Intro to Web Development

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Tools

A good toolkit is important.

Why?

The tools of the trade are designed to help us solve problems faster.

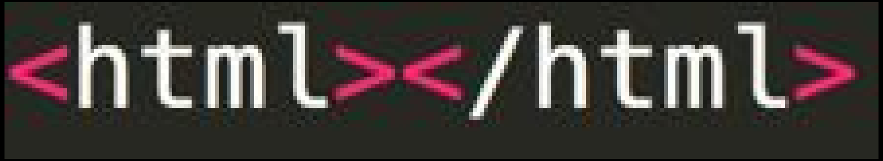
The Tools you Need

- A good text editor
- A way to debug your HTML, CSS, and Javascript

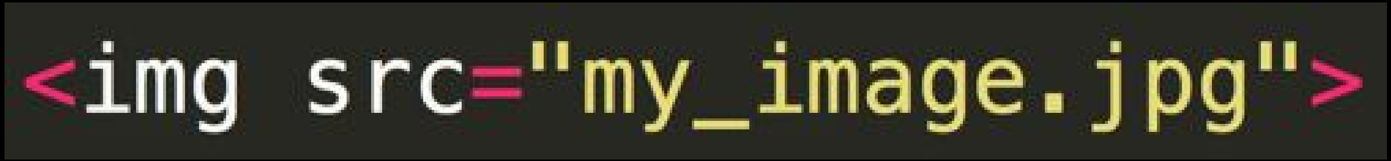
Our Toolbox

Sublime: Syntax Highlighting

Colors help differentiate between different parts of your code.

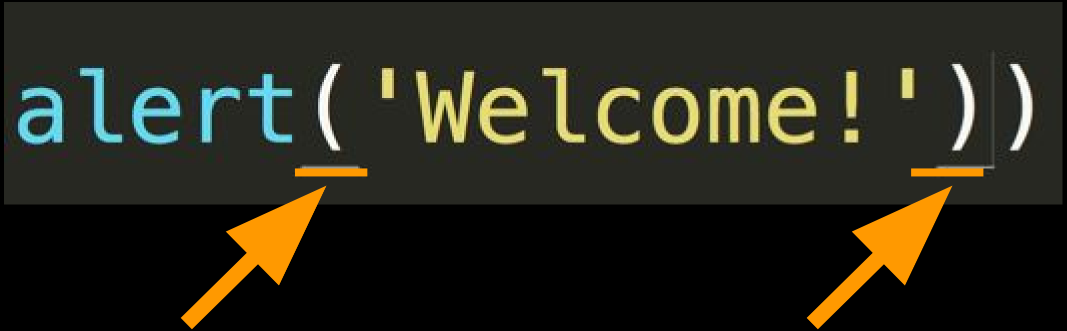


```
<html></html>
```

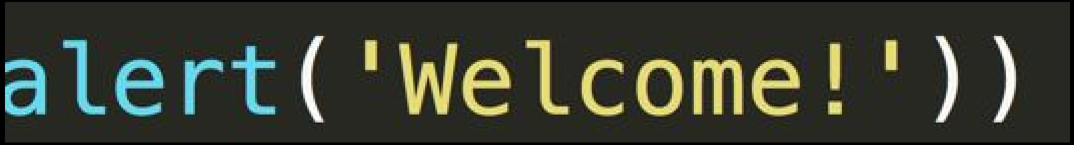


```
<img src="my_image.jpg">
```

Sublime: Match Parenthesis

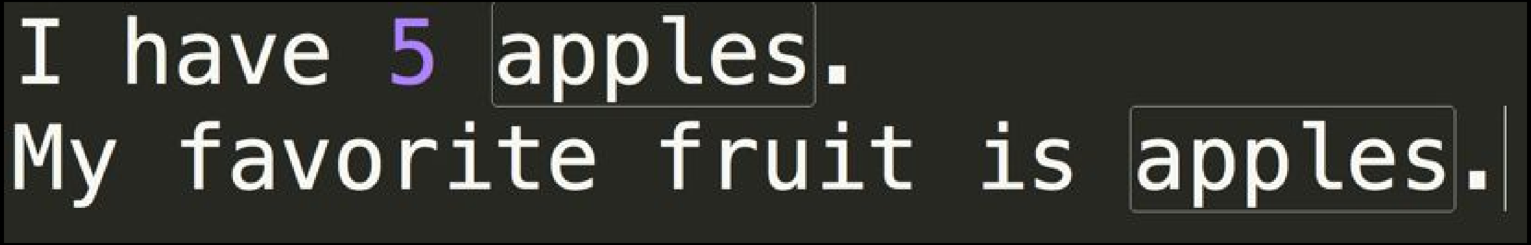


```
alert('Welcome!'))
```

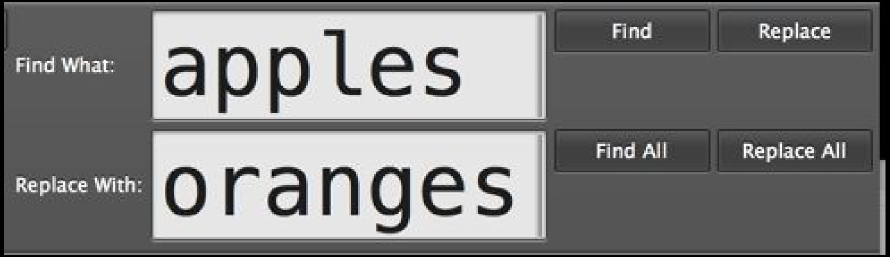


```
alert('Welcome!'))
```

Sublime: Replace All

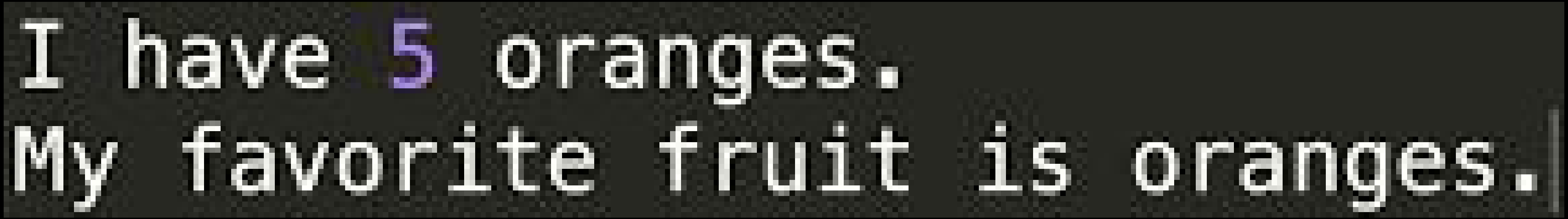


```
I have 5 apples.
My favorite fruit is apples.
```



Find What: apples

Replace With: oranges



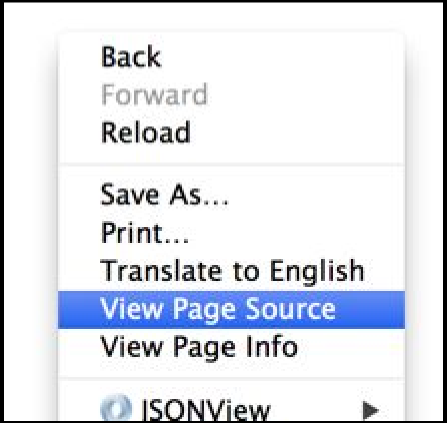
```
I have 5 oranges.
My favorite fruit is oranges.
```

Debugging a web page

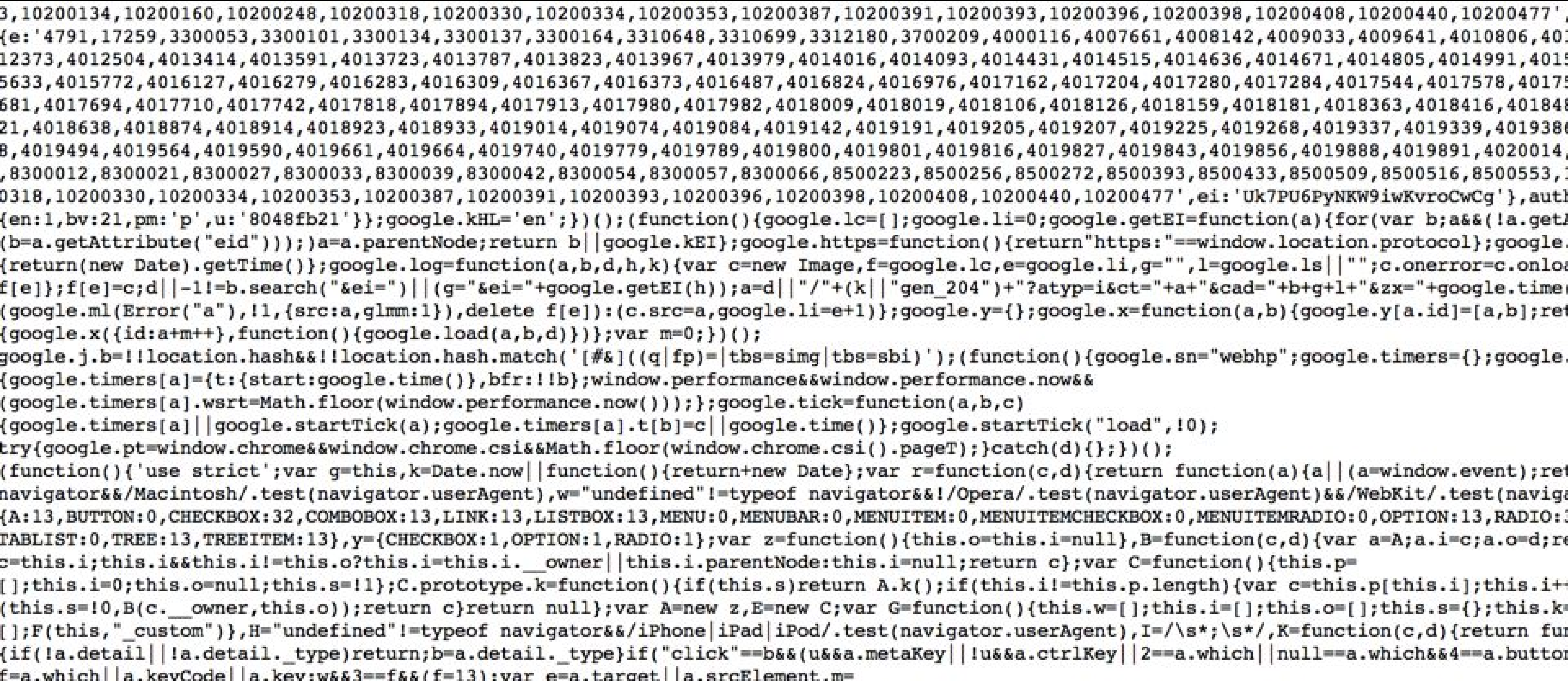
Chrome: View Source

Visit www.google.com

Right Click **->** View Page Source

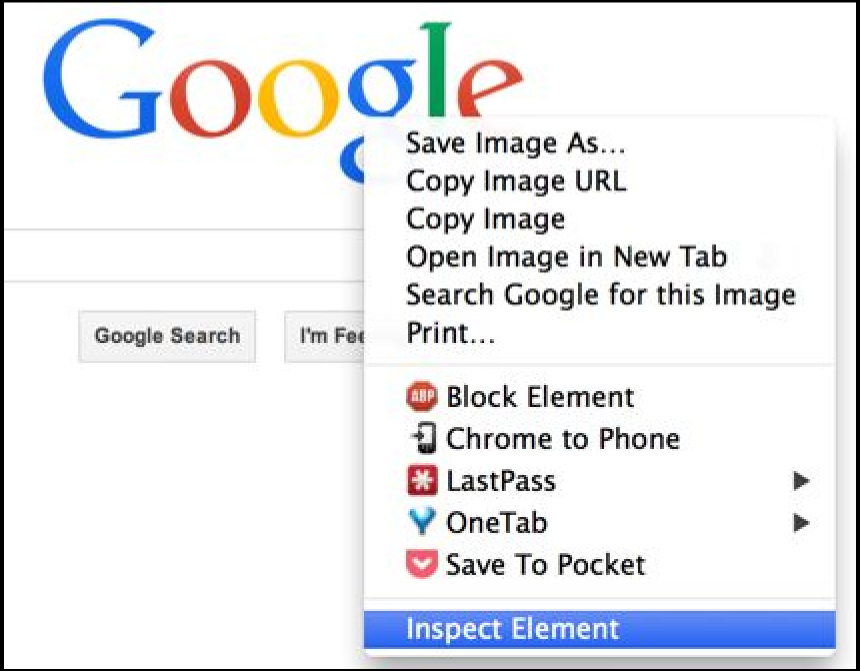


Whoa.

