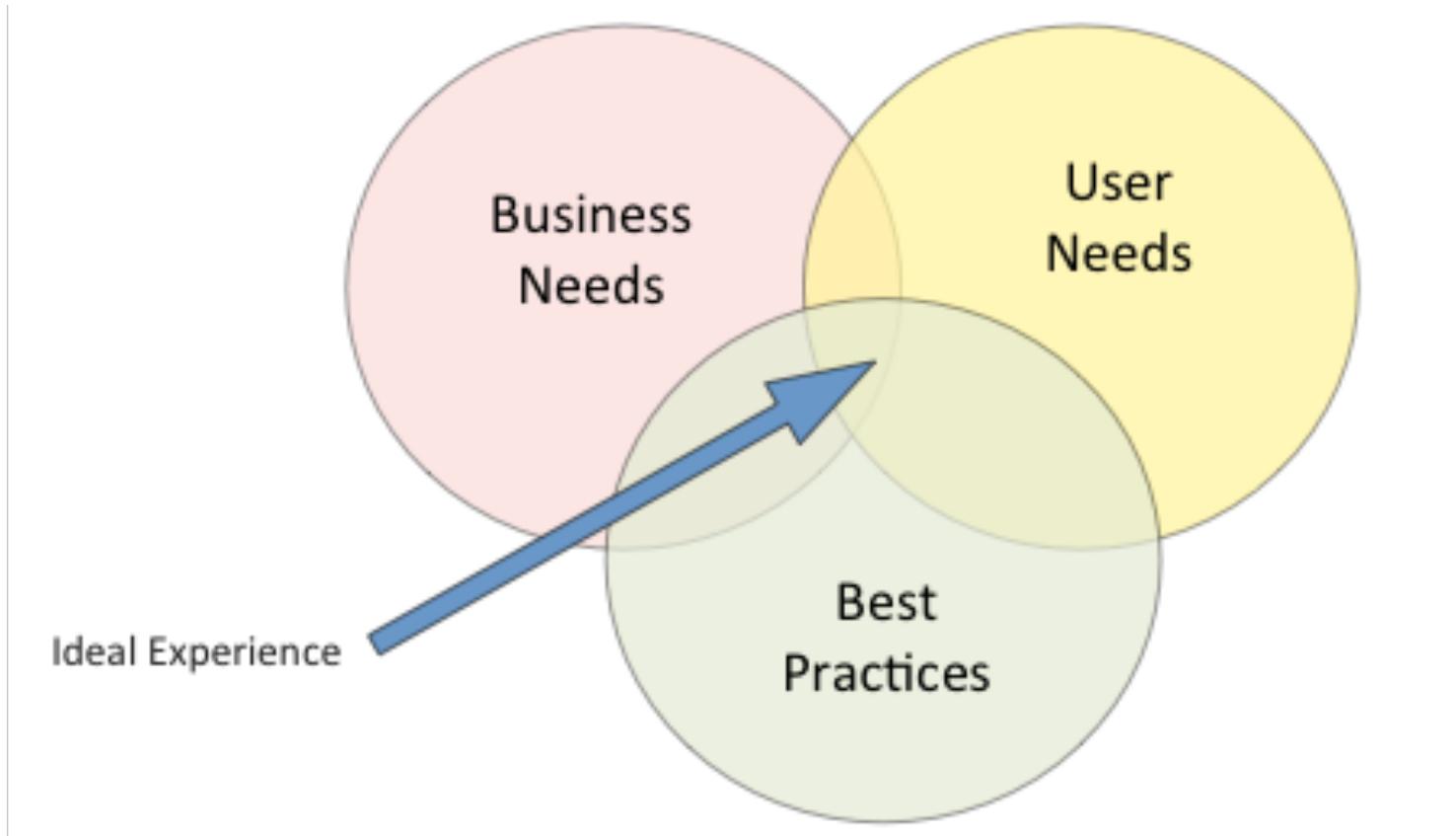
- UX (user experience)
- IA (information architecture)
- Designer
- Developer



USER EXPERIENCE (UX)

- Broad term used to describe the planning strategy for a web site
- Who is our target audience?
- How do we know if the user is hitting their goals?
- What are the most important features of this site?

USER EXPERIENCE (UX)

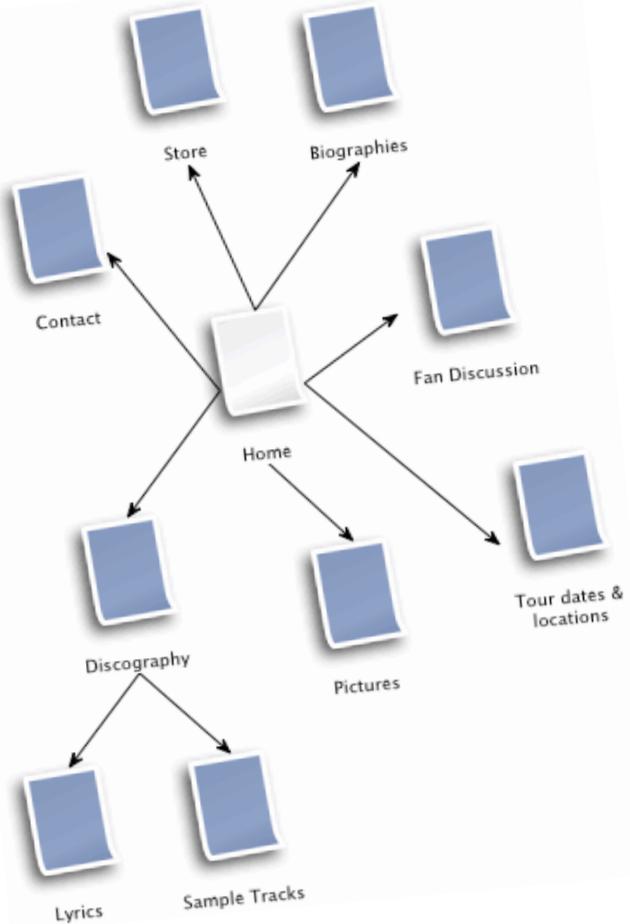


INFORMATION ARCHITECTURE (IA)

