WORLD WIDE WEB AND HTML

Application of Information and Communication Technologies

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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 eb pages

Web server

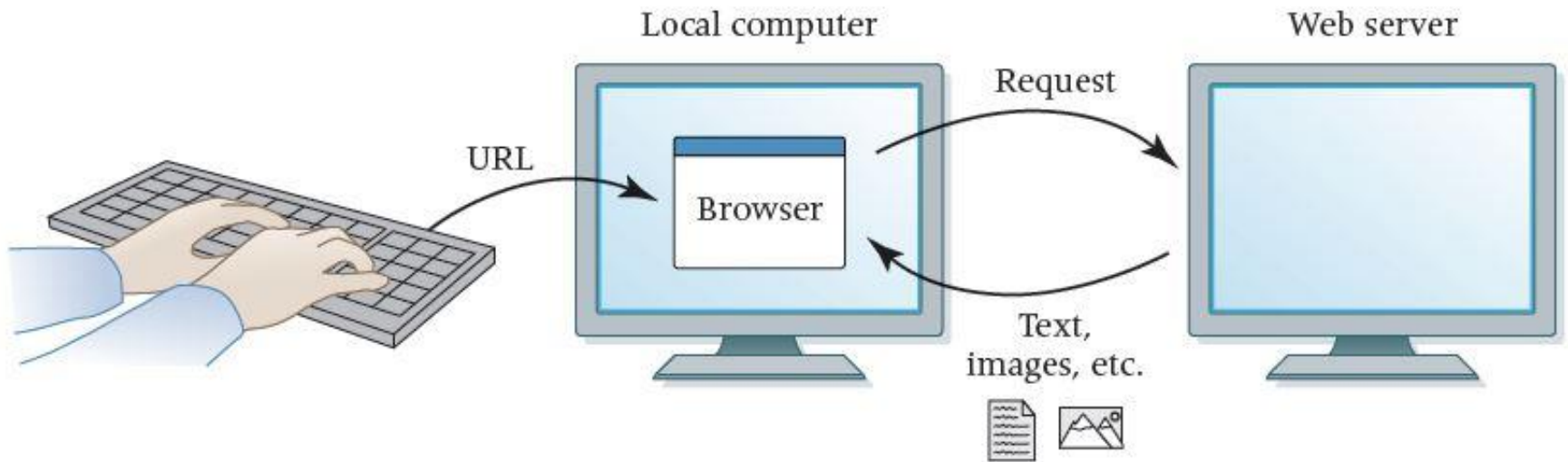A computer set up to respond to requests for web pages

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The World Wide Web

Uniform Resource Locator (URL)

A standard way of specifying the location of a Web page, containing the hostname, "/", and a file
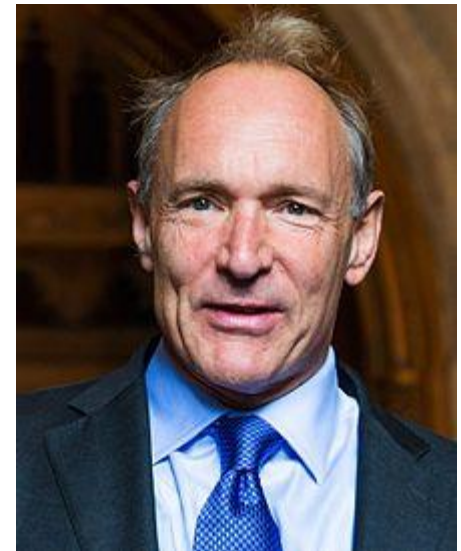
What is the relationship between the Internet and the Web?

The World Wide Web

Local computer

Web server

URL

Request

Browser

Text, images, etc.

WWW Inventor!

- **1989**, Tim Berners-Lee invented the World Wide Web, an Internet-based hypermedia initiative for global information sharing while at CERN, the European Particle Physics Laboratory.

- He wrote the first web client and server in 1990.