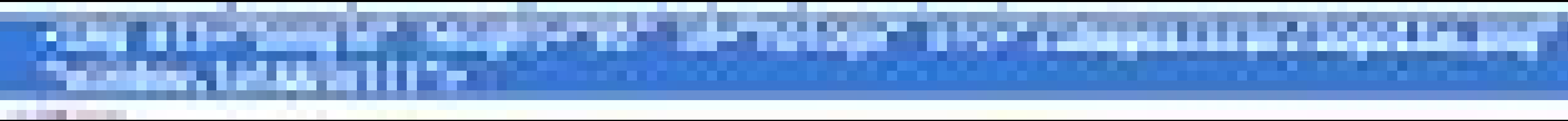


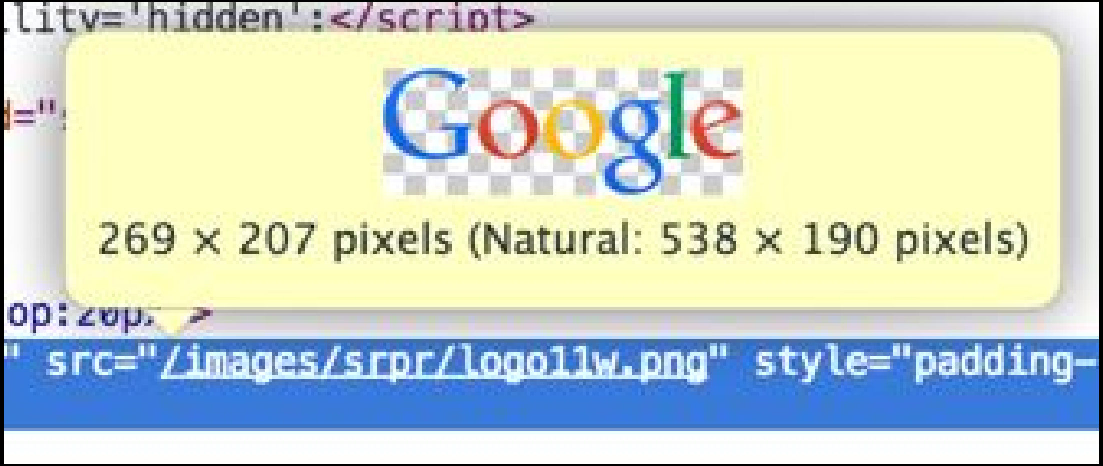
```
3,10200134,10200160,10200248,10200318,10200330,10200334,10200353,10200387,10200391,10200393,10200396,10200398,10200408,10200440,10200477',
{e:'4791,17259,3300053,3300101,3300134,3300137,3300164,3310648,3310699,3312180,3700209,4000116,4007661,4008142,4009033,4009641,4010806,40
12373,4012504,4013414,4013591,4013723,4013787,4013823,4013967,4013979,4014016,4014093,4014431,4014515,4014636,4014671,4014805,4014991,4015
5633,4015772,4016127,4016279,4016283,4016309,4016367,4016373,4016487,4016824,4016976,4017162,4017204,4017280,4017284,4017544,4017578,4017
681,4017694,4017710,4017742,4017818,4017894,4017913,4017980,4017982,4018009,4018019,4018106,4018126,4018159,4018181,4018363,4018416,40184
21,4018638,4018874,4018914,4018923,4018933,4019014,4019074,4019084,4019142,4019191,4019205,4019207,4019225,4019268,4019337,4019339,401938
8,4019494,4019564,4019590,4019661,4019664,4019740,4019779,4019789,4019800,4019801,4019816,4019827,4019843,4019856,4019888,4019891,4020014,
,8300012,8300021,8300027,8300033,8300039,8300042,8300054,8300057,8300066,8500223,8500256,8500272,8500393,8500433,8500509,8500516,8500553,
0318,10200330,10200334,10200353,10200387,10200391,10200393,10200396,10200398,10200408,10200440,10200477',ei:'Uk7PU6PyNKW9iwKvroCwCg'},auth
{en:1,bv:21,pm:'p',u:'8048fb21'}};google.kHL='en';})();(function(){google.lc=[];google.li=0;google.getEI=function(a){for(var b;a&&(!a.get
(b=a.getAttribute("eid")));)a=a.parentNode;return b||google.kEI};google.https=function(){return"https:"==window.location.protocol};google.
{return(new Date).getTime()};google.log=function(a,b,d,h,k){var c=new Image,f=google.lc,e=google.li,g="",l=google.ls||"";c.onerror=c.onloa
f[e]};f[e]=c;d||-1!=b.search("&ei=")||(g="&ei="+google.getEI(h));a=d||"/"+(k||"gen_204")+"?atyp=i&ct="+a+"&cad="+b+g+l+"&zx="+google.time
(google.ml(Error("a"),!1,{src:a,glmm:1}),delete f[e]):(c.src=a,google.li=e+1)};google.y={};google.x=function(a,b){google.y[a.id]=[a,b];ret
{google.x({id:a+m++},function(){google.load(a,b,d)})};var m=0;})();
google.j.b=!!location.hash&&!!location.hash.match('[#&]((q|fp)=|tbs=simg|tbs=sbi)');(function(){google.sn="webhp";google.timers={};google.
{google.timers[a]={t:{start:google.time()},bfr:!!b};window.performance&&window.performance.now&&
(google.timers[a].wsrt=Math.floor(window.performance.now()));};google.tick=function(a,b,c)
{google.timers[a]||google.startTick(a);google.timers[a].t[b]=c||google.time()};google.startTick("load",!0);
try{google.pt=window.chrome&&window.chrome.csi&&Math.floor(window.chrome.csi().pageT);}catch(d){};})();
(function(){'use strict';var g=this,k=Date.now||function(){return+new Date};var r=function(c,d){return function(a){a||(a=window.event);ret
navigator&&/Macintosh/.test(navigator.userAgent),w="undefined"!=typeof navigator&&!/Opera/.test(navigator.userAgent)&&/WebKit/.test(naviga
{A:13,BUTTON:0,CHECKBOX:32,COMBOBOX:13,LINK:13,LISTBOX:13,MENU:0,MENUBAR:0,MENUITEM:0,MENUITEMCHECKBOX:0,MENUITEMRADIO:0,OPTION:13,RADIO:
TABLIST:0,TREE:13,TREEITEM:13},y={CHECKBOX:1,OPTION:1,RADIO:1};var z=function(){this.o=this.i=null},B=function(c,d){var a=A;a.i=c;a.o=d;re
c=this.i;this.i&&this.i!=this.o?this.i=this.i.__owner||this.i.parentNode:this.i=null;return c};var C=function(){this.p=
[];this.i=0;this.o=null;this.s=!1};C.prototype.k=function(){if(this.s)return A.k();if(this.i!=this.p.length){var c=this.p[this.i];this.i+
(this.s=!0,B(c.__owner,this.o));return c}return null};var A=new z,E=new C;var G=function(){this.w=[];this.i=[];this.o=[];this.s={};this.k
[];F(this,"_custom")},H="undefined"!=typeof navigator&&/iPhone|iPad|iPod/.test(navigator.userAgent),I=/\s*;\s*/,K=function(c,d){return fu
{if(!a.detail||!a.detail._type)return;b=a.detail._type}if("click"==b&&(u&&a.metaKey||!u&&a.ctrlKey||2==a.which||null==a.which&&4==a.butto
f=a.which||a.keyCode||a.key;w&&3==f&&(f=13);var e=a.target||a.srcElement,m=
```

Better Way - Inspect Element



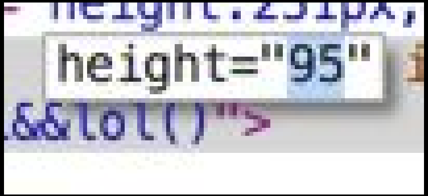
Much Better.




```
lity='hidden';</script>
d="
op:20p. />
" src="/images/srpr/logo1lw.png" style="padding-
```
269 × 207 pixels (Natural: 538 × 190 pixels)

Chrome: Updating Values

Double click on the field you want to change.



```
height:231px;
height="95"
&&lol()">
```

Enter the new value, and press enter to see your changes.

Update Values

Note: Your updates are only on your local machine.

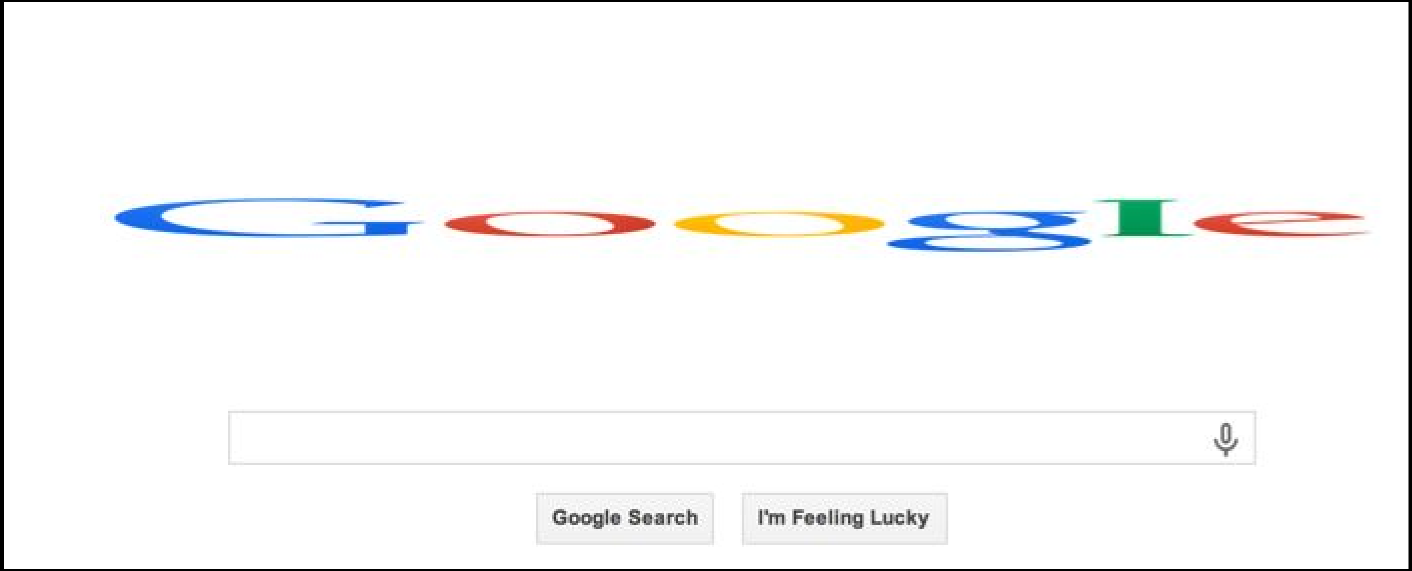
If you refresh the webpage, your updates will be gone.

