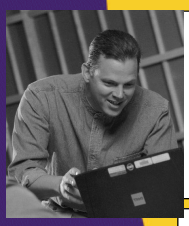
jQuery Part II: Selectors and DOM Manipulation

(jQuery 1.4 Version)

Originals of Slides and Source Code for Examples:
http://courses.coreservlets.com/Course-Materials/jquery.html

For live Ajax & GWT training, see training courses at http://courses.coreservlets.com/.



Taught by the author of *Core Servlets and JSP*, *More Servlets and JSP*, and this tutorial. Available at public venues, or customized versions can be held on-site at your organization.

- Courses developed and taught by Marty Hall
  - Java 6, servlets/JSP (intermediate and advanced), Struts, JSF 1.*x*, JSF 2.0, Ajax, GWT 2.0 (with GXT), custom mix of topics
  - Ajax courses can concentrate on 1 library (jQuery, Prototype/Scriptaculous, Ext-JS, Dojo, Google Closure) or survey several
- Courses developed and taught by coreservlets.com experts (edited by Marty)
  - Spring, Hibernate/JPA, EJB3, Web Services, Ruby/Rails

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Topics in This Section

- **Basics**
  - Basic selectors
  - Hierarchical selectors
  - Manipulating the matched elements
  - Chaining
  - Registering event handlers
- **Advanced topics**
  - Attribute selectors
  - Form element selectors
  - Positional selectors
  - Content-filtering selectors
  - Advanced operators
  - Cross-browser mouse and keyboard event handling

Basic Selectors and Operators

Selecting DOM Elements

- **Idea**
  - Use $("css selector") to get a set of DOM elements
    - Then, perform operations on each
      - $("div.warning").html("Missing values!").show()
- **Examples**
  - $("#some-id")
    - Return 1-element set (or empty set) of element with id
    - Simplest use, and most common for Ajax (note the "#"!)
  - $("p")
    - Return all p elements
  - $(".blah")
    - Return all elements that have class="blah"
  - $("li b span.blah")
    - Return all elements that are inside b elements, that in turn are inside li elements

Manipulating DOM Elements

- **Common functions on matched elements**
  - $("#some-id").val()
    - Returns value of input element. Used on 1-element sets.
  - $("selector").each(function)
    - Calls function on each element. "this" set to element.
  - $("selector").addClass("name")
    - Adds CSS class name to each. Also removeClass, toggleClass
  - $("selector").hide()
    - Makes invisible (display: none). Also show, fadeIn, fadeOut, etc.
  - $("selector").click(function)
    - Adds onclick handler. Also change, focus, mouseover, etc.
  - $("selector").html("<tag>some html</tag>")
    - Sets the innerHTML of each element. Also append, prepend
- **Chaining**
  - $("a").click(funct1).addClass("name").each(funct2)

Short Examples

- **$("#some-div").html("Blah blah");**
  - Find the element with id "some-div" and set its innerHTML to "Blah blah"
- **$("#some-button").click(someFunction);**
  - Add someFunction as the onclick handler for button whose id is "some-button"
- **$("div.msg").addClass("important").show();**
  - Find all elements (which are presumably hidden), add the CSS style "important", then make them visible
- **$("form#some-id input[type=text]").val("");**
  - Clear the values of all textfields that are inside <form id="some-id">

Basic Selectors

Selector	Meaning	Examples	
element	Matches all elements with given tag name. Returns array of matches.	**$("li")** **$("p")**	Returns all li elements Returns all p elements
#id	Matches the element with given id. Returns array of 0 or 1 elements.	**$("#blah")**	Returns element with <…id="blah">
.class	Matches all elements with given CSS style. Note that $(".foo") is a shorthand for $("*.foo").	**$(".important")**	Returns all elements with <… class="important">
element.class	Matches all elements with given tag name that have given class.	**$("div.important")**	Returns all elements like
element#id	Matches the element that has given tag name and given id. Since ids must be unique, you can omit the element name and get same result.	**$("form#blah")**	Returns element with <form id="blah"> Doing $("#blah") would match same element.
*	Matches all elements in entire page. More useful with the "not" operator covered later. E.g., $("*").not("html,head,title,body") returns all elements in page except for html, head, title, and body.	**$("*")**	Returns all elements.

Hierarchical Selectors

Selector	Meaning	Examples	
s1 s2	Elements that match selector s2 and are *directly or indirectly* inside an element that matches selector s1.	**$("div.foo span.bar")**	Matches all elements that are *somewhere* inside .
s1 > s2	Elements that match selector s2 and are *directly* inside an element that matches s1.	**$("div.foo > span.bar")**	Matches all elements that are *directly* inside .
s1, s2	Elements that match either selector.	**$("ul,ol,dl.foo")**	Matches all ul, ol, and <dl class="foo"> elements.
s1 + s2	Elements that match s2 and are immediately after a sibling element matching s1.	**$("label + input")**	Matches all input elements that are immediately after a label element.
s1 ~ s2	Elements that match selector s2 and are somewhere after a sibling element matching s1.	**$("label ~ input")**	Matches all input elements that have a label element somewhere before them at the same nesting level.

