CS 134: Pre Final Study Guide

Chapter 9: How to work with images

- Image types used on the web include JPG, GIF, and PNG
- Image elements are of the format `<img src='…' alt='…' />`
- Alt text with a description of the content should be provided for users with disabilities (screen readers), for search engines, and for the circumstance where an image fails to load. If content has no meaning (e.g. decoration only images) an empty string "" should be used.
- Just as with other block elements, the CSS properties float and clear can be used to push images to the left or right and flow in-line elements such as text around them.
- When setting up a gallery, it is important to create thumbnails that link to the larger images.
- Be aware that not all images available online are legally free to use, but that there are images with licenses such as Creative Commons, where the author releases the image to be used more-or-less freely.

Chapter 10: How to work with tables

- Tables in HTML will always consist of an outer `<table>` element containing `<tr>` table row elements, which contain <td> table data cell elements. They can also contain special `<th>` table head elements that take the place of <td> elements but are by default bold and meant to indicate headers for rows and columns.
- Additionally, in HTML5 there are `<thead>`, `<tbody>` and `<tfoot>` elements that can be used to indicate the header, body, and footer of a table explicitly
- A popular and important CSS property for tables is border-collapse which is used to convert table borders into simple lines
- CSS3 introduces some useful structural pseudo-class selectors to select every nth element, which is very useful with tables for example to easily style things like zebra stripes, which were difficult in the past.
    - `:nth-child(n)` picks every nth child element
    - n can be: `odd`, `even`, `3n` (every third), `3n+1`, etc
- The HTML attributes `colspan` and `rowspan` can be used to force a cell to span several rows or columns

Chapter 11: How to work with forms

- Forms are the most common way to receive data input from a user, and typically interact with a back-end server side component to a website. They are also used to create an interface with JavaScript.
- An HTML form consists of an outer `<form>` element that typically contains many `<input>` elements of various types.
- The form itself needs the attributes:
    - name (which gives the form a name to reference),
    - action (which is the destination gone to when the form is submitted
    - method (which is either GET or POST and determines how the data for the form is submitted)
        - GET submits the data in the URL of the destination (e.g. `url?property=val`)
        - POST also submits the data via HTTP, but in the background where it isn't visible to the user
- `<input>` elements define the actual form fields and have three critical attributes:
    - type (defines the type of field, e.g. button, text, radio, etc)
    - name (defines the field so the data for that field can be retrieved)

    - value (contains the current value of the element, which can be grabbed with JavaScript or set to a default in HTML)
- Types of `<input>` elements include:
    - `button` (a generic button that can be tied to JavaScript)
    - `submit` (the typical method to submit a form)
    - `reset` (a button that clears all form fields to their defaults)
    - `text` (a typical textbox)
        - The attribute "`maxlength`" constrains the user to a certain number of characters
        - The attribute size defines the width of the field
        - The HTML5 attribute placeholder gives the user some greyed out prompt text in the field
    - `password` (like text, but with bullets or asterisks for security)
    - `hidden` (used to set or hold values behind-the-scenes, but doesn't display as anything)
    - `radio` (a radio button that allows one and only one option in a set to be selected)
        - Each radio button in a set will share the same `name` attribute, but have different values
        - There is a "`checked`" attribute that can be used to set a default
    - `checkbox` (a binary true/false input element, when used in sets typically any number can be picked)
        - Each checkbox will have unique names and values
        - The "`checked` "attribute also works here to set defaults
- Other form fields include `<select>` which is used for drop-down boxes and list boxes
    - The `<select>` element will be given the name attribute
    - Nested inside the `<select>` element will be multiple `<option>` elements that define the values
    - If you give the `<select>` element the attribute "`multiple`", it becomes a list box and allows the user to select multiple options.
- The form field element `<textarea>` works similar to `<input type='text'>,` but provides a larger area to type and accepts multiple lines (good for comments, etc).
- Labels are used to tell the user which fields are used for what, and additionally, act as a handle to select the fields. They are also important accessibility features, and should always be used when possible.
    - The attribute "`for`" is used to associate the label with a field element of a certain `id`
- The attributes "`tabindex`" and "`accesskey`" are used to give field elements an explicit order to tab through, or to provide keyboard shortcuts for field elements respectively. Both are good to include for accessibility purposes
- New to HTML5 is form validation baked into HTML itself without requiring the use of JavaScript
    - Relevant attributes include:
        - autocomplete (used to turn on or off autocompletion by the browser)
        - required (indicates the field must have a value before the form can be submitted)
        - novalidate (tells the browser explicitly not to validate this element)
        - pattern (defines a regular expression pattern to validate against)
        - title (gives some pop up text to indicate what is required when a field doesn't validate
    - These can be used with CSS3 selectors `:required`, `:valid,` and `:invalid` for styling purposes
- New semantic input types exist in HTML5, many of them autovalidate, and all of them provide information about the data being sought, they include: `email`, `url`, and `tel` for e-mail, websites, and telephones

Chapter 12: How to add audio and video to your website

- Video types for the web include MP4, Flash, Ogg, WebM, etc.
- Audio types for the web include MP3, AAC, Ogg, etc.
- Playback for these may depend on the browser used and the codecs and plugins installed by the user
- MIME types are used to indicate the specific file format being embedded e.g. "`video/webm`;"
- HTML5 provides `<video>` and `<audio>` elements to allow you to embed multimedia into your content

Chapter 13: How to work with fonts and printing

- Historically websites were bound only use common fonts preinstalled on users' systems (typically with fallbacks in case a font is missing), HTML5 adds the ability to embed and link to specific fonts.
- The CSS3 `@font-face` rule, along with its properties `font-family` and `src` allow one to upload and embed a specific font
- Additionally, online services including Google Web Fonts and Adobe Edge Web Fonts exist that host a catalogue of web-friendly fonts online and allow you to link them to your projects directly.
- These tools will specifically allow you to choose only the styles and scripts you need in order to reduce file size and save bandwidth
- Printing can be supported easily with CSS3 in a very similar way to responsive web design
- Using a media query selector of the type `@media print {}`, you can specify rules for paper printouts
- For this CSS, you'll typically want to disable backgrounds, navigation, and other unnecessary elements, convert sans-serif fonts to serif, as well as change colors to fit a typical black-on-white printout.