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)

- Applications that allow people to send short messages
- Similar to texting, but based on username not cellular phone number
- Some applications allow more than two users in a chat room
- If participants run application simultaneously, they can have an interactive conversation
- Most applications use proprietary protocols that dictate the precise format and structure of the messages
- Most instant messages are **not** secure

Weblogs

Blog or Weblog

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 future visits
  - to implement shopping carts that can be maintained from visit to visit
- Cookies are **not** dangerous

Web Analytics

Web analytics

– Collection and analysis of data regarding website usage

– Typically used by website owners to track the number and behavior of users visiting their sites

– Example: Google Analytics tracks

- Where users are geographically located (based on their ISP)
- Which site referred them
- Which pages within your site they visit
- How long they spend on each page
- Which page they leave your site from
- More

Web Site Design

- Web Site Design
  - The process of planning what a Web site will look like and how it will function
  - Good planning is very important
- Basic Design Principles
  - Web pages should be interesting and exciting applications
    - Provide information of value or interest
    - Provide a stimulating experience
  - Pages should load quickly and be easy to use

Web Site Design

- Plan for all needed delivery methods and devices
  - Features that require a specific browser
  - Features that require little-used plug-ins
  - The size of the page content
    - Different devices, browsers, and screen resolutions affect how Web pages display
  - High-bandwidth items
    - Watch image file size (use thumbnails)
    - Use links to audio, video, and other high-bandwidth items
    - Use streaming audio and video

Responsive Web Design (RWD)

- Focuses on building sites that are compatible with a variety of devices

- Can create multiple versions of your site yourself or use a flexible site that adjusts to each visitor's device

- Can create a desktop site and use a service to generate mobile versions

DESKTOP SITE

MOBILE SITE

Web Site Development

- Creating the Web Site
  - Markup Language
    - Uses symbols or tags to describe what a document
    - should look like when it is displayed in a Web browser
  - JavaScript or other scripting languages can be used to add dynamic content
  - Web site authoring software is often used to create an entire site

HTML and CSS

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

Tag

The syntactic element in a markup language that annotate the information in a document
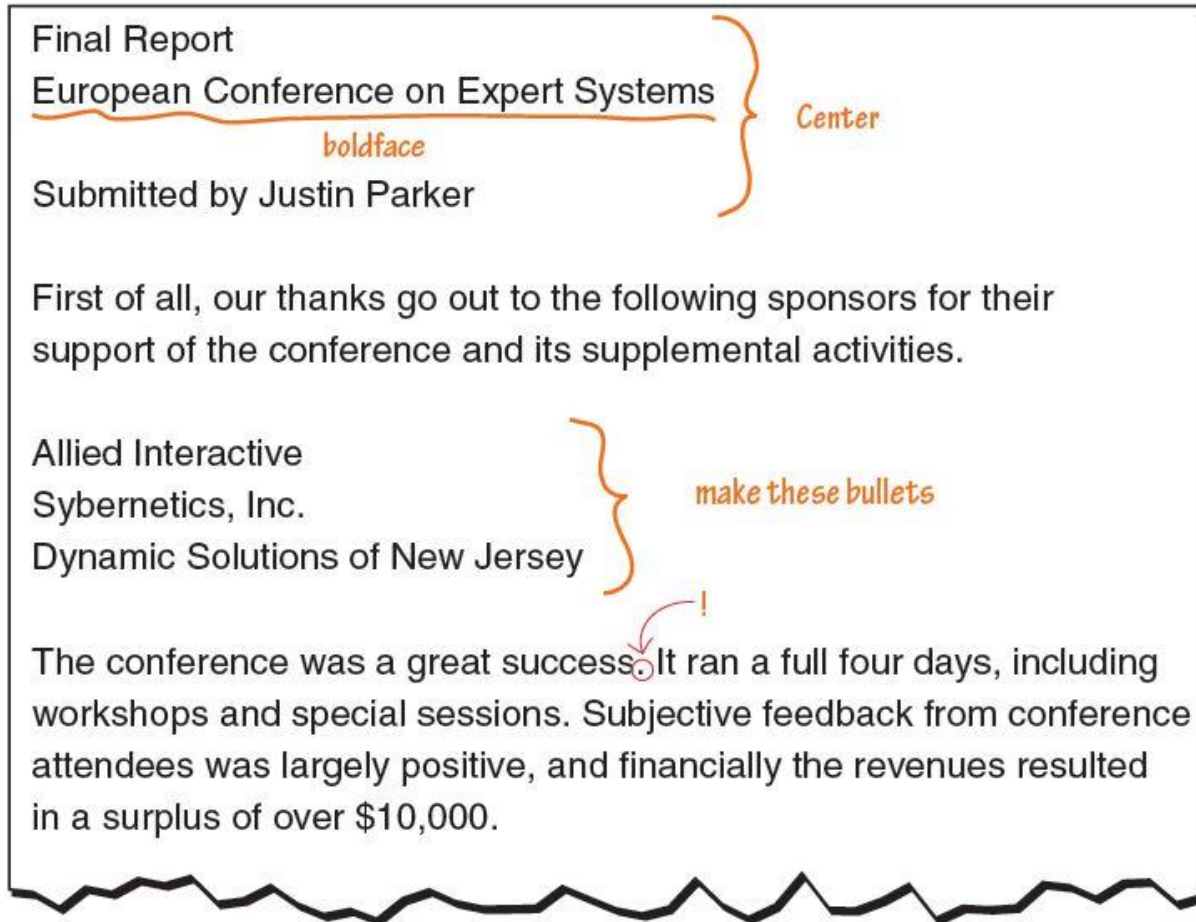
HTML and CSS

