Web Development Ethics

Responsibility in creating websites

What is Ethics?
- Ethics is thinking about the effects of your actions and doing what helpful rather than hurtful.
- How do we know if something is ethical or not?
- Apply the ethical tests of
  - Universality
  - Reversibility
  - Transparency
  - As part of these, think of the consequences for everyone involved

What are those ethical tests?
- Universality - Do you think it is okay for everyone to behave like that?
  - Consequences - What if everyone did this? What would be the consequences for everyone else?
- Reversibility – If someone did this to you, would you be okay with it?
- Transparency – Would you still do this if everyone knew about it?
  - If a TV camera was pointed at you, would you still do this action?

Web Development Ethics Topics
- Copyright infringement & fair use
- Being aware of laws
- Creating website responsibly
  - Responsible Search Engine Optimization (SEO)
- This is not a comprehensive list of ethical topics related to website development, but it highlights some areas to think about when developing your websites.

Copyright Infringement
- Copyright infringement is illegal.
- Copying any copyrighted element from another website without express permission from the owner is infringing on copyright.
- Elements may be
  - Text
  - Graphics
  - Animation
  - Music in any form
  - Videos
  - Design
  - Any other item which is copyrighted

Protecting site with copyright
- Sites can be protected by adding a copyright notice. Required elements
  - Word copyright or the symbol ©
  - Year
  - Copyright owner (Can be an organization or an individual)
- Copyrights should be registered. For information about registering a copyright see the US Copyright Office
Fair Use
- Certain elements may be quoted under fair use under certain conditions
  - Purpose – such as non-commercial, educational, comment, criticism
  - Amount used – for text 10% or 1000 words which ever is less
  - Also this cannot be your complete work.
- Always cite references when quoting the works of others or using images from other sources.

Keep it Legal
- Be aware of any laws governing web sites
  - Data collection
  - Dealing with minors
  - Privacy statement
  - Accessibility compliance
- Any other area of the law should be considered
  - Be aware of the laws in general of which activities are legal and which are not.

Legal areas
- Any illegal activities that break other laws not specific related to websites
- Examples
  - First amendment protects free speech, but that doesn't include the right to liable, slander, or otherwise defame another individual, company, organization or other entity.
  - Gambling is illegal in Hawaii, so sites originating in Hawaii should not contain gambling

Create Websites Responsibly
- Not necessarily against any laws, but good idea to be responsible.
- Use accurate information on your sites.
  - Avoid spreading rumors and hoaxes
  - Verify information
- Be considerate of others
  - Consider usability
  - Use accessibility standards

Responsible SEO
- SEO (Search Engine Optimization)
- Black Hat versus White Hat SEO
  - Black Hats
    - use whatever means possible to get sites listed higher in search engine listings
    - Also called spamdexing
  - White Hats
    - use search engine optimization responsibly and don't bend the rules to get a higher listing
- Develop websites responsibly!

Discussion Questions (Required)
- Search Engine Optimization
  - In what ways is black hat search engine optimization unethical?
  - What are some white hat methods of optimizing your search engine results?
- Copyright Infringement
  - What can you as a web developer do to protect your work?
  - What can you do to avoid infringing on the copyright of others?
Programming for the web
Adding additional functionality

Basic Types of Web Programming
- **Server-side Programming**
  - Programs located on the server and are called by the web page (not necessarily located in your web folder)
  - Also called
    - Backend programming
    - Server resident
- **Client-side Programming**
  - Scripting placed within the web page
  - Also called
    - Frontend programming
    - Browser scripting

**Server-side Programming**
- Provides an interface between server databases, programs and other information sources.
- Expands the capabilities of a webpage.
  - Provides functionality for web forms
  - Retrieves data from databases
  - Runs programs stored on server
- Server administrator may need to set up
- Common Programming Languages
  - Java
  - C/C++
  - Visual Basic
  - ASP
  - PHP
  - Many others

Note: This is an advanced topic and will not be covered further in this course

**Client-side Programming**
- Adds functionality
- Originally provided formatting ability that was not available in HTML (pre-CSS)
  - CSS can now do some of what scripting was developed to do
  - CSS is the preferred method.
    - Do not use scripting if CSS can provide the same effect.
    - Provides accessibility by separating content & style
- Incorporating scripting
  - Write the scripting
    - Need to know scripting language
  - Be able to adapt existing scripts
    - Need to know enough to make changes
  - Dreamweaver provides some scripts

