1 DESIGNING AND DEPLOYING A WEBSITE

HTML5 and CSS3

2 🔲 What Website Users Want

- Usability refers to how easy a website is to use
- Critical for an effective website
- The user's goal is to find the information and/or do the task as quickly and easily as possible

3 How Users Interface with Your Website—Page 1

- Users *scan* the page to find:
 - What they are looking for ...
 - Or a *link* to what they are looking for
 - They often click on links and buttons "hoping" to find what they are looking
 - They often click the <Back> if they do not find it

4 How Users Interface with Your Website—Page 2

- Users do not like to scroll up and down
- They do not like to take a lot of time to find what they are looking for
- If they get frustrated, they leave the website

5 Three Guidelines for Better Usability

- 1. Present all critical information "above the fold"—the content visible on the screen when a new page is displayed
 - So that most often the user will not have to scroll
- 2. Group related items together into separate components—limit number of components on page
- Makes the page more manageable and information easier to spot
- 3. Adhere to "current website conventions" for users (next slides)

6 Current Conventions for Usability

- When websites implement current conventions for usability, users can implement the same techniques on your site as they do on others
- Current conventions should include:
 - 1. Header conventions
 - 2. Navigation convention
- 7 Header Conventions
 - The header should consist of:
 - A logo
 - A "tag line" which identifies what is unique about a website
 - Utilities like creating and/or signing into an account
 - A search function which would consist of a text box followed by a search button

(optional)

• A navigation bar with links that divide site into its major sections

8 Navigation Conventions

- Navigation conventions include:
 - Underlined text always is a link (do not underline anything else)
 - Images that are close to short phrases are clickable
 - Short text phrases in columns are clickable (like a rollover menu)
 - Clicking on a "cart" symbol should take the user to the shopping cart
 - Clicking on the logo in header on any page should take user to the homepage

9 Responsive Web Design—Page 1

- Responsive Web Design (RWD) refers to the practice of creating websites that adapt easily to all viewing mediums
 - Full-size screens, tablets, phones, etc.
- The overall look-and-feel of the website remain consistent from one screen size to another

10 Responsive Web Design—Page 2

- The three components of RWD are:
 - 1. Use a fluid layout to adjust width of web pages and their structural elements to the size of the screen
 - 2. Use "media queries" (the website "queries the device" to see what type it is and moves elements around accordingly)
 - 3. Use scalable images so that the images scale to the size of the element in which they are contained
- 11 D Think "Mobile" from the Start
 - Use either Responsive Web Design or build a separate website for mobile devices
 - For new websites, RWD is best solution
 - For older large legacy websites, a separate mobile website may be a better solution at least in the short term

12 - "Sell the Site" on Your Homepage—Page 1

- Nine guidelines for an effective homepage:
 - 1. Most important is to emphasize what your site offers that is valuable and how your site differs from other sites
 - 2. Emphasize the highest priority tasks so users have clear understanding what they can do
 - 3. Waste of space to "welcome" users to site

13 - "Sell the Site" on Your Homepage—Page 2

- Nine guidelines for an effective homepage (con.):
 - 4. Group similar items in the navigation area

- 5. Only use icons for navigation if users will understand and recognize them clearly
- 6. Design the homepage so that it is different from all other pages on the site

14 🔲 "Sell the Site" on Your Homepage—Page 3

- Nine guidelines for an effective homepage (con.):
 - 7. Do not include "active" link (looks purple) to home page on the home page
 - 8. Code the "title" element as the organization name followed by a short description (eight of fewer words and 64 or fewer characters)
 - 9. If the site provides shopping, include a link to the "shopping cart"

15 🔲 Let Users Know Where They Are—Page 1

- Letting users know "where they are" is one of the current conventions for websites
 - Especially when the site gets more complicated
 - Users reach your site via a search engine and may not arrive at home page
- Highlight links that led the user to current page

16 Let Users Know Where They Are—Page 2

- The heading for the page should be the same as the link that led to it
- Provide "breadcrumbs" in the format:
 - Prof. Struck's Homepage > CST161 > Schedule of Topics