Manipulating the Results

Function	Meaning	Examples	
html	Sets the innerHTML property of each element. With no args, returns the innerHTML property.	**$("#some-id").html("Test")**	Sets innerHTML of element with <…id="some-id"> to "Test"
append, prepend	Appends (or prepends) to innerHTML property.	**$("ol li").append("!")**	Adds an exclamation point to the end of all li elements that are part of ol lists.
addClass, removeClass, toggleClass	Adds (or removes, or toggles) the specified CSS class name to each element.	**$("ol#foo li").addClass("bar")**	Finds all li elements inside <ol id="foo"> and makes them <li class="bar">
css	Adds specified style property and value	**$("ol#foo li").css("color", "blue")**	Finds all li inside <ol id="foo"> and makes them blue
val	Sets the value property. With no args, returns the property. Applies to form elements only.	**$("#form-id input").val("")** **$("#field-1").val()**	Clears all input elements inside <form id="form-id">. Returns value of textfield with <… id="field1">
hide show	Hides or shows all matching elements. Can call with no args or with "fast", "normal", "slow".	**$("div#foo span.bar").hide();**	Sets “display: none” for all elements inside

Registering Event Handlers

- **Approach: Unobtrusive JavaScript**
  - Assign event handlers from code when DOM loads.
  - Use $(function() {…})
    - This is shorthand for $(document).ready(function() {…})
  - Advantages over using window.onload
    - Runs after DOM loaded, but before images loaded
    - Can be called more than once; won't clobber any existing ready handlers
- **Example**

```
$(function() { $("#button1").click(button1Handler);
               $("#button2").click(button2Handler);
               $("ol.blah li").hover(onHandler, offHandler);
              $("input.foo").keyup(keyHandler);  });
```


Event Handler Functions

- **Idea**
  - Use $(…).click(function) to assign a click handler
  - Use $(…).click() to invoke an existing click handler
  - Similar helper functions for other event types
- **Event handler helper functions**
  - blur, change, click, dblclick, error, focus, keydown, keypress, keyup, load, mousedown, mouseenter, mouseleave, mousemove, mouseout, mouseup, resize, scroll, select, submit, unload
- **Event objects**
  - Event handlers are passed an event object containing info about the event in cross-browser format
  - Can ignore event, but useful for mouse and key events

Higher-Level Event Handlers

- **hover(onHandler, offHandler)**
  - Shorthand way to assign both mouseover and mouseout handlers. Also catches common mouseout errors.
    - $("ol li").hover(
      function() { $(this).css("background-color", "yellow"); },
      function() { $(this).css("background-color", "transparent"); });
- **toggle(function1, function2, … , functionN)**
  - Shorthand way to assign click handler that cycles among a set of two or more functions for each click.
    - $("h1#special").toggle(
      function() { $(this).addClass("wow"); },
      function() { $(this).removeClass("wow"); });

Basics: Example

Using Basic Selectors and Operators

- **Goals**
  - Make button that turns certain elements green
    - $("#poem li.blue").removeClass("blue").addClass("green");
  - Make button that reverts green element to original form
    - $("#poem li.green").removeClass("green").addClass("blue");
  - Make button that hides certain elements
    - $("#poem li.red").hide("slow");
  - Make button the shows the hidden elements
    - $("#poem li.red").show("slow");
  - Change the background color of certain elements when the mouse moves over
    - $(this).addClass("yellow-bg");
    - $(this).removeClass("yellow-bg");

Buttons that Turn Elements Green (and Back) – JavaScript

```
function turnBlueToGreen() {
  $("#poem li.blue").removeClass("blue")
                    .addClass("green");
}

function turnGreenToBlue() {
  $("#poem li.green").removeClass("green")
                     .addClass("blue");
}
...

$(function() {
    $("#turn-green-button").click(turnBlueToGreen);
    $("#revert-green-button").click(turnGreenToBlue);
    ...
  });
```

Matches <li class="blue"> inside <... id="poem">

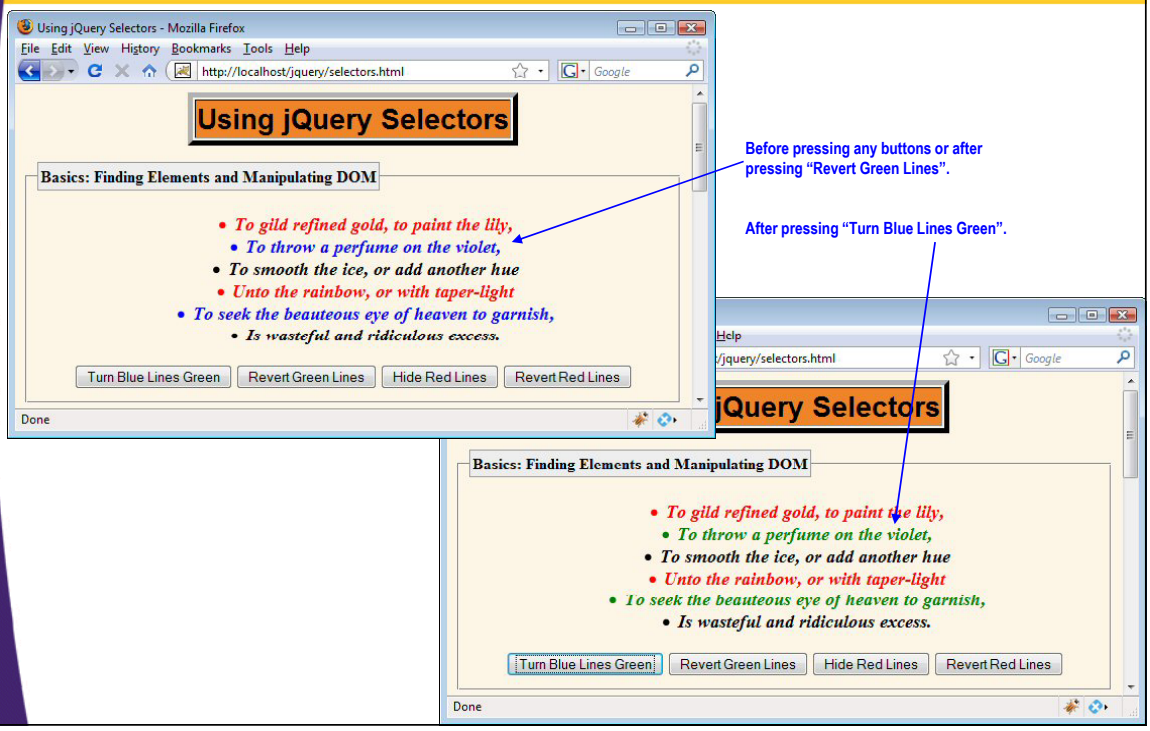
The functions on selected elements return the selected elements, so you can chain function calls. If it is too long to fit on one line, it is common to put them underneath each other like this.

