UNIT 1

THE INTERNET

Introduction

The term Internet is derived from two words – ***interconnection*** and ***networks***. So it is "**network of networks".**

Evolution

The foundation of Internet was laid in 1969 by the Department of Defense (DOD) of United States of America. They wanted to create a computer network that could continue to function in the event of a disaster such as a nuclear war. Even if a part of the network was damaged or destroyed, the rest of the system would continue to work. That network was known as ARPANET (Advanced Research Projects Agency Network), which linked US scientific and academic researchers. It was the forerunner of today's Internet. Later in 1980, another agency, the National Science Foundation (NSF) created a new network of computers based on ARPANET, called NSFNET, which turned out to be more efficient and capable. Initially, NSFNET was designed to link five super computers situated at the major universities of NSF and allowed only academic research. Over the time, this network expanded to include sites for business, universities, government and so on, and finally becoming a network consisting of millions of computers, now known as the **Internet**.

Basic internet terms

World Wide Web (WWW): WWW is collection of linked documents or pages stored on millions of computers and distributed across the world. It provides information in multimedia form, that is, in more than one medium such as, text, graphics, video and audio.

Web Page: The hypertext documents on the World Wide Web are known as web pages. A web page is written in a language called HTML (Hypertext Markup Language), which enables to embed hypertext links in the document. Using these hyperlinks, user can jump from one web page to another. *Note: Web pages are also known as HTML documents.*

Website: A website is a set of related web pages (linked through hypertext links), published by an organization or an individual. Typically, a website contains a home page along with other additional web pages. Each website is accessed by its own address known as **URL** (Uniform Resource Locator). All the websites on the Internet constitute the World Wide Web

Home Page: When you browse the World Wide Web, you will often see the term 'Home Page'. A home page (also called index page) is the starting point or a doorway to the website; it refers to the web page that identifies a website and contains the hyperlinks to other web pages in the website

Browser: A browser (short for web browser) is special software that enables the users to read/view web pages and jump from one web page to another. The most popular browsers are Microsoft Internet Explorer and Netscape Navigator.

Browsers are of two types

1. **Graphical browsers** - which allow retrieval of text, images and video. Example Internet Explorer, Google chrome.
2. **Text Browsers** – They provide access to the web in text – only mode. Example Lynx.

Uniform Resource Locator: Each web has a unique address called a URL that identifies its location on the Internet. The format of URL consists of four parts –

1. **Protocol:** It is usually **http** (hyper text transfer protocol)
2. **Name of the web server (domain name):** A domain name is a unique name that identifies a particular website and represents the name of the **s**erver where the web pages reside. For e.g. **www.xyz.com**.
3. **Path:** Specifies the hierarchic location of the said file on the computer. For e.g. **tutor/start/**
4. **File name:** The file name may be **main.htm.**

Some of domain types are

Type	Description
com	commercial and profit organization
edu	Colleges and universities
gov	Federal government agencies
mil	Us military sites
net	Internet infrastructure and service providers
org	Miscellaneous and nonprofit organizations

Hypertext: The hypertext is a system that provides a simple and consistent way of organizing large data available on the Internet. In hyper text system the documents contain links to other related documents on the Internet. These are called hyperlinks or hotlinks or simply links.

Internet Service Provider: An *Internet Service Provider* (ISP) is an organization that connects its subscriber's computer using modem to the Internet. The connection can be provided by telephone lines or wireless connections. Some of ISPs are America online (AOL), yahoo and so on.

Web Server: A server is a computer equipped with server software, which provides a specific kind of services to client software running on other computers. A web server receives request from the clients, processes this request and sends the result back to the client.

To view a website, the browser sends a request to the server. On receiving the request, the server sends the appropriate web page to the client's machine. The client's machine (browser) receives the information in the form of HTML commands. The browser interprets the HTML, finds all the pictures (or other types of media) and displays the information onto the user's screen.

Download and Upload: Download refers to the act of transmitting data from a remote computer on the Internet or other network to one's own computer. When the user downloads a file, he is copying a particular file from the remote computer and placing it on the hard drive.

Upload is just the opposite of download. Upload refers to the act of transmitting data from local computer to any other computer on the Internet or network.

Online and Offline: The term **online** is commonly referred to the state of being connected to the networked computer system or the Internet. For example, if you are browsing the WWW, your computer is said to be online. Being online also refers to any peripheral device (like printer) that is connected to the system and ready to use.

Offline is just the opposite of online; it refers to the state of not being connected to the remote computer or the Internet. A printer or other peripheral that is not ready to use is also considered offline.

Getting connect to internet

The basic requirements for getting connected to the internet are

1. **The computer:** The computer must have at least 386 microprocessor chip with minimum of 16 MB of RAM.

