Internet Services

Learning objectives

By the end of this chapter, student should be able to understand:

1. E-commerce
2. WWW (World Wide Web)
3. E-mail

6.2 Electronic commerce (e-commerce)

• **Electronic commerce**, commonly known as **e-commerce** or **ecommerce**, consists of the buying and selling of products or services over electronic systems such as the Internet and other computer networks. The amount of trade conducted electronically has grown extraordinarily since the spread of the internet. A wide variety of commerce is conducted in this way, spurring and drawing on innovations in electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems.

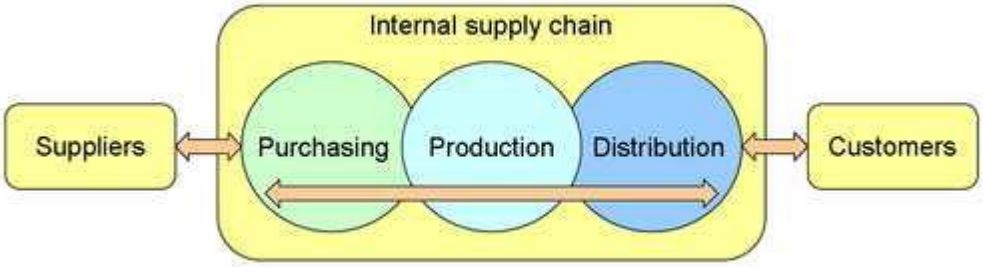
• **Electronic funds transfer** or **EFT** refers to the computer-based systems used to perform financial transactions electronically.

• The term is used for a number of different concepts:

- Cardholder-initiated transactions, where a cardholder makes use of a payment card
- Direct deposit payroll payments for a business to its employees, possibly via a payroll services company
- Direct debit payments from customer to business, where the transaction is initiated by the business with customer permission
- Electronic bill payment in online banking, which may be delivered by EFT or paper check
- Transactions involving stored value of electronic money, possibly in a private currency
- Wire transfer via an international banking network (generally carries a higher fee)
- Electronic Benefit Transfer

• **Supply Chain Management (SCM)** is the management of a network of interconnected businesses involved in the ultimate provision of product and service packages required by end customers (Harland, 1996). Supply Chain Management spans all movement and storage of raw

materials, work-in-process inventory, and finished goods from point-of-origin to point-of-consumption (supply chain)



An illustration of a company's supply chain; the arrows stand for supplier-relationship management, internal SCM and customer-relationship management.

- **Internet marketing**: also referred to as **web marketing**, **online marketing**, or **eMarketing**, is the marketing of products or services over the Internet.
- The Internet has brought many unique benefits to marketing, one of which being lower costs for the distribution of information and media to a global audience.
- The interactive nature of Internet marketing, both in terms of providing instant response and eliciting responses, is a unique quality of the medium.
- Internet marketing is sometimes considered to have a broader scope because it refers to digital media such as the Internet, e-mail, and wireless media; however, Internet marketing also includes management of digital customer data and electronic customer relationship management (ECRM) systems.
- Internet marketing ties together creative and technical aspects of the Internet, including design, development, advertising, and sales.
- Internet marketing does not simply entail building or promoting a website, nor does it mean placing a banner ad on another website. Effective Internet marketing requires a comprehensive strategy that synergizes a given company's business model and sales goals with its website function and appearance, focusing on its target market through proper choice of advertising type, media, and design.

• Internet marketing also refers to the placement of media along different stages of the customer engagement cycle through search engine marketing (SEM), search engine optimization (SEO), banner ads on specific websites, e-mail marketing, and Web 2.0 strategies.

• **Online transaction processing**, or **OLTP**, refers to a class of systems that facilitate and manage transaction-oriented applications, typically for data entry and retrieval transaction processing. The term is somewhat ambiguous; some understand a "transaction" in the context of computer or database transactions, while others (such as the Transaction Processing Performance Council) define it in terms of business or commercial transactions.[1] OLTP has also been used to refer to processing in which the system responds immediately to user requests. An automatic teller machine (ATM) for a bank is an example of a commercial transaction processing application.

• The technology is used in a number of industries, including banking, airlines, mail order, supermarkets, and manufacturing. Applications include electronic banking, order processing, employee time clock systems, e-commerce, and eTrading.

• Modern electronic commerce typically uses the World Wide Web at least at some point in the transaction's lifecycle, although it can encompass a wider range of technologies such as email as well.

• A large percentage of electronic commerce is conducted entirely electronically for virtual items such as access to premium content on a website, but most electronic commerce involves the transportation of physical items in some way. Online retailers are sometimes known as **e-tailers** and online retail is sometimes known as **e-tail**. Almost all big retailers have electronic commerce presence on the World Wide Web.

