

# Chapter 7

## The Web and E-mail

# Computer Concepts 2014



# 7

## Chapter Contents

- Section A: Web Technology
- Section B: Search Engines
- Section C: E-commerce
- Section D: E-mail
- Section E: Web and E-mail Security

# 7

## Section A: Web Technology

- Web Basics
- HTML
- HTTP
- Web Browsers
- Cookies
- Web Page Authoring
- Interactive Web Pages

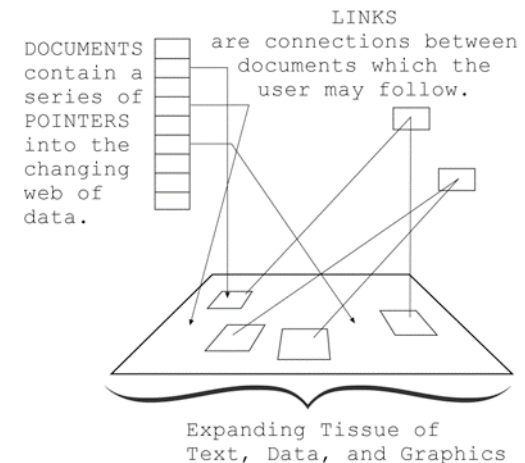
## 7

# Web Basics

- The Web is a collection of document, image, video, and sound files
  - Web 2.0
  - Web 3.0
- A Web site contains a collection of related information

**FIGURE 7-1**

Ted Nelson's early sketch of project Xanadu—a distant relative of the Web—used the terms *links* and *web*.



Courtesy of Ted Nelson. "Xanadu®" is a registered trademark of Project Xanadu.

# 7

## Web Basics

- A Web server accepts requests from browsers
- A Web page is the product or output of one or more Web-based files displayed in a format similar to a page in a book
- A Web browser is client software that displays Web page elements and handles links between pages
- Every Web page has a unique address called a URL

**FIGURE 7-3**

The URL for a Web page indicates the computer on which it is stored, its location on the Web server, its file name, and its extension.

**http://www.cnn.com/showbiz/movies.htm**

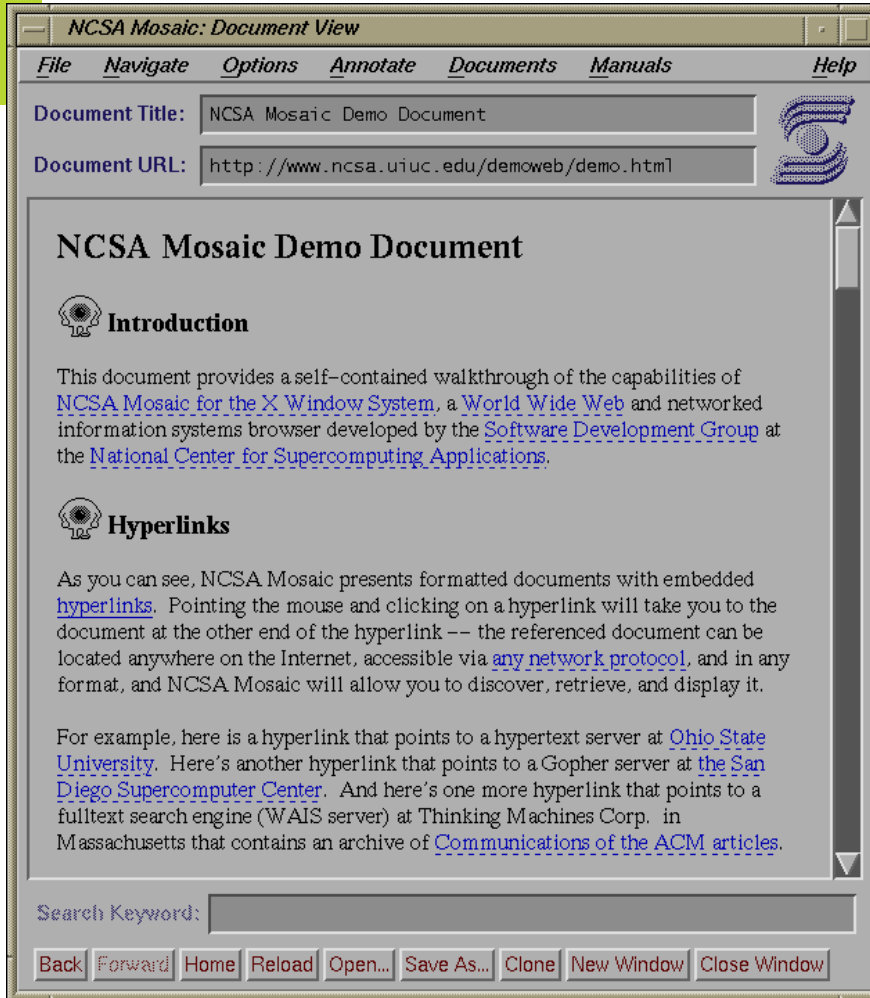
Web protocol standard	Web server name	Folder name	File name and file extension
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## The Web vs. the Internet

- The Web is part of the Internet, distinguished by
  - Common communication protocols
  - Navigation links
- 1989: Web invented by Tim Berners-Lee
- 1993: Mosaic browser released
- 1994: Netscape Navigator marked beginning of the Web's major growth
- 1997: Internet access was global

# 7 The early days of the web...



(where are all the ads?)

## Web 2.0

- Describes evolved type of Web interactions between people, software, and data
- Classified as the *social Web*, in which user is also a participant
- Describes trend of new applications
- Hundreds of companies exist to help share, recommend, collaborate, create, and socialize



# 7 Web 2.0

## WEB 2.0 Landscape

Widget/  
component



WEB APPLICATION



Aggregation/  
recombination

CONTENT  
SHARING



RECOMMENDATIONS/  
FILTERING



Rating/  
Tagging

SOCIAL NETWORK

Collaborative  
filtering



www.futureexploration.net

Note: Each of these Web 2.0 applications has multiple functionality - for each service the primary positioning has been used

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# HTML

- Set of specifications for creating documents that a browser can display as a Web page
- Markup language
- HTML tags
- HTML 5
- XHTML
- Source document

