CSCI E-12 Assignment 3

150 points.
Due by Monday, April 14, 2014, 12 noon (EDT)
Submit via the "Assignments" area of the course site.
http://cscie12.dce.harvard.edu/assignments

Assignment 3 focuses on Javascript and using functionality available through library "widgets" and external services.

Goals:

1. Become familiar with Javascript events and your browser's Javascript console (debugging mode).
2. Become familiar with Javascript and incorporating Javascript functionality in web pages. .
3. Use the jQuery library and various jQuery plugins.

Getting Started and Requirements for this Assignment

- Download the Assignment 3 "zip" file from the course web site and unzip it.
- **Keep the file names and directory structures the same.**
  We rely on the file names being consistent when we grade.
- **Add only files that are needed.** Note that you may need to add directories and files for some parts of Assignment 3. Please add only the files that are needed (e.g. if you download a slideshow library that has demos and examples, do not include them).
- **jQuery Javascript.** You will need to download and/or reference the jQuery and the jQuery UI Javascript files. You should use jQuery 1.11.0 (released January 2014).
  - You may download jQuery and the jQuery UI Javascript files and include these files in your assignment
  - Alternatively, you may also use jQuery hosted by a CDN (Content Delivery Network) service listed on the jQuery Download page (http://jquery.com/download/).
- **Markup and Style Validation.** Unless otherwise indicated, your markup should be HTML5, XHTML 1.0 Strict or Transitional, or HTML 4.01 Strict or Transitional. Your markup should validate with the W3C Markup Validator. Any **CSS you author** should validate with no errors (warnings are acceptable) with the W3C CSS Validator.
- **Use multiple browsers to test your work.** You are required need to check your work with at least two HTTP clients. You will need to include the "User-Agent" string of the browsers you used (there is a section in "answers.html" for this. To find the "User-Agent" string of your web browser, go to:
  http://cscie12.dce.harvard.edu/browser.html
- **Edit "answers.html"** to provide the requested information, including the fully qualified URL to your 'answers.html' file on morpheus.
- You will submit your work via a ZIP file to the dropbox, as well as publish your work on the course web hosting server (`morpheus.dce.harvard.edu`).
  - **Working on the course web hosting server**. Use your obscurely named directory for this assignment as well. If you haven't already, please create an obscurely named

folder in your `public_html` directory that will contain your work for the course. The reason for the obscure name is to prevent intentional or unintentional browsing via the web of your hard work by others. For example, the user John Harvard might create a folder named `VeRiTas_1636`.

Part 1: Javascript Events using both "plain" Javascript and jQuery

40 points. Events are a crucial concept in Javascript. To use Javascript in a web page, you need to tell the browser to "listen" for certain events and then to take certain actions based upon these events ("event handlers"). XHTML defines several event attributes that can be used, such as `onsubmit`, `onclick`, `onchange`, etc. These attributes determine which events are listened for, and the value of these attributes determines which Javascript functions are executed when these actions occur. The jQuery Javascript library allows you to easily separate defining the "event handlers" from the markup, and instead to use Javascript itself to set these event handlers.

In this part of the assignment, you are provided with a Javascript document (`js/events.js`) that has several functions defined. *You do not need to edit or alter the* `events.js` *file* (but feel free to examine it in order to understand what it is doing). You are also provided two XHTML documents.

- In one markup document (`events/events.html`), you will create event handlers by adding event attributes defined in XHTML to call the designated Javascript functions (see table below).
- In the other XHTML document (`events/events_jquery.html`), you will use jQuery to add the event handlers to the elements, and will not use event attributes.

Note that in each of these XHTML documents, an "`onclick`" event handler for the checkbox is already correctly defined.