Updating Values: Exercise

Let’s stretch out the google logo.

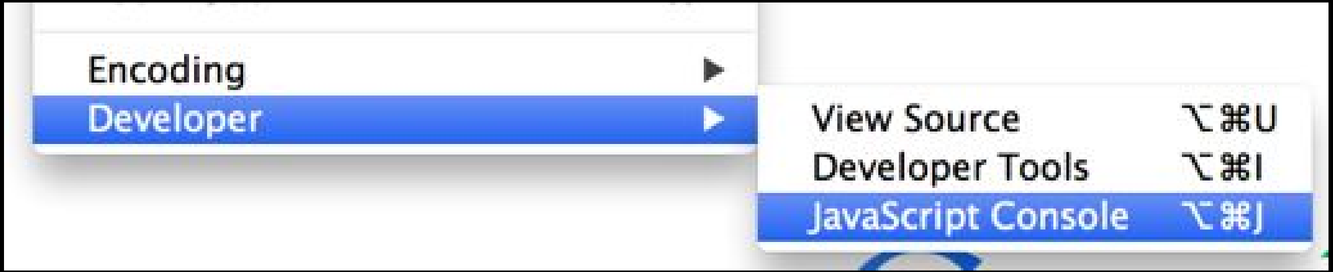
1. Navigate to http://www.google.com
2. Inspect Element on the Google Logo
3. Find the width value, set it to 700.
4. Find the height value, set it to 30.

Updating Values: Results



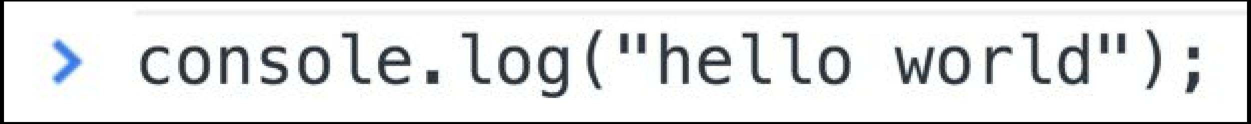
Chrome: Javascript Console

View -> Developer -> Javascript Console

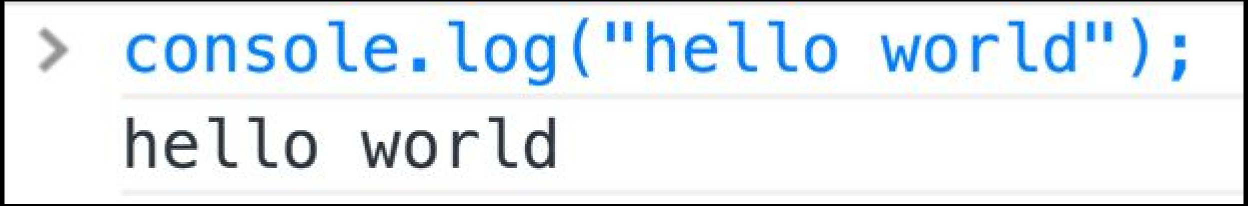


Interactive Javascript

Open the Javascript Console.



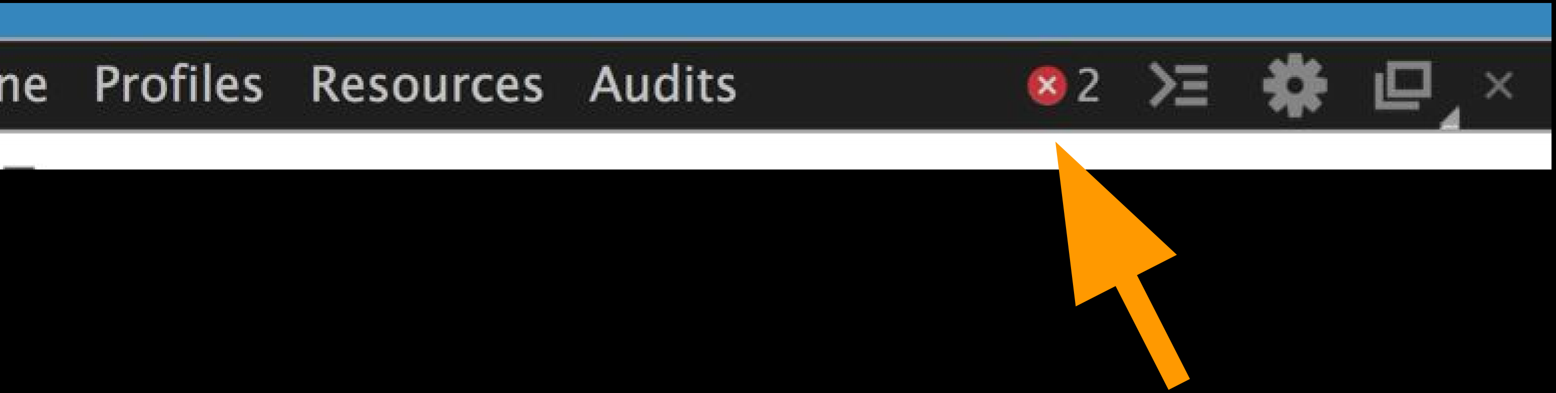
```
> console.log("hello world");
```



```
> console.log("hello world");
  hello world
```

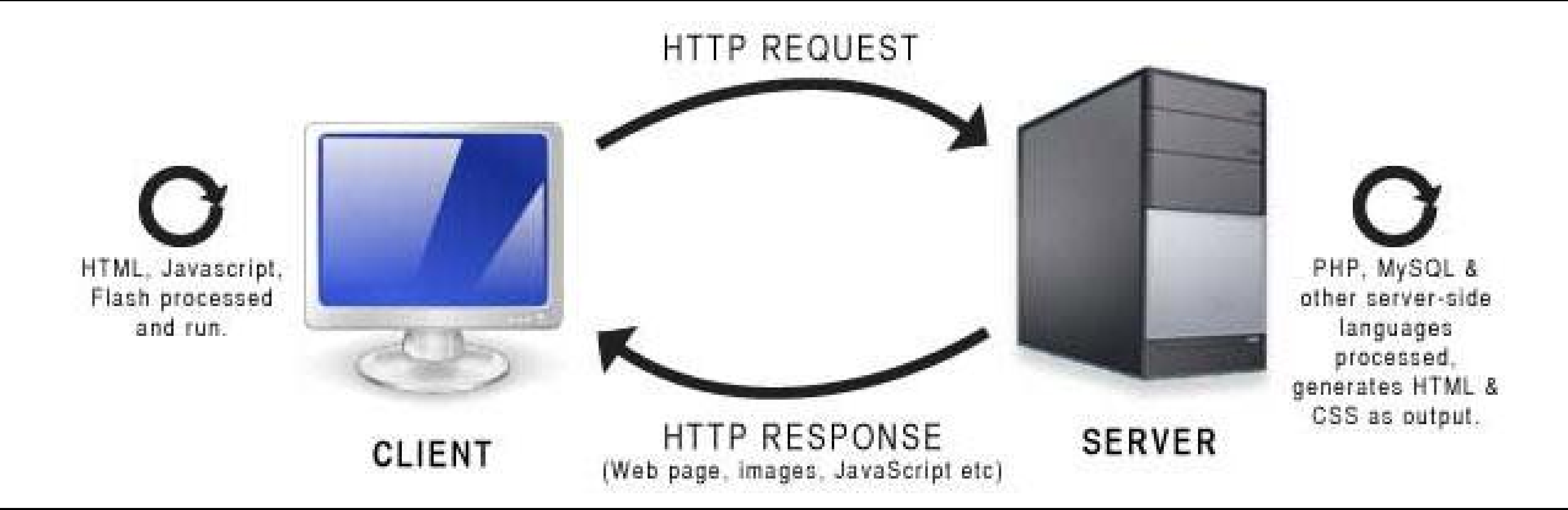
Chrome: Javascript Errors

If your Javascript has errors, you'll see an indicator in the developer toolbar.



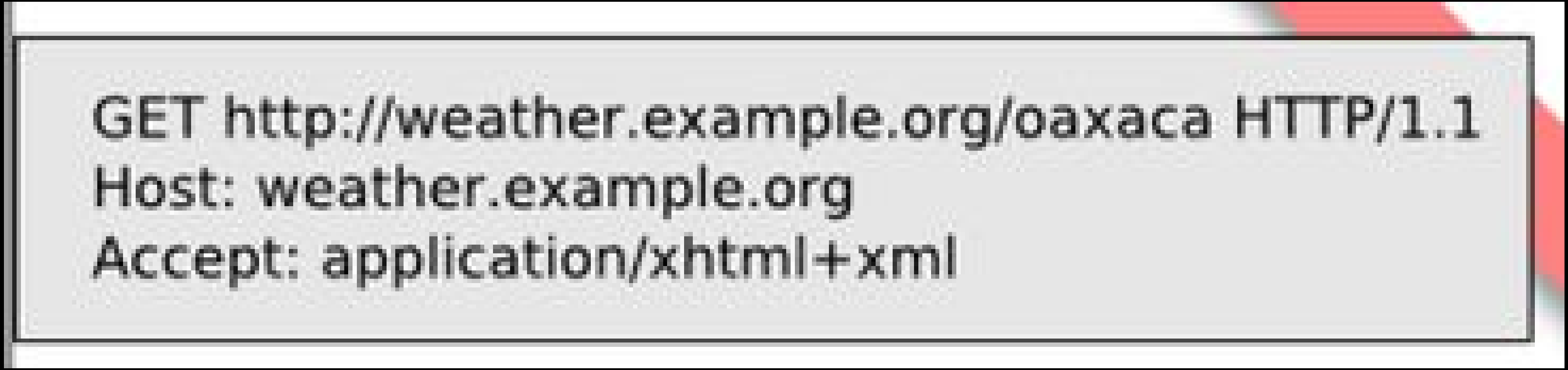
Client & Server

HTTP Request & Response


HTTP REQUEST
HTML, Javascript, Flash processed and run.
CLIENT
HTTP RESPONSE
(Web page, images, JavaScript etc)
SERVER
PHP, MySQL & other server-side languages processed, generates HTML & CSS as output.

What happens?