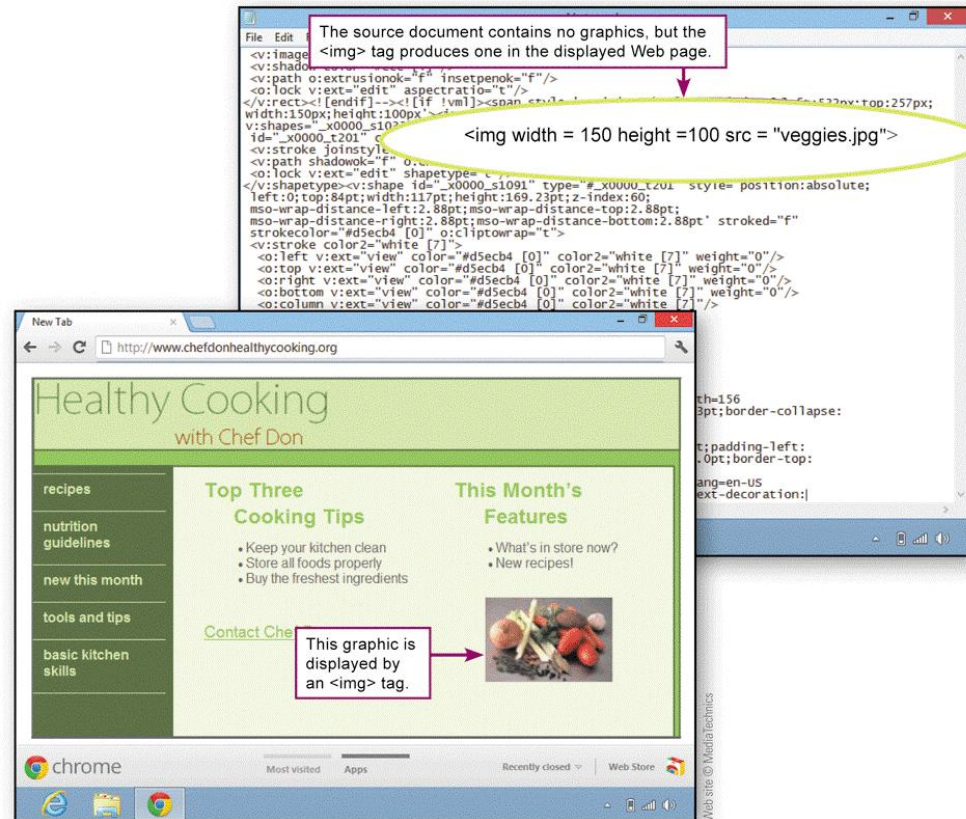
# 7

# HTML

**FIGURE 7-4**

An HTML document (top) contains text and HTML tags. Formatting tags are used to change font size and separate paragraphs. Other tags add graphics and links to a page. The HTML document produces a Web page (bottom).

▶ Refer to your interactive eBook to see more examples of HTML source code.



# HTTP

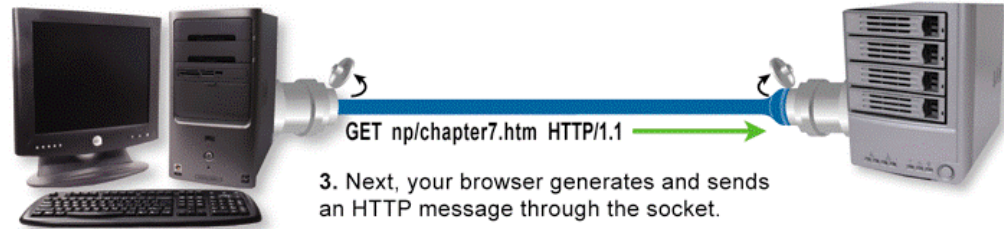
**FIGURE 7-5**

HTTP messages flow between a browser and a Web server. For an animated view of how HTTP works, take a look at this figure in your interactive eBook.

1. The URL in the browser's Address box contains the domain name of the Web server that your browser contacts.

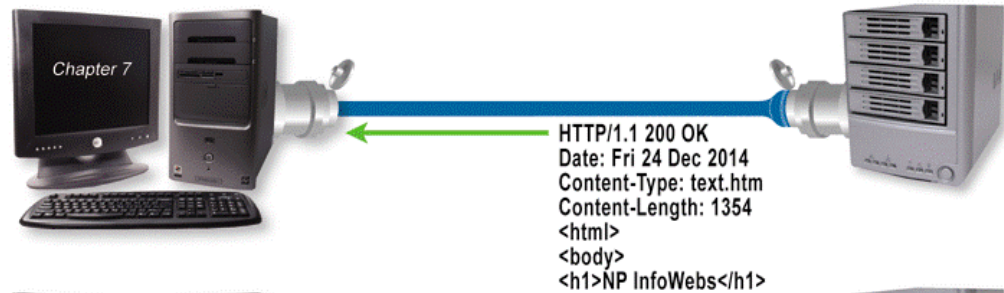


2. Your browser opens a socket and connects to a similar open socket at the Web server.

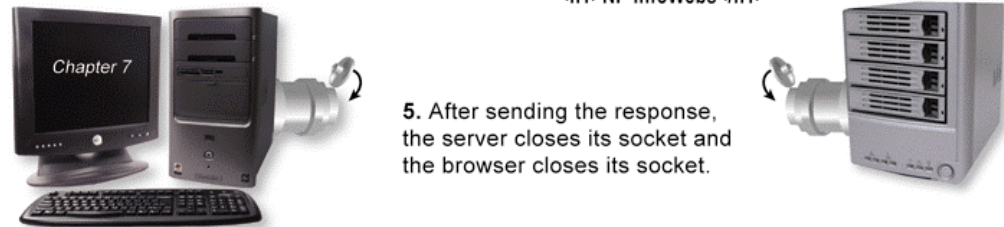


3. Next, your browser generates and sends an HTTP message through the socket.

4. The server sends back the requested HTML document through the open sockets.



5. After sending the response, the server closes its socket and the browser closes its socket.

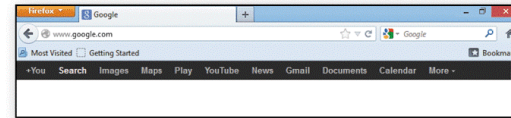


# 7 Web Browsers

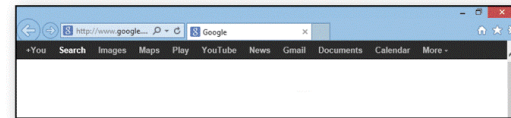
- Popular browsers:
  - Mozilla Firefox
  - Microsoft Internet Explorer
  - Apple Safari
  - Google Chrome
- It is a good idea to upgrade when a new version of your browser becomes available

FIGURE 7-7

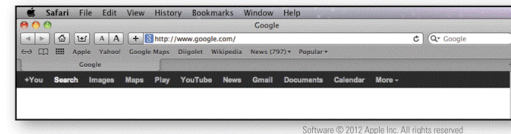
Popular browsers include Firefox, Internet Explorer, Safari, and Chrome.



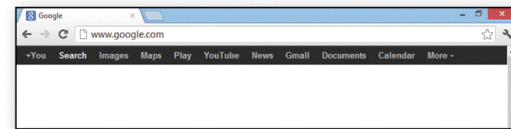
**Mozilla Firefox.** In 1998, Netscape source code became open source software, managed by an organization known as Mozilla. The organization's main product, a browser called Mozilla, was all but ignored by most computer owners. In 2004, however, a new version of Mozilla, dubbed Firefox, rapidly gained popularity because it offered effective security features.



**Microsoft Internet Explorer (IE).** The program code for the original IE 1.0 browser was licensed from a Netscape spin-off called Spyglass. Originally developed for Windows, IE has evolved through ten versions since 1995 and is also available for Mac OS, Linux, and several versions of UNIX.



**Apple Safari.** In 2003, Apple introduced a browser called Safari, which is now included with Macintosh computers and available for PCs. Safari is also available on Apple iPhones and iPads.



