

Web Behavior

JavaScript Libraries and Plugins

JavaScript Libraries

- Advanced JavaScript programming
 - Difficult and time-consuming
 - Difficultly dealing with browser differences
- JavaScript (helper) libraries
 - Sometimes called "frameworks"
 - Files of JavaScript, written so you don't have to
- To Use:
 1. Copy the library file to your file system
 2. Link to the file from your HTML file
 3. Learn how to use the library
 4. Write the JavaScript code in your HTML file to "turn-on" and use the library

Advantages and disadvantages of libraries

Advantages	Disadvantages
Speeds up the development process Helpful in collaborative work	Yet another learning curve
Clean and tidy code	Unused code leftover
Solutions to common problems <ul style="list-style-type: none">- Browser compatibility solutions- Typical patterns, ready to use/edit	You inherit bugs & bad practices
Learn good practices	You don't learn to do it yourself

When is it advisable to use a library?

When installing, learning and using a library, at what point do you realize it would have been faster or easier to code it yourself from the ground-up?

jQuery

- The most popular JavaScript library on the Internet today
- It's JavaScript!
- Reuses what you know: CSS selectors to access and manipulate the DOM
- Unobtrusive by Design
 - Respects progressive enhancement - adds functionality without having to hack-up HTML documents
 - Follows the "Principle of least astonishment"
 - Built to be easy for Web Developers
 - `$ (" . someSelector") . someAction ()`
- Some guy from RIT, John Resig

CDN - Content Delivery Networks

- You want your web pages to be as fast as possible
- You want the browser to **cache** as much as possible
- If many different web sites use the same JavaScript framework, it makes sense to host the framework library in a common location for every web page to share
- A CDN is a network of servers containing shared code libraries
- CDNs provide a number of popular JavaScript libraries, including:
 - jQuery
 - Prototype
 - MooTools
 - Dojo
 - Yahoo! YUI

Google: <http://code.google.com/apis/libraries/devguide.html>

Microsoft: <http://www.asp.net/ajax/cdn>

CDN JS: <https://cdnjs.com/>

Where to get jQuery

- Option 1: download and install from www.jquery.com

- In your HTML...

```
<script src="js/jquery.js"></script>
```

- Option 2: use a Content Delivery Network (CDN)

- In your HTML...

```
<script src="http://ajax.googleapis.com/ajax/libs/jquery/1.11.0/jquery.min.js"></script>
```

- Or, for development (less typing)...

```
<script src="http://code.jquery.com/jquery.js"></script>
```

Minification

- For faster Websites
 - Faster downloads
 - Fewer HTTP requests (when minifying multiple libraries together)
- Remove unnecessary characters (comments, line breaks, extra spaces)
- See:
<http://code.jquery.com/jquery/>

Unminified (normal)

```

/*!
 * jQuery JavaScript Library v2.1.3
 * http://jquery.com/
 *
 * Includes Sizzle.js
 * http://sizzlejs.com/
 *
 * Copyright 2005, 2014 jQuery Foundation, Inc. and other contributors
 * Released under the MIT license
 * http://jquery.org/license
 *
 * Date: 2014-12-18T15:11Z
 */

(function( global, factory ) {

    if ( typeof module === "object" && typeof module.exports === "object" ) {
        // For CommonJS and CommonJS-like environments where a proper `window`
        // is present, execute the factory and get jQuery.
        // For environments that do not have a `window` with a `document`
        // (such as Node.js), expose a factory as module.exports.
        // This accentuates the need for the creation of a real `window`.
        // e.g. var jQuery = require("jquery")(window);
        // See ticket #14549 for more info.
        module.exports = global.document ?
            factory( global, true ) :
            function( w ) {
                if ( !w.document ) {
                    throw new Error( "jQuery requires a window with a document" );
                }
                return factory( w );
            };
    }

