

jQuery Tutorial

What is jQuery?



- A framework for client-side JavaScript.
- Frameworks provide useful alternatives for common programming tasks.
- An open-source project at jquery.com
- It simplifies
 - HTML document traversing
 - Event Handling
 - Animating
 - AJAX interactions

What is available with jQuery?

- Cross browser support and detection
- AJAX functions
- CSS functions
- DOM manipulation
- DOM transversal
- Attribute manipulation
- Event detection and handling
- JavaScript animation
- Hundreds of plugins for pre-built user interfaces, advanced animations, form validation, etc
- Expandable functionality using custom plugins
- Small foot print

Downloading jQuery

- Installation – You just download the latest jquery-x.y.z.js file and put it in your website folder
- <http://jquery.com/download>
- jQuery is lightweight: 90KB (minified and uncompressed), 33KB (Minified and Gzipped)
- Latest version is 3.6.0

So How Does jQuery Change How You Write JavaScript?

- jQuery adds a JavaScript object called **\$** or **jQuery** to your JavaScript code.
 - Through manipulation of this JavaScript code, it abstracts away commonly used JavaScript objects into **\$** and **jQuery**, such as the DOM (document), XMLHttpRequest, and JSON
- Example: Instead of

```
var myButton = document.getElementById("myButton");
```
- In jQuery, it's just

```
$("#myButton");
```

jQuery Basic Selectors

- These are examples of “Basic” selectors, based on CSS1:
- All Selector (“*”): selects all elements, sets css properties and returns the number of elements found

```
var elementCount = $("*").css("border", "3px solid red" ).length;
```

- Class Selector (“.class”): selects all elements with a given class and sets css properties

```
$(".myClass").css("border", "3px solid red");
```

- Element selector (“element”): selects all elements with the given tag name, e.g. div, and sets css properties

```
$("div").css("border", "9px solid red");
```

- ID selector (“#id”): selects a single element with the given id attribute

```
$("#myDiv").css("border", "3px solid red");
```

- Multiple selector (“selector1, selector2, selectorN”): selects a combined result of all the specified selectors

```
$("div, span, p.myClass").css("border", "3px solid red");
```

- For more examples see: <http://api.jquery.com/category/selectors/basic-css-selectors/>

Other jQuery Selector Categories

- JQuery borrows notation from CSS1-3 “selectors”, as a tool to match a set of elements. Here are some examples of what one can do:
- Attribute: selects elements that have the specified attribute and changes the associated text
`$("input[value='Hot Fuzz'] "). text("Hot Fuzz") ;`
- Basic Filter, e.g. selects all elements that are h1, h2, h3, etc and assigns css properties
`$(":header").css({ background: "#ccc", color: "blue" });`
- Child Filter, e.g. finds the first span in each div and underlines the text
`$("div span:first-child").css("text-decoration", "underline")`
- Content Filter, e.g. finds all div containing “John” and underlines them
`$("div:contains('John')").css("text-decoration", "underline");`
- Form, e.g. finds all buttons and adds the css class “marked” to their properties
`var input = $(":button").addClass("marked");`
- For more examples see: <http://api.jquery.com/category/selectors>

jQuery Functions

- Either attached to the jQuery object or chained off of a selector statement.

- E.g., Run a function when the page is fully loaded

```
$( window ).load(function() {  
    //run code  
} );
```

- Most functions return the jQuery object they were originally passed, so you can perform many actions in a single line.

- E.g., Add the class *bigImg* to all images with height > 100 once the image is loaded

```
$("img.userIcon" ).load(function() {  
    if ( $( this ).height() > 100 {  
        $( this ).addClass("bigImg");  
    }  
});
```

- The same function can perform an entirely different action based on the number and type of parameters.

More jQuery Examples

- Remember these examples?