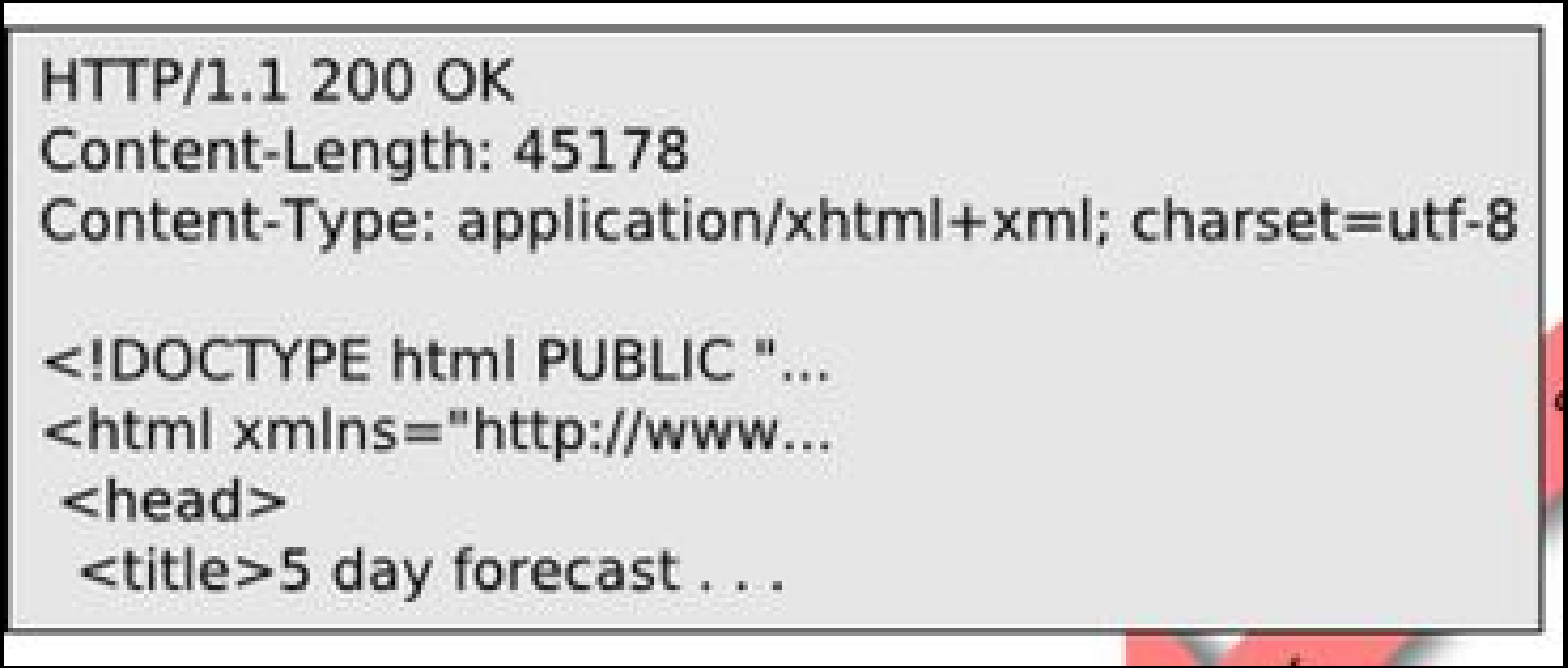
When a link is clicked, the browser creates an **HTTP Request t**hat is sent to the server.



```
GET http://weather.example.org/oaxaca HTTP/1.1
Host: weather.example.org
Accept: application/xhtml+xml
```

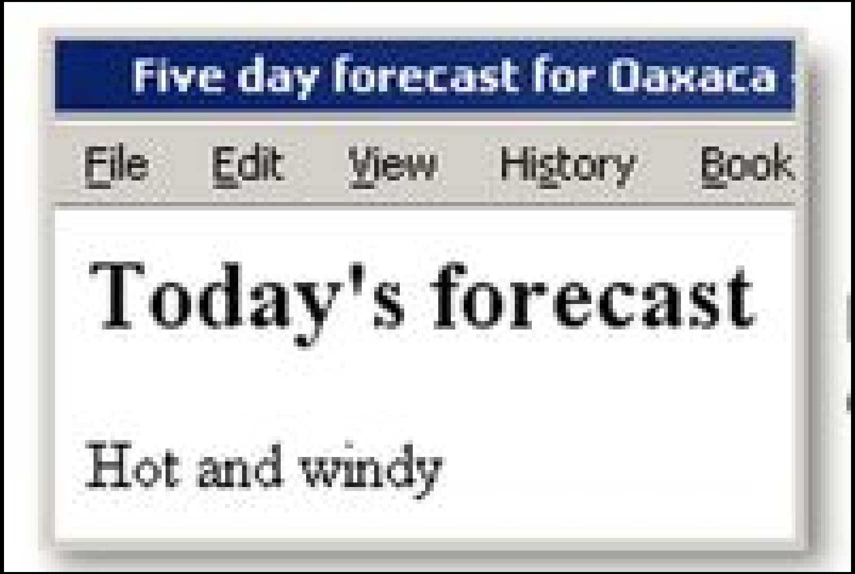
The Server handles the request

3. The Server Responds



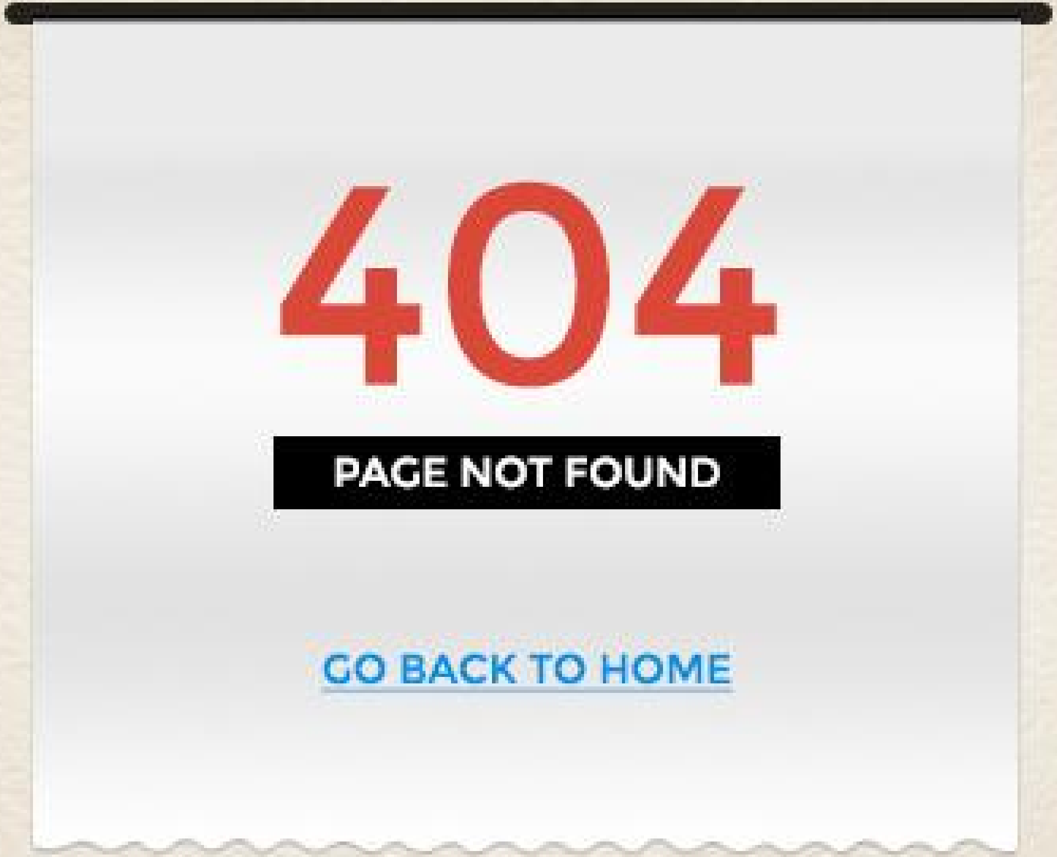
```
HTTP/1.1 200 OK
Content-Length: 45178
Content-Type: application/xhtml+xml; charset=utf-8

<!DOCTYPE html PUBLIC "...
<html xmlns="http://www...
 <head>
  <title>5 day forecast . . .
```

The Browser Displays the Page



Today's forecast

Hot and windy



404

PAGE NOT FOUND

GO BACK TO HOME

Common HTTP Status Codes

200 - OK

404 - Resource not found

500 - Server Error

Status Code Ranges

100s are informational

200s are successes

300s are redirection (something moved)

400s are client errors

500s are server errors

Hypertext Markup Language

What is HTML?

It is the content of your web page. If you have a blog, the HTML will describe the different sections of your page and will actually have the words of your blog post.

What is HTML?

HTML is not style. It does not describe how the page is arranged, the color, or the background image. That is CSS.

What is HTML?

HTML is made up nested tags. You start with the most general and nest it, becoming more specific.

```
<car>
  <engine>
    <transmission></transmission>
    <radiator></radiator>
  </engine>
  <stereo>
    <cd-player></cd-player>
    <fm-radio></fm-radio>
  </stereo>
</car>
```

```xml
<team>
  <defense>
    <defensive-backs>
      <corner-back>Richard Sherman</corner-back>
      <free-safety>Earl Thomas</free-safety>
      <strong-safety>Kam Chancellor</strong-safety>
    </defensive-backs>
  </defense>
  <offense>
    <wide-receivers>
      <wide-receiver>Doug Baldwin</wide-receiver>
      <wide-receiver>Golden Tate</wide-receiver>
    </wide-receivers>
  </offense>
</team>
```

```html
<html>
  <head>
    <title>My first web page</title>
  </head>
  <body>
    <h1>My very first web page</h1>
    <p>
      This is pretty much the most awesome thing ever. Seriously.
    </p>
  </body>
</html>
```

http://codepen.io/btholt/pen/hadGL

HTML Tags - Meta

- **`<html>`** - Encompasses your entire document.
- **`<head>`** - Where all your meta-data goes. Nothing in here gets displayed.
- **`<body>`** - Where all your content goes. This is the stuff that will be displayed.

HTML Tags - Content

- **`<h1>, <h2>, … <h6>`** - Headers or titles. h1 is the most important or “top level.”
- **`<p>`** - Denotes a stand-alone paragraph.
- **`<div>`** - A division or container of content. Used to group like objects together.

HTML Tags - Content

- **`<ul>`** - An unordered list. These bullet points are an unordered list. Implies no order.
- **`<ol>`** - Ordered list. Any list that implies some order (usually has leading numbers.)
- **`<li>`** - An element of a list. In this case, an individual bullet point.

```
<h1>My favorite social media sites</h1>
<ol>
  <li>reddit</li>
  <li>Twitter</li>
  <li>Instagram</li>
</ol>
```

http://codepen.io/btholt/pen/njfLl

Exercise

1. Create a new page that has a title.
2. Create an unordered list of things you look for in a car.
3. Create an ordered list of your favorite cars.
4. Give each a title

http://codepen.io/btholt/pen/axvAd

HTML Tags - Inline

- **`<strong>`** - Usually bold. Used for something you want to stand out.
- **`<em>`** - Usually italics. Used for something you want emphasis on.
- **`<span>`** - Like div for inlines. Used for something you want to separate from other things. Becomes useful with CSS.

```
This is an <strong>awesome</strong>
class. I <em>love</em> it.
```

http://codepen.io/btholt/pen/wlnbm

HTML Tags - Void Tags

Some tags don’t need a closing tag; they can’t have anything in them. In these cases, the tags close themselves. A good example is an input tag.

```
<input />
```

HTML Tags - Attributes

Sometimes tags need additional meta-data.
The img tag is a great example of that.

```
<img src=”http://placekitten.com/400/400” />
```

http://codepen.io/btholt/pen/vewaA

HTML Tags - Grouping

- Like we said before, it’s a good idea to group tags by some idea.
- If you were doing a blog post, you would group together individual blog posts.

http://codepen.io/btholt/pen/njGdE

HTML - Classes

Those previous groupings were useful, but to someone who had never seen the code before, you wouldn’t know what it was a group of. For that, we’ll use classes.

```
<div class="picture-group">
  <img src="http://placekitten.com/400/400" />
  <img src="http://placekitten.com/200/600" />
</div>
```

http://codepen.io/btholt/pen/ywAjc

HTML - IDs

- Classes can (and should be) used multiple times throughout a page. If you have multiple blog posts, you should multiple blog-post classes used.
- IDs are unique. There can only be one of an ID on a page. You would only have blog-post-1 ID or one blog-post-2 ID.

```html
<div id="group-1" class="picture-group">
  <img src="http://placekitten.com/400/400" />
  <img src="http://placekitten.com/200/400" />
</div>
<div id="group-2" class="picture-group">
  <img src="http://placekitten.com/100/400" />
  <img src="http://placekitten.com/350/400" />
</div>
```

http://codepen.io/btholt/pen/wflJD

HTML Tags - Naming

It’s tempting to give your classes name like left-group or purple-container. Don’t give them “presentational names.” What if you need to move the left-group to the right? Or the purple-container is now green? You don’t want to have to rename everything.

