BEFORE CLASS

If you haven't already installed the Firebug extension for Firefox, download it now from http://getfirebug.com.

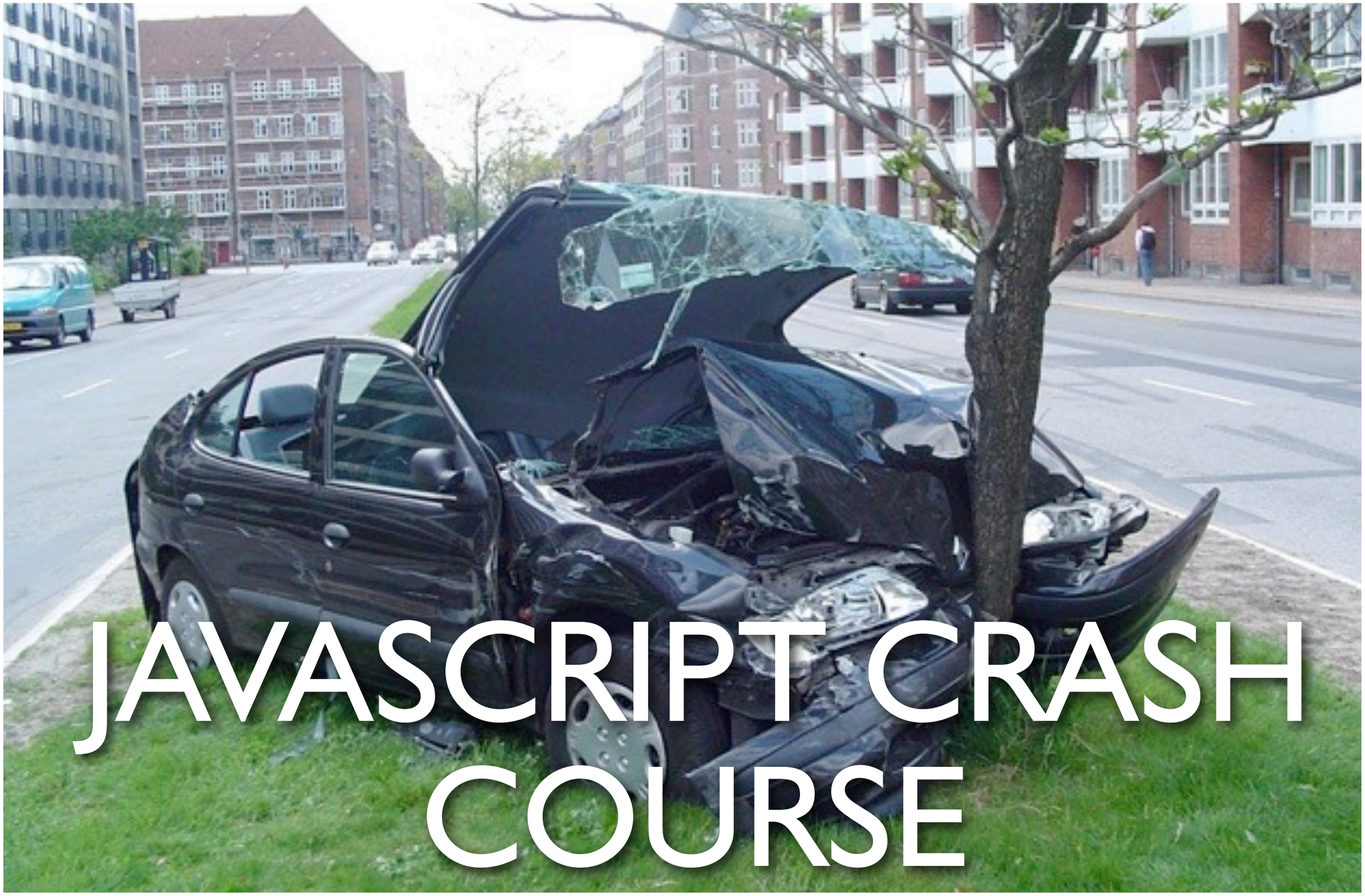
If you don't already have the Firebug extension for Firefox, Safari, or Google Chrome, please install one of those now. We'll be using them for our in-class demos.