<http://csci571.com/examples.html#dom>

DOM Examples

- Example 1 → `document.getElementById.style.color`
- Example 2 → `document.getElementsByTagName`
- Example 3 → `document.getElementById().innerHTML`
- Example 4 → Moving Objects Horizontally
- Example 5 → Reversing Nodes in a Document
- Example 6 → DOM and Three innerhtml Examples
- Example 7 → DOM setting CSS Background Property
- Example 8 → DOM setting CSS Background Image Property
- Example 9 → DOM used for switching stylesheets

- We'll revisit the examples, but with jQuery instead!

<https://csci571.com/examples.html#jquery>

Example 1:

document.getElementById.style.color

John slowly faded into view.

Fade Text

JavaScript w/o jQuery

```
hex=255 // Initial color value.
function fadetxt() {
  if(hex>0) { //If color is not black yet
    hex -= 11; // increase color darkness

document.getElementById("sample").style.color="rgb("+hex+", "+hex+", "+hex+")";
    setTimeout("fadetxt()", 20);    }
  else    hex=255 //reset hex value
}
```

<http://csci571.com/examples/dom/ex1.html>

Example 1: \$.fadeOut(), \$.delay(), \$.fadeIn()

John slowly faded into view.

Fade Text

JavaScript with jQuery

```
$(function() { // when document is ready
    $("#fadeText").click(function() { // set a onClick handler on fadeText
        $("h3").fadeOut(125).delay().fadeIn(125);
        // fadeOut the h3 for 125 ms, delay, then fadeIn
    });
});
```

<http://csci571.com/examples/jquery/dom/ex1.html>

Example 2: document.getElementsByTagName

Font1

Font2

Font3

Font4

Count Font Tags

JavaScript w/o jQuery

```
function handleAllTags()
{
  var arrayOfDocFonts;
  if (document.all || document.getElementById) {
    arrayOfDocFonts = document.getElementsByTagName("font");
    alert("Number of font tags in this document are " + arrayOfDocFonts.length + ".");
  }
  else
    document.write("Unrecognized Browser Detected");
}
```

JavaScript w/ jQuery

```
$(function() { // when document is ready
  $("#countTags").click(function() { // when countTags is clicked,
    alert("Number of font tags in this document are " + $("font").length);
    // alert the number of font tags in the HTML
  });
});
```

<http://csci571.com/examples/dom/ex2.html>

<http://csci571.com/examples/jquery/dom/ex2.html>

Example 3:

document.getElementById().innerHTML

Number of clicks = 0

Increment Counter

JavaScript w/o jQuery

```
var hits = 0;
function updateMessage() {
    hits += 1;
    document.getElementById("counter").innerHTML = "Number of clicks = " + hits; }
```

JavaScript w/ jQuery

```
$(function() {
    var hits = 0;
    $("#updateMessage").click(function() {
        $("#counter").html("Number of clicks = " + ++hits);
    });
});
```

<http://csci571.com/examples/dom/ex3.html>

<http://csci571.com/examples/jquery/dom/ex3.html>

Example 4:

document.getElementById().style.left

Move Button right once

Move Button down Once

JavaScript and HTML w/o jQuery

```
<FORM>
<INPUT ID="counter1" STYLE="position:relative; left:0px" TYPE="button" VALUE="Move Button
right once"
    onclick="document.getElementById('counter1').style.left = '500px';">
</FORM>
<br><br><br><br><br><br><br><br>
<FORM>
<INPUT ID="counter2" STYLE="position:relative; top:0px" TYPE="button" VALUE="Move Button down
Once"
    onclick="document.getElementById('counter2').style.top = '15px';">
</FORM>
```

<http://csci571.com/examples/dom/ex4.html>

Example 4: \$.css();

Move Button right once

Move Button down Once

JavaScript and HTML w/ jQuery

```
<FORM>
<INPUT ID="counter1" STYLE="position:relative; left:0px" TYPE="button" VALUE="Move Button
right once"
    onclick="$('#counter1').css('left', '500px');">
</FORM>
<br><br><br><br><br><br><br><br>
<FORM><INPUT ID="counter2" STYLE="position:relative; top:0px" TYPE="button" VALUE="Move
Button down Once"
    onclick="$('#counter2').css('top', '15px');">
</FORM>
```

