

Rebecca Hall  
Instructor



# Web Development

## How the Web Works

---

---

---

---

---

---

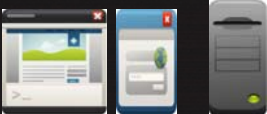
---

---

### How the Web Works

WWW – part of the Internet (others: Email, FTP, Telnet)

- Loaded to a Server | Viewed in a Browser (Client)



**Clients / Server**

- Client: Request & Render Content  
Browsers, mobile devices, screen readers
- Server (server software): Applications that deliver web content or services – HTTP, FTP, mail servers (POP), DB servers, name servers (DNS), application servers (PHP)

---

---

---

---

---


---

---

---



### How the Web Works

#### Browsers



Browser Components: Browser UI | Internal Engine | Rendering Engine | Networking | Data Storage | JavaScript Interpreter

#### RENDERING ENGINES

TRIDENT	GECKO	PRESTO	WEBKIT	BLINK
				
Developed by Microsoft: Internet Explorer, Windows Mobile, AOL	Open Source Originally developed by Netscape: Mozilla Firefox Firefox OS	Developed by Opera (now using Blink): Opera Opera Mobile	Open Source Developed by Apple, Google, Nokia: Safari, Android and many other mobile browsers	Based on Webkit Developed by Google: Chrome Opera 14+ Android 4.4+

---

---

---

---

---

---

---

---

# How the Web Works

## Basic Web Server

Computer running server software that can handle HTTP requests

### Popular Server Software Options

- Apache (open source)
- Microsoft Internet Information Services (IIS)

## Server



## Other Servers

Other Server Applications that deliver web content or services - FTP, mail servers, DB servers, name servers, application servers

## Web Stack:

Operating System | Web Server | Database Server | Programming Language  
Ex: LAMP: Linux | Apache | MySQL | PHP

---

---

---

---

---

---

---

---

WWW / Web docs - Based on HTTP | HYPERTEXT | HTML

## HTTP: Hypertext Transfer Protocol

The protocol or rules that specify how information is requested and sent between web server and client

(Protocol: Standardized format for transferring data between devices – Others: FTP, SMTP (Simple Mail Transfer Protocol), POP (Post Office Protocol) RTP (real-time Transfer Protocol)–video)



