

“शिक्षा मानव को बन्धनों से मुक्त करती है और आज के युग में तो यह लोकतंत्र की भावना का आधार भी है। जन्म तथा अन्य कारणों से उत्पन्न जाति एवं वर्गगत विषमताओं को दूर करते हुए मनुष्य को इन सबसे ऊपर उठाती है।”

-इन्दिरा गांधी



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“Education is a liberating force, and in our age it is also a democratising force, cutting across the barriers of caste and class, smoothing out inequalities imposed by birth and other circumstances.”

-Indira Gandhi



Indira Gandhi
National Open University
School of Continuing Education

BPR-005
Basic Computer
Literacy

Block

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BLOCK 3 FURTHER APPLICATIONS

Block Introduction

This Block '**Further Applications**' is the third block of the Course-5 and it overviews the ubiquitous Internet and covers computer applications in a few functional areas. It covers history and evolution of internet over years, different modes of connections and explains some uses of computer in payroll handling and accounts management. **Unit 1** on 'Internet overview' starts with how the concept of internet came to existence and how it evolved. Besides the development of Internet, it touches the different hardware and software components required to connect to remote systems. It also talks about the different protocols and addresses used in internet. **Unit 2** on 'Pay Rolls' covers application of computer in the field of payroll handling. This unit briefly describes overall goals of a payroll system and use of computer in calculation of gross wages, deductions, and net pay for employees etc. **Unit 3** on 'Accounts' deals with application of computer in accounts management. It covers basic accounting terminology, accounting equation and use of excel sheet to create simple accounts. It also explains preparation of ledger, trial balance, final accounting and balance sheets. We hope you will enjoy going through this block and learn application of computer in various fields.

UNIT 1 INTERNET OVERVIEW

Structure

- 1.0 Objectives
- 1.1 Introduction
- 1.2 Evolution of Internet
 - 1.2.1 Brief History
 - 1.2.2 Growth
- 1.3 Advantages of Internet
 - 1.3.1 Information Sharing
 - 1.3.2 Internet Tools and Services
- 1.4 Internet Components
- 1.5 Client/Server Computing and Web Servers
- 1.6 Structure of Internet
- 1.7 Structure of a Web Address
- 1.8 Lets Connect to Internet
 - 1.8.1 Direct Connection
 - 1.8.2 Dial-up Connection
 - 1.8.3 Setup Internet Connection
- 1.9 Let Us Sum Up
- 1.10 References and Further Readings
- 1.11 Check Your Progress – Possible Solutions/Answers

1.0 OBJECTIVES

At the end of this unit, you should be able to:

- identify how the Internet came into existence;
- explain different advantages and tools available through Internet;
- recognize different software and hardware components used to access Internet;
- elucidate the purpose of protocols used in Internet;
- recognize different type of addresses used in internet; and
- find different methods that can be used to connect with Internet; and set up the dialup connection for connecting to Internet.

In computer science *platform* means computer hardware and/or operating system.

1.1 INTRODUCTION

In the 1960's the Advanced Research Projects Agency (ARPA) of the U.S. Department of Defence, along with researchers working on military projects at research centres and Universities across the United States of America, developed a network called the ARPANET. This network was used for sharing data and processing time of computers over telephone lines and satellite links. This project led to the development of the Internet. Today, the Internet is the widely known computer



network. It uses interconnection of computer systems by both wired and wireless means. Internet can carry any digital signal, including video images, sounds, graphics, animations, and text; therefore, it has become a very popular communication tool. Now, Internet is a worldwide network of computer networks that connects Schools, Universities / Institutions.

Hospitals, Research Institutes, Government, Commercial, and other computers. There are thousands of networks and millions of users on the Internet, with the numbers expanding daily. Using the Internet, you can send electronic mail (Email), chat with colleagues around the world, obtain information on a wide variety of subjects, and lots more. This unit attempts to give a brief overview about the Internet. It covers the basic history of Internet its growth, its advantages. The unit also discusses the internet components and Structure of internet addresses. The unit explains you the process of internet connection.

1.2 EVOLUTION OF INTERNET

Internet is made up of thousands and thousands of interconnected networks. Although it has become extremely popular in the last decade, it came into being only in 1967. Internet has a very interesting history. The following section traces the evolution of Internet.

1.2.1 Brief History

Well the history of Internet is from the era of cold war. The launch of Sputnik (the first satellite) by USSR (Russia) incited the USA to form the *Advanced Research Projects Agency*, known as ARPA in the US Department of Defence (DoD), in 1958 to find a technical lead. In the mid 1960s, the Advanced Research Projects Agency (ARPA) wanted to find a way to connect computers so that their funded researchers could share their findings. In 1967, ARPA proposed its idea for ARPANET, a network for connecting computers. Soon, scientists using the ARPANET realised that they could send and receive messages as well as data and files over the network. The ARPANET became the first major electronic-mail network; soon thousands of researchers all over the world used it. Later on, the National Science Foundation (NSF) of USA helped connect more Universities and non-military research sites to the ARPANET, and renamed it as **Internet**, because it was a network of networks among many different organisations.