2. **Modem:** It is a device which enables a computer to transmit data over telephone lines. A modem (modulator and demodulator) is a hardware which converts digital data into analog signals and vice versa. Modems are of two types.
   i. Internal modem- is a card which is fitted inside a computer
   ii. External modem- is small external box wired between the computer and the telephone socket.
3. **Internet connection:** Before connecting to the internet, you need to buy an Internet connection from an authorized ISP. Some of the connections available are
   i. Dial-up –To connect to the Internet by using dialup the user need to specify a user name and password and telephone number.
   ii. ISDN- It is for commercial use. Integrated Services Digital Network
   iii. DSL – Digital Subscriber Line – It is provided through an existing phone line.
   iv. Broadband – This type of access is good for remote locations. It gives decent download speed.
4. **Internet Software:** To connect to the Internet a computer mainly requires three different kinds of software.
   i. **TCP/IP:** Transmission Control Protocol/ Internet protocol, is the basic communication protocol, it allows programs on the user's computer to communicate over the Internet.
   ii. **Dialler Software:** This software is provided by the ISP to instruct the modem to dial the phone number and to identify the user's machine to the access provider's system for access to the network.
   iii. **Browser:** To use the Internet, a web browser is essential, which allows the user to view the information available on the World Wide Web.

Internet applications

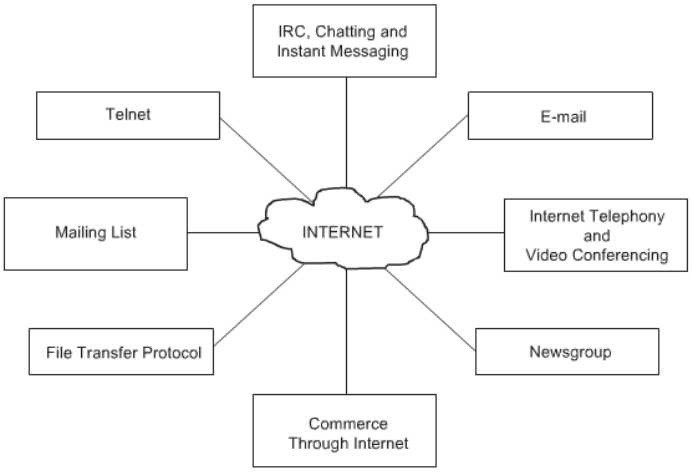


Figure 14.7 Internet Applications

Following are the applications of internet

Electronic Mail: Electronic mail (e-mail) is a fast, easy and inexpensive way of communicating with other Internet users around the world. E-mail overcomes most of the problems and delays of getting a physical document from one person to another. Rather, it has the dual advantage of not only being faster, but also cheaper.

File Transfer Protocol; The file transfer protocol FTP is a set of rules that enables a user to transfer files from one system to another. It was the first service developed for the Internet so that government and educational institutions could easily exchange f les. It allows the user to get access to the f les stored in the directory of a remote computer that is connected to the Internet.

Telnet: The term telnet is derived from '**tel**ecommunication and **net**work' and is protocol that allows a user to log on to a remote computer. Telnet is also known as remote login which means connecting one machine to another in such a way that a person may interact with another machine as if it is being used locally.

Internet Relay Chat: Internet Relay Chat (IRC) is a service on the Internet that allows people to communicate in real time and carry on conversations via the computer with one or more people anywhere in the world. Chat is instant communication and both parties must be connected to the Internet.

Chatting and Instant Messaging: Chat programs allow users on the internet to communicate with each other by typing in real time. A variation of chat is an instant messaging where a user on the Web can contact another user currently logged in and type a conversation. To avail this service the user must have software called instant messenger installed in the system.

Internet Telephony: Internet telephony is the use of the internet rather than the traditional telephone. It consists of hardware and software that enable people to use the Internet as a transmission medium for telephone calls.

Video Conferencing: A video conferencing system has two or more parties in different locations, which have the ability to communicate using a combination of video, audio and data. A video conference can be person to person (referred to as point-to-point) or can involve more than two people (referred to as multipoint) and the video conferencing terminals are often referred to as endpoints, In this form of meeting, participants in remote locations can view each other and carry on discussions via web cameras, microphones and other communication tools. The following five elements are common to all video conferencing endpoints:

1. **Web Camera:** It captures live images to send across the network.
2. **Visual Display:** It displays the images of the people taking part in the video conference.

3. **Audio System:** It includes microphones to capture audio from the endpoint and loud speakers to playback the audio received from other endpoint across the network communication.
4. **Compression;** Videos are highly bandwidth intensive and they take a long time to load. Therefore video system should include ***codecs*** to compress and decompress video and audio data.
5. **User Interface and control system:** The user interface allows the user to control interactions for example setting volume etc.

Commerce through Internet: E-commerce refers to buying and selling goods and services online. Electronic data interchange (EDI) is the computer-to-computer exchange of routine business transactions including payments, information exchange and purchase-order requests. Electronic funds transfer (EFT) is a technology that allows the transfer of funds from the bank account of one person or organization to that of another.

