

## Internet Services and Mobile Technologies

### 2.1 Introduction

So, you know what Internet is. But do you know what do people really do on the Internet and how? Well, they exchange messages or E-mails, participate in discussion groups (known as news groups), chat with many other people across the globe, retrieve data files, and access all sorts of information.

The types of services available on Internet are as diverse as the people interested in it. You can retrieve or search the desired information, e-mail your friends, do video-conferencing, store or retrieve files, participate in a discussion forum etc.

This chapter is dedicated to the practical application and use of Internet. In this chapter, you'll be learning about various Web services along with the practical guidance for the same.

#### WEB SERVICES

**Web Services** are the software based services that take place when two electronic devices connected via network, communicate over WWW's HTTP

### 2.2 Information Retrieval

After connecting your PC to Internet, you are ready to retrieve information from Net. But for this, you need an important software called *Browser*. A *browser* is a program that lets you visit different (web) sites on the Net and display their offering on your computer.

#### NET SURFING

Exploring the web is known as **Net Surfing**.

To visit a site on the Net, you need to supply the **address** of the site or in other words, its **URL** to the browser. And you'll see your browser fetch the 'home page' from the site-address you have specified in the address bar of your browser (see Fig. 2.1). This way you can explore all the sites on the web. Exploring web is generally known as Net Surfing.



Figure 2.1

When you specify a URL to the browser, which is a web page (a **file** or **document** actually). In order for you to see the web page, the browser makes a copy of it on your PC *i.e.*, your browser **downloads** it on your computer. So, now you know what downloading is.

#### Some Interesting Sites to Visit

The Internet is check-full of interesting places to visit, and the following list describes a few that you might try. The range varies in interest and in seriousness, so have some fun surfing these sites.

| Site   | Description   |
|--|---|
| <a href="http://www.bbco.uk/education/levels/z4kw2hv">www.bbco.uk/education/levels/z4kw2hv</a> | BBC site dedicated to school education. Student can find resources for various subjects of various course levels.   |
| <a href="http://www.codacademy.com">www.codacademy.com</a>                                     | A smart site gives teens a hands-on experience with coding. Very popular among coding fans.   |
| <a href="http://thimble.mozilla.org/">thimble.mozilla.org/</a>                                 | Fantastic online editor teaches kids to write the Web.  |
| <a href="http://www.discovery.com">http://www.discovery.com</a>                                | If you subscribe to cable TV's Discovery channel, you already know what a great source it is for nature and science programs, among others. Tune in to the Discovery site for the same great information. |
| <a href="http://www.nationalgeographic.com/kids/">http://www.nationalgeographic.com/kids/</a>  | This is another great source of nature and science programs. Check out for some great kids stuff here.  |

## 2.3 E-mail (Electronic Mail)

The most widely used tool on the Internet is electronic mail, or **e-mail**. E-mail is used to send written messages between individuals or groups of individuals, often geographically separated by large distances. E-mail messages are generally sent from and received by mail servers – computers that are **dedicated to processing and directing e-mail**. Once a server has received a message, it directs it to the specific computer that the mail is addressed to. To send e-mail, the process is reversed. A very convenient and inexpensive way to transmit message, e-mail has dramatically affected scientific, personal, and business communications.

### 2.3.1 E-mail Account and Address

Although sending and receiving mail is extremely simple. However, there are a few parameters you must be clear about before you start sending and receiving mails. One such parameter is E-mail address. E-mail addresses commonly take this form :

**username@hostname**

Here are a number of typical e-mail addresses (well, almost typical) :

pacasa@hotmail.com, pacasa@de16.vsnl.net.in,  
bala\_gm@india.com, maddurma@indya.com,  
Wada.Sachin@InfoMeet.com

#### Advantages of E-mail

- ❖ Low cost
- ❖ Speed
- ❖ Waste reduction
- ❖ Ease of use
- ❖ Record maintenance
- ❖ Patience

#### Limitations of E-mail

- ❖ Hardware requirement
- ❖ Impermanent
- ❖ A hasty medium
- ❖ Hard to convey emotions

Here you see that before the character '@' (pronounced "at" or "at the rate of") the e-mail account holder's *net name* appears and after '@', the name of Net server appears which hosts this e-mail address. That is, in address Wada.Sachin@InfoMeet.com, Wada.Sachin is the net name of a user and InfoMeet.com is the name of server hosting it.

Similarly, in email-id pacasa@hotmail.com, pacasa is the net name of the user and it is hosted on server hotmail.com. Thus we see that an email-address has **two parts separated by '@' ("at") symbol**.

- Username.** On the left side of @ separator is the user name. A user name can not have blanks.
- Domain name for the host server.** The portion to the right of @ identifies the server or host or network that services your e-mail. It is sometimes also called the *e-mail server*.

### 2.3.2 E-mail Primer

Before you start sending and receiving e-mails you must have an e-mail account. You can have either a web-based online e-mail account or an e-mail account on your ISP's server. co-incidental.

1. Please note, all the e-mail addresses mentioned here are fictitious. Any resemblance to real e-mail addresses is co-incidental.

However, as you must be knowing that an e-mail account on an ISP's server is a paid account and a web-based email account is generally free. So, here we'll be discussing how you can create a free web-based email account and use it for sending and receiving e-mails.

#### Creating a Web based E-mail Account

You can create your Web-based free e-mail account upon many sites. Some of them are :

<http://www.hotmail.com>,  
<http://www.rediffmail.com>

You can log on to any of these sites and then register there as a new user. We are selecting the site [www.gmail.com](http://www.gmail.com) for this purpose. In the following lines, you'll see how one can create a web-based e-mail account.

1. Get connected to Internet.
2. Now log on to site <http://www.gmail.com>.
3. To register for the very first time click at **Sign up for gmail** and follow the instructions.

You can also use **email-client software** for sending/receiving emails. An **e-mail client** (also mail user agent (MUA)) is a front-end computer program used to manage e-mail.

Some common email-clients used are :

1. **Mozilla Thunderbird**. It is an e-mail and news cross-platform client software package by Mozilla Foundation.
2. **Postbox Express**. It is similar to Thunderbird in look and feel but offers some extensions as well.
3. **eM**. It is a client and server platform for messaging and collaboration. This email-client integrates email, contacts, shared calendar, VoIP(Voice over IP), and online document authoring in a rich browser-based interface.

Some other popular email clients are : *WindowsLive mail*, *Claws mail*, *Zimbra Suite Opera mail* etc.

#### Viewing Received Mails

Once you have created your web-based e-mail account, you can log in it and view your mail. For this you'll have to get back to the web page that allows you to log in to your e-mail account. For instance, we have created a mail account on [gmail.com](http://www.gmail.com), so we will have to go to web page [www.gmail.com](http://www.gmail.com). Following steps will guide you how to view the mails in your e-mail account (we'll use our newly created account on [www.gmail.com](http://www.gmail.com)).

1. Go to **gmail** web page (by typing the URL <http://www.gmail.com> in the address bar) to log in to your e-mail account. In this web page, type your newly created **login** and **password** in front of **UserName** : and **Password** : fields, and then click at **Sign In** [Fig. 2.2(a) step 1].

2. And here you are, successfully into your e-mail account [Fig. 2.2(b) step 2]. You'll see a list of messages along with details like, **From**, **Subject**, **Date** etc. To view a message, move your cursor on subject detail of message. Wherever, your cursor changes to a hand symbol [], click there to view it. [If it is not showing you the list of mails, then click at **Inbox** link in the window].

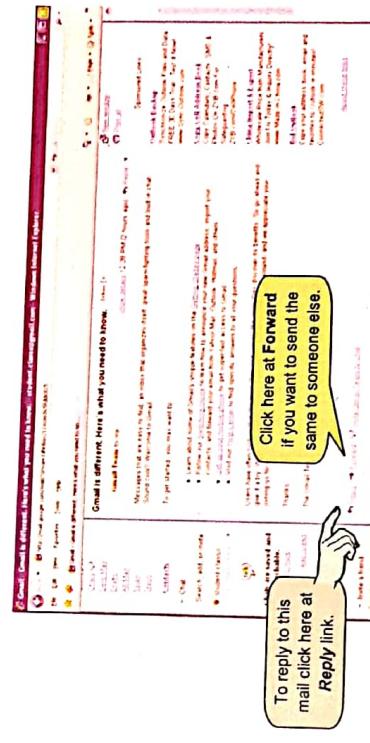


(b) The inbox of a mail account

Figure 2.2

#### Replies or Forwarding on Email Message

1. You are reading an email message you've received, you can reply to the sender of this message immediately by clicking at **Reply** button [see Fig. 2.3(a)].



(a) Repling/Forwarding an email-message.

When you click at **Reply** button, it takes you to the **Compose window**, where, automatically the address of the sender appears in front of **To** box i.e., the sender becomes recipient of reply message [see Fig. 2.3(b)].

Now in this compose window you can write the **reply mail message** and send it.



(a) Signing in a Gmail mail account.

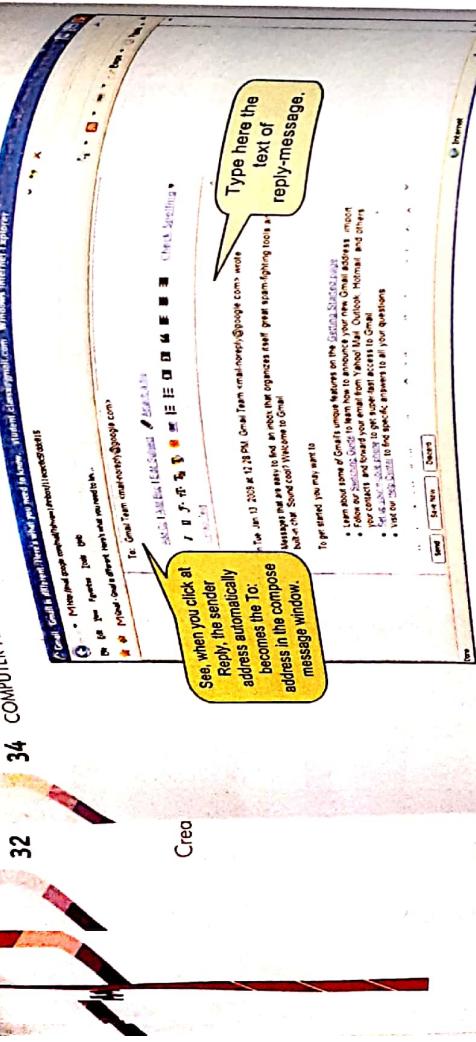


Figure 2.3 (b) Replying/Forwarding email-message window.