<script>

SCRIPTING WITH JAVASCRIPT

Nick Doty & Ryan Greenberg

A warning: today is going to be a quick course in scripting web browsers (Javascript/JQuery). Another title for this lecture might be...



Nick Doty & Ryan Greenberg

A warning: today is going to be a quick course in scripting web browsers (Javascript/JQuery).

JAVASCRIPT CONSOLE

If you don't already have the Firebug extension for Firefox, Safari, or Google Chrome, please install one of those now. We'll be using Firebug for our in-class demos today, but you can use any of these three browsers. If you are using IE, stop.

Web Browsers

Bookmarklets

Greasemonkey

Photoshop

PLACES TO USE JAVASCRIPT

FIRST THINGS FIRST

JavaScript is a high-level, object-oriented language used most often in web browsers.

You can write comments in your code with `//` or `/* */`

A semi-colon goes at the end of every statement.

It's a dynamic, scripting language. What does it have to do with Java? Nothing.

How many of you have written Javascript before? How many of you have used a programming language before?

VARIABLES

29

Numbers

'Bob'

Strings

true

Boolean

['Bob', 'John', 'Coye', 'Deirdre']

Arrays

{'name': 'Arnold', 'weight': 240}

Objects

Variables can be of different types. We're going to cover these basic data types.

VARIABLES

```
var stateName = 'California';
```

You use the word ‘var’ to declare a variable. You don’t have to say what type of variable it is. The convention is to use camelCase.

STRINGS

A sequence of characters.
Use single- or double-quotes to indicate a string.

Examples

```
var myName = "Larry";
myName → "Larry"
myName.length → 5
myName.toUpperCase() → "LARRY"
myName.indexOf('a') → 1
```

ARRAYS

An ordered collection of elements.
Use square brackets to indicate an array.

Examples

```
var myArray = ['dog', 'fish', 'cat'];
myArray.length → 3
myArray[0] → ['dog']
myArray.push('horse') →
['dog', 'fish', 'cat', 'horse']
myArray.sort() → ['cat', 'dog', 'fish'];
```

OBJECTS

A collection of key-value pairs or named properties.
Use braces to indicate an object.

Examples

```
var person = {'name': 'Arnold',
 'weight': 240, 'height': 6.2 }
person.name → "Arnold"
person.height → 6.2
person.wife = 'Maria';
person.wife → 'Maria'
person['wife'] → 'Maria'
```

The most confusing thing about objects in JavaScript is that they're used for so many different things. First, they fill the role of the data structure: hashes/dictionaries (in Python)/ associative arrays. Second, objects are naturally used for JavaScript's object-oriented programming. Third, JavaScript objects are also the basis for JSON.

You can access the properties of an object using the dot notation or bracket notation.

FUNCTIONS

```
function add(x, y) {
    return x + y;
}
add(2,4) → 6
```

BROWSER FUNCTIONS

alert('…')

confirm('…')

prompt('…')

console.log('…')

Type alert("Hello world"); into your console.

var c = confirm("Are you sure you want to delete this?");

c will be true if the user clicks OK, false if the user clicks Cancel

var p = prompt("What is your name?");

p contains the user's response, or null if the user clicked Cancel

CONTROL STRUCTURES

```
if (3 > 2) {
    alert('3 is greater than 2');
}
```

```
for (var i=0; i < myArray.length; i++) {
    myArray[i];
};
```