Newsgroups (Usenet): Newsgroups are international discussion groups that focus on a particular topic and helps in gathering information about that topic. The topics discussed here cover all the fields such as politics, computers, technology and many more. The information or articles that make up the 'news' are written by people interested in a specific topic. These articles are posted to the newsgroup so that others can read, reply and comment on them. To read and post articles in a newsgroup, newsreader software such as Microsoft Outlook Express or Netscape News is required. Some newsgroups are devoted to current events and headlines.

Data over the internet.

The data, in terms of internet comprises the hypertext documents containing links that connects o other documents of files. These documents may include animations and multimedia components.

The displayed data can be divided into two categories: static component and dynamic component

1. Static component: This includes the information displayed on the browser that does not interact with the user. For example, the text written in the form of paragraph on the web page is static component. Static component for the web page is accomplished by creating documents with HTML(Hyper Text Markup Language)
2. Dynamic component: This component refers to a specification by which a user can interact with a web browser. For example, when a user fills the web page, the text filled in various fields is sent back to the originating point of the web page. This way a user is able to interact with the server hosting that web page.

Web browser

It is a software application, which provides a graphical user interfaces (GUI) so that the user a navigate the internet easily by clicking on menus, icons or buttons instead of learning

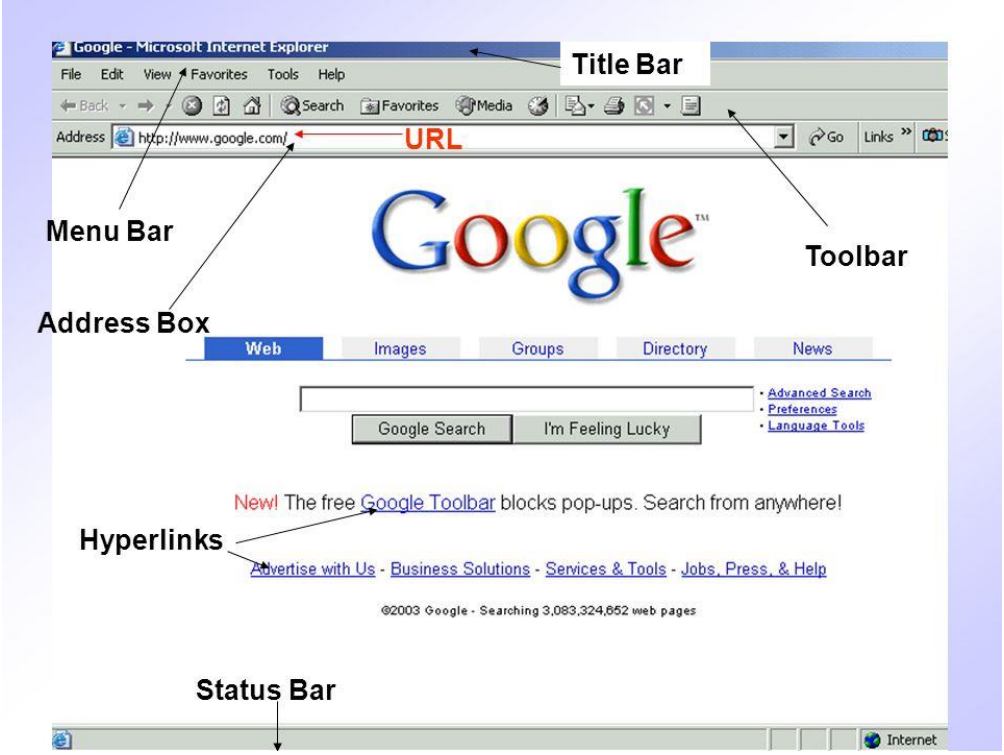
difficult keyboard commands. A web browser uses HTTP protocol to request web pages from the web browser. Most browsers support a variety of formats in addition to HTML, such as the JPEG, PNG and JIF image formats

Web browser features

Basic features are:

- A browser handles requests for HTML files, interprets links, and deals with embedded images, audio and video elements.
- A browser keeps the history of the web sites visited
- A browser lets a user to save a collection of pages, allowing for later retrieval.
- A browser provides a row of buttons at the top of the browser window for browsing the internet conveniently
- A browser connects to an email program for importing and sending and receiving e mails from the most commonly used application and formats.

Internet Explorer environment



Title bar: it is located at the very top of the window and tells you the title of the page you are viewing. It also tells you which internet explorer application is currently active. It has the minimize, restore, maximize, and close buttons.

Menu bar: this bar has many different sub-menus, which control all options, functions and commands for the entire internet explorer program.

Standard toolbar: his tool bar contains the most frequently used commands and the browsing functions.

Address bar: displays the internet address of the page currently being displayed.

Link bar: contains shortcut to useful internet websites.

Content area or document view: it holds the document page or other recourses as the browser presents it. any text, images, animations, links, or any other application files is shown in this area.

Status bar: displays the current state of activity of the web pages.