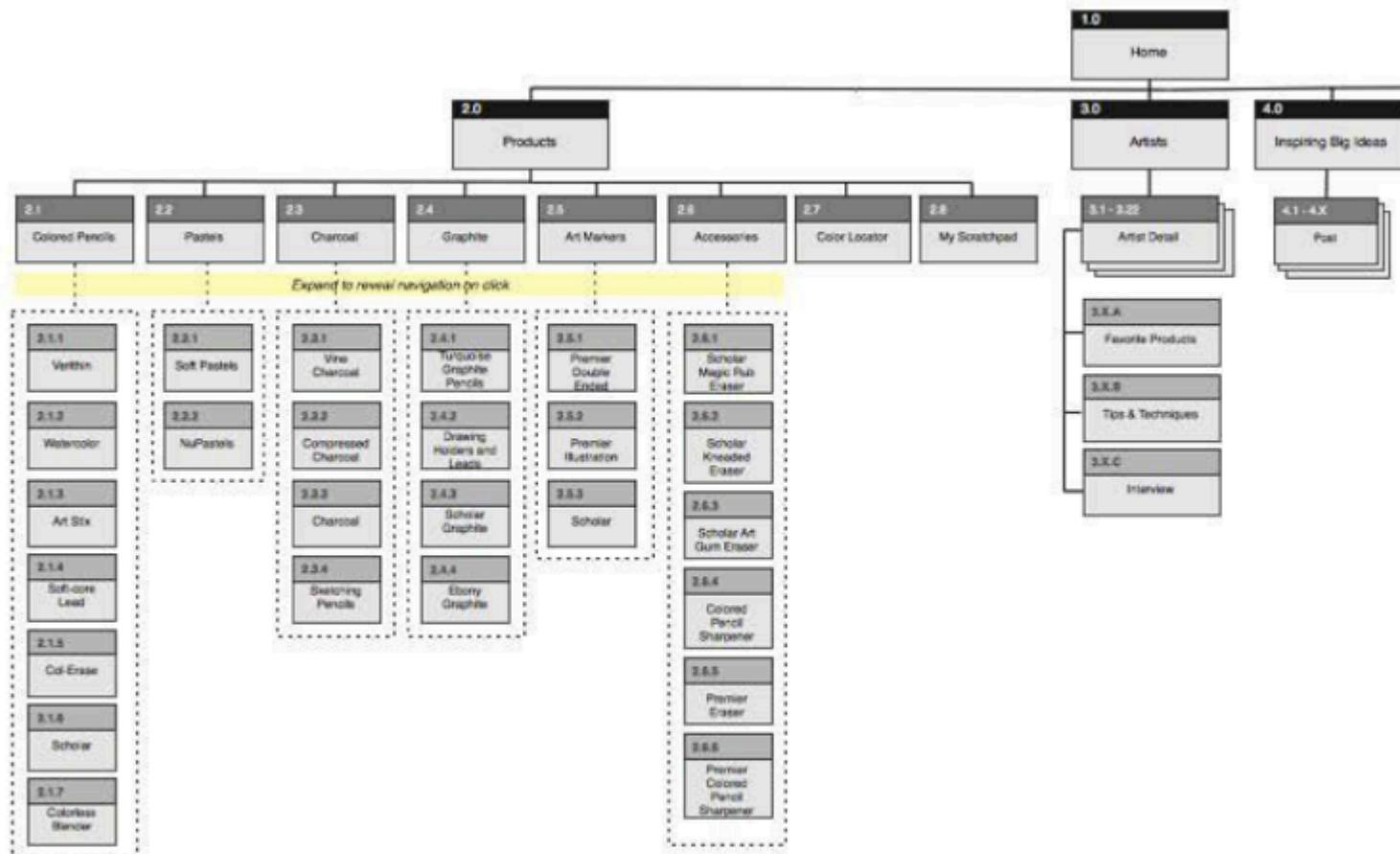
- Organize the site's information
- Sitemaps & Flow diagrams
 - Establish flow and order
- Wireframes
 - Define the user interaction and ease the handoff process to the creative team
- Deliverables: sitemaps, flows, wireframes