• Electronic commerce that is conducted between businesses is referred to as *business-tobusiness or B2B. B2B* can be open to all interested parties (e.g. commodity exchange) or limited to specific, pre-qualified participants (private electronic market). Electronic commerce that is conducted between businesses and consumers, on the other hand, is referred to as *business-to-consumer or B2C*. This is the type of electronic commerce conducted by companies such as Amazon.com.

• Electronic commerce is generally considered to be the sales aspect of e-business. It also consists of the exchange of data to facilitate the financing and payment aspects of the business transactions.

WWW (World Wide Web)

- The Internet consists of many services. What most people hear about however is the World Wide Web (WWW). This is a graphical environment that allows text and pictures to be displayed on your screen, via software called Web browsers (such as Microsoft Internet Explorer). In addition, sound and movies are also supported on the WWW.

The Microsoft Internet Explorer Web Browser

Microsoft was a little late in realizing the full potential of the Internet, but soon came to understand its importance. Their version of a Web browser is called the Microsoft Internet Explorer. It has the advantage of being tightly integrated into Windows 98 / 2000 and Microsoft Office.

The Internet Explorer Program Window

Will re-display the previous page that you visited.

Will display the next page (assuming that you have first moved back a page).

Will halt the downloading of information. This button is useful when you visit a slow loading site and you wish to cancel the loading of that page.

The refresh icon reloads the information from the Web site that you are visiting.

The home icon will take you to your default starting page. This page can be set up to be any page on any Web site. If your organization has its own Web site then you may wish the Home Page to be the starting page of your own Web site.

The search icon allows you to search the Internet for sites containing information that is of interest to you. When you click on this icon you will have access to a number of Internet Search programs, such as Lycos and Excite. When you enter a word or phrase into these programs they will return a list of documents that match your search criteria.

The favorites list is basically a series of bookmarks that allows you to store pointers to your favorite Web sites, so that you can easily re-visit the Web site of interest.

Allows you to access recently visited web sites.

Allows you access to your email and newsgroup programs.

The Print icon allows you to print a Web page that is displayed on your screen.

TIP: If the Web page displayed on your screen is formatted using frames (i.e. it is divided into sections, often separated by scroll bars) then you should click on the section of the screen that you wish to print!

Web Sites and URLs

- A Web site is simply data that is stored on a WWW server and which can be freely accessed by people 'surfing the Net'.
- For instance Microsoft has their own Web site from which you can download information and software.
- The trouble is that you have to know the address of the Web site, in much the same way as if you want to phone someone you have to know his or her phone number.
- The address of a Web site is given by something called its URL (Universal Resource Locator).
- The structure of the URL is very precise. For instance, if you wish to use your Web browser to visit the Microsoft Web site you would have to use the URL below.

http://www.microsoft.com

• Due to of the very large number of organizations who now have Web sites, you can also use a search engine, in which you can enter a word or phrase connected with what you wish to find and it will then display sites that match the information that you have entered. The results can be overwhelming however. A recent search using the search words "PC courseware" displayed a list of 4.5 million pages containing these words!

Using Hyper Links

A hyperlink is simply part of the text (or graphic) on a Web page, that when clicked on will automatically:

• Take you to a different part of the same page

• Take you to a different page within the Web site

• Take you to a page in a different Web site

• Enable you to download a file

• Lunch an application, video or sound

The illustration below displays a fragment of a Web page.

• The words that are underlined indicate a hyper link. By default these text links are normally displayed in blue.

Internet Site Home Page

• Most Internet sites have a starting page, called the Home Page. Often when you surf into a site, using a search engine, you initially go to a page that is not the home page. If you see a button (or text) on a site displaying the word HOME, then clicking on this will take you to the starting page, i.e. the Home Page.

Responding to an Email Link on a Web Page

• Many Web site pages will have text (or a graphic) asking you to “Click here to contact someone”.

• When you click on these links, you will see a small box displayed within your browser where you enter a message, and send that message via email to the organization running the Web site. This has the advantage that you do not need to know the email address of the organization, as it is already coded into the Web site page for you.

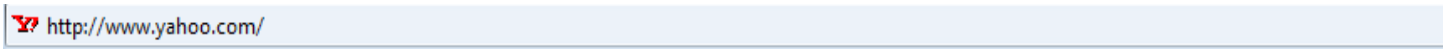
Email (Electronic Mail)

• Email is available over the Internet enabling you to send and receive messages on a global basis. Even better, you can communicate globally for the cost of a local phone call. The reason for this is that you connect to the Internet via your ISP (Internet Service Provider) by dialing a local number. Once connected to the Internet, you can send and receive emails with someone in the same room or on the other side of the world - It makes no difference to your phone bill. In the same way you can browse Web pages globally, also at local call rates!