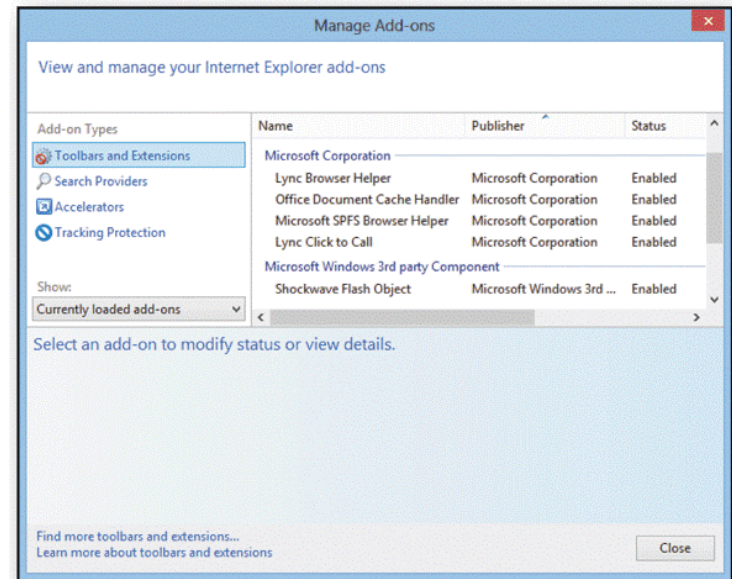
**Google Chrome.** Developed in 2008, Chrome was engineered specifically to support Web-based e-mail and similar online applications. It is generally considered to have the best support for HTML5.

# 7 Web Browsers

- If your browser does not have built-in support for a file format required to display or play a Web page element, you can download the necessary software
  - A plug-in is a program that extends a browser's ability to work with file formats

**FIGURE 7-8**

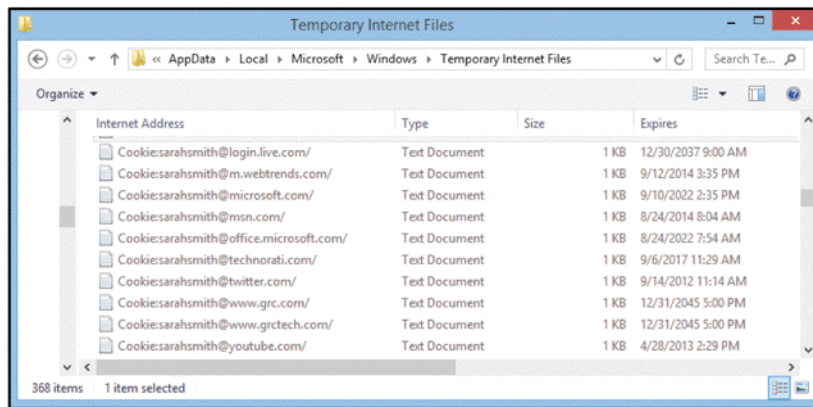
You can usually find a list of plug-ins installed for use with your browser. If you use Internet Explorer, look for a Manage Add-ons option on the Tools menu. ▶ For more information about managing plug-ins, refer to this figure in your interactive eBook.



## 7

# Cookies

- Small chunk of data generated by a Web server and stored in a text file on computer's hard disk
  - Fix problems caused by HTTP's stateless protocol



**FIGURE 7-10**

Internet Explorer stores cookies as individual files in the `AppData\Local\Microsoft\Windows\Temporary Internet Files` folder. The information after the @ symbol indicates the domain name of the site that created the cookie.

## 7

# Web Page Authoring

- HTML conversion utility
- Online Web page authoring tools
- Web authoring software
  - Adobe Dreamweaver
- Text editor

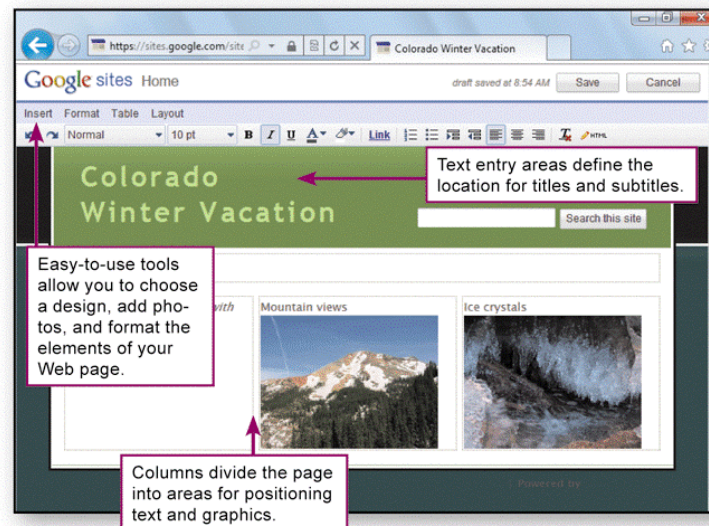


FIGURE 7-11

Many Web hosting sites, such as Google, offer subscribers online tools for creating Web pages.

► For a tour of online Web page authoring, activate this figure in your interactive eBook.

Website © 2012 Google. Photos © MediaTechnics



# Interactive Web Pages

- Interactive and dynamic Web sites are possible when programming and scripting technologies supplement native HTML features
- An HTML form uses the `<form>` tag to accept typed input
- Client-side and server-side processes
- A computer scripting language called JavaScript is commonly used to add logic and other programmable elements to a Web page

## 7

# Interactive Web Pages

The image shows a web form with two main sections. The left section is titled 'Credit Card Payment Method' and includes a radio button, a dropdown menu set to 'Visa', logos for Visa, MasterCard, American Express, Discover, and PayPal, and input fields for 'Cardholder Name' (Sarah Mae Smith), 'Credit Card Number' (12345678912345), 'Expiration Date' (Jan 2016), and 'Card Verification Number' (222). The right section is titled 'Billing Address' with the instruction 'Please verify or enter billing address'. It features a checkbox for 'My Billing Address is the same as my Shipping Address', and input fields for 'First' (Sarah), 'Middle Initial' (M), 'Last' (Smith), 'Address Line 1' (123 Main St.), 'Address Line 2', 'City' (Marquette), 'State' (MI - Michigan), and 'Zip' (49855). A red 'CONTINUE' button is located at the bottom right of the form.

**FIGURE 7-16**

The data from this form is held in memory until you click the Submit button. Then, your browser sends the data to a program on an HTTP server where it can be processed and stored.