<http://csci571.com/examples/jquery/dom/ex4.html>

Example 5: document.getElementById(), parseInt()

Move Button

JavaScript w/o jQuery

```
var obj = document.getElementById('counter1');
var xlocation = parseInt(obj.style.left);
function handleClick( ) {
    xlocation += 50;
    document.getElementById('counter1').style.left = xlocation + "px";}
```

JavaScript w/ jQuery

```
$(function() {
    $("#counter1").click(function() {
        $("#counter1").css("left", (parseInt($("#counter1").css("left"))+50)+"px");
    });
});
```

<http://csci571.com/examples/dom/ex5.html>

<http://csci571.com/examples/jquery/dom/ex5.html>

Example 6: Uses childNodes, removechild, appendChild

paragraph #1

paragraph #2

paragraph #3

Click Me to Reverse

JavaScript w/o jQuery

```
function reverse(n)
{ // Reverse the order of the children of Node n
  var kids = n.childNodes; // Get the list of children
  var numkids = kids.length; // Figure out how many children there are
  for(var i = numkids-1; i >= 0; i--) { // Loop backward through the children
    var c = n.removeChild(kids[i]); // Remove a child
    n.appendChild(c); // Put it back at its new position
  } }
```

<http://csci571.com/examples/dom/ex6.html>

Example 6: \$.children(), \$.remove(), \$.append();

paragraph #1

paragraph #2

paragraph #3

Click Me to Reverse

JavaScript w/ jQuery

```
var onReady = function() {  
    $(".reverse").on("click", function() {  
        var kids = $("body").children();  
        for(var i = kids.length - 1; i >= 0; i--) {  
            var c = $(kids[i]).remove();  
            $("body").append(c);  
        }  
        onReady();  
    });  
}  
  
$(onReady);
```

<http://csci571.com/examples/jquery/dom/ex6.html>

Example 4b: Uses innerHTML

HTML:Element:innerHTML

value:

set to:

Paragraph

Form

Division

JavaScript w/o jQuery

```
function setInnerHTML(nm, value) {  
  if (nm == '') return;  
  var  
element=document.getElementById?document.getElementById(nm):(document.all?document.all(nm):null);  
  if (element) {  
    if(element.innerHTML) {  
      element.innerHTML=value;  
    }  
    else notSupported( );  
  }  
  else NotSupported( );  
}
```

<http://csci571.com/examples/dom/domtest.html>

Example 4b: \$.change() and \$.html();

HTMLInputElement:innerHTML

value:
set to:

Paragraph

Form

Division

JavaScript w/ jQuery

```
$(function() {  
    $("#sel").change(function() {  
        var selector = "#" + $("#sel").val();  
        $(selector).html($("#input[name='t']").val());  
    });  
});
```

<http://csci571.com/examples/jquery/dom/ex4b.html>

jQuery & AJAX

- jQuery has a series of functions which provide a common interface for AJAX, no matter what browser you are using.
- Most of the upper-level AJAX functions have a common layout:
 - **`$.func(url[,params][,callback])`**, [] optional
 - url: string representing server target
 - params: names and values to send to server
 - callback: function executed on successful communication.