Like window.onload handler, but runs earlier (before images loaded) and it is OK to call it more than once.

Buttons that Turn Elements Green (and Back) – HTML

```
<ul id="poem">
  <li class="red">To gild refined gold, to paint the lily,</li>
  <li class="blue">To throw a perfume on the violet,</li>
  <li>To smooth the ice, or add another hue</li>
  <li class="red">Unto the rainbow, or with taper-light</li>
  <li class="blue">To seek the beauteous eye of heaven to
                   garnish,</li>
  <li>Is wasteful and ridiculous excess.</li>
</ul>
<form action="#">
  <input type="button" id="turn-green-button"
         value="Turn Blue Lines Green"/>
  <input type="button" id="revert-green-button"
         value="Revert Green Lines"/>
  <input type="button" id="hide-red-button"
         value="Hide Red Lines"/>
  <input type="button" id="revert-red-button"
         value="Revert Red Lines"/>
</form>
```


Buttons that Turn Elements Green (and Back) – Results



Buttons that Hide (and Show) Red Lines – JavaScript

```
function hideRed() {
  $("#poem li.red").hide("slow");
}

function showRed() {
  $("#poem li.red").show("slow");
}
...

$(function() {
    ...
    $("#hide-red-button").click(hideRed);
    $("#revert-red-button").click(showRed);
    ...
  });
```

Matches <li class="red"> inside <... id="poem">

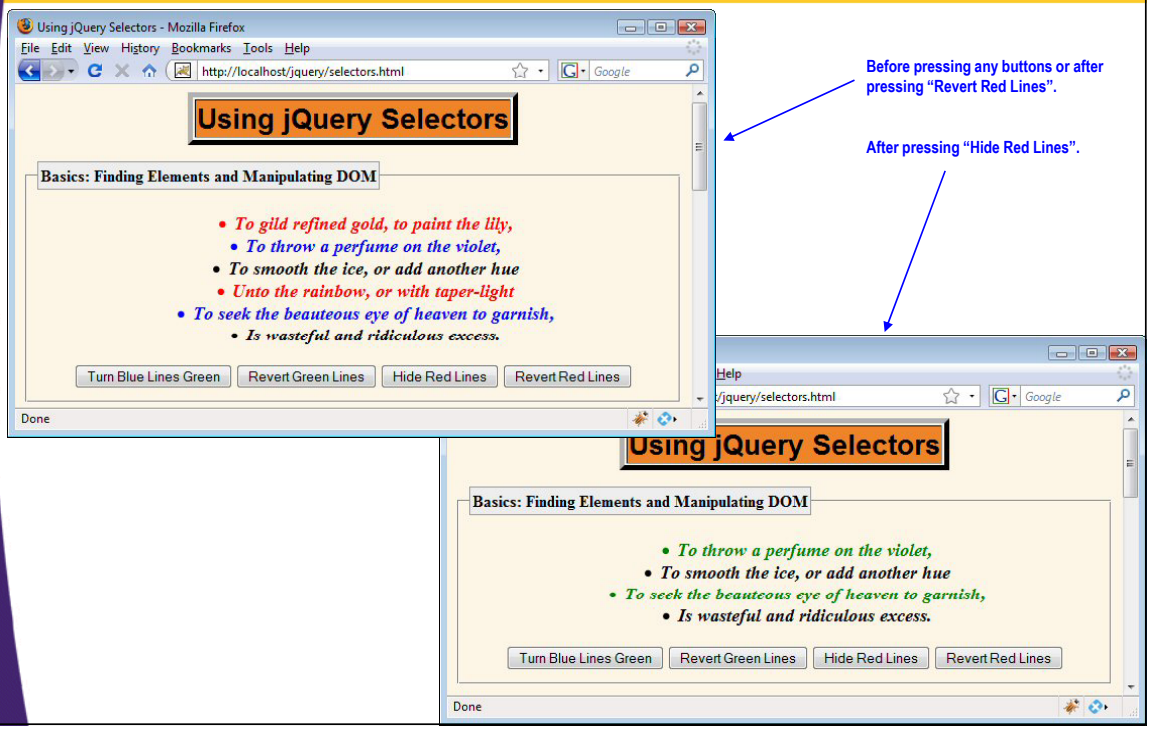
Besides hide and show, there are toggle, fadeIn, fadeOut, fadeTo, slideDown, slideUp, slideToggle, and animate (for custom animations). Not nearly as extensive as Scriptaculous, but good enough for most purposes.

I put these registration calls in the same ready handler as the last example. But I could have used a new ready handler.

