

# Basics of Web Design

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 URLs 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

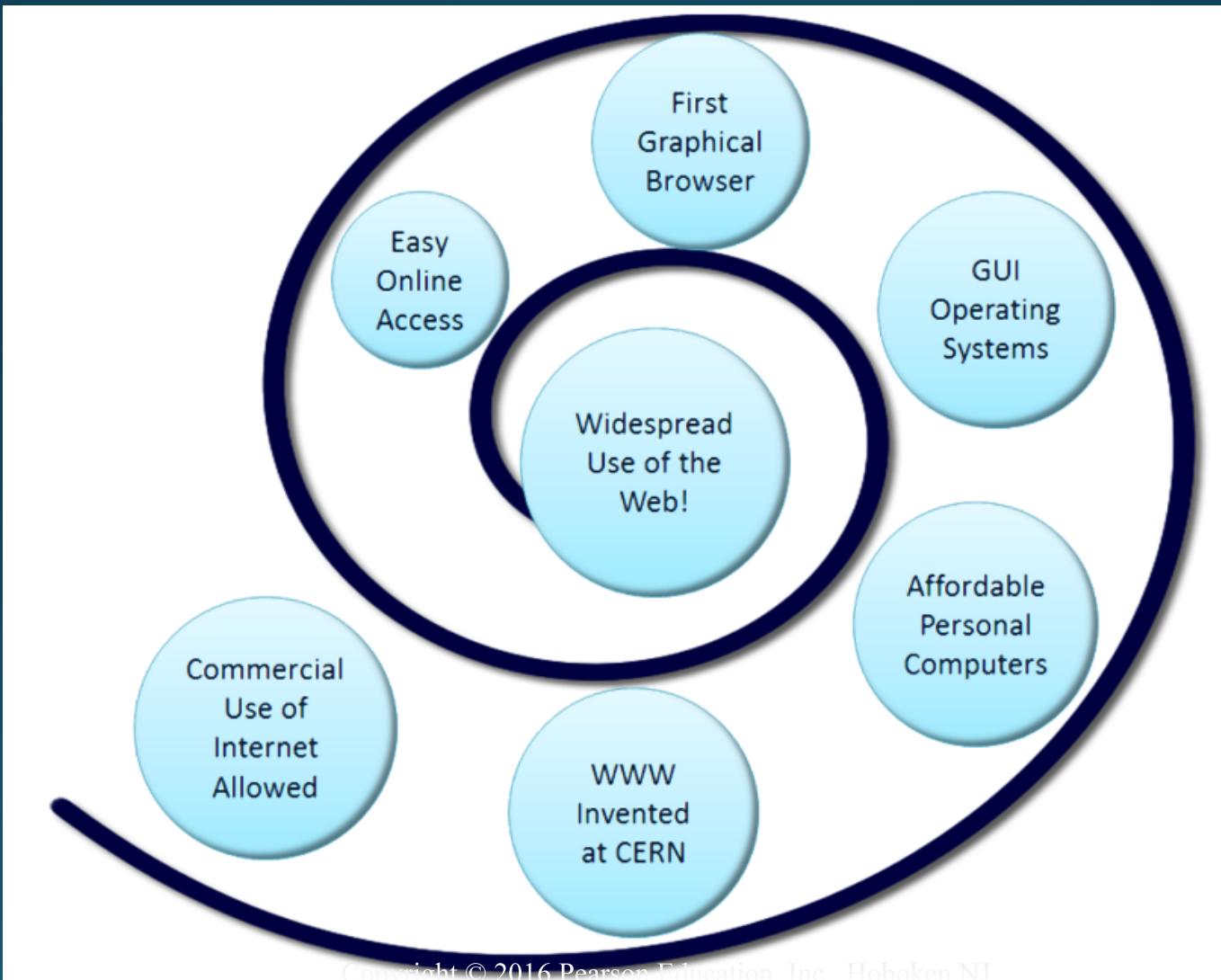
- Internet
  - Interconnected **net**work of computer networks
  - ARPAnet
    - Advanced Research Project Agency
    - 1969 – four computers connected
  - NSFnet
    - National Science Foundation
  - Use of the Internet was originally limited to government, research and academic use
  - 1991 Commercial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

# The World Wide Web

The graphical user interface to information stored on some of the computers connected to the Internet.