If you've received a joke or some interesting or useful piece of information, you may want to send the same message to someone else. This can be done by clicking at *Forward button*, you need to specify the addresses of the recipients separated by commas to whom you intend to forward it.

When you log in to your email account, your e-mail server takes you into a folder called **Inbox**. **Inbox** is the name of folder that stores your received mails. There are many other folders also. To learn about these, you may explore it yourself or take help from some experienced user.

#### Structure of an Email Message

|                    |  |
|--------------------|--|
| <b>FROM</b>        | This is the address of the sender of the e-mail. Apart from the e-mail address, the field may contain the name of the sender also.   |
| <b>To</b>          | This is the address or addresses to which the mail is sent.  |
| <b>CC</b>          | CC stands for <i>Carbon Copy</i> . Here you can specify the address/addresses of those to whom you want to send a copy of the mail. The CC recipient's name is visible to all recipients.  |
| <b>BCC</b>         | BCC is for <i>Blind Carbon Copy</i> . This is also a list of addresses. These people will also receive a copy of the message. But a BCC recipient's name is not visible to the other recipients. The recipients can see the T0 and CC addresses. |
| <b>SUBJECT</b>     | A short title for the mail. It ideally should speak about contents of the message.   |
| <b>BODY</b>        | The message.   |
| <b>ATTACHMENTS</b> | You can attach one or more pictures and documents or any other with your e-mail. Computers specify a maximum size for the mails they can handle and so you have to keep this in mind if you intend to send very big attachments.                 |
| <b>DATE</b>        | This is the date and time on which the message was sent from the sender's computer.  |
| <b>MESSAGE-ID</b>  | Every message will have a unique id, which is used to track replies to it. The message is visible to us; rather it is used internally by the e-mail program and the e-mail system.   |

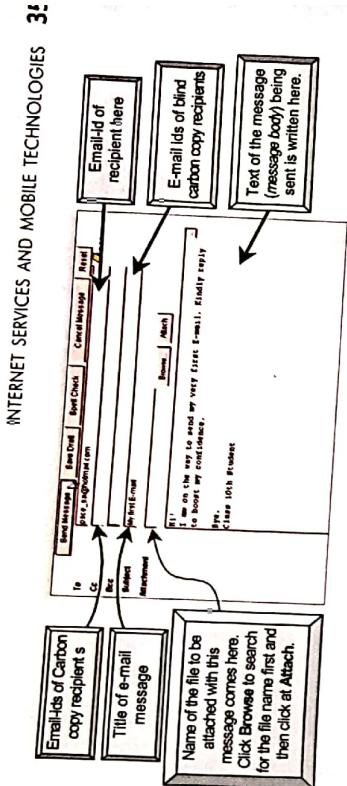


Figure 2.4 Structure of an E-mail Message.

#### Sending Mail

To send mail(s) to your friends and relatives, you need to first log in to your e-mail account and then follow these steps :

1. After logging in to your e-mail accounts, you need to click at Compose (or New Mail or Compose Mail in some accounts) button to compose a new mail message to be sent.
2. In the Compose Message window, you'll see various fields, which are to be used for the following things :

- |                  |  |
|------------------|--|
| <b>To :</b>      | Mail-id of recipient   |
| <b>CC :</b>      | Mail-ids of recipients of <i>Carbon Copy</i> of this mail-message. |
| <b>Bcc :</b>     | Mail-ids of recipients of <i>Blind Carbon Copy</i> .               |
| <b>Subject :</b> | Title of the mail message.   |

- If you do not see CC : or Bcc : boxes, click on Add CC: and/or Add Bcc: links below To: box. (cc: and Bcc: are OPTIONAL components)
- ◆ The *Carbon Copy i.e., CC* field allows you to send the same mail message to multiple recipients at the same time. For example, if a manager wants to send same message to all his/her subordinates, he/she may use this field for entering the mail-ids of his subordinates.
  - ◆ The *Blind Carbon Copy i.e., Bcc* field allows the sender to send same mail-message to multiple recipients without letting them know that some other persons also have received the same message.

Refer to Fig. 2.4 for the structure of e-mail message.

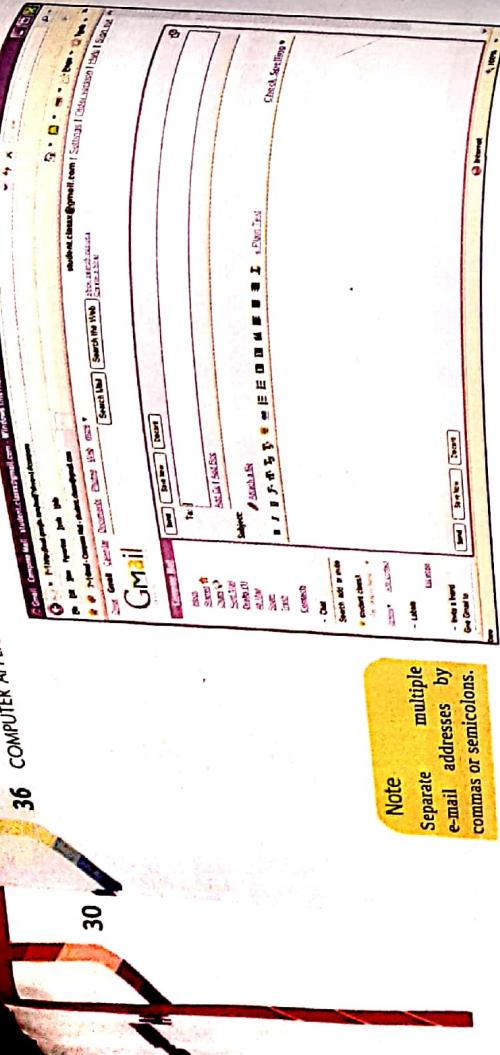


Figure 2.5 (a) Composing mail message.

3. Fill in the details of e-mail message and write the text of message in the box designated for it. If you want to attach a file (OPTIONAL) with your e-mail message, firstly click at Attach a file link below Subject: box and then you need to browse through your computer to select the desired file, and then click at Open [see Fig. 2.5(b)].

◆ Once you are through with composing the e-mail message, click at Send button [see Fig. 2.5(c)]. And your e-mail will be sent to the recipient's Inbox in no time.

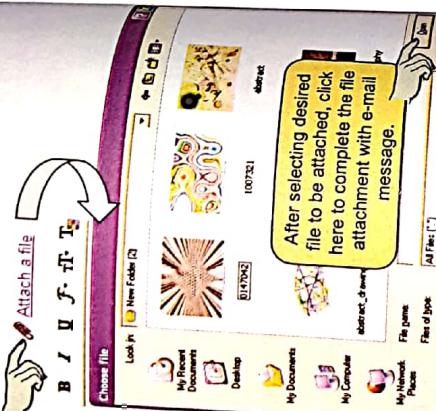
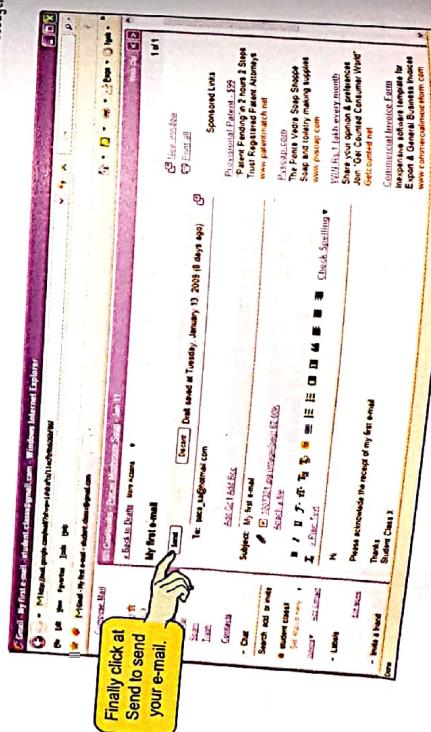


Figure 2.5 (b) Attaching a file to email-message.



(c) Sending email.

### Difference between Cc and Bcc

Both Cc and Bcc forward a copy of the message to everyone you've listed. The main difference between Cc (i.e., Carbon copy) and Bcc (Blind carbon copy) is that, with the latter, the recipients do not get to know each other.

Using BCC protects the privacy of your recipients and helps reduce spam. When you send an email to several people using the normal "To:" or "Cc:" fields, all of their email addresses are clearly displayed in the message. If the email is forwarded, the email addresses of all previous recipients may also be forwarded. However, when you use BCC to send email to more than one person, the email addresses of your recipients will not be displayed in the emails.

### Spam vs. Junk Mail

Spam is defined as irrelevant or inappropriate messages sent on the Internet to a large number of people. Junk mail is the unwanted or unsolicited advertising or promotional material received through mail or email. These two terms typically are used interchangeably.

In the early days of the Internet it was possible to send email to everyone on the system (Nowadays, we have lot of spam filters that save us from a lot of spam). These system-wide emails were referred to as "SPAM", meaning *Send People A Lotta Mail*. Spammers (i.e., the people sending the spam) send their messages to hundreds, thousands or even MILLIONS of email addresses at once with the hopes that at least a few people will respond.

## 2.4 Using Search Engines

Until now, you were surfing Internet by visiting sites known to you. What if you want to view particular information, but you do not know which site would provide you that information. In that case, you need to search for that information on the web. And this can be done through search engines, a program used for searching information on the Internet.

### 2.4.1 Finding Information using a Search Engine

There are many search engines on the web. The searching process is similar on these search engines.

Following table 2.1 lists some popular search engines on the web.

