

# JavaScript

## Lecture 3c (jQuery)

Waterford Institute of Technology

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John Fitzgerald

# JavaScript Introduction

Topic discussed

- jQuery

# Static v Dynamic

## JavaScript enabled page

### Example

This page contains a list, which will be modified by pressing the following button:

1. An Item

---

This page contains a list, which will be modified by pressing the following button:

1. An Item  
2. test one  
3. test two

- For a static page, clicking on a link/button takes the browser to a new page (new url)
- With a dynamic page (javascript enabled), clicking on a button may change the *current* pages structure, content or style

# jQuery

## Introduction

jQuery JavaScript library:

- Credible claims that most widely used
- Competitors exist:
  - Prototype
  - Modernizer
- Hides browser incompatibilities
- Facilitates finding & manipulating elements in document



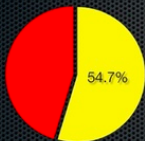
# jQuery

## Statistics

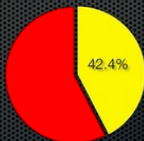
### Share of websites that use jQuery (June 2012)

- Sites using jQuery
- Sites not using jQuery

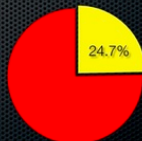
Top 10k sites



Top 1k sites



Top 100 sites

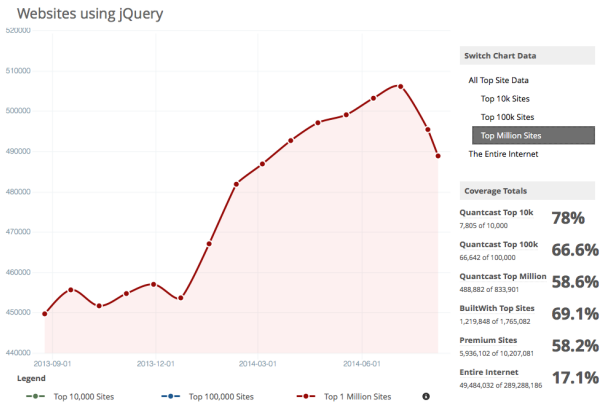


Data sources: Alexa for list of world top 10k sites, Pingdom for jQuery analysis.

[www.Pingdom.com](http://www.Pingdom.com)

# jQuery

## Statistics



# jQuery

## Features

Facilitates modifications to web page:

- Add or change specific content
- Change HTML attributes
- Change CSS properties
- Define event handlers
- Perform animation

```
<!DOCTYPE html>
<html>
<head>
  <title>jQuery</title>
</head>
<body>
  <button class="edit" onclick="
    change()">Change</button>
  <script src="jquery.js"></script>
  <script>
    function change() {
      $("button.edit").html("Next Step...");
    }
  </script>
</body>
</html>
```

# jQuery

## Focus

jQuery focussed on queries

Typically uses CSS selectors

- Identify set document elements
- Return object representing these
- Object has useful methods to operate on data
- Method chaining provided where possible
- Can operate on elements as group rather than individually

```
// Returns a jQuery object containing all div elements in document.  
// Observe jQuery variable naming convention: $div.  
let $divs = $('div');  
console.log($divs);
```



# jQuery

## Returned jQuery object

```
<body>
  <button onclick="lotsadivs()">Press</button>
  <div id = 'div-1'>
    <div id = 'div-2'>
    </div>
  </div>
  <script src="jquery-2.2.3.min.js"></script>
  <script src="jquery.js"></script>
</body>
```

```
//File: jquery.js
function lotsadivs() {
  console.log($('div').length);
}
```

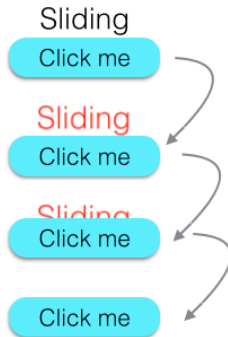
```
// output
[div#div-1, div#div-2, ... selector:"div"]
```

# jQuery

## Method chaining

```
//html
<body>
  <p id="p1">Sliding</p>
  <button>Click me</button>

  <script src="jquery.js"></script>
  <script>
    $(function()
    {
      $('#button').click(function(){
        $('#p1').css('color','red').slideUp(2000);
      });
    });
  </script>
</body>
```