Exercise - Giving Classes

1. Open http://codepen.io/btholt/pen/njGdE
2. Give appropriate class names to all the h1, p, and divs.
3. Give the blog posts appropriate IDs.

Cascading Style Sheet

CSS - What is CSS?

- While HTML is the content, CSS is the style, the presentation of the content. CSS dictates how the HTML looks.
- CSS is a collection of rules. If certains are met, then a style is applied to it.

```css
body {
  color: red;
}
```

http://codepen.io/btholt/pen/eFoIn

```css
body {
  color: red;
}
p {
  color: green;
}
```

http://codepen.io/btholt/pen/GFImi

CSS - Better Practices

What we've done works so far. However, try adding another **`<p>`** to the previous pen. It will also be green. What if we want one **`<p>`** to be blue and one to be green?

http://codepen.io/btholt/pen/vIryG

CSS - Classes

- Classes are used extensively for styling. Notice the leading period in .leading-p: that denotes that it is a class.
- There are different rules for styles “winning out,” or stated differently, when two styles conflict, which one gets applied. We’ll talk about it in a sec.

http://codepen.io/btholt/pen/echKA

CSS - Text Properties

- `color` - Change the color of the text.
- `font-weight` - Change it from normal to bold.
- `font-style` - Change the text from normal to italic.
- `text-align` - Left, right, or center.
- `text-indent` – Indent paragraphs.
- `font-size` - How big the text is

CSS - Measurements

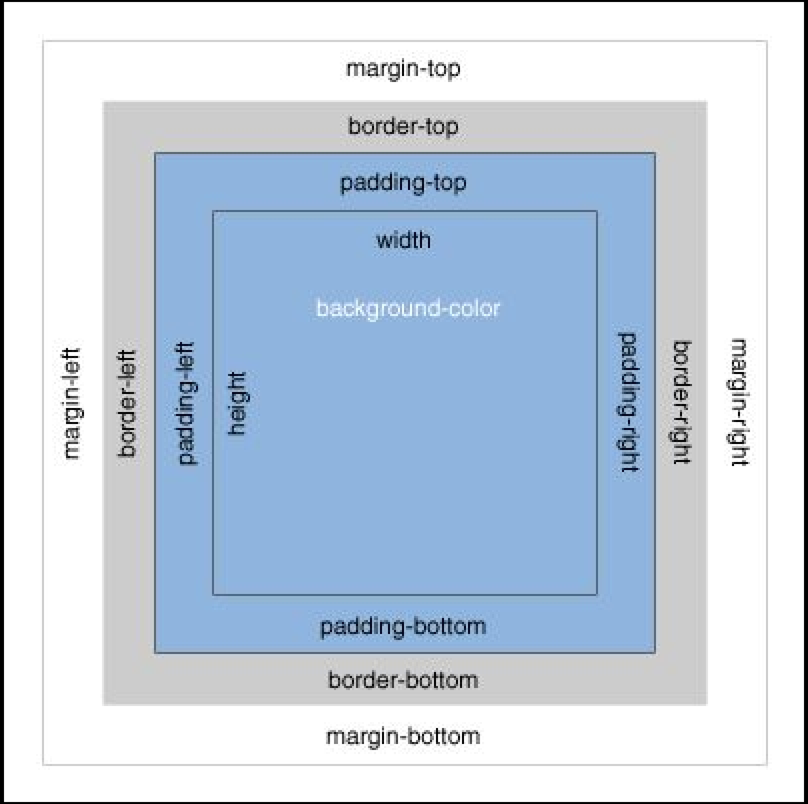
CSS has a whole bunch of measurements for legacy reasons: px, pts, em, ex, rem, in, mm, cm, etc. With few exceptions, px and em are the two you want to use (depending what context you’re in.)

CSS - Measurements

- px - Pixels. While not necessarily uniform across browsers (FireFox has a different pixel measurement vs Chrome) it will be uniform across your page.
- em - M’s. It’s how wide an ‘m’ is in the current font. Good for relative sizes that scale with a font.

CSS - Boxes

- width / height - Obvious, hopefully.
- border - The border around your box. Examples:
  - 1px solid black
  - 3px dashed gray
  - 5px dotted #663399
- background-color - The color of the background
- background-image - A URL to the background image


margin-top
border-top
padding-top
width
background-color
margin-left
border-left
padding-left
height
padding-right
border-right
margin-right
padding-bottom
border-bottom
margin-bottom

http://codepen.io/btholt/pen/DIsLE

http://codepen.io/btholt/pen/echKA

CSS - Document Flow

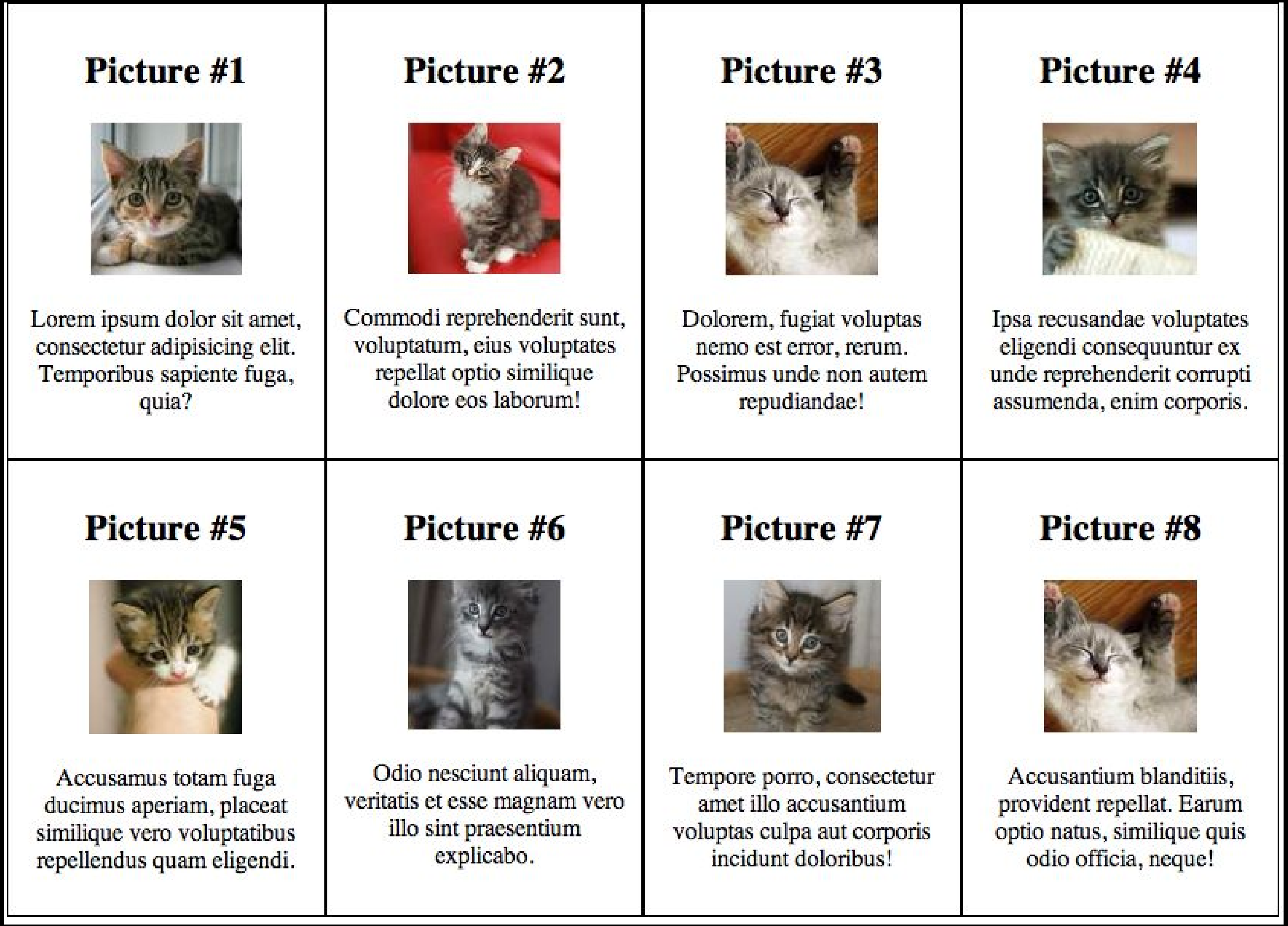
CSS has a concept called float. You can have divs “float” next to each other instead of each one on a new line. The browser will try to fit as many divs next to each other until there isn’t any room left, at which point it’ll wrap to the next line.

http://codepen.io/btholt/pen/HamlJ

http://codepen.io/btholt/pen/ebkJG

Exercise: Styling a Page

1. Open http://codepen.io/btholt/pen/uHzfL
2. Recreate http://i.imgur.com/0dnCF58.png without changing the HTML
3. Leave the box-sizing. It makes it easier.



Picture #1

Lorem ipsum dolor sit amet, consectetur adipisicing elit. Temporibus sapiente fuga, quia?

Picture #2

Commodi reprehenderit sunt, voluptatum, eius voluptates repellat optio similique dolore eos laborum!

Picture #3

Dolorem, fugiat voluptas nemo est error, rerum. Possimus unde non autem repudiandae!

Picture #4

Ipsa recusandae voluptates eligendi consequuntur ex unde reprehenderit corrupti assumenda, enim corporis.

Picture #5

Accusamus totam fuga ducimus aperiam, placeat similique vero voluptatibus repellendus quam eligendi.

Picture #6

Odio nesciunt aliquam, veritatis et esse magnam vero illo sint praesentium explicabo.

Picture #7

Tempore porro, consectetur amet illo accusantium voluptas culpa aut corporis incidunt doloribus!

Picture #8

Accusantium blanditiis, provident repellat. Earum optio natus, similique quis odio officia, neque!

codepen.io/btholt/pen/uHzfL

i.imgur.com/0dnCF58.png

Solution: codepen.io/btholt/pen/kcuea

CSS - Conclusion

CSS, like HTML, has a lot of stuff to it. It’s impossible to keep it all in your head. Don’t expect to memorize all of it. Use sites like the MDN, CSS-Tricks, and Stack Overflow when you need help.

JavaScript

An Introduction to Programming

How is JS different from HTML?

