

## Chapter 12.5: jQuery

CS 80: Internet Programming

Instructor: Mark Edmonds

### jQuery

- A lightweight javascript library
- Main advantage: provides a lot of functionality in a minimal amount of code
  - Works across browsers and platforms
  - Means you don't have to worry about minor differences between browsers
- Makes practical javascript much easier

### Importing jQuery

- jQuery is hosted by many large companies

```
1 <!-- import your own local jQuery -->
2 <script src="jquery-3.1.0.min.js"></script>
3 <!-- import Google's hosting of jQuery -->
4 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.1.0/
  jquery.min.js"></script>
```

### jQuery Basics

- Conceptual starting points
  - We will *select* HTML elements and then perform some *action* on the elements
  - Basic syntax:

```
1 $(selector).action()
```

- `$` indicates we are using jQuery
- `( selector )` finds corresponding HTML elements
- `action()` performs some action on the elements

### Anonymous Functions

- Anonymous functions are functions without a name

- We had subtly been using anonymous functions when we assigned variables to functions
- Remember:

```
1 // javascript anonymous function declaration
2 var sum2 = function(a,b){
3     return a + b;
4 }
```

### Anonymous Functions

- Remember:

```
1 // javascript anonymous function declaration
2 var sum2 = function(a,b){
3     return a + b;
4 }
```

- The right hand side of this assignment has no name!
- We'll be seeing this pattern more, don't freak out!

### Document Loading

- Previously, we used the following paradigm to wait until the page is ready:

```
1 // wait for document to load to run the start function
2 window.addEventListener("load", start, false);
3
4 function start(){
5     // startup code
6 }
```

- jQuery makes this a lot easier...

```
1 // equivalent to adding an event listener for when document is
  loaded
2 $( document ).ready(function() {
3     // startup code
4 }); //notice the syntax of this, we are passing an anonymous
    function as a parameter! (see the ");" ending the parameter
```

## Document Loading

- What does this do?
  - `$(document)` Selects the document
  - `.ready()` is a jQuery event
  - The anonymous function is the callback to call when the event is trigger
  - Notice how similar this is to what we did before, but with much simpler code
    - \* We didn't have to register a listener for the page loading, then define another function for the start of the DOM interaction.
    - \* jQuery does this in one step!

## jQuery Selectors

- `*` - select all
- `#id` - select id `id`
- `.class` - select CSS class `class`
- `ele` - select all HTML `ele` elements
- You can also use comma separated values to select multiple selectors
  - E.g. `.class1, .class2` will select both `.class1` and `.class2`
- See: [http://www.w3schools.com/jquery/jquery\\_ref\\_selectors.asp](http://www.w3schools.com/jquery/jquery_ref_selectors.asp)

## Old Example: loading\_event\_listeners.html

```
1 <!DOCTYPE html>
2 <html>
3
4 <head>
5   <meta charset=utf-8 />
6   <title>Proper Loading</title>
7   <script>
8
9     function start(){
10       document.getElementById("p1").addEventListener("mouseenter",
11         addHighlight);
11       document.getElementById("p1").addEventListener("mouseleave",
12         removeHighlight);
12     }
13
14     document.addEventListener("DOMContentLoaded", start);
```

```
15
16     // the following line will not work! DOM is not loaded (yet)
17     //start();
18
19     function addHighlight() {
20         var p1 = document.getElementById("p1");
21         p1.setAttribute("style", "background-color: #3F6");
22     }
23
24     function removeHighlight() {
25         var p1 = document.getElementById("p1");
26         p1.removeAttribute("style");
27     }
28 </script>
29 </head>
30
31 <body>
32     <p id="p1">
33         Lorem ipsum dolor sit amet, consectetur adipiscing elit. Quisque
            faucibus augue in risus tempus viverra. Etiam gravida augue a
            venenatis sollicitudin. Praesent varius ex varius, accumsan
            libero vel, bibendum eros. Aenean tristique mattis sem id
            scelerisque. In cursus ultrices massa nec tristique. Phasellus
            efficitur ac neque eu suscipit. Donec volutpat pretium justo,
            eget fringilla sapien. Integer vitae metus eget lorem auctor
            vestibulum non ut risus. Aenean hendrerit iaculis sapien. Nunc
            vestibulum purus quam, nec consequat sem cursus a. Aenean
            interdum euismod dui id dapibus. Curabitur vel placerat purus.
            Etiam dolor turpis, dictum in augue sit amet, suscipit suscipit
            leo. Aliquam auctor fringilla ligula, vitae sodales ligula
            facilisis quis. Donec consequat molestie tempus. Donec faucibus
            elit ullamcorper ante accumsan congue.
34     </p>
35 </body>
36
37 </html>
```