© MediaTechnics

# 7

## Section B: Search Engines

- Search Engine Basics
- Formulating Searches
- Citing Web-based Source Material

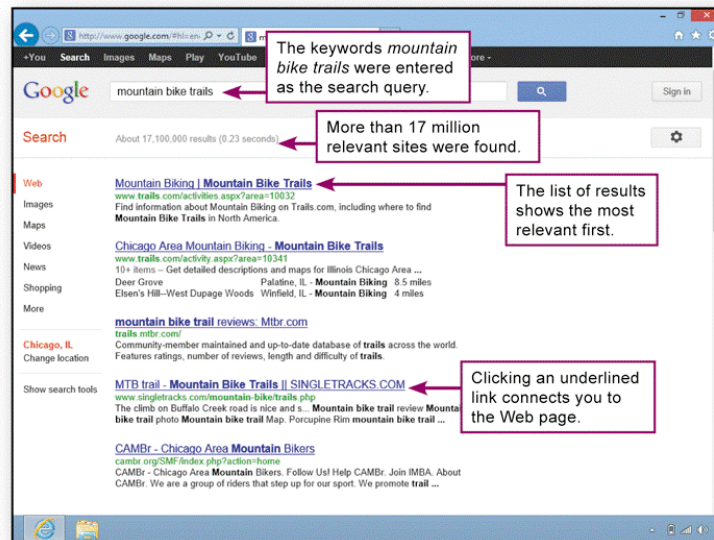
## 7

# Search Engine Basics

- A Web search engine is a program designed to help people locate information on the Web by formulating simple keyword queries

FIGURE 7-17

A query for *mountain bike trails* returns a list of links to relevant sites.



# Search Engine Basics

- A Web crawler is a computer program that is automated to methodically visit Web sites
- A search engine indexer is software that pulls keywords from a Web page and stores them in an index database
- A search engine's query processor looks for your search terms in search engine's indexed database and returns a list of relevant Web sites
- Link popularity is measured by quality and quantity of links from one Web page to others
- A meta keyword is entered into a header section of a Web page when it is created and is supposed to describe the page contents
  - Keyword stuffing

# Formulating Searches

- Most search engines work with keyword queries in which you enter one or more words, called search terms

- Most search engines are not case sensitive, so you don't have to use the Shift key when entering proper names.
- Search engines generally ignore common words, such as *and*, *a*, and *the*, so don't bother to include them in your query.
- The top search engines use stemming technology that looks for plurals and other variations of the search terms you enter. For example, if you enter *diet*, the search engine also looks for pages with terms such as *diets*, *dietary*, and *dietician*.
- Order matters. A search for *time machine* produces different results than a search for *machine time*.
- Location matters. If your search engine is able to determine your location, your results might be affected. Most search engines give you an option for changing your location or hiding it.
- Search engines build on your previous searches. If you formulate several Batman-related searches and then search for *dark night*, your search engine might assume that you are looking for information about the Batman movie *The Dark Knight* instead of astronomy information. Google uses this predictive technology unless you clear your Web history.

FIGURE 7-22

Tips for Effective Queries

## 7

# Formulating Searches

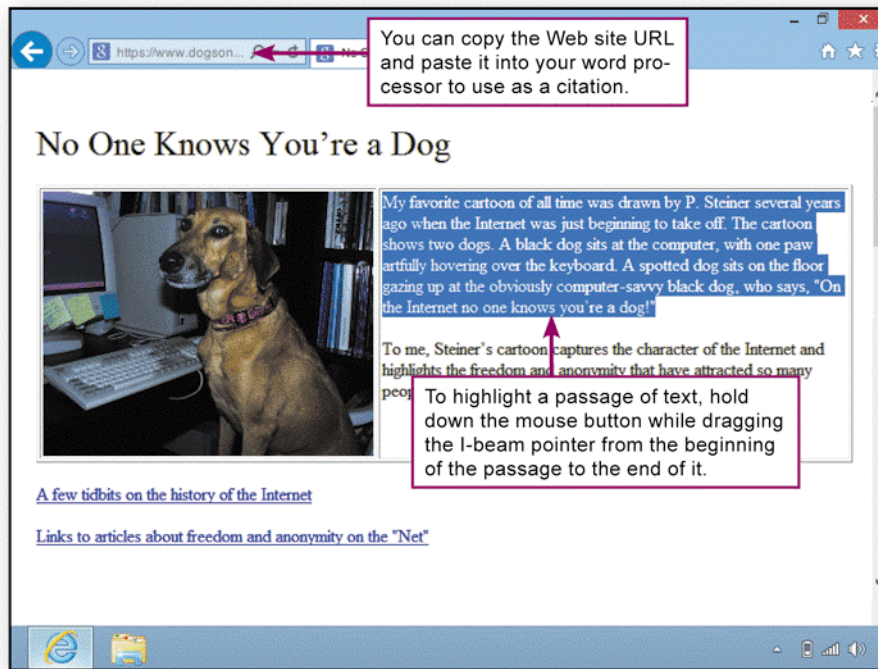
- A search operator is a word or symbol that describes a relationship between search terms and thereby helps you create a more focused query

AND	When two search terms are joined by <i>AND</i> , both terms must appear on a Web page before it can be included in the search results. The query <i>railroad AND cars</i> will locate pages that contain both the words <i>railroad</i> and <i>cars</i> . Your search results might include pages containing information about old railroad cars, about railroad car construction, and even about railroads that haul automobiles (cars). Some search engines use the plus symbol (+) instead of the word <i>AND</i> .
OR	When two search terms are joined by <i>OR</i> , either one or both of the search words could appear on a page. Entering the query <i>railroad OR cars</i> produces information about railroad fares, railroad routes, railroad cars, automobile safety records, and even car ferries.
NOT	The search term following <i>NOT</i> must not appear on any of the pages found by the search engine. Entering <i>railroad NOT cars</i> would tell the search engine to look for pages that include <i>railroad</i> but not the term <i>cars</i> . In some search engines, the minus sign (-) can be used instead of the word <i>NOT</i> .
" "	To search for an exact phrase, enter it in quotes. For example, " <i>Dynamic Duo</i> ."
*	The asterisk (*) is sometimes referred to as a wildcard character. It allows a search engine to find pages with any derivation of a basic word. For example, the query <i>medic*</i> would produce pages containing not only the word <i>medic</i> , but also the words <i>medics</i> , <i>medicine</i> , <i>medical</i> , <i>medication</i> , and <i>medicinal</i> .
..	Google lets you use two dots to specify a range of numbers, dates, episodes, or prices. For example, to view <i>Batman</i> episodes 5, 6, 7, and 8, you can enter <i>Batman episodes 5..8</i> .

**FIGURE 7-23**  
Search Operators

# 7

# Using Web-Based Source Material



**FIGURE 7-27**

To copy a passage of text from a Web page, highlight the text, right-click it, then select Copy. Next, switch to your own document and use the Paste option. ▶ For a demonstration of this process, go to your interactive eBook.

Web site © Media techniques



# 7

## Section C: E-commerce

- E-commerce Basics
- E-commerce Site Technology
- Online Payment

# 7

## E-commerce Basics

- Business transactions conducted electronically over a computer network
  - B2C (business-to-consumer)
  - C2C (consumer-to-consumer)
  - B2B (business-to-business)
  - B2G (business-to-government)



B2C: Online storefronts offer goods, merchandise, and services to consumers.



C2C: Consumers sell to each other at popular auction and list sites such as eBay and craigslist.



B2B and B2G: Businesses sell goods and services to other businesses or to the government.

**FIGURE 7-28**

E-commerce offers consumers many types of goods and services.