# Convergence of Technologies



# Convergence of Technologies

- 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

## 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 to 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

## 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

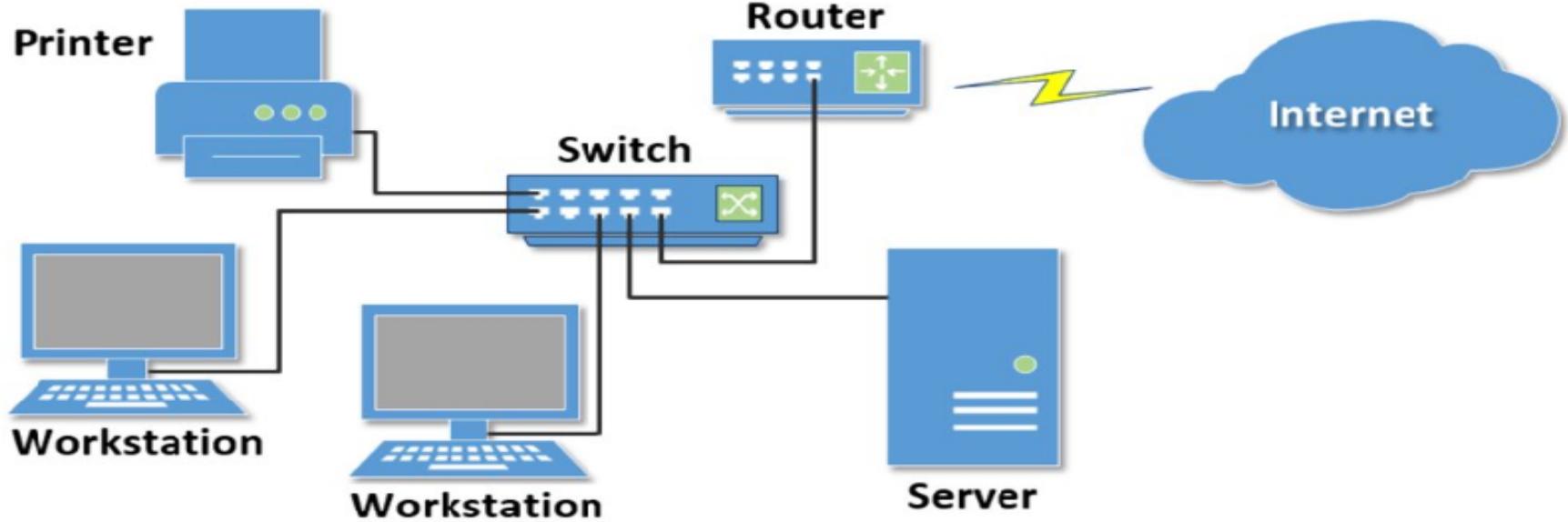
# Universal Design

“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](http://www.design.ncsu.edu/cud/about_ud/about_ud.htm)

# Network Overview



## Network

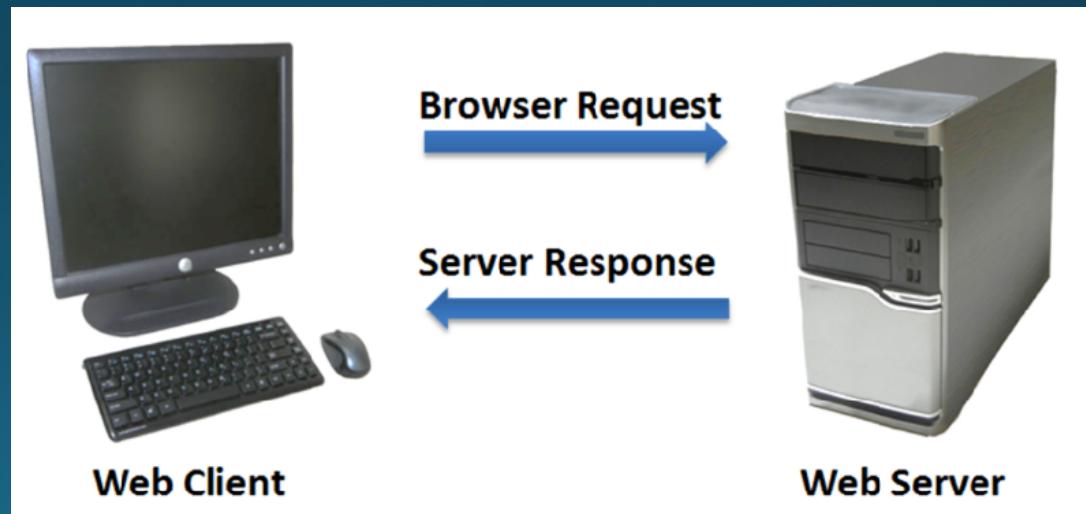
two or more computers connected together for the purpose of communicating and sharing resources