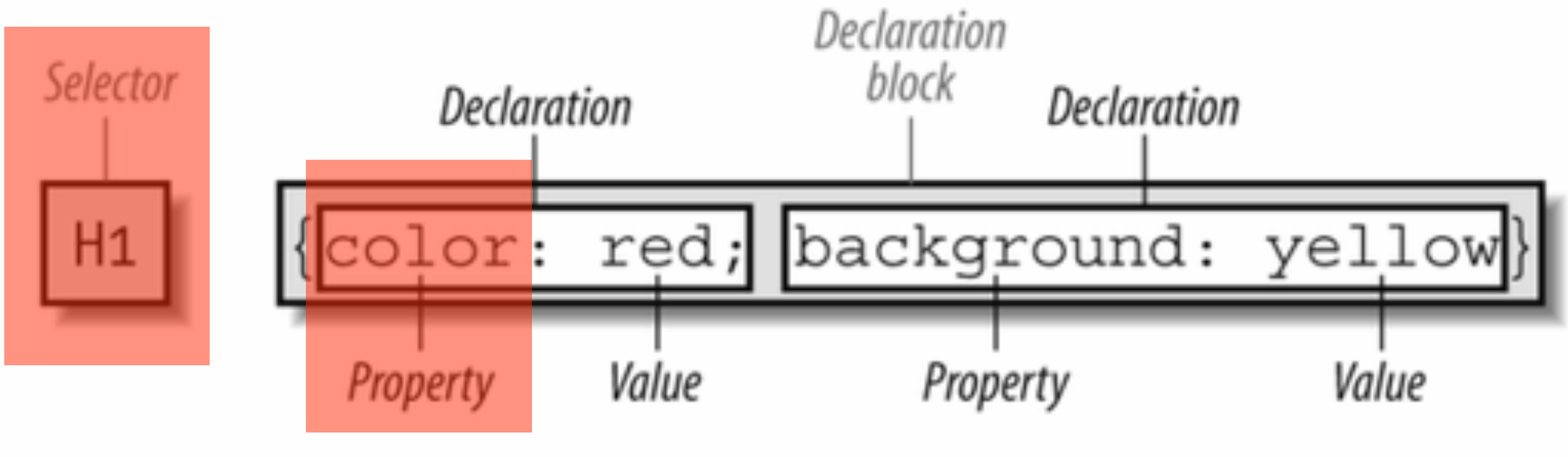
CASCADING STYLE SHEETS

Separate presentation from structure and content.
If you want to be impressed by what's possible with CSS, see http://csszengarden.com.

CASCADING STYLE SHEETS

- Separate presentation from content
- Provide us with a language to specify elements in the DOM

RULE STRUCTURE



From *CSS: The Definitive Guide*

A stylesheet consists of a series of rules. Here you see the structure of a style rule. You start with a selector, which specifies what elements in the DOM you want this rule to apply to. Then you write one or more declarations to apply styles to that selection. Declarations are separated by semi-colons.

SELECTORS

	CSS	HTML
Type (Tag)	p	<p>
Id	#header	id="header"
Class	.author	class="author"
Descendent	div p	<p>
Grouping	h1, h2	<h1> *and* <h2>

Who can explain the difference between IDs and classes? IDs are unique, only occur once on the page. Classes are recurring elements.
Both can add semantic meaning to the page.
For a complete list of selectors in CSS2, see http://www.w3.org/TR/CSS2/selector.html.
For a list of all the selectors that jQuery can use (which are a lot more than CSS2), see http://docs.jquery.com/Selectors.