# 7

## E-commerce Basics

- Enhances traditional business models
- Styles of online advertisements
  - Banner ad
  - Hover ad
  - Pop-up ad
    - Click-through rate
- Ad-blocking software prevents ads from appearing on screens

**FIGURE 7-29**

Pop-up ads appear as separate windows.



# E-commerce Site Technology

- E-commerce offers some unique advantages over brick-and-mortar stores and mail-order catalogs
  - Easily search for merchandise
  - Easily compare prices and products
- Two popular models
  - B2C
  - C2C

# E-commerce Site Technology

**FIGURE 7-31**

Shopping cart items can be stored in a cookie.



1. When you click the Add to Cart button, the merchant's server sends a message to your browser to add that item number to the cookie, which is stored on your computer.

ITEM # B7655



2. When you check out, the server asks your browser for all the cookie data that pertains to your shopping cart items.



3. Your browser sends those cookies along with a request for an order summary.

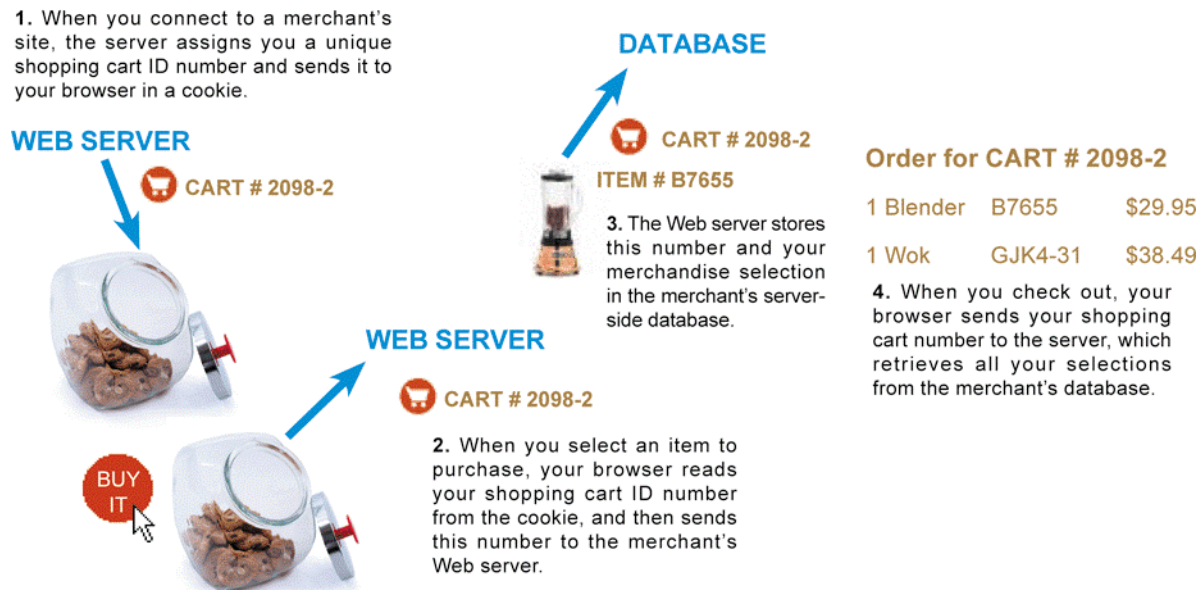
## Your order:

1 Blender \$29.95

1 Wok \$38.49

4. The Web server uses the cookies to look up products in its database and produce a Web page listing the items you want to purchase.

# E-commerce Site Technology



**FIGURE 7-32**

Shopping cart items can be stored in a server-side database.

## 7

# E-commerce Site Technology

- At C2C auction and online classified advertising e-commerce sites, consumers offer goods and services to other consumers
- C2C sites are hosted by an e-commerce provider such as eBay or craigslist or kijiji

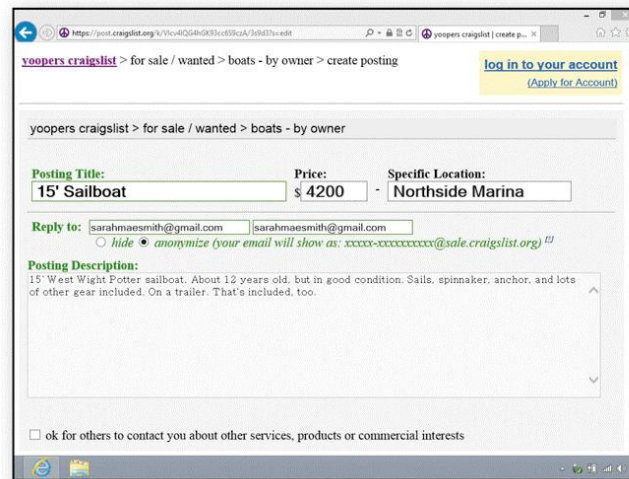
A screenshot of a web browser showing the Craigslist 'create posting' form. The browser address bar shows a URL from craigslist.org. The page title is 'yoopers craigslist > for sale / wanted > boats - by owner > create posting'. The form includes fields for 'Posting Title' (15' Sailboat), 'Price' (\$ 4200), and 'Specific Location' (Northside Marina). There is a 'Reply to:' field with an email address and a checkbox for 'hide' and 'anonymize'. A 'Posting Description' field contains text about a 15' West Wight Potter sailboat. At the bottom, there is a checkbox for 'ok for others to contact you about other services, products or commercial interests'. The browser's taskbar and system tray are visible at the bottom.

FIGURE 7-33

The craigslist Web site provides a form for entering product descriptions and photos.

## 7

# E-commerce Site Technology

- Many C2C sites use e-mail forwarding to protect participants' privacy

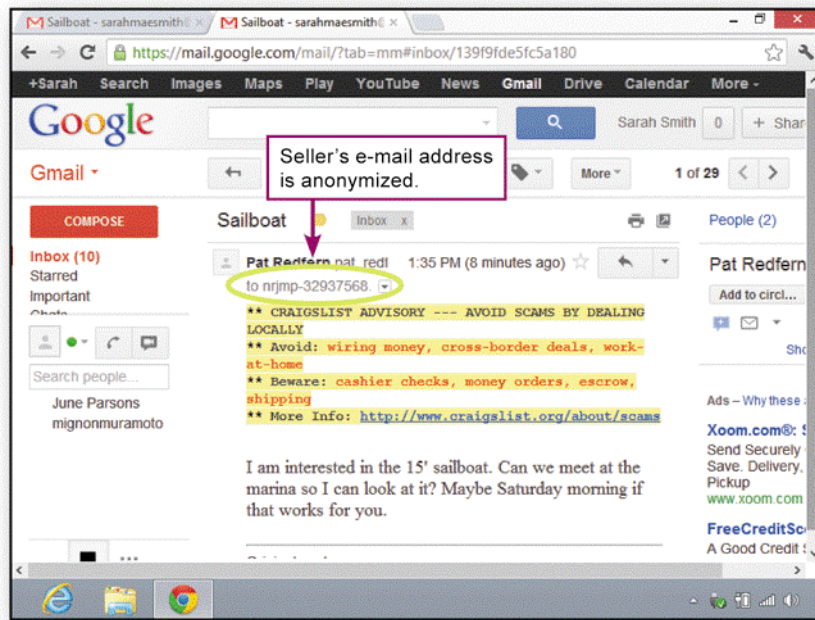


FIGURE 7-35

Communication between sellers and buyers is mediated through protected e-mail forwarding provided by the C2C host provider.