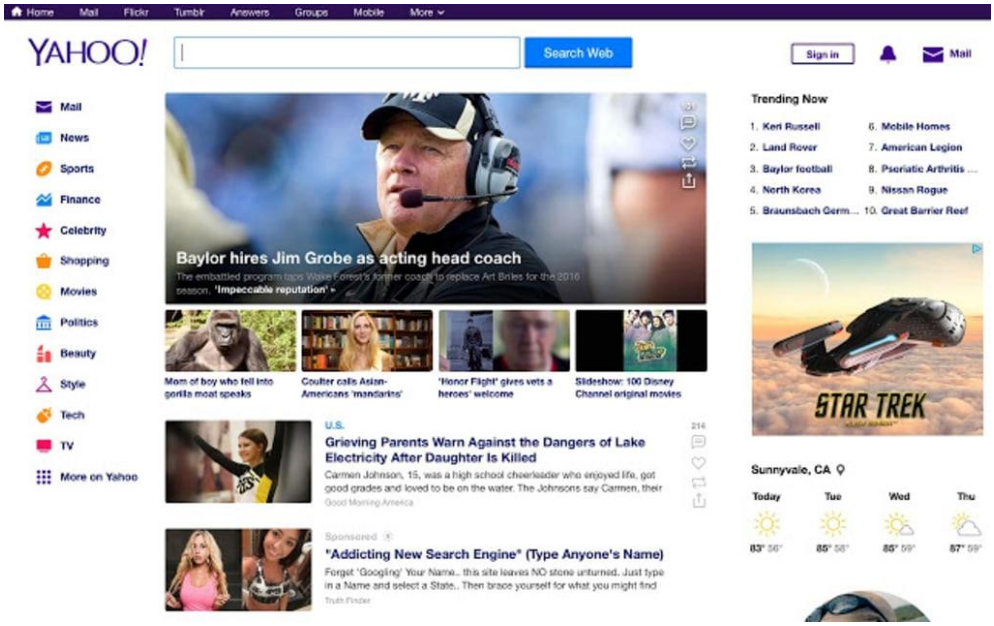
Electronic mail

Electronic mail can be defined as the process of exchanging messages electronically, via a communications network, using the computer. E-mails allow users to communicate with each other in less time and at nominal cost as compared to traditional phone or mail services. Apart from a textual message, e-mails can also consist of other data formats such as pictures, sound and video. E-mails can be sent anywhere in the world using a computer and a modem.

Email address structure

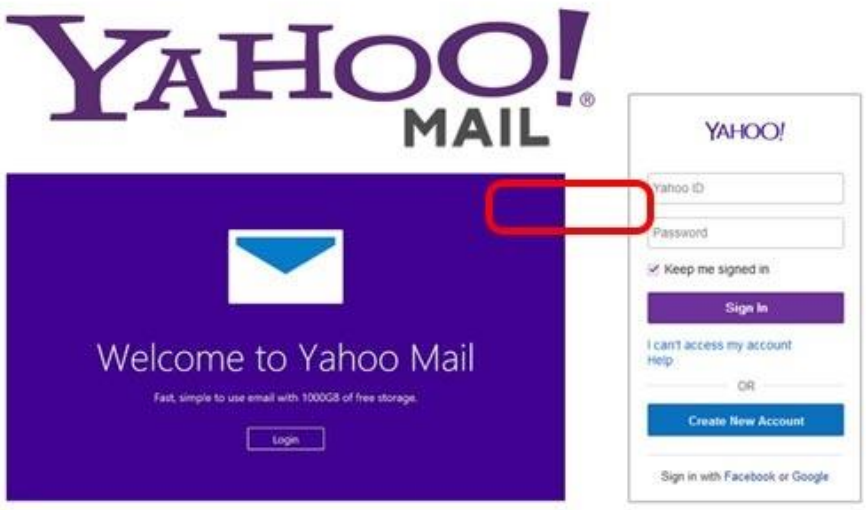
Generally, there are two parts of an email address: the logon identity and the identity of the email server. These are separated by the ampersand @ symbol
Eg: username@webite.com
The first part of the address indicates the identifiable name of the user.

