jQuery Basics

IT 4403 Advanced Web and Mobile Applications

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Overview

- Client side JavaScript frameworks

- jQuery overview

- jQuery basics and examples
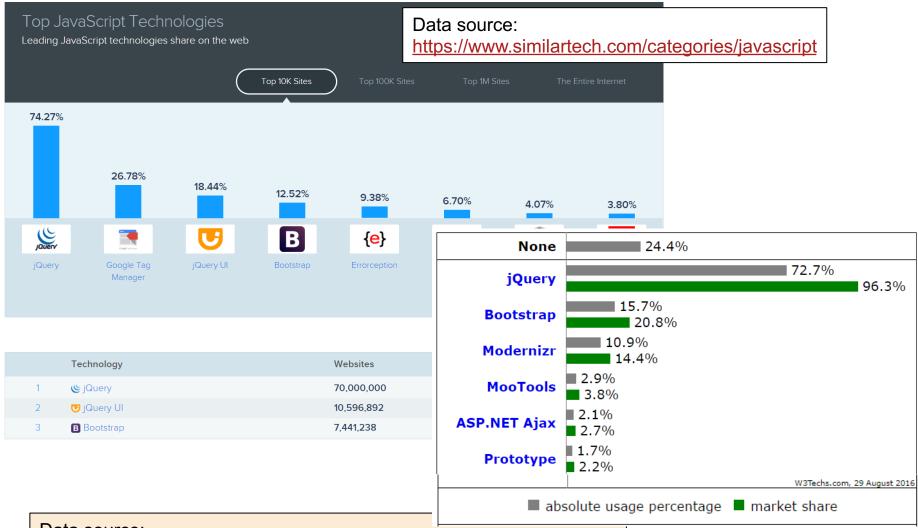
- jQuery family resources

JavaScript Library

- Why libraries/frameworks?
  - "Advanced JavaScript programming (especially the complex handling of browser differences), can often be very difficult and time-consuming to work with."
  - Libraries or frameworks promotes reusability and best practices

- What are the common libraries?
  - http://jster.net
  - http://en.wikipedia.org/wiki/List_of_JavaScript_libraries
  - http://en.wikipedia.org/wiki/Comparison_of_JavaScript_frameworks
  - https://www.similartech.com/categories/javascript
  - https://www.sitepoint.com/top-javascript-frameworks-libraries-tools-use/

Popularity – Why jQuery

Top JavaScript Technologies
Leading JavaScript technologies share on the web

Data source:
https://www.similartech.com/categories/javascript

| Top 10K Sites | Top 100K Sites | Top 1M Sites | The Entire Internet |

- jQuery — 74.27%
- Google Tag Manager — 26.78%
- jQuery UI — 18.44%
- Bootstrap — 12.52%
- Errorception — 9.38%
- 6.70%
- 4.07%
- 3.80%

	Technology	Websites
1	jQuery	70,000,000
2	jQuery UI	10,596,892
3	Bootstrap	7,441,238

None — 24.4%

jQuery — 72.7% / 96.3%

Bootstrap — 15.7% / 20.8%

Modernizr — 10.9% / 14.4%

MooTools — 2.9% / 3.8%

ASP.NET Ajax — 2.1% / 2.7%

Prototype — 1.7% / 2.2%

W3Techs.com, 29 August 2016

■ absolute usage percentage   ■ market share

Data source:
- http://w3techs.com/technologies/overview/javascript_library/all
- http://w3techs.com/technologies/cross/javascript_library/ranking

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jQuery Overview

- ● What is jQuery?
  - ● jQuery is a JavaScript library designed to simplify and enrich the client-side scripting.
  - ● http://jquery.com

- ● Quick facts
  - ● Initial released on August 26, 2006
  - ● Current stable versions: 3.4.1 (as of Aug 27, 2019)
  - ● Cross platform - http://jquery.com/browser-support/
  - ● Light weight - Only about 30KB minified and compressed.
  - ● http://en.wikipedia.org/wiki/JQuery

jQuery Features and Advantages

- Non-obtrusive scripting
  - Separates JavaScript and HTML completely: Instead of using HTML attributes to call JavaScript functions for event handling, jQuery can be used to handle events purely in JavaScript.
  - jQuery provides a new paradigm for event handling. The event assignment and the event callback function definition are done in a single step in a single location in the code.
  - https://en.wikipedia.org/wiki/Unobtrusive_JavaScript

- Eliminates cross-browser incompatibilities
  - The JavaScript engines of different browsers differ slightly so JavaScript code that works for one browser may not work for another. jQuery handles all these cross-browser inconsistencies and provides a consistent interface that works across different browsers.