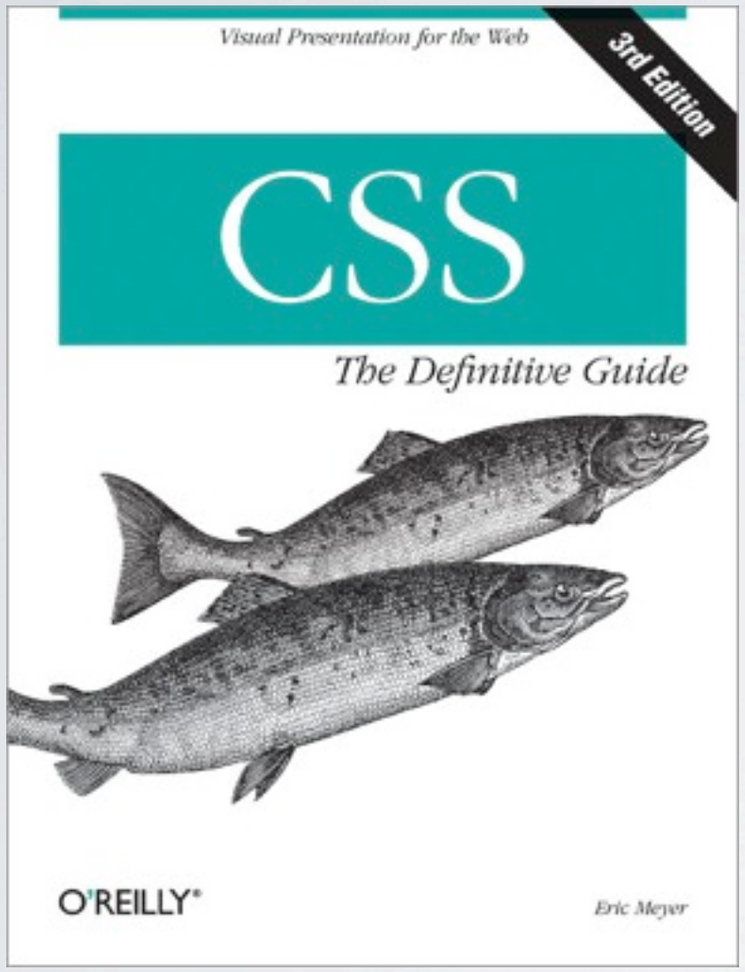
COMMON PROPERTIES

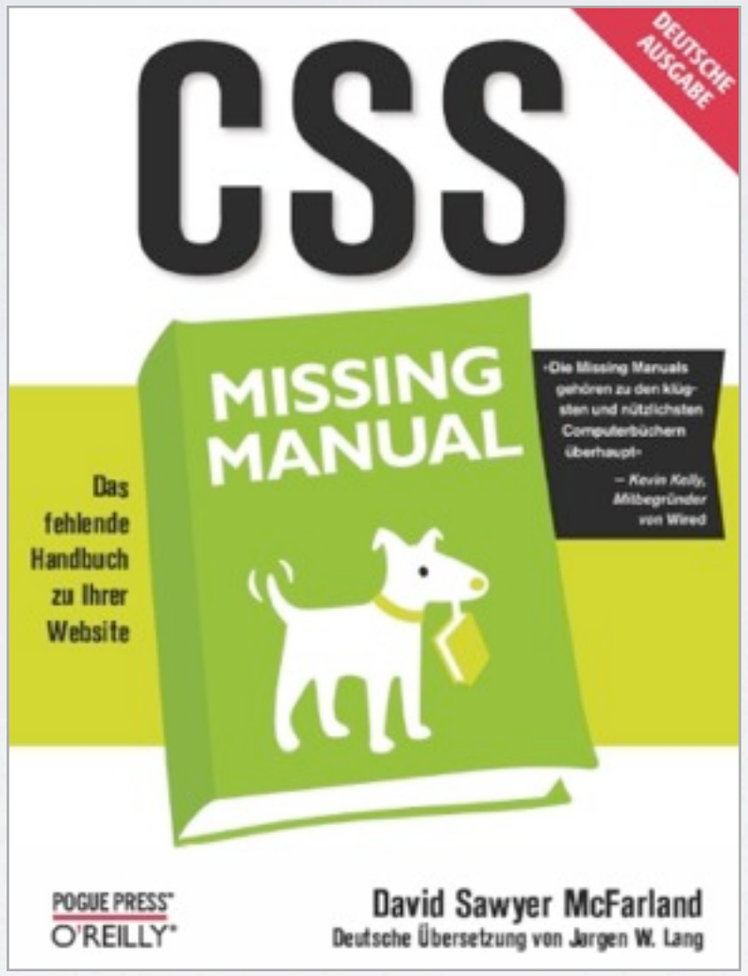
font-family	color	border	display
margin	font-size	width	padding
background	position	text-align	float