Checking email

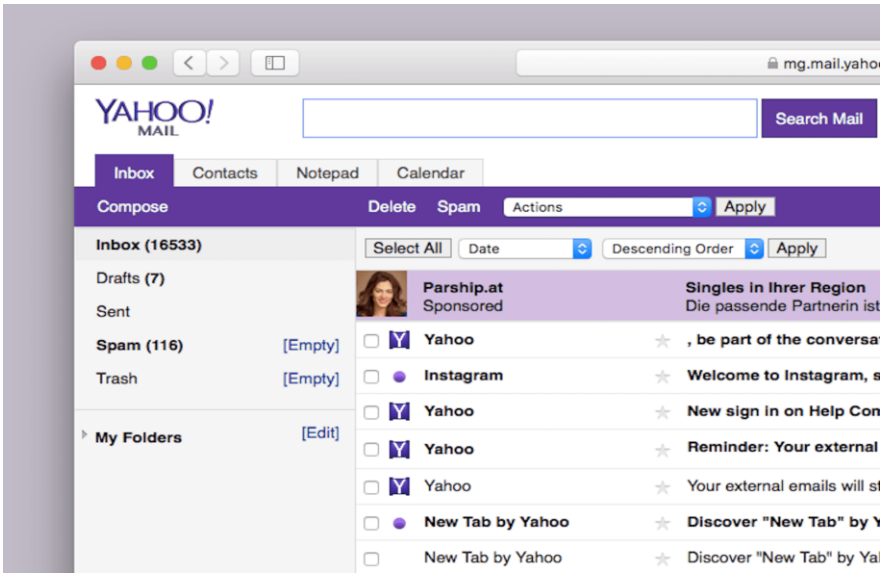


1. Must have an email account

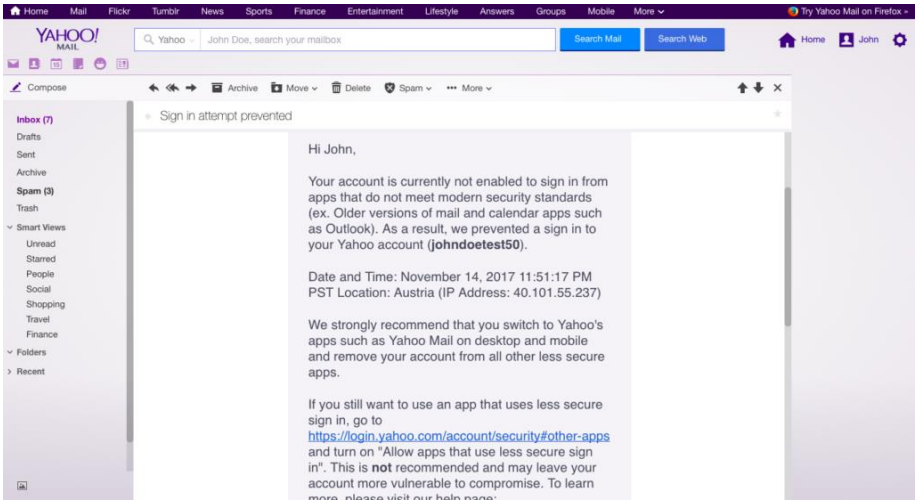
2. Open internet explorer and type www.yahoo.com press enter key, click the Mail link
3. Yahoo loads the new page, which allows users to log on to their mail accounts.
4. Enter the username and password. And click in sign in



5. To check for new mails click the inbox link.



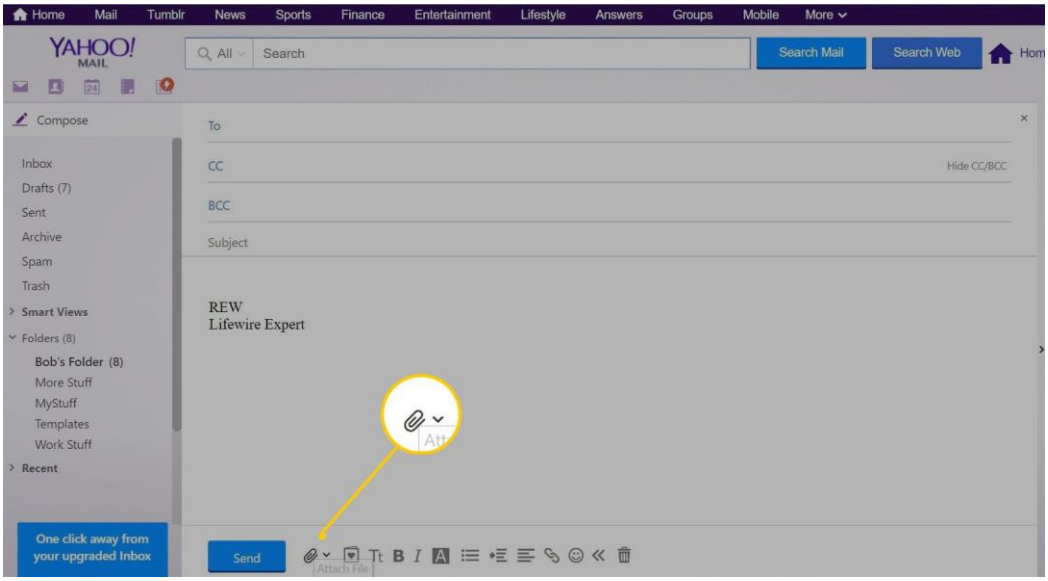
6. To read email simply click on the subject of the email



7. After reading mail, you can reply to the mail or forward the same mail to others.

Sending email

1. click on the compose button so that you can create and send email to the desired address



key elements:

- To: It denotes to whom the mail is to be sent
- CC: Carbon is used to specify the addresses of all the recipients who will also receive copies of the same mail.
- BCC: Blind Carbon Copy: it is used to send message to several addresses without showing everyone all the addresses.
- Subject: it denotes the subject of the message as specified by the sender.
- Attachment : it is used to send files, created with other programs such as Microsoft word or a zip file along with the email