In 1972, Vint Cerf and Bob Kahn, who were part of core ARPANET group, started Interknitting Project with the aim to connect different networks together. As most of these networks had different transmission rates and mechanism, Kahn Cerf proposed the idea of gateway as an intermediate hardware to transfer data from one network to another. In 1973, they presented the outlines and model of TCP/IP a set of rules governing the transfer of data over Internet. In 1978 noticing the popularity of BSD (Berkley Software Distribution) UNIX, which included network capabilities, ARPA and Berkley incorporated TCP/IP in the operating system itself. In 1983, original ARPANET protocols were abolished and TCP/IP was made de facto standard for Internet. The first TCP/IP network was made operational by January 1, 1983 when all hosts on the ARPANET were switched over from the older ARPANET protocols to TCP/IP.

UNIX is an operating system, which first included the network capabilities

1.2.2 Growth

Internet and WWW (World Wide Web) are often used as synonyms of each other, which is technically wrong. The Internet is a collection of interconnected computer

networks; In contrast, the Web is a collection of interconnected documents and other resources. The World Wide Web is one of the services accessible via the Internet, along with various others including e-mail, file sharing, etc. The World Wide Web is an Internet-based distributed system of information sources and information subscribers. The World Wide Web is often abbreviated as the Web or WWW. The Web provides a point-and-click interface to text, images, sound and movies and has proven to be powerfully intuitive and easy-to-use. After the invention of WWW in 1989 by Tim Berners-Lee at Physics Laboratory (CERN), the Internet scenario has changes drastically. In 1991, CERN publicized the World Wide Web project. Key of WWW was the use of hypertext of a document that, when selected, take the user to a connected document. The initial purpose of the Web was to use networked hypertext to facilitate only textual communication (for e.g. e-mail or document without any image or graphics) among its members, who were located in several countries. It was soon spread beyond CERN, and a rapid growth in the number of both developers and users ensued. In addition to hypertext, the Web began to incorporate graphics, video, and sound. An early popular web browser was Viola WWW. It was eventually replaced in popularity by the Mosaic web browser. Mosaic was a great innovation for the Web that was introduced in 1992 and it displayed not only the text of a Web page, but embedded graphic elements as well.

Internet has many synonyms like WWW, Web, Net, and Cyber. Do you know some more?

The nature of the Internet changed suddenly in 1992, when the U.S. government began pulling out of network management, and commercial entities offered Internet access to the public for the first time. This change in focus marked the beginning of the Internet's amazing expansion. By late 1994, there was growing public interest in the previously academic, technical Internet. By 1996 usage of the word Internet had become commonplace, and consequently, so had its misuse as a reference to the World Wide Web. Meanwhile, over the course of the decade, the Internet successfully accommodated the majority of previously existing public computer networks. During the 1990s, it was estimated that the Internet grew by 100% per year. The use of the Web has reached global proportions and has become a defining aspect of human culture in an amazingly short period.

1.3 ADVANTAGES OF INTERNET

Before 1995, the term Internet was anonymous to most people in India. However, today Internet has become a powerful tool for people. The Internet is a collection of various facilities, tools, applications and resources. Although, many people think e-mail, chatting and Web surfing as the main uses of Internet, there are actually several more. Today Internet has brought the world to your desktop. Right from news across the world, wealth of knowledge to shopping, purchasing the rail, movie or air tickets everything is at the click of your mouse. It has also become an excellent business tool.

How Internet is useful for Teachers and Students? Find Out.

Several activities can be performed if you have access to the Internet; like you can use it for learning or teaching, you can use it for publicity and advertisement, you can refer Internet for career or job consultation, etc. Let us discuss about some of the facilities, tools, applications and resources available on the Internet.

1.3.1 Information Sharing

Information sharing undoubtedly is the biggest advantage Internet is offering. On Internet, you can communicate with a person sitting in the other part of the world in a fraction of second and in a more cost effective way. Today for better communication, we can avail the facilities of e-mail; we can chat for hours with

others. There are plenty of messenger services in offering. With help of such services, it has become very easy to establish a kind of global friendship where you can share your thoughts, can explore other cultures and ethnicity. People can post and publish their ideas, thoughts, feeling, advertisement, knowledge, etc on Internet through Web sites, Blogs, Discussion forums, Groups, social networking sites like orkut, facebook and twitter. You can almost find any type of data on almost any kind of subject that you are looking for. There is a huge amount of information available on the Internet for just about every subject known to man, ranging from government law and services, trade fairs and conferences, market information, new ideas and technical support, the list is endless. We have used number of terms like discussion Forums, Blogs, Chatting etc. in the above text, may be some of you, are not aware of these, lets discuss them in more detail:

World Wide Web (WWW)

HTML is the basic language for writing web pages. However, now many languages and tools are available to design web pages. Can you find them?