**Scripting Languages**
- Javascript
- Ajax - Asynchronous JavaScript and XML
- Visual Basic Scripting
- Jscript
- Other scripting languages

**Uses of Scripting**
- Detect user setup
  - Time of day
  - Resolution of monitor
  - Browser used
- Display content based on user setup
- Change style sheets based on user setup
- Animate elements
- Verify forms submission
- Call server-side programs
**Javascript**
- Assists in creating interactive pages
- Based on Java Programming Language
- Programming usually resides within the webpage
  - the least amount of setup needed
  - browser interprets so doesn’t need server to run
- Programming can also be stored separately in web directory and called by webpage

**Dreamweaver & Scripts**
- Dreamweaver provides some scripting which can easily be customized for your web page
- Spry framework incorporates CSS & Ajax
  - Form validation
  - Tabbed panels
  - Accordion & Collapsible panels
  - Data tables that are sortable
  - Be sure to upload the SpryAssets and Scripts folders.

**Customizing Forms Scripts**
- Web hosts provide forms processing via email address.
  - The processing is completed with server side programming that is controlled by the web host.
- Calling of the program is often completed with scripting that may need to be customized
- Each web server is unique.
  - Get information from your web server on procedure

**Scripting & Usability**
- Sometimes scripting can interfere with usability & accessibility.
  - Some browsers may block certain types of scripting which may cause problems with accessing the information.
  - For navigation access to content could be limited if it relies on scripting - Provide alternatives methods of accessing the information.
- Some effects can be achieved through CSS rather than scripting.
  - See CSS effects exercise for effects added to navigation without scripting.

**More Info & Examples**
- Examples
  - Simple Javascripts
  - Dreamweaver Spry Examples
- Learn more about Javascript at these sites:
  - W3Schools-JavaScript
  - Web Teacher: Javascript Tutorial
  - Javascript Technical Reference

**Javascript Libraries**
- The programming is already done, you just need to add in your own values for the various parameters.
  - Many libraries are hosted on Google
CSS Effects without programming

- Sample CSS Effects
Creating Web Forms
Receiving feedback from audience

What are Web Forms

- Forms are
  - Input devices on web pages
  - Created within the webpage
  - Processed by the server
    - Each server may have different software that requires different processing command in the form definition

Uses of forms

- Facilitate information retrieval from user.
  - Example form to contact the instructor
- Integrate database functions
  - Example query to retrieve information from Library database
- Create interactive pages
  - Quiz Example: HTML Quiz
- Drop down or jump navigation
  - Be sure to provide alternate way of accessing pages to make accessible

Defining Forms

- Entire form placed in the body section
  - &lt;form options&gt; &lt;/form&gt; defines entire form
    - options define processing
- Javascript can be used to validate information
  - Dreamweaver (CS4-CS6) has built in Spry form fields to do this
- Form elements may have initial values set
- Determine what elements are appropriate for the data needed
  - Usability - which element type is easiest for reader to use

Form Elements Types

- Text fields - allows a limited amount of text to be entered
  - &lt;input type="text" name="fieldname"&gt;
  - &lt;input type="password" name="fieldname"&gt;
    - hides input displaying asterisk as user types
- Radio buttons - mutually exclusive choices
  - &lt;input type="radio" name="fieldname" value="fieldcontent"&gt;
- Checkboxes - check to select item (multiple choices allowed)
  - &lt;input type="checkbox" name="fieldname" value="fieldcontent"&gt;

Form Element Types (cont.)

- Drop down lists - selection of items from list
  - &lt;select name="fieldname"&gt;
    &lt;option value="item1">item1</option&gt;
    &lt;option value="item2">item2</option&gt;
    &lt;option value="item3">item3</option&gt;
  &lt;/select&gt;
- Lists
  - &lt;select name="select2" size="3" multiple="multiple"&gt;
    &lt;option value="Item 1">Item 1</option&gt;
    &lt;option value="Item 2">Item 2</option&gt;
    &lt;option value="Item 3">Item 3</option&gt;
  &lt;/select&gt;
Form Element Types (cont.)

