Web Development

Lecture 14 – JQuery 2

http://jquery.com
http://www.w3schools.com/jquery/default.asp

Tree traversal methods

More on Effects

Callback functions

Custom Animations

Changing the CSS content

Changing the HTML content

AJAX requests

What is jQuery?

jQuery is a library of JavaScript Functions.

A lightweight "write less, do more" JavaScript library.

The jQuery library contains the following features:

- HTML element selections
- HTML element manipulation
- CSS manipulation
- HTML event functions
- JavaScript Effects and animations
- HTML DOM traversal and modification
- AJAX
- Utilities

From last weeks exercises

```
$(document).ready(function(){
  $(".ex .hide").click(function(){
    $(this).parents(".ex").hide("slow");
  });
});
```

This is a tree traversal method

Means:

If someone clicks on an element with the class name 'hide', which is inside an element with the class name 'ex', then find the parent element (with the class name 'ex') of the clicked element, and hide it.

Traversal Methods

.children() Get the children of each element in the set of matched elements, optionally filtered by a selector.

.next() Get the immediately following sibling of each element in the set of matched elements. If a selector is provided, it retrieves the next sibling only if it matches that selector.

.nextAll() Get all following siblings of each element in the set of matched elements, optionally filtered by a selector.

.parent() Get the parent of each element in the current set of matched elements, optionally filtered by a selector.

.parents() Get the ancestors of each element in the current set of matched elements, optionally filtered by a selector.

.prev() Get the immediately preceding sibling of each element in the set of matched elements, optionally filtered by a selector.

.prevAll() Get all preceding siblings of each element in the set of matched elements, optionally filtered by a selector.

.prevUntil() Get all preceding siblings of each element up to but not including the element matched by the selector, DOM node, or jQuery object.

.siblings() Get the siblings of each element in the set of matched elements, optionally filtered by a selector.

jQuery Effects

$(selector).hide(speed, callback)	Hide selected elements
$(selector).show(speed, callback)	Show selected elements
$(selector).toggle(speed, callback)	Toggle (between hide and show) selected elements
$(selector).slideDown(speed, callback)	Slide-down (show) selected elements
$(selector).slideUp(speed, callback)	Slide-up (hide) selected elements
$(selector).slideToggle(speed, callback)	Toggle slide-up and slide-down of selected elements
$(selector).fadeIn(speed, callback)	Fade in selected elements
$(selector).fadeOut(speed, callback)	Fade out selected elements
$(selector).fadeTo(speed, opacity, callback)	Fade out selected elements to a given opacity
$(selector).animate()	Run a custom animation on selected elements

Speed can be one of the following: slow, fast, normal, or a number in milliseconds.

Callback functions

JavaScript statements are executed line by line. However, with animations, the next line of code can be run even though the animation is not finished. This can create errors.

To prevent this, you can create a callback function.

A callback function is executed after the current animation (effect) is finished.

jQuery Callback Example

Example with Callback

```
$("p").hide(1000,function()
            {
            alert("The paragraph is now hidden");
            });
```

Without a callback parameter, the alert box is displayed before the hide effect is completed:

Example without Callback

```
$("p").hide(1000);
alert("The paragraph is now hidden");
```

jQuery Custom Animations

The syntax of jQuery's method for making custom animations is:

```
$(selector).animate({params},[duration],[easing],[callback])
```

The key parameter is params. It defines the CSS properties that will be animated. Many properties can be animated at the same time:

```
animate({ width:"70%", opacity:0.4,
           marginLeft:"0.6in", fontSize:"3em"
         });
```

The second parameter is duration. It specifies the speed of the animation.

Possible values are "fast", "slow", "normal", or milliseconds.