The World Wide Web (WWW or The Web) is the best Internet information sharing system, with fresh resources being added daily. The Web browsers, like Internet Explorer, Mozilla or Netscape, are used to access web pages. A Web page can contain text, graphics, audio and video added by authorized people, which are generally written in special language called as Hypertext Markup Language (HTML). However because of the very large number of WebPages on Internet we want a tool, which can find the relevant WebPages. Thus Search engines like

Google, Lycos have evolved and grown over period of time. A search engine stores information in a searchable database indexed in a format. By giving requirements in simple language, these search engines show a no. of related webpages. We can then go to any webpage and look for the relevant information.

Email

You can easily create your email account for free with any popular email service provider. Try creating one.

Electronic mail is one of the most popular tools made available through the Internet for Information sharing. It is an efficient and effective means of network communication. You can call it as an electronic postal system. One of the most valuable features of communicating via email is that it is asynchronous, meaning the recipient need not be at a computer to receive the message you send. The message will be stored and available to be read when the recipient is ready to read it. In order to send and receive email, you must have access to an Email account. Preferably, you are also having it at your academic institution or may be available with the popular E-mail vendors like , Yahoo, MSN (Hotmail),Google (Gmail) or Rediff (Rediffmail). However, an E-Mail system can do more than just sending messages back and forth. Applications that are built on the email infrastructure include multimedia mail, database access, document sharing, fax routing, scheduling etc.

Online-Chatting

Online chat can refer to any kind of communication over Internet, but is primarily meant to refer to direct one-on-one chat or text-based group chat (formally also known as synchronous conferencing), using tools such as instant messaging applications—like s Rediff, Yahoo, and MSN chat applications. Presently most of the online chat and messaging services are free on Internet; however some service providers are having paid services also. There are many Internet users replacing traditional conversation with online chat. Online chat is steadily replacing telephony as the means of office and home communication. Now a days, mobile / handheld devices are also providing the technology for online voice / video chat.

Are you member of any discussion group? It's very helpful.

There are a variety of electronic discussion groups on the Internet like Yahoo, Google and MSN groups. These groups generally share information, communicate ideas, ask questions and solve problems on specific topics. Messages are communicated by the email address, and through the group home page. Some groups are moderated, and a person monitors the messages that are added to the list and distributed to the group. Some groups are not moderated and every message submitted is included.

Newsgroups

In Internet, there exist another way to meet people and share information; one such way is through USENET newsgroups. These are special groups set up by people who want to share common interests ranging from current topics to cultural heritages. There are currently thousands of USENET newsgroups. Newsgroups provide a free exchange of ideas, opinions and comments usually confined to a specific interest. Newsgroups are an invaluable source of information. You visit a newsgroup, read messages that provoke a response, post new messages when you want to propose a topic, and revisit when you want to see who responded.

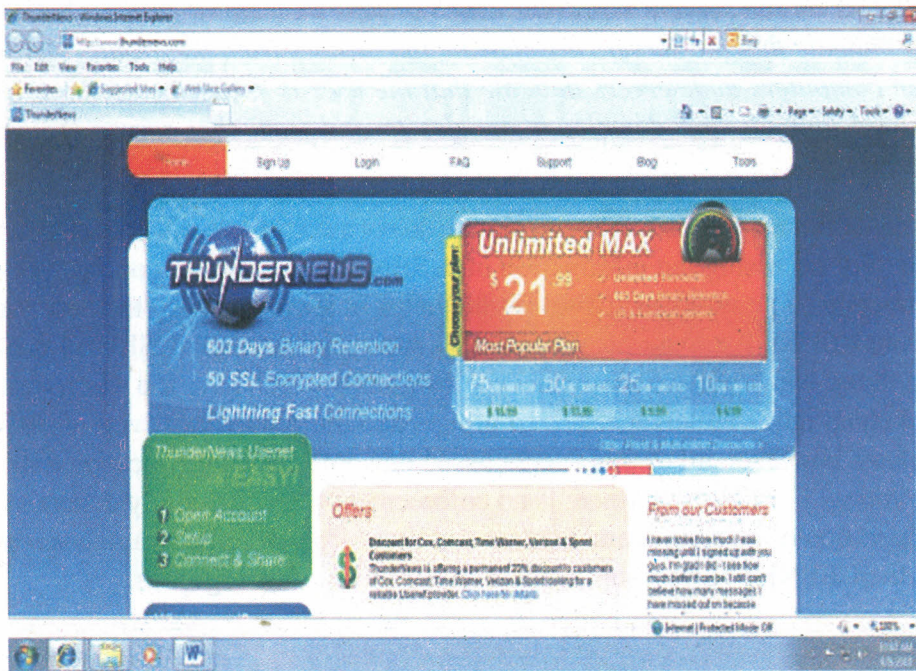


Figure 1.1: ThunderNews.com is a Usenet newsgroup provider

Unlike e-mail, there is no mail involved with newsgroups. Most of the activity occurs while you are online, including reading and responding to messages. For this reason, most people find that newsgroups are more interactive and conversational than e-mail. The USENET can be considered as another network of computers and people, which are intertwined with the Internet. However, USENET does not operate interactively like the Internet, instead USENET Machines store the messages sent by users.

