CS 2033

Multimedia & Communications II

LECTURE 8 – WEB LIBRARIES

Libraries

- ▶ Have you ever heard the phrase "don't re-invent the wheel"?
- ▶ We don't have to create everything in a website from scratch.
- ▶ Frameworks and libraries provide pre-programmed functions, CSS classes, and other web tools.

Libraries

- ▶ Some libraries are made for a specific purpose.
  - ▶ Leaflet is for maps
  - ▶ Owl Carousel is for carousel sliders
- ▶ Others are general purpose.
  - ▶ jQuery simplifies JavaScript
  - ▶ Bootstrap provides CSS classes, JS functions, and web modules

---

Other libraries

- ▶ Web developers nowadays use a lot of frameworks and libraries.
  - ▶ Angular
  - ▶ React
  - ▶ node.js
  - ▶ Vue.js
  - ▶ Selenium
  - ▶ etc.

---

jQuery

- ▶ jQuery is a JavaScript-based library used to simplify the code.
- ▶ It's almost like another language but it ties in closely with JS.
- ▶ Regular JS is now called vanilla JS.
- ▶ jQuery contains various shortcuts and built-in functions that help us to leave out redundant code.

---

jQuery

- ▶ Easy to access elements by tag, class, and ID with jQuery.
- ▶ $(".theClass")
  - ▶ Similar to getElementsByClassName()
- ▶ $("#theID")
  - ▶ Similar to getElementById()
- ▶ $("tag")
  - ▶ Similar to getElementsByTagName()
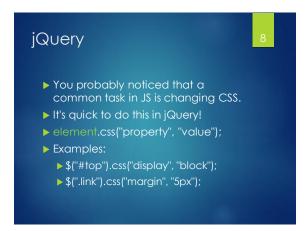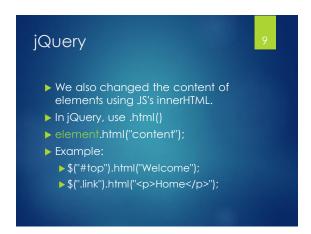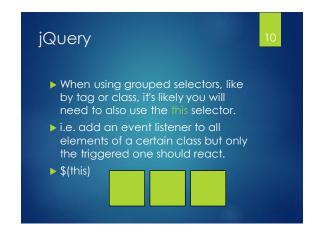
jQuery

- ▶ Use jQuery to attach event listeners to website element(s).

- ▶ element.mouseover(function() {
      // Do something.
    });
- ▶ $(".link").click(function() {
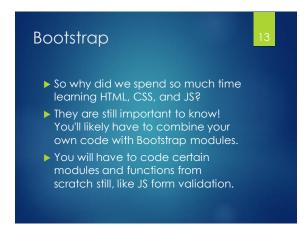   // Do something.
    });

jQuery

- ▶ You probably noticed that a common task in JS is changing CSS.
- ▶ It's quick to do this in jQuery!
- ▶ element.css("property", "value");
- ▶ Examples:
  - ▶ $("#top").css("display", "block");
  - ▶ $(".link").css("margin", "5px");

jQuery

- ▶ We also changed the content of elements using JS's innerHTML.
- ▶ In jQuery, use .html()
- ▶ element.html("content");
- ▶ Example:
  - ▶ $("#top").html("Welcome");
  - ▶ $(".link").html("<p>Home</p>");

jQuery

- ▶ When using grouped selectors, like by tag or class, it's likely you will need to also use the this selector.
- ▶ i.e. add an event listener to all elements of a certain class but only the triggered one should react.
- ▶ $(this)

jQuery

```
1   <!doctype html>
2
3 ▼ <html>
4 ▼   <head>
5       <link rel="stylesheet" href="css/styles.css">
6       <title>jQuery Example - Home</title>
        <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js"></script>
8     </head>
9
10 ▼   <body>
11
```

```
1   <!doctype html>
2
3 ▼ <html>
4 ▼   <head>
5       <link rel="stylesheet" href="css/styles.css">
6       <title>jQuery Example - Home</title>
        <script src="jquery.min.js"></script>
8     </head>
9
10 ▼   <body>
```

Bootstrap

- ▶ Bootstrap is a library for website development.
- ▶ Many pre-made modules that are free to use for anyone making a website.
- ▶ Saves us time having to write all the code for everything in a website

Bootstrap

- ▶ So why did we spend so much time learning HTML, CSS, and JS?
- ▶ They are still important to know! You'll likely have to combine your own code with Bootstrap modules.
- ▶ You will have to code certain modules and functions from scratch still, like JS form validation.