Opening a new e-mail account on

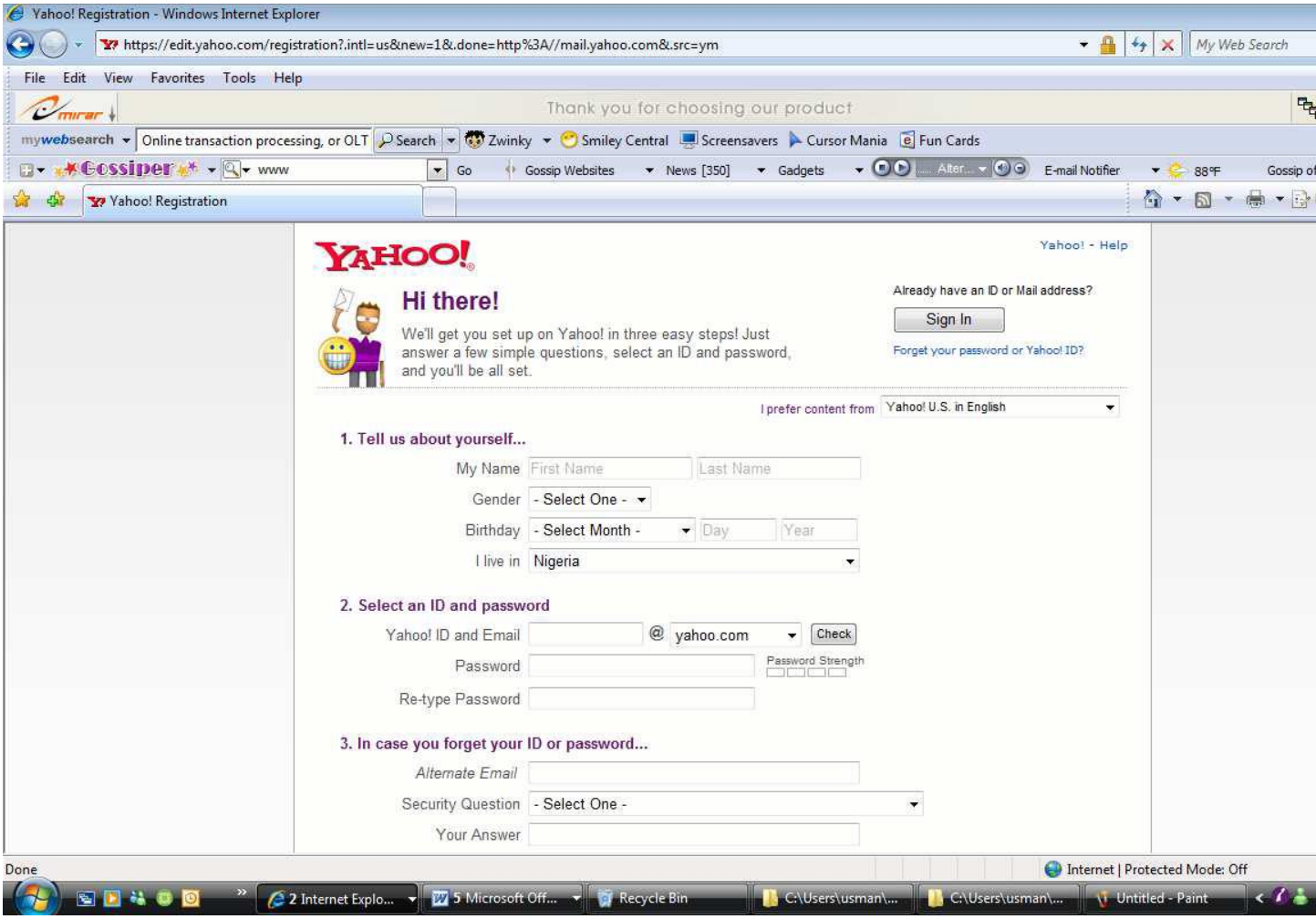
• On the address tool bar of internet explorer, type http://www.yahoo.com