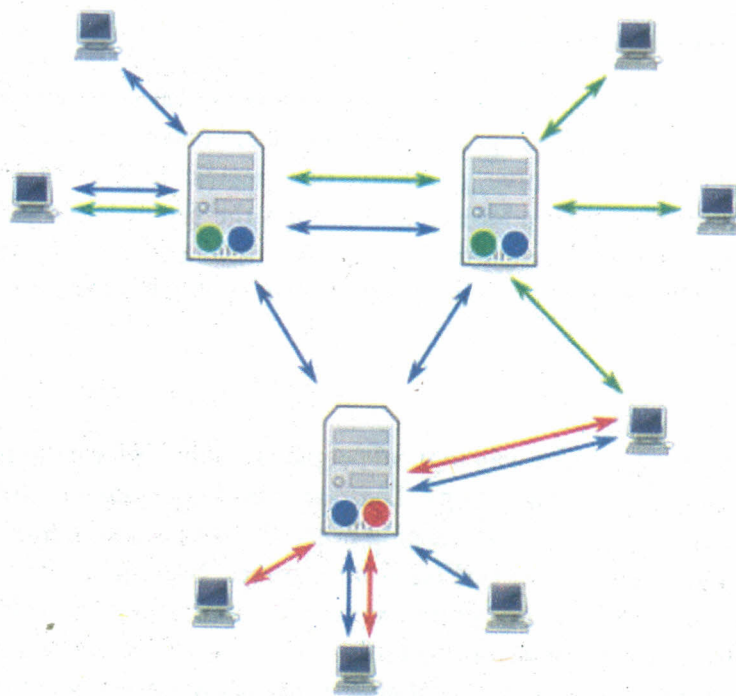


Figure 1.2: A diagram of some Usenet servers and clients. The blue, green, and red dots on the servers represent which groups they carry. Arrows between servers indicate that the servers are sharing the articles from the groups. Arrows between computers and servers indicate that the user is subscribed to a certain group, and uploads and downloads articles to and from that server (Source: Wikipedia).

Unlike mail from mailing lists, the news articles do not automatically fill your electronic mailbox. For accessing the information on USENET, one needs a special type of program called a newsreader. This program helps in retrieving only the news you want from USENET storage site and displays it on your terminal. USENET is like a living thing: New newsgroups get added, the groups which have too much traffic get broken up into smaller, specialized groups and the groups can even dissolve themselves. However, all of this occurs based on some commonly accepted rules and by voting. For USENET, there is no enforcement body; it entirely depends on the cooperation of its computers' owners and users. To subscribe to a newsgroup, review the USENET newsgroups offered in our menu of newsgroups.

Blogging

Blog is a website where entries are written as commentary or news on a particular subject such as food, politics, or local news; some function as more personal online diaries. A typical blog combines text, images, and links to other blogs, web pages and other media related to its topic. The ability for readers to leave comments in an interactive format is an important part of many blogs. Most blogs are primarily textual, although some focus on art, photographs, videos and music and are part of a wider network of social media.

Blogging is gaining popularity, as it removes the technical barriers of writing and publishing online, which encourages students to keep a record of their ideas and thinking over time. Blogging also facilitates readers to give critical feedback on any topic, readers can add comments, where readers can be teachers, other students or wider viewers.

Blogging is emerging as a wonderful way to share and publish your views. Many famous people these days have their own Blog.

A social network service builds online communities of people who share common interests, for these services provide different ways for users to interact. There are a number of social networking websites available these days. Some social networking sites may help you to connect to your school friends.

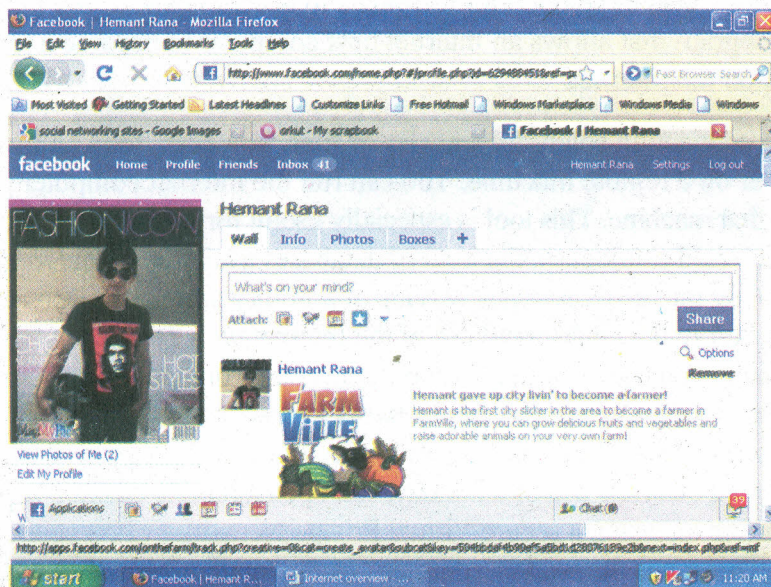


Figure 1.3: Social networking Website (Facebook)

Some of the popular social networking websites are- Facebook, Orkut, Twitter, Linked In, Hi5 and many more http://en.wikipedia.org/wiki/Social_network_service - cite note-5 . Some of these websites are popular in specific countries only. For example is StudiVZ is a social networking platform for students (in particular for college and university students in Europe) <http://en.wikipedia.org/wiki/Studivz> .