Table 2.1 Some Popular Search Engines

| Search Engine / Directory | URL  |
|---------------------------|--|
| Google                    | <a href="http://www.google.com">www.google.com</a>             |
| Bing                      | <a href="http://www.bing.com">www.bing.com</a>                 |
| Yahoo! Search             | <a href="http://www.search.yahoo.com">www.search.yahoo.com</a> |
| Ask                       | <a href="http://www.ask.com">www.ask.com</a>                   |
| AOL                       | <a href="http://www.search.aol.com">www.search.aol.com</a>     |
| Wow                       | <a href="http://www.wow.com">www.wow.com</a>                   |

We are going to learn the information searching process in one very popular search engine.

Bing ([www.bing.com](http://www.bing.com)).

To search for web pages pertaining to a specific information, all you have to do is :

(i) go to the home page of the search engine.

(ii) type the information to be searched for in the box provided for it.

(iii) now click at **Search** button next to it. Within a few seconds, the search engine will search for that information in some way.

Figure 2.6 shows this process of searching information.



Figure 2.6 Searching information through a search engine.

Sc

## 2.4.2 How Search Engine Works

In a search engine, you can type keyword(s) to search for and a search engine searches them on the web and provides you the details. A search engine works with the help of following three elements :

- ◆ Spiders or Webcrawler or Bots or Agents. The search engines use a software called spider or webcrawler or Robot or bot or agent which comb the Internet looking for documents and their web addresses. The spiders or webcrawlers perform the methodical searches needed to find information.
- ◆ The Bots or Spiders are given direction by the search engine and they crawl from one site to another, compiling the huge lists of URLs (based upon the directions) given by search engine.

- ◆ Indexing Software and Database. The lists of documents and web addresses collected by bots are sent to the indexing software. The indexing software extracts information from the documents and web addresses, prepares on Index of it and stores in a database.
- ◆ The kind of information indexed depends upon the particular search engine. Some index every word in the document ; others index the document title only.
- ◆ Search Algorithm. When you perform a search by entering keywords, the search engine software searches its database (in which indexing software stores its entries) using a particular search method called **search algorithm**. And then it displays the matching documents or web addresses.

Figure 2.7 illustrates the working process of search engine.

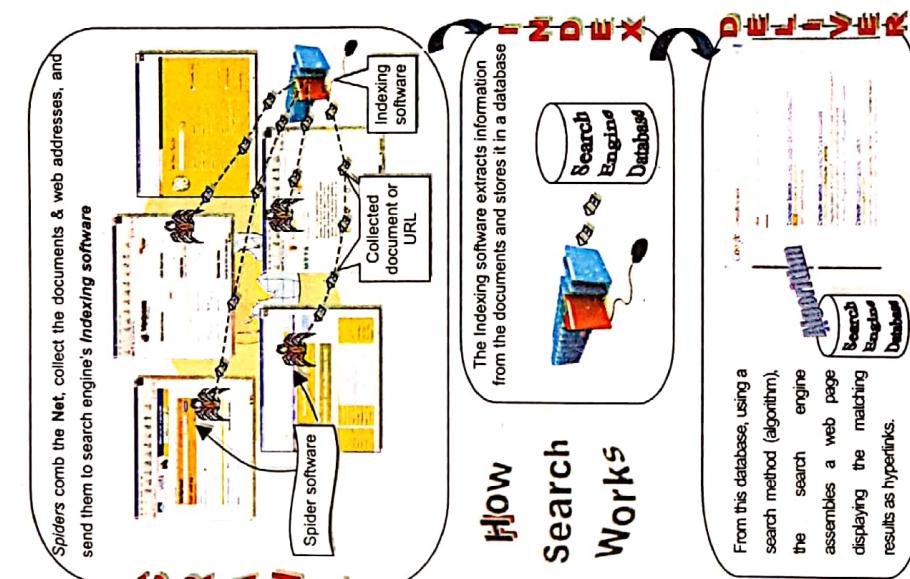


Figure 2.7 How search engine works.

### 2.4.3 Some Searching Tips

To effectively search for desired information, you must learn the art of framing search queries. In the following lines, we are going to discuss some tips for the same :

- Do not ask questions. For example, if you want to find out some information about Home Minister of India and if you type **Who is the Home Minister of India ?** in the search box, then you may end up getting lakhs of matches but most being useless.

This is because the search engine searches for each word in the search query separately. That is, in this case, your search will search for words "who", "home", "minister", "India" separately and then display all the results. Common words like "a", "and", "is", "the" etc. are dropped.

- Surround your query in quotes or put some punctuation marks (- or -) if you want it to be treated as single phrase rather than a series of individual search terms. For example, if you want to search for the book titled *God of Small Things* then you may write it as

"god of small things"

or as **god-of-small-things**

or as **god : of ; small ; things**

3. Use wildcard \* for pattern matching. For instance, if you want to search for certain

- Use wildcard \* for pattern matching. For instance, if you want to search for certain

things starting with word dir, then you may write **dir\*** in the search box and your search engine will search for many words starting with dir e.g. dire, direct, direction, director etc.

4. The lowercase word matches are not case-sensitive but uppercase words are case-sensitive. For example, if you write **program** it will match with **program** or **Program**, ..., and **PROGRAM**. But if you write **PROGRAM** then it will match **PROGram** only.

5. To specify that a word or phrase must appear in matched documents, put a plus sign (+) immediately before it. For example, the following query

**+boston +university**

will match with web pages having both the words **boston** and **university**.

6. To specify that a word or phrase must not appear in matched documents, put a minus sign (-) immediately before it, e.g.

**+asia -china**

### 2.4.4 Finding People on the Net

The Internet provides several search engines that are primarily intended to help you locate general information. However, many search engines also offer a way to search for basic information about people and places. And there are a number of utilities and sites geared entirely towards helping you find this kind of information. If you want to find out a person's mail-id, phone numbers, street addresses, you can use this service. To do this, all you have to do is go to one such site and then supply some information (like name etc.) required to search desired information. We have done this through the [www.123people.com](http://www.123people.com)

For instance, if you want to search e-mail-id of a person follow these steps :

- Log onto [www.123people.com](http://www.123people.com)

- You'll see the people search page on your screen. Now type the first name and last name of the person whose email-id you want to search for.
- Click Search button and the search engine will search for the name given in its database and display the results on your screen.

Apart from 123people, you may also try following web sites :

- [www.addresses.com](http://www.addresses.com)
- [email.addresssearch.com](http://email.addresssearch.com)
- [www.peakyou.com](http://www.peakyou.com)
- [www.pipl.com](http://www.pipl.com)

### 2.5 FTP Protocol

**FTP or File Transfer Protocol** is a commonly used protocol for exchanging files over any network that supports the TCP/IP protocol (such as the *Internet* or an *intranet*<sup>2</sup>). TCP/IP is a main protocol used for communications over Internet and intranets.

There are two computers involved in an FTP transfer :

- ◆ an FTP server and
- ◆ an FTP client

The FTP server is a computer that is running FTP server software. An FTP server listens on the network for connection requests from other computers.

The FTP client is a computer that is running FTP client software. An FTP client computer initiates a connection to the server. Once connected, the customer can do a number of file manipulation operations such as uploading files to the server, downloading files from the server, renaming or deleting files on the server and so on.

Virtually every computer platform supports FTP. This allows any computer connected to a TCP/IP based network to manipulate files on another computer on that network regardless of which operating systems are involved.

There are many existing FTP client and server programs, and many of these are free. Some examples include :

|          |  |
|----------|--|
| Windows  | WinSCP, SmartFTP, FileZilla, Core FTP, AceFTP  |
| Mac OS X | Cyberduck, RBrowser Lite, OneButton FTP, Yummy FTP, Captain FTP, Interarchy 8.5, FTPee     |
| Linux    | gFTP, CrossFTP, FileZilla, FireFTP, Konqueror, Nautilus Multi-Platform for Firefox FireFTP |

### 2.5.1 Downloading and Uploading Files from Remote Site

Previous section mentioned some FTP software that let you install and create FTP server and client computers. You can connect to FTP servers by installing any of these programs. However, you can also connect to FTP server through Windows Explorer also. In the following lines, we are explaining the same.

- Intranet is a local or restricted communications network, especially a *private network* created using World Wide Web software.

Requirements to Connect to FTP Server  
After installing the required software for FTP access before you connect to an FTP server, you need to know its web address and your username and password. There many FTP servers that allow **anonymous** or **guest** access. That is, you need not be a registered users of these FTP servers.

Some of these FTP addresses are given below for your reference:

- ◆ <ftp://ftp.frelsruhpms.net/>
- ◆ <ftp://ftp.freestone.net/>
- ◆ <ftp://ftp.leo.org/>
- ◆ <ftp://ftp.usgs.edu/>
- ◆ <ftp://ftp.heanet.ie/>
- ◆ <ftp://ftp.freestone.net/>
- ◆ <ftp://ftp.freestone.net/>

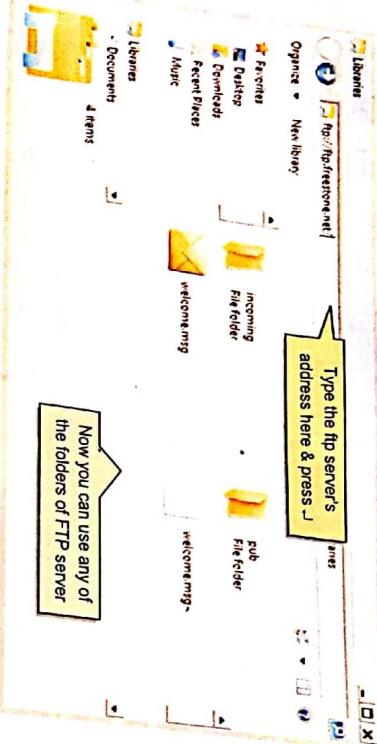
We shall be logging as anonymous user on one of these FTP servers.

Connecting to FTP Server and Uploading/Downloading Files

To connect to an FTP server, you need to follow the steps as given below:

1. Open Windows Explorer or File Explorer.
2. In the address bar of Windows explorer window, type **ftp://** followed by the address of the FTP server to which you want to connect.
3. We are going to connect to <ftp://ftp.freestone.net>, so we typed this address in the address bar (see figure below).

3. Windows/File Explorer now connects to the FTP server and, if the connection is established without problems, you get to see all the folders on the server, as if they were folders on your computer.