Chapter 14: How to use CSS3 transitions, transforms, animations, and filters

- CSS3 provides means to smoothly transition between sets of properties, animate through several sets, as well as apply transformations and filters to block elements
- The `transition` property is used to define how the timing and characteristics of a transition
    - `transition: [property] [duration] [timing-function] [delay];`
- The initial state will typically be set with standard CSS, the state to transition to is typically set with a pseudo selector like `:hover` or another rule that requires user feedback to fire off
- Transforms are used for instance to rotate, skew, or flip a block element like an image
- Some example CSS transforms include:
    - `rotate(angle)`
    - `scale(x-value, y-value)`
    - `rotateY(angle)`
- CSS3 animations are similar to transitions, except they continuously transition between a set of specified sets of properties known as keyframes
    - `animation: [name] [duration] [timing-function] [delay] [interation-count] [direction];`
    - ```
      @keyframes [name] {
                  key1 { … }
                  key2 { … }
      }
      ```
      ```

Chapter 15: How to use JavaScript and jQuery to enhance your web pages

- JavaScript is a programming language used to script things in the browser
- jQuery is a popular library for JavaScript that makes it very easy to interact with the DOM
- The DOM (Document Object Model) is a tree that represents the HTML elements of a page and can be interacted with using JavaScript so that attributes and contents can be read and modified
- JavaScript code can be included in three ways (similar to CSS):
    - Linked to Externally:
        - `<script src="…"></script>` (usually done in the `<head>`)
    - Inline in the head
        - `<script>…</script>`
        - When used in the head you usually define functions to be used elsewhere
    - Inline in the body
        - `<script>…</script>`
        - When used in the body, JavaScript can execute (and for example write to the page) in between HTML elements as they load
- Two common methods used in JavaScript
    - `getElementById(id)` grabs an HTML element from the DOM
    - `write(…)` adds some content directly to the HTML document
- The property "`value`" is frequently used with form elements to get or set the value in that element, is an easy way to get input from the user and provide output to them
- jQuery along with its documentation and examples is provided online
- It can be downloaded and linked to externally as with any JavaScript file, or it can be loaded remotely via a content distribution network (CDN)
- The master jQuery shortcut function $() can be used in various ways to grab specific DOM elements in a manner similar to CSS
    - $("h2") returns <h2> elements
    - $("#id") returns an element with the id "id"
    - $(".class") returns elements with the class "class"
- Events in JavaScript are certain actions that happen (a page loads, a user clicks an element, etc) which can be tied to specific JavaScript or jQuery code

Chapter 16: How to use jQuery UI and jQuery plugins to enhance your web pages

- jQuery UI is an official library for jQuery that provides an easy way to style UI elements as well as providing some special widgets not available in native HTML such as accordions, tabs, dialogue boxes, and the like.
- It is linked to externally similar to jQuery, and requires jQuery itself to also be linked in
- You can customize jQuery UI with themes and different sets of features when you download it
- The typical method for using jQuery UI is
    - code a special HTML structure (e.g. a list inside a div)
    - Put some jQuery code in the head inside the head to fire off when the page loads, telling jQuery UI to convert that HTML structure into one of its special widgets
    - ```
      $(document).ready(function(){
                      ("#accordion").accordian();
      });
      ```
      ```

- There are also many freely available jQuery plugins available (e.g. lightbox, carosels, etc.)
- The method for using them varies, but is usually similar to jQuery UI, and always documented on the sites that host them

Chapter 17: How to use jQuery Mobile to build mobile websites

- jQuery Mobile is another official jQuery library available specifically for building mobile only websites.
- Like jQuery UI, it is themeable, and provides widgets like accordions not available in plain CSS
- It is also very good at automatically styling a very basic site resulting in a design that is very consistent with and optimized for a mobile interface
- It is typically used when the decision is made to fork a site into mobile and non-mobile versions, and less frequently used with Responsive Web Design, which is a method that styles one site appropriately for both sets of devices.

Chapter 18: How to design a website

- The most important thing when designing a website is to consider who your users are, and what they expect from your site.
- Providing them a fast and easy way of doing what they want to do and finding what they want to find is the best recipe for success
- Know and follow web standards for navigation (e.g. clickable logo, navigation at the top or left, etc)
- Make sure all critical information is "above the fold" and it isn't necessary to scroll for it.
- Design with mobile in mind, as it's becoming a critical market to support, and you will be penalized both by search engines like Google and your customers for not supporting it properly
- Make good use of space (don't waste it on overly large and meaningless graphics)
- Chunk the site into visibly separate sections
- Write a briefer more structured manner than you would for print
- Know concepts of graphic design
- Maintain a site map (tree of all of the pages of a site and how they link)
- Follow the typical development lifecycle (design, implement, maintain, repeat)

Chapter 19: How to deploy a website on a web server

- First you typically need to find a web host to provide a place to put your website, and buy a domain that people can use to reach it
- Transferring your website to the web host is usually done via FTP (file transfer protocol)
- Once it's online be sure to test thoroughly across multiple browsers to be sure everything is uploaded correctly and working as expected.
- Afterwards it is good to submit your site for indexing at the major search engines and use robots.txt to indicate to the engine what should and shouldn't be searchable