

CSCI 3308 – Software Development Methods and Tools



University of Colorado Boulder



University of Colorado
Boulder

Reminders



Topics

- HTML



Application Stack

- **Front-End**

- The presentation layer
- What the user sees and interacts with
- What software tools do I use to build it and present it to the users

- **Back-End**

- The underlying database and code to interact with it
- Authentication, User Management

- **Integration Layer**

- Connects the Front-End to the Back-End

- **Full Stack Developer**

- “A Full-Stack Web Developer is someone who is able to work on all portions of an application – front-end, backend, integration.”



Architecture

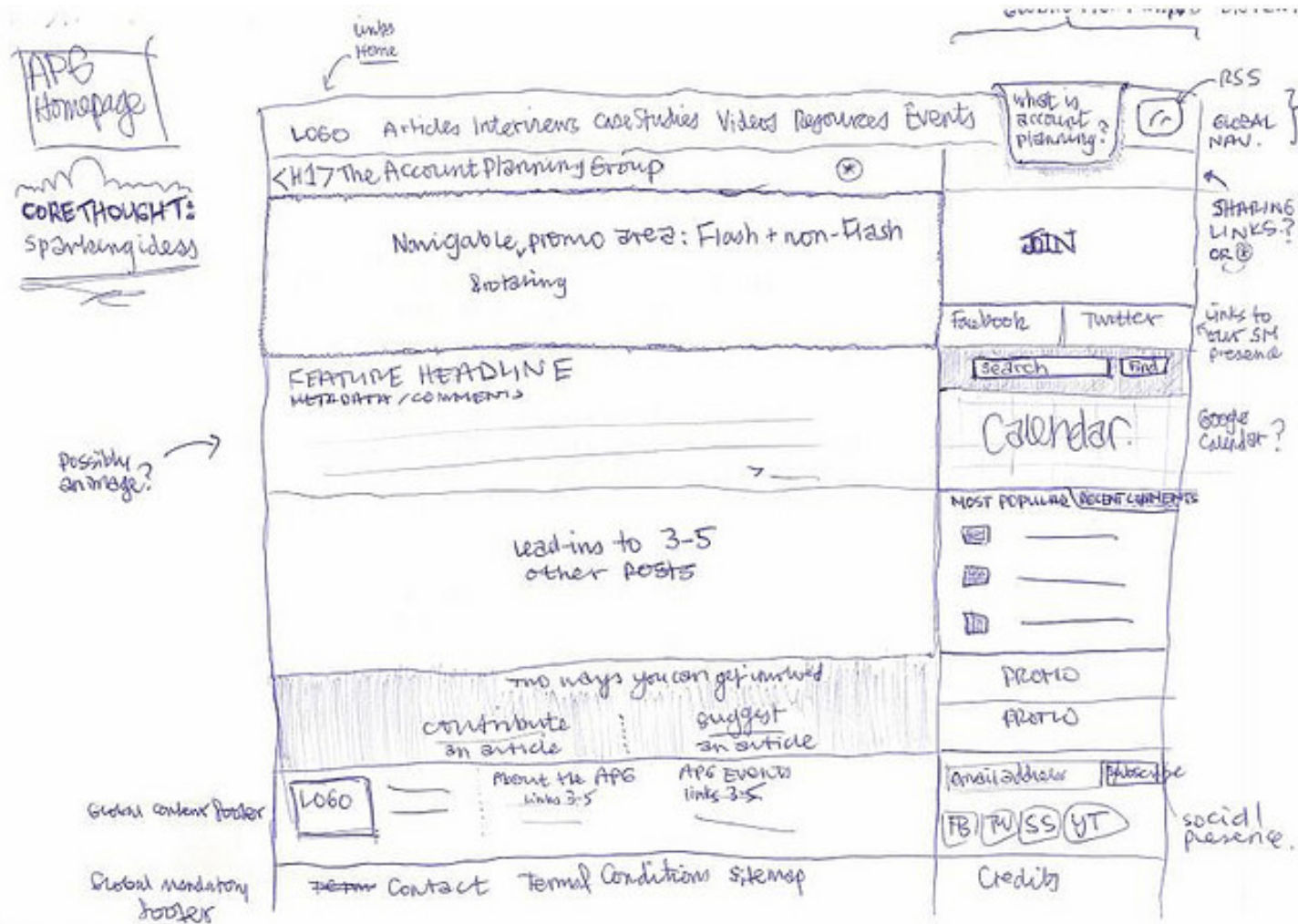


Wireframes

- **How a team designs a web site**
 - The wireframe tells the story
- **Contains important layout and content, not style**
- **No color, no graphics, no images**
- **Includes**
 - Information design (describes what's being presented)
 - Navigation design (describes links and nav menus)
 - Interface design (drop down menus, buttons, form fields)



