

# Introduction/Getting Started

CSE/ISE 102: Introduction to Web Design and Programming  
Stony Brook University

## What is the Web?

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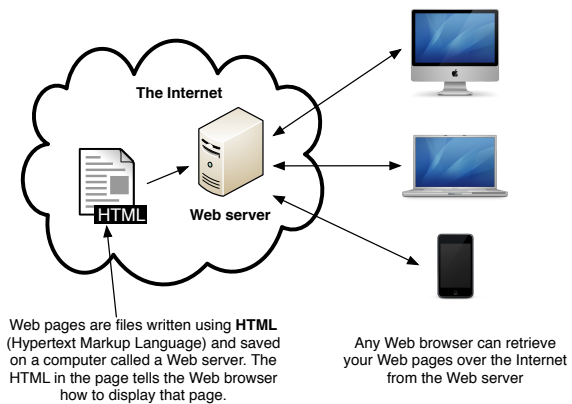
- A collection of machines connected to the Internet
- Consist of **servers** that distribute documents (pages/files) and **clients** that request/retrieve those documents
- A set of protocols (standard communication formats)
  - TCP/IP
  - HTTP

## A Brief History Lesson...

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- 1989: The World Wide Web was created at CERN in Switzerland by Tim Berners-Lee and Robert Cailliau
  - The Web was text-only for its first few years
- 1992: NCSA Mosaic, the first graphical browser, is created, and the Web becomes visible to (and used by) the public at large
  - Total number of Web servers: about 50

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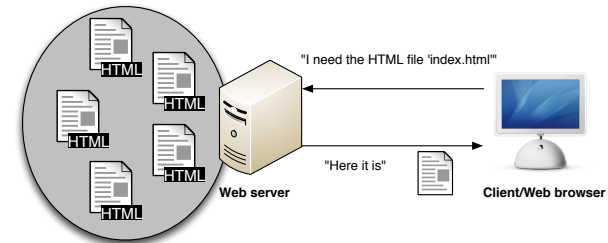
## Servers vs. Browsers

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- Web servers listen for requests from Web browsers
  - When a request comes in, the server finds the file (resource) and sends it back to the browser
- When the user clicks on a link in a Web browser, the browser requests an HTML page (or a file) from a Web server, retrieves it, and displays it

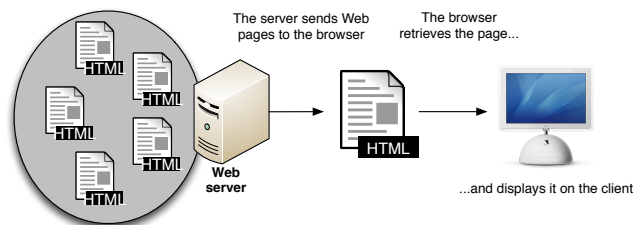
## Web Server Overview

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## Web Browser Overview

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## Web Page Addresses (URLs)

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- A URL (Uniform Resource Locator) is the address of a page or resource on the Web
- A complete URL has three parts:
  - the protocol
  - the site name
  - the absolute path to the document/resource

Protocol      Name of site      Absolute path

`http://` `www.example.com` `/2011/samples/first.html`

Hostname      Domain name      Directory path      Document

## The Art of Web Design

## What Does a Web Designer Do?

- Design
  - User Experience, Interaction, and User Interface Design
  - Visual (Graphic) Design
- Development
  - Authoring/markup, Styling, Scripting/Programming
- Content Strategy and Creation
- Multimedia