17 🔲 Make the Best Use of Space

- Keep the header relatively small
- The most valuable space on each web page is the space above the "fold"
 - The visible part when the page loads
 - Prioritize the components for each page
 - Give most important components the primary locations (above the fold)

18 Divide into Smaller Chunks

- Remember that users do not like to "scroll"
 - Limit amount of scrolling to $1\frac{1}{2}$ to 2 times the height of the output window
- Chunking refers to the division of content into smaller chunks:
 - Using links to separate web pages
 - Or in separate components on the same page commonly using features like:
 - Accordions: https://www.w3schools.com/howto/howto js accordion.asp
 - Tabs: <u>https://www.w3schools.com/howto/howto js full page tabs.asp</u>

19 Principals of Graphics Design—Page 1

- Even designers who are not graphics designers should know basic graphics design principals and typography
- The four basic principals of graphics design are:
 - 1. Alignment—related items on the same page should line up with each other
 - 2. Proximity-related items should be close together
 - 3. Repetition—repeat some elements from page to page to give them continuity

4. Contrast—stands out to draw user's eye to what is different on each page

20 Principals of Graphics Design—Page 2

- Typographical guidelines include:
 - Limit the line length of paragraphs to 65 characters
 - Use a sans serif font with a size that is large enough for easy reading
 - Show relationship between headings and following text by keeping them close
 - Use dark text on a light background (do not use *reverse typing*, e.g. white type on colored background)
 - Do not use an image for the background
 - Exclusive of page headings, do not center or justify text

21 Write for the Web—Page 1

- Instead of reading it, users skim and scan the website
- Principals for writing for the web:
 - The quickest way simply is to use fewer words
 - Use an "inverted pyramid" style so most important information appears first
 - Use headings and subheadings to identity portions of text
 - Use bulleted and numbered lists to make information more accessible (instead of paragraphs)
- 22 Write for the Web—Page 2
 - Principals for writing for the web (con.):
 - Use tables for "tabular" information only (not layout)
 - Do not use all caps for headings (best to capitalize the first letter plus any required capitalization)
 - Make the text for all links as explicit as possible
 - Limit the line length of paragraphs to 65 characters

23 Lifecycle of a Website

- The lifecycle of all systems including a website is:
 - Design—define the overall layout and create the critical web pages
 - Implement—develop remaining web pages, deploy to server, test and launch
 - Maintain—often maintaining involves much more time than developing it, usually many years

24 Procedure for Design—Page 1

- The general procedure for designing a website:
 - 1. Define the audience and set the goals for the website
 - Start by learning about the company or organization
 - Market research to learn about target audience
- 25 Procedure for Design—Page 2
 - The general procedure for designing a website (con.):

- 2. Develop a site map
 - Shows all the pages required by the website
 - · Second level represents links in homepage's navigation bar in the header
 - Contents below that level are pages accessed by links on second level
 - Can be created using free or commercial software

26 Procedure for Design—Page 3

- The general procedure for designing a website (con.):
 - 3. Critical pages are *wireframed* (sketched) in black and white, either drawn by hand, or using free or commercial software
 - Start with homepage and one primary content page
 - Once approved move on to other critical pages

27 Procedure for Design—Page 4

- The general procedure for designing a website (con.):
 - 4. Illustrate the critical pages in full color by either:
 - Using a software program like Photoshop
 - Create pages using HTML and CSS with a software program like Dreamweaver (gives a head start on implementing pages)

28 Procedure for Implementation

- The general procedure for implementing a website:
 - 1. Develop the HTML and CSS templates for the pages
 - The *template* is the basic structure the majority of documents should follow, as well as other extra elements to help manage the documents
 - 2. Develop the web pages
 - 3. Deploy the site to a web server
 - 4. Test and launch the website

29 🔲 Procedure for Maintenance

- The general procedure for maintaining a website:
 - 1. Plan the changes
 - 2. Design the changes
 - 3. Implement the changes
 - 4. Test and launch the changes

