1 Getting started with interactive web programming

There are several tools for interactive web programming that are good to know:
- HTML — Hyper-Text Markup Language: the fundamental language interpreted by browsers
- CSS — Cascading Style Sheets: defines how things look in a web page
- JavaScript — client-side scripting that defines how things behave in a web page
- HTML5 — newest whiz-bang version of HTML that includes expanded types of elements

We're going to focus on *client-side* programming — tools that run on the client (as opposed to the server, like php). *Server-side* tools are good for saving data and interfacing with a database, but since this class is focused on the *user interface*, we're not going to worry about handling data right now or interfacing with a server. So we'll start by using the above tools to create a lovely interface that validates the user's input from an HTML form. See the **Lab Exercises** (second section, below) for details. **But first, make sure you have the skills to continue!**

Note that for today, unless you are completely familiar with HTML4, CSS and Javascript, then do not worry about HTML5. We'll spend more time on HTML5 over the next 2 weeks.

HTML. If you don't know any HTML, then start with an HTML Beginner tutorial, like this one:
- `http://www.htmldog.com/guides/htmlbeginner/`

or this one:
- `http://www.w3schools.com/html/`

These pages both discuss beginning, intermediate and advanced features of HTML.

CSS. If you know some HTML, but don't know any CSS, then start with a CSS Beginner tutorial, like this one:
- `http://www.htmldog.com/guides/cssbeginner/`

or this one:
- `http://www.w3schools.com/css/`

These pages both discuss beginning, intermediate and advanced features of CSS.

JavaScript. If you don't know any JavaScript, then start with a JavaScript Basics tutorial, like this one:
- `http://www.w3schools.com/js/`

HTML5. If you don't know anything about HTML5, then start with an HTML5 tutorial, like either of these:
- `http://www.w3schools.com/html5/`
- `http://diveintohtml5.info/`

All of these tutorials give you lots of examples, and the chance to try things as you go along. I strongly encourage you to go through the tutorials. Even if you know something about these tools, if you are not an *expert* (and nobody who filled out the First-Day Survey classified themselves as an expert in any of these topics), then there is probably something you can learn from each tutorial.

If you want more detail than the tutorials provide, then you can also find some very good in-depth books on the O'Reilly web site:
- `http://oreilly.com/`

Books are available both in print and electronic formats.

2 Lab Exercises

Your job is to make a web page that will help high school students write their college application essays. You'll need to create a page that is simple yet informative, easy to use, and looks good.

Start by *designing* the page in your head or on paper—what input fields should be on the page? e.g., name, email address, grades, hobbies,

Then create the HTML and CSS that displays the page. Edit it until it looks the way you want it to.

Finally, write the JavaScript functions that respond to the user's input.

Note that this is an exercise and will not be submitted. But the assignment for this unit will build on this exercise, so I strongly encourage you to do it!

2.1 Make it LOOK GOOD

Use CSS with HTML to make your page look good.

1. use multiple `<div>` tags to divide up your page into sections

2. read about the `position` property to figure out how to place each `<div>` in a distinct location on your page

3. set the *color* properties of each `<div>` (background and text color)

4. set the *font* properties of each `<div>` (and make sure each `<div>` contains some text, so you can see what the different font properties look like)

5. set the *border* properties of each `<div>`

6. then play with *margin* and *padding*

7. create a `list` and use CSS to modify the default properties of the list

8. create a `table` and use CSS to modify the default properties of the table

2.2 Make it DO something

Use HTML form elements and Javascript to make a web page that does something in response to user input.

1. use a `<button>` to change the text in one of the `<div>`s that you defined above

2. use a `<button>` to change the background color of one of the `<div>`s that you defined above

3. create a set of `checkboxes` to allow the user to select colors for the background of one of the `<div>`s that you defined above

4. create two `password` elements and ask the user to enter the same password twice; use a JavaScript function to verify that the user typed the same password in both fields

5. use `<select>` and `<option>` to create a drop-down list from which the user can pick one item

6. use `<select multiple>` and `<option>` to create a drop-down list from which the user can select more than one item

7. use `<input type="text">` to create a single-line text field; use a JavaScript function to convert the text that the user enters to all upper-case

8. use `<textarea>` to create a multiple-line text field; use a JavaScript function to count how many words the user entered

3   References

some CSS properties:

Colors and Backgrounds
color, background-color, background, background-image, background-repeat, background-position, background-attachment

Text and Fonts
font, font-family, font-size, font-weight, font-style, font-variant, line-height, letter-spacing, word-spacing, text-align, text-decoration, text-indent, text-transform, vertical-align, white-space

Positioning and Display
position, top, right, bottom, left, clip, overflow, z-index, float, clear, display, visibility

The Box Model - **dimensions, padding, margin and borders**
padding, padding-top, padding-right, padding-bottom, padding-left,
border, border-top, border-right, border-bottom, border-left,
border-style, border-top-style, border-right-style, border-bottom-style, border-left-style, border-color, border-top-color, border-right-color, border-bottom-color, border-left-color, border-width, border-top-width, border-right-width, border-bottom-width, border-left-width, outline, outline-style, outline-color, outline-width,
margin, margin-top, margin-right, margin-bottom, margin-left
width, height, min-width, max-width, min-height, max-height

Lists
list-style, list-style-type, list-style-image, list-style-position

Tables
table-layout, border-collapse, border-spacing, empty-cells, caption-side

some HTML form elements:

from *JavaScript: The Definitive Guide*, page 397

HTML property	Type property	Event handler	Description and events
`<input type="button">` `<button type="button">`	"button"	onclick	a push button
`<input type="checkbox">`	"checkbox"	onchange	a toggle button without radio button behavior
`<option>`	none	none	a single item within a Select object; event handlers are on the Select object, not on individual Option objects
`<input type="password">`	"password"	onchange	an input field for password entry; typed characters are not visible
`<input type="radio">`	"radio"	onchange	a toggle button with radio button behavior
`<input type="reset">` `<button type="reset">`	"reset"	onclick	a push button that resets a form
`<select>`	"select-one"	onchange	a list or drop-down menu from which one item may be selected (also see `<option>`)
`<select multiple>`	"select-multiple"	onchange	a list from which multiple items may be selected (also see `<option>`)
`<input type="submit">` `<button type="submit">`	"submit"	onclick	a push button that submits a form
`<input type="text">`	"text"	onchange	a single-line text entry field
`<textarea>`	"textarea"	onchange	a multi-line text entry field

The two sites that I recommend for online tutorials are:

- `http://www.w3schools.com/`
  This site contains tutorials on HTML, HTML5, CSS, CSS3, JavaScript (and many other things).

- `http://www.htmldog.com/`
  This site contains tutorials on HTML and CSS, and as well as references.

Some O'Reilly books:

- *JavaScript: The Definitive Guide, 6th Edition.* by David Flanagan. O'Reilly Media, 2011.
- *CSS: The Definitive Guide, 3rd Edition.* by Eric A. Meyer. O'Reilly Media, 2006.
- *HTML5: Up and Running.* by Mark Pilgrim. O'Reilly Media, 2010.