



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 compatible way to do this.

- The DOM way

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

- The direct jQuery translation

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

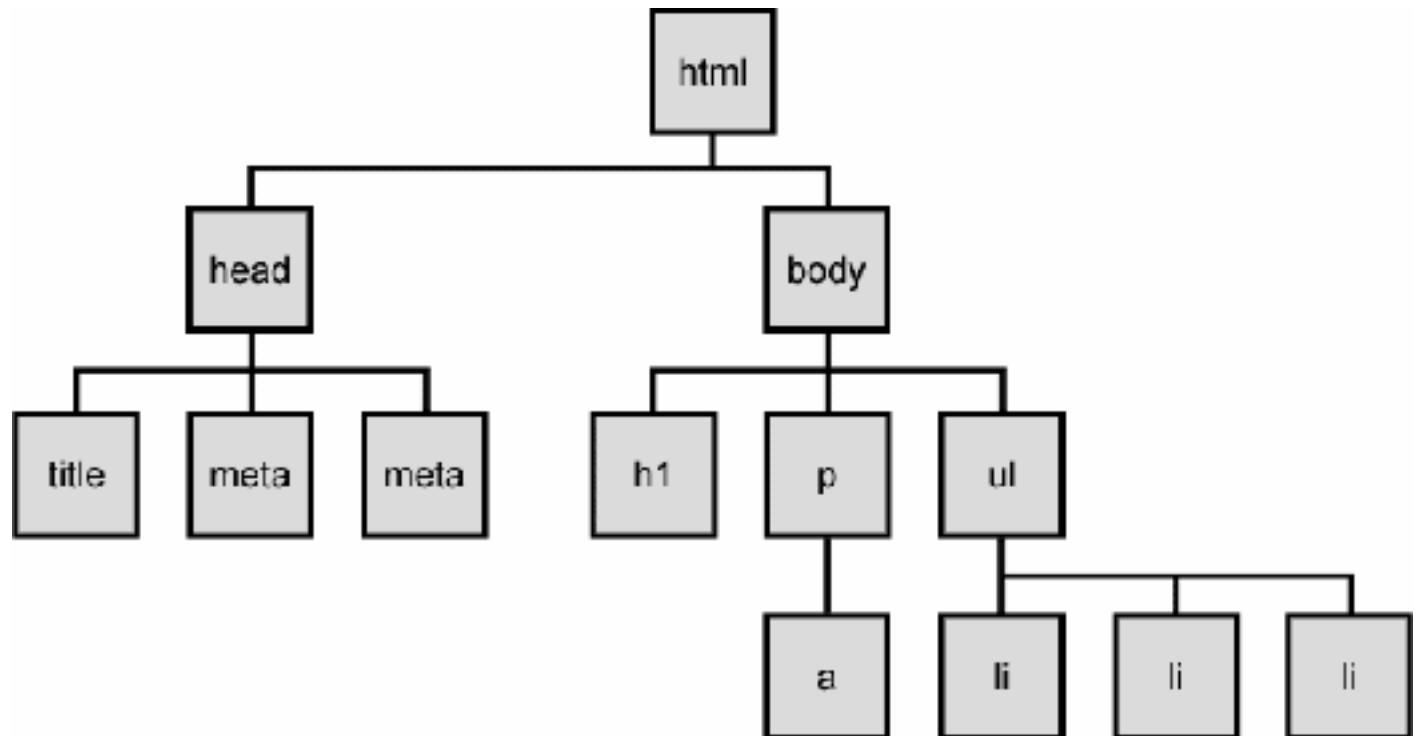
- The jQuery way

```
$(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
<u>getElementById</u>	returns array of descendents with the given tag, such as "div"
<u>getElementsByTagName</u>	returns array of descendents with the given tag, such as "div"
<u>getElementsByName</u>	returns array of descendents with the given name attribute (mostly useful for accessing form controls)
<u>querySelector</u> *	returns the first element that would be matched by the given CSS selector string
<u>querySelectorAll</u> *	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 = $("#mvid. 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
<code>getElementById("id")</code>	<code>\$("#id")</code>
<code>getElementsByTagName("tag")</code>	<code>\$("tag")</code>
<code>getElementsByName("somename")</code>	<code>\$("[name='somename']")</code>
<code>querySelector("selector")</code>	<code>\$("selector")</code>
<code>querySelectorAll("selector")</code>	<code>\$("selector")</code>

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

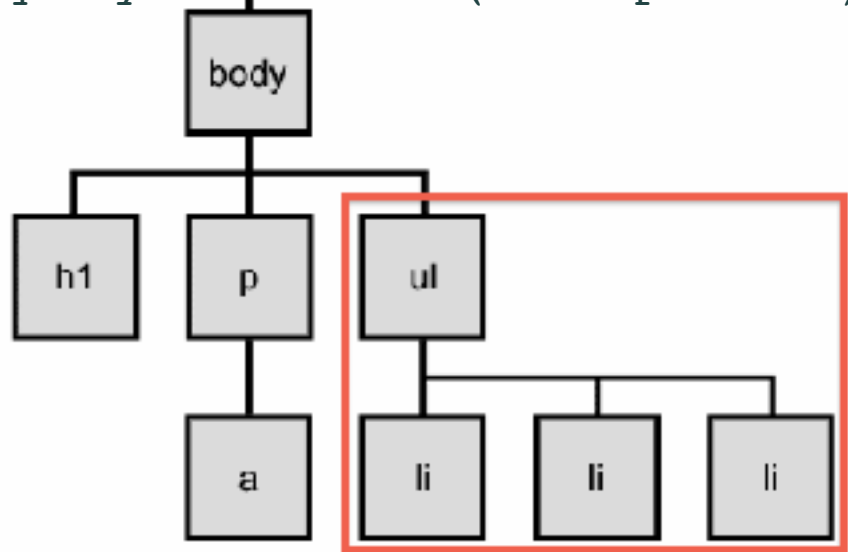
- \$ adds extra functionality to DOM elements
- passing an existing DOM object to \$ will give it the jQuery upgrade