1.3.2 Internet Tools and Services

To work with Internet and to utilise some of the points mentioned above we need to use certain tools. For example, Telnet is a tool, which is utilised for logging on a remote computer. In this section we will introduce several internet tools providing different kind of services.

File Transfer

Files and data are scattered all over the Internet in large and small archives. Some of these may contain text, pictures, graphics or sounds. If you want to get some file available on any other computer on Internet, you have number of ways of doing that like: file can be e-mailed as an attachment or file can be uploaded to a website or FTP server for easy download by others. If you want to copy the file from FTP server, there is a standard tool on Internet called FTP (File Transfer Protocol). The File Transfer Protocol (FTP) was originally developed to allow Internet users to share files across the Internet. However, for such a transfer you need an account name on a host and the password. The FTP program will make a connection with the remote host, which will help you to browse its directories and mark files for transfer. However, you cannot look at the contents of a file, while you are connected via FTP. You have to transfer the copy and then look at it once it is on your own account. What will happen if you do not have an account on a remote Internet host? For such cases FTP recognizes a special account name called anonymous. Thus by using anonymous FTP you can access a public archive on the Internet and copy a file from there.

You Know TELNET is derived from Terminal NETWORK. Telnet is program that runs on your computer to control remote server.

The Internet allows computer users to connect to other computers and information stores easily, wherever they may be across the world. This is an interesting way of working from home, along with collaboration and information sharing in many industries. Imagine you are sitting at home and working on the lab computer of study centre. TELNET was developed for terminals to access hosts across the Internet. Telnet is a program that allows an Internet host computer to become a terminal of another host on the Internet.

FTP opens a connection solely for transfer of files, however, Telnet allows you to become a user on a remote machine. You can run the Internet computer programs available on that machine. This tool is especially useful for accessing public services such as library card catalogues, the kind of databases available on the machine etc. You can also log into any catalogue service of a library and use it. Remote Access was possible before the widespread use of the Internet with Telnet, but the cost and reliability made many of them unpopular. Nowadays, one popular alternative for remote access is VPN (Virtual Private Network) constructed by using public wires to connect nodes. An office worker away from his desk, perhaps on the other side of the world on a business trip or a holiday, can open a remote desktop session into his normal office PC using a secure Virtual Private Network (VPN) connection via the Internet. This gives the worker complete access to all of his or her normal files and data, including e-mail and other applications, while away from the office.

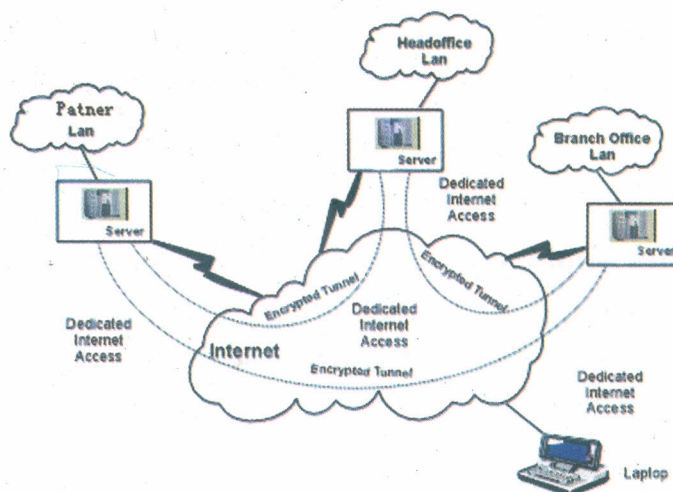


Figure 1.4: Example of a Virtual Private Network

Source: <http://www.javvin.com/pics/vpn.gif>

Online Services

Many services are now provided on the Internet such as online banking, career consultation, job searching, online share trading, purchasing railway / airline tickets or tickets for your favorite movie, hotel reservations and guidance services on every aspect of life. etc. Often these services are not available off-line and can cost you more. Broadly, the concept used for any type of commercial maneuvering, or a business deal that involves the transfer of information across the globe via Internet is called E-commerce. It has become a phenomenon associated with any kind of shopping, almost any commercial transaction. Many online stores and sites can be used to look for products as well as buy them using your credit card. You do not need to leave your house and can do all your shopping from the convenience of your home.