Web site © 2012 Google



# 7 Online Payment

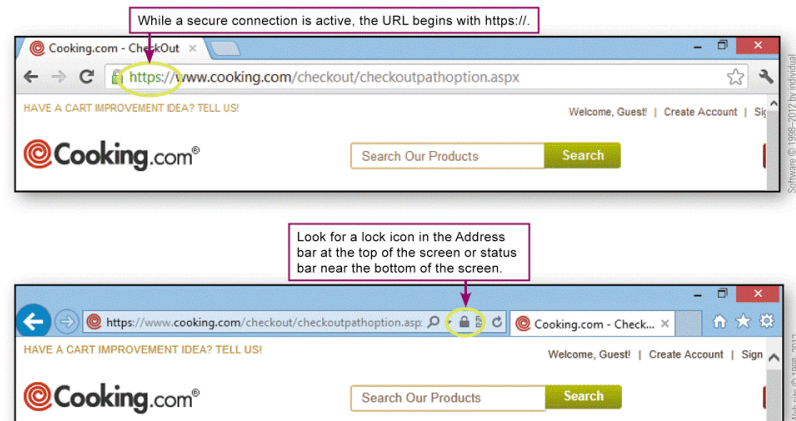
- The most popular ways to make online payments include submitting your credit card number directly to a merchant and using a third-party payment service such as PayPal
- Online shoppers are justifiably worried that personal information and credit card numbers supplied in the course of an e-commerce transaction might be hijacked and used inappropriately

# 7 Online Payment

- A secure connection encrypts the data transmitted between your computer and a Web site
  - SSL (Secure Sockets Layer)
  - TLS (Transport Layer Security)
  - HTTPS (Hypertext Transfer Protocol Secure)

FIGURE 7-36

Look for https or a padlock icon to ensure you have a secure connection.



# 7 Online Payment

- Person-to-person payments are an alternative to credit cards
  - The payment service is the only entity that sees your credit card number



**FIGURE 7-38**

PayPal and other online payment systems offer a method for transferring funds without revealing your credit card number to the payee.

# 7

## Section D: E-mail

- E-mail Overview
- Local E-mail
- Webmail
- E-mail Attachments
- Netiquette

# 7 E-Mail Overview

- An e-mail message is an electronic document transmitted over a computer network
- The computers and software that provide e-mail services form an e-mail system
- An e-mail server acts as a central post office for a group of people
- A message header is divided into fields that contain the sender's e-mail address, the recipient's address, a subject line, and the date and time the message was written

# 7 E-Mail Overview

© Jack Z. Young/Shutterstock  
© Wallerock/Shutterstock



1. To use a person-to-person payment service, simply log in to your account, enter the recipient's e-mail address, and indicate the payment amount.



2. The recipient immediately receives an e-mail notification of your payment.



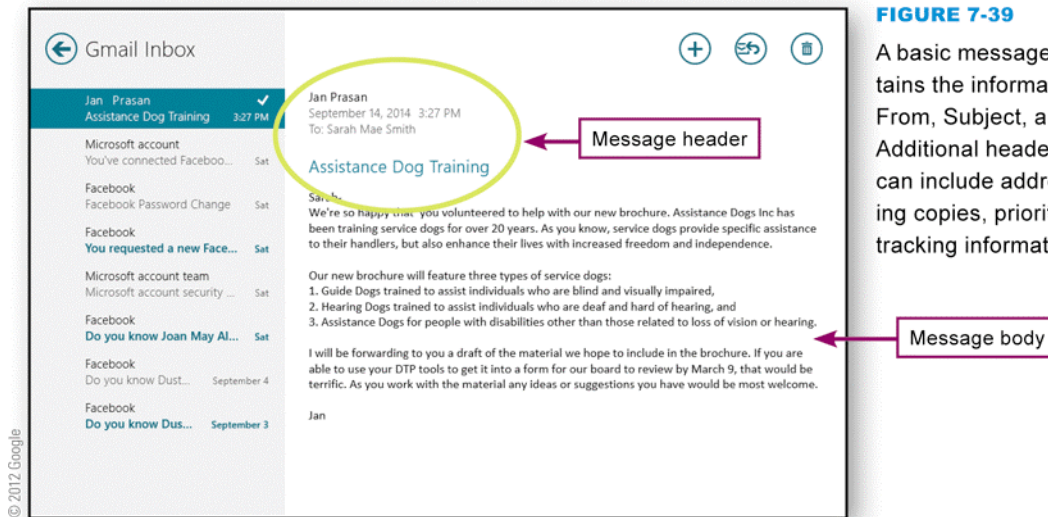
3. The recipient connects to the payment site to pick up the money by transferring the funds to his or her checking or payment account, requesting a check, or sending the funds to someone else.

**FIGURE 7-38**

PayPal and other online payment systems offer a method for transferring funds without revealing your credit card number to the payee.

# 7 E-Mail Overview

- To use an e-mail system, you need:
  - Internet connection
  - E-mail account
  - E-mail software
    - E-mail client software
    - Webmail



**FIGURE 7-39**

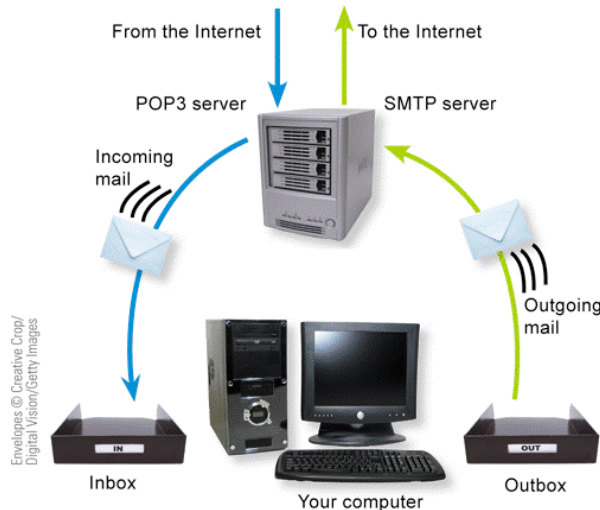
A basic message header contains the information for To, From, Subject, and Date fields. Additional header information can include addresses for sending copies, priority levels, and tracking information.

Message body

## 7

# Local E-mail

- When you use local e-mail, an e-mail server stores your incoming messages until you launch your e-mail client and get your mail
  - Based on store-and-forward technology
- E-mail protocols
  - POP3
  - IMAP
  - SMTP



**FIGURE 7-40**

Outgoing mail can be stored in your Outbox until you connect to the Internet and send it to the SMTP server. Incoming mail can be stored on a POP3 server until it is downloaded to the Inbox on your hard disk.