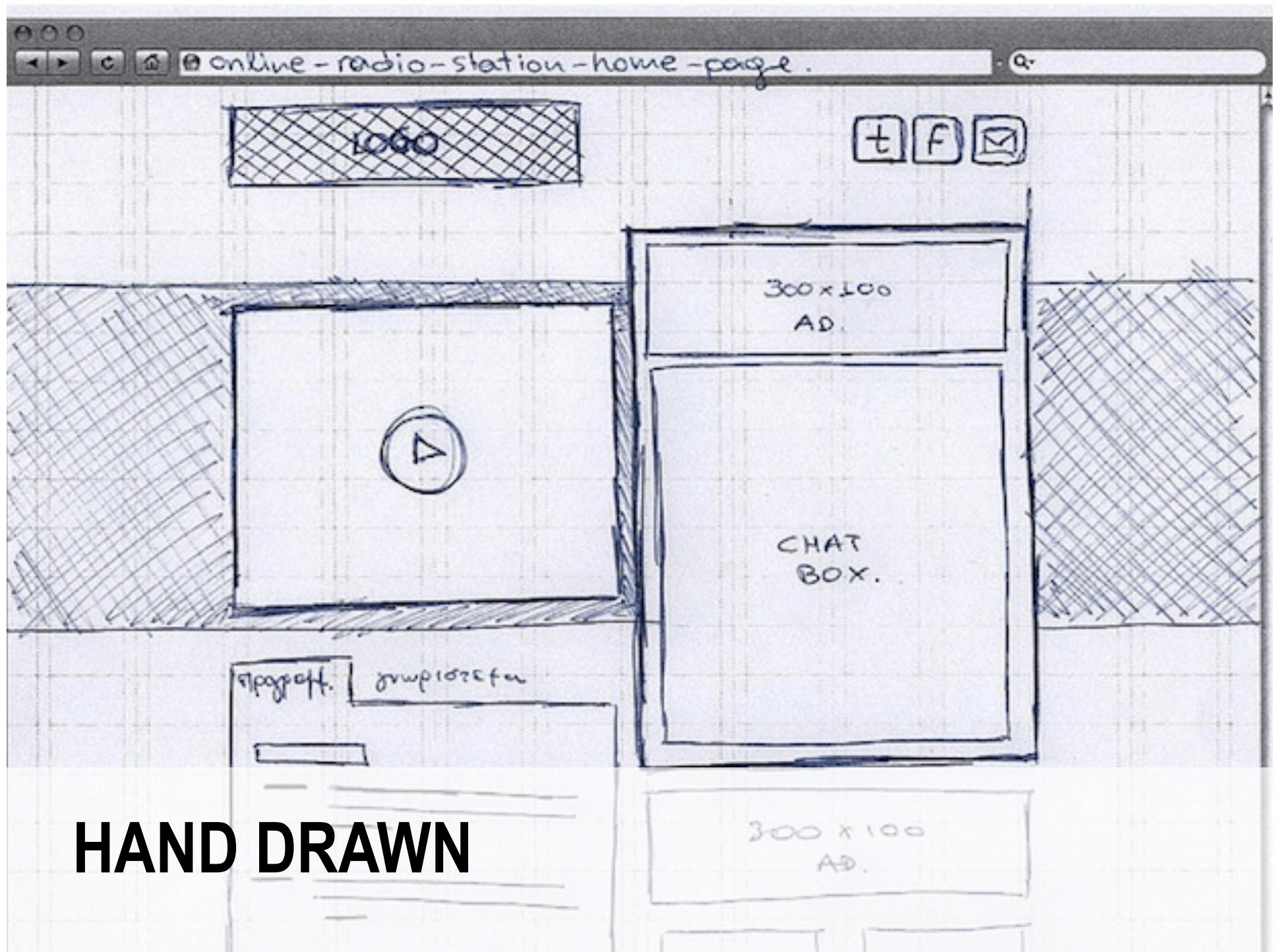


SITE MAP – SMALL SITE



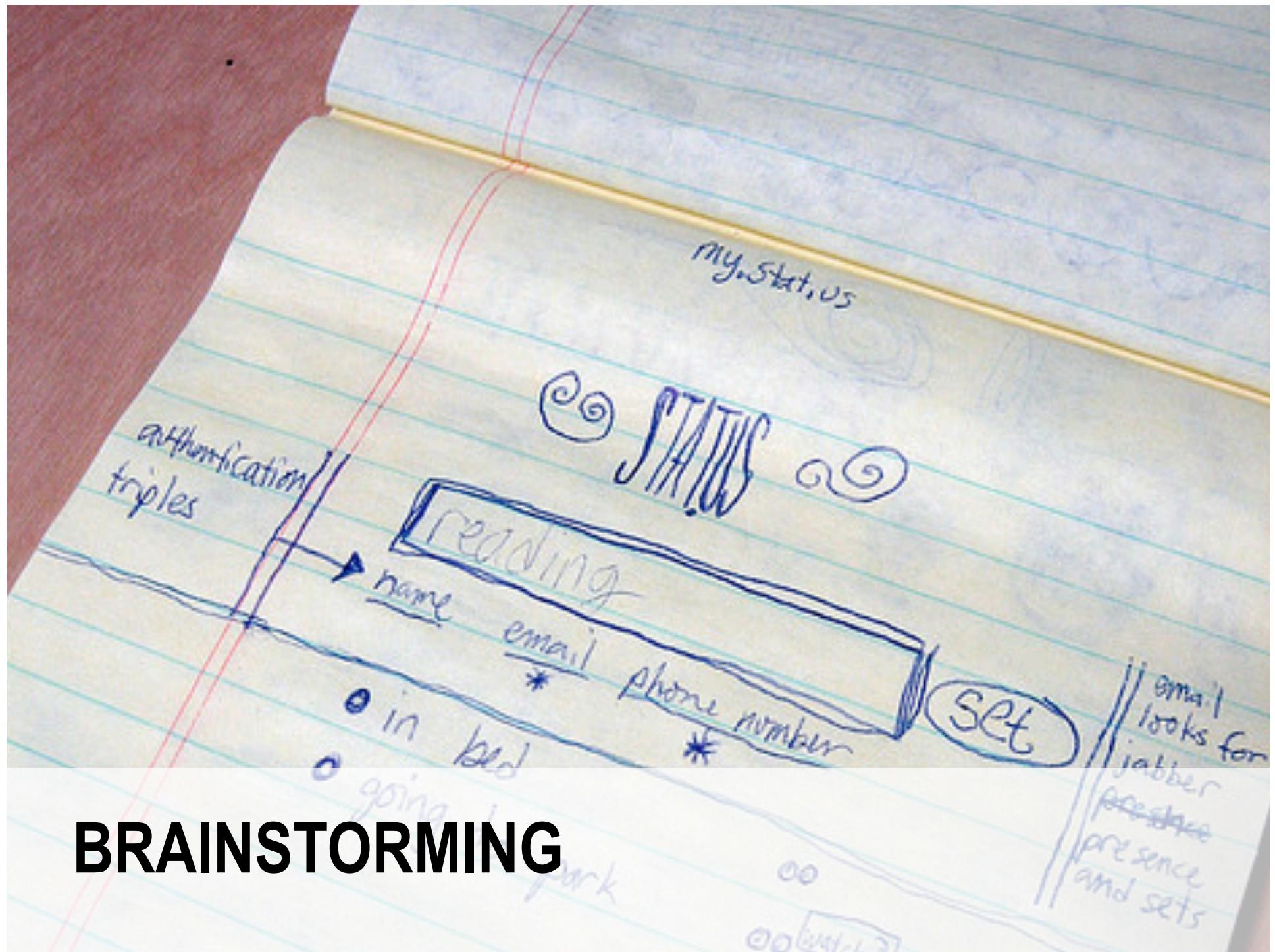
SITE MAP – LARGE SITE

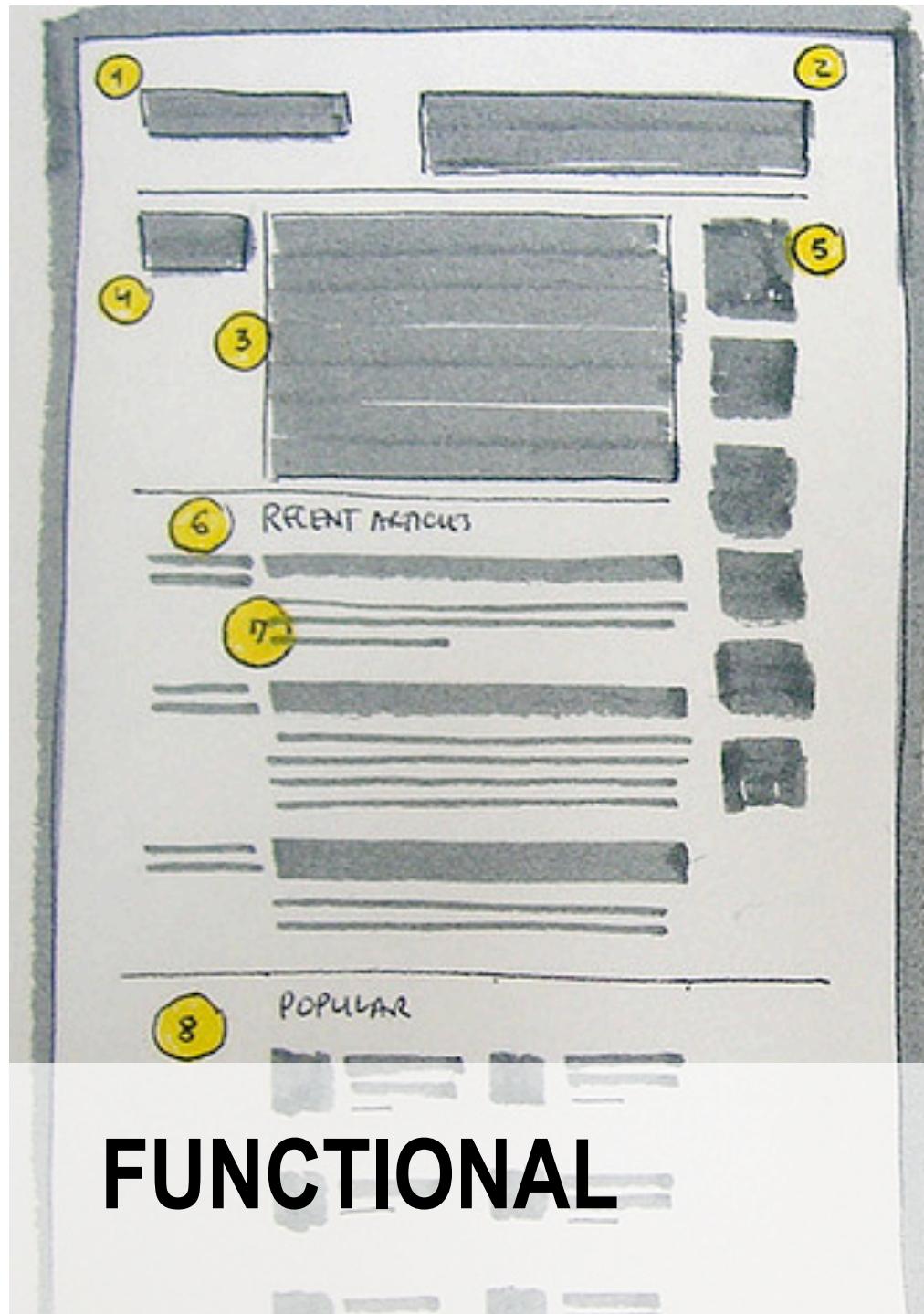




HAND DRAWN

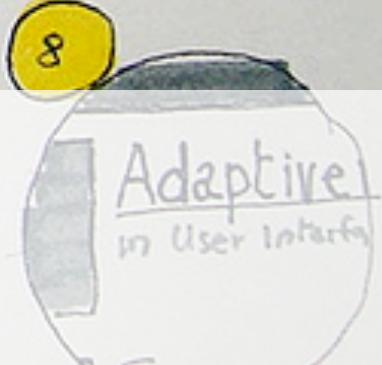
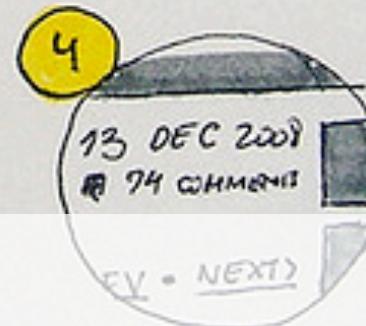
BRAINSTORMING





FUNCTIONAL

- 1 - LOGO AND TAGLINE
- 2 - NAVIGATION, SEARCH & SUBSCRIBE
- 3 - LATEST ARTICLE PREVIEW
- 4 - LATEST ARTICLE CALENDAR & INFO
- 5 - ADS 125x125
- 6 - RECENT POSTS AREA, SHOWING LATEST FIVE ARTICLES WITH LINK TO ARCHIVE AT THE END. ARCHIVE LOOKS THE SAME AS THIS VIEW. MAYBE TO INCLUDE CATEGORY?
- 7 - EACH ARTICLE HAS TITLE, DESCRIPTION AND CALENDAR & INFO
- 8 - POPULAR POSTS SHOWS 6 MOST POPULAR POSTS: 2 FROM ARTICLES, 2 FREEBIES AND 2 TUTORIALS. EACH ARTICLE HAS TITLE AND CATEGORY / DATE? IS DATE RELEVANT?





