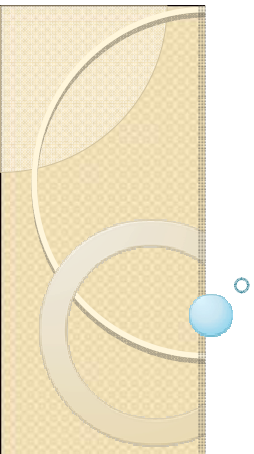


jQuery

CS 380: Web Programming

What is jQuery?

- jQuery is a fast and concise JavaScript Library that simplifies HTML document traversing, event handling, animating, and Ajax interactions for rapid web development. (jQuery.com)

Why learn jQuery?

- Write less, do more:
  - *$("p.neat").addClass("ohmy").show("slow");*
- Performance
- Plugins
- It's standard
- … and fun!

Example: Show/Hide Button

window.onload

- We cannot use the DOM before the page has been constructed. jQuery gives us a more compatibile way to do this.
  - The DOM way
  - The direct jQuery translation
  - The jQuery way

```
window.onload = function() { // do stuff with the DOM }
```

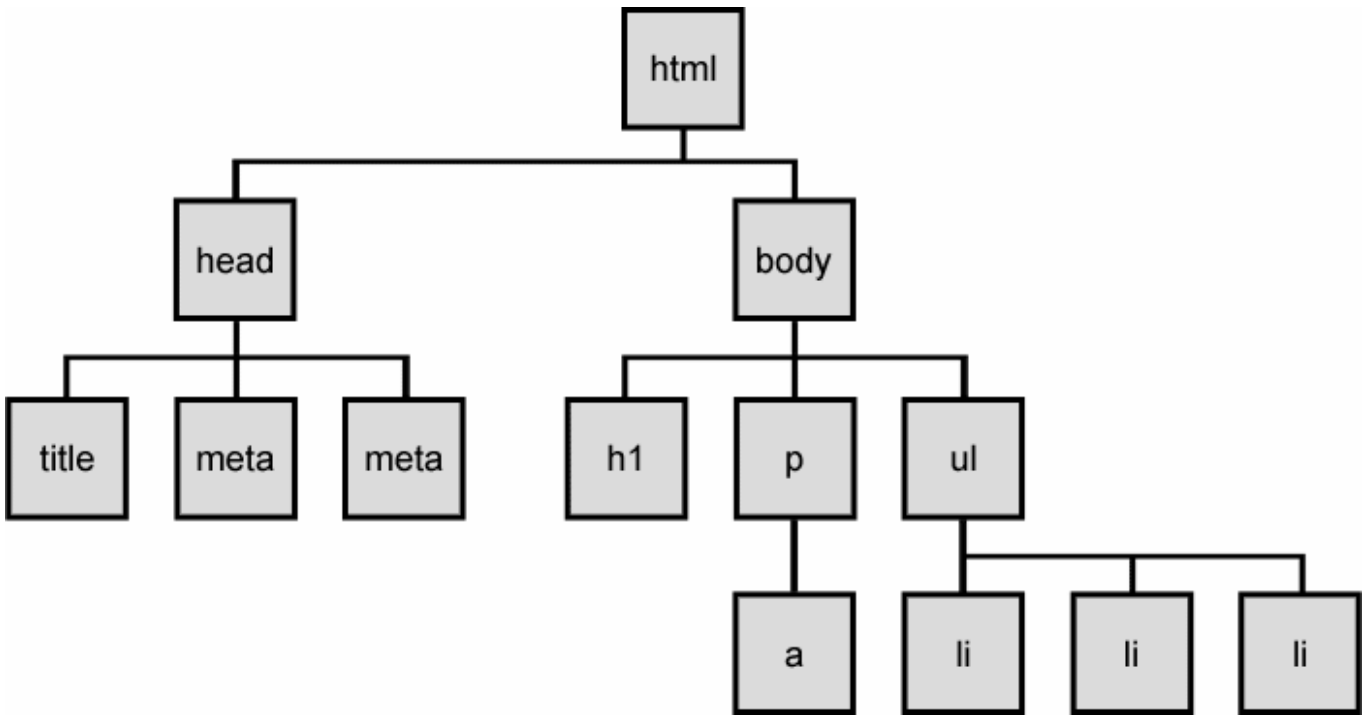
```
$(document).ready(function() { // do stuff with the DOM });
```

```
$(function() { // do stuff with the DOM });
```