Buttons that Hide (and Show) Red Lines – HTML

```
<ul id="poem">
  <li class="red">To gild refined gold, to paint the lily,</li>
  <li class="blue">To throw a perfume on the violet,</li>
  <li>To smooth the ice, or add another hue</li>
  <li class="red">Unto the rainbow, or with taper-light</li>
  <li class="blue">To seek the beauteous eye of heaven to
                   garnish,</li>
  <li>Is wasteful and ridiculous excess.</li>
</ul>
<form action="#">
  <input type="button" id="turn-green-button"
         value="Turn Blue Lines Green"/>
  <input type="button" id="revert-green-button"
         value="Revert Green Lines"/>
  <input type="button" id="hide-red-button"
         value="Hide Red Lines"/>
  <input type="button" id="revert-red-button"
         value="Revert Red Lines"/>
</form>
```

Buttons that Hide (and Show) Red Lines – Results



Highlighting Elements on Mouseover – JavaScript

```
function addYellow() {
  $(this).addClass("yellow-bg");
}

function removeYellow() {
  $(this).removeClass("yellow-bg");
}

…

$(function() {
    …
    $("#poem li").hover(addYellow, removeYellow);
    …
  });
```

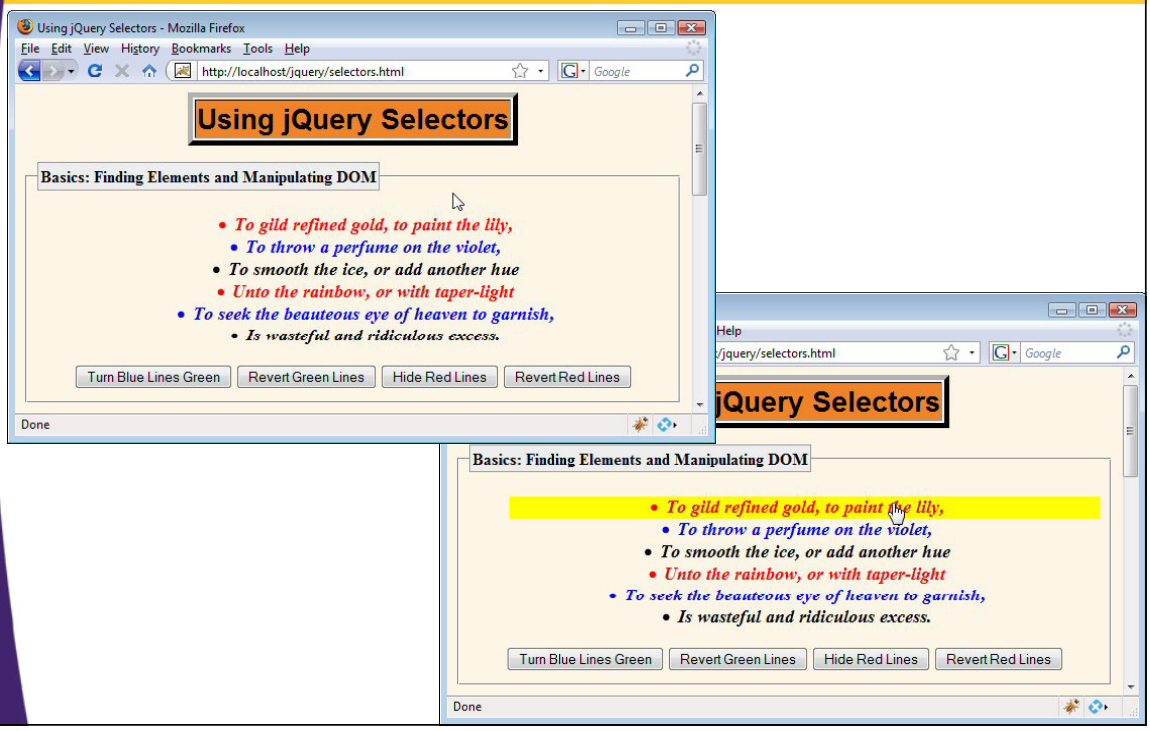
The element to which the mouseover or mouseout handler is attached

Attach handlers to any li element inside <… id="poem">. Those li elements will match "this" at the top.

Highlighting Elements on Mouseover – HTML

```
<ul id="poem">
  <li class="red">To gild refined gold, to paint the lily,</li>
  <li class="blue">To throw a perfume on the violet,</li>
  <li>To smooth the ice, or add another hue</li>
  <li class="red">Unto the rainbow, or with taper-light</li>
  <li class="blue">To seek the beauteous eye of heaven to
                   garnish,</li>
  <li>Is wasteful and ridiculous excess.</li>
</ul>
<form action="#">
  <input type="button" id="turn-green-button"
         value="Turn Blue Lines Green"/>
  <input type="button" id="revert-green-button"
         value="Revert Green Lines"/>
  <input type="button" id="hide-red-button"
         value="Hide Red Lines"/>
  <input type="button" id="revert-red-button"
         value="Revert Red Lines"/>
</form>
```


Highlighting Elements on Mouseover – Results



Advanced Selectors and Operators

Attribute Selectors

Selector	Meaning	Examples	
s[att]	Elements that match selector s and also contain attribute named att.	**$("div.blah a[name]")**	Matches all <a name="…"> elements that are inside
s[att=val]	Elements that match selector s and also contain attribute named att whose value is (exactly) val.	**$("a[href=#sect2]")**	Returns all <a href="#sect2"> elements
s[att^=val]	Elements that match selector s and also contain attribute named att whose value starts with val.	**$("a[href^=#]")**	Returns all internal hyperlinks
s[att$=val]	Elements that match selector s and also contain attribute named att whose value ends with val.	**$("a[href$=jquery.com]")**	Returns all hyperlinks pointing to blah.jquery.com home page (not subpages)
s[att*=val]	Elements that match selector s and also contain attribute named att whose value contains val.	**$("a[href*=jquery.com]")**	Returns all hyperlinks pointing to any page at blah.jquery.com
s[att!=val]	Elements that match selector s and either do not have the specified attribute, or have a different value.	**$("a[href!=#sect2]")**	Returns all hyperlinks except <a href="#sect2"> elements
s:not([…])	Elements that match s but do not match attribute specification.	**$("a:not([href^=http])")**	Returns hyperlinks that do not start with http…

