ASU W. P. CAREY SCHOOL of BUSINESS
ARIZONA STATE UNIVERSITY

CIS 300
Web Design and Development

Chapter 1 | Internet & Web Basics
Key Concepts

Learning Outcomes

- Describe the evolution of the Internet and the Web
- Explain the need for web standards
- Describe universal design
- Identify benefits of accessible web design
- Identify reliable resources of information on the Web
- Identify ethical use of the Web
- Describe the purpose of web browsers and web servers
- Identify Internet protocols
- Define URIs and domain names
- Describe XHTML and HTML
- Create your first web page
- Use the body, head, title and meta elements
- Name, save, and test a web page

The Evolution of the Internet

- Internet
  - Interconnected network of computer networks
  - ARPAnet
    - Advanced Research Project Agency
    - 1969 – four computers connected
  - NSFnet
    - National Science Foundation
  - Use of the Internet was originally limited to government, research and academic use
  - 1991 Commercial ban lifted

The World Wide Web

- Inventor of the World Wide Web
  - Tim Berners-Lee
- How do you access the World Wide Wrb?
  - Browser
  - The graphical user interface to information stored on some of the computers connected to the Internet.

Convergence of Technologies

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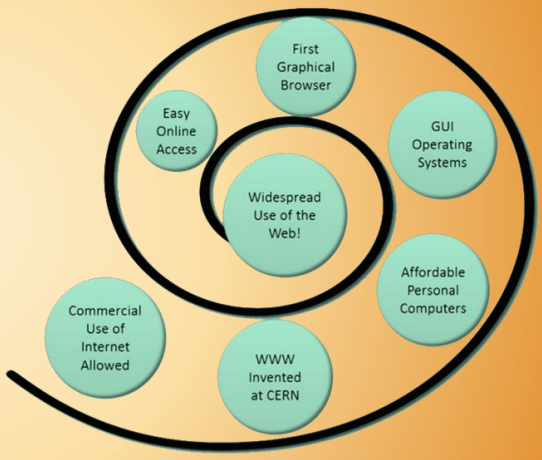
- Removal of the ban on commercial activity
- Development of the World Wide Web at CERN
- Development of Mosaic, the first graphics-based web browser at NCSA
- Affordable personal computers with GUI operating systems
- Affordable Internet Service Providers



Web Standards and the W3C Consortium

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- W3C – World Wide Web Consortium
  - Develops recommendations and prototype technologies related to the Web
  - Produces specifications, called Recommendations, in an effort to standardize web technologies
  - WAI – Web Accessibility Initiative

Web Accessibility

"The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect." – Tim Berners-Lee

- Accessible Websites
  - Provide accommodations that help individuals with visual, auditory, physical, and neurological disabilities overcome barriers.
- WAI – Web Accessibility Initiative
  - Develops accessibility recommendations
- WCAG 2.0
  - Web Content Accessibility Guidelines http://www.w3.org/WAI/WCAG20/quickref/

Web Accessibility

- Americans with Disabilities Act
  - 1990
  - Prohibits discrimination against people with disabilities and applies to Internet resources.
- Section 508 of the Rehabilitation Act
  - Requires that government agencies must give individuals with disabilities access to information technology that is comparable to the access available to others

Universal Design

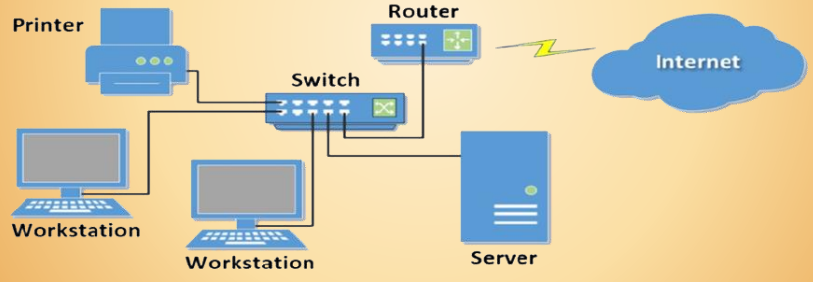
"The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design."