# jQuery

## Terminology

### the jQuery function

- \$ or jQuery: single global function

### a jQuery object

- is object returned by \$()

### the selected elements

- determined by CSS selector parameter in \$

### a jQuery function

- a function defined within \$()

### a jQuery method

- bound to jQuery object

```
//these 2 methods exactly the same  
function change() {  
    $('button.edit').html('Next');  
}
```

```
function change() {  
    jQuery('button.edit').html('Next');  
}
```

```
//jQuery function: invoke func for each  
element of array  
$.each(array, func);
```

```
//jQuery method: invoke func2 once for  
each selected element  
$('a').each(func2);
```

# jQuery

## How to Obtain

### Method 1

- Download from *jquery.com*

### Method 2

- Use a content distribution network (CDN)
  - [code.jquery.com/jquery-1.4.2.min.js](http://code.jquery.com/jquery-1.4.2.min.js)
  - [ajax.microsoft.com/ajax/jquery/jquery-1.4.2.min.js](http://ajax.microsoft.com/ajax/jquery/jquery-1.4.2.min.js)
  - [ajax.googleapis.com/ajax/libs/jquery/1.4.2/jquery.min.js](http://ajax.googleapis.com/ajax/libs/jquery/1.4.2/jquery.min.js)

```
//include jquery script tag before other script calls at end document body  
//ensure use latest versions jquery (not shown here)  
<script src="//ajax.googleapis.com/ajax/libs/jquery/1.11.1/jquery.min.js">
```

# JavaScript

## Scope - Window object

### Window object

- The global object
- Represents open window in browser
- Entry point client-side JavaScript
- Defines properties such as:
  - *location*: navigates to new page
  - *document*: returns DOM object

```
<!DOCTYPE html>
<html>
  <head>
    <title>Window</title>
  </head>
  <body>
    <script>
      window.location
        = "http://www.wit.ie";
    </script>
  </body>
</html>
```

# JavaScript

## HTML5 Elements

### Element: extensive HTML5 list:

- `<html>` : root element
- `<head>` : collection metadata
- `<script>` : links to JavaScript
- `<a>` : hyperlink
- `<table>` : tabular data
- `<form>` : input for server

```
<!DOCTYPE html>
<html>
  <head>
    <title>Elements</title>
  </head>
  <body>
    <h1>This is a heading</h1>
    <p>This is a paragraph.</p>
    <!-- This is a comment -->
    <script src="f.js"></script>
  </body>
</html>
```

# jQuery

## Invoking `$()` function

**jQuery()**, a.k.a **\$()**,  
invokable with 4 different  
parameters:

- CSS selector
- Element, Document or Window object
- String of HTML
- Function

```
//CSS selector: <p id="p1"></p>
$('#p1').append('Added material...');

//Element: <p class='p2'></p>
$('.p2').append('Second para');

//String HTML: dynamically add node
$('<p>Third para</p>').appendTo('body');

//Function: function clickbutton param
$(function clickbutton() {
    alert('Button clicked');
});
```

# jQuery

## Invoking \$() function

### example.html

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4   <title>ICTSkills JavaScript</title>
5 </head>
6 <body>
7   <p id="p1"></p>
8   <script src="js/jquery-2.0.0.js"></script>
9   <script src="js/selectors.js"></script>
10 </body>
11 </html>
```



### selectors.js

```
1 $("#p1").append("Added material...");
```

### example.html : output in browser

Added material...



# jQuery

## Immediately-Invoked Function Expression (IIFE)

```
// Click button to trigger alert
<button onclick="clickbutton()">Click</button>
<script src="jquery.js"></script>
<script>
  function clickbutton() {
    alert('Button clicked');
  }
</script>
```

```
// Example of self-invoking function
// Alert triggered on refreshing page
<script src="jquery.js"></script>
<script>
  (function clickbutton() {
    alert('Button clicked');
  })();
</script>
```

# jQuery

## Execute function when document loaded

### **onload** event

- Ensure page load complete before accessing script code.

```
$(function () {  
    alert('Page has loaded');  
});
```

```
// Older, verbose equivalent  
$(document).ready(function () {  
    alert('Page has loaded');  
});
```

# Summary

- jQuery
  - A popular JavaScript library.
  - May be declining in popularity.
  - Losing market share to frameworks.
  - Abstracts browser inconsistencies.
  - Community support.
  - jquery-2.2.4 contains almost 10,000 lines.



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