2. Now write the desired contents in the text area and after composing, click the send button

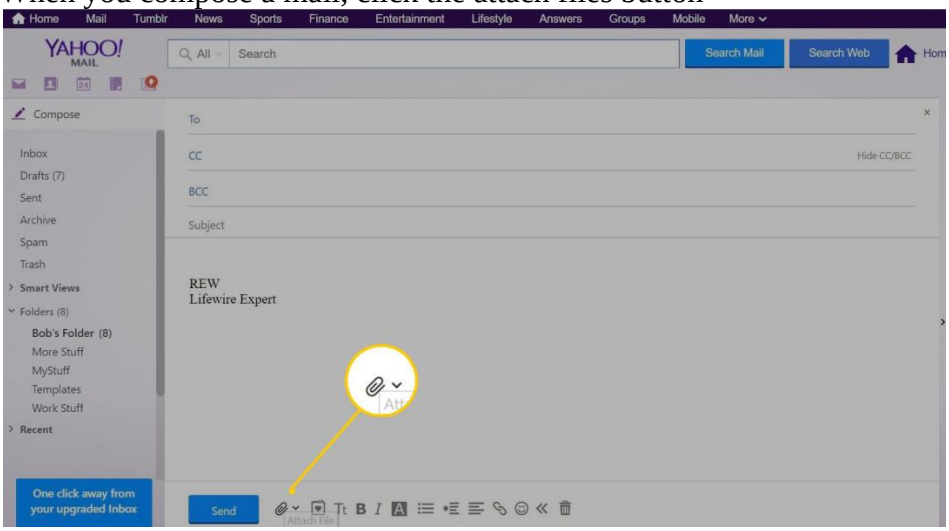
Email attachment

1. When you open an email that contains an attachment, it will be displayed as an icon in the lower part of the page.

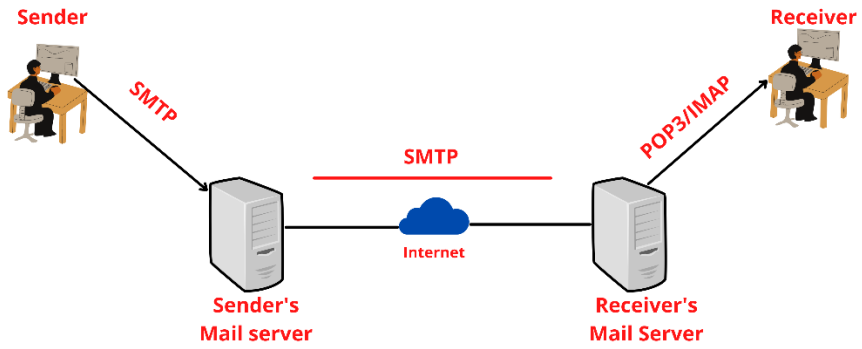
2. Click on the icon or download attachment link. This displays the file download dialog box, save the attachment file onto your hard disk.

To send an attachment with the mail, follow the steps given below

1. When you compose a mail, click the attach files button



How email works



To send e mail, one needs a connection to the internet and access to main server, which forwards the mail. The standard protocol used for sending internet e mail is called SMTP (Simple Mail Transfer Protocol). It works in conjunction with POP (Post Office Protocol) and IMAP (Internet Mail Accessing Protocol) servers.

When an email is sent to a person, who has an email address like xyz@hisdomain.com , it is broken down into two parts: xyz (account name) and hisdomain.com (domain name).

The SMTP server contacts a DNS (Domain Name Server) and asks for the location of hisdomain.com. The DNS server sends the address back to the SMTP. The SMTP server then sends the email message to the SMTP server where hisdomain.com is located. This SMTP server delivers the email message to xyz's account on the POP or IMAP server.

Finally when xyz logs on to his computer and opens his mail client, his email client requests the POP or IMAP server to send all mails from the account to his computer.

Advantages and disadvantages of email

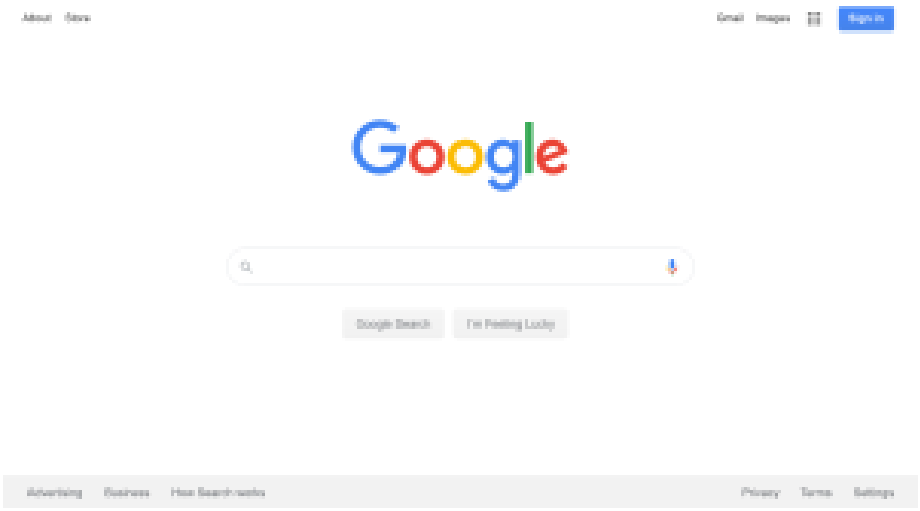
Table 14.3 Advantages and Disadvantages of E-mail