FIGURE 16.3 A marked-up document

HTML and CSS

TAG	PURPOSE
<html></html>	Marks the beginning and end of an HTML document.
<head></head>	Marks the head section, which contains the page title and meta tags.
<title></title>	Marks the title of the Web page.
<body></body>	Contains all the content of the Web page, including text, hyperlinks, and images.
to	Formats headings larger or smaller than the regular (non-heading) text in the document; H1 is the largest text.
<img>	Indicates an image file to be inserted; attributes included within this tag specify the image filename, display size, alternative text, title, border, etc.
<a>	Defines a hyperlink using the specified URL; can include an image filename, hyperlink text, and other attributes.
	Bolds text.
<i></i>	Italicizes text.
<!-- -->	Indicates a comment that won't display when the Web page is viewed.
<hr>	Inserts a horizontal rule.
 	Inserts a line break (new line within the same paragraph).
<p>	Inserts a paragraph break (starts a new paragraph).

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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

```xml
<?xml version="1.0" ?>
<!DOCTYPE books SYSTEM "books.dtd">
<books>
<book>
<title>The Hobbit</title>
<authors>
  <author>J. R. R. Tolkien</author>
</authors>
<publisher>Ballantine</publisher>
<pages>287</pages>
<isbn>0-345-27257-9</isbn>
<price currency="USD">7.95</price>
</book>
<book>
<title>A Beginner's Guide to Bass Fishing</title>
<authors>
  <author>J. T. Angler</author>
  <author>Ross G. Clearwater</author>
</authors>
<publisher>Quantas Publishing</publisher>
<pages>750</pages>
<isbn>0-781-40211-7</isbn>
<price currency="USD">24.00</price>
</book>
</books>
```

FIGURE 16.6 An XML document containing data about books

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

XML

Document Type Definition (DTD)

A specification of the organization of the document

The structure of a particular XML document is described by its corresponding DTD document

```
<!ELEMENT books (book*)>
<!ELEMENT book (title, authors, publisher, pages, isbn, price)>
<!ELEMENT authors (author+)>
<!ELEMENT title (#PCDATA)>
<!ELEMENT author (#PCDATA)>
<!ELEMENT publisher (#PCDATA)>
<!ELEMENT pages (#PCDATA)>
<!ELEMENT isbn (#PCDATA)>
<!ELEMENT price (#PCDATA)>
<!ATTLIST price currency CDATA #REQUIRED>
```

FIGURE 16.7 The DTD document corresponding to the XML books document