- **text areas** - allows input of longer text areas - 
  can be scrollable
  
  `<textarea name="fieldname"> </textarea>`

- **action buttons** - submit forms for processing or 
  reset clears form
  
  `<input type="submit" name="Buttonname" value="Words on button">`

- **Hidden fields**
  
  `<input type="hidden" name="hiddenField">`
  
  - can be used to input information needed for forms 
    processing

Form Tag Parameters

- **Parameters for form tag** `<FORM` 
  
  `method=POST action="/cgi-bin/program"` 

  `enctype="text/plain" name="myform">`

  - method (Two options - web server may determine 
    which one can be used)
    
    - `="get"`
    
    - `="post"`

  - ACTION="location of program"
    
    - This is determined by your web server which should provide 
      the infomation on processing the form

  - ENCTYPE="text/plain"
    
    - Required, just says it's text.

  - name="whatever"
    
    - Name the form whatever you want

Processing of Forms

- Once the user inputs information into the form it 
  must be processed
  
  - Validation
    
    - Javascript
  
  - Recording information
    
    - Javascript
    
    - Program on server
      
      - possible security problems on server
      
    - database integration
      
    - email response
      
      - available on most web servers, which emails the information to 
        you
      
      - a file must be set up to show how the email text should be 
        displayed
  
  - Form completion page - lets the user know that 
    the form was submitted

How do you go about processing

- Most web servers have available code for 
  forms processing. Code will need to be added 
  to the webpage code as part of the form 
  definition

- Email response
  
    - Most web servers provide email response to 
      process your forms. An email is sent to you when a 
      form is submitted
      
      - Often required for processing

      - Create a text file that has the field names and labels 
        displayed.
      
      - Adapt the code to include the email address and the 
        name of the text file for processing

Forms Usability

- Use style sheets to change formatting

- Mark required fields with special 
  formatting

- Use validation to check contents of fields
  
    - Specify appropriate error messages

- More information on usability
  
    - Reset and Cancel Buttons
Working with Tables
Organizing Data

About HTML Tables
- Tables were originally designed to present data in an organized manner
  - Increases readability of data.
- HTML Tables were not intended for layout.
  - Before CSS, tables were used for layout, but some problems arose
    - Layout tables often interfered with accessibility
    - Some browsers interpreted the layout differently causing the design to be lost
- CSS now makes the layout function possible without tables.

Use CSS for layout – NOT tables
- Eases redesign
- Since tables are structure.
  - Using them for layout creates headaches for redesign.
  - It also doesn’t separate your design from structure.
- Do not use tables for layout!
- Use CSS for layout

Tables Codes
- In HTML tables consist of cells with rows.
  - Columns are formed by cells within rows, but do not have a separate code
- HTML Table codes
  - `<table></table>` delimitates the entire table.
  - `<tr></tr>` delimitates each row
  - `<td></td>` delimitates each cell or table data
  - `<th></th>` used in place of table data (td) code to specify a cell is a heading.
  - `<caption></caption>` adds accessibility by specifying a table caption or heading which appears above the table
  - Note: caption tag is for tables and not for images.

Example coding
```html
<table border="1">
  <caption>Sample table</caption>
  <tr>
    <th>Column</th>
    <th>Heading</th>
  </tr>
  <tr>
    <td>one cell</td>
    <td>another cell</td>
  </tr>
  <tr>
    <td>below one cell</td>
    <td>below another cell</td>
  </tr>
</table>
```

Table Properties
- HTML 5 has only one table property
  - `border` - Specifies if there is a border or not
    - `<table border="1">` is always specified
  - If borders are not desired don’t specify the border property.
- Table with no borders
- Table with borders
Older table codes

- Older versions of HTML included additional properties:
  - **Table properties**
    - **width** - how much of the parent element the table takes up. Specified in: percent (preferred) or pixels. If width is not specified the table adjusts to the width of the items.
    - **cellpadding** - determines how much space is between contents and border. Specify in pixels.
    - **cellspacing** - determines how much space is between cells. Specify in pixels.
  - **Older Cell properties**
    - **align** - horizontal alignment of text within the cell
    - **valign** - vertical alignment of text within the cell
  - Don't use in new pages, but be aware of codes when editing older pages.