HTML tells your browser how a web page is going to look.

Javascript is **interpreted** by your browser.

What is it used for?

Javascript is used for anything from creating a pop-up when a user clicks on something, to full fledged games.

Statements

Each line in JavaScript is an instruction.

When the browser reads it, it executes that line of code.

```
console.log(“Hello”);
```

Statements

`; - what’s this thing??`

`; is a semi-colon`

`think of a javascript statement as a sentence, and a semi-colon as a period.`

JavaScript - Comments

```
// Comments start with two forward slashes.

/*

 Multi-line comments

 can be long

*/
```

Comments - Rule of Thumb(s)

- Comments can be used to explain complex or complicated code.
- There is no need for obvious comments
- Remember, when you go back and update your code, comments should be updated too.

Seeing Results

```
// will popup a dialog
alert(“hello popup”);


// will output directly to the html page
document.write(“hello document”);


// will display in the console
console.log(“hello console”);
```

Exercise: Seeing results

http://codepen.io/nnja/pen/lnypi?editors=001

JavaScript - Variables

Variables are used to store values.

Declare and initialize on one line:

```
var y = 2;
```

or two:

```
var x;
```

```
x = 5;
```

Don’t forget the var!

Always use the var keyword when declaring a variable for the first time.

If you don’t other parts of the code can accidentally overwrite it.

JavaScript Variables - Naming

Variables are case sensitive!

Naming convention:

- Variables start with lower case letter, $ or _
- Don’t contain special symbols % # !
- written in **c**amel**C**ase

JavaScript - Reserved Words

Some words are reserved and can’t be used as variable names.

Examples:

`case`	`catch`	`for`
`let`	`private`	`this`
`with`	`in`	`do`

For a full list of reserved words - http://www.w3schools.com/js/js_reserved.asp

JavaScript - Variable Types

Strings - Used to store a series of characters.

```
var myName = “Nina”;
```

Numbers - With or without decimal.

```
var year = 2014;
```

```
var pi = 3.14;
```

JavaScript - Variable Types

Boolean

True (**Yes**)

```
var isNice = true;
```

False (**No**)

```
var hasCake = false;
```

JavaScript - Special Types

The value of a variable which is not yet declared is called **undefined.**

```
var cars;                   // Value is undefined
```

Variables can be emptied by setting the value to **null.**

```
person = null;              // Value is null
```

Our First Javascript

```
// Let's use Javascript to popup something about
us

var myName = “Nina”;
alert(“My name is ” + myName);
```

Exercise

http://codepen.io/nnja/pen/nzspH/?editors=001

Operators

+	Addition
-	Subtraction
*	Multiplication
/	Division
%	Modulus

JavaScript - Expressions

Variables can also store the results of expressions.

```
var x = 2 + 2;

var y = 5 * 6;

var name = “Nina”;

var greeting = “Hello ” + name;
```

Increment & Decrement

`++`	Increment
`--`	Decrement

```
var x = 5;
```

```
x++; // x will be 6
```

```
x--; // x will be 5
```

JS - Comparisons

`==`	equal to
`===`	equal value and type
`!=`	not equal to
`!==`	not equal value or not equal type
`>,` `>=`	greater than, greater than or equal
`<, <=`	less than, less than or equal

JavaScript - Equality Comparison

```
var numApples = 3;
```

```
numApples == 3 // true

numApples == “3” // true

// Strict Equality

numApples === “3” // false
```

JS - Logical Operators

`&&`	AND
`||`	OR
`!`	NOT

JS - Logical Operators Example

```
var x = 5;

var y = 3;


console.log(x < 4 && y < 4);

>> false

console.log(x < 4 || y < 4)

>> true
```

JavaScript - Arrays

Arrays are a list of variables.

They are written with square brackets. **[ ]**

```
var fruits = ["Peach", "Orange", "Apple"];
```

JavaScript - Arrays

Arrays have a length property, so we can find out how many items are in them.

```
var fruits = ["Peach", "Orange", "Apple"];
fruits.length
>> 3
```

JavaScript - Access Items in Array

Use square brackets to access an item in an array.

```
var myFruit = fruits[0];
```

Array access is **zero based**. To access the first element, use **[0]**.

```
console.log(myFruit);
```

```
>> Peach
```

Exercise: Arrays

http://codepen.io/nnja/pen/zCHtf?editors=001

JS - Change / Add item in List

```
var fruits = ["Peach", "Orange", "Apple"];


// Change item in 2nd position.
fruits[1] = "Pineapple";
console.log(fruits);
>> ["Peach", "Pineapple", "Apple"]
// Add Orange to List of Fruits
fruits.push("Orange") // Returns the new length of the array.
["Peach", "Pineapple", "Apple", "Orange"]
```

JavaScript - If Statement

Use `if` to tell JS which statement to execute, based on a condition that is `true`.

```
var apples = 8;
if (apples > 0) {
   console.log(“Eat An Apple”);
}
```

JS - If Else

```
if (apples > 0) {
   console.log("Eat An Apple");
}
else {
   console.log("No apples left.");
}
```

JS - If, Else, Else If

```
if (apples > 0) {
  document.write("Eat An Apple");
}
else if (apples < 3) {
  document.write("Go to the store.");
}
else {
  document.write("No apples left.");
}
```

Exercise - The If statement

http://codepen.io/nnja/pen/qflBK?editors=001

JS - For Statement

```
for (<counter> ; <counting to> ; <increment counter>) {
  <expression>
}
```

- The **<counter>** is a variable used to keep track of what step you're on.
- The **<counting to>** is the goal. It's how many total steps we want to take.
- The **<increment counter>** is how we change the variable to get to the goal.

JS - For Statement

```
var text = "numbers: ";
for (var i = 0; i < 5; i++) {
  text += " " + i;
}
console.log(text);
>> "numbers:  0 1 2 3 4"
```

Iterating over Array

```
var fruits = ["Peach", "Orange", "Apple"];
for (var i=0; i<fruits.length; i++) {
    console.log(fruits[i]);
}


// We're counting up to fruits.length. It doesn't
matter how long the array is.
```

Exercise - Iterate over an Array

http://codepen.io/nnja/pen/zaqBI?editors=001

Functions

Functions are a way of repeating the same action multiple times.

Functions can be called multiple times.

Anatomy of a Function

```
var printList = function(list) {
  for (var i=0; i<list.length; i++) {
    console.log(list[i]);
  };
};
```

Running Functions

Declaring a function is different from a statement.

The code in a function will not be run until you explicitly call it.

Functions Exercise

http://codepen.io/nnja/pen/aumdH?editors=001

Calling a function

```
var fruits = ["Peach", "Orange", "Apple"];


var printList = function(list) {
  for (var i=0; i<list.length; i++) {
    console.log(list[i]);
  };
};


printList(fruits);
```

Scope

Variables defined in functions can only be used in those functions.

So what happens when you forget to use var?

http://codepen.io/nnja/pen/ocLDG?editors=0
01

http://codepen.io/btholt/pen/pzBCl

JavaScript Objects

- Objects are collections are of properties. They can contain numbers, strings, functions, arrays, even other objects.
- They're useful for containing like-properties.

JS Objects

```
var car = {
  make: “Telsa”,
  model: “Model S”,
  acceleration: 30,
  accelerate: function() {
    this.accelerate += 10
  }
}
```

NO SMOKING
IN THIS BUILDING

JavaScript - Context

- Context refers to what `this` means.
- What `this` means depends on what context the function is called from, much like the preceding sign.
- Depending on where `this` called, it means different things. It can be source of bugs. Be careful.

http://codepen.io/btholt/pen/BLtiv?editors=001 http://codepen.io/btholt/pen/iFodm?editors=001

Other topics not covered here

- do / while loops
- Inheritance
- Switch statements
- A boatload of DOM interactions (other than document.write)
- Newer “ES6” syntax
- Much, much more. JavaScript has been around a while and has a lot to it.

jQuery

write less, do more.

Using JavaScript to manipulate the DOM

jQuery - What is jQuery?

- jQuery is JavaScript *toolkit*. It’s JavaScript someone else wrote to make writing it easier.
- Its main purpose to make common tasks in JavaScript (like changing info on the page) easier and shorter.
- Used on some 80% of the top sites in the world.

jQuery - Telltale Sign

If you see something looks

```
$(‘... stuff in here ...’)
```

then it’s probably jQuery. jQuery uses the $ a lot.

jQuery - Simple example

```
$(‘.caption-text’).text(‘Magic!’);
```

http://codepen.io/btholt/pen/aopKv

jQuery - Chaining

```
$(‘.caption-text’)
  .text(‘Magic!’)
  .css(‘background-color’, ‘orange’);
```

http://codepen.io/btholt/pen/wdgiB

Exercise - Set text

1. Open http://codepen.io/btholt/pen/lbwul
2. Using jQuery, make it so when the button is clicked, whatever text in the <input/> is set as the text of the <p>.
3. Do not modify the HTML.
4. Hint: you'll need .text(), .val(), and .click().

Solution: http://codepen.io/btholt/pen/Gyqri

jQuery - Responding to Users

```
$(‘.alert-btn’).click(function() {
  alert(‘Hey there!’);
});
```

http://codepen.io/btholt/pen/ujIEz

jQuery - Get text from an input

```
var name = $(‘.name-input’).val();
alert(name);
```

http://codepen.io/btholt/pen/Elfjs

jQuery - Other Cool DOM Functions

- .css() - Get or update CSS values.
- .html() - Set the inner HTML of an element.
- .show() / .hide() - Displays / hides an element.
- .addClass() / .removeClass - Add or remove a class.
- .append() - Add an element to the existing elements in an element

jQuery - Other functions

jQuery has over 300 functions. It’s huge. And it has great documentation and a great community. If you want to know how to do something, just search for “jQuery how to hide div” and it’ll come up. Stack Overflow is great.