jQuery AJAX load method

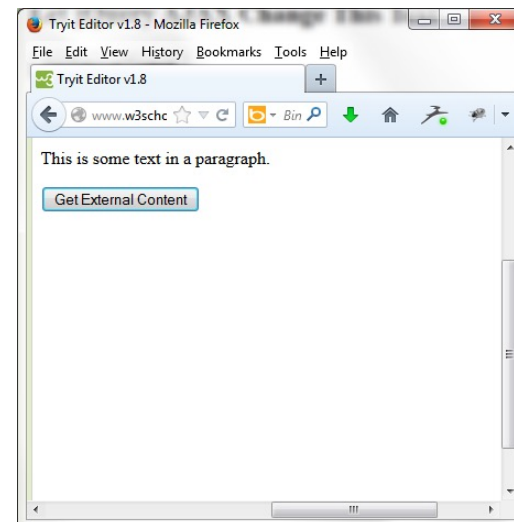
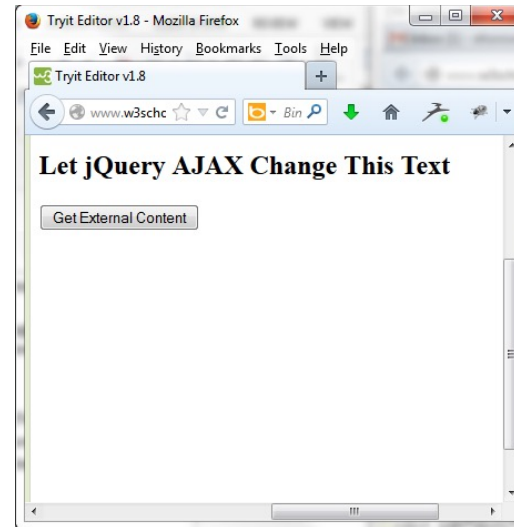
- The **load()** method loads data from a server and puts the returned data into the selected element.
- `$(selector).load(URL,[data,callback]);`
- The selector is usually a reference to div or span tag
- The required *URL* parameter specifies the URL you wish to load.
- The optional *data* parameter specifies a set of querystring key/value pairs to send along with the request.
- The optional *callback* parameter is the name of a function to be executed after the load() method is completed.
- For examples see

<http://csci571.com/ajaxexamples/simple/simpleajaxexjquery.html>

or <http://csci571.com/examples.html#jquery> [4 examples under Ajax]

AJAX Example 1

```
<!DOCTYPE html><html><head>
<script
src="https://code.jquery.com/jquery-
3.4.1.min.js">
</script>
<script>
$(document).ready(function(){
    $("button").click(function(){
        $("#div1").load("demo_test.txt
#p1");
    });
});
</script>
</head><body>
<div id="div1"><h2>Let jQuery AJAX
Change This Text</h2></div>
<button>Get External Content</button>
</body></html>
```



