Chapter 2   The Internet, The Web, And Electronic Commerce

A. Competencies

1. Discuss the origins of the Internet and Web.

2. Describe how to access the Web using providers and browsers.

3. Discuss Internet communications including e-mail, instant messaging, and discussion groups.

4. Describe search tools including search engines, metasearch engines and specialized search engines.


B. The Internet and the Web

- The Internet launched by ARPANET is a worldwide network
  - The Internet is a worldwide network.
  - The **Internet**, or **Net**, started in 1969 when the United States government funded a major research project on computer networking called ARPANET (Advanced Research Project Agency Network).
  - The Internet is an actual large physical network that connects smaller networks all over the globe. It is made up of wires, cables, and satellites.
  - Being connected to this network is often described as being **online**.
  - It connects millions of computers and resources throughout the world.

- What is the **Web**?
  - The **Web** provides a multimedia interface to resources available over the **Internet**.
  - It is also known as **WWW** or **World Wide Web**.
  - Everyday a billion users from every country in the world use the Internet and the Web.
  - The **Web** was first introduced in 1992 at **CERN** (Center for European Nuclear Research) in Switzerland.
  - Prior to the Web, the Internet was all text with no graphics, animations, sound, or video.
The most common Internet uses are:

- **Communicating**
  - Communicating is the most popular Internet activity.
  - You can use e-mail to send or receive messages to people around the world.
  - You can join discussion groups on various topics.
  - You can chat live with others.
  - You can create your own personal web page.

- **Shopping**
  - You can visit individual stores or a cybermall providing access to a variety of different stores.
  - You can purchase goods using checks, credit cards, or electronic cash called electronic payment.

- **Searching**
  - You can do research on the Internet by visiting virtual libraries and browse through stacks of books.
  - You can read selected items at the virtual libraries and even check out books.
  - You can find the latest local, national, and international news.
  - Many newspapers maintain an online presence.

- **Entertainment**
  - Find music, movies, magazines, and computer games.

- **Education or e-learning**
  - Education is a rapidly emerging Web application.
  - Classes can be taken for high school, college, and graduate school credit.
  - Courses are available about a wide variety of subjects and are available for a cost or for free

**C. Access**

- **How do you get connected to the Internet?**
  - **Providers** give us access to the Internet.
  - Once connected, your computer becomes an extension of what seems like one giant computer.
  - **Browsers** provide access to web resources.

1. **Providers**
   - Using a provider or host computer is the most common way to access the Internet.
   - A provider is already connected to the Internet.
It’s possible to find free providers to the Internet, such as your college or university.

Commercial Internet Service Providers are called ISPs

ISPs use a variety of connection technologies including dial-up, Digital Subscriber Line (DSL), cable, and wireless modems

This creates a client/server network: the user’s computer is the client, the ISPs computer is the server

A variety of technologies are used including dial-up, DSL, cable, and wireless modems to create a client-server network.

a) National service providers

- Example is America On Line (AOL)
- They provide access through standard telephone connections.
- Access the Internet from almost anywhere in the United States without incurring long distance charges

b) Regional service providers

- Also use telephone lines and their service areas cover smaller regions and you’ll incur long distance charges if you connect from outside their region

c) Wireless service providers

- Don’t use standard telephone connections.
- Do use wireless modems and/or other wireless devices

2. Browsers

- Browsers are programs that provide access to Web resources

Browser software lets you:

- Connect to remote computers
- Open and transfer files
- Display text and images
- Have in one tool an uncomplicated interface to the Internet and Web documents.
- Surf or explore the Web, easily moving from one site to another

Two well known browsers are Netscape Navigator and Microsoft Internet Explorer

- Uniform Resource Locators URLs

  - URL is an address or location of the resources or web sites
  - URLs have two basic parts
    - **Protocol** (rules to exchange data between computers), used to connect to the resource e.g. http://
    - **Domain name** or name of the server where the resource is located, e.g. www.mtv.com
- **Domain code** is the last part of the domain name following the dot (.) that identifies the type of organization.
  - Domain codes include .com, .net, .gov, .mil, .edu, .org
- **Hypertext Markup Language (HTML) documents**
  - **Web pages** that contain commands to properly display information on the browser
  - Page may contain **links** or **hyperlinks** that take you to another page containing related information
  - Links appears as underlined and colored text and/or images on the web pages that needs to be clicked
- **Web Servers**
  - The computer that stores and shares HTML documents
- **Applets**
  - Special programs added to web pages that are often written in a language called **Java**
  - They can be quickly downloaded and run by most browsers
  - Java applets are used to add interest and activity to a website by presenting animation, displaying graphics, providing interactive games, and much more

**D. Communication**
- Communication is the most common Internet activity.
- It allows you to stay in contact with people separated by thousands of miles.
- At a business level, electronic communication has become a standard way to stay in touch with suppliers, employees, and customers.
- The most popular types of Internet communication are e-mail, instant messaging, and discussion groups.