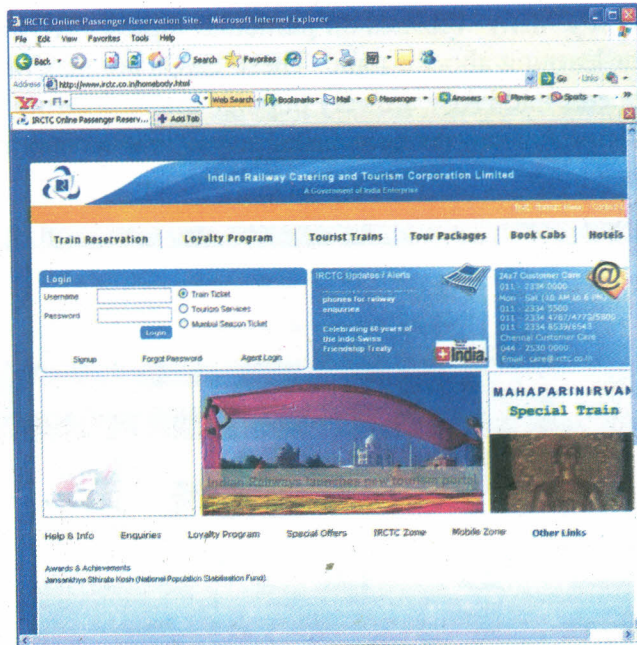


Figure 1.5: Online Indian Railways Reservation website

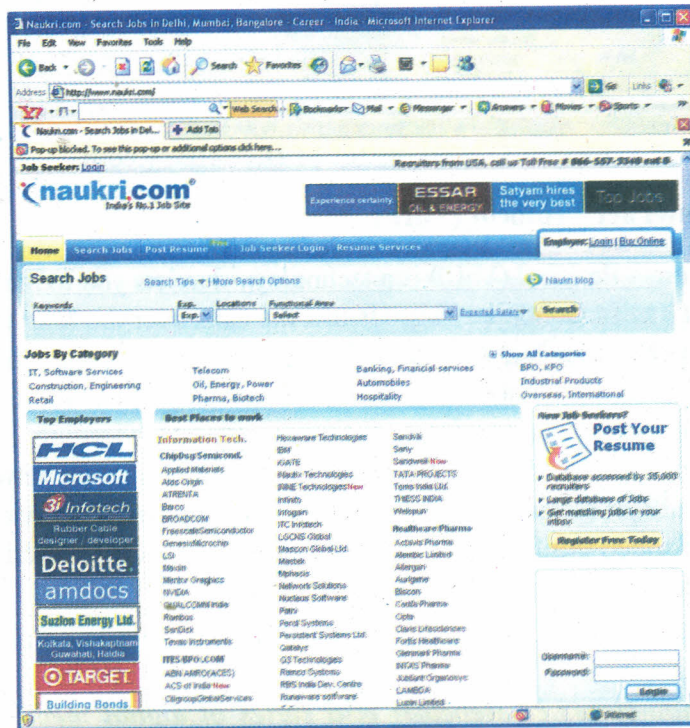


Figure 1.6: One of the Online Job Searching Website named Naukri.com

Online Resources

Internet has become a treasure of information, where many online resources are freely available. There are some websites that are providing a facility of online dictionaries (Dictionary.com, Webster, Oxford etc), which release us from carrying the bulky dictionaries. These online dictionaries are not only providing the meaning of words, but also their origin, use and correct pronunciation (through attached audio file). Similarly, some online resources provide the collaborative information on almost every topic for example wikipedia (www.wikipedia.com). The growth of wikipedia is tremendous over the last decade and today it has developed as one of the major online encyclopedia and collaborative community portal. These portals compile and publish the information posted by different people on most of the topics. FAQs, - the list of frequently asked questions and responses for them are great information

resources offered by many websites on particular topics. FAQs are an excellent sharing place for learning about a topic. These FAQs are generally in text form. Nowadays, wikipedia and FAQs are very popular among Internet users. However, in some cases information may not be authentic so you must reconfirm the information got from these resources.

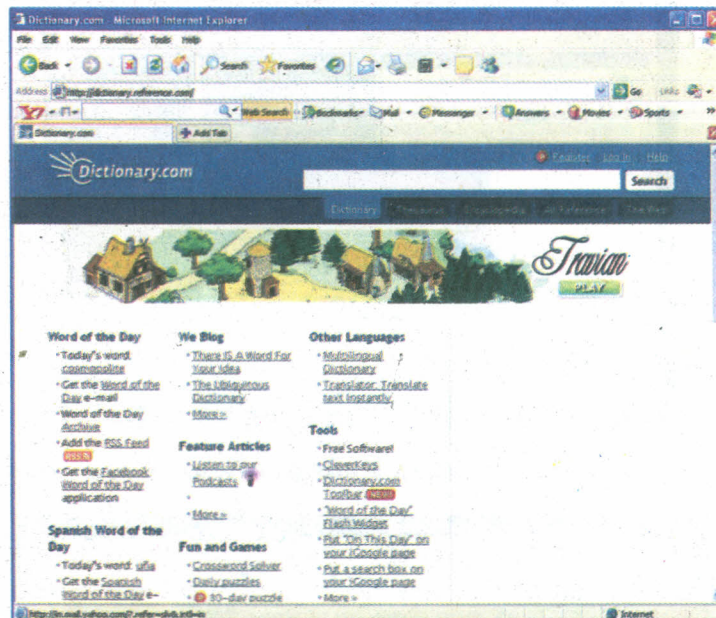


Figure 1.7: Snapshot of Dictionary.com

Voice over Internet Protocol (VoIP)