Cool New Games



Farm Ville

Farm Ville is a game where you can farm with your friends



Mall World

The place where you can be your own boss, run your own fashion boutique, and shop to your heart's content.



What's Hot

Celebs updates

Sign Up

Choose Username

Password

Re-Type Password

Email (optional)

Birthday

Boy Girl



MINIMAL

Report
Jobs
For parents

Blog
What's Giant Hello?
Meet the team

[Phones](#)[Rates](#)[Services](#)[Special Offers](#)[Team](#)[Events](#)[Find us](#)[Join](#)

Lorem > Ipsum > Dolar Sit > Consectetur

Welcome Josh!

You have [1 new message](#) and [12 items](#) in the XXXX Marketplace!

► XXXX Prepaid Broadband

▼ XXXX Mobile ► Settings

Rate Plan : Super Cap 100+ [Change](#) | [Details](#)

TIME	22d
REVUP Credits	\$5
Handset Rewards	\$15
My Credit	\$49.15

[Recharge](#)[Send SOS](#)[Change Rate Plan](#)[Earn Credits](#)[Settings](#)[View Statements](#)

Your Rating

Detailed

Detailed

Detailed

[Recharge](#)[Rewards](#)[Statements](#)[Change your Rate Plan](#)[FAQ](#)

XXXX MARKETPLACE PROMO

EARN FREE CREDIT JUST BY PIMPING YOUR PHONE!

[More info](#)

1 | 2 | 3 | 4 | 5 | 6

▼ XXXX Mobile Calendar

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Phasellus elementum enim vel quam consectetur posuere. Sed dui enim, ullamcorper quis commodo eu, volutpat nec sem.

Most popular events

January

Jan 5th – Lorem ipsumJan 5th – Lorem ipsum

Feb

Feb 5th – Lorem ipsFeb 5th – Lorem ips

Mar

Mar 5th – Lorem ipsumMar 5th – Lorem ipsum

Jan Feb Mar May June July Aug Sep Oct Nov Dec

View by: Month

<< Back | Next >>

1	2	3	4	5	6	7
Lorem ipsum		Lorem ipsum		Lorem ipsum	Lorem ipsum 2	
8	9	10	11	12	13	14
	Lorem ipsum	Lorem ipsum		Lorem ipsum	Lorem ipsum 2	

Map views



List views



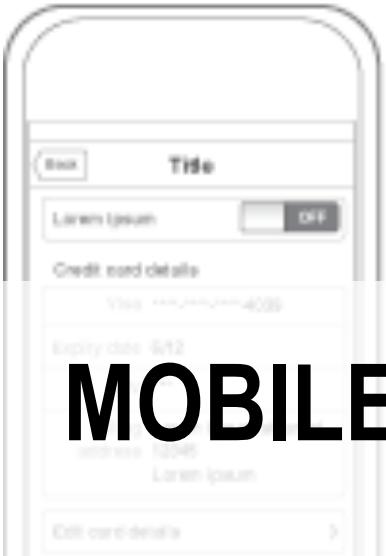
Notifications



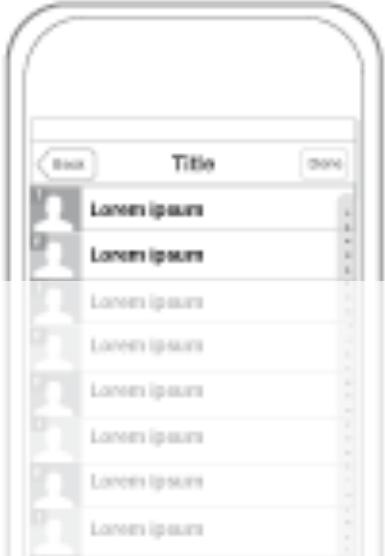
Profile pages



Table views



Contact lists



Web views



Keyboard



MOBILE

VISUAL DESIGN

- Wireframes become visual “comps”
- Each wireframe template becomes a comp template

DEVELOPMENT



GENERAL ASSEMBLY

general-assembly-logo.png



mailer.png

Real Text:

General Assembly offers classes, and events at the intersection of technology, design, and entrepreneurship. Together with our members, thought leaders, and seasoned practitioners, we offer a robust curriculum focused on



PROGRAMMING LANGUAGES

- Languages have strengths and weaknesses
- Developers choose based on
 - Security
 - Difficulty
 - Development time
 - Community

PROGRAMMING LANGUAGES

- Sometimes languages are required
 - HTML, CSS, Javascript on every site
 - Objective C for iOS development
 - Java for Android development
 - Content Management Systems (CMS) requirements

PROGRAMMING LANGUAGES

- What is a “Content Management System” (CMS)?
 - Manages content (duh!)
 - Out-of-the-box or custom CMS?