#### Uploading a file

4. To upload a file on FTP server, you need to copy a file from your computer and paste it to FTP server's folder just as the way you copy other files on your computer.

#### Downloading a file

5. To download a file from FTP server, just copy a file from any of the folders of the FTP server and paste it your computer's folder just as the way you copy other files on your computer.

Once done, simply close the FTP server's window.

## 2.6 Remote Login and File Transfer Protocols

Previous section talked about a file transfer protocol FTP. In this section we shall talk about some more protocols such as SFTP (Secure FTP), SSH (Secure SHell), SCP (Secure CoPy) and Telnet.

### 1. TELNET

Telnet is an older Internet utility that lets you log on to remote computer systems. Basically, a Telnet program gives you a character-based terminal window on another system. You get a login prompt on that system. If you're permitted access, you can work on that system, just as you would if you were sitting next to it.

Traditionally, Telnet has been used by people who have logins on remote systems and want to do serious work there. But Telnet has some additional uses that are more relevant to people who are exploring the internet. Most notably, you can use Telnet to connect to thousands of catalogs at libraries around the world. This capability is wonderful for anyone doing serious research. Imagine being able to find out which books in your particular discipline are available at a number of specialty libraries in remote locations—all while you plug away at your desk.

### How Telnet Works

The computer, through which you want to connect to a remote server, is the *client computer*. To connect to *remote server* via Telnet, following process happens :

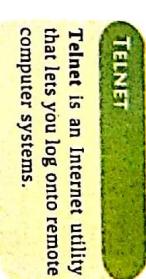
- (i) Using telnet client software on your computer (the Telnet client), your computer makes a connection to a telnet server (*i.e.*, the remote host) over Internet (which is a TCP/IP network).
- (ii) Once your telnet client establishes a connection to the remote host, your client becomes a virtual terminal, allowing you to communicate with the remote host from your computer.
- (iii) Now you can type Telnet based access commands on the Telnet client computer, which are then sent to the remote Telnet server and the Telnet server acts accordingly.

In most cases, you'll need to log into the remote host, which requires that you have an account on that system. Occasionally, you can log in as *guest* or *public* without having an account.

### 2. SSH (Secure SHell) Protocol

**SSH** is a Telnet like protocol in functionality but it is a secure protocol compared to Telnet. SSH (Secure SHell) is also a protocol for remotely logging into a machine via a shell where all data between the client and server is encrypted.

The SSH protocol ensures security shell using other protocols like SCP and SFTP. You shall read about these protocols in coming lines.



### SSH (SECURE SHELL)

SSH (Secure SHell) is remote logging protocol that logs into remote machine via a shell where all data between the client and server is encrypted.

**Requirements to Connect to FTP Server**

After installing the required software for FTP access, before you connect to an FTP server, you need to know its web address and your username and password. There many FTP servers that allow **anonymous** or **guest** access. That is, you need not be a registered user of these FTP servers. Some of these FTP addresses are given below for your reference :

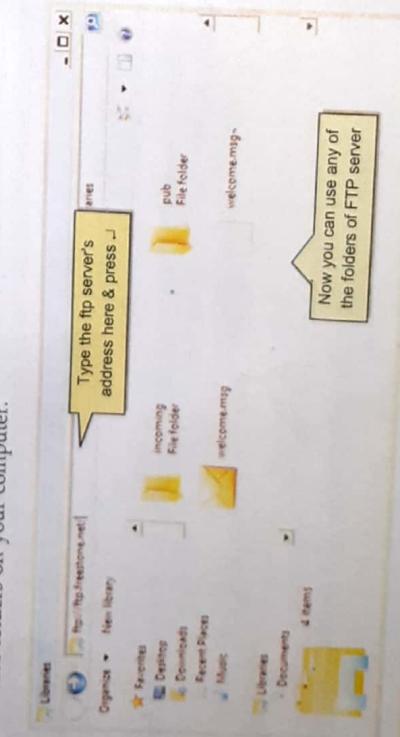
- ◆ <http://ftp.freesharpmis.net/>
- ◆ <http://ftp.leo.org/>
- ◆ <http://ftp.freestone.net/>
- ◆ <http://ftp.freestone.net/>
- ◆ <http://ftp.usg.iu.edu/>
- ◆ <http://ftp.usg.iu.edu/>

We shall be logging as anonymous user on one of these FTP servers.

**Connecting to FTP Server and Uploading/Downloading Files**

To connect to an FTP server, you need to follow the steps as given below:

1. Open Windows Explorer or File Explorer.
  2. In the address bar of Windows explorer window, type **ftp://** followed by the address of the FTP server to which you want to connect.
- We are going to connect to <http://ftp.freestone.net>, so we typed this address in the address bar (see figure below).
3. *Windows/File Explorer* now connects to the FTP server and, if the connection is established without problems, you get to see all the folders on the server, as if they were folders on your computer.

**Uploading a file**

4. To upload a file on FTP server, you need to copy a file from your computer and paste it to FTP server's folder just as the way you copy other files on your computer.

**Downloading a file**

5. To download a file from FTP server, just copy a file from any of the folders of the FTP server and paste it to your computer's folder just as the way you copy other files on your computer.
- Once done, simply close the FTP server's window.

**2.6 Remote Login and File Transfer Protocols**

Previous section talked about a file transfer protocol FTP. In this section we shall talk about some more protocols such as **SFTP** (Secure FTP), **SSH** (Secure SHell), **SCP** (Secure CoPy) and **Telnet**.

**1. TELNET**

- ◆ **TELNET**
- ◆ Telnet is an older Internet utility that lets you log on to remote computer systems. Basically, a Telnet program gives you a character-based terminal window on another system. You get a login prompt on that system. If you're permitted access, you can work on that system, just as you would if you were sitting next to it.

Traditionally, Telnet has been used by people who have logins on remote systems and want to do serious work there. But Telnet has some additional uses that are more relevant to people who are exploring the internet. Most notably, you can use Telnet to connect to thousands of catalogs at libraries around the world. This capability is wonderful for anyone doing serious research. Imagine being able to find out which books in your particular discipline are available at a number of specialty libraries in remote locations—all while you plug away at your desk.

**How Telnet Works**

The computer, through which you want to connect to a remote server, is the client computer.

To connect to *remote server via Telnet*, following process happens :

- (i) Using telnet client software on your computer (the Telnet client), your computer makes a connection to a telnet server (*i.e.*, the remote host) over Internet (which is a TCP/IP network).
- (ii) Once your telnet client establishes a connection to the remote host, your client becomes a virtual terminal, allowing you to communicate with the remote host from your computer.
- (iii) Now you can type Telnet based access commands on the Telnet client computer, which are then sent to the remote Telnet server and the Telnet server acts accordingly.

In most cases, you'll need to log into the remote host, which requires that you have an account on that system. Occasionally, you can log in as *guest* or *public* without having an account.

**2. SSH (Secure SHell) Protocol**

**SSH** is a Telnet like protocol in functionality but it is a secure protocol compared to Telnet. **SSH** (Secure SHell) is also a protocol for remotely logging into a machine via a shell where all data between the client and server is encrypted. The **SSH** protocol ensures security shell using other protocols like **SCP** and **SFTP**. You shall read about these protocols in coming lines.

**SSH (SECURE SHELL)**

**SSH** (Secure SHell) is remote logging protocol that logs into remote machine via a shell where all data between the client and server is encrypted.

### Significance of using SSH

The traditional Internet protocols like Telnet, FTP, even email also, are not secure, i.e., these share data/information in unencrypted form over Internet which can easily be eavesdropped.

With the traditional Telnet protocol, the information that is exchanged between the client computer and the server computer is not sent directly to that machine, it is routed through several machines to get there. (You can understand it like this : *if you are travelling to a destination, then, rather than taking one road directly to destination, you use several connecting roads to reach destination.*) This way of data travelling is not safe – anyone can easily see what you are sending (because your data in unencrypted) – just like on open highway, you are visible to all.

Now what does this mean? Since your data is unencrypted, it is unsecure and hence any hacker can easily grab your data such as username and password, other data shared etc. But if you use SSH, it secures your data by creating a secure connection with encrypted data. This ensures that only the client and the server will have access to actual data. (Fig. 2.8)

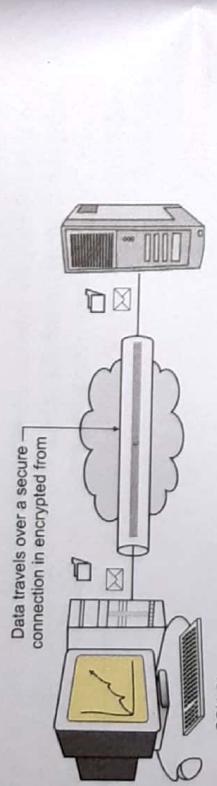


Figure 2.8 SSH - Secure SHell protocol's working

### 3. SCP (Secure Copy)

There are protocols that allow to copy files between two servers or two connected machines over Internet. SCP is **Secure Copy**, is one such protocol. The SCP protocol allows you to transmit files from one machine to another over Internet with the encryption benefits of SSH. Most SSH clients include SCP capability. It offers own set of command options for secure copying of files across two connected machines over Internet.

### 4. SFTP (Secure FTP)

SFTP is a file transfer protocol but is secure contrary to unsecure FTP. FTP (File Transfer Protocol) is not a secure protocol and data/files travelling over FTP are not protected during a session. This means , data travelling over FTP can easily be stolen. To counter this problem, SFTP protocol is used. SFTP (Secure File Transfer Protocol) is a secure protocol for file transfer and it ensures security of data based on the Secure Shell protocol. SFTP ensures data safety by taking these measures:

- SFTP requires that the client user must be authenticated by the server and the data transfer must take place over a secure channel (SSH).
- All data is encrypted before being sent across the network.
- SFTP encrypts both commands and data providing effective protection against common network security risks.

## 2.7 Web Services

Web services are the services or applications available *via* web through the use of specific protocol. There are diverse web services available today e.g., chat, email, video-conferencing, social networking etc. In the coming sections, we are going to talk about common web services that we use in our day-to-day life.