Voice over Internet Protocol (VoIP) is a technology that lets you to make voice calls using Internet. One advantage of VoIP is that the calls over the Internet do not gain a surcharge beyond what you are paying for Internet access, in the same way as you do not pay for sending individual e-mails over the Internet. It costs according to the amount of information send and not on time connected. Merging voice and data networks opens up a world of opportunities for better interaction between teachers and students. VoIP promotes online classes as it offers improved bandwidth utilization. Voice chat and video-conferencing are now viable and a cost-effective option for discussions between dispersed students and teachers.

Podcasting

Podcast (or non-streamed webcast) is a series of digital media files (either audio or video) that are released episodically and often downloaded through web syndication. (Wikipedia)

An iPod is device capable of storing and playing media files.

Podcasting is the latest in Internet technology. The term podcasting was inspired by Apple's iPod but any software and hardware application onto which you can download audio files will also work in the similar way. Podcasting is similar to a radio broadcast but the files are available for downloading from the website. Podcasting has become a popular technology in education, because it provides a way of delivering educational content to learners.

Check Your Progress I

Note: a) Write your answer in the space provided.

b) Check your answer with the possible answer provided at the end of the unit.

1) What are the different ways of sharing information through Internet?

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2) Explain the advantages of Blogging.

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3) How is File transfer handled by FTP?

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4) How is VPN better than Telnet? Explain.

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1.4 INTERNET COMPONENTS

The Internet is a global collection of people computers, which are linked together by cables and telephone lines making communication possible among them in a common language. For connecting to the Internet, you need to have certain equipment. In brief, you must have a computer, a modem and access to a telephone line or a local area network (LAN) which in turn is connected to the Internet; and connection software that will allow you to establish an account with a service provider and access the Internet in case of dial up connection. A different device may be needed when accessing the Internet through a direct line. These components of Internet are broadly divided into two categories software and hardware components.

Software Components

It is important for you to know about the basic software component involved in

Remember your computer must have an operating system preferably the latest one.

accessing Internet facility. Obviously, it goes without saying that the first software for internet access is the Operating system. An operating system must be installed properly on your system (so that it can handle the driver requirements of the hardware components). Further, Internet browsers, firewall, TCP/IP are the basic components used during Internet access. Let us discuss briefly about them:

Internet Browser

Browser is software that allows the user to access and read information on the World Wide Web. Internet Explorer, Mozilla, Netscape are the best-known browsers. Only browser is sufficient for working with the Internet viz., the browser software that should be loaded on all the clients. In fact, the browser is one of the very intelligent software that contributed to the growth of World Wide Web. A browser converts the standard Hyper Text Markup Language (HTML) web pages to a very sophisticated display in colour and pictures.

Firewall

Internet has many security problems like Hacking, Trojan Horse, Virus, etc. There are various tools to provide protection against unwanted access of your computer by anyone else, but the most popular among all security measures is the firewall. Firewall is software that works on some set of rules and instructions given by you. A firewall helps to keep your computer more secure. It restricts information that comes to your computer from other computers, giving you more control over the data on your computer and providing a line of defense against people or programs (including viruses and worms) that try to connect to your computer without invitation.

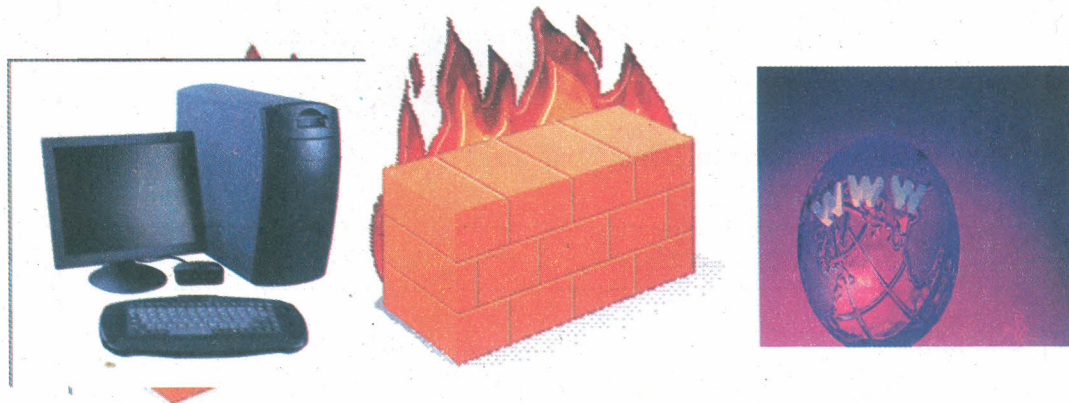


Figure 1.8: Firewall protecting Your Computer System

Protocol

As stated earlier, the major advantage of Internet is information sharing. Since in computers, bits and bytes are basic building blocks of information, one of the key aspects in network of many computers is to move bits between two specific computers. For such a communication,