Markup Snippet	**Event Attribute**	**Function to Call** (these are custom JS functions that are provided in `js/events.js`)
`<body>`	onload	doOnLoad()
`<a href="#" id="mylink" …`	onclick	doOnClick()
`<p id="mypara" …`	onmouseover onmouseout	doOnMouseOver() doOnMouseOut()
`<form id="myform"…`	onsubmit	doOnSubmit()
`<input id="myname"…`	onfocus onblur	doOnFocus() doOnBlur()
`<select id="mydirection" …`	onchange	doOnChange()

Using Your Browser to Understand and Debug JavaScript. The provided Javascript functions not only change the image and text on the page, but they also output messages to the Javascript debugging console. You should get familiar with how to turn on and view the console for the browser you are using.

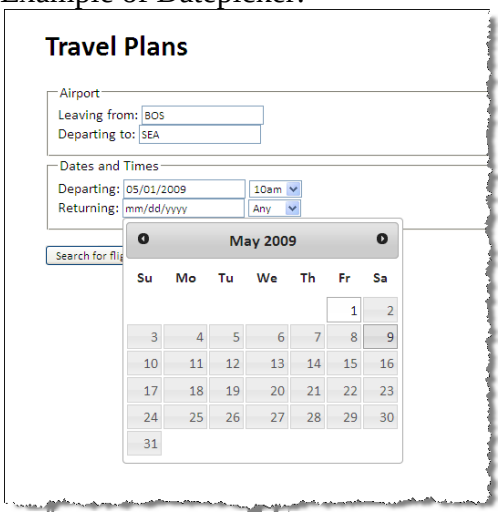
Part 2: jQuery UI Widgets

40 points. The jQuery UI (http://jqueryui.com/) provides ready-to-use "widgets" that are built on-top of jQuery (http://jquery.com/). In this part of the assignment, you will **choose two of these three widgets** (Datepicker, Accordion, and Tabs) to use in an XHTML web pages you author.

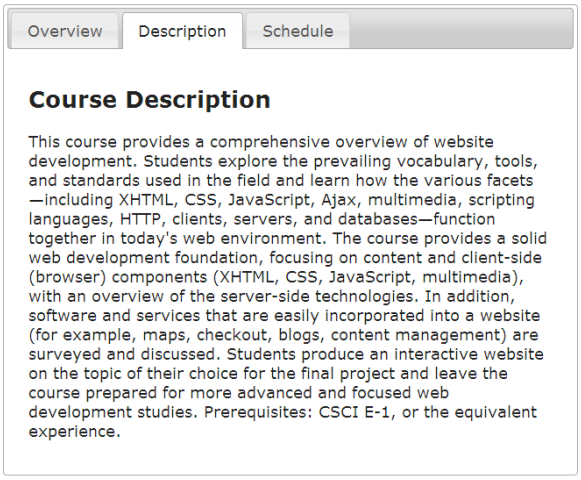
Note: Choose two of these three to do, and indicate your choice in `answers.html`. For this part of the assignment to be graded, you **must indicate your choice** in `answers.html`.

- **Markup files.**
  - Datepicker: `datepicker.html`
  - Accordion: `accordion.html`
  - Tabs: `tabs.html`
- **jQuery Javascript and jQuery UI Javascript, and themes**. Part of the exercise is to download (or reference) the libraries and include the resources you need to use the three widgets. Use the "`js`" directory for any jQuery or jQuery UI resources (Javascript, CSS and images for themes). You should use the most recent version of jQuery UI, which is 1.10.4.
  - **Themes**. Select one of the themes from the Theme Gallery, or feel free to roll-your-own. Themes should be downloaded and the files included as part of your assignment (again, please include only what is needed). Alternatively, you can reference the standard themes that are on the Google or Microsoft CDN:
    http://ajax.googleapis.com/ajax/libs/jqueryui/[UI.VERSION]/themes/[THEME-NAME]/jquery-ui.css
    http://ajax.aspnetcdn.com/ajax/jquery.ui/[UI.VERSION]/themes/[THEME-NAME]/jquery-ui.css
- **Content**. You should not simply cut-and-paste content from one of the many examples or demos that are available for these widgets, nor should you use "lorem ipsum" text. Choose content that is appropriate.
  - **Datepicker**. Build a form (use the "`echo.cgi`" on `morpheus` as the "action") that has two input fields that use the datepicker widget. A screenshot of an example is provided – feel free to do something different that uses the datepicker widget.
  - **Accordion**. Your Accordion page should have at least three areas that expand. An example is provided to give an idea of what might be done, but don't feel constrained by the example.
  - **Tabs**. Your Tabs page should have two or more tabs. An example screenshot is provided to give an idea of what might be done, but don't feel constrained by the example.

