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EASING INTO WEB DEVELOPMENT

1. Introduction

1 INTRODUCTION

2 HTML

3 TABLES

4 FORMS

5 HTTP

6 CSS

7 CSS FRAMEWORKS

8 DIGITAL MEDIA

9 USABILITY

Overview of Web Applications

- Web applications refers to all types of applications in which some part of the application is hosted within a web browser.

Evolution of Internet

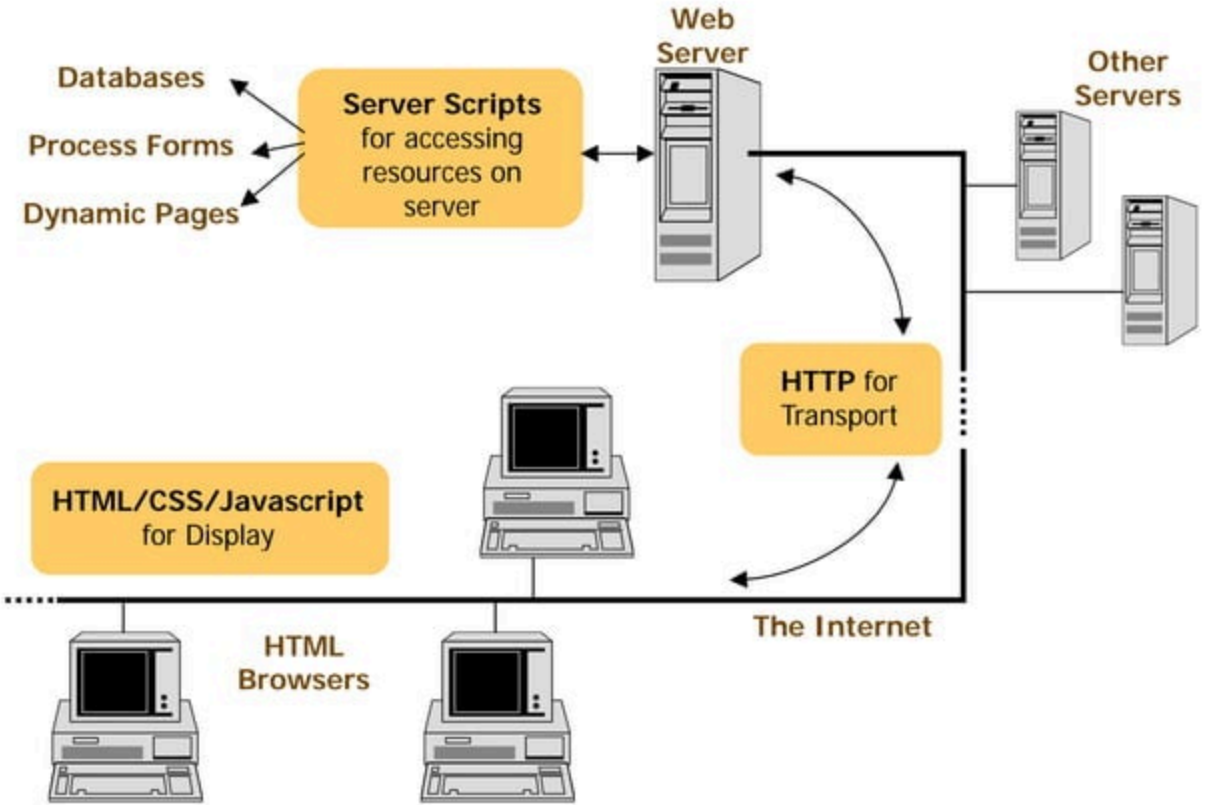
- Over the past ten years, the Internet has evolved from
  - a hypertextual information system offering **static** information,
- to a
  - marketplace for the buying and selling of goods and services,
- and now to a
  - widely-used infrastructure for the development and hosting of software applications within an enterprise.
- Thus, over time, the Internet has moved from principally static page content to dynamically-generated content via programs running on web servers.

Intranets ⚠

- An **Intranet** is a private network that uses web technology and that can be accessed only by authorized persons, usually members or employees of that organization

How Does the Web Work?

- The browser (or client) requests and displays information.
- Browsers make requests of servers, then servers process those requests based on a set of rules (called a protocol).
- On the server, a web server software processes the requests and returns information to the client.