Cell Properties

- Cell properties can be used for table cells
  - **<td> or <th>**
    - **colspan** - specifies how many columns a cell spans (like merging cells in word processing and spreadsheets)
      - `<td colspan="n"> n is the number of columns`
    - **rowspan** - specifies how many rows a cell spans (like merging cells in word processing and spreadsheets)
      - `<td rowspan="n"> n is the number of rows`

Examples of column & row spans

- **colspan**
  
  Column 1 | Column 2 | Column 3 | Column 4
  📗 | 📗 | 📗 | 📗
  `<td>` | `<td>` | `<td>` | `<td>`
  `<td colspan="2">` | `<td>` | `<td>`
  `<td colspan="3">` | `<td>`

- **rowspan**
  
  Row 1 | Row 2 | Row 3 | `<td>`
  📗 | 📗 | 📗 | `<td>`
  `<td rowspan="2">` | `<td rowspan="3">`

Sizing it up – cell sizes

- When specifying cell widths or heights in CSS keep in mind:
  - All cells within the same column will have the same width
    - Spanned cells have the same width as the number of columns spanned
    - If more than one cell in a column has a width specified, all of the cells in the column will have the same width - different browsers may interpret differently
  - All cells within the same row will have the same height.
    - Spanned cells have the same height as the number of rows spanned
    - If more than one cell in a row has a height specified, all of the cells in the column will have the same width - different browsers may interpret differently

Images in tables

- Images, placed in cells, that are larger than the cell row or column specifications will expand to the height and/or width of the cell row and/or column

Converting Data to Tables

- Data can be converted to a table.
  - Data should be in a text file and separated by a particular character such as a comma or a tab.
  - Each row should be a separate line in the document
How to convert data to table

- Dreamweaver
  - File - Import Tabular Data
  - Select the file
  - Indicate the separator character

- In HTML
  - At the beginning of the document add in `<table>`
  - At the end of every line except the last line add in `</tr><td>`
  - Find & Replace the separator character with `<td>`
  - At the end of the last line add in `</td></tr></table>`

Avoid Tables for Page Layout

- If maintaining an older site which used tables for layout and no time to redesign with CSS Keep in mind these tips:
  - Turn table borders off
  - Do not use table headings - table headings are for data tables only
  - Use regular headings within text
  - Ensure that an auditory web browser will read information in the correct order

- Redesign the page as soon as you can.
  Convert the table elements to divisions or other layout objects

Advanced Tables - Dreamweaver

- Dreamweaver (CS5-CS6) has the capability to incorporate XML data into a table and also provides scripting necessary to allow the audience to sort data in a table.
  - Data needs to be in XML format
    - Excel & Access can output XML format

- Example page
  - Click on headings to see effect.

More About Tables

- Further Readings
  - Accessible Data Tables
Finishing Touches & More on HTML 5

Favicon
- Icons that show on the location line and in bookmarks
- Icon file format (.ico)
  - 16 by 16 pixels
  - Irfanview (Windows) can save in this format
- Save in the main web folder
  - Note: Favicon does not work with UH Server.

Favicon Coding
- In the head section of your webpage, add in the following code where "filename" is the actual name of your file
  - `<link rel="shortcut icon" ref="filename.ico" />
- Automatic favorite icon. If the filename is favicon.ico, the link in the head section is not necessary, though it is still a good idea.

Meta Tags for Search Engines
- Meta tags are in the head section of the web page and are not displayed on the page.
  - Author – author of page
  - Keywords – words which search engines can use to catalog page
  - Description – description of the site which will be displayed in a search engine results (if this is not present the search engine will display the first words encountered on the page)
  - Publisher – publisher of site
  - Copyright – copyright information

Meta Tag Syntax
- `<meta name="tagname" content="Whatever the tag is suppose to be"/>
  
Example:
- `<meta name="description" content="Meta tags for search engines is presented with explain of author, keywords, description, publisher, copyright">

More meta tag
- Don’t want your web site or a particular page placed in a search engine?
  - `<meta name="robots" content="noindex, nofollow">
    - noindex – don’t place in search engine
    -nofollow – don’t follow any links on this page
  - Not all search engines observe this
Custom 404 Pages

- 404 – “Page not found” error returns a generic error page
  - Example
- Customize to be friendly
  - Create a page and give friendly advice on finding the information needed and a link to your main site
  - Example
- Different servers have different requirements. Check with your server for the correct methodology

More on 404 pages

- How to Create a Custom 404 page
- Do it Yourself - 404
- HTML Goodies: Server Response Codes

Search Capability

- Google provides free search capability for web sites
  - Sign up for an account
  - Code is provided to place within site
    - Preferably place in the template so it is available on all pages.
  - http://www.google.com/coop/cse/
- Other services may provide additional capability.