HTTP Client



HTTP Server

---

---

---

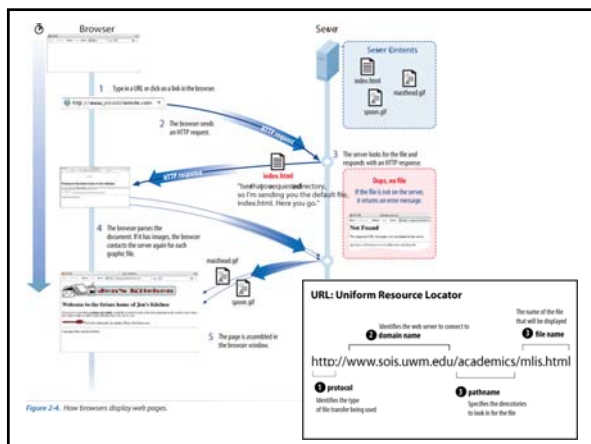
---

---

---

---

---



---

---

---

---

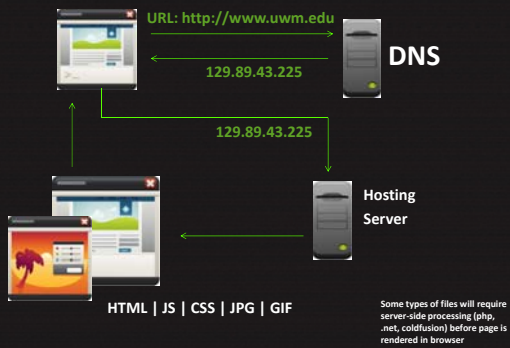
---

---

---

---

## How the Web Works




---

---

---

---

---

---

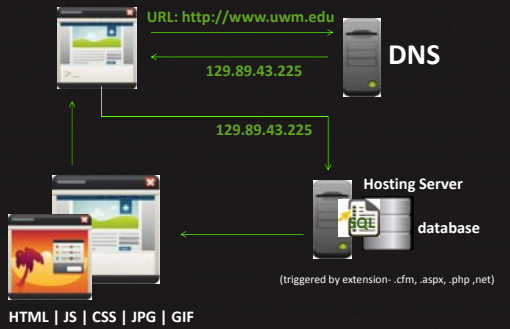
---

---

---

---

## How the Web Works




---

---

---

---

---

---

---

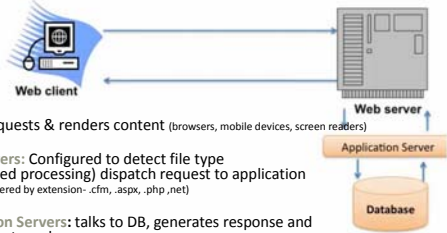
---

---

---

## Dynamic Content

### How Dynamic Web Content Works



- Client: requests & renders content (browsers, mobile devices, screen readers)
- Web Servers: Configured to detect file type (does it need processing) dispatch request to application server (triggered by extension: .cfm, .aspx, .php, .net)
- Application Servers: talks to DB, generates response and returns info to web server. (compiles all elements and nodes needed from DB)
  - Application Servers: Adobe ColdFusion (Java Based web application); Microsoft Active Server Pages & ASP.NET; PHP (free, open source); Ruby On Rails
  - Example - ColdFusion based CMS Website
    - Written in ColdFusion Markup Language (CFML)- running on server & HTML, CSS, JavaScript or JQuery - executed in the browser

---

---

---

---

---

---

---

---

---

---

## Static vs. Dynamic Content

- Dynamic
  - Present different content based on which users are accessing the page
  - Create pages populated with content from a database
  - Build shopping carts
  - Process forms

---

---

---

---

---

---

---

---

---

---

---

---

## URL – Uniform Resource Locator

Protocol: http://  
Tells the browser that its using Hypertext Transfer Protocol

Domain Name (resource name): [www.sois.uwm.edu](http://www.sois.uwm.edu)  
Indicates the server that the browser should connect to

www=subdomain  
uwm=domain  
edu = top-level domain

Pathname  
Filename

**URL: Uniform Resource Locator**

1 protocol: Identifies the type of the transfer being used

2 domain name: Identifies the web server to connect to

3 pathname: Specifies the directories to look in for the file

4 file name: The name of the file that will be displayed

---

---

---

---

---

---

---

---

---

---

---

---

## Folder Structure & Path Names

Another Example:  
<http://www.sois.uwm.edu/academics/graduate/mlis.html>

Browser will find the SOIS server (domain):  
[www.sois.uwm.edu](http://www.sois.uwm.edu)

Open the folder called: academics  
Find and open the folder called: graduate  
And retrieve and display the file called: mlis.html

(www= default subdomain on most web servers)

---

---

---

---

---

---

---

---

---

---

---

---

**Index??**

**Significance of "index"**

*Often* the default filename a browser will look for if no filename is provide.

<http://www.sois.uwm.edu/EPub/spring>

retrieving a file called **"index.html"** in the spring folder

---

---

---

---

---

---

---

---

---

---

## Web Tools

**Software associated with web development**

**Web page authoring** (Dreamweaver, Nvu)

**HTML editors** (Notepad, TextEdit, BBEdit, jEdit)

**Graphics software** (Adobe Photoshop (elements), Adobe Fireworks, Adobe Illustrator, Corel Paint Shop Pro, GIMP)

**Multimedia tools** (Adobe Animate, QuickTime and iMovie, Apple Final Cut Pro, Windows Movie Maker, Adobe After Effects, Sony Sound Forge, Audacity)