How does it work?

- ▶ They have CSS/JS files with many styles, classes, and useful functions.
- ▶ Load Bootstrap with link/script tags in your website.
- ▶ Just like you would link your own external CSS and JS files.
- ▶ You can download them to your folder or use a hosted set of files.

How does it work?

How does it work?

- ▶ Let's begin adding Bootstrap components to our website now.
- ▶ Start with a div container (like the wrapper) using the class container (fixed width) or container-fluid (full window width).
  - ▶ <div class="container">
    </div>

How does it work?

- ▶ Within the container, add any normal HTML elements like headers (h1-h6), paragraphs (p), etc.
- ▶ In this example I used a fixed width container and added an h1 and p.

My First Bootstrap Page
This is some text.

My First (Fake) Bootstrap Page
This is some text.

With Bootstrap links.   Without Bootstrap links.

Bootstrap layouts

- ▶ Remember the layout classes we used before for placing elements side by side in a grid-like formation?
- ▶ Bootstrap has something similar but **much** better than mine!
- ▶ Many more sizes so that you can have up to 12 small columns of elements across a row.

3

Bootstrap layouts

- ▶ Create a div with class: row. Within a row, add cells based on the size you desire (1 is small, 12 is large).
- ▶ Cell classes are: col-lg-1, col-lg-2, col-lg-3, col-lg-4, ..., col-lg-12.
- ▶ Sum of cell sizes in a row must = 12.

https://www.w3schools.com/bootstrap/bootstrap_grid_basic.asp

Bootstrap layouts

- ▶ You can also omit the size value and they will try to auto-size it to fill the available space.

No margins

1px margins

Bootstrap layouts

- ▶ These numbered classes are made to be the correct size on a normal desktop monitor.
- ▶ Resize the window smaller to see how they no longer fit across a row.
- ▶ These blocks were designed to work on all different screen sizes. They are responsive – more on this concept next lecture!

Bootstrap layouts

- ▶ For full control over the responsiveness, they provide 4 size classes: xs, sm, md, and lg.
- ▶ I just showed you lg but you could swap in another size to indicate which screen size it would apply to.
- ▶ Sample
  - ▶ Try resizing the window and see where each block size wraps down.

Bootstrap modules

- ▶ Now that you know the Bootstrap layout system, let's look at other useful modules in the library.
- ▶ There are many components. We'll just look at a few common ones.

Bootstrap modules

- ▶ **Navbar**
  - ▶ Navbars (navigation bars) are easy to create in Bootstrap.
  - ▶ This includes dropdown menus.
  - ▶ They are easy to customize using various built-in nav styles.
  - ▶ Sample

Bootstrap modules

- **Modal windows**
  - Pop up over the main website
  - Often a translucent tint covers the site and this window appears above it all.
  - Draws immediate attention to info contained in the window.
  - Sample

Bootstrap modules

- **Figures**
  - Images and other media may need captions underneath them.
  - Bootstrap provides CSS classes for easily creating figures and captions.
  - Sample

Bootstrap modules

- **Carousel**
  - Clean image slideshow.
  - Images slide in and out with smooth transitions.
  - Often have arrows and/or line indicators to change images manually.
  - Sample

Bootstrap modules

- Some modules are advanced and require additional libraries to work.
- i.e. Carousel requires jQuery

- Look online for more information on other components.
  - https://getbootstrap.com/docs/4.3/components/alerts/