Chapter 16
The World Wide Web

Chapter Goals
• Compare and contrast the Internet and the World Wide Web
• Describe general Web processing
• Write basic HTML documents
• Describe several specific HTML tags and their purposes

Chapter Goals
• Describe the processing of Java applets and Java server pages
• Compare and contrast HTML and XML
• Define basic XML documents and their corresponding DTDs
• Explain how XML documents are viewed

The World Wide Web
The Web
An infrastructure of information combined and the network software used to access it

Web page
A document that contains or references various kinds of data

Links A connection between one web page and another

What are the links used for?

The World Wide Web
Website
A collection of related web pages

Web browser
A software tool that retrieves and displays Web pages

Web server
A computer set up to respond to requests for Web pages

Uniform Resource Locator (URL)
A standard way of specifying the location of a Web page, containing the hostname, “/”, and a file

What is the relationship between the Internet and the Web?
The World Wide Web

Figure 16.1 A browser retrieving a Web page

Why is the expression "visiting a website" confusing?

Search Engines

Search Engine
A website that helps you find other websites

Can you name at least two?

How do they work?

Instant Messaging

Instant messaging (IM)
An application that allows people to send and receive messages in real time

– Both sender and receiver must have an IM running
– Most IM applications use a proprietary protocol that dictates the precise format and structure of the messages sent
– Instant messages are not secure

Weblogs

Blog
An online journal or newsletter that is frequently updated and intended for public consumption

Do you have a blog?

Do you read blogs?

Cookies

Cookie
A small text file that a web server stores on your local computer’s hard disk

– A cookie contains information about your visit to the site
– Cookies can be used
  • to determine number of unique visitors to the site
  • to customize the site for your future visits
  • to implement shopping carts that can be maintained from visit to visit
– Cookies are not dangerous

HTML

Hypertext Markup Language (HTML)
The language used to create or build a Web page

Markup language
A language that uses tags to annotate the information in a document

Tags
The syntactic element in a markup language that indicate how information should be displayed
HTML

The browser determines how the page should be displayed based on the tags

The browser
- Ignores the way we format the HTML document using carriage returns, extra spaces, and blank lines
- Takes into account the width and height of the browser window
- Reformats the contents to fit your browser window

Tags are enclosed in angle brackets (&lt;...&gt;)

Words such as HEAD, TITLE, and BODY are called elements and specify the type of the tag

Tags are often used in pairs, with a start tag such as &lt;BODY&gt; and a corresponding end tag with a / before the element name, such as &lt;/BODY&gt;

Basic HTML Formatting

&lt;P&gt;...&lt;/P&gt; specify that text should be treated as a separate paragraph
&lt;CENTER&gt;...&lt;/CENTER&gt; center information in the browser window
&lt;B&gt;...&lt;/B&gt; bold information
&lt;I&gt;...&lt;/I&gt; italicize information
&lt;HR&gt; insert horizontal rule across page
Basic HTML Formatting

- `<UL>`…`</UL>` unordered list
- `<LI>`…`</LI>` list item
- `<H1>`…`</H1>` information as H1 head
- `<H8>`…`</H8>` information as H8 head

Images and Links

**Attribute**
Part of a tag that provides additional information about the element

```
attribute-name = value
```

```html
<IMG SRC = "myPicture.gif">
```
inserts the image stored in file "myPicture.gif"

Images and Links

A link is specified using the element `A`, (which stands for anchor) and attribute `HREF` that specifies the URL of the destination document.

```html
<A HREF="http://www.cs.utexas.edu/users/ndale/labs/factorial/FactByte.htm">Factorial-Byte</A>
```

Java Applets

**Java applet**
A Java program designed to be embedded into an HTML document, transferred over the Web, and executed in a browser

```html
<APPLET code = "FactByte.class" width=250 height=150></APPLET></P>
```

Java Applets

**Example link:**

Contents of FactByte.htm:

- `<H1>` Factorial with Byte Result: `<H1>`

  ```html
  <P>Enter increasing values beginning with 0 and record the results of the Factorial of your input. At some point, the answer will seem strange. Record what seems strange about the answer and return to the previous page. <P>
  </P>
  <P><APPLET code = "FactByte.class" width=250 height=150></APPLET></P>
  ```

Java Server Pages

**JSP Scriptlet**
A portion of code embedded in an HTML document designed to dynamically contribute to the content of the web page

**Java Server Page**
A web page that has a JSP scriptlet interwoven among the HTML content
Java Server Pages

A JSP scriptlet is encased in special tags beginning with `<%` and ending with `%>

Imagine JSP scriptlets as having the expressive power of a full programming language

```html
<H3>
<% out.println("hello there"); %>
</H3>
```

Imagine JSP scriptlets as having the expressive power of a full programming language.

Java Server Pages

JSPs are executed on the server side where the web page resides.

By the time it arrives at your computer, all active processing has taken place, producing a static (though dynamically created) web page.

JSPs are particularly good for coordinating the interaction between a web page and an underlying database.

Compare and contrast Java applets and JSP scriptlets

XML

Extensible Markup Language (XML)

A language that allows the user to describe the content of a document

- HTML describes how a document should look
- XML describes a document's meaning

Metalanguage

A language for talking about, or defining, other languages

XML is a metalanguage

XML

Like HTML, an XML document is made up of tagged data.

XML represents a standard format for organizing data without tying it to any particular type of output.

Extensible Stylesheet Language (or XSL)

A language for defining transformations from XML documents to other output formats.

XML Document

Figure 16.7 An XML document can be transformed into many output formats.

Figure 16.6 The DTD document corresponding to the XML books document.
Ethical Issues

Blogging

What is the blogosphere?
Give several examples of how blogs have made national headlines
Should bloggers have the same protections as regular journalists?

Who am I?

Bill Gates and I have something in common. Do you know what it is?

Do you know?

What does the expression "dancing spiders of Google" mean?
What is a bot?
Why is standardization across technologies such as Wi-Fi essential?