### 2.7.1 Chat

Chatting is one of popular services of Internet. Chatting is like a text-phone. In telephonic conversations, you say something, people hear it and respond, you hear their responses on the spot and can reply instantly. In the same manner, in chatting, you type a message on your screen, which is immediately received by the recipient ; then the recipient can type a message in response to your message, which is received by you instantly.

If you want to chat, you need to log on to a server that provides chat facility. There are many sites that provide chat facility.

**Chat room** A chat room is a website or a part of some online service that provides an online venue for communities of users with a common interest to communicate in real time (instantly).

### 2.7.1A Commonly used Types of Chat

Chat can be of different types. Given below are some commonly used types of chat.

(i) **Instant Messaging (IM).** It is a type of communications service via IM software that enables one to create a kind of private chat connection with another individual in order to communicate in real time over the Internet, similar to a telephone conversation but using text-based, not voice-based, communication.

The most popular form of IM is *Instant Messengers* such as AOL Messenger. Messenger software allows anyone who downloads their free software to choose a nickname and 'chat' with anyone else with the same messenger software directly. Even programs like Skype also offer such a facility.

(ii) **ICQ ('I seek you')** ICQ offers chatting via ICQ software. It is used as a conferencing tool by individuals on the Net to chat, e-mail, perform file transfers, play computer games, and more.

When you download ICQ program (which is free) you are assigned an ICQ number. Two or more people using ICQ can have the same nickname, but no two people can have the same ICQ number.

(iii) **IRC – Internet Relay Chat.** Unlike IM and ICO, IRC (Internet Relay Chat) is not owned by any company. To use IRC, you need an IRC client program. IRC has many

networks that are completely separate from one another. If you want to chat with someone on IRC, you need to make sure that you are connected to an IRC server via your PC's IRC client program.

Once you connect to an IRC server, there are often thousands of rooms (called *channels*) on nearly any topic, and tens of thousands of different people to chat with.

(iv) **Web based Chat**: Web based chat is also like IRC but it is different from it in the sense that it's on a specific website and no program is really needed to install on computer. *Yahoo Chat* is a great example of a web based chat.

### 2.7.2 Video Conferencing

The next dimension in Internet communication is the videophone. People who have a multimedia PC with a camera and video compression hardware, access to Internet over an ordinary telephone line, and videophone software can see each other while talking, which is what is called video conferencing (Fig. 2.9).

### VIDEO CONFERENCING

A two-way videophone conversation among multiple participants is called **Video Conferencing**.



Figure 2.9 The video conferencing.

Some most popular video conferencing software include : *Skype*, *ooVoo*, *Adobe Acrobat Connect*, *AT&T connect* etc.

### 2.7.2A Areas of Application

Video conferencing has become a very useful tool and has found its applications in diverse areas. Some areas that commonly use video conferencing are being given below :

#### *Business*

Video conferencing provides businesses with the ability to meet and quickly and effectively communicate with employees sitting in multiple locations; even provide training or conduct interviews.

Video conferencing is an exciting technology for education. Distance Learning video conferencing increases efficiency by saving travel time and expenses and maintaining the ability for interaction between teachers and students.

Telecommunication with Clients

Video conferencing allows users to save resources by meeting with clients and/or colleagues at distant locations while maintaining face-to-face contact.

*Legal Environment*

Through video conferencing, testimony can be given by an individual who is not able to attend the physical legal settings, e.g., expert witnesses, prisoners etc.

#### *Telemedicine*

In places where actual hospitals and medical experts are not available, Video conferencing enables patients to get the necessary information and expert guidance they need quickly and easily.

#### *Media*

Through video conferencing, journalists can participate in international press conferences from any location, without having to leave their offices.

### 2.7.2B Advantages and Disadvantages of Video Conferencing

Video conferencing is a popular and useful communication tool. It offers multiple benefits ; however there are some disadvantages also as listed below.

#### *Advantages*

- ◆ Saves travel cost and travel time.
- ◆ Allows conducting meeting with people at different locations across the globe.
- ◆ You can see people as well as hear them. This means you can see their body language which you can't do with a telephone call.
- ◆ You can all view a document on the screen at the same time. People can work together and add their ideas. The document can be emailed to all of the people at the meeting later on.
- ◆ Ideas and knowledge can be communicated between all those at the meeting very quickly and responses gathered. Video conferencing is good for brainstorming.
- ◆ Video conferencing is an excellent way of keeping in touch with friends and family, even if they are in a different country.

#### *Disadvantages*

- ◆ Additional cost of video conferencing specific hardware and software.
- ◆ A very reliable, fast data link is needed to conduct video conferencing.
- ◆ Even with a fast connection, there might be a slight delay between responses. Especially from one side of the planet to the other.
- ◆ If the hardware breaks down for any of the participants, they cannot attend the meeting.
- ◆ People could be in different time zones around the world. This might mean that some people have to stay up through the night in order to attend the meeting.
- ◆ The video camera might not be able to see all parts of the room at the same time. Some people might not be easy to see at the meeting.

### 2.7.3 e-Learning

e-Learning is learning that takes place in an electronically simulated environment. e-Learning, web-based training, Internet-based training and computer-based training are the next-generation instruction methods being developed today. With e-Learning, users can immerse

themselves in a three-dimensional environment to further enhance their learning experience. Moreover, e-Learning can be done anywhere and anytime as long as the user has the proper hardware.

**e-LEARNING**

e-Learning refers to the learning that takes place in an electronically simulated environment.

The major benefits of e-learning are :

- ◆ **Reduced Overall Cost.** It's less expensive to produce e-training is virtually free once the break-even point is reached.
- ◆ **e-Learning is self-directed and self-paced.** Learners control the amount of time they spend on any particular topic thereby controlling the speed of course coverage.
- ◆ **e-Learning is interactive and hands-on.** The use of a variety of multimedia in e-Learning increases student involvement and reinforces the learning experience.
- ◆ **e-Learning is flexible.** Learning can take place anytime and anywhere, as long as the necessary equipment is accessible.
- ◆ **Consistent delivery.** e-learning eliminates the problems associated with different instructors teaching slightly different material on the same subject.
- ◆ **Easily Manageable.** Today's e-learning software allow a group of people to keep track of the course offerings, schedule and track their progress and results.

#### 2.7.3B Application Areas of e-Learning

e-learning has made teaching, training and learning much easier and in the reach of many more sectors. With technology advancements and its reach in people's lives, e-learning has found its applications in many diverse areas including formal and non-formal education. Most common application areas of e-learning are given below.

#### Application in Formal Setup

**e-learning coursework** This type of e-learning involves courses related to specific syllabi which is part of formal education system.

**Assessments** This setup conducts online assessments and quizzes to test the understanding of the student.

**e-simulation** Simulation based e-learning is very useful for showing/illustrating concepts which are otherwise not possible to show in practical e.g., working of different systems in human body, nuclear reactions, chemical reactions etc.

#### Application in Non-formal Setup

|  |   |
|--|---|
| <b>Games based Behavioural Development</b> | This type of e-learning is offered through strategy games, problem solving-games etc. and other activities for impacting the behaviour changes of work-force, enhancing their business problem solving skills and leadership development. |
| <b>Learning support</b>                    | This type of e-learning setup involves learning aids that help enhance job-oriented performance. This is especially useful for product compliance and software application training.  |

|  |   |
|--|---|
| <b>Social /Collaborate learning</b>      | This type of learning is useful for conducting social experiments and mass learning usually conducted by government, NGOs and other big organizations.  |
| <b>MOOC (Massive Open Online Course)</b> | MOOCs are courses that are delivered electronically to massive audiences, often is thousands of students, via the Internet. These are designed and conducted by university professors and/or experienced professionals. |

#### 2.7.3C e-learning Software

The e-learning software platforms are used by teachers, authors, coaches etc. for creating online customizable system of learning for each student.

Some popular e-learning software are : *moodle, olat, eFront, H5P, chamili, siminars, udemy, articulate, udacity, skill share* etc.

#### 2.7.4 e-Banking

**Electronic banking** is an umbrella term for the process by which a customer may perform banking transactions electronically without visiting a brick-and-mortar institution. The following terms all refer to one form or another of electronic banking: personal computer (PC) banking, Internet banking, virtual banking, online banking, home banking, remote electronic banking, and phone banking. PC banking and Internet or online banking are the most frequently used designations. It should be noted, however, that the terms used to describe the various types of electronic banking are often used interchangeably.

**PC banking** is a form of online banking that enables customers to execute bank transactions from a PC via a modem. In most PC banking ventures, the bank offers the customer a proprietary financial software program that allows the customer to perform financial transactions from his or her home computer. The customer then dials into the bank with his or her modem, downloads data, and runs the programs that are resident on the customer's computer as per his requirement of financial transaction.

**Internet banking**, sometimes called **online banking**, uses the Internet as the delivery channel by which to conduct banking activity, for example, transferring funds, paying bills, viewing financial instruments and certificates of deposit. An Internet banking customer accesses his or her accounts from a web browser – software that runs Internet banking programs resident on the bank's World Wide Web server, not on the user's PC. Internet banks are also known as virtual cyber, net, interactive, or web banks.

**Mobile Banking.** Mobile banking is a wireless Internet-based service that allows one to use banking services safely and conveniently using a mobile device like mobile phone or table etc. Mobile banking provides access to the most popular Internet banking features and services.

Although Internet banks offer many of the same services as do traditional brick-and-mortar Banks, analysts view Internet banking as a means of retaining increasingly sophisticated customers, of developing a new customer base, and of capturing a greater share of deposit assets. A typical Internet bank site specifies the types of transactions offered and provides information about account security.

Because Internet banks generally have lower operational and transactional costs than do traditional brick-and-mortar banks, they are often able to offer low-cost checking and high-yield Certificates of deposit. Internet banking is not limited to a physical site; some Internet banks exist without physical branches. According to industry analysts, electronic banking provides a variety of attractive possibilities for remote account access, including:

- ◆ Availability of inquiry and transaction services around the clock;
- ◆ Worldwide connectivity;
- ◆ Easy access to transaction data, both recent and historical; and
- ◆ Direct customer control of international movement of funds without intermediation of financial institutions in customer's jurisdiction."