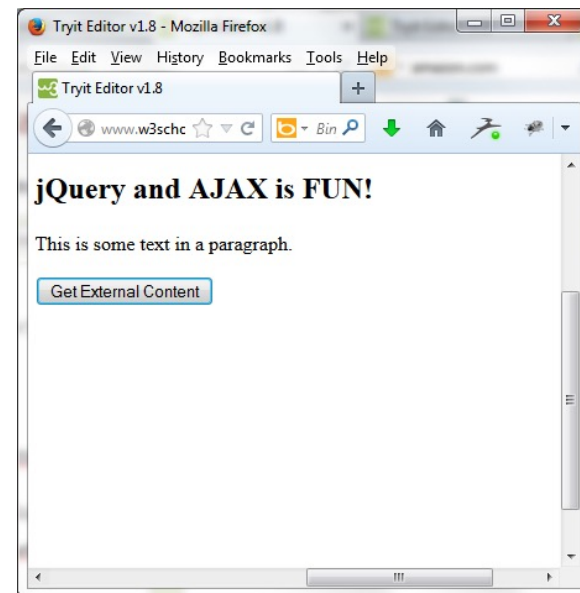
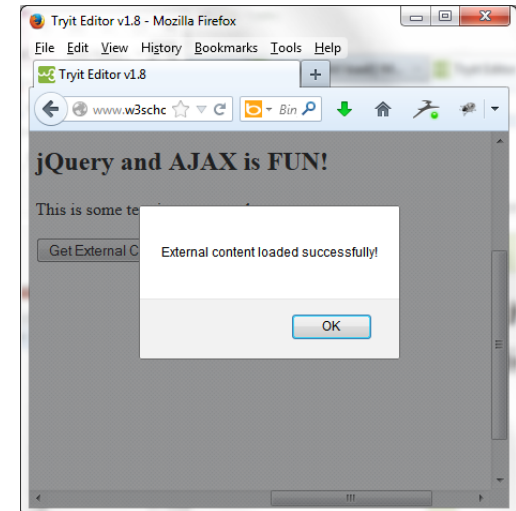
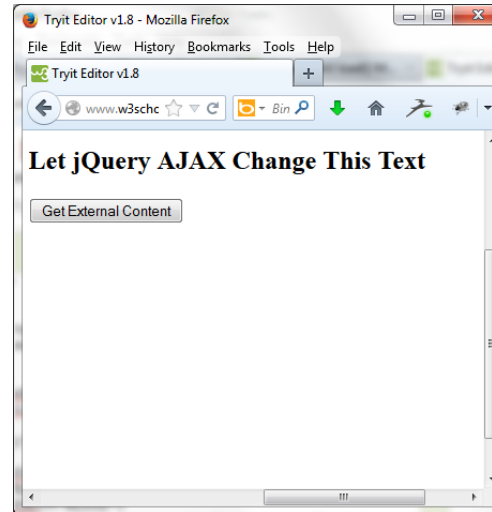
AJAX Example 2

```
<!DOCTYPE html><html><head>
<script
src="https://code.jquery.com/jquery-
3.4.1.min.js">
</script><script>
$(document).ready(function(){
    $("button").click(function(){

$("#div1").load("demo_test.txt",function
(responseTxt,statusTxt,xhr){
    if(statusTxt=="success")
        alert("External content loaded
successfully!");
    if(statusTxt=="error")
        alert("Error: "+xhr.status+":
"+xhr.statusText);    });    });    });
</script></head><body>
<div id="div1"><h2>Let jQuery AJAX
Change This Text</h2></div>
<button>Get External
Content</button></body></html>
```

Note: non-jQuery version of .ready:

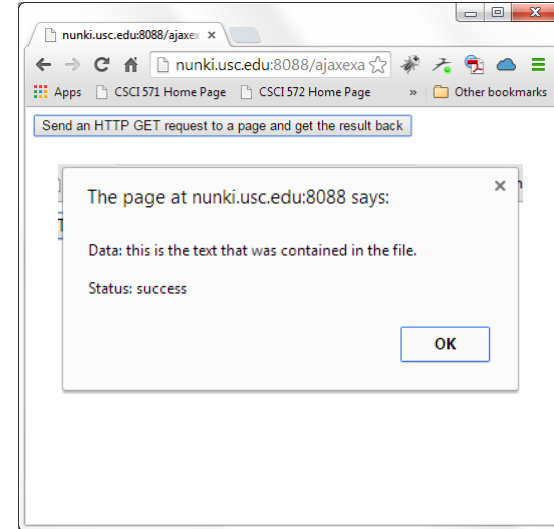
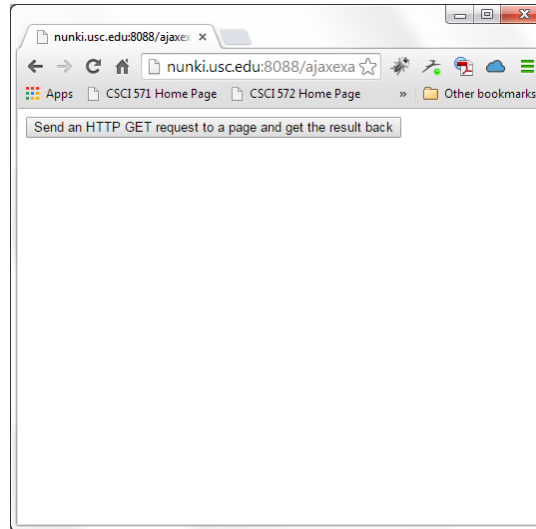
```
document.addEventListener("DOMContentLoaded",
function(event) { //do work });
```



AJAX Example 3 – GET Method

```
<!DOCTYPE html><html><head>
<script
src="https://code.jquery.com/jquery-
3.4.1.min.js">
</script><script>
$(document).ready(function(){
    $("button").click(function(){

$.get("demo_test_get.pl",function(data,
status){
    alert("Data: " + data +
"\nStatus: " + status);
    });
});
</script></head><body>
<button>Send an HTTP GET request to a
page and get the result back</button>
</body></html>
```



The \$.get() method requests data from the server with an HTTP GET request.