# The Client/Server Model

- 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

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

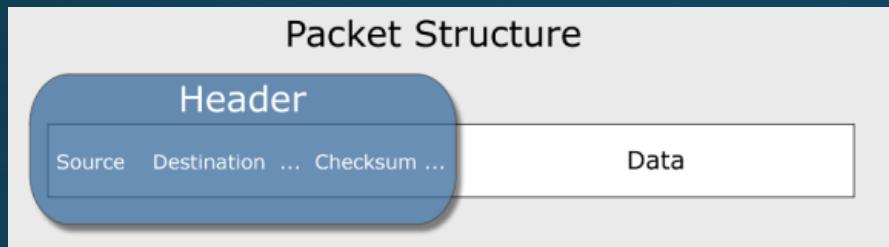


# Internet Protocols

- 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

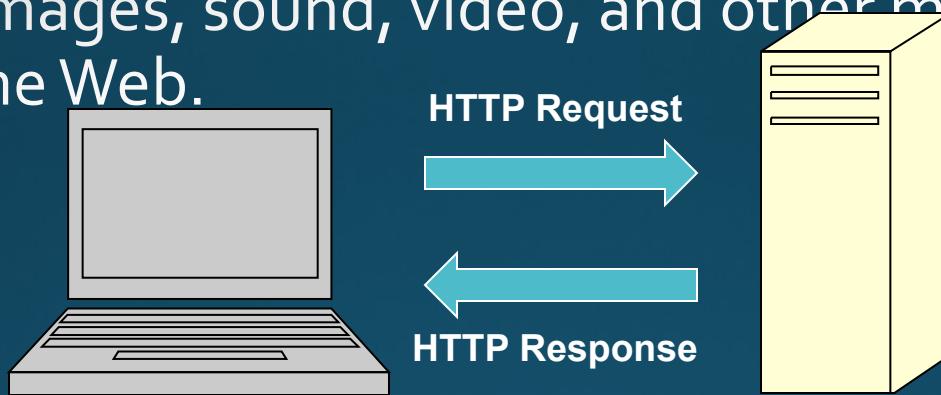
- Official Communication Protocol: TCP/IP



- 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!

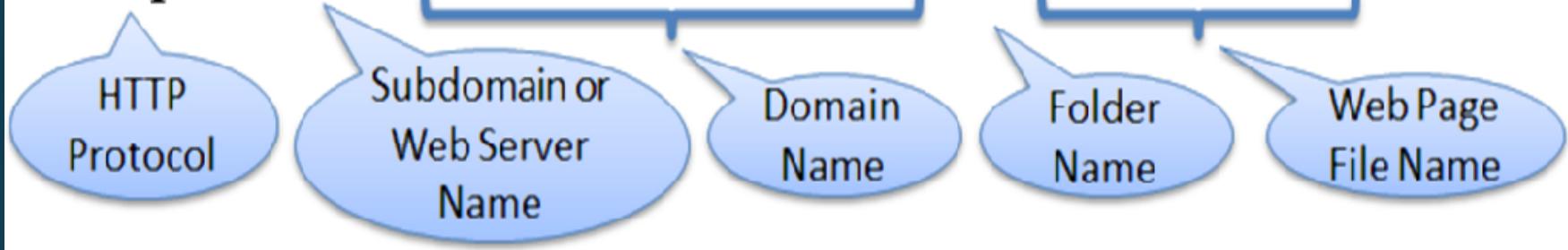
- An IP address may correspond to a domain name.