• Press Enter

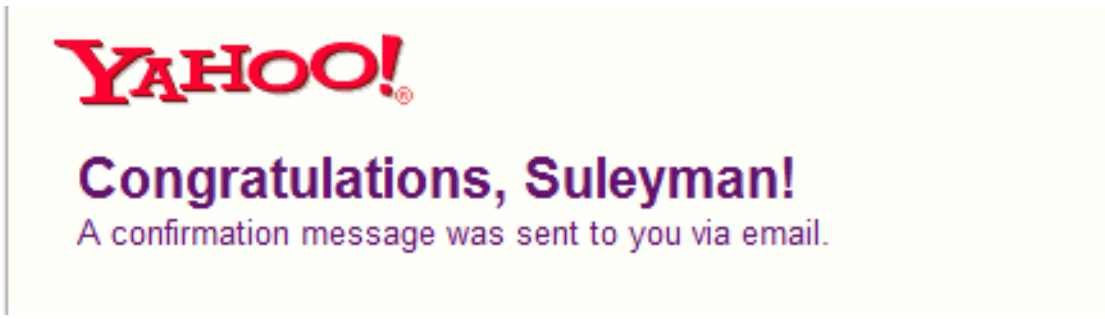


• The Yahoo homepage below will be displayed

- Click on free mail Sign up
- A Yahoo registration form will be displayed as below

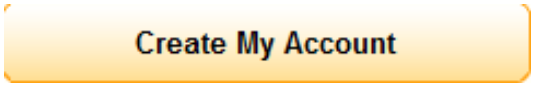


- Carefully fill the form and click on when finished
- A congratulatory message will be displayed to confirm your registration

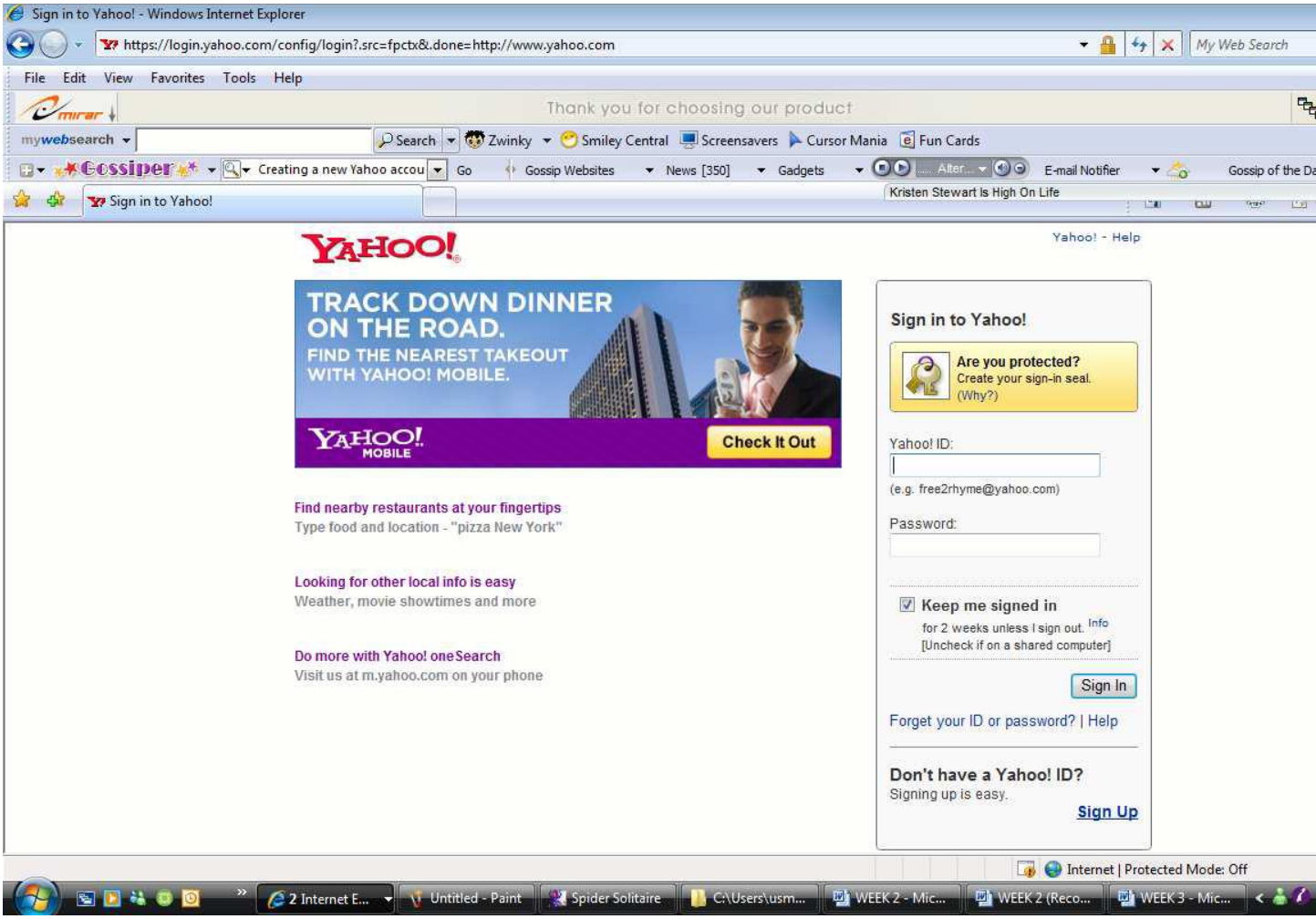


Signing in and signing out account

- To **Sign in** to your Yahoo! Mail account, click on Sign In on Yahoo Homepage



- Enter your Yahoo! ID and Password in the spaces provided, and click the "Sign In" button.