1. **E-Mail**
   - **E-mail** or **electronic mail** is the transmission of electronic messages over the Internet.
   - At one time it consisted only of text messages
   - Now, e-mail routinely includes:
     - graphics, photos, and many different types of file attachments
   - Two widely used programs are
     - Microsoft’s Outlook Express
     - Netscape’s Mail
   - An e-mail message has three basic elements:
     - **Header** – appears first in an e-mail message and contains the following information:
       - **Addresses** - the addresses of the persons sending and receiving the e-mail and anyone who is receiving copies.
       - E-mail addresses have two basic parts – first part is **user’s name** and second part is **domain name** like xyz@ksu.edu.sa
• Subject - a one-line description to present the topic of the message displayed when a person checks his mail.
• Attachments - files that can be sent with the e-mail program.
• Message – the text of the e-mail communication.
• Signature line – may include sender’s name, address and telephone number (optional).
• **Drawbacks to e-mail**
  • **Spam** is unwelcome or unwanted e-mail
  • **Computer viruses** or destructive programs can be attached to unsolicited e-mail

2. **Discussion Groups**
   • Allow you to use e-mail to communicate in discussion groups with people you do not know but with whom you wish to share ideas and interests.
   • There are several types of discussion groups on the Internet:
     • Mailing Lists
     • Newsgroups
     • Chat Groups
     • Instant Messaging
   • **Mailing Lists**
     • In this type of discussion group, **members communicate by sending messages to a list address.**
     • To join, send your e-mail request to the mailing list **subscription address.**
     • To cancel, send your e-mail request to **unsubscribe** to the subscription address.
   • **Newsgroups**
     • Newsgroups are the most popular type of discussion group.
     • They use a special network of computers called the **UseNet.**
     • Each UseNet computer maintains the newsgroup listing.
     • There are over 10,000 different newsgroups organized into major topic areas.
     • Newsgroup organization hierarchy system is similar to the domain name system.
     • Contributions to a particular newsgroup are sent to one of the UseNet computers.
     • UseNet computers save messages and periodically share them with other UseNet computers.
     • Unlike mailing lists, a copy of each message is not sent to each member of a list rather interested individuals can read contributions to a newsgroup.
   • **Chat Groups**
     • **They allow direct “live” communication** (real-time communication).
     • To participate in a chat group, you need to join by selecting a **channel** or topic.
     • You communicate live with others by typing words on your computer.
Other members of your channel immediately see the words on their computers and can respond. The most popular chat service is called Internet Relay Chat (IRC), which requires special chat client software. You may want to try “lurking” by watching how the group discusses before contributing yourself.

3. Instant Messaging
- Like chat groups allows two or more people to contact each other via direct, live communication.
- You specify a list of friends (aka buddies or contacts) after registering with an instant messaging service.
- Widely used services include AIM (AOL Instant Messenger), Microsoft’s MSN Messenger, and Yahoo! Messenger.
- Some universal instant messenger programs (e.g. Gain, Odigo, Trillian) allow you to communicate with a number of services.

E. Search Tools
- Web is a huge collection of interrelated pages with lots of information.
- Search tools developed for the Internet help users locate precise information.
- A number of organizations called search services or search providers operate web sites that can help you locate the information you need.
- They maintain huge databases relating information provided on the Web and the internet.
- These database store addresses, content description, and key words appearing on web pages.
- Special programs called agents, spiders, or bots continually look for new information and update the search services’ database.

1. Search engines
- Search engines are specialized programs that assist you in locating information on the Web and the Internet.
- To access a search engine, you must visit a web site that has a search tool available.
- There are two basic types of search approaches:
  o Keyword Search
  o Directory Search (index search)

a) Keyword Search
- The user enters a keyword or phrase reflecting the information desired.
The search engine compares the entry against its database and returns a list of hits or sites that contain the keywords.
- Each hit includes a hyperlink to the referenced Web page or other resource along with brief description of information contained at that location.
- Many searches results in large number of hits and these are usually ordered in a group of 10.

**b) Directory (or Index) Search**
- Most search engines also provide a directory or list of categories or topics such as Finance, Health, and News.
- You select a category or topic that fits the information you want.
- Each category is further organized into subcategories.
- Users can continue search of subcategories until a list of relevant documents appears.
- It is advisable to use more than one search engine when researching important topics.
- If you are looking for specific information use the keyword approach and if you want general information use the directory search approach.

2. **Metasearch Engines**
- Metasearch engines are programs that automatically submit your search request to several search engines simultaneously.
- The metasearch engine receives the results, eliminates duplicates, orders the hits, and then provides the edited list to you.
- One of the best known metasearch sites on the Web is MetaCrawler.

3. **Specialized Search Engines**
- Specialized search engines focus on subject-specific Web sites.
- These sites can potentially save you time by narrowing your search.

**F. Electronic Commerce**
- **Electronic commerce**, also known as e-commerce, is the buying and selling of goods and services over the Internet.