# 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

`http://www.webdevbasics.net/3e/index.html`



## 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!

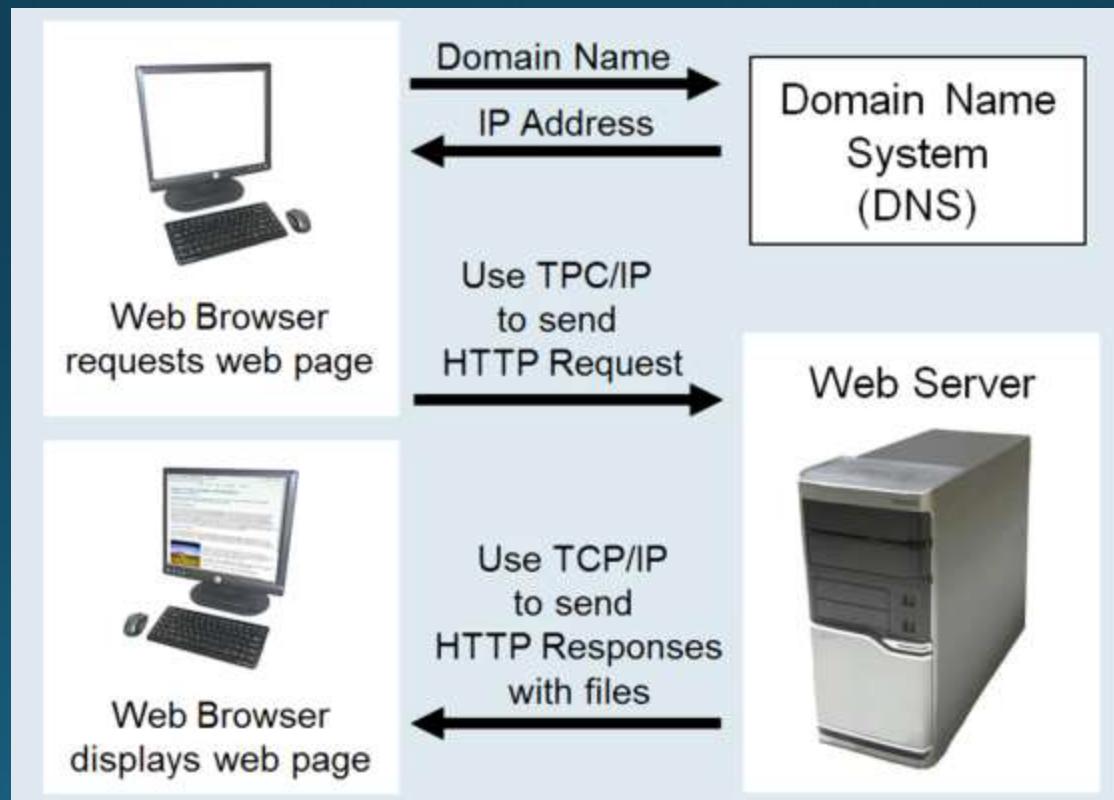
- ICANN accepted proposals for almost 2000 new gTLDs in 2012.
  - A wide variety of new gTLDs were proposed
  - Some of the first new gTLDs to become available included .bike, .guru, .holdings, .clothing, .singles, .ventures, and .plumbing.
  - ICANN has set a schedule to periodically launch new gTLDs.
  - 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.



# Information on the Web

- Reliability and information
  - Evaluate the credibility of the site
- Ethical use of information
  - Copyright and the Web



# 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 (2)

- 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 (3)

- 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 (4)

## ◎ HTML 5

> The next version of HTML 4 and XHTML 1

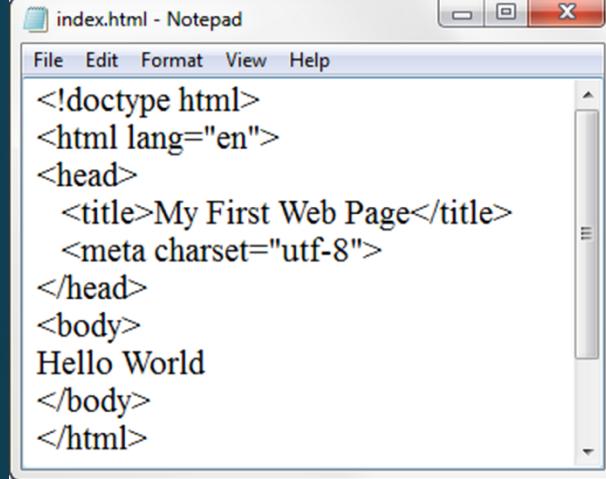
- Incorporates features of both HTML and XHTML
- Adds new elements
- Eliminates some elements
- Intended to be backward compatible

> <http://www.w3.org/html/>



# Your First HTML5 Web Page: index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Page Title Goes Here</title>
  <meta charset="utf-8">
</head>
<body>
  ... body text and more HTML tags go here ...
</body>
</html>
```



The image shows a screenshot of a Windows Notepad window titled "index.html - Notepad". The menu bar includes File, Edit, Format, View, and Help. The main content area contains the following HTML code:

```
<!doctype html>
<html lang="en">
<head>
  <title>My First Web Page</title>
  <meta charset="utf-8">
</head>
<body>
Hello World
</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.

# Summary

This chapter provided a brief overview of Internet, Web, and introductory networking concepts along with your very first web page.