30 🔲 Making Websites Easier to Maintain

- Websites can be made easier to maintain:
 - Use HTML for content and CSS for layout and formatting
 - Use tables only for "tabular" information, not for layout
 - Not using frames
 - Getting the design correct before starting implementation
- 31 🔲 Development Teams—Page 1

- In large organizations, website usually designed and implemented by a team
 - In small organizations, one person often does everything
- Development team often works with others who review and evaluate work, such as managers, marketing specialists, customers and/or potential users

32 Development Teams—Page 2

- Term web designer often is confused with the term graphics designer
 - Web designer—participates in all phases of web design
 - Graphics designer—involved in a relatively small part of web design focusing on graphics that make web pages look more inviting and work better

33 Development Teams—Page 3

- 1 Members of *design* team for may include:
 - Web designers
 - Writers
 - Marketing specialists
 - Graphic designers
- 2 Members of the *implementation* team may include:
 - HTML and CSS specialists
 - Client-side programmers
 - Server-side programmers
 - Database administrator
 - Network administrator

34 🔲 Top-Down Design

- When *top-down designing* a website, design the most critical pages first, get approval for those, then the next most critical and get approval, etc.
 - Work on one set of pages at a time
 - For example, most critical pages for a commercial site often are home page and product pages, followed by the "Shopping Cart" and "Checkout" pages
- Implies that a site map for the entire site does not have to be completed before design begins on the critical page

35 Prototyping Web Pages—Page 1

- *Prototyping* involves developing a "working model" of the critical pages early in design process (incomplete pages)
- Reviewers then can "run" the pages and see how they work
 - Catches errors and concerns early in design process

36 Prototyping Web Pages—Page 2

- Often used in combination with top-down design so that the most important pages are prototyped first
- When design is complete and approved, prototype can be built into the actual website, or discarded and website built in a more permanent way

37 Deployment

- Deployment is the process of moving website from a local environment to live servers
- Five possible steps to deploying a website are:
 - Preparation—creating web pages, getting a web host and domain name, etc.
 - Set up DNS (Domain Name System) records-a database record that maps a URL to an IP address
 - Set up a live testing site (not live to the public)
 - Set up email accounts
 - Backup (a full backup including databases) and "go live"

38 Web Hosting Services—Page 1

- A web host is a server computer connected to the Internet
- For a fee, a web host is used to make website accessible via the Internet
 - Find one that fits your needs by doing a web search (could be as little as \$5 per month or more, some free)
 - Besides disk space, site may need a database server and a server-side programming language, e.g. PHP, JSP (Java Server Pages) or ASP.NET
 - Also provided may be access to an FTP (File Transfer Protocol) account that provides a way to upload (and download) your files to and from web host

39 🔲 Web Hosting Services—Page 2

- Once you have a web host, you will be given an *IP address* in the format 64.46.106.120 which can be used initially to access the website
 - The Internet uses IP addresses for accessing websites
- Later you will receive a domain name which most people use to access your website

40 Web Hosting Services—Page 3

- Some popular commercial web hosting services:
 - Bluehost
 - SiteGround
 - HostGator
 - A2 Hosting
- InMotion Hosting
- DreamHost
- WPEngine (for WordPress hosting)
- DigitalOcean (cloud hosting)
- Amazon Web Services (AWS)
- Google Cloud Platform (GCP)
- Microsoft Azur

41 Domain Names—Page 1

• The *domain name* is a user-friendly name for locating a resource on the Internet, e.g.

"www.google.com"

• The domain name can have one or more *subdomains*, e.g. "mail.google.com"

42 Domain Names—Page 2

- Popular extensions for domain names:
 - .com—originally intended for commercial websites
 - .net—intended for network infrastructure websites
 - .org-to be used for other types of organizations
 - .edu—designed for educational institutions
 - Many countries have extensions for websites within their boundaries, e.g ".uk" is Great Britain

43 Domain Names—Page 3

- The domain name is *linked* to the IP address in the *domain name registry* which is a database of all domain names
 - Stored in multiple servers around the world
- Start by searching for a domain name that has not yet been registered and then have your web hosting service register the name for you