Form Element Selectors

Selector	Meaning
:input	Matches any form element (input, select, textarea, button)
:text	Shorthand for input[type=text]. For example, $("form#blah :text[value=]") matches empty textfields inside <form id="blah">.
:button	Matches input[type=submit], input[type=button], input[type=reset], and button
:enabled, :disabled	Matches enabled/disabled elements.
:selected	Matches elements that are selected
:checkbox, :radio	Matches checkboxes and radio buttons, respectively
:checked	Matches checkboxes or radio buttons that are currently checked
:file, :image, :password, :reset, :submit	Shorthand entries for input[type=file], input[type=image], input[type=password], input[type=reset], and input[type=submit]
:hidden, :visible	Matches hidden or visible elements.

Advanced Operators

Function	Meaning	Examples	
each(fn)	Calls function on each entry. First arg passed to function is index (0-based), 2nd is element. The "this" variable also set to element.	**$(".foo li").each(funct)**	Calls funct on each li element inside <… class="foo">
map(fn)	Calls function on each entry, then returns array of outputs. Same args and meaning of this as "each". Function returns value rather than only performing side effect.	**$(":text").map(upVal)**	Assume that upVal returns $(this).val().toUpperCase() Then, the example returns an array of all textfield values, in uppercase
find(expr)	Finds elements that match expression in current context.	**$("p").find("span")**	Same as $("p span"), but using find is useful from each and map
next	Returns the next sibling element. With an argument, returns next sibling that matches the argument.	**$(":text[value=]").next()**	Returns elements right after empty textfields (e.g., a span for a message)
parent	Returns the enclosing element	**$("input#foo").parent()**	Surrounding element (e.g., the form input is inside)
not(expr)	Removes elements that match the expression. Opposite of "filter"	**$(".foo").not("li")**	Returns all non-li elements that have <…class="foo">
filter(expr)	Keeps only elements that match the expression. Opposite of "not"	**$(".foo").filter("li,p")**	Same as $("li.foo,p.foo")

Advanced Selectors and Operators: Example

Goals

- **Recognize empty textfields**
  - Have a way of marking which fields need values
    - Use <input type="text" class="required">
    - No actual style sheet entry for "required"
  - Identify those fields when empty
    - $("… input.required[value=]")
- **Highlight fields with missing values**
  - Use parent() to find table cell holding textfield
  - Use addClass to add CSS style that has red border
- **Turn on error message if any field missing**
  - Call "each" on the fields with missing values. Set a "warning" style in div. Insert warning message via $("#warning-msg.warning").html("…");

Highlighting Empty Textfields – JavaScript

```
function highlightMissingValues() {
   removeHighlighting();
   $("#form-1 td input.required[value=]").parent()
                                         .addClass("missing")
                                         .each(addWarningStyle);
   $("#warning-msg.warning").html("Please enter required values");
}

function addWarningStyle() {
   $("#warning-msg").addClass("warning");
}

function removeHighlighting() {
   $("#warning-msg.warning").removeClass("warning").html("");
   $("#form-1 td input.required").parent().removeClass("missing");
}
```

Textfield with class="required" but no value (i.e., empty)

The td in which the textfield sits

Red border around the td

Set a flag that says warning message needs to be turned on.

This div originally had no class="warning". It was added only if an empty textfield was found above.

Highlighting Empty Textfields – JavaScript (Continued)

```
$(function() {
    $("#turn-green-button").click(turnBlueToGreen);
    $("#revert-green-button").click(turnGreenToBlue);
    $("#hide-red-button").click(hideRed);
    $("#revert-red-button").click(showRed);
    $("#poem li").hover(addYellow, removeYellow);
    $("#highlight-button").click(highlightMissingValues);
    $("#unhighlight-button").click(removeHighlighting);
    $("#zebra-button").click(zebrafyTables);
    $("#cool-styles-button").click(doCoolStyles);
    $("#uppercase-field").keyup(makeUpperCase);
    $("#echo-button").click(echoText);
});
```