Aspects of the DOM and jQuery

- **Identification:** how do I obtain a reference to the node that I want.
- **Traversal:** how do I move around the DOM tree.
- **Node Manipulation:** how do I get or set aspects of a DOM node.
- **Tree Manipulation:** how do I change the structure of the page.

The DOM tree



Selecting groups of DOM objects

name	description
getElementById	returns array of descendents with the given tag, such as "div"
getElementsByTagName	returns array of descendents with the given tag, such as "div"
getElementsByName	returns array of descendents with the given name attribute (mostly useful for accessing form controls)
querySelector *	returns the first element that would be matched by the given CSS selector string
querySelectorAll *	returns an array of all elements that would be matched by the given CSS selector string

jQuery node identification

```
// id selector
var elem = $("#myid");

// group selector
var elems = $("#myid, p");


// context selector
var elems = $("#myid < div p");

// complex selector
var elems = $("#myid < h1.special:not(.classy)");
```

jQuery Selectors

- http://api.jquery.com/category/selectors/

jQuery / DOM comparison

DOM method	jQuery equivalent
getElementById("id")	$("#id")
getElementsByTagName("tag")	$("tag")
getElementsByName("somename")	$("[name='somename']")
querySelector("selector")	$("selector")
querySelectorAll("selector")	$("selector")

Exercise

- Use jQuery selectors to identify elements with these properties in a hypothetical page:
  - All p tags that have no children, but only if they don't have a class of ignore
  - Any element with the text "REPLACE_ME" in it.
  - All div tags with a child that has a class of special
  - All heading elements (h1, h2, h3, h4, h5, h6)
  - Every other visible li.
- Use the DOM API to target the #square and periodically change it's position in a random direction.
- Use jQuery selectors instead of the DOM API.

jQuery terminology

- the jQuery function

  refers to the global jQuery object or the $ function depending on the context

- a jQuery object

  the object returned by the jQuery function that often represents a group of elements

- selected elements

  the DOM elements that you have selected for, most likely by some CSS selector passed to the jQuery function and possibly later filtered further

The jQuery object

- The $ function always (even for ID selectors) returns an array-like object called a jQuery object.
- The jQuery object wraps the originally selected DOM objects.
- You can access the actual DOM object by accessing the elements of the jQuery object.

```
// false
document.getElementById("id") == $("#myid");
document.querySelectorAll("p") == $("p");
// true
document.getElementById("id") == $("#myid")[0];
document.getElementById("id") == $("#myid").get(0);
document.querySelectorAll("p")[0] == $("p")[0];
```

Using $ as a wrapper

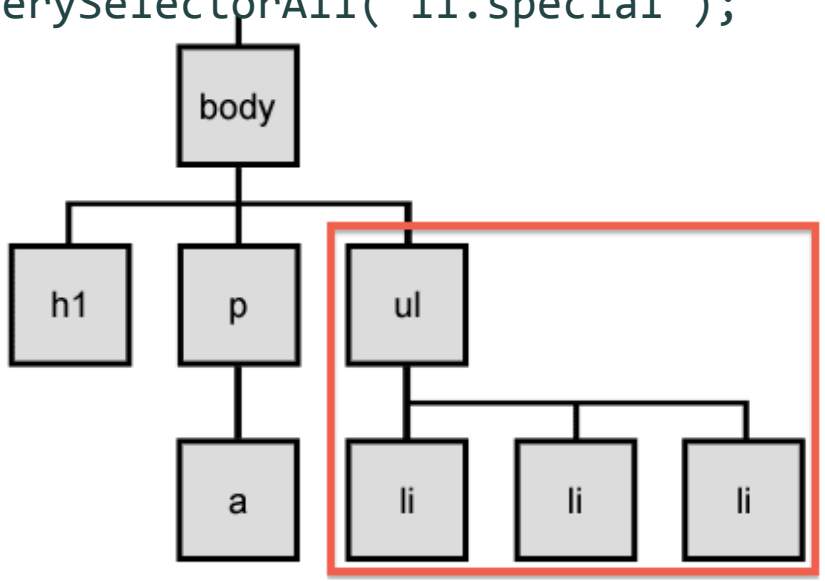
- $ adds extra functionality to DOM elements
- passing an existing DOM object to $ will give it the jQuery upgrade

```
// convert regular DOM objects to a jQuery object
var elem = document.getElementById("myelem");
elem = $(elem);
var elems = document.querySelectorAll(".special");
elems = $(elems);
```