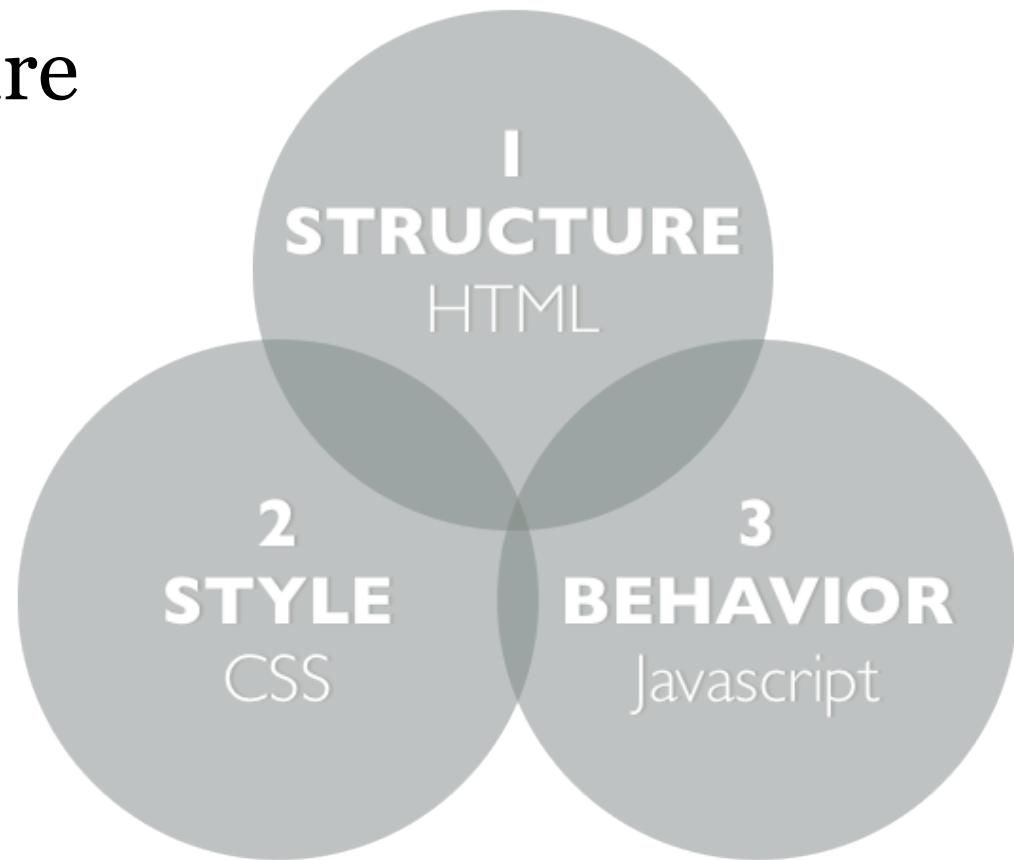
PROGRAMMING LANGUAGES

- Languages we're using in today's class:
 - HTML
 - CSS
 - Javascript
- All front-end (client side) code

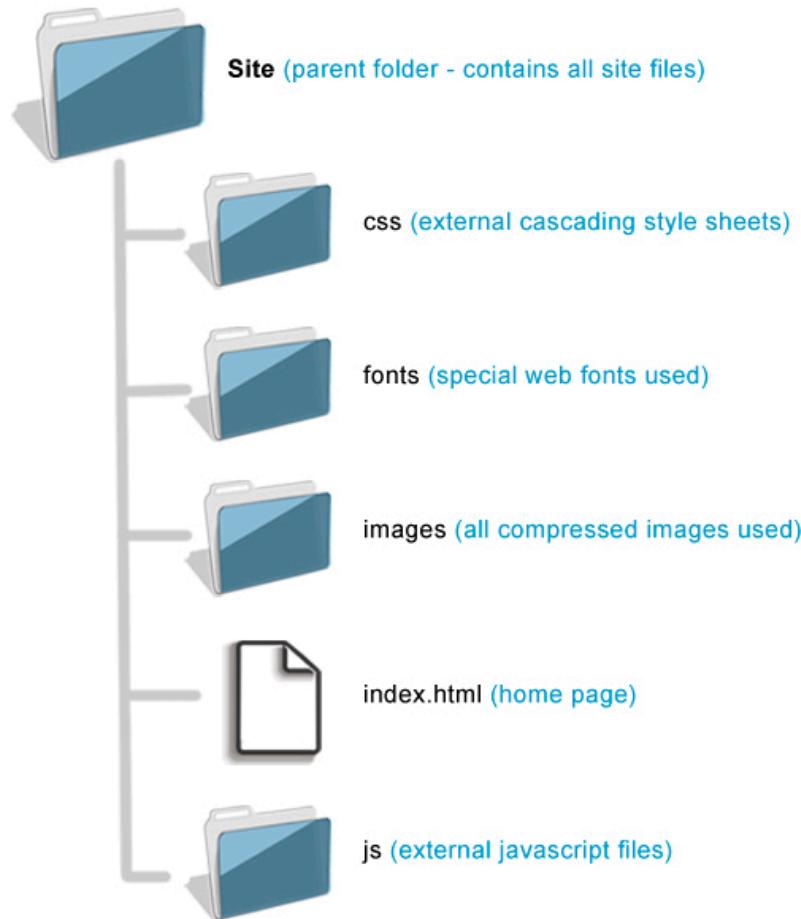


SEPARATION OF CONCERNS

- HTML = structure
- CSS = style
- JS = behavior



SITE ORGANIZATION



HTML BASICS

- Syntax
- Document Structure
- Content Tags
- Element Display

SYNTAX



SYNTAX



BASIC DOCUMENT STRUCTURE

```
<!doctype html>
<html lang="en">
<head>
```

Document metadata

```
</head>
<body>
```

Document contents

```
</body>
</html>
```



CONTENT TAGS

- Want to use tags that make sense and describe the data better
- Create code that is machine readable but human understandable



CONTENT TAGS

Heading Elements

<h1>Largest Heading</h1>

<h2> . . . </h2>

<h3> . . . </h3>

<h4> . . . </h4>

<h5> . . . </h5>

<h6>Smallest Heading</h6>



CONTENT TAGS

Unordered list

```
<ul>
    <li>First item</li>
    <li>Next item</li>
</ul>
```

CONTENT TAGS

Ordered list

```
<ol>
    <li>First item</li>
    <li>Next item</li>
</ol>
```

CONTENT TAGS

Definition list

```
<dl>
    <dt>First term</dt>
    <dd>Definition</dd>
    <dt>Next term</dt>
    <dd>Definition</dd>
</dl>
```



CONTENT TAGS

Text Elements

<p>This is a paragraph</p>

 (line break)

<hr> (horizontal rule)

<pre>This text is preformatted</pre>



CONTENT TAGS

Text Elements

Logical Styles

<*This text is emphasized*>

This text is strong

<code>This is some computer code</code>



DEPRECIATED CONTENT TAGS

Text Elements cont.