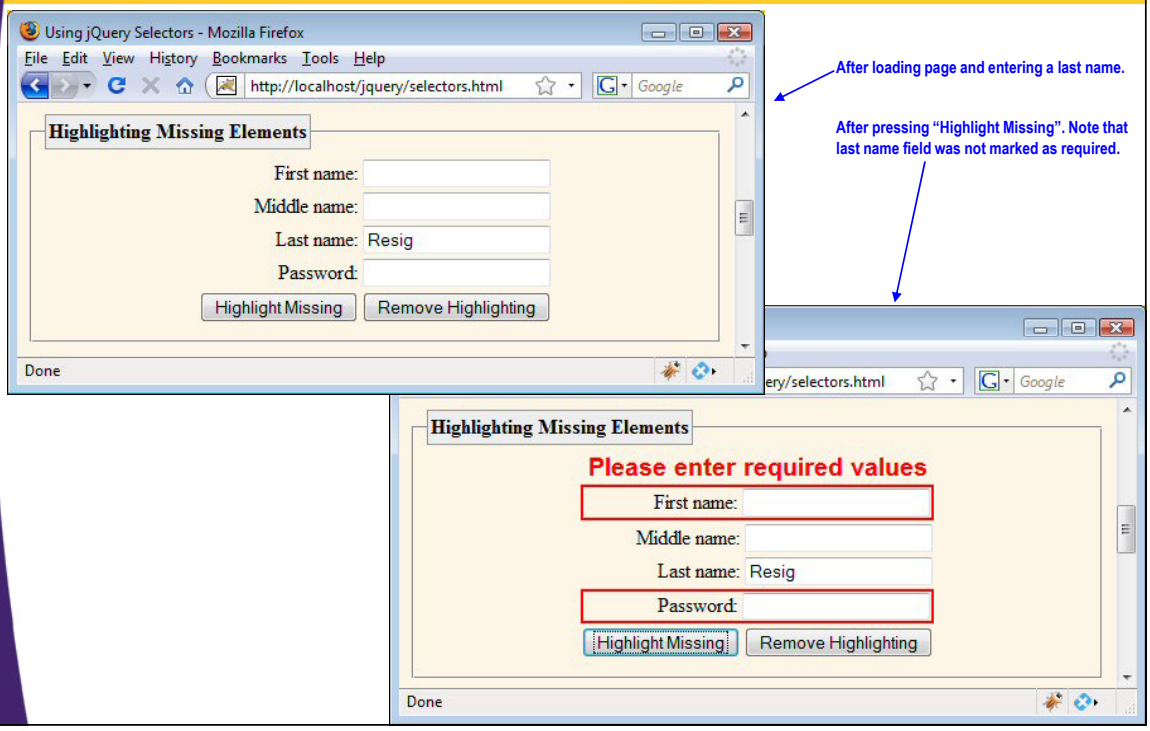
Highlighting Empty Textfields – HTML

```
<form id="form-1">
  <div id="warning-msg"></div>
  <table>
    <tr><td align="right">
        First name: <input type="text" class="required"/></td></tr>
    <tr><td align="right">
        Middle name: <input type="text"/></td></tr>
    <tr><td align="right">
        Last name: <input type="text" class="required"/></td></tr>
    <tr><td align="right">
        Password: <input type="password" class="required"/></td></tr>
    <tr><td align="center">
        <input type="button" id="highlight-button"
               value="Highlight Missing"/>
        <input type="button" id="unhighlight-button"
               value="Remove Highlighting"/>
               </td></tr>
  </table>
</form>
```

No class="warning" unless inserted programmatically

First name, last name, and password marked as required.

Highlighting Empty Textfields – Results



Positional and Content Filtering Selectors

Positional Selectors

Selector	Meaning	Examples	
s:first s:last	First or last match in page.	**$("ul.foo li:first")**	Matches first li element that is inside <ul class="foo">
s:eq(*n*)	The nth match in the page. Count starts at 0.	**$("p:eq(3)")**	Fourth p element in page.
s:gt(*n*), s:lt(*n*)	Elements after/before the nth.	**$("p:gt(3)")**	5th and following p elements.
s:even s:odd	Elements that are even or odd numbered elements in the page. 0-based, so first match is even.	**$("tr:even")**	Finds all table rows, then returns the even numbered ones from that overall list.
s:first-child s:last-child s:only-child	Elements that are the first or last child of their parents, or that have no siblings.	**$("tr:first-child")**	Returns the first row of every table.
s:nth-child(*n*)	Elements that are the nth child. First child is nth-child(1), not (0)	**$("tr:nth-child(3)")**	The third row of each table
s:nth-child(even) s:nth-child(odd)	Elements that are even or odd children of their parent. Count starts at 1, so first match is odd.	**$("tr:nth-child(even)")**	Rows that are even numbered rows of their own table.
s:nth-child(*xn+y*)	Elements matching formula. You list "n" literally. So, 3n means every third. 3n+1 means entry after every third.	**$("tr:nth-child(4n+2)")**	Returns row 6, 10, 14, … of each table.

Content Filtering Selectors

Selector	Meaning	Examples	
s:contains(text)	Elements that match s and whose body content contains given text.	$(".foo li:contains(wow)")	Matches li elements that are inside <… class="foo"> and have "wow" in body text
s:empty	Elements that have no child elements. Body content counts as a child element (text node).	$("div:empty")	Empty divs.
s:parent	Elements that have child elements.	$("div:parent")	Non-empty divs.
s1:has(s2)	Elements that match s1 and have directly or indirectly contain elements that match s2.	$("table:has(th)")	All tables that have at least one th element inside.

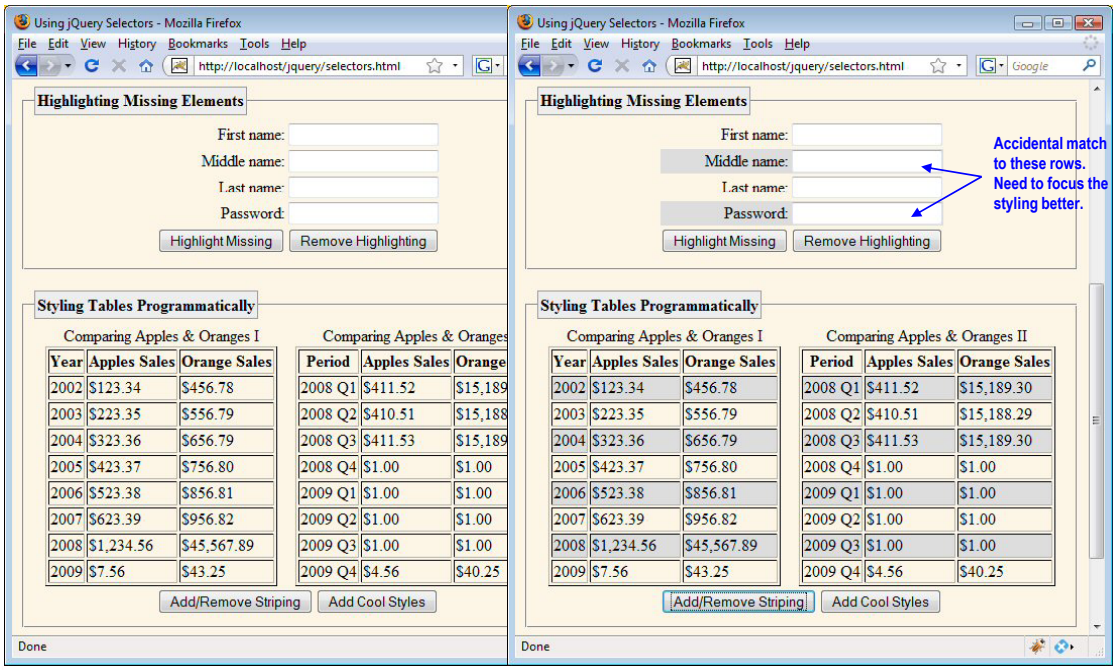
Positional and Content Filtering Selectors: Examples