Databases
Process Forms
Dynamic Pages
Server Scripts
for accessing
resources on
server
Web
Server
Other
Servers
HTTP for
Transport
HTML/CSS/Javascript
for Display
The Internet
HTML
Browsers

Web Site Structure

- A web site is typically composed of many files.
- A web site will have:
  - HTML files
    - These are ASCII text files. Most sites will have many HTML files.
    - These HTML files may also include client-side scripting (usually **Javascript**).
  - image files (optional)
    - There are two file formats (GIF and JPG) that are supported by all browsers.
  - object files (optional)
    - Files that require a helper application or plug-in.
    - Sound files, video files, Flash files, Java files, etc
  - server-side scripts (optional)
    - programs for accessing server-based resources such as databases.
    - Typically CGI-Perl, ASP, ASP.NET, JSP, Cold Fusion, etc.

Web Site Structure

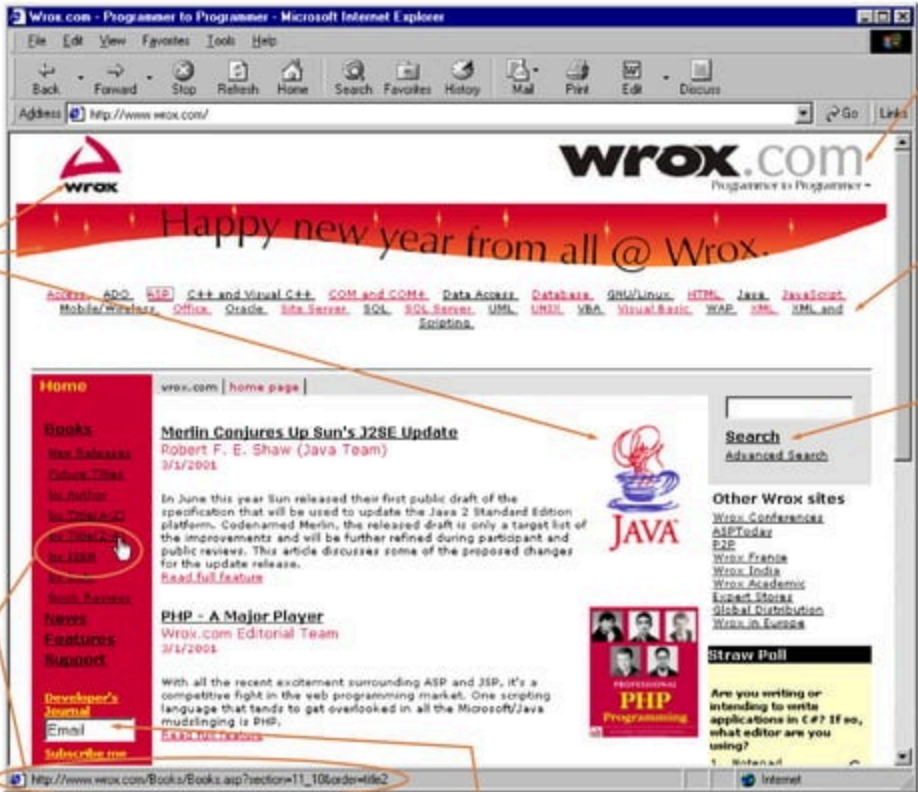
index.htm

programs.htm

courses.htm

faculty.htm

index.html



Javascript for image roll-over

Image files

Links to other HTML files

Link to server-side script

Links to server-side scripts

Javascript to validate form input

Basic Web Development Process

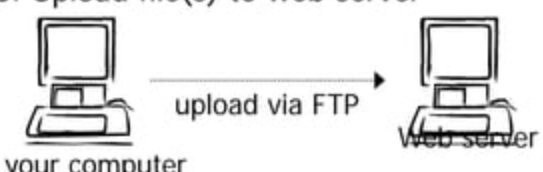
1. Create HTML file(s)

```
<HTML><HEAD></HEAD><BODY
BACKGROUND="images/mainback.gif"
BGCOLOR="#999966" TOPMARGIN="8"
LEFTMARGIN="8">
<TABLE BORDER="0" WIDTH=544 CELLSPACING=0>
<TR><TD WIDTH="31"><IMG SRC="images/pixel.gif"
WIDTH="31" HEIGHT="8"></TD><TD
WIDTH="58"><IMG SRC="images/pixel.gif"
WIDTH="58" HEIGHT="8"></TD><TD
WIDTH="30"><IMG SRC="images/pixel.gif"
WIDTH="30" HEIGHT="8"></TD>
</TR></TABLE>
```

2. Test locally on browser(s)

3. Upload file(s) to web server

4. Test page(s) on web server



What You Need for the Basics

Several Web Browsers

HTML Editor

Image Editor

FTP

Required

More Complex IDE

Flash

Media editors

Optional

Why Several Browsers?