## Exercise

- How can we achieve the same with jQuery?
- Hint: you have the `.mouseenter()`, `.mouseleave()`, `.attr()`, and `.removeAttr()` jQuery

actions

### Example: highlighting\_mouse.html

```
1 <!DOCTYPE html>
2 <html>
3
4 <head>
5   <meta charset=utf-8 />
6   <title>Proper Loading</title>
7   <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.1.0/
8     jquery.min.js"></script>
9   <script>
10     $(document).ready(function(){
11       $("#p1").mouseenter(addHighlight);
12       $("#p1").mouseleave(removeStyle);
13     });
14
15     function addHighlight(){
16       $("#p1").attr("style", "background-color: #3F6");
17     }
18
19     function removeStyle(){
20       $("#p1").removeAttr("style");
21     }
22
23   </script>
24 </head>
25
26 <body>
27   <p id="p1">
28     Lorem ipsum dolor sit amet, consectetur adipiscing elit. Quisque
29     faucibus augue in risus tempus viverra. Etiam gravida augue a
30     venenatis sollicitudin. Praesent varius ex varius, accumsan
31     libero vel, bibendum eros. Aenean tristique mattis sem id
32     scelerisque. In cursus ultrices massa nec tristique. Phasellus
33     efficitur ac neque eu suscipit. Donec volutpat pretium justo,
34     eget fringilla sapien. Integer vitae metus eget lorem auctor
35     vestibulum non ut risus. Aenean hendrerit iaculis sapien. Nunc
36     vestibulum purus quam, nec consequat sem cursus a. Aenean
37     interdum euismod dui id dapibus. Curabitur vel placerat purus.
```

```
Etiam dolor turpis, dictum in augue sit amet, suscipit suscipit
leo. Aliquam auctor fringilla ligula, vitae sodales ligula
facilisis quis. Donec consequat molestie tempus. Donec faucibus
elit ullamcorper ante accumsan congue.
29   </p>
30   </body>
31
32   </html>
```

## Exercise

- How would we do this with anonymous functions?

## Example: highlighting\_mouse\_anon.html

```
1  <!DOCTYPE html>
2  <html>
3
4  <head>
5    <meta charset=utf-8 />
6    <title>Proper Loading</title>
7    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.1.0/
8      jquery.min.js"></script>
9
10   <script>
11     $(document).ready(function(){
12       $("#p1").mouseenter(function(){
13         $("#p1").attr("style", "background-color: #3F6");
14       });
15       $("#p1").mouseleave(function(){
16         $("#p1").removeAttr("style");
17       });
18     });
19   </script>
20 </head>
21
22 <body>
23   <p id="p1">
```

```
24     Lorem ipsum dolor sit amet, consectetur adipiscing elit. Quisque
        faucibus augue in risus tempus viverra. Etiam gravida augue a
        venenatis sollicitudin. Praesent varius ex varius, accumsan
        libero vel, bibendum eros. Aenean tristique mattis sem id
        scelerisque. In cursus ultrices massa nec tristique. Phasellus
        efficitur ac neque eu suscipit. Donec volutpat pretium justo,
        eget fringilla sapien. Integer vitae metus eget lorem auctor
        vestibulum non ut risus. Aenean hendrerit iaculis sapien. Nunc
        vestibulum purus quam, nec consequat sem cursus a. Aenean
        interdum euismod dui id dapibus. Curabitur vel placerat purus.
        Etiam dolor turpis, dictum in augue sit amet, suscipit suscipit
        leo. Aliquam auctor fringilla ligula, vitae sodales ligula
        facilisis quis. Donec consequat molestie tempus. Donec faucibus
        elit ullamcorper ante accumsan congue.
25     </p>
26 </body>
27
28 </html>
```

### Exercise

- But this is not very reusable
- Why?

### Exercise

- But this is not very reusable
- Why?
  - We can't make `#p1` a variable!
  - And cannot easily highlight other IDs
- Fix?