Goal 1: Adding Simple "Zebra Striping" to Tables

- **Add gray background to even rows**
  - $("tr:nth-child(even)").addClass("gray-bg");
- **Undoing striping**
  - Change "addClass" to "toggleClass" above, then each call reverses the operation
- **Complete JavaScript Code**

```
function zebrafyTables() {
  $("tr:nth-child(even)").toggleClass("gray-bg");
}

$(function() { …
    $("#zebra-button").click(zebrafyTables);
});
```


Zebra Striping: Results



Goal 2: A Flexible Table Styler

- **Make reusable function that takes**
  - The id of table to be styled
  - Optional caption style
  - Optional style for first row (headings)
  - Optional array of styles to be applied to subsequent rows (cycling once end of array is reached)
- **Allow further extension**
  - Make it easy to add even more customization on top of what is done by the function

Table Styler: Main Function

```
function styleTables(tableId, options) {
  tableId = "#" + tableId;
  options = setDefaultOptions(options);
  $(tableId + " caption").addClass(options.captionStyle);
  $(tableId + " tr:first").addClass(options.headingStyle);
  $(tableId + " tr").each(
      function(n) {
        if (n>0) {
          var styleIndex = (n-1) % options.rowStyles.length;
          var style = options.rowStyles[styleIndex];
          $(this).addClass(style);
        }
      }
  );
}
```

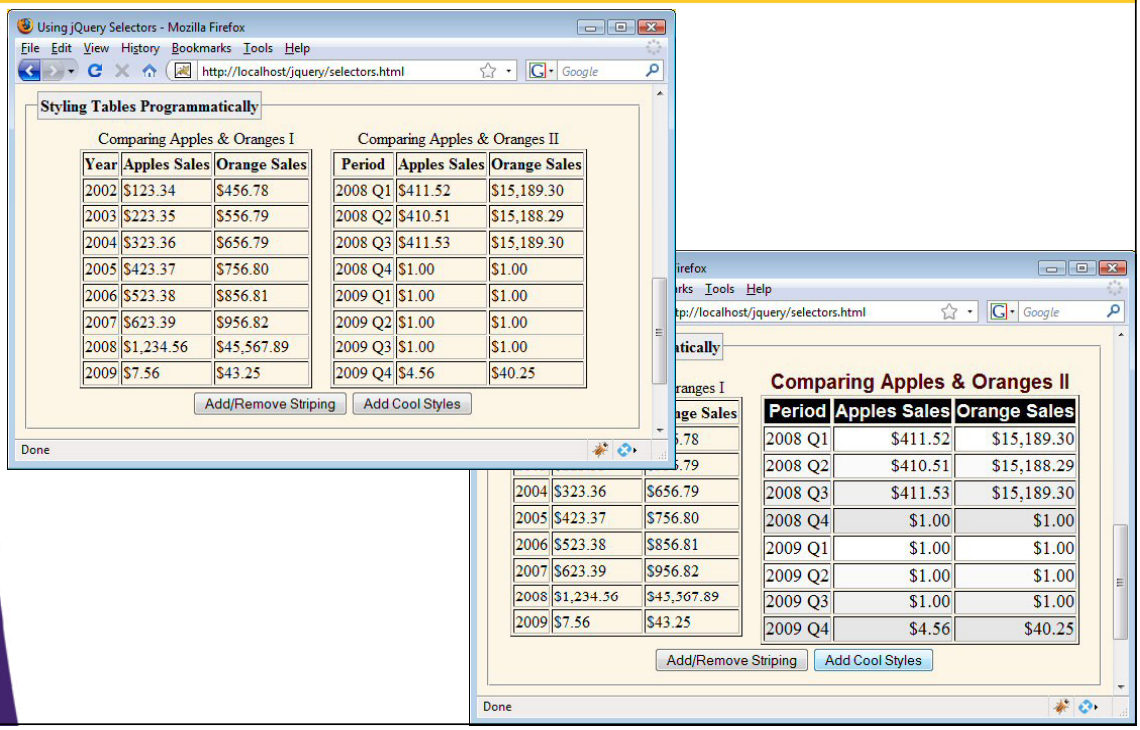
Table Styler: Handling Missing Options

```
function setDefaultOptions(options) {
  if (!options.captionStyle) {
    options.captionStyle = "";
  }
  if (!options.headingStyle) {
    options.headingStyle = "";
  }
  if (!options.rowStyles) {
    options.rowStyles = [""];
  }
  return(options);
}
```


Table Styler in Action

```
function doCoolStyles() {
  styleTables(
      "table2",
      { captionStyle: "title",
        headingStyle: "heading",
        rowStyles: ["row1", "row2", "row3", "row4"]
       });
  $("#table2 td:first-child").css("text-align",
                                  "center");
  $("#table2 td:not(:first-child)").css("text-align",
                                        "right");
}
```

Table Styler: Results



Mouse and Keyboard Events

Event Properties: Overview

- **Idea**
  - When you assign an event handler as with $("#button-id").click(someHandler), you can use "this" inside handler to access element to which it was attached
  - But, handler is also passed an event object. This is particularly useful for mouse and keyboard events
    - Works consistently across browsers!
- **Most important event properties**
  - event.keyCode: numeric key code
  - event.which: mouse button number
  - event.pageX, event.pageY: location of click
  - event.shiftKey (etc): is shift, alt, meta, control down?