- A simple, clean, powerful syntax
  - Easy to select and manipulate DOM elements and CSS styles. jQuery uses the CSS3 selector specification for selecting elements.
  - Allow you to chain actions and effects together for efficient code. It is quite common to replace a dozen or more lines of JavaScript with a single line of jQuery code.

- Reusability
  - Provides many functions that simplify highly-used JavaScript functionalities like UI effects, string processing, parse JSON data, AJAX, etc.

- Extensible
  - New events, elements, and methods can be easily added and then reused as a plugin.

Basic jQuery Usages

- HTML DOM/CSS manipulation
  - Provide simpler ways to work with HTML and CSS elements dynamically

- HTML event methods
  - Provide a better way to handle events

- Simple effects and animations
  - Provide simple function call for commonly used effects and animations, such as show/hide, transition, etc.

- AJAX
  - Provide more efficient way to handle AJAX calls

- Utility functions
  - More functions to handle common tasks

Referencing jQuery Library

- Two basic ways used with the <script> tag
  - Download the jQuery library files from jQuery.com and include it in your website.
  - Include jQuery from a CDN directly and have the CDN site to serve jQuery library files.
  - http://www.w3schools.com/jquery/jquery_get_started.asp

- CDN (content delivery network)
  - A centralized service to provide commonly and publicly used script libraries
  - Faster and more reliable than self-hosting

- Common CDN for jQuery
  - http://code.jquery.com
  - https://cdnjs.com
  - https://developers.google.com/speed/libraries/
  - More: http://www.cdnperf.com

jQuery Basic Syntax

- Basic syntax is: **$(*selector*).*action*()**
  - A $ sign to define/access jQuery
  - A (*selector*) to "query (or find)" HTML elements
  - A jQuery *action*() to be performed on the element(s)

- Examples

```
$(this).hide() - hides the current element.

$("p").hide() - hides all <p> elements.

$(".test").hide() - hides all elements with class="test".

$("#test").hide() - hides the element with id="test".
```

- jQuery syntax style statements can be mixed with vanilla (traditional) JavaScript statements.

- http://www.w3schools.com/jquery/jquery_syntax.asp

Selectors

- jQuery selectors allow you to select and manipulate HTML element(s).
  - Based on CSS selectors with additional custom ones
  - Apply methods to all elements that satisfy the selector definition

- All selectors in jQuery start with the dollar sign and parentheses: $().

- Three main types of selectors
  - HTML tag based
  - Class based
  - Id based
  - http://www.w3schools.com/jquery/jquery_selectors.asp

- Reference https://api.jquery.com/category/selectors/

jQuery Events

- Events represents a pre-defined action that happens with a target

- Examples – (full list of events: http://api.jquery.com/category/events/)

Mouse Events	Keyboard Events	Form Events	Document/Window Events
click	keypress	submit	load
dblclick	keydown	change	resize
mouseenter	keyup	focus	scroll
mouseleave		blur	unload

- jQuery provides simple methods for attaching event handlers to selections. When an event occurs, the provided function is executed. Inside the function, this refers to the element that was clicked.
  - Use a anonymous function to handle events directly
  - Or use a refereed named function

- Events
  - http://www.w3schools.com/jquery/jquery_events.asp

Anonymous Function

- ## Aligned format style

Mouse click event

```
$("p").click
(
        function()
        {
                // statements goes here!!
        }
);
```

Anonymous function to handle the event (when mouse button clicked)

- ## Shorthand format style

```
$("p").click(function(){
  // statements goes here!!
});
```

Document Ready Event

- Better to put all scripts inside the document ready event to prevent any jQuery code from running before the document is finished loading (is ready).
  - Except for defining functions

- https://learn.jquery.com/using-jquery-core/document-ready/

```
$(document).ready(function(){

    // jQuery methods go here...

});

function dothis()
{ … }
```

```
$(function(){

});
```

Regular JS functions are still outside the event handler.