Example 1

```
< script type="text/javascript">

$(document).ready(function()
  {
  $("button").click(function()
   {
    $("div").animate({height:300},"slow");
    $("div").animate({width:300},"slow");
    $("div").animate({height:100},"slow");
    $("div").animate({width:100},"slow");
   });
  });

< /script>
```

Example 2

```
< script type="text/javascript">

$(document).ready(function()
 {
 $("button").click(function()
  {
   $("div").animate( {left:"100px"} ,"slow");
   $("div").animate( {fontSize:"3em"} ,"slow");
  });
 });

< /script>
```

jQuery CSS Manipulation

jQuery has one important method for CSS manipulation: css()

The css() method has three different syntaxes, to perform different tasks.

css(name)	Return CSS property value
css(name,value)	Set CSS property and value
css({properties})	Set multiple CSS properties and values

Using the CSS method

Return CSS Property

Use css(name) to return the specified CSS property value of the FIRST matched element:

```
$(this).css("background-color");
```

Set CSS Property and Value

Use css(name,value) to set the specified CSS property for ALL matched elements:

```
$("p").css("background-color","yellow");
```

Set Multiple CSS Property/Value Pairs

Use css({properties}) to set one or more CSS property/value pairs for the selected elements:

```
$("p").css({"background-color":"yellow","font-size":"200%"});
```

Changing HTML Content

$(selector).html(content)

The html() method changes the contents (innerHTML) of matching HTML elements.

```
$("p").html("<p>W3Schools</p>");
```

Adding HTML content

$(selector).append(content)

Appends content to the inside of matching HTML elements.

$(selector).prepend(content)

Prepends content to the inside of matching HTML elements.

$(selector).after(content)

Inserts HTML content after all matching elements.

$(selector).before(content)

Inserts HTML content before all matching elements.

What is Ajax?

Asynchronous
Javascript
and
XML

A bit misleading, as it doesn't have to be asynchronous, and it doesn't have to involve XML.

The name for a collection of technologies that had existed for some time, but web developers had never combined them in this way.

The term was coined by Jesse James Garrett in:

"Ajax: A New Approach to Web Applications"

http://www.adaptivepath.com/ideas/essays/archives/000385.php

With traditional web page design, if you want something on the page to change, you have to refresh the entire page.

The browser issues an HTTP request.

The server issues an HTTP response.

The new information is displayed in the browser.

The key to Ajax applications, is the use of scripted HTTP requests.

Since the amount of data transferred is often very small, and the browser doesn't have to parse and render an entire web page, response time is improved.

An html file

```
<!DOCTYPE html>

<html>
  <head>
    <link rel="stylesheet" type="text/css" href="JQ2ex04.css" />
    <script type="text/javascript" src="jquery-1.7.1.js"></script>
    <script type="text/javascript" src="JQ2ex04.js"></script>
  </head>

  <body>
    <div>
      Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aliquam vel augue justo.
Donec eget sapien urna, at mollis arcu. Etiam eu volutpat velit. Phasellus vehicula sem at
augue dapibus vestibulum. Nunc ut metus ut est volutpat sollicitudin eu vitae lectus.
    </div>
    <div id="middle">
      <h2>Let AJAX change this text</h2>
    </div>
    <div>
       Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aliquam vel augue justo.
Donec eget sapien urna, at mollis arcu. Etiam eu volutpat velit. Phasellus vehicula sem at
augue dapibus vestibulum. Nunc ut metus ut est volutpat sollicitudin eu vitae lectus.
    </div>
    <button>Change Content</button>
  </body>
</html>
```

test1.txt

```
This is a test file containing some text.  I want it
to appear in a document when I click on a button,
without having to refresh the page.  I need to use a
remote http request to get the file. This is called
the Ajax technique.
```

In more complex Ajax applications, this data would be encoded in XML format.

XML (Extensible Markup Language) is a way of encoding documents electronically. The standards are laid down by the W3C.

JQ3ex04.js

```
$(document).ready(function(){
  $("button").click(function(){
    $("div#middle").load('test1.txt');
  });
});
```

The syntax of the load method is:

$(selector).load(url, *data, callback*)

url the address of the data.

data (Optional) Only used if you want to send data to the server.

callback (Optional) Used if you want to trigger a function after the data has been retrieved.

The World is a Strange Place…

If we are scripting HTTP requests, and dealing with responses, then the files must be held on a web server.

This method should not work if the files are held on your local file system.

In other words, if you double click on the html file, it should show you the page, but the button won't function.