#### Opening an e-banking account

There are several ways to open and fund an electronic banking account in India. Customers who have existing accounts at brick-and-mortar banks and want to begin using electronic banking services may simply ask their institution for the software needed for PC banking or obtain a password for Internet banking. Either approach requires minimal paperwork. Once they have joined the system, customers have electronic access to all of their accounts at the bank. New customers can establish an account either by completing a PC banking application form and mailing it to an institution offering such a service or by accessing a bank's web site and applying online for Internet banking. In either instance, the customer can fund the new online account with a cheque, wire transfer, or other form of remittance. No physical interface between the customer and the institution is required.

#### 2.7.5 e-Shopping

e-shopping or Online shopping is the process of buying goods and services from merchants who sell on the Internet. Shoppers can visit web stores from the comfort of their homes and shop as they sit in front of the computer. Consumers buy a variety of items from online stores. In fact, that provide their products online. Books, clothing, household appliances, toys, hardware, software, and health insurance are just some of the hundreds of products consumers can buy from an online store.

#### Advantages of e-Shopping

There are reasons behind the growing popularity of online-shopping.

These are :

- ◆ Major reason to conduct shopping online is the convenience. For example, when a person shops at a brick-and-mortar store, (s)he has to drive to the store, find a parking place, and walk throughout the store until (s)he locates the products she needs. After finding the items (s)he wants to purchase, (s)he may often need to stand in long lines at the cash register. In contrast, online shopping helps consumers avoid these disadvantages. With online shopping, a person logs onto the Internet, visits the store's website, and chooses the items she desires. The items are held in a virtual shopping cart until (s)he is ready to make purchase. The shopper can remain in pajamas as (s)he does shopping, and the process can be conducted in the wee hours of the morning or late into the night. Online stores never close – they're open 24 hours a day.
- ◆ Equal accessibility of products. Online stores are equally accessible from metro cities to non-metro cities to remote areas, which is not the case with brick-and-mortar stores. Thus, a person can shop online from an online store being anywhere in the world where the online store can deliver.

#### Disadvantages of e-Shopping

Despite the convenience of online shopping, not everyone chooses to purchase items and services online.

- ◆ Some people like the idea of physically going to a store and experiencing the shopping process. They like to touch the merchandise, try on clothing, and be around other people. Online shopping doesn't permit shoppers to touch products or have any social interaction.
- ◆ It also doesn't allow them to take the merchandise home the same day they buy it.
- ◆ Other people may worry about shopping online because they fear their credit card information will be compromised. Since it's necessary to provide credit card information when purchasing products online, people worry they may become the victims of identity theft. This discourages some consumers from participating in online shopping.
- ◆ Another reason some consumers avoid shopping online is the fact that they worry that the products they purchase are not accurately portrayed in the website's picture. They worry that the picture of the item may appear one way, but the actual item may look completely different – perhaps of lesser quality. It's also impossible to try on apparel when conducting online shopping.

- ◆ A consumer has to rely on body measurements in order to make sure the clothing will fit properly. If the clothing arrives in the mail and it's too small, the consumer has to return the item. This is a potential inconvenience that some shoppers may not wish to face.

#### 2.7.5A Sites Available

There are many e-shopping sites available in India. Some of these are being given below :

|  |  |
|--|--|
| FlipKart ( <a href="http://www.flipkart.com">www.flipkart.com</a> ),     | SnapDeal ( <a href="http://www.snapdeal.com">www.snapdeal.com</a> ), |
| Indiatimes ( <a href="http://www.indiatime.com">www.indiatime.com</a> ), | Jabong ( <a href="http://www.jabong.com">www.jabong.com</a> ),       |

#### e-SHOPPING

The process of shopping done over the Internet is called **online shopping** or **e-shopping**. Both products and services can be purchased through online shopping.

|       |                              |                                |                     |     |                           |         |                                 |           |
|-------|------------------------------|--------------------------------|---------------------|-----|---------------------------|---------|---------------------------------|-----------|
| Mynta | (www.myntra.com),<br>Jaypore | (www.jaypore.com),<br>Pepperry | (www.pepperry.com), | Yep | (www.yep.com),<br>Zansaar | Zansaar | (www.zansaar.com),<br>Amazon.in | Amazon.in |
|-------|------------------------------|--------------------------------|---------------------|-----|---------------------------|---------|---------------------------------|-----------|

There are also e-shopping sites that offer second-hand goods to be purchased ; some of them are :

www.olx.in  
www.quickr.com

### 2.7.5B Threats and Security Concerns

Although e-shopping has made people save on time and efforts, yet it also comes with some 'price' attached to it. There are threats and security concerns of e-shopping, which you must be aware of.

#### Threats

Some of the more common threats that hackers pose to e-shoppers include :

- ◆ gaining access to sensitive data such as user-id, passwords, credit card numbers etc.
- ◆ using viruses to corrupt your system.
- ◆ unwanted spam suggesting what to buy.
- ◆ gaining access to your shopping history, your shopping habits.
- ◆ getting access to your location details.

#### Security Concerns

This section describes potential security attack methods from an attacker or hacker.

**Tricking the shopper.** Most common security concern is tricking the shopper, also known as social engineering techniques. These attacks involve surveillance of the shopper's behaviour, gathering information to use against the shopper. For example,

- ◆ A mother's maiden name is a common challenge question used by numerous sites. If one of these sites is tricked into giving away a password once the challenge question is provided, then not only has this site been compromised, but it is also likely that the shopper used the same login ID and password on other sites.
- ◆ A common scenario is that the attacker calls the shopper, pretending to be a representative from a site visited, and extracts information. The attacker then calls a customer service representative at the site, posing as the shopper and providing personal information. The attacker then asks for the password to be reset to a specific value.

**Snooping the shopper's computer.** Many users are unaware of the security concerns and security features. Attackers exploit this situation to their own benefit. For example,

- ◆ The attacker can use various techniques to gain entry into the user's system in the absence of security features. Upon entry, they scan your file system for personal information, such as passwords.

**Sniffing the network.** In this scheme, the attacker monitors the data between the shopper's computer and the server. He collects data about the shopper or steals personal information, such as credit card numbers and uses such information for own benefit.

**Guessing passwords.** Another common attack is to guess a user's password. This style of attack is manual or automated.

**Phishing.** Another common form of social engineering attacks are phishing schemes. Attackers use similar looking names of famous sites to collect authentication and registration information. For example, <http://www.ibm.com/shop> is registered by the attacker as [www.ibn.com/shop](http://www.ibn.com/shop). (Notice this one is IBM not IBM). A shopper mistypes and enters the illegitimate site and provides confidential information. Alternatively, the attacker sends emails spoofed to look like they came from legitimate sites. The link inside the email maps to a rogue site that collects the information.

### 2.7.6 e-Reservation

e-Reservation or Online Reservation is the process of determining the availability of tickets/rooms etc., online and making reservation through electronic means via Internet. These days, you need not personally go to an office or a counter to book/reserve railways/airways tickets, hotel rooms, tourist packages etc. All this can be done online through e-reservation.

#### 2.7.6A Benefits of e-Reservation

The e-reservation offers you many benefits, major ones of which are being listed below :

- ◆ Safety. While booking an e-ticket, you directly store your details in the company's databases. It is safe and reliable to make any changes, cancellations or annotations as all these take place inside the secure electronic database.
- ◆ Ease. E-tickets can be purchased online and printed at home. Theft or loss of the printed e-ticket is not a worry – it can easily be retrieved and reprinted.
- ◆ Available Anywhere. Buying an e-ticket is simpler and faster. One can buy e-ticket anywhere where there is an Internet connection.
- ◆ Fast. e-tickets cut on manual time, the need for middle man, the best-price, the best-route availability as all these are made available by the website offering the e-ticketing system.

#### 2.7.6B Application Areas of e-Reservation

The e-reservation process is used in many areas. The most common application areas of e-reservation are listed below :

|                    |   |
|--------------------|---|
| Travel Tickets     | One can e-reserve tickets for train-travel, air-based travel from different sites that provide with this facility.            |
| Hotel Rooms        | Using e-reservation, one can reserve rooms in different hotels.   |
| Sports Matches     | Using e-reservation, you can buy tickets for matches of different sports.   |
| Movies and Theater | Using e-reservation you can buy e-tickets for a movie show or a theater play using sites/apps like BookMyShow.                |
| Events             | Using e-reservation, you can buy tickets for events taking place in a city such as exhibitions, fairs, live performances etc. |

### 2.7.6C e-Reservation Process

To buy an e-Ticket, you need to fulfill following two requirements :

- ◆ Access to the Internet.
- ◆ Online payment facility (in terms of a credit/debit card or bank account number that facilitates net-banking).

**After fulfilling the requirements, one can book an e-ticket as follows :**

1. Log into a site that provides online booking system, e.g., BookMyShow.com for movie/play/match tickets, cleartrip.com, makemytrip.com for travel tickets etc (Fig. 2.10 shows two such web-sites).

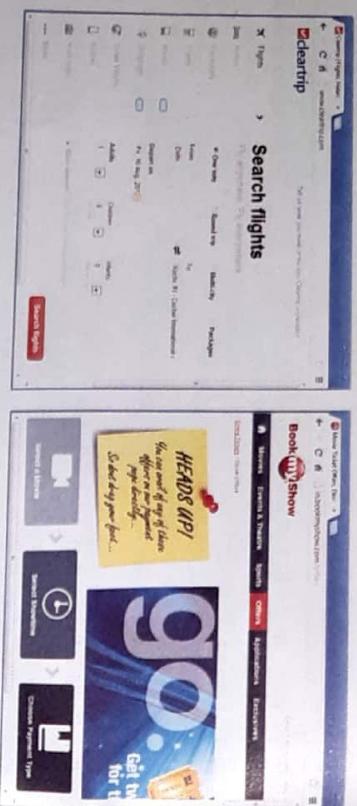


Figure 2.10 Some Online Ticket-booking sites.

2. Provide details about the day/time/seating type etc.
3. The website will display the available choices. Make a choice and confirm by submitting your details.

The moment you submit, the details you entered get recorded in several computer databases and the ticket-reservation is confirmed. The ticketing system has access to these databases.

4. Make payment (mostly e-payment) as per the directions of the website.
5. After the e-payment is processed, the web-site will show the e-ticket on screen, which you can print or save.