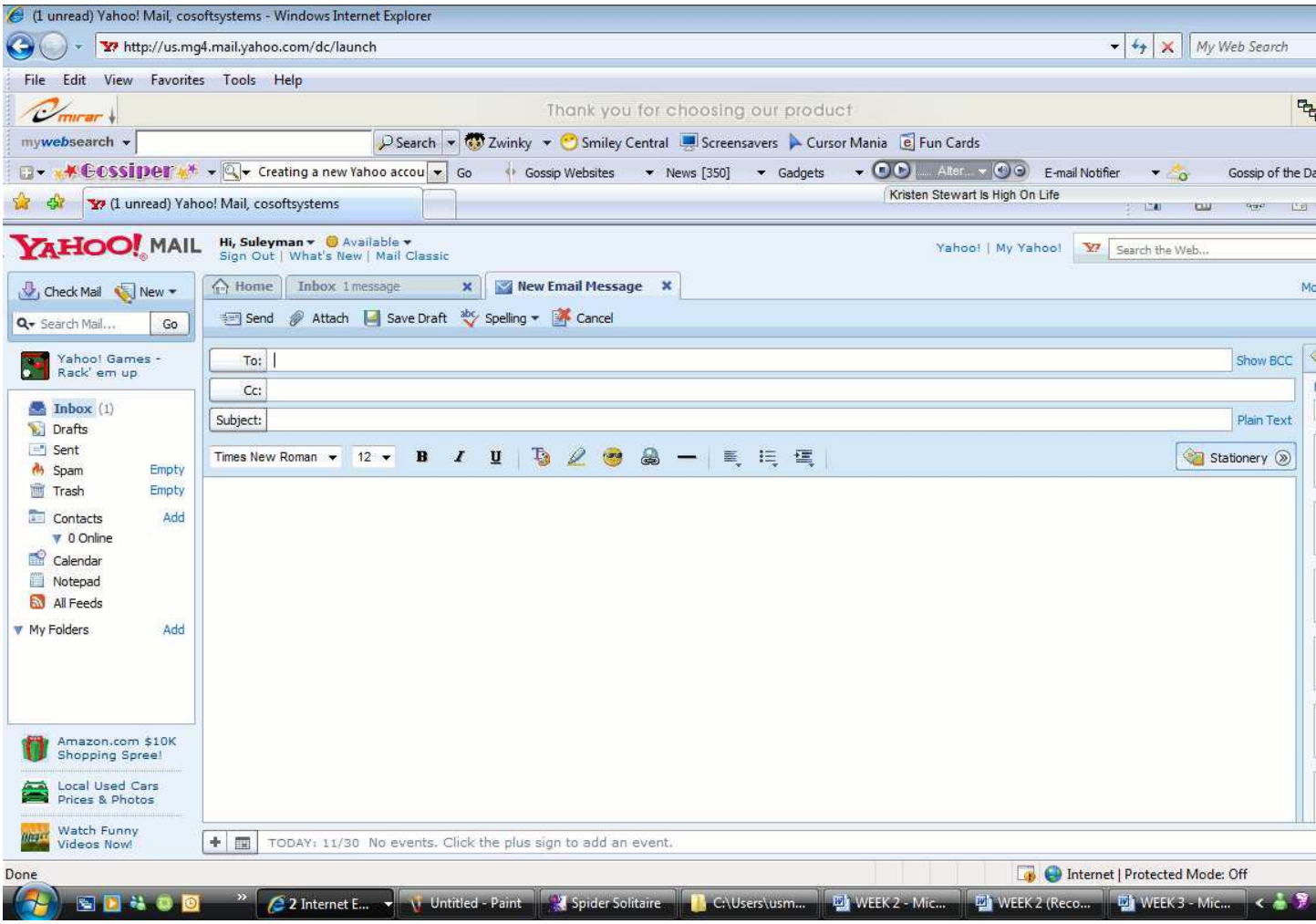
- If you've signed in to your Yahoo! Mail account, or another Yahoo! service, within the past eight hours and you don't click "Sign Out" or close your browser, your account remains accessible to you without signing in. Just click any Yahoo! Mail icon
- You might see your Yahoo! ID in the Sign In screen if you've used the same computer to log in to Yahoo! Mail or another of Yahoo!'s personalized services (such as My Yahoo! or the Yahoo! Music Engine) on a previous occasion. To sign in to a different Yahoo! Mail account, just click the "Sign in as a different user" link, or sign out of the current account and sign in to the new one.