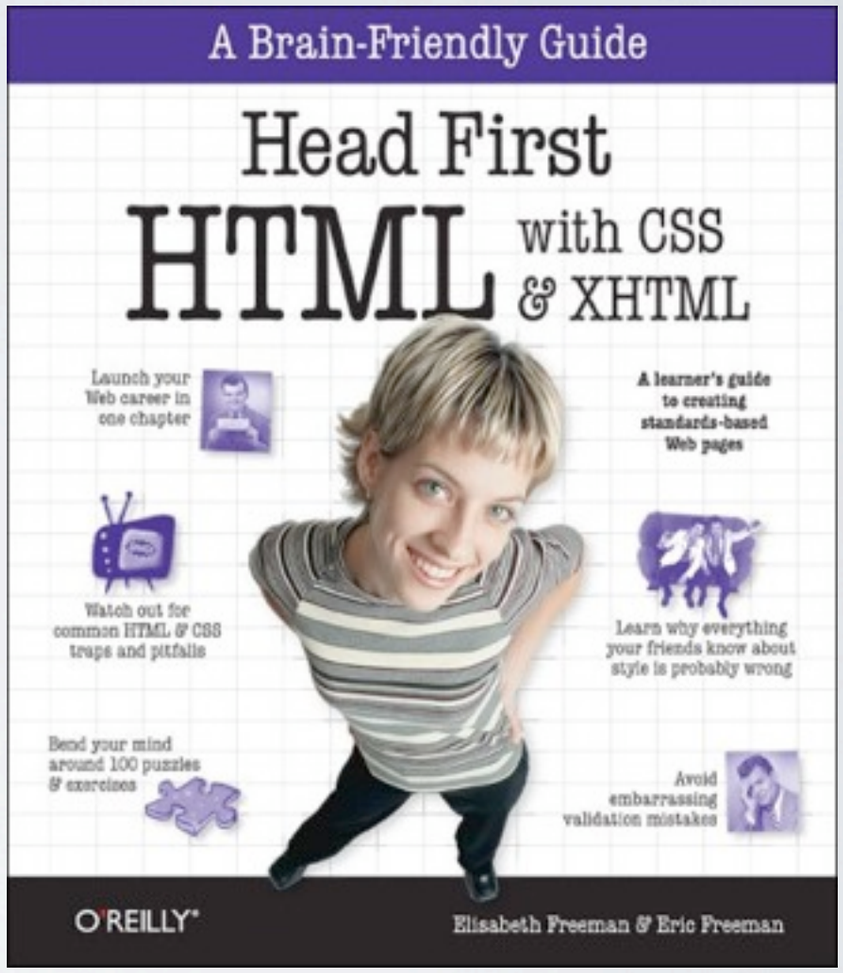
See http://htmldog.com/reference/cssproperties/ for a good list of CSS2 properties.

Let's do some examples.
(1) I want to make the blog title orange.
(2) Align the text in the header: #header { text-align: center; }
(3) Make every author's name's much bigger. .author
(4) I want to make the titles of the blog entries blue Papyrus.

CSS RESOURCES







Available free for students at http://proquest.safaribooksonline.com.

Erik has a number of resources posted on the Mobile App site. You also have access to these.

CSS definitive guide: http://proquest.safaribooksonline.com/0596527330
Heads-First XHTML & CSS: http://proquest.safaribooksonline.com/059610197X/hfhtmlcss-CHP-8?imagepage=285
"Expanding your vocabulary" http://proquest.safaribooksonline.com/059610197X/hfhtmlcss-CHP-8?imagepage=285

Questions

CSS meets JavaScript

jQuery is a JavaScript library (intro. 2006) written by John Resig. When learning: great when you can apply something you know to something else. A lot of JS in browser has to do with selecting objects from the DOM. And we already have something to do that...CSS!

JQUERY

$ = jQuery

JQUERY

Using jQuery involves two steps:

- Selects objects from the DOM using CSS selectors.
- Do something with the selected elements.