AJAX

- Stands for Asynchronous JavaScript and XML. It’s really a misnomer. It’s just a buzzword that stuck.
- Means making requests to a server without refreshing the page.
- jQuery makes it dead simple with its .ajax() method.

http://codepen.io/btholt/pen/FArdh

http://codepen.io/btholt/pen/mjBkq

Putting some concepts together

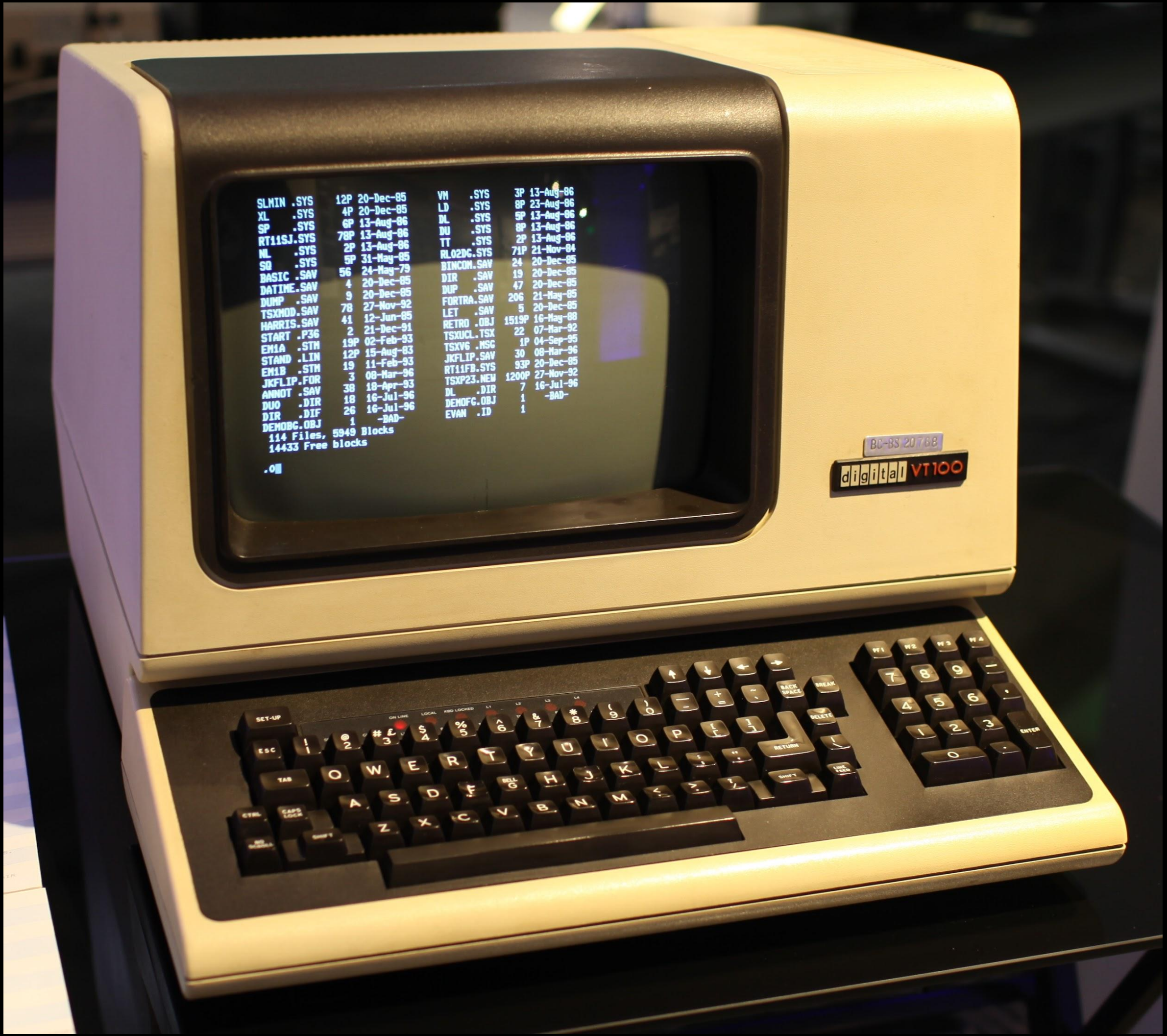
Exercise: Displaying Data from reddit

1. Open http://www.reddit.com/r/aww/search.json?q=puppy&restrict_sr=true
2. If you want to see the API documentation, it’s here: http://www.reddit.com/dev/api#GET_search
3. Open the CodePen http://codepen.io/btholt/pen/Aejsl

Hints:

- Solution: http://codepen.io/btholt/pen/fErah
- You’ll need the jQuery methods .click(), .append(), and .ajax()
- You shouldn’t need to touch HTML or CSS.
- The data is fairly nested. The data that concerns you is `data.children[i].data.thumbnail`. children is an array you’ll loop over.

Intro to Command Line



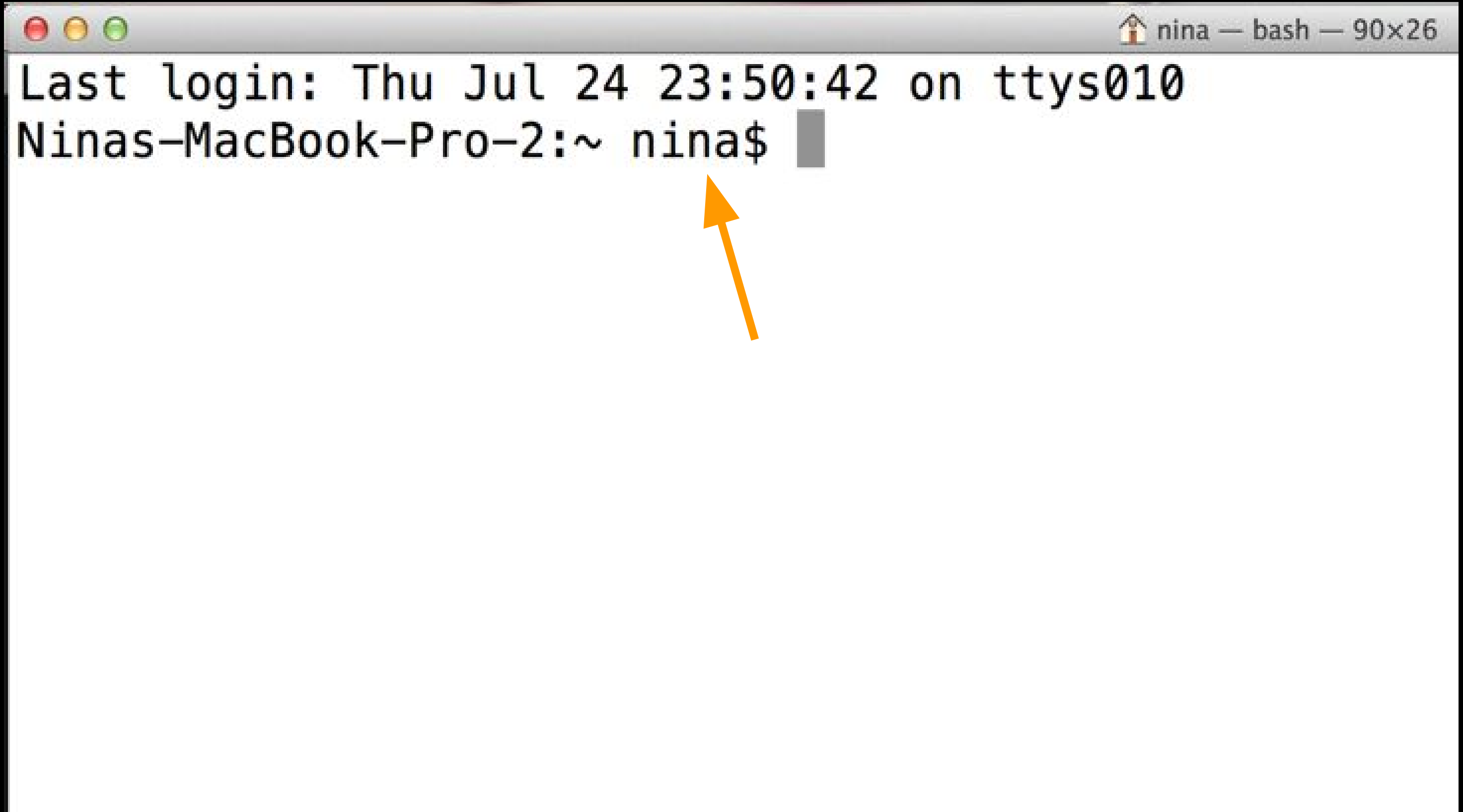
```
SLMIN .SYS    12P 20-Dec-85    VM    .SYS     3P 13-Aug-86
XL    .SYS     4P 20-Dec-85    LD    .SYS     8P 23-Aug-86
SP    .SYS     6P 13-Aug-86    DL    .SYS     5P 13-Aug-86
RT11SJ.SYS    78P 13-Aug-86    DU    .SYS     8P 13-Aug-86
NL    .SYS     2P 13-Aug-86    TT    .SYS     2P 13-Aug-86
SQ    .SYS     5P 31-May-85    RL02DG.SYS    71P 21-Nov-84
BASIC .SAV    56  24-May-79    BINCOM.SAV    24  20-Dec-85
DATIME.SAV     4  20-Dec-85    DIR   .SAV    19  20-Dec-85
DUMP  .SAV     9  20-Dec-85    DUP   .SAV    47  20-Dec-85
TSXMOD.SAV    78  27-Nov-92    FORTRA.SAV   206  21-May-85
HARRIS.SAV    41  12-Jun-85    LET   .SAV     5  20-Dec-85
START .P36     2  21-Dec-91    RETRO .OBJ  1519P 16-May-88
EM1A  .STM    19P 02-Feb-93    TSXUCL.TSX    22  07-Mar-92
STAND .LIN    12P 15-Aug-83    TSXV6 .MSG     1P 04-Sep-95
EM1B  .STM    19  11-Feb-93    JKFLIP.SAV    30  08-Mar-96
JKFLIP.FOR     3  08-Mar-96    RT11FB.SYS    93P 20-Dec-85
ANNOT .SAV    38  18-Apr-93    TSXP23.NEW  1200P 27-Nov-92
DUO   .DIR    18  16-Jul-96    DL    .DIR     7  16-Jul-96
DIR   .DIF    26  16-Jul-96    DEMOFG.OBJ     1   -BAD-
DEMOBG.OBJ     1   -BAD-       EVAN  .ID      1
 114 Files, 5949 Blocks
 14433 Free blocks

.o
```

Windows vs **Mac** vs **Linux**

Why do we still use it today?

- Completing repetitive tasks is faster
- Tasks can be automated
    - This is called scripting
- Parameters can be specified
    - Parameters are a way of customizing how a command is run.

The Command Prompt



```
Last login: Thu Jul 24 23:50:42 on ttys010
Ninas-MacBook-Pro-2:~ nina$ 
```

Home Directory

Mac/Linux:

```
$ cd
/Users/<username>
```

Windows:

```
C:\Users\<username>
```

What directory am I in?

Linux/Mac OS

```
$ pwd
/Users/nina
```

```
(pwd stands for
print working
directory)
```

Windows

```
$cd
```

```
(cd stands for
current directory)
```

Listing Directory Contents

```
$ cd ~/Desktop
$ ls


folder/
file.txt
```

```
$ dir C:\windows
```

Case sensitivity

File names in linux and mac os are case sensitive.

That means myfile.txt != MyFile.TXT

UNLESS, you use windows.
Windows don’t care.