```

```

/*! jquery v2.1.3 | (c) 2005, 2014 jQuery Foundation, Inc. | jquery.org/license */
!function(a,b){("object"==typeof module&&"object"==typeof module.exports?module.exports=a.document?b(a,!0):function(){if(!a.document)throw new Error("jQuery requires a window with a document");return b(a)})(b(a))}("undefined"!=typeof window?window:this,function(a,b){var c=[],d=c.slice,e=c.concat,f=c.push,g=c.indexOf,h={},i=h.toString,j=h.hasOwnProperty,k={},l=a.document,m="2.1.3",n=function(a,b){return new n.fn.init(a,b)},o=/^\s\uFEFF\xA0+|^\s\uFEFF\xA0+$|g,p="/-ms-/ ,q=-([da-z])/gi,r=function(a,b){return b.toUpperCase();};n.fn=n.prototype={jquery:"m",constructor:n,selector:"",length:0,toArray:function(){return d.call(this)},get:function(a){return null!=a?a?[this[a+this.length]:this[a]]:d.call(this)},pushStack:function(a){var b=n.merge(this.constructor(),a);return b.prevObject=this,b.context=this.context,b.each(function(a,b){return n.each(this,a,b)},map:function(a){return this.pushStack(n.map(this,function(b,c){return a.call(b,c,b)})),slice:function(){return this.pushStack(d.apply(this,arguments))},first:function(){return this.eq(0)},last:function(){return this.eq(-1)},eq:function(a){var b=this.length,c=++a>0?b:0;return this.pushStack(c>0&&b<c?[this[c]]:[]),end:function(){return this.prevObject||[this.constructor(null)],push:f,sort:c.sort,splice:c.splice,n.extend=n.fn.extend=function(){var a,b,c,d,e,f,g=arguments[0]||[],h=1,i=arguments.length,j=1;for("boolean"==typeof g&&(j=g,g=arguments[h])||{},{},h++)"object"==typeof g||n.isFunction(g)||[g]={},h===i&&(g=this,h--);i>h;h++){if(null!=(e=arguments[h]))for(b in a)c=b[j],d=[a[c],g[c]],g[c]=d&&n.isPlainObject(b).isPlainObject(d)?(e=f&&n.isArray(d)?c:[]:f&&n.isPlainObject(c)?c:{},g[b]=n.extend(j,f,d)):void 0!==d&&(g[b]=d));return g},n.extend({expando:"jQuery"+(Math.random()).replace(/D/g,""),isReady:!0,error:function(a){throw new Error(a)},noop:function(){},isFunction:function(a){return"function"==n.type(a)},isArray:Array.isArray,isWindow:function(a){return null!=a&&a===a.window},isNumeric:function(a){return!n.isArray(a)&&a-parseFloat(a)+1>=0},isPlainObject:function(a){return"object"!==(n.type(a)|n.nodeType)|n.isWindow(a)?!1:a.constructor&&!j.call(a.constructor.prototype,"isPrototypeOf")?!1:0},isEmptyObject:function(a){var b;for(b in a)return!1;return!0},type:function(a){return null==a?"":'object'==typeof a||"function"==typeof a?h[i.call(a)]|"object":typeof a},globalEval:function(a){var b,c;eval=a.n.trim(a),a&&(1===a.indexOf("use strict"))?(b=l.createElement("script"),b.text=a,l.head.appendChild(b).parentNode.removeChild(b)):c(a)},camelCase:function(a){return a.replace(p,"ms-").replace(q,r)},nodeName:function(a,b){return a.nodeName&&a.nodeName.toLowerCase()==b.toLowerCase()},each:function(a,b,c){var d,e,o,f=a.length,g=s(a);if(c){if(g)