The required URL parameter specifies the URL you wish to request.

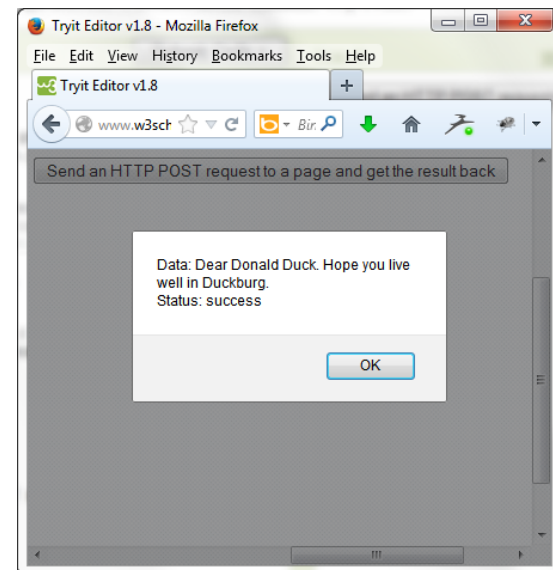
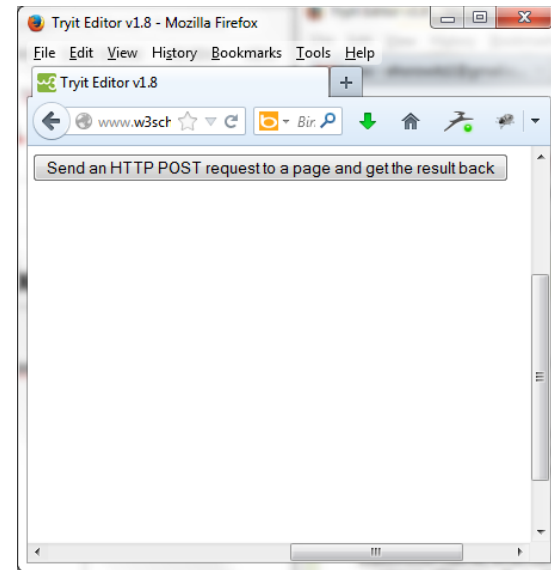
The optional callback parameter is the name of a function to be executed if the request succeeds.

The following example uses the \$.get() method to retrieve data from a file on the server

AJAX Example 4 – POST Method

```
<!DOCTYPE html><html><head>
<script src="https://code.jquery.com/jquery-
3.4.1.min.js">
</script><script>
$(document).ready(function(){
    $("button").click(function(){
        $.post("demo_test_post.php",
        {
            name:"Donald Duck",
            city:"Duckburg"
        },
        function(data,status){
            alert("Data: " + data + "\nStatus: " + status);
        });
    });
});
</script></head><body>
<button>Send an HTTP POST request to a page and get
the result back</button>
</body></html>

<?php
echo "Dear ".$_POST["name"]." Hope you live well in
".$_POST["city"];
?>
```