– The Center for Universal Design
http://www.design.ncsu.edu/cud/about_ud/about_ud.htm

THE CENTER FOR UNIVERSAL DESIGN
Environments and Products for All People

Network Overview

- Network
  - Two or more computers connected together for the purpose of communicating and sharing resources



The Client/Server Model

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- Client/Server can describe a relationship between two computer programs – the "client" and the "server".
- Client
  - Requests some type of service (such as a file or database access) from the server.
- Server
  - Fulfills the request and transmits the results to the client over a network

The Client/Server Model

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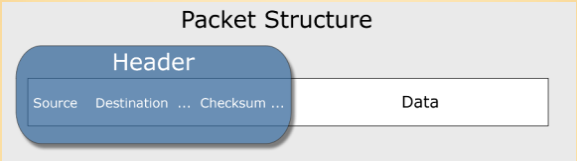
- The Internet
  Client/Server Model
  - Client: Web Browser
  - Server: Web Server

Internet Protocols

- Protocols
  - Rules that describe the methods used for clients and servers to communicate with each other over a network.
- There is no single protocol that makes the Internet and Web work.
- A number of protocols with specific functions are needed.

Common Internet Protocols

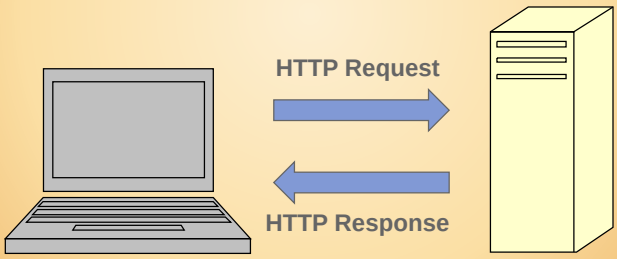
- Official Communication Protocol: TCP/IP



- Specialized Protocols:
  - File Transfer: FTP
  - E-mail: SMTP, POP3, IMAP
  - Websites: HTTP

HTTP - Hypertext Transfer Protocol

- A set of rules for exchanging files such as text, graphic images, sound, video, and other multimedia files on the Web.
- Web browsers send HTTP requests for web pages and their associated files.
- Web servers send HTTP responses back to the web browsers.



IP Address

- Each device connected to the Internet has a unique numeric IP address.
- These addresses consist of a set of four groups of numbers, called octets.

  74.125.73.106 will get you Google!
  104.16.50.14 will get you to ASU!

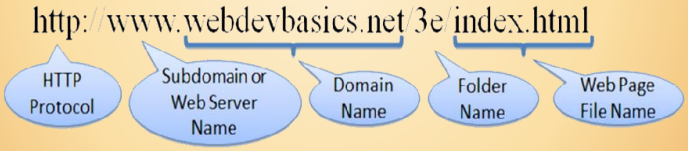
- An IP address may correspond to a domain name.

Domain Name

- Locates an organization or other entity on the Internet
- Domain Name System
  - Divides the Internet into logical groups and understandable names
  - Associates unique computer IP Addresses with the text-based domain names you type into a web browser
    - Browser: http://google.com
    - IP Address: 74.125.73.106

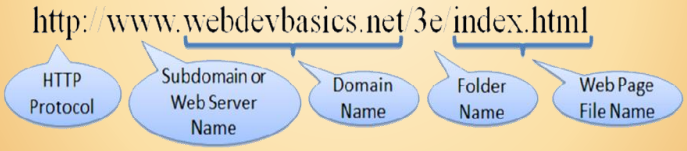
URI - Uniform Resource Indicator

- URI
  - Uniform Resource Locator
- URL
  - Uniform Resource Locator
  - Represents the address of a resource on the Internet.