### 2.7.7 e-Governance

The letter 'e' makes available to you something 24 hours a day, 7 days a week, all days a month. For example, e-mail means you can mail any time as per your wish and requirements. Same way e-governance nearly means that you can interact with your government 24 x 7.

#### e-GOVERNANCE

E-governance refers to the application of electronic means in governance with an aim of fulfilling the requirements of common man at affordable costs and in fastest possible time.

E-governance can be thought of as the application of electronic means in governance i.e.,

- (i) the interaction between government and citizens and government and businesses via electronic means
- (ii) use of electronic means in internal government operations to simplify and improve democratic, government and business aspects of Governance.

In the domain of e-governance, the interaction is an umbrella term that covers the delivery of government products and services, exchange of information, communication, transactions and system integration.

The National e-governance Plan (NeGP) has been formulated by the government to promote e-governance on a massive scale. The vision of NeGP states

"making all Government services accessible to the common man in his locality, through common service delivery outlets and ensure efficiency, transparency and reliability of such services of affordable costs to realise the basic needs of the common man."

#### Major E-governance Projects in India

In this section, we are going to enlist some of the major e-governance projects.

##### 1. MCA 21, India's Prestigious G2B Services Portal

The MCA 21 project provides stakeholders with convenient and secure online access to all services provided by Ministry of Company Affairs, key services that can be availed through the MCA 21 portal.

##### 2. Consular Passport and VISA Division (Indian Passport Office)

The Consular Passport and VISA Division, a division of Ministry of External Affairs, is the Indian Passport office for people of India. It is an executive agency of Government of India responsible for issuing Indian passports.

##### 3. Income Tax portal

Some major services offered by Income tax portal include : preparation and filling of individual Income Tax returns and TDS returns by tax deductors; filing and tracking of PAN/TAN applications; status enquiry of taxes paid in banks; and access to taxation rules and taxpayer specific information.

##### 4. National Portal of India

The National Portal of India, has been developed with an objective to enable a single window access to information and services being provided by the various Indian Government entities.

(URL : [india.gov.in](http://india.gov.in))

##### 5. DRDO

DRDO is a network of more than 50 laboratories which are deeply engaged in developing defence technologies covering various disciplines, like aeronautics, armaments, electronics, combat vehicles, engineering systems, instrumentation, missiles, advanced computing and simulation, special materials, naval systems, life sciences, training, information systems and agriculture.

(URL : [drdonline.in](http://drdonline.in))

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6. Supreme Court of India  
Supreme Court of India is the highest judicial body in India. It has also its web-presence in the Supreme Court of India is the highest judicial body in India. It has also its web-presence in the form a website that can be used to know about Supreme Court Judgements, Case studies, News, e-filing etc.
7. Indian Courts  
The 'Indiancourts' is a bouquet of Web Sites of the Supreme Court and all 21 High Courts and their Benches in India. It provides a single point access to information related to the Supreme Court and any High Court in India.
8. RTI Portal  
Right to Information Act 2005 mandates timely response to citizen requests for government information.  
(URL : [rti.gov.in](http://rti.gov.in))

There are many more websites and portals that are part of e-governance mission of India. Some of these URLs are being given below :

- ◆ <http://indianairforce.nic.in>
- ◆ [http://indiamarvy.nic.in](http://indiamarmy.nic.in)
- ◆ [pensionersportal.gov.in](http://pensionersportal.gov.in)

### Societal Impacts

The positive impacts of e-governance on society can be summarised as :

1. 'E-governance' programs have improved the efficiency of administration and service delivery.
2. 'E-governance' programs have resulted in reduced waiting time before the work is done
3. People have also benefitted from e-governance in the form of reduced cost of availing the services.
4. E-governance has proved successful in keeping a tab on corruption to some extent
5. 'E-governance' programs have resulted in increased public participation.
6. These programs have resulted in increased transparency and increased accountability of government offices.

The negative or not so positive societal impacts of e-governance can be summarised as :

1. People living in rural and remote areas could not benefit from the e-governance initiatives because of lack of computerization in these areas.
2. Not all services are part of e-governance, so manual methods cannot be avoided.
3. Lack of awareness about the e-governance programs has prevented people to benefit from it.
4. Incompatibility of software and hardware has prevented people to fully benefit from it.
5. Users also find it inconvenient to make payments online due to limited number of certified branches of banks.
6. Some people have their apprehensions about using credit cards for making online payments.
7. Many users find the websites to be slow vis-à-vis other websites and feel that appropriate steps should be taken to improve the performance and speed of the portals.

### 2.7.8 e-Groups

An e-group or simply a group can be viewed as a way to provide an online environment where like-minded individuals can come together to discuss and share information and insights on topics of their interest. An e-group often has a "discussion board." Discussion boards have become a popular way for people from all over the world to get together to discuss various topics of interest. Using a discussion board is similar to sending e-mail. The biggest difference being that all of the e-mails, called "posts," are contained on the discussion board, and are viewable by all of the members of the eGroup.

An e-group is another name online clubbing where you meet people of your tastes and likes, discuss things and then leave. Many portals allow you to create egroups. Some popular ones are : [groups.yahoo.com](http://groups.yahoo.com), [groups.google.com](http://groups.google.com).

#### 2.7.8A Features of e-Groups

e-groups let you connect and converse with people of similar preferred choices. e-groups provide following features to help members communicate effectively.

A conversation on a group can have original message and its responses and replies. All these (belonging to single conversation i.e., single topic) are together known as threaded conversation or threaded message. The members of an e-group can post a message on the group's discussion board, reply to a post (i.e., posted message) and upload as well as download files from group. A google group offers space for files uploaded by the group-members. e-groups are perfect for people with busy schedules. There are no specific times one "must" be online to participate.

#### 2.7.8B Benefits of e-Groups

e-groups let you connect to people with similar thoughts and mindsets. Major benefits of e-groups are listed below :

- ◆ It keeps you in touch with other members. e-groups allow members to exchange messages, plan vacations, participate in a meeting online, or share news with the other members of the group. Each group has its own email address, message board, calendar, photo album and more.
- ◆ It's a venue to make new friends. You may choose to keep your e-group public or private depending on your preference. Public groups let you meet people with the same interests. You may opt to create a fan club, for instance, and meet new friends as they join your group.
- ◆ It lets you build a community without the technical hassle. You don't have to be well-versed in HTML or web design to create an online community. The entire process of creating and maintaining an e-group is very simple.

## 2.8 Social Networking

Social networking is the grouping of individuals into specific groups, like small rural communities or a neighbourhood subdivision, if you will. Although social networking is possible in person, especially in universities, high schools or in the workplace, it is most popular online. When it comes to online social networking websites are commonly used. These websites are known as **social sites**. Social networking websites function like an online community of Internet users. Depending on the website in question, many of these online community members share a common interest such as hobbies, religion, or politics. Once you are granted access to a social networking website, you can begin to socialize. This socialization may include reading the profile pages of other members and possibly even contacting them.

So, in short, we can say that Social Networking sites, also called **Social media**, are Internet sites where people interact freely, sharing and discussing information about each other and their lives, using a multimedia mix of personal words, pictures, videos and audio.

### Various Social Networking Sites

Social media are in many forms including **blogs** and **microblogs**, **forums** and **message boards**, **social networks**, **wikis**, **chat-rooms** etc.

Some popular social-networking sites are : *Facebook, LinkedIn, MySpace, Twitter, YouTube, Flickr, WordPress, Blogger, Typepad, LiveJournal, Wikipedia, Wetpaint, Wikidot, Second Life, Delicious, Digg, Reddit, Lulu* and many others.

### 2.8.1 Merits and Demerits of Social Networking

Social networks not only allow people to meet and communicate with strangers, but they also let users organize their social networks. In many ways, social media has led to positive changes in the way people communicate and share information; however, it has a dark side as well. Social networking can sometimes result in negative outcomes, some with long-term consequences. In this section, we are exploring the same.

#### Merits of Social Networking

Major uses of social networking are as listed below.

1. **Easier to connect with people.** It is easier to connect with people from all across the world on social networking site, which otherwise is very difficult in real-life.
2. **Easy to hold discussions and collect opinions.** With social networking, conducting discussions and collecting view or opinions on anything has become easier as you can post the topic on a social-networking site and invite people to post their view /opinions about it.

## SOCIAL NETWORKING

**Social Networking** is the use of internet-based social media programs to make connections with friends, family, classmates, customers and clients.

### Demerits of Social Networking

With the boom in social networking, a few ill practices have seeped into the system and the users should be aware of these in order to avoid unnecessary pitfalls. Here is a list of common misuses that users must be aware of :

1. **Misusing the data/information posted by innocent users.** Some people with wrong intentions can misuse the personal information posted by innocent users such as *date-of-birth, address, school address, phone numbers* etc. Thus, you should be careful while posting such information and should avoid posting very personal information on your public profiles.
2. **Credibility of Information.** Some people with bad intentions use social networking sites for spreading baseless 'facts' resulting in a complete abuse of the 'freedom of expression'. Thus, you should avoid being gullible and should practise discretion.
3. **Fake Profiles.** There are numerous fake user profiles in these sites. Orkut lost its credibility mainly due to a growing use of such profiles.
4. **Bullying and Trolling.** With growing use of social networking sites undesirable elements have crept up who resort to needless bullying, defamation, harmful commenting and pranks and persecute hapless, innocent victims and pages. Such practices cause emotional trauma both for the victim and the 'bully'.
5. **Peer Pressure.** In order to fit under peer-pressure, often people lie or put exaggerated information about them. Experts say that a majority of the profiles on social networking sites are actually either less than or greater than, but never equal to what they portray. This leads to consequences born out of jealousy and harmful reactions.
6. **Irresponsible Behaviour.** Many users believe that they cannot be held responsible for anything they do or say on the social network. Out of this belief they often resort to misusing their freedom of expression and free speech. They abuse others' rights for the same. While laws against cyber violations may not be strong enough, yet they are becoming stronger by the day. Instances where severe penalties have been imposed on offenders are not uncommon.
7. **Attention Seeking Disorders and Addiction.** Another disturbing trend with the rise in social networks is disorders like **Attention Seeking Disorder** and **Addition**.

Just to get attention these users will resort to any means and even fake serious illnesses.