Search Engine Optimization

- Much of what we learned throughout the semester increases search engine optimization
  - title
    - unique for each page in site
    - accurately describes page
  - headings
    - correct levels are used
    - headings act as outline for your page
    - accurate heading for what is beneath it
  - images and other media
    - alt text describes image accurately related to context
    - long descriptions provided if needed
  - accessibility standards followed

More on SEO

- Appropriate domain name
- Filenames may also be used to weigh pages
- Concise writing
  - Main ideas at the beginning
  - Search engines also weigh pages based on the percentage of the words on a page the search word appears.
    - A search term that appears once on a 100-word web page will be rated as higher than the same search time that appears once on a 10,000-word web page.

HTML 5

- New codes for dividing sections of pages.
  - article - main content area
  - aside - an aside or can be used as a sidebar
  - footer- usually at the bottom of a page
  - header - usually at the top of a page
  - nav – navigation
- When working with coding, it’s easier to see where items begin & end.
  - Div codes all end in </div> and if you have multiple divisions, it’s hard to see where each ends.
HTML 5 (cont.)

- Allows for greater accessibility and better SEO with consistency of identifying elements of a page.
- In order for these codes to behave similarly to divisions the CSS code `display:block` needs to be added.
- Dreamweaver has these available as coding options, but not as menu options.
  - For design view, unlike divisions which shows lines to show where the division is, there are no lines demarking these sections.
Testing Websites
Assuring usability & accessibility

Testing

- Types of testing
  - User testing
    - Can your site can be used?
  - Technical testing
    - Does everything work - HTML, CSS, Scripting
    - How does various systems effect your web site?

- When to test
  - Technical testing is normally ongoing throughout the develop of the site.
  - Both a final technical test and user testing should occur offline before uploading.
  - Test again once the site is uploaded to be sure everything is working online

User Testing

- User testing is having people, who are not involved in the development of the web site, test the site for usability.
  - Be open minded and grateful to any and all input.
  - Set your ego aside!

How to do user testing

- Create a list of tasks that samples using the site
- Select 5 people who are similar to the average readers of the site
- Have them complete the list of tasks
  - Observe how long it takes them to find the given information
  - Make note of what problems and difficulties are encountered
  - Ask for opinions, comments and suggestions

Usability Questions

- Questions to ask yourself
  - Does the navigation work the way it should?
  - Is there an alternative to accessing information if the navigation is reliant on graphics, scripting, Flash or non-text means?
  - Do multimedia elements work?
    - Are they embedded correctly?
  - Is text readable?

Technical Testing

- Test on various setups
  - Browsers
    - Different browsers: Internet Explorer, Firefox, Safari, Chrome, Opera, etc.
    - Text sizes: Increase & decrease (not zoom)
      - Preferably text size should increase and decrease
      - Exception - fixed fonts used to maintain an artistic appeal
    - Maximized & not-maximized
  - Monitor
    - Resolutions, Sizes, Orientation
  - Operating Systems
    - Different systems: MacOS, Windows, Linux
  - Mobile Devices
Accessibility Testing

- Part of technical testing and can be user testing as well
- Test web sites on various screen resolutions, text sizes, and if possible on various devices including screen readers
- Check accessibility through web sites which check for accessibility
  - Access Keys: [http://www.accesskeys.org](http://www.accesskeys.org)
  - Webnauts: [http://www.webnauts.net/check.html](http://www.webnauts.net/check.html)

Monitor - Sizes & Orientation

- Sizes range from cell phone size to large projection type
- Orientation
  - Portrait (long and narrow)
  - Landscape - Normal
  - Landscape - Wide Screen
  - Square

Testing Font Sizes

- People who have difficulties reading small text sizes may need to increase the font size of their browser, but not increase the graphics.
  - Pages need to be checked with a larger font to see the effects on your page
    - Note: Zoom options can be used to magnify the page, but this increases the whole page including graphics and often requires left and right scrolling, which is not desirable.
  - Pages with fixed font will not change
    - Good if the layout needs to be rigid
    - Bad for accessibility

Video on testing

- [http://vimeo.com/52301069](http://vimeo.com/52301069)
Publishing a site
Posting & Publicizing