Signing Out

- To prevent someone else from using the "Back" button or the History function, each time you exit your account you should sign out completely.
- To sign out completely; click the "Sign Out" link at the top of the page. This way, a person using the computer after you does not have access to your account. This is especially important if you use a public or shared computer.

S**ending a message**

- Click **Compose or New Mail** in the upper left corner to write a message.



• On the page that opens, click in the blank box beside **To:** and type the email address of the person you're writing.

• Inside **Subject:** give your message a title—a reason for being.

• ``Then write whatever you want to in the message window. That's the big box below To**:** and **Subject**:

• OK. Now *sending* it is the easy part.

• Once you're done writing (and attaching photos or files if you want... see below), just click **Send**. It's above the message window.

• Presto—you've done it! Here are some further particulars:

Multiple Recipients:

Send your message to more than one person. Add additional email addresses after **To:** and separate them with commas (e.g., johndoe@yahoo.com, janedoe@yahoo.com, etc.).

Cc:

- Add addresses in the Cc: field if you want to send a copy of your message to anyone.
- To show the **Cc:** box, click **Add CC** above the **To:** line.
- Others receiving this message will be able to see anyone listed in the Cc: line.

Bcc:

- If you want to send a copy of your message to someone, but NOT let anyone else see that they're getting a copy, click **Add BCC** above the **To:** line.
- Bcc is "blind carbon copy." *Bcc: recipients are invisible to the To: and Cc: recipients of the message, as well as to each other*.
- For example, if you send a message to johndoe@yahoo.com with a Bcc: to janedoe@yahoo.com, johndoe will see himself as the message's *only* recipient. janedoe will also get the message, and she will see that you addressed and sent the message To: johndoe. Shhhh!

Check spelling:

- If you're composing in Rich Text – i.e., if you see the row of buttons along the top of the Compose window for **Bold**, *Italics*, etc., then click the button toward the left with a checkmark and "abc" on it.
- If you're in Plain Text, click **Spell Check** at the top – it's between **Save As A Draft** and **Cancel**.
- Click in the "Suggestions" box if you see the correct spelling you're looking for, then click **Change**.

Attach Photos and Files:

- Click **Attach Files**—it's below **Subject:**.
- In the window that opens, click **Browse** to find and select the file or photo you want.
- When you've got it, click it, then click **Open**.
- Click **Attach Files** again to initiate the upload of the file.
- Once the upload is completed, click the **Continue to Message** button.
- Repeat these steps to attach more files.

• You can send many types of files as attachments, including word processor or spreadsheet documents, audio files, image files (.bmp, .jpg., .gif, etc.), web pages saved as HTML files, and more. You can add multiple attachments up to a sum total of 10MB to any email message.

Reading a message

What do you see when you first open Yahoo! Mail? A Welcome page. Welcome! Underneath, you'll see the list of folders and the number of unread messages in those folders. If you do not have any unread messages since your last login, you will see 'You have **0 unread messages**.'

• Click **Inbox**. You can also click **Inbox** at the top of your folder list to the left. Or you can click on any other folder if you're looking for a message somewhere other than your Inbox.

• A list of emails opens in the main window. Click on the Subject of any one of them to open it. Bingo! Now you can read it.

• After you've read a message, its info line (sender, Subject, Date/time) will no longer appearin **bold** in the list of messages in the folder. Only the info lines of **unread** (fresh!) messages will appear in **bold**

Downloading an attachment

• Following the text of a message with attachments, you'll see the attachments.

• Click **Scan and save to computer**.

• On the page that opens, click **Download Attachment**.

• You'll be prompted to either Open the attachment or Save it to Disk.

• Opening it lets you view the file without saving it to your computer; Saving it to Disk puts it on your computer's hard drive.

• You can also click **Cancel** if you'd like to exit this window.