Summary jQuery AJAX Functions

- **\$.func(url[,params][,callback])**
 - \$.get
 - \$.getJSON
 - \$.getIfModified
 - \$.getScript
 - \$.post
- **\$(selector), inject HTML**
 - load
 - loadIfModified
- **\$(selector), ajaxSetup alts**
 - ajaxComplete
 - ajaxError
 - ajaxSend
 - ajaxStart
 - ajaxStop
 - ajaxSuccess
- **\$.ajax, \$.ajaxSetup**
 - async
 - beforeSend
 - complete
 - contentType
 - data
 - dataType
 - error
 - global
 - ifModified
 - processData
 - success
 - timeout
 - type
 - url

jQuery Usage Example (1) - Event

- jQuery way of a mouseover event that shows a submenu when menu is selected:

```
$( '#menu' ).mouseover(function() { // Anonymous function  
    $( '#submenu' ).show();  
});
```

jQuery Usage Example (2) - Event

- Stopping a normal **event** action: Suppose we want to stop the action of following a URL when a link is clicked. The action is part of the event object. We can reference the event object and call `.preventDefault()`;

```
$( '#menu' ).click(function(evt){  
    //JS code here  
    evt.preventDefault();  
})
```

jQuery Usage Example (3) – Form Selectors

- Selecting all form elements of a certain type:
\$('**:text**') It selects all text fields.
- Use with :input (all form elements), :password, :radio, :checkbox, :submit, :image, :reset, :button, :file, :hidden

See <https://api.jquery.com/category/selectors/form-selectors/>

- Set the value of a form element
Var fieldvalue = \$('#total').val(Yourvalue);
See <https://api.jquery.com/val/>

jQuery Usage Example (4) - Attribute

- Determining if checkbox is checked

```
If ($('#total').attr('checked')) {  
    //Do whatever you want if box is checked  
}  
else {  
    //Do whatever you want if box is not checked  
}
```

jQuery Usage Example (5) – Form Events

- Form Events such as submit:

```
$(document).ready(function() {  
    $('#signup').submit(function() {  
        if ($('#username').val() == '' ) {  
            alert ( 'Please supply name to name  
field' );  
            return false;  
        }  
    })  
});
```


jQuery Usage Example (6) - More events

- Focus Example: Auto erases default text in a field when it gets the focus

```
<input name="username" type="text" id="username"
value="Please type your user name">
$( '#username' ).focus(function() {
    var field = $(this);
    if(field.val()==field.attr( 'defaultValue' )) {
        field.val( '' );
    }
});
```

jQuery Usage Example (7)

- Click: If any radio button is clicked

```
$( ':radio' ).click(function() {  
    //do stuff  
});
```

- Add focus to the first element of the form:

```
$( 'username' ).focus;
```

Is jQuery Worth It?

Yes	No
<p>Good use of the jQuery library will make it worthwhile in your code; will make JavaScript more readable and understandable</p>	<p>Bad use of jQuery library adds extra overhead. Why even add jQuery? Remember you need to add:</p> <pre data-bbox="884 606 1875 775"><script src="//ajax.googleapis.com/ajax/libs/ jquery/1.8.3/jquery.min.js"></script></pre>
<p>If web application requires a lot of DOM manipulation, hiding elements, fading out elements, etc</p>	<p>Doesn't even need DOM manipulation; could be done with CSS</p>
<p>Cross Browser Support – no need extra code for browser compatibility</p>	<p>Audience only uses Firefox – no need cross browser support only</p>

jQuery

- It's a useful library **when used wisely.**
- It will allow you to write JavaScript differently
 - **Write less, do more.**
- Remember: jQuery is just JavaScript
 - What you can do with jQuery, **you can always do without jQuery** but with *more code.*

jQuery Resources

- Project website
 - <http://www.jquery.com>
- Learning Center
 - <http://docs.jquery.com/Tutorials>
 - <http://www.learningjquery.com/>
 - <https://www.w3schools.com/jquery/default.asp>
- Support
 - <http://docs.jquery.com/Discussion>
 - <http://www.nabble.com/JQuery-f15494.html> mailing list archive
 - irc.freenode.net irc room: #jquery
- Documentation
 - http://docs.jquery.com/Main_Page
 - <http://www.visualjquery.com>
 - <http://jquery.bassistance.de/api-browser/>
- jQuery Success Stories
 - http://docs.jquery.com/Sites_Using_jQuery
- jQuery selectors Demo
 - <https://api.jquery.com/category/selectors/>