- The original intention behind HTML was that it describes meaning, not formatting.
  - That is, it is up to the browser to determine the formatting of tags.
  - Thus, the same tags can be displayed differently on different browsers.
- As well, Netscape, and then later, Microsoft, added their own proprietary tags.
  - Many of these special tags added physical formatting, tables, frames, etc.
- The browsers can vary in how they display pages.
  - CSS and Javascript, in particular, vary on the browsers.

Different Browsers, Different Pages?

- Given the different capabilities of the different browsers, it is almost impossible to design a web page that will look the same for all viewers.

Different Browsers, Different Pages?

- Strategies for dealing with differing browsers:
  - Different versions for different browsers
    - Too difficult and time-consuming
  - Lowest common denominator design
    - Design for safest HTML standard (HTML 3.2)
  - Current version design
    - Design for most current versions of browsers
  - Splitting the difference
    - Design web pages that take advantage of newest features, but are still usable and attractive for those with older browsers.
  - Standards-based design 
    - Design pages for current web standards, regardless of browser support.
    - Use CSS and XHTML 1.0

Browser Market Share

Usage share of desktop browsers for March 2012

Source	Internet Explorer	Firefox	Chrome	Safari	Opera	Other
StatCounter	34.8%	25.0%	30.9%	6.7%	1.8%	0.8%
Net Applications	53.8%	20.6%	18.6%	5.1%	1.6%	0.4%
W3Counter	30.0%	25.3%	24.3%	6.4%	2.1%	11.9%
Wikimedia	28.0%	21.8%	24.0%	5.7%	3.8%	16.8%
Clicky	39.0%	24.4%	26.7%	8.6%	1.4%	0.1%
Average	**37.1%**	**23.4%**	**24.9%**	**6.5%**	**2.1%**	**6.0%**

Usage share of mobile browsers for December 2011

Source	Safari	Opera	Android browser	Nokia browser	BlackBerry browser	Other
StatCounter	22.6%	24.2%	20.2%	12.9%	7.5%	12.6%
Wikimedia	51.2%	10.0%	23.0%	0.3%	2.7%	12.8%
Net Applications	53.3%	21.7%	15.9%	3.3%	3.1%	2.7%

Browser versions, non mobile	All requests	
Chrome 17.0	30,991 M	21.20%
MSIE 8.0	16,526 M	11.31%
MSIE 9.0	13,880 M	9.50%
Firefox 10.0	13,038 M	8.92%
Firefox 11.0	7,523 M	5.15%
MSIE 7.0	6,982 M	4.78%
Opera 11.61	4,219 M	2.89%
Firefox 3.6	4,037 M	2.76%
Safari 534.52	2,499 M	1.71%
MSIE 6.0	2,040 M	1.40%

Test, Test, Test

- Always test your pages on as many browsers as possible.
- Always test your pages on as many computer platforms as possible.

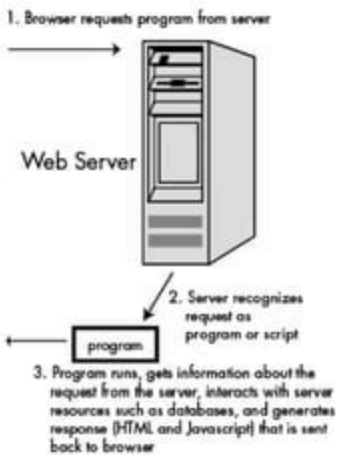
Static vs Dynamic Web Pages

- Most web pages that you view are not static HTML pages.
- Instead they are output from programs that run on web servers.
  - These programs can interact with server resources like databases and XML Web services.

Static Web Content

Dynamic Web Content

4. Browser renders content



Dynamic Web Technologies

- There are quite a number of different technologies for dynamically generating Web content.
  - ASP.NET
  - ASP
  - CGI
  - ColdFusion
  - JSP
  - PHP
  - Ruby on Rails
- All of these technologies share one thing in common:
  - Using programming logic, they generate HTML on the server and send it back to the requesting browser.

Web Frameworks

- More and more web development is being done within pre-existing web frameworks, such as Content Management Systems (CMS) and Blog engines, or Javascript frameworks such as JQuery.
  - CMSs and Blogs are complex programs running on the server that construct pages by combining content residing within databases on the server with HTML+CSS templates.
  - While no to little programming knowledge is required, HTML and CSS knowledge is still required in order to use these frameworks effectively.

Web Frameworks

Template Industry

- Not everyone has visual design skills.
- Because of this, there are many web template sites available from which one can purchase or freely use.
  - Again, HTML and CSS knowledge is still required in order to use or customize these templates.
  - If you make use of someone else's template you **MUST** attribute it in the footer and within the HTML.

Template Industry