Event Properties: Details

Property	Description
event.keyCode	Numeric key code. For alphabetic characters, returns code of uppercase version. Check shiftKey to distinguish. Consistent across browsers for keydown and keyup. For keypress, use "which" property for browser consistency.
event.which	For mouse events, the mouse button that was pressed. Left=1, middle=2, right=3. Right button is 3 even on 2-button mouse. Can also be used for key events, and is consistent across browsers for keypress.
event.target	Element where event started. Usually the same as event.currentTarget and "this".
event.currentTarget	Element that currently has event. With event bubbling, could be different from event.target. Always the same as "this".
event.relatedTarget	For mouse events, element mouse was over before moving on/off current target.
event.pageX event.pageY	The x and y coordinates relative to the page. For mouse events only.
event.screenX event.screenY	The x and y coordinates relative to the whole monitor. For mouse events only.
event.altKey event.ctrlKey event.metaKey event.shiftKey	Boolean flags to determine if modifier keys were down.

Events: Example

- **Goal 1: make textfield value uppercase**
  - $(this).val($(this).val().toUpperCase());
  - Register: $("#uppercase-field").keyup(makeUpperCase);
    - Not dramatically easier than version in regular JavaScript (see section on JavaScript: Browser Capabilities)
- **Goal 2: down arrow should do same thing as the button that is below the field**

```
if (event.keyCode == 40) {
  $("#echo-button").click();
}
```

  - Dramatically easier than similar version in regular JavaScript section. jQuery unifies cross-browser behavior.

Example: JavaScript

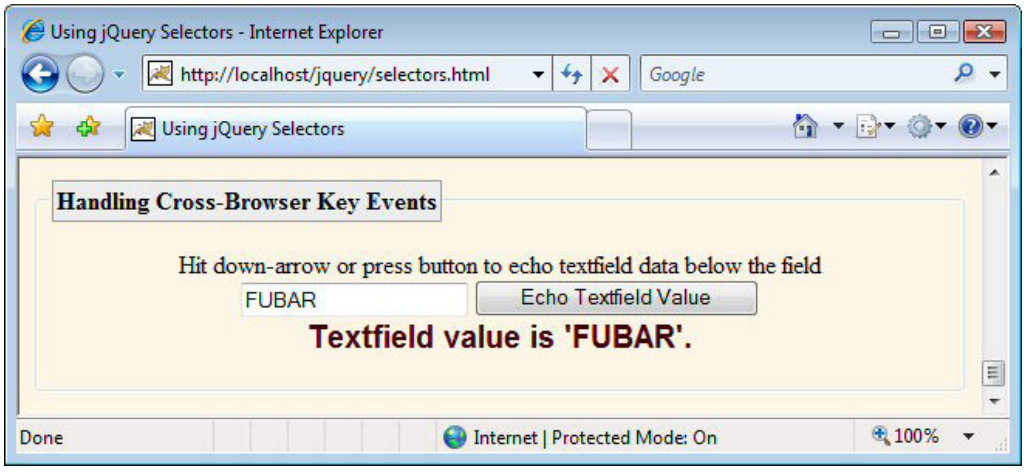
```
function makeUpperCase(event) {
  $(this).val($(this).val().toUpperCase());
  if (event.keyCode == 40) {
    $("#echo-button").click();
  }
}

function echoText() {
  var msg =
    "Textfield value is '" +
    $("#uppercase-field").val() +
    "'.";
  $("#echo-text").html(msg);
}

$(function() { …
    $("#uppercase-field").keyup(makeUpperCase);
    $("#echo-button").click(echoText);
});
```

Example: HTML

```
<form action="#">
   Hit down-arrow or press button to echo
   textfield data below the field<br/>
   <input type="text" id="uppercase-field"/>
   <input type="button" id="echo-button"
          value="Echo Textfield Value"/><br/>
   <div class="title" id="echo-text"></div>
 </form>
```


Example: Results

- **Entered “Fubar” then hit down arrow**



jQuery Plugins

Idea

- **Extensible architecture**
  - jQuery is designed to be extensible
  - Large set of third-party jQuery extensions
    - Varying degrees of stability and robustness
- **Examples**
  - Color choosers
  - Sortable tabs
  - Filtering keys on regular expressions
  - Ajax form plugin (sends all form data automatically)
  - Templates for filling in HTML from JSON data
  - Functional programming extensions
- **Download site**
  - http://plugins.jquery.com/

Form Plugin

- **Without form plugin**

```
<form id="form1">…</form>
function showParams3() {
  $("#result2").load("show-params.jsp",
                     $("#form1").serialize());
}
```

- **With form plugin**

```
<form id="form2" action="show-params.jsp">…</form>
function showParams4() {
  $("#form2").ajaxSubmit({ target: "#result3" });
}
```


Wrap-up

Summary

- **Find some elements**
  - $("element")
  - $("#id")
  - $(".class")
  - $("element.class")
  - $("parent child")
- **Operate on those elements**
  - $(…).html(…)
  - $(…).addClass(…)
  - $(…).hide()
  - $(…).css(name, value)
  - $(…).click(clickHandler)
  - $(…).each(function)

Questions?