1. There are three basic types of e-commerce:
   **a) Business-to-consumer (B2C)**
   - Involves the sale of a product or service to the general public or end-users.
   - Often eliminates the middleman allowing manufacturers to sell directly to customers.
   - Used by retail stores to establish a presence on the Web as another way to reach customers.
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Chapter 2 The Internet, The Web, And Electronic Commerce

b) Consumer-to-consumer (C2C)
   - Individuals sell to individuals.
   - An electronic version of the classified ads or an auction
   - Sellers and buyers negotiate prices.
   - Buyers and sellers typically never meet face-to-face.

c) Business-to-business (B2B)
   - Involves the sale of a product or service from one business to another
   - Manufacturers electronically place orders with suppliers.
   - Many times payments are made electronically.

2. Web Storefronts
   - Web storefronts are virtual stores for B2C electronic commerce.
   - Web storefronts are where shoppers can go to inspect merchandise and make purchases on the Internet.
   - Web storefront creation packages (aka commerce servers) are used to help businesses create virtual stores.
   - Web storefront creation packages do the following:
     - Allow visitors to register, browse, place products into virtual shopping carts, and purchase goods and services.
     - Calculate taxes and shipping costs and handle payment options.
     - Update and replenish inventory.
     - Ensure reliable and safe communications.
     - Collect data on visitors
     - Generate reports to evaluate the site’s profitability

3. Web Auctions
   - Web auctions are a recent trend in C2C electronic commerce.
   - Web auctions are similar to traditional auctions, but buyers and sellers do not meet face-to-face.
   - Sellers post descriptions of products at a Web site.
   - Buyers submit bids electronically.
   - There are two basic types of Web auction sites:

a) Auction house sites
   - Auction house owner present merchandise typically from company’s surplus stock
   - Auction house sites operate similar to a traditional auction.
   - Bargain prices are not uncommon on this type of site.
   - They are generally considered safe places to shop.

b) Person-to-person sites
   - Owner of site provides a forum for buyers and sellers to gather.
   - Person-to-person sites operate more like a flea market.
The owner of the site typically facilitates rather than being involved in transactions.
Buyers and sellers on this type of site must be cautious.

4. Security
- The greatest challenge for e-commerce is the development of fast, secure, and reliable payment methods for purchased goods.
- Three basic payment options now in use are:

a) Checks
- After an item is purchased on the Internet, a check for payment is sent in the mail.
- It requires the longest time to complete a purchase.
- It is the most traditional and safest method of payment.

b) Credit Card
- Credit card number can be sent over the Internet at time of purchase.
- It is a faster and more convenient method of paying for Internet purchases.
- However, credit card fraud is a major concern for buyers and sellers.
- Criminals known as carders specialize in stealing, trading, and using stolen credit cards over the Internet.

c) Electronic Cash
- Electronic cash is also known as e-cash, cyber cash, or digital cash.
- It is the Internet equivalent to traditional cash.
- Buyers purchase e-cash from a third party such as a bank that specializes in electronic currency.
- Buyers can then purchase goods on the Internet using e-cash.
- Sellers convert e-cash to traditional currency through a third party.
- It is more secure than using a credit card for purchases.

G. Web Utilities
- Web Utilities are programs that make using the Internet and the Web easier and safe.
  - Some utilities are Internet services for connecting and sharing resources over the Internet.
  - Some utilities are browser-related programs.
  - Common categories of web utilities are:
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Chapter 2 The Internet, The Web, And Electronic Commerce

1. Telnet
   - Telnet is an Internet standard that allows you to connect to another computer (host) on the Internet.
   - With Telnet you can log on to the computer as if you were a terminal connected to it.
   - Some computers allow free access; some charge a fee for their use.

2. FTP
   - FTP is an Internet service for transferring files.
   - Many computers on the Internet allow you to copy files to your computer.
   - If you copy a file from an Internet computer to your computer, it is called downloading.
   - If you copy a file from your computer to an Internet computer, it is called uploading.

3. Plug-Ins
   - A plug-in is a program that automatically loads and operates as part of your browser.
   - Many web sites require plug-ins for users to fully experience web page contents.
   - Some widely used plug-ins are:
     a) Acrobat Reader from Adobe
        - Used to view and print a variety of standard forms and other documents saved in a special format called PDF.
     b) Cosmos from Silicon Graphics
        - Used to display three-dimensional graphics and used in sites displaying virtual reality.
     c) Windows Media Player from Microsoft
        - Used to play audio files (including MP3 files) and to view video.
     d) QuickTime from Apple
        - For playing audio and video files.
     e) Realplayer from RealNetworks
        - For playing audio and video files.
     f) Shockwave from Macromedia
        - For playing Web-based games and viewing concerts and dynamic animations.
4. Filters

- **Filters** are programs that allow parents or organizations to block access to selected sites and set time limits.
- They can monitor usage and generate reports detailing time spent on the Internet, time spent at individual Web sites, chat groups, and news groups.
- Three well known filters are Cyber Patrol, Cybersitter, and NetNanny.