Internet Services

Learning objectives

By the end of this chapter, student should be able to understand:

1. Newsgroups
2. File Transfer Protocol (FTP)
3. Bulletin Board services
4. Audio Video Communication
5. Digital Library
6. Telnet

7.2 Newsgroups

- Newsgroups are included in the Internet. They can be accessed via your Web browser and enable you to take part in discussions of interest to you with likeminded people from around the world. Whether you are interested in researching your ancestral tree or viewing the latest pictures from Mars, there is a newsgroup for you!
- Typically, a newsgroup is focused on a particular topic. Some newsgroups allow the posting of messages on a wide variety of themes, regarding anything a member chooses to discuss as on-topic, while others keep more strictly to their particular subject, frowning on off-topic postings.
- The news admin (the administrator of a news server) decides how long articles are kept before being expired (deleted from the server). Usually they will be kept for one or two weeks, but some administrators keep articles in local or technical newsgroups around longer than articles in other newsgroups.
- Newsgroups generally come in either of two types, binary or text. There is no technical difference between the two, but the naming differentiation allows users and servers with limited facilities the ability to minimize network bandwidth usage. Generally, Usenet conventions and rules are enacted with the primary intention of minimizing the overall amount of network traffic and resource usage.
- Newsgroups are much like the public message boards on old bulletin board systems. For those readers not familiar with this concept, envision an electronic version of the corkboard in the entrance of your local grocery store.

• There are currently well over 100,000 Usenet newsgroups, but only 20,000 or so of those are active. Newsgroups vary in popularity, with some newsgroups only getting a few posts a month while others get several hundred (and in a few cases a couple of thousand) messages a day.

7.2.1 FTP (File Transfer Protocol)

• FTP (File Transfer Protocol) is simply a way of transferring files to and from the Internet. Often this is done using your browser, or you may obtain specialist FTP software programs.

• FTP sites are typically used for uploading and downloading files to a central server computer, for the sake of file distribution.

• In order to download and upload files to an FTP site, you need to connect using special FTP software. There are both commercial and free FTP software programs, and some browser based free FTP programs as well.

• The typical information needed to connect to an FTP site is:

- The "server address" or "hostname". This is the network address of the computer you wish to connect to, such as ftp.microsoft.com.
- The username and password. These are the credentials you use to access the specific files on the computer you wish to connect to.

• The objectives of FTP are:

- To promote sharing of files (computer programs and/or data).
- To encourage indirect or implicit use of remote computers.
- To shield a user from variations in file storage systems among different hosts.
- To transfer data reliably, and efficiently.

• Most recent web browsers and file managers can connect to FTP servers, although they may lack the support for protocol extensions such as FTPS. This allows manipulation of remote files over FTP through an interface similar to that used for local files. This is done via an FTP URL, which takes the form ftp(s)://<*ftpserveraddress*> (e.g., ftp://ftp.gimp.org/). A password can optionally be given in the URL, e.g. ftp(s)://<*login*>:<*password*>@<*ftpserveraddress*>:<*port*>. Most web-browsers require the use of passive mode FTP, which not all FTP servers are capable of handling. Some browser allow only the downloading of files, but offer no way to upload files to the server.

7.2.2 Telnet

- **Telnet** (**Tel**ecommunication **net**work) is a network protocol used on the Internet or local area network (LAN) connections.
- It was developed in 1969 beginning with RFC 15 and standardized as IETF STD 8, one of the first Internet standards. Typically, telnet provides access to a command-line interface on a remote machine.
- The term *telnet* also refers to software which implements the client part of the protocol. Telnet clients are available for virtually all platforms. Most network equipment and operating systems with a TCP/IP stack support some kind of Telnet service server for their remote configuration (including ones based on Windows NT).
- "To telnet" is also used as a verb meaning to establish or use a Telnet or other interactive TCP connection, as in, "To change your password, telnet to the server and run the *passwd*command".
- Most often, a user will be *telnetting* to a Unix-like server system or a simple network device such as a router. For example, a user might "telnet in from home to check his mail at school". In doing so, he would be using a telnet client to connect from his computer to one of his servers. Once the connection is established, he would then log in with his account information and execute operating system commands remotely on that computer, such as `ls` or `cd`.

7.2.3 Digital Library

- A **digital library** is a library in which collections are stored in digital formats (as opposed to print, microform, or other media) and accessible by computers.
- The digital content may be stored locally, or accessed remotely via computer networks. A digital library is a type of information retrieval system.
- The first use of the term *digital library* in print may have been in a 1988 report to the Corporation for National Research Initiatives
- The term *digital libraries* was first popularized by the NSF/DARPA/NASA Digital Libraries Initiative in 1994.
- The older names **electronic library** or **virtual library** are also occasionally used, though *electronic library* nowadays more often refers to portals, often provided by government agencies, as in the case of the Florida Electronic Library.