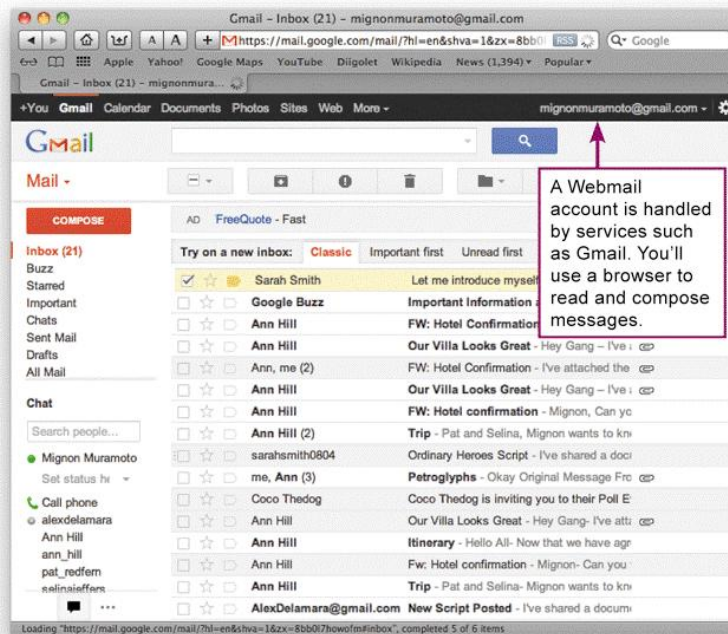
# 7

# Webmail

- Webmail is typically a free service accessed using a browser

**FIGURE 7-43**

You can use a browser to access your Webmail account. This figure in your interactive eBook takes you on a tour of Gmail.



Software © 2012 Google

# E-Mail Attachments

- E-mail attachments are files that travel with an e-mail message
  - E-mail software converts e-mail attachments using a conversion process called MIME
- When working with attachments, keep the following points in mind:
  - Don't send huge attachments
  - Explain all attachments
  - Don't open suspicious attachments
  - You can save attachments
  - You might have to download a plug-in or player

# Netiquette

**FIGURE 7-46**

Principles of Netiquette

- **Put a meaningful title on the subject line.** The subject line of your message should clearly describe the contents of your e-mail message.
- **Use uppercase and lowercase letters.** An e-mail message that's typed in all uppercase means that you're shouting.
- **Check spelling.** Most e-mail software offers a Check Spelling command. Use it.
- **Be careful what you send.** E-mail is not private, nor is it secure. Treat your messages as though they are postcards that can be read by anyone. Remember that all laws governing copyright, slander, and discrimination apply to e-mail.
- **Be polite.** Avoid wording that could sound inflammatory or argumentative. If you would not say it face-to-face, don't say it in e-mail.
- **Be cautious when using sarcasm and humor.** The words in your e-mail arrive without facial expressions or voice intonations, so a sarcastic comment can easily be misinterpreted.
- **Notify recipients of viruses.** If you discover that your computer sent out infected attachments, use antivirus software to remove the virus, and then notify anyone to whom you recently sent mail.
- **Use smileys and text messaging shorthand cautiously.** **Smileys** are symbols such as :- ) that represent emotions. They can help convey the intent behind your words, but use them only in casual messages.
- **Use the Bcc function for group mailings.** By placing e-mail addresses for secondary recipients in the Bcc box, the recipients of your message won't have to scroll through a long list of addresses before reaching the meat of your message.
- **Don't send replies to all recipients.** Use the Reply All command only when there is a very specific need for everyone listed in the To, Cc, and Bcc boxes to receive the message.