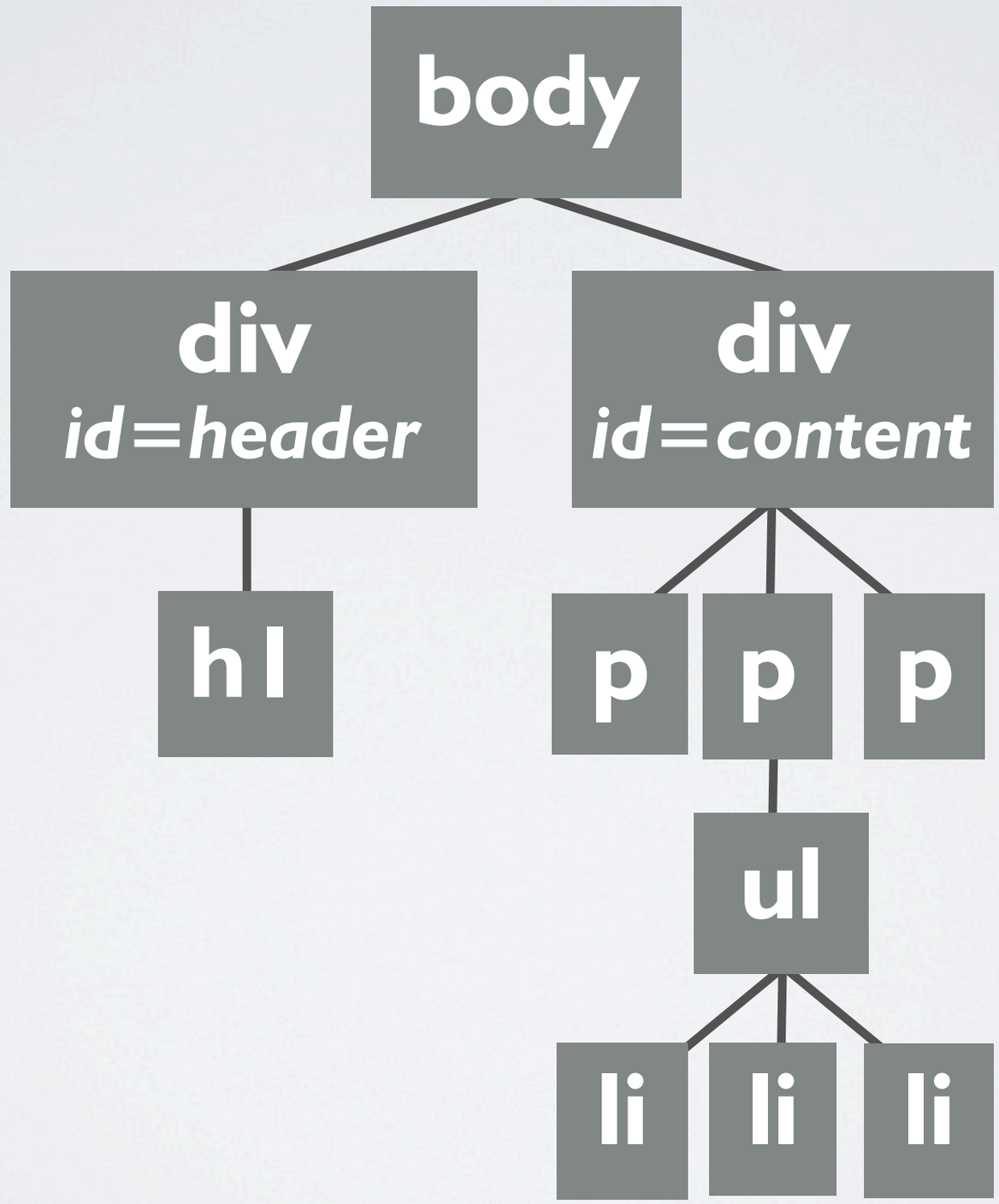
JQUERY

Using jQuery involves two steps:

$("p").hide()

Here we see what this looks like using jQuery's dollar sign syntax. In the first part of this statement, we select an object. **Question: what does "p" select?** (all the paragraphs on the page). In the second part we do something with it. **Question: what would you guess hide() does?**