Wireframes



Wireframes - Tools

- <https://balsamiq.com/>
- <https://www.invisionapp.com/>
- <https://www.uxpin.com/>
- <https://wireframe.cc/>
- **Remember! You can simply use paper and pencil.**



HTML

- HyperText Markup Language
- The foundation of all web pages
- Marking up text with tags
- Tags look like
 - `<tag>content</tag>`



HTML

```
<!DOCTYPE html>
```

```
<html>
```

```
  <head>
```

```
    <!-- head elements go here -->
```

```
  </head>
```

```
  <body>
```

```
    <!-- body elements go here -->
```

```
  </body>
```

```
</html>
```



HTML

- HyperText Markup Language
- The foundation of all web pages
- Marking up text with tags
- Tags look like
 - **<tag>content</tag>**



HTML

- **Paragraph**
 - `<p>` text goes here `</p>`
- **Headings**
 - `<h1>` big heading `</h1>`
 - `<h2>` smaller heading `</h2>`
 - `<h3>` even smaller heading `</h3>`
- **Divisions**
 - `<div>` contains multiple paragraphs `</div>`
- **Lists**
 - `` an ordered list `` A,B,C or 1,2,3
 - `` an unordered list `` bullets



HTML

- **Horizontal Lines**

`<hr size="10" width="10px" float="[left,right,center]">`

- **Line Break**

`
 </br>`

- **Blanks**

` `

- **Comments**

`<!-- comment goes here -->`



Basic Guidelines

- HTML commands are NOT case sensitive
 - Tip: always use lower case
- Anything in quotes might be case sensitive
 - For example, an image
 - **``**
- Spaces: Many spaces = one space
- Always use end tags
- Nested elements: From `<tag>` to `</endtag>`
- Good habit: Quote all attribute values



Terminology

- Cache: Browser cache pages. Beware when reloading. SHIFT + Reload or CTRL + Reload will force.
- "Deprecated" = no longer supported by the standard.
- It's either a TAG or it's TEXT
- There are 4 basic attributes for every tag
 - id="xxxx" – identifies it
 - class="classname" – ties it into a group for style
 - style="xxxx" – where xxx is a list of style elements
 - title="xxxx" – adds misc info to the tag



Linking

- **Hyperlink**
 - Takes the web user to another document
 - Can be on the same site, or ANYWHERE
 - Implemented via `<a>` tag ("a" is for "anchor")
 - Uses the `href="xxxxx"` attribute
 - Browser identifies Link via underscore and color
 - *Avoid `<u>` tag*
 - Cursor changes shape on "mouseover"
 - Status Bar shows URL of the link on "mouseover"



Linking

- **Managing Hyperlink Colors**
 - `<body link="xxxx", alink="xxxx", vlink="xxxx">`
 - xxxx = valid color name
- **Absolute versus Relative URL**
 - Protocol://host.domain.tld/fullpath/file.htm - absolute
 - file.htm - relative
 - Relative location set by current page OR `<base>` tag in `<head>` section
 - `<base href=http://host.domain.tld/path>`
 - No file name - uses "index.htm" or "default.htm"
- **URL**
 - Directory path – filename plus extension
- **Linking to a "marker"**
 - Defined by `id="xxxx"` attribute



Linking

```
<!DOCTYPE html>
```

```
<html>
```

```
  <head>
```

```
  </head>
```

```
  <body>
```

```
    <p>In this example, the anchor tag creates a link to another document.</p>
```

```
    <br><br>
```

```
    <p>
```

```
      <a href="http://www.colorado.edu"> CUBOULDER</a>
```

```
    </p>
```

```
  </body>
```

```
</html>
```