### 2.8.2 Features Available on Social Networking Sites

The social networking sites provide certain functionality (called *features*) that helps users connect with other users in multiple ways.

3. **Interactive involvement.** Social networking provides interactive involvement with other people. With social networking and the Internet in general, correspondence to virtually anyone from anywhere is possible.

4. **Brings more awareness.** Interactive involvement even reaches as far putting children and teens under the spotlight for discussing and participating in online and social networking forums for issues that concern them. It helps in improving the world awareness.

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## 2.8.3 Ethics in Social Networking

Major features available on social networking sites include the following :

|                   |  |
|-------------------|--|
| User profiles     | Represent information about a user in organized format   |
| Blog engine       | Facility to create blogs, blog posts, tags and categories to each user   |
| Photo albums      | Facility to upload and organize photos using the album infrastructure.   |
| Groups            | Groups allow users to interact with each other around a common topic.  |
| Discussion boards | Allow users to easily post messages and comments to the community in a way that all the responses will be viewable no matter how much time passes between each post.   |
| Media galleries   | A generic architecture that allows users to host videos, photos, resumes, or any other kind of physical files.   |
| Activity streams  | Users can track the activity of their friends and be instantly notified when somebody publishes an interesting blog post, uploads a photo, joins the community.  |
| Messaging         | It allows users to communicate with each other (or a whole group) directly, resembling the look and feel of traditional mail clients.  |
| Walls             | Wall is a kind of virtual space on every user's profile or group page that allows friends to post messages for other users to see. In essence, this is usually the central gathering point for all users of a community. |
| Comments          | Comment modules allow users to interact with the content and other members of the social network.  |
| Tags              | Similar to comments and ratings, tags can be attached to different types of content, allowing users to build an independent form of navigation and/or categorization.  |

## 2.8.3 Ethics in Social Networking

Social networking brings responsibility with it. As a responsible e-citizen, one should practice these ethics while connecting via social networks.

1. **Right Perspective.** Carefully upload the contents, pictures, videos etc. as it may also involve others and posting these may violate other users' privacy.

One should be very careful with posting content as it becomes hard for the users to exercise complete control over the images and personal information made available online.

2. **Utilitarian Perspective.** One should deliberately keep away from indulging in illegal and unethical activities like hacking and posting of threatening online messages.

3. **Fairness Perspective.** One should treat every other user equal and no less in any way. There should not be any discrimination based on the gender, race, age and other personality traits of a person while interacting with other users online.

4. **Common Good Perspective.** Your every action must not hinder in any way the betterment of the society and promoting common good of the users.

## 2.8.4 Service Providers

The social networking on the Internet takes place in variety of models. Following are some service providers in different types of social networking.

|    | <b>Social Networking Model</b>         | <b>Examples</b>   |
|----|--|---|
| 1. | <i>Friendship Social Networking</i>    | Friendster ( <a href="http://www.friendster.com">www.friendster.com</a> ) ; MySpace ( <a href="http://www.myspace.com">www.myspace.com</a> )<br>Friendsreunited ( <a href="http://www.friendsreunited.com">www.friendsreunited.com</a> )<br>Hi5.com ( <a href="http://www.hi5.com">www.hi5.com</a> )  |
| 2. | <i>Business Social Networking</i>      | Canon Professional Photographer community ( <a href="http://cpn.canon-europe.com/content/index.do">cpn.canon-europe.com/content/index.do</a> )<br>LinkedIn ( <a href="http://www.linkedin.com">www.linkedin.com</a> )<br>Latio Professional Network ( <a href="http://www.lpn.org">www.lpn.org</a> )<br>SixApart Professional Blogging Community ( <a href="http://www.sixapart.com">www.sixapart.com</a> )   |
| 3. | <i>Hobbies Social Networking</i>       | GardenWeb ( <a href="http://www.gardenweb.com">www.gardenweb.com</a> )<br>SportPundit ( <a href="http://www.sportspundit.com">www.sportspundit.com</a> )<br>Flickr ( <a href="http://www.flickr.com">www.flickr.com</a> )<br>Automotive Forums ( <a href="http://www.automotiveforums.com">www.automotiveforums.com</a> )   |
| 4. | <i>Informational Social Networking</i> | EHow ( <a href="http://www.ehow.com">www.ehow.com</a> )<br>Do-it-Yourself Community ( <a href="http://www.diychatroom.com">www.diychatroom.com</a> )<br>Investopedia ( <a href="http://www.investopedia.com">www.investopedia.com</a> )<br>epals ( <a href="http://www.epals.com">www.epals.com</a> ) ; GoIT ( <a href="http://www.goit.com">www.goit.com</a> )<br>The Student Room ( <a href="http://www.thestudentroom.co.uk">www.thestudentroom.co.uk</a> )<br>The Math Forum ( <a href="http://mathforum.org/students/">mathforum.org/students/</a> ) |
| 5. | <i>Educational Social Networking</i>   | Yahoo! Voices ( <a href="http://www.associatedcontent.com">www.associatedcontent.com</a> )<br>Helium ( <a href="http://www.helium.com">www.helium.com</a> )<br>NowPublic ( <a href="http://www.nowpublic.com">www.nowpublic.com</a> )<br>Suite101 ( <a href="http://www.suite101.com">www.suite101.com</a> )<br>Triond ( <a href="http://www.triond.com">www.triond.com</a> )   |
| 6. | <i>News Social Networking</i>          |   |

## 2.9 Mobile Technologies

Modern technology is now within reach of most of us, thanks to Mobile technologies. Nowadays, mobile is accessible to most of the people of India, whether they live in metro cities or remote villages. The popularity of mobiles is attributed to its technologies that have made communication so affordable for all.

Most commonly used mobile technologies are being discussed below :

1. **SMS (Short Message Service)**  
SMS stands for Short Message Service and is also commonly referred to as "text message". With an SMS, you can send a message of up to 160 characters to another mobile device. Longer messages will automatically be split up into several parts. Most cell phones support this type of text messaging.

## 2. Multimedia Messaging Service)

MMS is the abbreviation for Multimedia Messaging Service and is a standard way to send messages that include multimedia content to and from mobile phones. With an MMS, you can send a message that can include various types of media in it, such as pictures, video, or audio content to another mobile device. It is most commonly used to send a photo taken with a camera phone to another phone. Most new cell phones with multimedia capabilities support MMS.

## 3. 3G (Third Generation)

The "G" used with 1G, 2G, 3G, 4G etc. stands for a **generation of mobile technology**. When mobile technology came into existence, communications happened through initial technology called 1G (analog cell phones), then came 2G (digital phones) and now 3G and 4G are more prevalent.

3G stands for "Third Generation" and originally enabled wireless devices to operate at speeds which made web browsing a more enjoyable experience on mobile devices. Whilst this gave users the ability to regularly use the Internet when 'on the go', speeds were still not very high as pages needed time to load and open. 3G speeds can produce download data rates of typically upto 384 kb/s under normal conditions and up to 2 Mb/s in some instances.

## 4. 4G (Fourth Generation)

4G is the next generation of mobile technologies with enhanced download and upload speeds and better connectivity. This allows users to do far more than check emails and basic web browsing. 4G allows for music streaming, fast and reliable web browsing and the ability to use a device as a portable entertainment center. A 4G network offers peak data rates of at least **100 megabits per second** for high mobility communication (users in cars, trains, etc.), and at least **1 Gigabit per second** for low mobility communication (pedestrians and stationary users).

Please note here that the speed that you receive in your mobile device also depends on the device being used, since older devices can't use the full power of an area with higher coverage. A 3G phone will work in an area with 4G coverage, but will only connect at 3G speeds, and likewise a 4G phone will work in an area with 3G, but only connect at 3G speeds.

- ❖ Making reservations of tickets or hotel rooms or tourist packages etc through Internet is known as **e-Reservation**.
- ❖ Social networks have led to positive changes but sometimes these are misused also. Thus, one should know the dangers associated and precautions and measures to counter it.
- ❖ SMS refers to Short message Service through which you can send short text messages of up to 160 characters over mobile phones.
- ❖ MMS refers to Multimedia messaging Service and with this, you can include different media like image/picture, audio/video etc. over mobile phones.
- ❖ 3G and 4G are mobile communication technologies through which you can connect to Internet on the go and these offer different data rates for downloading and uploading.



### SECTION A : Objective Type Questions

1. In web services, the communication takes place between
  - (a) Two electronic devices
  - (b) Two human beings
  - (c) Two spiders
  - (d) None of the above
2. An email can be sent via,
  - (a) PC
  - (b) Tablet
  - (c) Smart phone
  - (d) All the above
3. In an email address, the characters following '@' character represent
  - (a) User name
  - (b) E-mail Recipient
  - (c) Domain name
  - (d) None of these
4. In the email address 'hithere@edupillar.com', what is the domain name
  - (a) the whole email address
  - (b) .com
  - (c) edupillar.com
  - (d) hithere
5. \_\_\_\_\_ field of email-compose box allows to send same message to multiple recipients without letting them know that same message has been sent to some other persons also.
6. Which of the following is not a legal domain in context of web address ?
  - (a) edu
  - (b) com
  - (c) tv
  - (d) work
7. Chatting on Internet is
  - (a) Talking face to face
  - (b) Talking on phone
  - (c) Online textual talk
  - (d) None of these
8. Chat Rooms are actual rooms where chat session takes place.
 

[CBSE Sample Paper Term I, 2011]



- ❖ Sending and receiving messages electronically is called e-mail.
- ❖ An email address has two parts : username and domain name separated by '@("at")' symbol.
- ❖ Advantages of e-mail are : low cost, waste reduction, speed, ease of use, record maintenance etc.
- ❖ In an e-mail message, Cc : field can be used to send carbon copy of email message to multiple recipients ; and Bcc: field can be used to send same mail-message to multiple recipients without letting them know that same message has been sent to some other persons also.
- ❖ Some common protocols used over Internet for file transfer and remote logging are : FTP, Telnet, SSH, SFTP and SCP.
- ❖ Online textual talk is called chatting.
- ❖ Two-way videophone conversation among multiple participants is called videoconferencing.
- ❖ e-Learning refers to the learning that takes place in an electronically simulated environment.