DOM context identification

- You can
  use querySelectorAll() and querySelector() on any DOM object.
- When you do this, it simply searches from that part of the DOM tree downward.
- Programmatic equivalent of a CSS context selector

```
var list = document.getElementsByTagName('ul')[0];
var specials = list.querySelectorAll('li.special');
```



find / context parameter

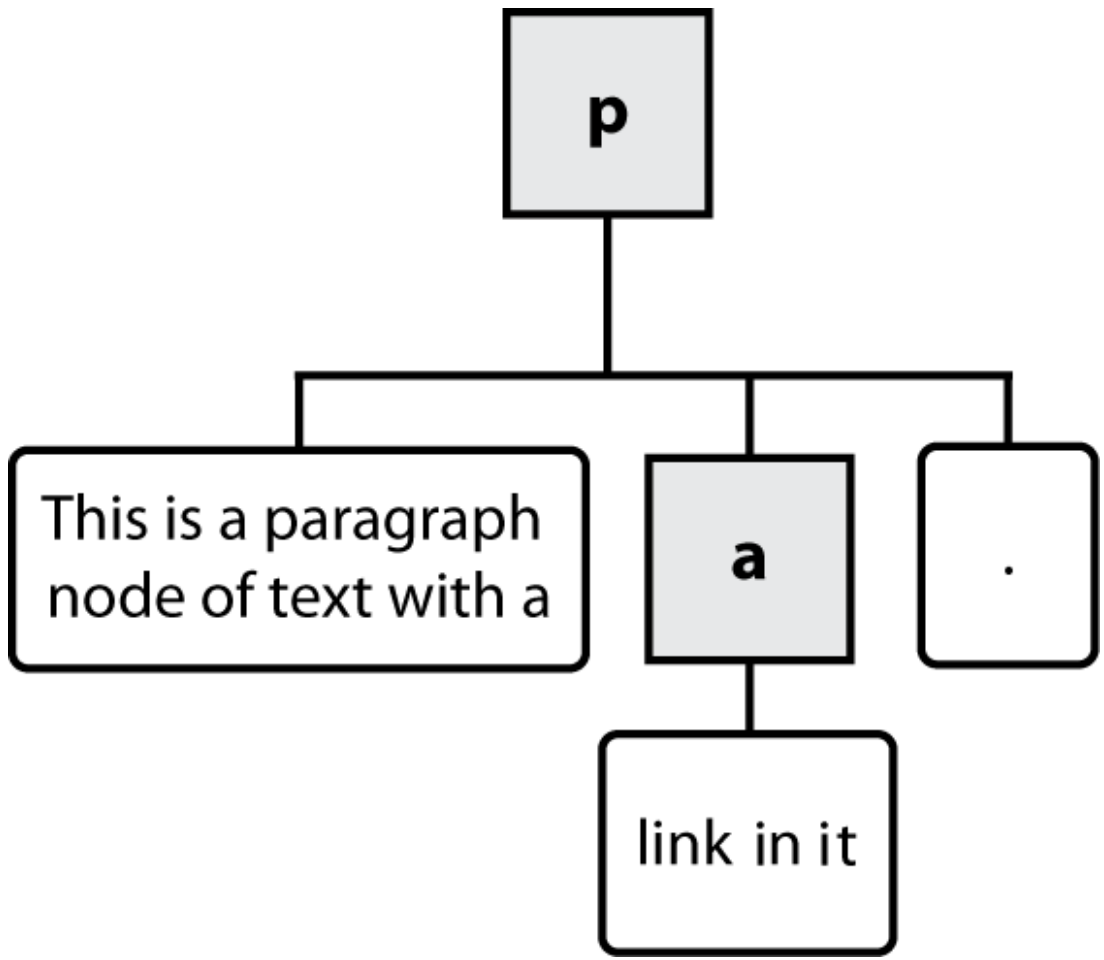
- jQuery gives two identical ways to do contextual element identification

```
var elem = $("#myid");

// These are identical
var specials = $("li.special", elem);
var specials = elem.find("li.special");
```