Advantages	Disadvantages
The delivery of messages is very fast, sometimes almost instantaneous, even though the message is meant for overseas or just to a friend next door.	The slightest error in the address or a failure in one of the links between the sender and the receiver is enough to prevent a delivery.
The cost of e-mailing is almost free as it involves negligible amount of telephone and ISP charges.	Although e-mail is delivered instantly, the recipient may or may not read the mail on time. That defeats the quickness of electronic mailing.
Multiple copies of the same message can be sent to a group of people at the same time and can be sent as easily to a single person.	Since e-mail passes through a network, it may be intercepted in between.
Pictures, documents and other files can also be attached to messages.	Electronic mailing system depends on the electricity and telephone system. Thus, failure of any one of them can prevent the user from sending or receiving e-mails.

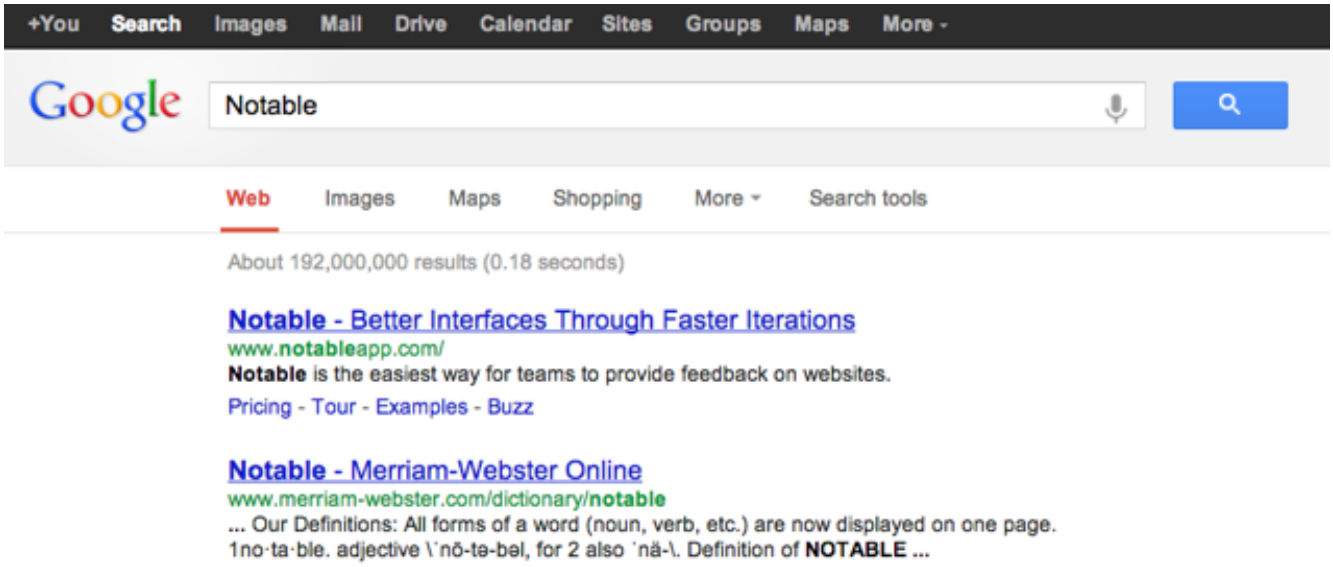
Searching an internet

Let us assume that you want **to** search the web to get information regarding computer generation,

1. Open the search engine's website(www.google.com) now type your keywords in the search box and click the **Google search** button or press **Enter**



The engine searches its index and generates a page with links to those recourses containing some or all of the search terms.



Refining the search

The major search engines allow the user to choose whether to search for the exact typed phrase, all the words in the phrase, any of the words in phrase and so on. In this case the user can define the search by adding one more words or symbol to the search topic

- AND: it is used to search for two or more terms on the same page. Type the word AND **between** the terms or put a plus sign right before the second term.
- OR: it is used to search for either of two terms on the same page. Type the word OR between the terms
- NOT: it is used to search for pages that include the first term but not the second. Type the word NOT between the terms
- " " double quotes are used to search for an exact phrase
- () parenthesis are used to group parts of the search phrase.
- * asterisk is used to search for various forms of a word

Instant messaging

It is a web based service to exchange messages in real time between two or more people over the internet. It is a combination of e mall and chat room. To send and receive instant messages, internet connections along with instant messaging software such as yahoo messenger or MSN messenger are required. It allows the user to communicate over the internet through voice, live pictures or text.