Navigate to a different Directory

linux/mac os

```
$ cd Desktop
```

tip: cd stands for change directory

windows

```
$ chdir C:\windows
```

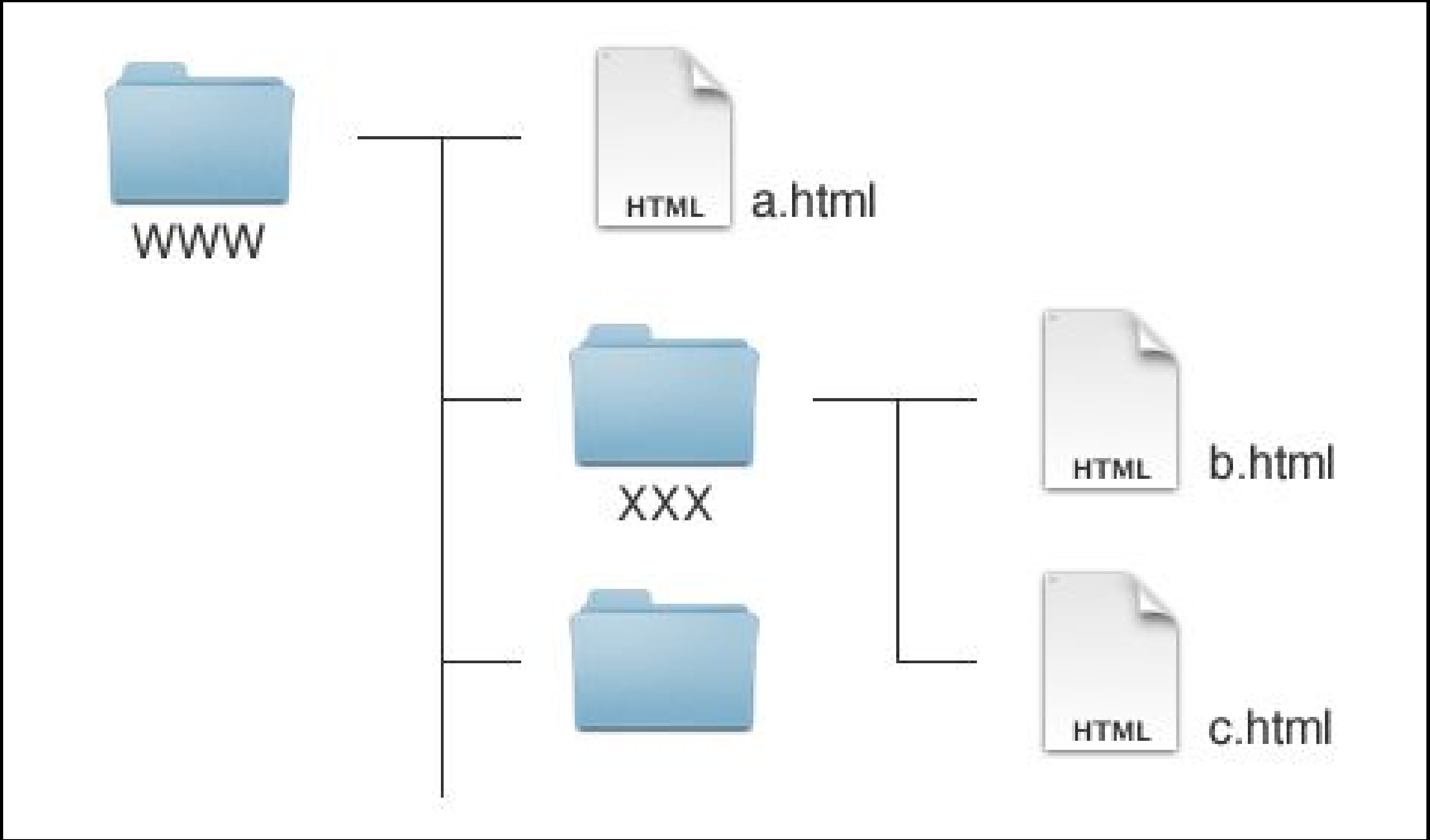
Navigate up one directory

```
$ cd ~/Desktop/painting/
$ pwd
/Users/nina/Desktop/painting
$ cd ..
pwd
/Users/nina/Desktop
```

Paths - Relative/Absolute

The starting for relative paths is the directory you are in.

The starting for absolute paths in the root directory. It’s just `/` on linux, or `C:\` on windows.


WWW
HTML
a.html
XXX
HTML
b.html
HTML
c.html

Git / Github

Git is an open source version control system.

- Advantage: Maintain history of changes
- Can use a remote server for backup

Github.com is a popular website with features built on top of this tool.

You can find tons of free projects!

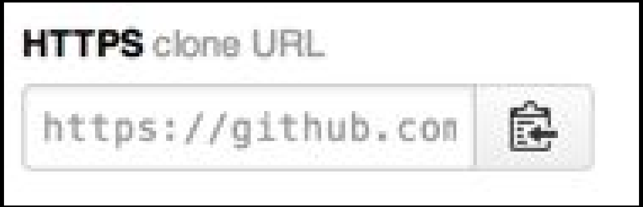
Forking

https://github.com/btholt/pull-requests

Cloning a Repository

Navigate to a github.com Repository.

Copy Clone URL:



```
https://github.com
```

Cloning a Repository

Open your terminal, and navigate to a folder you’d like to save files in.

type:

```
git clone <your repo url>
```

This will copy the files to your computer.

Git Status

This is the git command you will use the most.

```
$ git status
```

```
On branch master
Your branch is up-to-date
```

Unstaged Changes

Create a file called <your first name>.txt in the pull-requests directory. Write a fun fact about you in the file, and save it.

```
$ git status
Untracked files:
nina.txt
```

Git Add

```
$ git add nina.txt
Changes to be committed:
new file:   nina.txt
```

Git Commit

```
$ git commit -m “yay! my first commit”
[my_branch 1edbb31] my first commit
 1 file changed
```

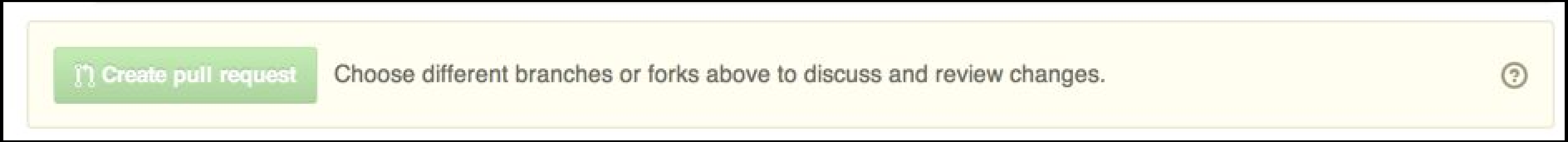
Origin

At this point, our version controlled changes are only on our local machines.

We want to push our code up to github.

```
$ git push origin my_branch
 * [new branch] my_branch -> my_branch
```

Creating a Pull Request



Choose different branches or forks above to discuss and review changes.

Initializing a New Repository

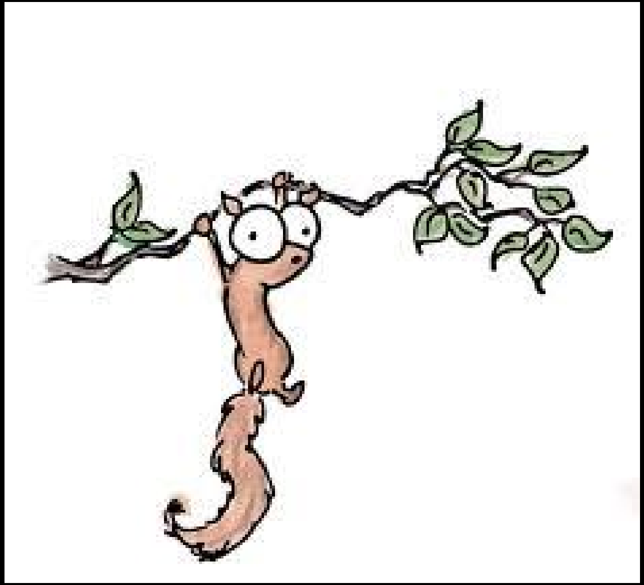
```
$ mkdir project-folder
$ cd project-folder
$ git init
$ Initialized empty Git repository in
/Users/nina/project-folder/.git/
$ git status
On branch master Initial commit
```

Feature Branches

```
$ git checkout -b my_branch
Switched to a new branch 'my_branch'

$ git status
On branch my_branch
nothing to commit, working directory
clean
```

Feature Branches

```
$git branch


  master
* my_branch
```



node JS™

JavaScript on the Server

JS on the server? wut?

- node.js takes Google Chrome’s JavaScript engine (V8) and uses it to control libenv, a library that allows you to create and run a server.
- It’s super rad and pretty fast.

Who uses node.js?

- Walmart
- eBay
- PayPal
- LinkedIn
- HP
- New York Times
- Klout
- Microsoft
- Groupon
- Yahoo!
- Uber
- Pinterest
- Mozilla
- Flickr

node.js - What is it?

- We’re going to use JS to code the server. This is useful because you only need to learn one language
- You’re using node.js instead of Python, Ruby, Java, PHP, etc.
- node.js is quite different from other server-side languages.

Hello World

Let’s do the most basic app, Hello World.

Folder: node-exercises/basic

npm - node package manager

- Remember how we used jQuery which is just code written by someone else to make your life easier? npm makes it even easier to bring in other people’s code.
- Great news! You already have it because you installed node.js.

npm

- Let’s make it easier to make changes to our program using npm.
- In the terminal, type:

```
npm install -g nodemon
```

nodemon

- nodemon is a development tool that every time you make code changes, nodemon restarts your server, making it easier to code.
- npm, by default, installs everything locally. We want to be able to use nodemon anywhere, so we used the -g flag, which makes it install globally.

Express

- Like jQuery, Express is a library designed to make writing code easier.
- Express makes writing node.js easier at by a billion. Maybe a trillion.
- Folder: node-exercises/express

Exercise - cheer and jeer

1. Make an app that has two routes: /cheer.txt and /jeer.txt.
2. /cheer.txt should send back something positive to say.
3. /jeer.txt should send back something negative to say.
4. Solution is in node-exercises/cheer-jeer
5. Remember to npm install express

Static Assets

- HTML, CSS, JavaScript, images, and fonts are considered to be “static assets” because they aren’t changed by the server; they are served exactly as they are saved.
- As such, it would be a pain to write a route for every image. Instead we have “static” or “public” directories which items are served exactly as they are.
- Let’s look at node-exercises/static-assets
- Notice that even the CSS and JavaScript are loading okay!

Receiving Parameters

- Often we have 1 page that will serve multiple routes.
  - Example: /team/jazz/ and /team/timberwolves/ will both use the same page but load different information on those pages
- node.js makes that pretty easy.
- Look at node-exercises/params

npm - more

1. npm can track your app’s dependencies, or libraries that must be there for your app to work.
   a. Example: Our apps all depend on Express.
2. When you have a lot of dependencies, you can’t remember them all. Good thing npm can keep track.
3. Let’s create a dependency file for params.
4. Delete node_modules
5. Run `npm init`
6. Run `npm install express --save`

npm - even more

1. Now that params has a package.json file (it’s always called that in node.js), let’s see why that’s useful.
2. Delete the node_modules directory
3. Run `npm install`
4. Notice you didn’t tell npm to install Express; it just knew which one to install.
5. Take a look at package.json

node.js - POSTing

- Often we want to send more than a few parameters in a request to the server. We can do this via POST.
- We’ll use jQuery to send up a user’s login credentials.
- Folder: node-exercises/posting

node.js - POSTing

- Notice that we had another dependency, body-parser. Express aims to be flexible and allows you to use different parsers. Most of the time you'll just use body-parser as it does a great job
- We're also using HTTP status codes. Remember 404 - Not found? That's a status code. Some other useful ones 200 - request successful, 401 - unauthorized request, and 403 - forbidden request. There are a lot.

Our App: Twitter

copy the link from
https://github.com/btholt/intro-to-webdev-app

```
$ git clone
https://github.com/btholt/intro-to-webdev-app.git
```

Requirements

- Write a server in node.js. The server will
  - Serve the HTML, CSS, and JS necessary to run our app
  - Accept GET requests of the latest tweets
  - Accept POST requests to post a new tweet and store it to be served later via a GET request
  - For each new tweet, the server will attach the time of when it was posted

Requirements

- Create a web app that will:
    - Make an AJAX request to GET new tweets
    - Have the ability to accept user input to POST a new tweet to the server
    - Will display in a pretty way the tweets when the server loads
    - After posting a new tweet, it will display the new tweet too.

Things we will not do

- Store anything in a database. If the server crashes or gets shut down, we will lose all our tweets.
- Have any notion of users, follows, retweets or anything like that. Just anonymous tweets.

Bye!

Nina Zakharenko
@nnja

Brian Holt
@holtbt