44 🔲 File Transfer Protocol—Page 1

- FTP (File transfer protocol) is the protocol designed for transferring files to and from the Internet
- Just like HTTP (Hypertext Transfer Protocol) it is used for accessing documents on the World Wide Web

45 🔲 File Transfer Protocol—Page 2

- An FTP program carries out the work of transferring files
 - May be a simple stand-alone application that runs in Windows, Mac and Linux like WS-FTP or FileZilla
- Some IDEs like DreamWeaver and VisualStudio have their own FTP client built into the application

46 - FTP Applications—Page 1

- Most FTP programs have a dialog window for connecting to the website, define the host name, and set up a username and a password
 - In FileZilla it is called "Site Manager"
 - Additional settings can be configured here as well

48 FTP Applications—Page 2

- The application usually has two sub-windows
 - On the left the directories on your local *client* computer
 - On the right the website folders on web server
- Drag files back and forth to upload and download them
- There also is access to most file processing actions, e.g. copy, move, delete, rename,

etc. (both on the server and on the client)

50 🔲 Testing an "Updated" Web Document

- For a web document that has just been added to the site:
 - In a web browser, go to the home page and navigate to the web document using every route available to reach it
 - Review that it is there and that all content is working including images as well as JavaScript and jQuery features
 - Test all links to see that they work correctly
 - Retest in multiple browsers to make sure it works correctly there as well

52 Getting into Search Engines

- Most major search engines used to have a page where you could directly submit your website
- This information is still in the textbook but it is not true anymore

53 🔲 Controlling Pages Visited and Indexed—Page 1

- There may be pages that should not be indexed and visited directly, e.g. the shopping cart and/or checkout page
- Also, you do not want deleted pages to remain indexed (even though it may take a few days or possibly weeks before robots re-index them)

54 Controlling Pages Visited and Indexed—Page 2

- You can set up a "robots.txt" file in the website *root folder* that specifies which of the folders or even individual files should not be indexed
 - For example the following tells search engine robots not to index one folder (/cart/) and one file (private.html):

User-agent: *

Disallow: /cart/

Disallow: /backlist/private.html

55 Controlling Pages Visited and Indexed—Page 3

- Another way of stopping a robot from indexing a page is to set up robots meta tags with a content attribute set with the following values:
 - "noindex"—do not index the page
 - "nofollow"—do not follow links on the page <meta http-equiv="robots" content="noindex, notfollow">

56 Controlling Pages Visited and Indexed—Page 4

• To redirect a user from a deleted page to a current page (until the site is re-indexed) add a "refresh" meta tag, e.g.

<meta http-equiv="robots" content="0" url="..currentpage.html">

- Attribute and value content="0" means redirection be done immediately
- Keeps users from seeing HTTP status code message "404 Page Not Found"

• Not all browsers support the "refresh" meta tag

57 🔲 Maintain a Healthy Website—Page 1

- Even for tested and deployed websites, more can be done to improve their effectiveness, e.g.
 - Improve search engine rankings
 - Improve user accessibility

58 Maintain a Healthy Website—Page 2

- There are a number of free and commercial web-based tools to check and maintain website "health"
 - Google Webmaster—free tool that analyzes and reports on the site's search appearance, traffic, crawl statistics, security issues and more
 - www.google.com/webmasters/tools/home?h1=en
 - SiteImprove—a commercial service for larger websites that check for accessibility issues, spelling errors, broken links, site downtime and more
 - <u>www.siteimprove.com</u>

59 Maintain a Healthy Website—Page 3

- Tools to check and maintain website "health" (con.)
 - Hubspot's Marketing Grader—free tool reports on the website's social media presence, blog activity, email marketing campaigns and even mobile responsiveness
 marketing.grader.com

60 🔲 Maintain a Healthy Website—Page 4

- Tools to check and maintain website "health" (con.)
 - FreeGrader and Woorank—provide free scores on accessibility, user experience, marketing and technology with suggestions for improvement
 - nibbler.silktide.com
 - <u>www.woorank.com</u>