TLD - Top-Level Domain Name

- A top-level domain (TLD) identifies the right-most part of the domain name.
- Some generic TLDs:
  .com, .org, .net, .mil, .gov, .edu, .int, .aero, .asia, .cat, .jobs, .name, .biz, .museum, .info, .coop, .pro, .travel



NEW gTLDs!

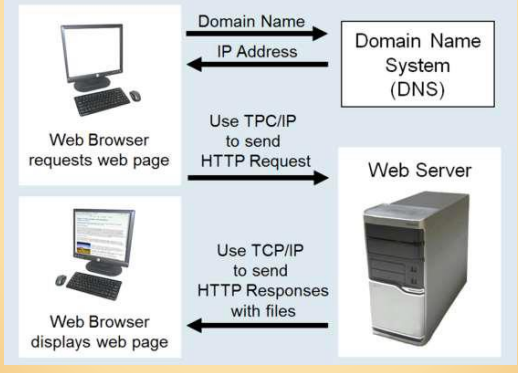
- ICANN accepted proposals for almost 2000 new gTLDs in 2012.
  - A wide variety of new gTLDs were proposed
  - Some of the first new gTLDs to become available included .bike, .guru, .holdings, .clothing, .singles, .ventures, and .plumbing.
  - ICANN has set a schedule to periodically launch new gTLDs.
  - Visit http://newgtlds.icann.org/en/program-status/delegated-strings for a list of new gTLDs.

Country Code TLDs

- Two character codes originally intended to indicate the geographical location (country) of the web site.
- In practice, it is fairly easy to obtain a domain name with a country code TLD that is not local to the registrant.
- Examples:
  - .tv, .ws, .au, .jp, .uk
  - See http://www.iana.org/domains/root/db for a list of TLDs.

Domain Name System

- The Domain Name System (DNS) associates Domain Names with IP addresses.



Markup Languages

- SGML – Standard Generalized Markup Language
  - A standard for specifying a markup language or tag set
- HTML – Hypertext Markup Language
  - The set of markup symbols or codes placed in a file intended for display on a web browser.
    - Element or tag – individual markup code
    - Attribute – modifies the purpose of a tag

Markup Languages

- XML – eXtensible Markup Language
  - A text-based language designed to describe, deliver, and exchange structured information.
  - It is not intended to replace HTML – it is intended to extend the power of HTML by separating data from presentation.

Markup Languages

- XHTML – eXtensible Hypertext Markup Language
  - Developed by the W3C as the reformulation of HTML 4.0 as an application of XML.
  - It combines the formatting strengths of HTML 4.0 and the data structure and extensibility strengths of XML.

Markup Languages

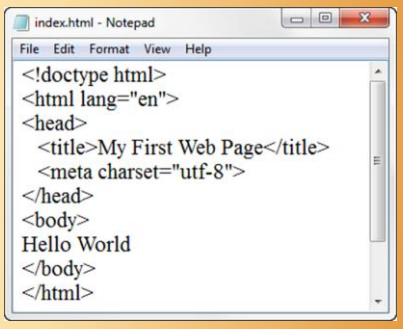
- HTML5
  - The next version of HTML 4 and XHTML 1
    - Incorporates features of both HTML and XHTML
    - Adds new elements
    - Eliminates some elements
    - Intended to be backward compatible
  - http://www.w3.org/html/

HTML5 Web Page


```
<!DOCTYPE  html>
<html lang="en">
<head>
     <title>Page Title Goes Here</title>
     <meta charset="utf-8">
</head>
<body>
    <p>Hello World!</p>
</body>
</html>
```


Under the Hood of a Web Page

- DTD – describes the markup language syntax
- HTML element– contains the web page document
- Head element – contains the head section
  - The head section contains information that describes the web page document
  - Title element– Text displays in title bar of window
  - Meta element – describes the character encoding
- Body element – contains the body section
  - The body section contains the text and elements that display in the browser viewport.

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