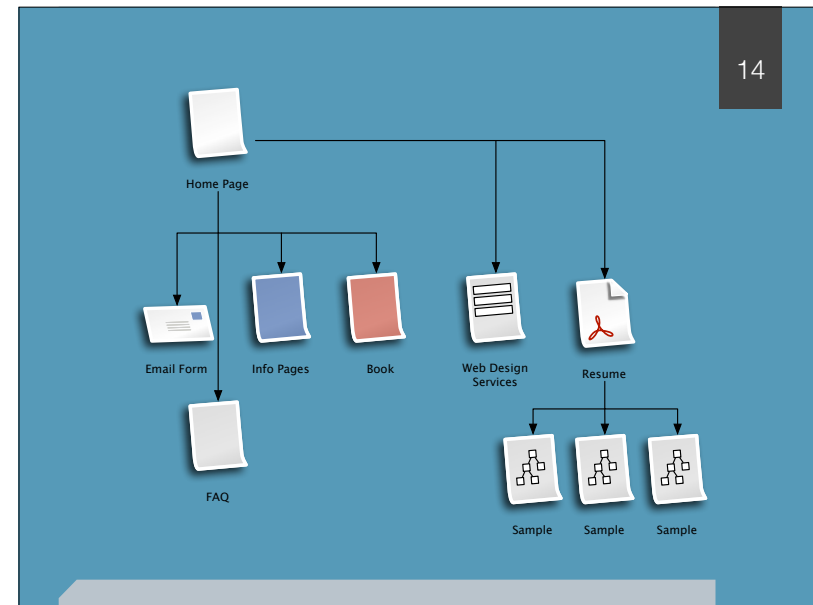
## Elements of Web Design

- Interaction design: makes the site easy and efficient to use
- User interface design: focuses on functional organization and tools (links, buttons, menus) that users use to do things
- User experience design: covers “all aspects of a user’s interaction with the product” (Norman)
  - visual design, user interface, quality of content, and site performance

## Sample Design Documents

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- User research/testing reports
  - interviews and observations, user testing
- Wireframe diagrams
  - shows the structure of a Web page using outlines
- Site diagrams
  - shows the site structure as a whole
- Storyboards and user flow charts



## What Do I Need To Know?

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- Hypertext Markup Language (HTML)
- Cascading Style Sheets (CSS)
- Javascript/DOM scripting
- Server-side programming

## HTML vs. CSS

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- HTML is a **markup language**
  - identifies/describes the various components of a document
  - indicates the document's underlying structure
- CSS describes **presentation** (how a page's content should look)
  - change the entire look of a Web site by editing a single style sheet document

## Layers of Web Design

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<b>Behavior</b>	Scripts that make the page interactive
<b>Presentation</b>	Controls how the content should appear
<b>Structure</b>	Establishes document content with HTML

## Types of Interactivity

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- Javascript/DOM scripting
  - Manipulates Web page elements, their styles, or even browser behavior
- Server-side programming
  - e.g., Perl, Python, PHP, Java, CGI scripts
  - Applications running on the server to handle forms, dynamically generate pages, work with databases, etc.

## Types of Software Tools

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- Web page authoring
  - Dreamweaver, Microsoft Expression Web, Nvu
- HTML editors
  - Brackets, TextPad, Sublime Text, Coda, etc.
- Image-editing
  - Photoshop, Illustrator, GIMP
- Internet tools: browsers, FTP client, SSH/terminal application

## Things to Keep in Mind

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- Mobile devices
- Web standards
- Progressive enhancement
- Accessibility
- Site performance

- Mobile devices
  - can no longer depend on a fixed/common screen size
  - network speed may vary (3G/4G vs. broadband)
- Web standards
  - World Wide Web Consortium (W3C) documents standards for HTML, CSS, and Javascript
  - this keeps a site consistent across multiple (standards-compliant) browsers

- Progressive enhancement
  - different browsers provide different levels of support for Web standards, and users may deactivate some features
  - set a “baseline” experience and add more advanced features for browsers that can handle them
  - reverse of old “graceful degradation” philosophy
- Accessibility
  - people access the Web in many ways: visual browsers and mice, screen readers, foot pedals, etc.
  - sites should be built with as few barriers as possible
  - we will talk more about this later in the semester

- Responsive Web design
  - provide custom layouts based on size of viewport (browser window)
  - detect device capabilities on server end and send back whatever the device can handle
  - may consider separate mobile-specific site
- Site performance
  - limiting file sizes and reducing number of server requests

## Next Time

- HTML markup for structure