# 10. JS Libraries & Web Site

충남대학교 컴퓨터공학과
데이타베이스시스템 연구실

# JavaScript Libraries : jQuery

- The most popular JavaScript framework on the Internet today

- It uses CSS selectors to access and manipulate HTML elements (DOM objects) on a web page

- Provides a companion UI(user interface) framework and numerous other plug-ins

- Many of the largest companies on the Web use jQuery
  - Google, Microsoft, IBM, Netflix

# JavaScript Libraries : jQuery   *Try it!*

- **What is jQuery?**
    - A lightweight, "write less, do more", JavaScript library.
    - Purpose : to make it much easier to use JavaScript on your website.
    - Takes a lot of common tasks that require many lines of JavaScript code to accomplish, and wraps them into methods that you can call with a single line of code.
    - jQuery library contains the following features
        - HTML/DOM manipulation
        - CSS manipulation
        - HTML event methods
        - Effects and animations
        - AJAX
        - Utilities

- **Tip : In addition, jQuery has plugins for almost any task out there.**

# JavaScript Libraries : jQuery (cont'd)

- **Why jQuery?**
  - There are lots of other JavaScript frameworks out there, but jQuery seems to be the most popular, and also the most extendable

- *jQuery Examples*

# JavaScript Libraries : *jQuery Mobile*

## What is jQuery Mobile?

- A touch-optimized web framework for creating mobile web applications
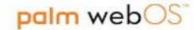- Works on all popular smartphones and tablets



- Built on top of the jQuery library, which makes it easy to learn if you already know jQuery.
- Uses HTML5, CSS3, JavaScript and AJAX to accomplish its work for laying out pages with minimal scripting

# JavaScript Libraries : jQuery Mobile (cont'd)

- **Why Use jQuery Mobile?**
  - Instead of writing one application for each mobile device or OS :
    - Android and Blackberry is written in Java
    - iOS is written in Objective C
    - Windows Phone is written in C# and .net, etc
  - jQuery Mobile solves this problem, as it only uses HTML, CSS and JavaScript, which is standard for all mobile web browsers!

- *jQuery Mobile Examples*

# JavaScript Libraries : AngularJS   *Try it!*

## ⬧ What is AngularJS?

- ○ Open source web application framework.
- ○ Was originally developed in 2009 by Misko Hevery and Adam Abrons.
- ○ Now maintained by Google.
- ○ Definition of AngularJS as put by its official document is as follows :

> *AngularJS is a structural framework for dynamic web apps. It lets you use HTML as your template language and lets you extend HTML's syntax to express your application's components clearly and succinctly. Angular's data binding and dependency injection eliminate much of the code you currently have to write. And it all happens within the browser, making it an ideal partner with any server technology.*

## ⬧ *AngularJS Examples*

# Bootstrap   *Try it!*

## 🔷 What is Bootstrap?

- A free front-end framework for faster and easier web development.
- Includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousels and many other, as well as optional JavaScript plugins.
- Gives you the ability to easily create responsive designs
  - What is Responsive Web Design?
    - About creating web sites which automatically adjust themselves to look good on all devices, from small phones to large desktops.

## 🔷 Bootstrap History

- Was developed by Mark Otto and Jacob Thornton at Twitter, and released as an open source product in August 2011 on GitHub.
- In June 2014 Bootstrap was the No.1 project on GitHub!

# Bootstrap (cont'd)

- **Why Use Bootstrap?**
  - Easy to use
    - Anybody with just basic knowledge of HTML and CSS can start using Bootstrap
  - Responsive features
    - Bootstrap's responsive CSS adjusts to phones, tablets, and desktops
  - Mobile-first approach
    - In Bootstrap 3, mobile-first styles are part of the core framework
  - Browser compatibility
    - Compatible with all modern browsers (Chrome, Firefox, Internet Explorer, Safari, and Opera)

# Web Building → Web Site

- **At W3Schools**

# Web Design

- **Designing a web site needs careful thinking and planning**

- **The most important thing is to KNOW YOUR AUDIENCE**

- **Users are Scanners**
  - **A typical visitor will NOT read the entire content of your Web page!**
  - Be sure to make your point in the very first sentence of the page! After that, try to keep the user occupied with short paragraphs, and new headers down the page

# Web Design (cont'd)

## Less is More

- Keep the paragraphs as short as possible
- Keep the pages as short as possible
- Keep the chapters as short as possible
- If you have a lot to say, break your information into smaller chunks and place it on different pages!