- The *DELOS Digital Library Reference Model* defines a digital library as: An organization, which might be virtual, that comprehensively collects, manages and preserves for the long term rich digital content, and offers to its user communities specialized functionality on that content, of measurable quality and according to codified policies.
- The term *digital library* is diffuse enough to be applied to a wide range of collections and organizations, but, to be considered a digital library; an online collection of information must be managed by and made accessible to a community of users.
- A distinction is often made between content that was created in a digital format, known as born-digital, and information that has been converted from a physical medium, e.g., paper, by digitizing.
- The term *hybrid library* is sometimes used for libraries that have both physical collections and digital collections. They consist of a combination of traditional preservation efforts such as microfilming and new technologies involving digital projects.
- For example, American Memory is a digital library within the Library of Congress. Some important digital libraries also serve as long term archives, for example, the ePrint arXiv, and the Internet Archive.

7.2.4 Bulletin Board Services

- A **Bulletin Board System**, or **BBS**, is a computer system running software that allows users to connect and login to the system using a terminal program.
- Originally BBSes were accessed only over a phone line using a modem, but by the early 1990s some BBSes allowed access via a Telnet or packet radio connection.
- Once a user logged in, they could perform functions such as downloading or uploading software and data, reading news, and exchanging messages with other users. Many BBSes also offered on-line games, in which users could compete with each other, and BBSes with multiple phone lines often offered chat rooms, allowing users to meet each other.
- As the use of the Internet became more widespread in the mid to late 1990s, traditional BBSes rapidly faded in popularity.
- Today, Internet forums occupy much of the same social and technological space as BBSes did. Today the term BBS is often used to refer to any online forum or message board.

Audio-Video communication

Audio/Voice Communication

- **Voice over Internet Protocol** (**VoIP**) is a general term for a family of transmission technologies for delivery of voice communications over the Internet or other packet-switched networks.
- Other terms frequently encountered and synonymous with VoIP are *IP telephony* and *Internet telephony*, as well as *voice over broadband*, *broadband telephony*, and *broadband phone*, when the network connectivity is available over broadband Internet access.
- VoIP systems usually interface with the traditional public switched telephone network (PSTN) to allow for transparent phone communications worldwide.
- VoIP can be a benefit for reducing communication and infrastructure costs by routing phone calls over existing data networks and avoiding duplicate network systems. Skype and Vonage are notable service provider examples that have achieved widespread user and customer acceptance and market penetration.
- Voice-over-IP systems carry telephony speech as digital audio, typically reduced in data rate using speech data compression techniques, packetized in small units of typically tens of milliseconds of speech, and encapsulated in a packet stream over IP.

VoIP challenges:

- Available bandwidth
- Network Latency
- Packet loss
- Jitter
- Echo
- Security
- Reliability
- In rare cases, decoding of pulse dialing

Video Communication 

- A **videoconference** (also known as a *video teleconference*) is a set of interactive telecommunication technologies which allow two or more locations to interact via two way video and audio transmissions simultaneously. It has also been called **visual collaboration** and is

a type of groupware. It differs from videophone in that it is designed to serve a conference rather than individuals.

- Videoconferencing uses telecommunications of audio and video to bring people at different sites together for a meeting. This can be as simple as a conversation between two people in private offices (point-to-point) or involve several sites (multi-point) with more than one person in large rooms at different sites. Besides the audio and visual transmission of meeting activities, videoconferencing can be used to share documents, computer-displayed information, and whiteboards.
- In addition to use for personal videoconferencing, it was quickly realized that World Wide Web users enjoyed viewing images from cameras set up by others elsewhere in the world. While the term "webcam" refers to the technology generally, the first part of the term ("web-") is often replaced with a word describing what can be viewed with the camera, such as a netcam or streetcam. Educators can use webcams to take their students on virtual field trips.
- Today there are millions of webcams that provide views into homes, offices and other buildings as well as providing panoramic views of cities (Metro cams) and the countryside. Webcams are used to monitor traffic with Traffic Cams, the weather with Weather Cams and even volcanoes with VolcanoCams. Webcam aggregators allow viewers to search for specific webcams based on geography or other criteria.
- As webcam capabilities have been added to instant messaging text chat services such as AOL Instant Messenger, one-to-one live video communication over the internet has now reached millions of mainstream PC users worldwide. Increased video quality has helped webcams encroach on traditional video conferencing systems. New features such as lighting, real-time enhancements (retouching, wrinkle smoothing and vertical stretch) can make users more comfortable, further increasing popularity. Features and performance vary between programs.
- Videoconferencing support is included in programs including Yahoo Messenger, AOL Instant Messenger (AIM), Windows Live Messenger, Skype, iChat, Paltalk (now PaltalkScene), Ekiga , Stickam, and Camfrog.
- Some online video broadcasting sites have taken advantage of this technology to create internet television programs centered on two (or more) people "diavlogging" with each other from two different places. Among others, BloggingHeads.tv uses this technology to set up conversations between prominent journalists, scientists, bloggers, and philosophers.