Shorthand version for this event

Working with HTML DOM and CSS

- Using selectors and DOM methods can dynamically read and change web page content and style.

- Get and set HTML elements and attributes (text, html, val, attr)
  - http://www.w3schools.com/jquery/jquery_dom_get.asp
  - http://www.w3schools.com/jquery/jquery_dom_set.asp

- Add and remove elements dynamically
  - http://www.w3schools.com/jquery/jquery_dom_add.asp
  - http://www.w3schools.com/jquery/jquery_dom_remove.asp

- Working with CSS style
  - Get and set CSS attributes: http://www.w3schools.com/jquery/jquery_css.asp
  - Work with CSS class: http://www.w3schools.com/jquery/jquery_css_classes.asp
  - Work with the CSS box model: http://www.w3schools.com/jquery/jquery_dimensions.asp

Effects

- jQuery provides efficient functions to add simple effects to your page.
  - Hide, show
  - Slide
  - Fading
  - Animate

- https://learn.jquery.com/effects/intro-to-effects/

jQuery Examples

Some examples are provided to compare the coding with traditional JavaScript and jQuery. The examples are provided in D2L and hosted at http://it4203.jackzheng.net/demo/jquery/

Example file names	Description
1.calculation.html 2.loop.html 3.function.html	Basic use and syntax (jQuery reference, document ready, selector, functions)
4.dom-get.html	Getting content and attribute values
5.click.html	Event handling and dynamic content
6.css.html	Styles manipulation

Advanced Features

- Callback
  - http://www.w3schools.com/jquery/jquery_callback.asp

- Chaining
  - http://www.w3schools.com/jquery/jquery_chaining.asp

- Code organization
  - https://learn.jquery.com/code-organization/

- Advanced event handling
  - https://learn.jquery.com/events/
  - http://api.jquery.com/category/events/event-object/

jQuery Family

- jQuery UI
  - A set of user interface interactions, effects, widgets, and themes built on top of the jQuery
  - http://jqueryui.com

- jQuery Mobile
  - An HTML5-based user interface framework to build sites and apps targeting mobile devices. This framework provides a set of touch-friendly UI widgets and an AJAX-powered navigation system.
  - http://jquerymobile.com

- jQuery Plugins
  - https://www.npmjs.com/browse/keyword/jquery-plugin
  - http://jquer.in

- Other projects from jQuery Foundation
  - https://jquery.org/projects

Vanilla JavaScript

- VanillaJS is a name to refer to using plain JavaScript without any additional libraries like jQuery.

- See some opposite opinions on using jQuery
  - https://snipcart.com/blog/learn-vanilla-javascript-before-using-js-frameworks

- For more resources
  - http://vanilla-js.com
  - https://plainjs.com

More Resources

- Learning resources
  - http://www.w3schools.com/jquery/
  - http://www.codecademy.com/tracks/jquery
  - http://learn.jquery.com
  - http://try.jquery.com
  - http://jqfundamentals.com
  - http://www.jquery-tutorial.net

- Video tutorials
  - https://www.youtube.com/playlist?list=PLoYCgNOIyGABdI2V8I_SWo22tFpgh2s6_
  - https://www.youtube.com/playlist?list=PLIoX3-mcY80gRblVp1CJMGG3B0mOd9kDo

- References
  - http://api.jquery.com
  - http://jqapi.com

- Comments and discussions
  - Common Pitfalls of jQuery http://www.codeproject.com/Articles/346904/Common-Pitfalls-of-jQuery
  - http://www.smashingmagazine.com/2008/09/16/jquery-examples-and-best-practices/
  - http://blog.wearecolony.com/a-year-without-jquery/