```

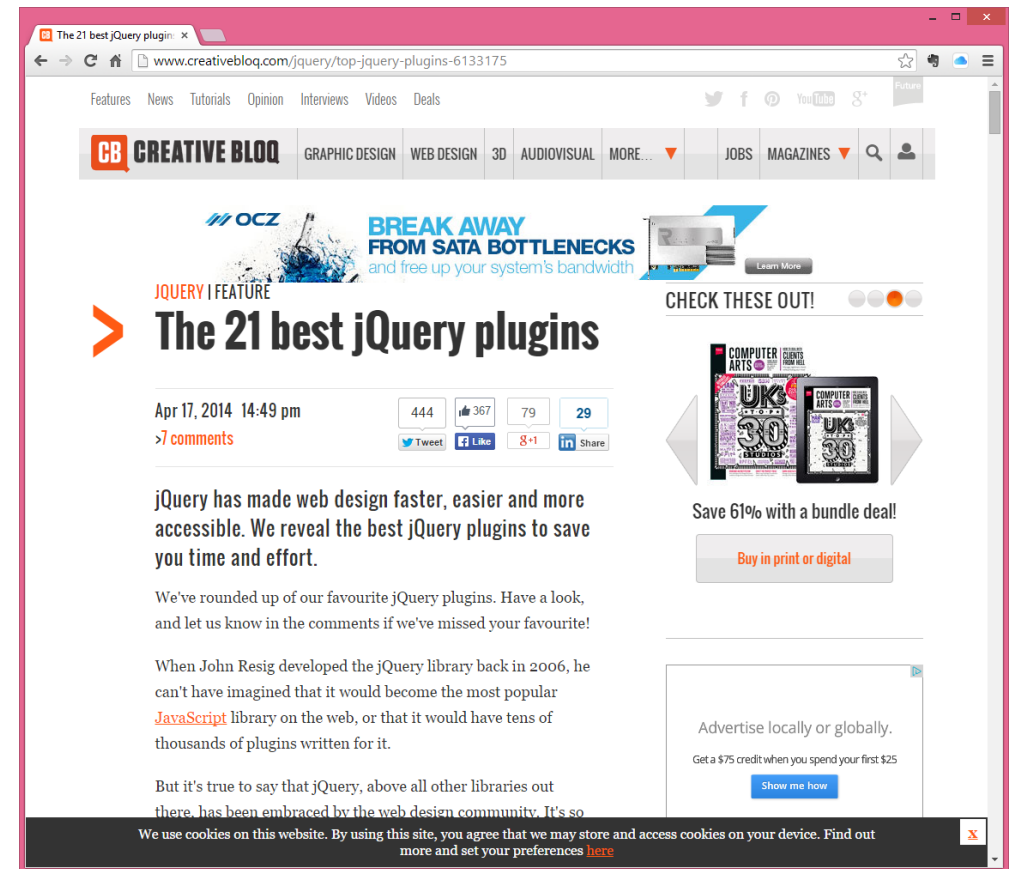
Minified

JavaScript Plugins

Libraries for Libraries

Finding & Evaluating Plugins

- “Plugin” = an industry term
- The jQuery ecosystem
- Google it! It's been done
- Quality control
- jQuery plugin Programmers
 - Private use, or released into the wild
 - “Buyer” beware



Plugin parts

- Author of the plugin decides
- 3 - 5 parts (depending on the plugin)
- “Open source”
- 5 Parts
 1. Library script
 2. Plugin script
 - (3) CSS file (from plugin website)
 - (4) Initialization and options script (instructions from plugin website)
 - (5) Content, arranged in a specific way (instructions from plugin website)

Examples using: “jQuery UI” – a plugin

- “jQuery UI” - widget and interaction library
- Quality control - *very good*

Note: “jQuery UI” is *not* jQuery



1. Install jQuery

- jQuery website: **www.jquery.com**
- You can use the same jQuery library to power all jQuery behaviors
 - Important: only load this library once on the webpage, even if you are installing multiple plugins
- Download and insert:
`<script src="js/jquery.js"></script>`

or point to a CDN:
`<script src="http://code.jquery.com/jquery.js"></script>`
- Insert the jQuery script near the bottom of the HTML document, above the closing `</body>` tag.
 - Remember: the jQuery script must be inserted above any other JavaScript that uses it

2. Install the plugin (jQuery UI)

- jQuery UI website: **www.jqueryui.com**
- You can use the same plugin to power all jQuery UI behaviors
 - Important: only load this library once on the webpage, even if you are planning to use multiple "widgets"
- Download and insert:
`<script src="js/jquery-ui.js"></script>`

or point to a CDN:
`<script src="http://code.jquery.com/ui/1.11.4/jquery-ui.js"></script>`
- Insert the jQuery UI script near the bottom of the HTML document, *below* the jQuery script

3. Install the plugin's CSS (jQuery UI CSS)

- jQuery UI website: **www.jqueryui.com**
 - Find the generic CSS or a customized theme and download it
 - Note: You can use the same CSS to style all jQuery UI widgets
- Download and insert

```
<link rel="stylesheet" href="css/jquery-ui.css"></script>
```

...and download its associated images folder that goes in the CSS folder

or point to a CDN (if it exists):

```
<link rel="stylesheet" href="http://code.jquery.com/ui/1.11.4/themes/smoothness/jquery-ui.css">
```

- Insert the jQuery CSS link in the <head> of your HTML document

4a. Initialize the Script

- From the jQuery UI website, look-up what you need to use to initialize the particular widget you want to use.
- Inert the initialization string(s)

Example...

```
<script>  
    $( "#accordion" ).accordion();  
</script>
```

...below the jQuery and jQuery UI scripts

4b. Initialize the Script with Options

- Options go in an "array"
 - ```
{
 property: value,
 property: value
}
```
- From the jQuery UI website, look-up the customization options you want to use for each widget.
- Insert the customization options into the initialization strings, between curly braces, inside the parenthesis like this...

```
<script>
$("#accordion").accordion({
 collapsible: true,
 heightStyle: "content"
});
</script>
```

- Notice that commas go after each option, but not after the last option



## 5. Arrange HTML Content in a Specific Way

- From the jQuery UI website, look-up the way content must be arranged in your HTML for each widget to work.

Example (in HTML):

```
<div id="accordion">

 <h2>First header</h2>
 <div>First content panel</div>

 <h2>Second header</h2>
 <div>Second content panel</div>

</div>
```