### Example: `highlighting_mouse_anon_func.html`

```
1 <!DOCTYPE html>
2 <html>
3
4 <head>
5     <meta charset=utf-8 />
```

```
6 <title>Proper Loading</title>
7 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.1.0/
  jquery.min.js"></script>
8 <script>
9
10 $(document).ready(function(){
11     highlightOnMouseEnter("#p1");
12     highlightOnMouseEnter("#p2");
13 });
14
15 function highlightOnMouseEnter(selector){
16     $(selector).mouseenter(function(){
17         $(selector).attr("style", "background-color: #3F6");
18     });
19     $(selector).mouseleave(function(){
20         $(selector).removeAttr("style");
21     });
22 };
23 </script>
24 </head>
25
26 <body>
27 <p id="p1">
28     Lorem ipsum dolor sit amet, consectetur adipiscing elit. Quisque
        faucibus augue in risus tempus viverra. Etiam gravida augue a
        venenatis sollicitudin. Praesent varius ex varius, accumsan
        libero vel, bibendum eros. Aenean tristique mattis sem id
        scelerisque. In cursus ultrices massa nec tristique. Phasellus
        efficitur ac neque eu suscipit. Donec volutpat pretium justo,
        eget fringilla sapien. Integer vitae metus eget lorem auctor
        vestibulum non ut risus. Aenean hendrerit iaculis sapien. Nunc
        vestibulum purus quam, nec consequat sem cursus a. Aenean
        interdum euismod dui id dapibus. Curabitur vel placerat purus.
        Etiam dolor turpis, dictum in augue sit amet, suscipit suscipit
        leo. Aliquam auctor fringilla ligula, vitae sodales ligula
        facilisis quis. Donec consequat molestie tempus. Donec faucibus
        elit ullamcorper ante accumsan congue.
29 </p>
30 <p id="p2">
31     Lorem ipsum dolor sit amet, consectetur adipiscing elit. Quisque
        faucibus augue in risus tempus viverra. Etiam gravida augue a
        venenatis sollicitudin. Praesent varius ex varius, accumsan
        libero vel, bibendum eros. Aenean tristique mattis sem id
```



```
scelerisque. In cursus ultrices massa nec tristique. Phasellus  
efficitur ac neque eu suscipit. Donec volutpat pretium justo,  
eget fringilla sapien. Integer vitae metus eget lorem auctor  
vestibulum non ut risus. Aenean hendrerit iaculis sapien. Nunc  
vestibulum purus quam, nec consequat sem cursus a. Aenean  
interdum euismod dui id dapibus. Curabitur vel placerat purus.  
Etiam dolor turpis, dictum in augue sit amet, suscipit suscipit  
leo. Aliquam auctor fringilla ligula, vitae sodales ligula  
facilisis quis. Donec consequat molestie tempus. Donec faucibus  
elit ullamcorper ante accumsan congue.  
32     </p>  
33 </body>  
34  
35 </html>
```

### Example: `highlighting_mouse_anon_func.html`

- This is a good example of how to modularize and expand a simple example into a reusable segment of code

## jQuery Animation

- jQuery can animate CSS property changes!
- The property changes must be numerical (e.g. cannot animate `background-color: red`)
- The properties are contained in a set of curly braces like so (this data format is called JSON, which we will cover later):

```
1 { css-prop1: value, css-prop2: value }
```

## Exercise

- Write an animation to change a box's height and width to 300px when the user's mouse enters the box. The box should start at 100px by 100px and return to that size when the mouse leaves

### Example: `animation.html`

```
1 <!DOCTYPE html>
2 <html>
3
4 <head>
5   <!-- use google's hosting of jQuery -->
6   <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.1.1/
7     jquery.min.js"></script>
8   <!-- write our own jQuery code using the script above -->
9   <script>
10     $(document).ready(function() {
11       $("#box").mouseenter(function() {
12         $("#box").animate({
13           height: "300px",
14           width: "300px"
15         });
16       });
17       $("#box").mouseleave(function() {
18         $("#box").animate({
19           height: "100px",
20           width: "100px"
21         });
22       });
23     });
24   </script>
25 </head>
26 <body>
27   <div id="box" style="background:#98bf21; height:100px; width:100px;
28     margin:6px;"></div>
29
30 </body>
31 </html>
```