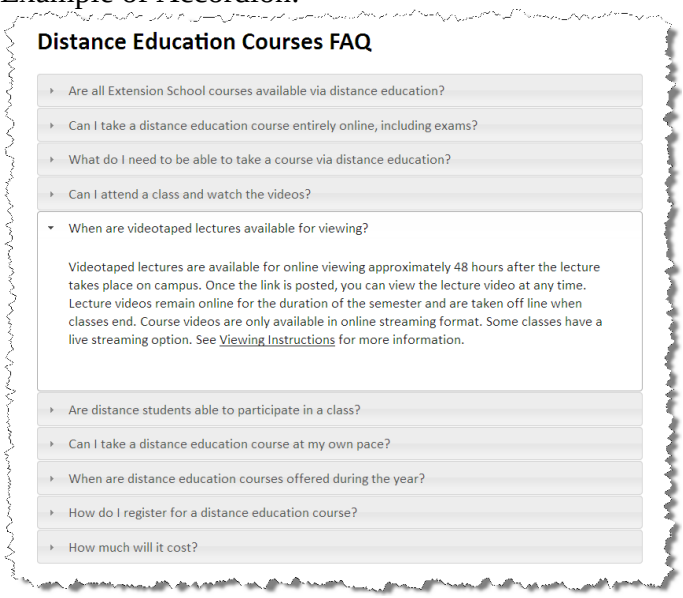
Example of Datepicker:



Example of Tabs:



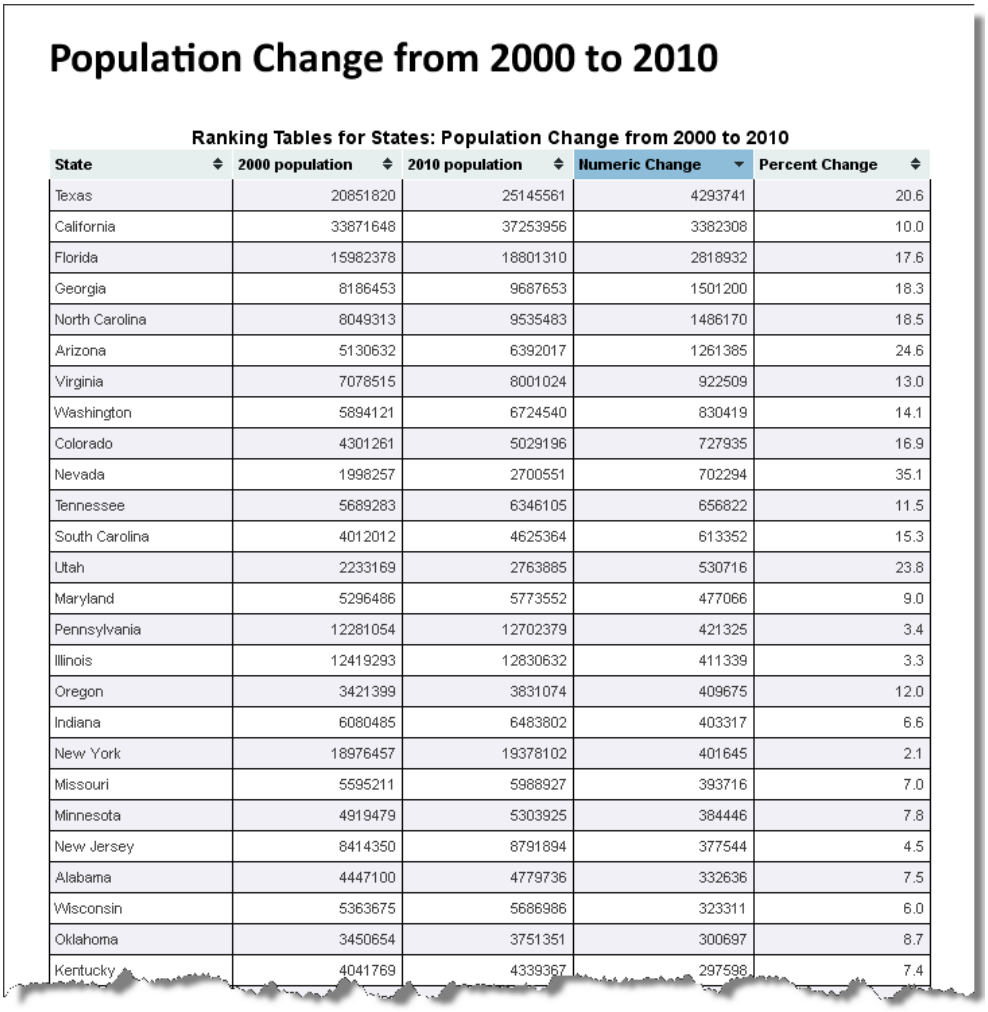
Example of Accordion:



Part 3: jQuery Tablesorter Plugin

30 points. The jQuery tablesorter plugin (tablesorter.com) provides a flexible client-side table sorting based upon "plain old table markup". In this part of the assignment, you will use the tablesorter plugin to make a table sortable.

- **XHTML file.**
  - `tablesorter.html`
- **jQuery Javascript and jQuery tablesorter plugin, CSS, and images**. Part of the exercise is to download (or reference) the libraries and include the resources you need to use the tablesorter. You should download the tablesorter JS, along with any needed CSS and images, and include these files as part of your assignment (again, please include only what is needed.
- **Content**. You may start with the data table provided in "`table_plain.html`" if you wish. You are free to use your own data as long as your table has at least ten rows and three columns.



Population Change from 2000 to 2010

Ranking Tables for States: Population Change from 2000 to 2010

State	2000 population	2010 population	Numeric Change	Percent Change
Texas	20851820	25145561	4293741	20.6
California	33871648	37253956	3382308	10.0
Florida	15982378	18801310	2818932	17.6
Georgia	8186453	9687653	1501200	18.3
North Carolina	8049313	9535483	1486170	18.5
Arizona	5130632	6392017	1261385	24.6
Virginia	7078515	8001024	922509	13.0
Washington	5894121	6724540	830419	14.1
Colorado	4301261	5029196	727935	16.9
Nevada	1998257	2700551	702294	35.1
Tennessee	5689283	6346105	656822	11.5
South Carolina	4012012	4625364	613352	15.3
Utah	2233169	2763885	530716	23.8
Maryland	5296486	5773552	477066	9.0
Pennsylvania	12281054	12702379	421325	3.4
Illinois	12419293	12830632	411339	3.3
Oregon	3421399	3831074	409675	12.0
Indiana	6080485	6483802	403317	6.6
New York	18976457	19378102	401645	2.1
Missouri	5595211	5988927	393716	7.0
Minnesota	4919479	5303925	384446	7.8
New Jersey	8414350	8791894	377544	4.5
Alabama	4447100	4779736	332636	7.5
Wisconsin	5363675	5686986	323311	6.0
Oklahoma	3450654	3751351	300697	8.7
Kentucky	4041769	4339367	297598	7.4

Part 4: Slideshow

40 points. Use Colorbox or Fancybox to create a slideshow of images (or another Javascript-based slideshow program). When viewing the images in the slideshow, there should be navigation to the previous and next images, as well as a title supplied for each image.

- **Markup file.**
  - `slideshow.html`
- You should download any needed Javascript, along with CSS and images, and include these files as part of your assignment (again, please include only what is needed).
- **Content**. You may use the images of Glacier National Park for your slideshow, or you may use images of your choice. For full credit, you should generate thumbnails and not simply resize the images on the client-side by altering "`height`" and "`width`" (either in CSS or `img` attributes). Your slideshow should have at least 6 images. Sample screenshots are shown using the public domain images of Glacier National Park.