## Navigation

- Create a consistent navigation structure that is used by all the pages in your Web site
- If you must use hyperlinks, add them to the bottom of a paragraph, or to the menu

# Web Design (cont'd)

- ## Download Speed
  - Most visitors will leave a Web page that takes more than 7 seconds to download
  - Test your web pages over a low-speed modem connection. If your pages take a long time to download, consider removing graphic or multimedia content

- ## Let your Audience Speak!
  - Feedback is a very good thing!
  - Provide a simple way to reach you, and you will get a lot of input from people with different skills and knowledge

- ## Visitor's Monitor
  - Make sure you test your Web site on different monitors
  - Take a look at our *browser display statistics*

# Web Design (cont'd)

- ## What Browsers Do They Use?
  - Don't forget to test your Web site on different browsers
  - One wise thing to do when designing Web pages is to use correct HTML. Correct coding will help the browsers to display your pages correctly.
  - Take a look at our *browser statistics*.

- ## What Plug-Ins Do They Have?
  - Sound, video clips, or other multimedia content might require the use of separate program (plug-ins)
  - Be sure that your visitors have access to the software needed to view them

- ## What About Disabilities?
  - They might try to read your pages with Braille or speech-based browsers. Always add text alternatives for images and graphic elements

# Web Quality

- **Using the newest web standards improves the quality of your web site.**

- **Use HTML5**
  - Writing your pages to the latest HTML5 standard, brings you as close as possible to perfection.

- **Use Separate CSS Files**
  - Using CSS is the preferred way of separating content from style, in quality web pages
  - Using CSS improves the quality of web sites and increases the readability for many different browsers
  - Will greatly reduce your web site development costs

# Web Quality (cont'd)

- *Web Validation*
  - A validator is a software program that can check your web pages against the web standards
  - Make sure you make it a habit to validate all your web pages before publishing

- **The Title element**
  - The <title> element is one of the most important HTML elements
    - It will be visible in search engine lists
    - It is visible in the browser's title bar
    - It will be displayed in the user's bookmark
  - The title should be as short and descriptive as possible
  - Make sure the title matches the content the user is looking for. Then it is more likely the user will click on the link to visit your web site

# Web Quality (cont'd)

## Heading elements

- Because some web browsers display the <h1> element in a very large font by default, some web developers will use the <h2> element instead of the <h1> element for main headings
- This will confuse most search engines and other software that will try to "understand" the structure of the web page
- Try to structure your headings
- If you don't like the default size for headers, use CSS to change it.

# Web Quality (cont'd)

- **Character Sets**
  - All W3C standards (since 1996) defines an internal character set called Unicode (ISO 10646).
  - All modern web browsers are using this character set internally. Most documents transmitted over the Internet do not use the Unicode character set.
  - Because of this, browsers and servers must have a way to agree about the character set used in the communication between them.
  - For your HTML pages, always use the following meta element inside the <head> elements

    ```
    <meta charset = "x">
    ```

    - Replace x with the character set you would like to use, like ISO-8859-1, UTF-8, or UTF-16

# Web Quality (cont'd)

- **Date Formats**
  - Don't use date like "04-03-02"
  - The International Standard Organization (ISO) has defined an International format for dates as "yyyy-mm-dd", where yyyy is the year, mm is the month, and dd is the day.

# Web WAI

🔹 **WAI defines guidelines for web developers.**

🔹 **WAI  - The Web Accessibility Initiative**

- WAI (W3C, 1997) is set of guidelines intended for web developers and designers, about how to make the web accessible to people with disabilities
- The goal of these guidelines is accessibility, but they will also help make web contents available to more browsers (voice browsers, cell phones, hand-held devices), and to more users working in difficult environments (hands-free, strong light, darkness, bad sight, heavy noise)

🔹 **Remember "alt"**  `<img  src="images/banana.jpg"  alt="Banana">`

- If you use the "alt" attribute, most browsers will at least display (or read) the "alt" text.

# Web WAI (cont'd)

- ## Don't Use Small Fonts
  - Visitors with different equipment, viewing conditions, or disabilities might have difficulties reading the text.
  - Don't' force your visitors to enlarge the text size every time they visit your site

- ## Chose the Best Letter and Line Spacing

Text with extra letter spacing is easy to read.

Text with reduced letter spacing is difficult to read.

Text with good
line spacing
is easy to read.

Text with reduced
line spacing
is difficult to read.