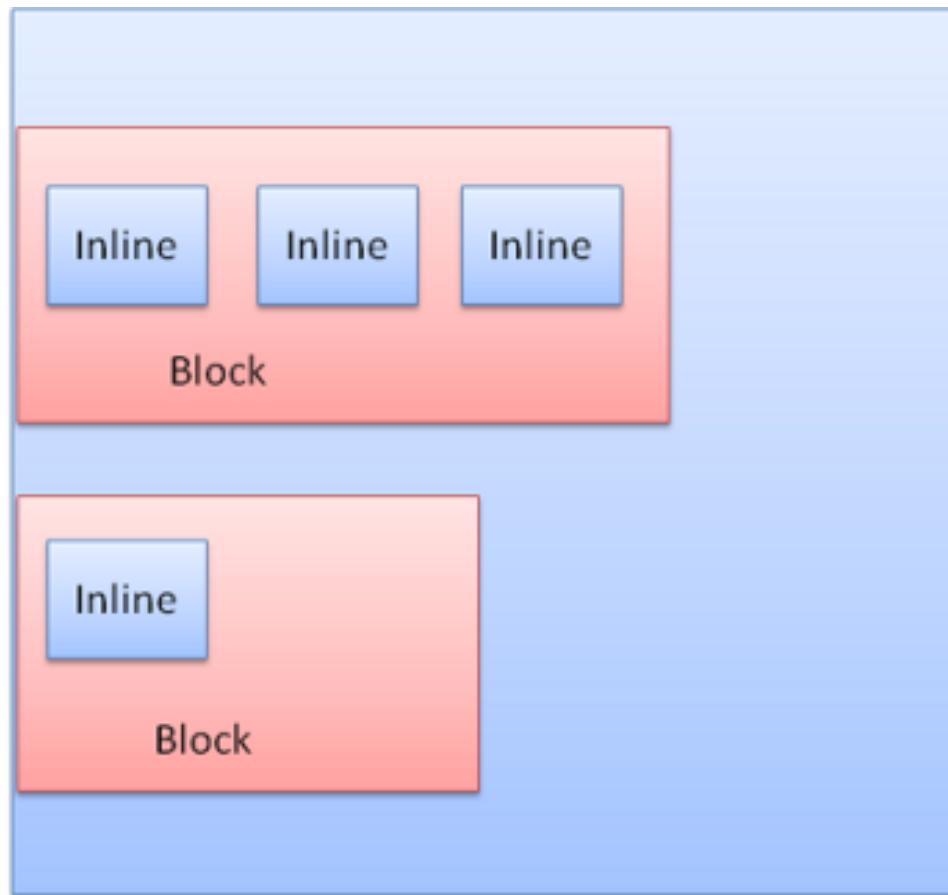
Physical Styles

This text is bold

<i>This text is italic</i>



ELEMENT DISPLAY



CASCADING STYLE SHEETS (CSS)

- Styles define how to display HTML elements.
- Three ways to write CSS
 - Inline Styles
 - Embedded Styles
 - External (linked) style sheets



CSS PROPERTIES

- `color` - sets the color of text
- `background-color` - sets the background color of an element
- `background-image` - sets an image to be the background of an element
- `font-size` - sets the size of a font
- `padding` - adds space inside of an element
- `margin` - adds space outside of an element



CSS DECLARATION

```
body {  
    background-color: red;  
    font-size: 12px;  
}
```



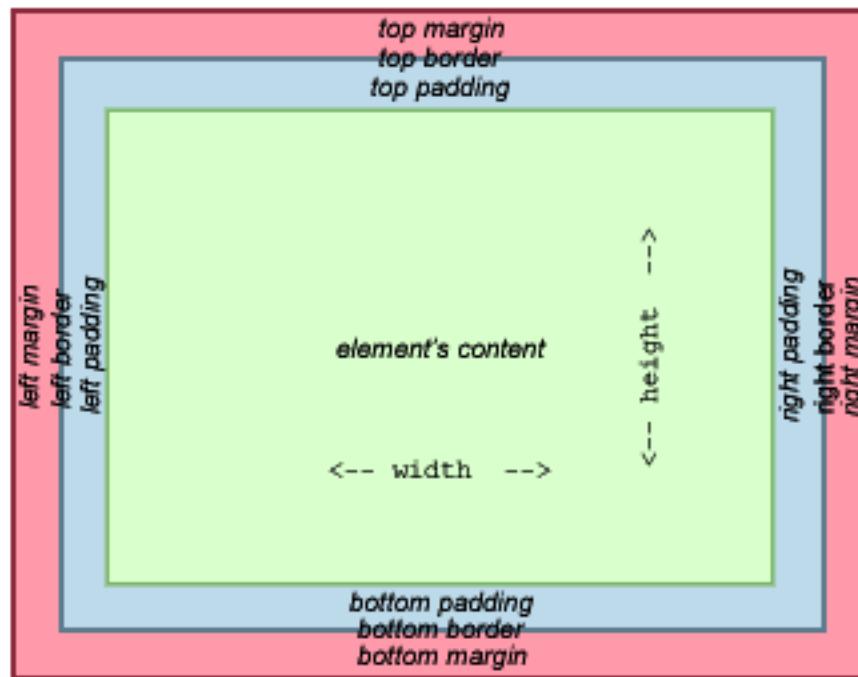
W3C VALIDATION

<http://validator.w3.org/>

The screenshot shows the W3C Markup Validation Service interface. At the top, there is a blue header bar with the W3C logo and the text "Markup Validation Service" and "Check the markup (HTML, XHTML, ...) of Web documents". Below the header, there are three buttons: "Validate by URI" (highlighted in grey), "Validate by File Upload", and "Validate by Direct Input". Under the "Validate by URI" section, there is a sub-section titled "Validate by URI" with the sub-instruction "Validate a document online:" followed by a text input field labeled "Address:". Below this is a link "More Options". At the bottom of the form is a "Check" button.



BOX MODEL



NOW WRITE SOME CODE!