Features of messengers.

The features of messenger that make it a favorite among internet users include

- Chatting: one can chat using a web cam or microphone and send textual messages.
- Audible: audible are faces used to say something or express the attitude of the user in the form of greetings games and fun.
- Emoticons/ Smileys: The emoticons or smileys are used to express the feelings in the

form of little symbols and smiling faces.

- Games: when connected online, users can play multi-player games such as chess and many more. Users can even see how they stack up against their friends by comparing their scores.
- Address book: messengers also provide address books so that users can easily find and manage their friend's contact details.

Multiple choice questions:

1. A home page is:
    A. A web page created by an individual home user, as opposed to one created by a corporation
    B. The web page you like to visit most
    C. The entry page of most websites
    D. A web page you eventually reach by clicking a series of hyperlinks
2. URL is
    A. A computer software program
    B. A type of web server
    C. The address of a document or "page" on the world wide web
    D. An acronym for unlimited resources for learning
3. HTTP stands for
    A. Hyper Text Transfer Protocol
    B. Hyper Text Transmit Program
    C. Hybrid Text Transfer Protocol
    D. Hyper Term Transfer Protocol
4. The first network that planted the seeds of internet was:
    A. ARPANET
    B. NSFNET
    C. VNET
    D. Both A and B
5. Which of the following protocols is used for WWW?
    A. ftp
    B. http
    C. w3
    D. all of the above
6. The first page that you normally view at a website is its
    A. Home page
    B. Master page
    C. First page
    D. Web page
7. The process of receiving data from the internet is called
    A. Surfing
    B. Rendering
    C. Uploading
    D. Downloading
8. We can send using internet
    A. Text
    B. Audio
    C. Video
    D. All of the above
9. ----------is a set of rules that enables a user to transfer files from one system to another.
    A. FTP
    B. ISDN
    C. HTTP
    D. XTML
10. Which of the following is not a requirement for the internet

A. Personal computer
B. 128 MB RAM
C. Telephone lines
D. Notepad

11. ---------is a device which enables a computer to transmit data over telephone lines
    A. Browser
    B. **Modem**
    C. Dial up
    D. Server
12. The process of exchanging messages electronically, via a communications network, using the computer is known as
    A. message
    B. chat
    C. email or electronic mail
    D. Usenet
13. Which of the following is a correct format of Email address?
    A. name@website@info
    B. name@website.info
    C. www.nameofebsite.com
    D. name.website.com
14. HTML is used to create
    A. Machine language
    B. High level program
    C. Web page
    D. Web server
15. In internet terminology IP means
    A. Internet Provider
    B. Internet Procedure
    C. Internet program
    D. Internet protocol
16. Which one of the following is not a search engine
    A. Yahoo
    B. Google
    C. Bing
    D. Windows
17. What is the full form of WWW in web address?

A. World Wide Web

B. World Wide Word

C. World Wide Wood

D. None of these

18. Full form of HTML is

A. Hyper text madeup language

B. Hyper Text Markup Language

C. Hyper Text Managing Links

D. Hyper Text Manipulating Links

19. _____is used to specify the addresses of all the recipients who will also receive copies of the same mail.
    A. Carbon Copy
    B. Blind Carbon Copy
    C. TO
    D. None of these
20. Moving from one website to another is called
    A. Downloading
    B. Uploading
    C. Attachment
    D. Browsing
21. A software that is used to view website is called
    A. Browser
    B. Web viewer
    C. Spread sheet
    D. Server
22. Which of the following is not a type of broadband internet connection
    A. Satellite
    B. DSL
    C. Dial up
    D. Cable
23. ARPANET stands for

A. Advanced Rehearse Projects Agency Network

B. Advanced Research Projects Agency Newark

C. Advanced Research Projects Agency Network

D. None of these

24. _____web based service to exchange messages in real time between two or more people over the internet.
    A. Instant messaging

B. Email
C. Text message
D. browsing

25. Internet is

A. A worldwide interconnected network of computers which use a common protocol to communicate with one another

B. A worldwide network of computers

C. An interconnected network of computers

D. A local computer networks

Long answer questions:

1. Explain the following basic internet terms: Web Page, World Wide Web (WWW), Home Page, and Website.
2. What is a browser? Explain the types o browser
3. Explain Uniform Recourse Locator with its various parts
4. Explain internet service provider and web server
5. Explain the following terms: downloading, uploading, online and offline
6. What are the basic requirements for getting connected to the internet
7. Explain video conferencing with elements
8. What is NEWS groups
9. What are the Features of messengers
10. What are the Advantages and disadvantages of email
11. Explain with the diagram how email works
12. Explain the basic terms in Internet Explorer Environment
13. Explain the data over the internet
14. What is a web browser? Explain its features