# Web WAI (cont'd)

## Avoid Fancy Fonts

- Normal fonts are easy to read.

  *Italic fonts are not so easy to read.*

  Serif fonts are more difficult to read.

## Avoid Poor Color Contrasts

- Black text on a white background, or white text on a black background, is best for people with viewing disabilities, and for display on bad equipment.
- Grey text on a light background can give a poor contrast :

  Text color #AAAAAA on white background
  Text color #666666 on white background
  Text color #333333 on white background
  Text color #000000 on white background

# Web WAI (cont'd)

- Grey text on a dark background can also give a poor contrast :

Text color #666666 on black background
Text color #AAAAAA on black background
Text color #CCCCCC on black background
Text color #FFFFFF on black background

- Some combinations – like black and red, black and blue, yellow and green always strain the eye :

Black text on a red background

Black text on a blue background

Yellow text on a green background

# Web WAI (cont'd)

- And some combinations are not so bad :

> Black text on a grey background

> Black text on a light blue

> Black text on antique white

> White text on dark blue

## Always Set Background Color

- As a web designer, you should be aware of the fact that your visitors are able to change their default color preferences.
- If you define colors for your web elements (like header and links), you should also define the background color.

# Web Validation

- **Web Page Validator**
  - A validator is a software program that can check your web pages against the web standards
  - Make sure you make it a habit to validate all your web pages before publishing

- **Validate your HTML files with W3C**   *Try it!*

- **Validate your CSS files with W3C**   *Try it!*

# Web SEO

- **SEO – Search Engine Optimization**
  - The process of improving the ranking(visibility) of a website in search engines
  - Considers how search engines work, what people search for, and which search terms are typed.
  - Optimizing a website may involve editing the content to increase its relevance to specific keywords.

- **Submit Your site to Search Engines**
  - Web search engines (like Google) automatically add new web sites to their search index every time they crawl the web
  - Google : http://www.google.com/addurl.html
  - Yahoo : http://search.yahoo.com/info/submit.html
  - Bing : http://www.bing.com/webmaster/SubmitSitePage.aspx
  - Open Directory : http://www.dmoz.org/help/submit.html

# Web TCP/IP

- **What is TCP/IP?**
  - **T**ransmission **C**ontrol **P**rotocol/**I**nternet **P**rotocol
  - Defines how electronic devices (like computers) should be connected over the Internet, and how data should be transmitted between them
  - TCP
    - Responsible for breaking data down into small packets before they can be set over a network, and for assembling the packets again when they arrive
  - IP
    - Takes care of the communication between computers.
    - Responsible for addressing, sending and receiving the data packets over the Internet

# Web TCP/IP (cont'd)

- **TCP/IP Protocols For the Web**
  - Web browsers and servers use TCP/IP protocols to connect to the Internet
  - HTTP : Hyper Text Transfer Protocol
    - Is used for sending requests from a web client(a browser) to a web server, returning web content(web pages) from the server back to the client
  - HTTPS :Secure HTTP
    - Typically handles credit card transactions and other sensitive data
  - FTP : File Transfer Protocol
    - Takes care of transmission of files between computers

# Web TCP/IP (cont'd)

- **IP is Connection-Less**
  - With IP, messages (or other data) are broken up into small independent "packets" and sent between computers via the Internet
  - Responsible for "routing" each packet to the correct destination

- **IP Routers**
  - When an IP packet is sent from a computer, it arrives at an IP router
  - IP router is responsible for "routing" the packet to the correct destination, directly or via another router.

# Web TCP/IP (cont'd)

- ## IP Addresses
  - 32bits, or four numbers between 0 and 255, to address a computer
    - Example : 192,168.1.50

- ## Domain Names
  - Names used for TCP/IP addresses
    - Example : w3schools.com
  - When you address a web site, like http://www.w3schools.com, the name is translated to a number by a Domain Name Server(DNS)

# Web TCP/IP (cont'd)

- **TCP/IP Protocols for Email**
  - SMTP : Simple Mail Transfer Protocol
    - Takes care of sending emails
  - MIME : Multi-purpose Internet Mail Extensions
    - Lets SMTP transmit multimedia files including voice, audio, and binary data across TCP/IP networks.
  - POP : Post Office Protocol
    - Is used by email programs to retrieve emails from an email server.
  - IMAP : Internet Message Access Protocol
    - Works like the POP protocol
    - The mail difference is that the IMAP protocol will not automatically download all your emails each time your email program connects to your email server.