First Up: CSS and HTML



DEVELOPER TOOLS

- Browser tools
 - Chrome's Developer Tools
 - Right click->Inspect Element
 - Safari's Web Inspector
 - Turn it on: Safari->Preferences->Advanced
 - Firefox
 - Download Firebug



JAVASCRIPT

- Programming language
- Creates interactions
- Runs in the browser
- Modifies HTML and CSS

GETTING STARTED

- Load the Javascript File

```
<script type="text/javascript" src="path/file.js"></script>
```

- Inline Javascript

```
<script type="text/javascript">  
    "JavaScript goes here";  
</script>
```



VARIABLES

- Declaration
`var age;`
- Assignment
`age = 21;`
- Declaration and initialization
`var age = 21;`
- Re-assignment
`var name = "Keith";
name = "Charley";`



VARIABLE CONVENTIONS

- Variables start with a lower case letter
- Don't start with a number or use an ampersand (&) in the name
 - Bad: 99Balloons or alpha&beta
- If they contain multiple words, subsequent words start with an upper case letter
 - e.g: var numberOfStudents = 10;
 - This is called “camel case”



DATA TYPES

- Primary Data Types
 - String
 - Number
 - Boolean
- Composite Data Types
 - Object
 - Array

STRING

- Stores textual information
 - Double quotes
 - "How is the weather today?"
 - Single Quotes
 - 'Warm'

QUOTES IN STRINGS

- Double vs single quoted strings:
 - 'They "purchased" it'
 - "It's a beautiful day"
- Escaping
 - "They \"purchased\" it"
 - 'It\'s a beautiful day'

NUMBERS

- Represent numerical data
 - int: 42
 - float: 3.14159265
- Signed
 - int: +6
 - float: -8.2

BOOLEAN

- Binary, two possible values:
 - true
 - false
- Has driver license:
 - If driver has license: true
 - If driver does not have license: false

ARRAYS

- Contains other Data Types (elements)
 - Can be of different type
- Starts with a '['
- Ends with a ']'
- Elements separated by a ','
- Whitespace between elements is ignored



SAMPLE ARRAYS

- Create an empty array: []
- Single element in array: ["one element"]
- Multiple elements (with different type):
["first", 2, "three"]

ARRAY INDEXING

- “Indexing” means to pull the value out of a certain place in array
- Use '[' and ']' combined with a number to index into an array
- JavaScript arrays are zero indexed
 - `["a", "b", "c"][0]` => "a"
 - `["a", "b", "c"][1]` => "b"
 - `["a", "b", "c"][2]` => "c"



ARRAY INFORMATION

- Length of an array: `["a", "b", "c"].length`
 - Gives the number: 3
- First element is at position zero
- Last element is one less than the array length

CONDITIONALS

- Decides which block of code to run if a conditional statement evaluates to true or false
- Can include comparison and logical operators

LOOPS

- Allows you to run code over and over until you hit a specified point

FUNCTIONS

- A block of code that runs when you call it

JQUERY

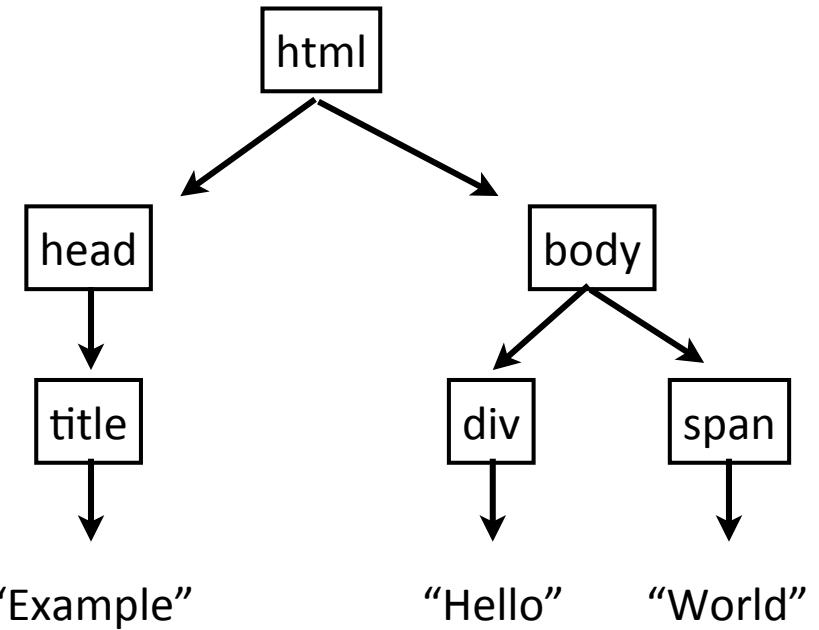
- jQuery is a Javascript library to simplify DOM manipulation
- Cross-browser support built in
- Written in Javascript, not a new language
- Allows document traversal, css manipulation, event handling, animation, and more!

DOCUMENT OBJECT MODEL

- The structure of HTML documents
- How a document should be accessed and manipulated (by javascript)
- HTML vs. DOM
 - The browser is showing you the HTML + CSS that is stored in the DOM
- SSS

DOM EXAMPLE

```
<html>
  <head>
    <title>Example</title>
  </head>
  <body>
    <div>Hello</div>
    <span>world</span>
  </body>
</html>
```



JQUERY FUNDAMENTALS

- \$ function
 - A reference to the `jQuery()`
- Finds elements on a page using CSS selectors with the \$ function:
 - `$("#searchBox")` for IDs
 - `$(".errors")` for classes
- Returns an array of HTML elements you have selected.

ONLINE RESOURCES

- cssstricks.com
- delcious.com or pinboard.in
- codepen.io
- stackoverflow.com for questions
- W3 School
- Twitter (e.g. @real_CSS_Tricks)
- Google!

BOOKS

- Head First Books (HTML and Javascript)
- A Book Apart collection
- *HTML & CSS* by Jon Duckett
- *CSS Mastery* by Simon Collison, Andy Budd, Cameron Moll
- *JavaScript & jQuery: The Missing Manual* by David Sawyer McFarland
- *Learning jQuery* by Jonathan Chaffer and Karl Swedberg



HOW TO HIRE A DEVELOPER

- Look for candidates
 - Active approaches
 - Passive Approaches
- Informal Meeting
 - Casual environment
- Formal interview
- Make an offer