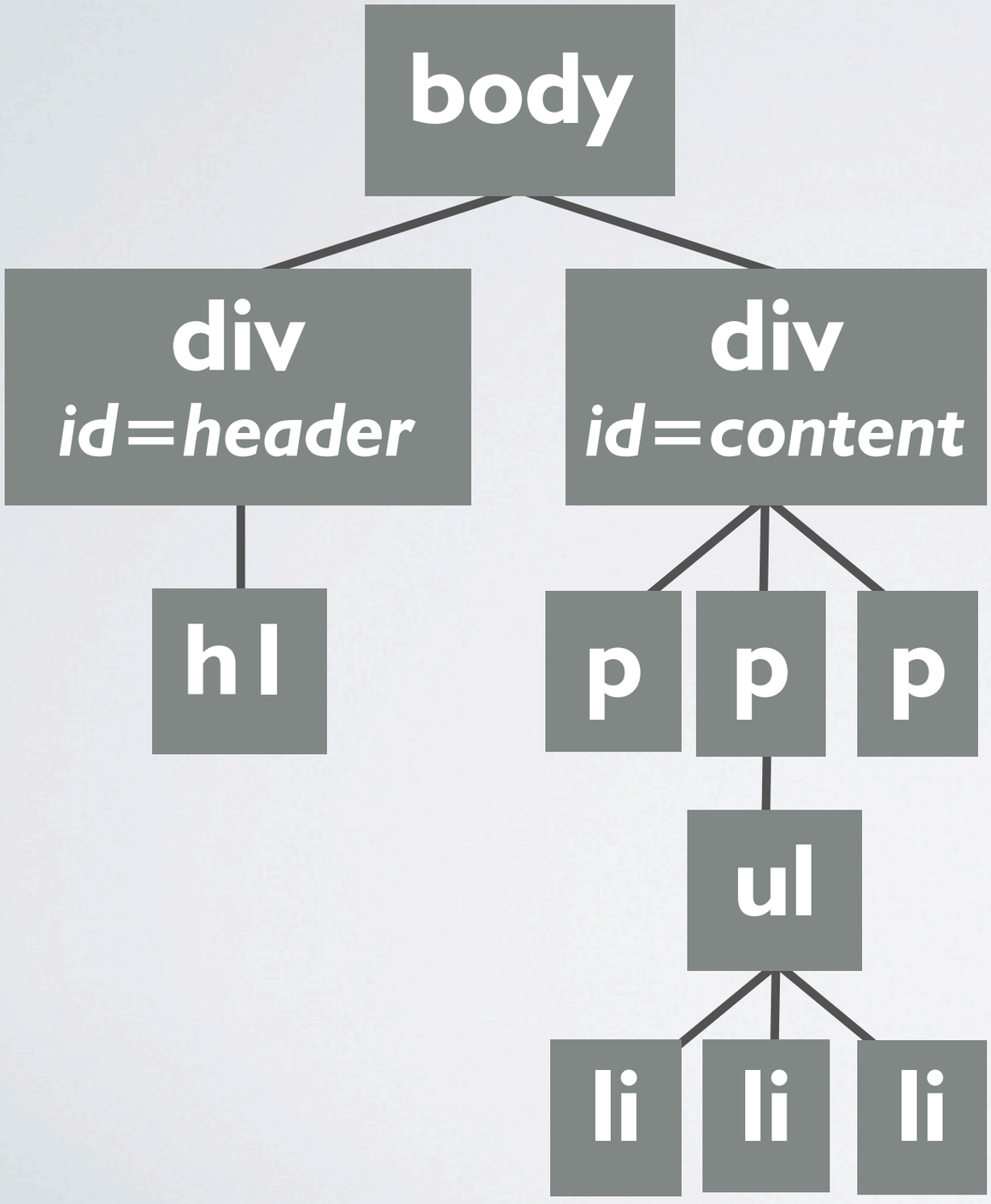
DOCUMENT OBJECT MODEL



As Erik discussed on Monday, when your web browser loads this document, it generates a representation called the Document Object Model. This is a **collection of objects** that you can manipulate and change.

See http://en.wikipedia.org/wiki/Document_Object_Model for more information.

DOCUMENT OBJECT MODEL



$("h1")

$("#content")

$("li")

What portions of the DOM on the left do these examples select?

JQUERY DEMONSTRATION

http://j.mp/mobileappdom

Script and examples found in iolab/learning_javascript/lecture2_firebug_examples in the section “jQuery DOM Examples.”

Change the title of my blog to "Mobile Web Apps". (Use inspector to see what that DOM element is). – $(‘h1’).text(“Mobile Web Apps”)
Fade out all the h2s with class author. Fade them back in.

MAIN JQUERY OPERATIONS

- **Attributes**: Changing existing elements.
- **Traversing**: Moving from selected elements in the DOM to others.
- **Manipulating**: Inserting or removing elements.
- **Events**: Attaching functions to events in the browser.

QUESTIONS?