Images

- **Two basic types**
 - .gif – Graphics Interchange Format
 - *For illustrations*
 - *Good with large areas of contiguous color*
 - *Compresses nicely. "lossless"*
 - *Limited to 256 colors*
 - *Allows transparency*
 - *Supports animation*
 - .jpg – Joint Photographic Experts Group
 - *For photos*
 - *Good with large numbers of various colors*
 - *"lossy" compression.*
 - *Millions of colors*
 - *No transparency*
 - *No animation*



Images

- `` tag attributes
- `` as “link” (i.e. a “button”)
- ``
 ``
``



Other Formatting Tags

- **<body> attributes**
 - bgcolor="xxxx"
 - text="xxxx"
 - link, alink, vlink
 - background="image.gif"
 - topmargin="xx", leftmargin="xx"



Tables

- Used Primarily for LAYOUT options
- Rows and Columns, "cells"
- The browser will SIZE the table large enough to hold the cells' contents
- Every row gets the same number of "cell positions", whether you define or use them
- **Table Tags:**
 - `<table>` defines the table
 - `<tr>` defines a table row
 - `<th>` defines the table's header cell content
 - `<td>` defines the table's data cell content
 - `<caption>` puts some text above, outside the table



Tables

- **<table> attributes**

- bgcolor – just like <body>
- border="xx" size in pixels. Default = no border
- cellpadding="xx" size of cell space in pixels (space between cells)
- cellspacing="xx" size of cell pad in pixels (space around contents within cell)
- width="nn" (pixels or percent) Size of table



Tables

- **<tr> defines a table ROW**
- **<tr> attributes**
 - bgcolor – just like <body>
- **<td> or <th> defines a table cell**
- **<td> <th> attributes**
 - bgcolor – just like <body>
 - Colspan="nn" – number of columns cell spans
 - Rowspan="nn" – number of rows cell spans



HTML Forms

- **How are they used?**
 - Use the browser's window as a data entry screen
 - Collect information from the user
 - Pass it to the web server via http
 - Invoke a server-side script
 - Passes form data as input to the script



HTML Forms

- **Tag has several attributes – two are required**
- **ACTION**
 - `<form action="http://URL">` name of a program on the web server
 - *URL specifies the location of the executable file on the web server*
 - `<form action="mailto:mailrecipient">` sends an email
- **METHOD**
 - `<form method="GET">` or `<form method = "POST">`
 - *POST when you have large amount of data being sent, encryption available, a two-step process*
 - *GET for small amounts, no security – all in one step*
 - `<form enctype="[multipart/form-data]">` or `<form enctype="[text/plain]">`



HTML Forms

- **The <input> tag –**
 - Specifies an input field on a form
- **type attribute – tells us what kind of control**
 - Text
 - Radio
 - Checkbox
 - submit button
 - reset button



HTML Forms

- **<form> examples**

- **Text Box**

- `<input type="text" name="Name" size="20" maxlength="30">`

- **Radio Button(s)**

- `<input type="radio" name="Gender" value="M"/> Male`

- `<input type="radio" name="Gender" value="F"/> Female`

- `<input type="checkbox" name="size" value="S"/> Small`

- `<input type="checkbox" name="size" value="M"/> Medium`

- `<input type="checkbox" name="size" value="L"/> Large`

- `<input type="checkbox" name="size" value="XL"/> X-Large`



HTML Forms

- **List boxes**

```
<select name="grade" size="3"  
  <option>A  
  <option>B  
  <option>C  
  <option>D  
  <option>E  
</select>
```



HTML Forms

- **List Box via <select> tag**
 - Size attribute
 - *When absent: you get a "drop down list", first item selected by default*
 - *When present: indicates the number of items in the list*
 - Selected attribute: specifies selected item
 - Multiple attribute: when "yes", can click > 1
- `<input type = "submit" />`
- `<input type = "reset" />`
- `<textarea name = "comments" cols = "40" rows ="8">`



HTML5

- The latest evolution of the standard that defines HTML
- Contains new elements, attributes, behaviors, and additional features that allow for richer Web sites and applications.
- Examples
 - `<section>`, `<article>`, `<nav>`, `<header>`, `<footer>`, `<aside>`
 - `<audio>`, `<video>`
 - `<canvas>`
 - Improvements on forms
 - Web Sockets
- The doctype for HTML5 below indicates that your HTML content uses HTML5:
 - `<!DOCTYPE html>`



Questions?