What is Publishing
- Publishing a web site is placing the site on a web server and encompasses
  - Registering a domain (if needed)
  - Selecting a web host (if needed)
  - Uploading the files
  - Publicizing

Domain Name
- Domain names must be registered through an authorized domain registrar (often the web host.)
- Domain name consist of two parts:
  - name
  - high/top level domain
- High/top level domains have meaning
  - COM - commercial concern
  - ORG - non-profit organization*
  - NET - network
  - INFO - information
  *Certain high level domains need special registration requirements

Best domain names
- Domain name should match the organization
  - A domain for a web consulting business called Vanessa's Webpages
    - vanessaswebpages.com is probably the best
    - vanessas.com is ok
    - coolconsulting.com is not good

Where to Host Websites
- Free hosting Internet service provider (ISP)
  - ISP often provide space for personal sites at no cost
    - Site does not have it's own domain, but is a subdomain or a folder of the ISP or other service
  - Universities often provide space for students and faculty
    - No commercial web sites
    - Other restrictions
  - Free web host
    - expect advertising

Where to Host Websites (cont.)
- Paid hosting
  - Web hosting services
    - GoDaddy
    - Yahoo Small Business
    - numerous others
- Self hosting
  - Large businesses sometimes host their own sites – there is the cost of computer, dedicated lines, maintenance
Features of Web Hosts

- **Storage space**
  - How much storage space do you need?

- **Through-put/data transfer rate**
  - How much traffic can your site handle?
  - Does your server charge more for more traffic?

- **Available services**
  - forms processing
  - server side includes
  - database integration
  - CGI scripts
  - other advanced features if you need them

More Web Host Features

- **Email**
  - Do they provide email server?
  - How many email accounts?
  - Do they provide a web interface for email

- **Reports**
  - Are usage reports provided?
  - Detailed user statistics provided?

- **Security of your site**
  - Who has access to your site?
  - Can additional file transfer protocol accounts be set up?

Transferring Files

- Until your site is in a web enabled folder, it is not "on the web".
- Files can be transferred
  - Using an FTP program
    - Most web development software has FTP built in
    - Follow setup instructions from web host
  - Web file management
    - Some provide this capability
    - Good for quick updates
    - Not recommended for uploading entire sites

Transferring Files (cont.)

- Upload all files into **proper folders**
  - HTML files
  - Images
  - Cascading Style Sheets
  - Scripting files
  - Programs
  - any other files need to run your site.

- **Proper folders**
  - Folder names and placement on the server must match the site on your computer.
  - If a file is in a folder called `images` on your computer it needs to be in a folder called `images` on the server.
  - Just upload the files & folders instead of creating new folders on the server.

Publicizing a Site

- **List with search engines**
  - Most search engines have a place to Add URL/site
  - Charges
    - a few search engines always charge to list
    - many have a quick listing for a charge
    - most have a free way to list that may take several weeks to a month to get into the search engine
  - Some web hosts will list your site as part of their service

Publicizing a Site

- **Request others to list your site on their site**
  - This will also help get you listed in search engines and improve you ranking

- **Place your URL on**
  - business stationary
  - business cards
  - bumper stickers
  - brochures
  - email signatures
Other Issues in Publishing

- Copyright
  - US Copyright Office
- Advertisements on Site
  - HTML Goodies: So, You Want Sponsors/Advertisers, Huh?

Maintenance

Web sites are never finished

Maintaining and Updating

- Web sites should be updated frequently.
  - Keeps your site higher in the results in search engines
- Keep the information fresh
  - Keeps readers coming back to your site
- Check all links to see if they are still valid.
  - Nothing gives your site an outdated feel than several bad links
- Check search engines to see if listed

Turning Over a Site

- When developing for someone else, allow the site to be maintained by the owner.
- Adobe Contribute is an easy to use program that helps to maintain a web site.
  - Not recommended for creating sites as it doesn't have templates and other features of Dreamweaver.
  - Connects to the online site and downloads selected files
  - Easy as using a word processing program
  - Uploads after editing
  - Costs less than Dreamweaver

Other Software

- Website development
  - Adobe Dreamweaver
  - Microsoft Expressions Web
- Web page creation & editing
  - Adobe Contribute
- Edit HTML & CSS
  - Windows Notepad
  - Mac TextEdit
  - any text editor