**Internet tools** (browsers, mobile browsers, ftp programs)

**Content Management Systems**

---

---

---

---

---

---

---

---

---

---

**“CMS”** – CONTENT MANAGEMENT SYSTEM

“Server-side software that is designed to simplify the creation and maintenance of sites. These systems manage online content, generate web pages, and allow users to upload and change content without requiring technical expertise”

**CMS Fundamentals**  
[http://www.linda.com/course20/BusinessOnline\\_Marketing\\_SEO\\_tutorials/CMS-Fundamentals/74535-2.html?org=uwm.edu](http://www.linda.com/course20/BusinessOnline_Marketing_SEO_tutorials/CMS-Fundamentals/74535-2.html?org=uwm.edu)

---

---

---

---

---

---

---

---

---

---

# Content Management Systems



Drupal <small>drupal.org</small>	Joomla! <small>joomla.org</small>	WordPress <small>wordpress.org</small>
High-performance (20,000 requests/second proven)	Good output (design, printability, font sizing)	Simple, easy startup
Praised by developers	Praised by designers	Praised by beginners
Full CMS	Full CMS	Partial CMS... but growing fast

<http://www.joomla.com/Drupal-6-tutorials/essential-training/6207.html>

- Resources
- <http://www.cmsmatrix.org>
  - <http://cmsreport.com>
  - <http://www.backenbattles.com/>

---

---

---

---

---

---

---

---

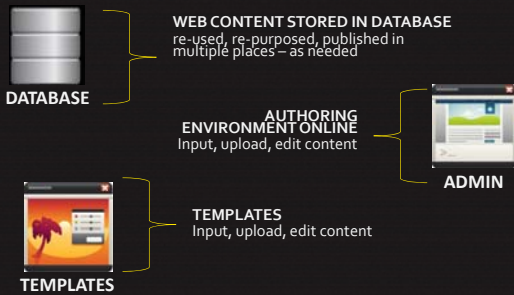
---

---

---

---

## “CMS” – CONTENT MANAGEMENT SYSTEM




---

---

---

---

---

---

---

---

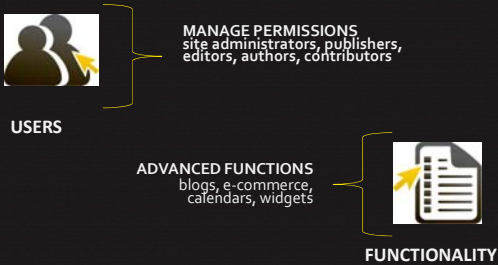
---

---

---

---

## “CMS” – CONTENT MANAGEMENT SYSTEM




---

---

---

---

---

---

---

---

---

---

---

---

## CMS Benefits



### Ease of Use\*

- Ability to update content without technical knowledge (Web-based editor)
- Site-wide editing and modifications
- Speed up site development
- Add advanced functionality



### Multiuser/Levels of Permission

- Control over editing and publishing of content & content updates by content owners (edit, review and/or publish based on role and authority)
- Admin, Author, Contributor

---

---

---

---

---

---

---

---

## CMS Benefits



### Consistency

- Consistency in content presentation (templates & style sheets)
- Modular page elements
- Ability to manage versions of the content (version control)
- Scheduling



### Extensible

- Ability to repurpose content across a large site or multiple sites
- Nodes / Page Elements (move & arrange)
- Modules
- Page View (collected & generated)

---

---

---

---

---

---

---

---

## Content Management Systems (CMS)



PaperThin



### CommonSpot

- PaperThin (<http://www.paperthin.com>)
- ColdFusion-based CMS

### Education Customers

Cornell University, Kent State, Stanford, Savannah College of Art & Design  
UW-Milwaukee (<http://www.paperthin.com/customers/University-of-Wisconsin-Milwaukee.cfm>)

---

---

---

---

---

---

---

---