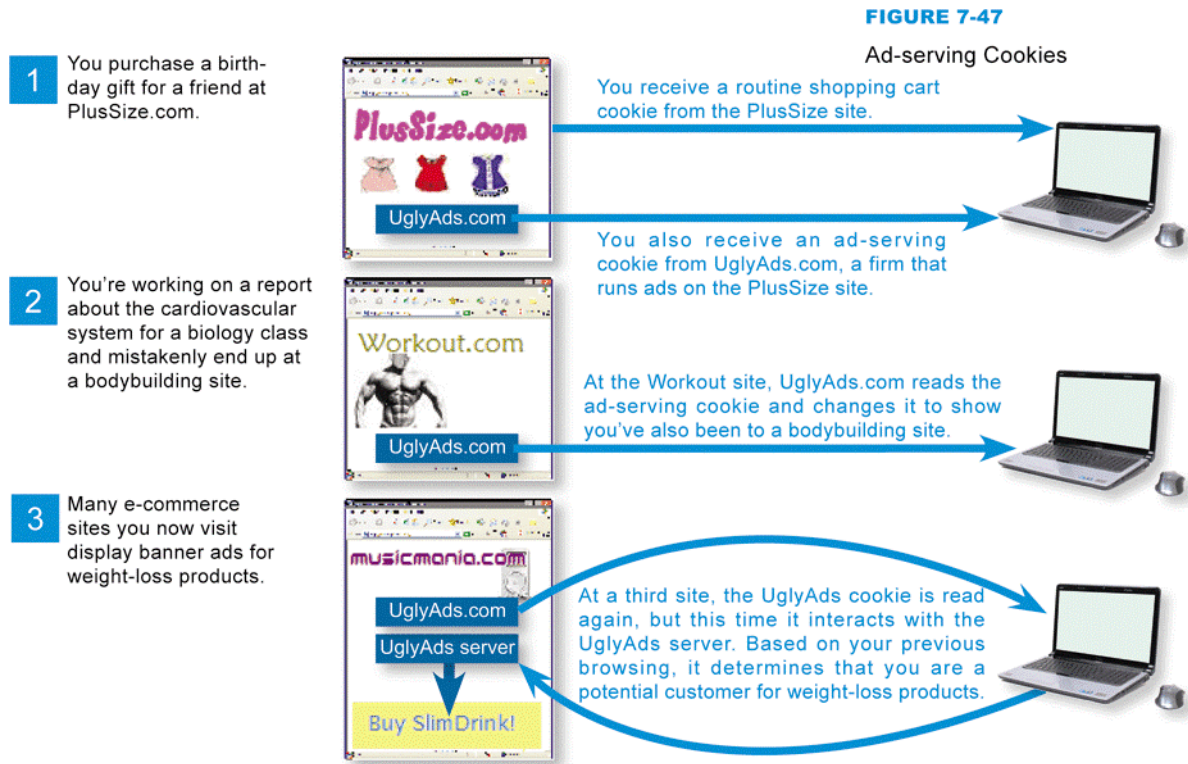
# 7

## Section E: Web and E-mail Security

- Cookie Exploits
- Spam
- Phishing
- Fake Sites

# 7 Cookie Exploits

- An ad-serving cookie can select and display ads that might interest you

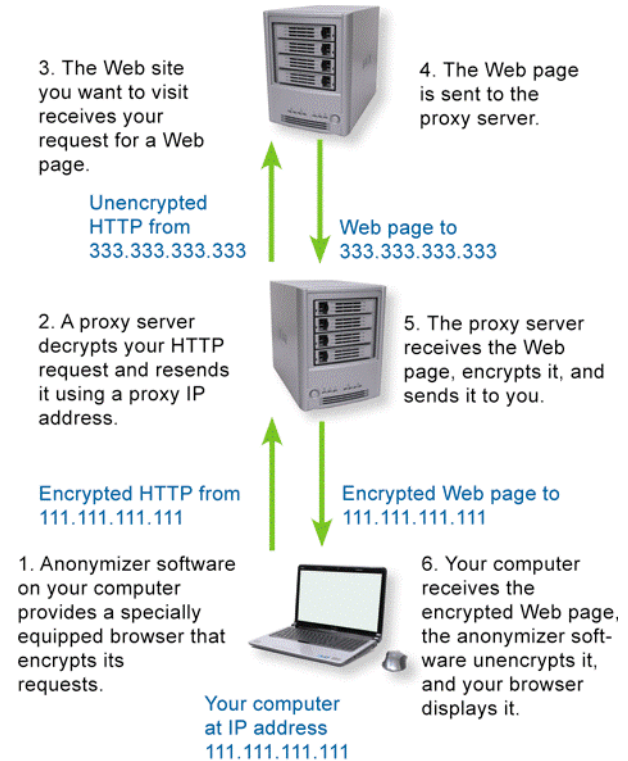


# 7 Cookie Exploits

- A Flash cookie, also called a local shared object, is the Flash equivalent of a conventional Web cookie
- A Web bug or clear GIF is typically a 1x1 pixel graphic embedded in a Web page or e-mail message. It is almost invisible due to its size and is designed to track who's reading the Web page or e-mail message
- Antispyware is a type of security software designed to identify and neutralize Web bugs, ad-serving cookies, and other spyware

# 7 Cookie Exploits

- Individuals who prefer not to leave a trail of their Internet activities surf through an anonymous proxy service, which uses an intermediary, or proxy, server to relay Web page requests after masking the originating IP address



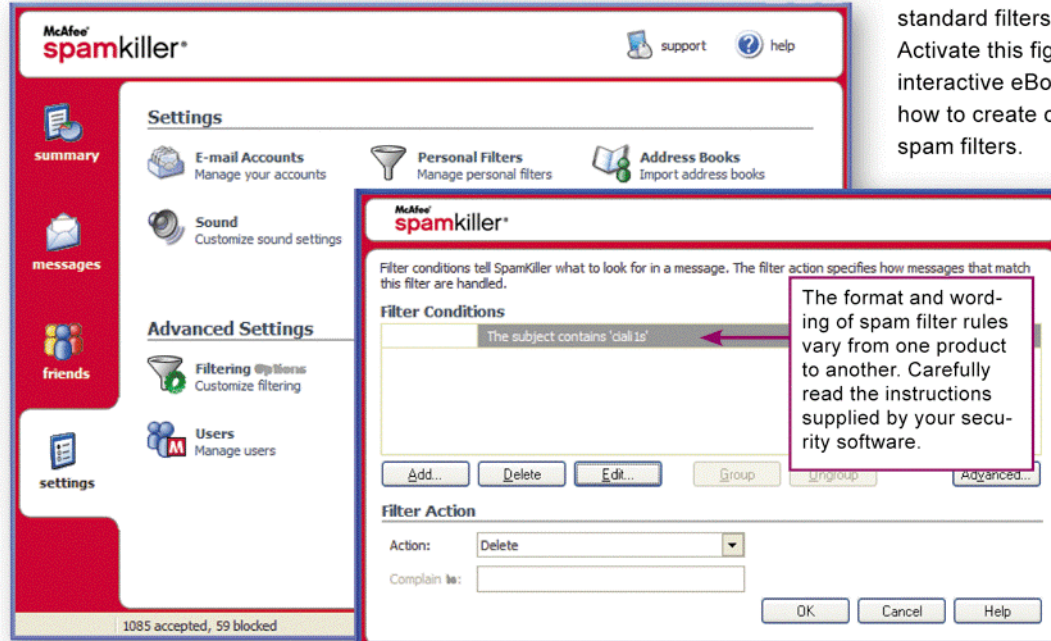
**FIGURE 7-50**

An anonymous proxy server relays your Web page requests after stripping off your IP address. ▶ To see this process in action, activate this figure in your interactive eBook.


# Spam

- Spam is unwanted electronic junk mail about medical products, low-cost loans, and fake software upgrades that arrive in your online mailbox
- Spam has turned into another major hacking tool for cybercriminals
- A spam filter is a type of utility software that captures unsolicited e-mail messages before they reach your inbox





**FIGURE 7-51**

Spam filters include standard rules that block common spams, but you can create your own rules for spam that standard filters miss.  Activate this figure in your interactive eBook to find out how to create customized spam filters.

# Phishing

- Phishing is an e-mail based scam designed to persuade you to reveal confidential information, such as your bank account number or Social Security number
- If you don't want to become a phishing victim, be suspicious of e-mail messages that supposedly come from banks, ISPs, online payment services, operating system publishers, and online merchants

# 7

## Fake Sites

- A fake, or fraudulent, Web site looks legitimate, but has been created by a third party to be a very clever replica of a legitimate Web site
- Pharming is an exploit that redirects users to fake sites by poisoning a domain name server with a false IP address
- Pharming is more surreptitious and tougher to detect than most other hacker schemes

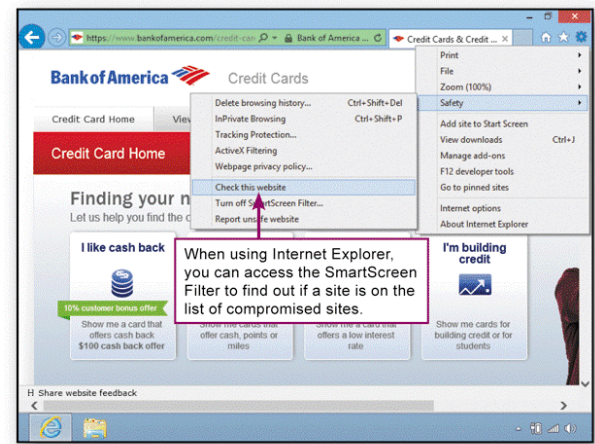


FIGURE 7-53

Most browsers include features that can help you avoid pharming and phishing attacks.

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# Fake Sites

- Use antispyware utilities to clean up any spyware that might have infiltrated your computer.
- Run antispyware continuously just as you do antivirus software.
- Set your browser to reject third-party cookies.
- Consider using your browser's private browsing feature when you want cookies deleted at the end of your session.
- Check Flash Player settings to make sure you control the sites that store Flash cookies on your computer.
- Make sure your browser's antispoofing tools are activated; or install a third-party antispoofing tool to help you identify fake Web sites.
- Set up a disposable e-mail address at a site such as Hotmail or Gmail and use it when you don't want to disclose your primary e-mail address.
- Do not click links in untrusted e-mail or pop-up ads, and never respond to e-mail offers, especially those that seem too good to be true.

**FIGURE 7-54**

Guidelines for Secure and Private Web Surfing

# Chapter 7 Complete

## Computer Concepts 2014