Types of DOM nodes

```
<p>
        This is a paragraph of text with a
        <a href="/path/page.html">link in it</a>.
</p>
```



Traversing the DOM tree

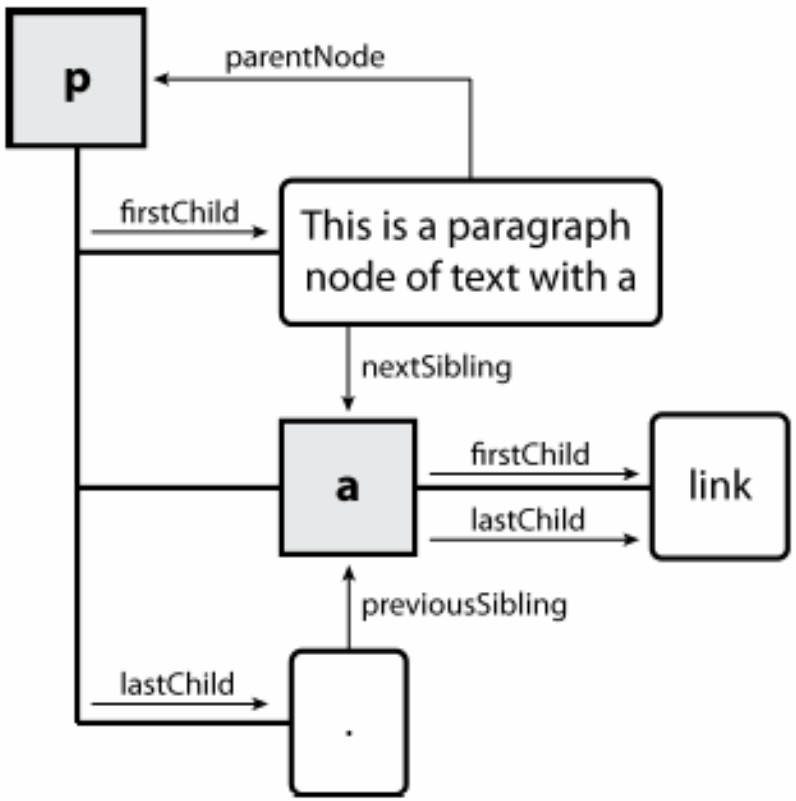
name(s)	description
firstChild, lastChild	start/end of this node's list of children
childNodes	array of all this node's children
nextSibling, previousSibling	neighboring nodes with the same parent
parentNode	the element that contains this node

- complete list of DOM node properties
- browser incompatiblity information (IE6 sucks)

DOM tree traversal example

```
<p id="foo">This is a paragraph of text with a
<a href="/path/to/another/page.html">link</a>.</p>
```

HTML



Elements vs text nodes

```
<div>
	<p>
		This is a paragraph of text with a
		<a href="page.html">link</a>.
	</p>
</div>
```

HTML

- Q: How many children does the div above have?
- A: 3
  - an element node representing the <p>
  - two text nodes representing "\n\t" (before/after the paragraph)
- Q: How many children does the paragraph have? The a tag?

jQuery traversal methods

- http://api.jquery.com/category/traversing/

jQuery tutorials

- Code Academy

  http://www.codecademy.com/courses/you-and-jquery/0?curriculum_id=4fc3018f74258b0003001f0f#!/exercises/0

- Code School:

  http://www.codeschool.com/courses/jquery-air-first-flight