```
// 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);
```

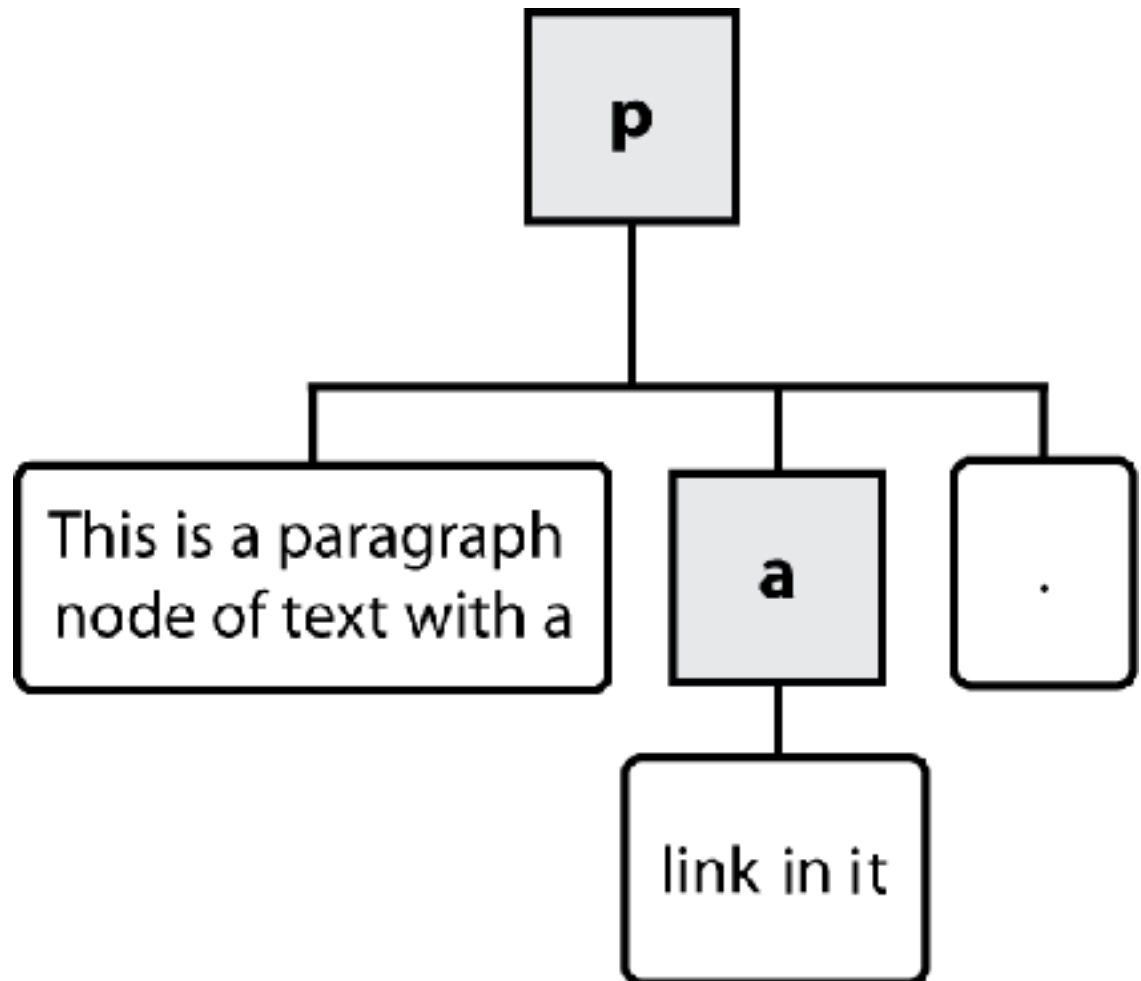
```
var specials = elem.find("li.special");
```

Types of DOM nodes

<p>

This is a paragraph of text with a
link in it.

</p>



Traversing the DOM tree

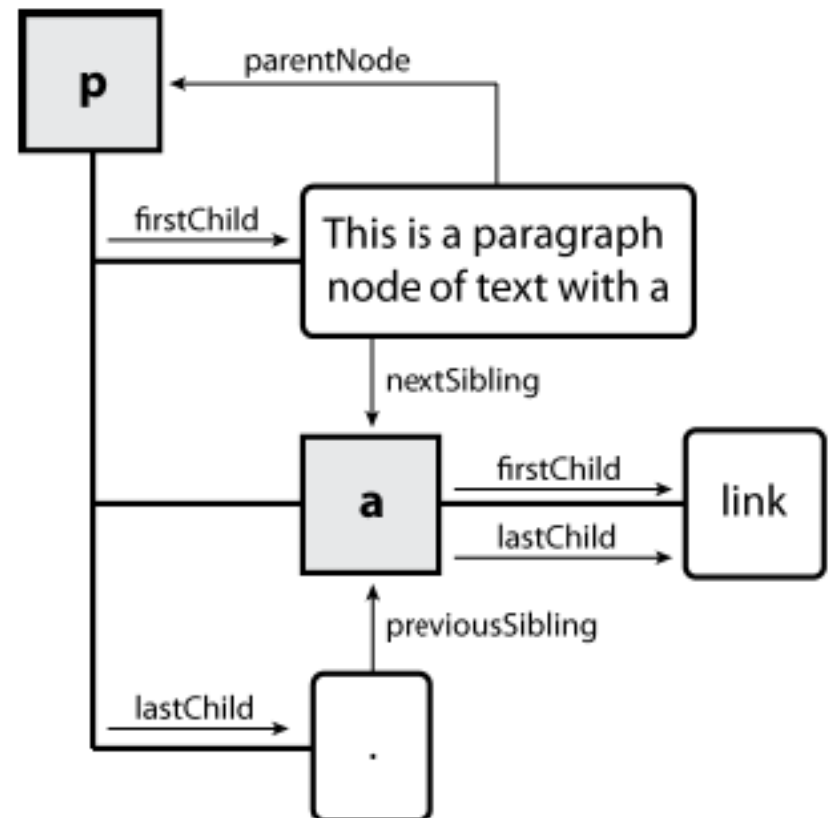
name(s)	description
firstChild, lastChild	start/end of this node's list of children
childNodes	array of all this node's children
nextSibling, previousSibling	neighboring nodes with the same parent
parentNode	the element that contains this node

- complete list of DOM node properties
- browser incompatibility 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>