we require the address of the destination and a safe means of moving data in the form of electronic signals. As far as safe movement of data is concerned, there exists a set of rules which, governs the sending and receiving of data on the Internet. A stack of protocols called TCP/IP (Transmission Control Protocol/Internet Protocol) implements these rules. Its name reflects names of only two protocols called TCP and IP. For sending large block of text/data to another machine, TCP divides the data into little data packets. It also adds special information e.g. the packet position, error correction code etc. to make sure that packets at the destination can be

Packet is data in the network in a particular format.

reassembled correctly and without any damage to data. The role of IP here is to put destination-addressing information on such packets. On Internet it is not necessary that all the packets will follow the same path from source to destination. A special device called router tries to load balance various paths that exist on networks. Other special devices called gateways allow different electronic networks to talk to Internet using TCP/IP.

Besides software components you require hardware components (Network card, cable, router etc.) which physically connect your machine to the internet. You must have studied them in unit of this course.

Check Your Progress II

Note: a) Write your answer in the space provided.

b) Check your answer with the possible answer provided at the end of the unit.

1) Explain how firewall prevents a computer from different security problems.

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2) How data communication is handled by TCP/IP?

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1.5 CLIENT/SERVER COMPUTING AND WEB SERVERS

As we discussed earlier, the World Wide Web is one of the most popular services of Internet. In the past, a computer was used as a standalone device that was specifically used for certain purposes but, the Internet technologies have changed it all. In this section, we focus on one of the basic concepts that actually lead to the development of such a technology. This concept is the concept of client and server. As the name suggests Client/Server computing splits any application including an Internet based application into tasks that are performed using three separate components:

WANs are collection of LANs and other types of networks together.

- The client computer – also called the front -end.
- The server computer – also called the back-end. It has to be a powerful computer.
- The network that connects the two –such as a Local Area Network (LAN) or Wide Area Network (WAN) that connects the client to the server.

The Figure 1.5 represents a client server computing platform.

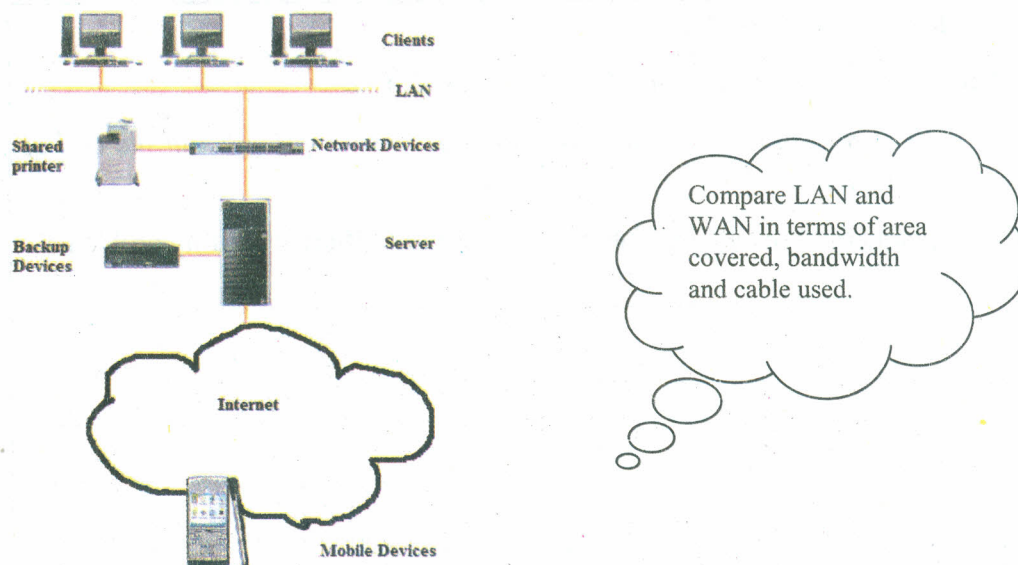


Figure 1.9: A typical client server computing architecture

But why would you like to separate the server from a client and depend on the network to get the services of an application?

It reduces load on the processing power requirements of a client machine. The client server computing technology empowers the users having finite processing power to access information and applications that may require substantial resources.

In general client server architecture opens up issues like scalability, reliability, security etc. A client server system is expected to be more reliable and secure not because threats have reduced, but because such jobs can be specifically performed on server resources in a much more efficient way. However, remember a single insecure client may compromise the security of an application. Client server systems by very nature are scalable. What does that mean? Assume that you are required to set up a client server application that allows the students of a college to access information about them. Assume that the college has just started its operations so have hardly 1000 students, thus, you require just one server to serve about 1000 simultaneous clients. Assume that after about 5 years the college had 50000 students an overall increase of 50 times.. You shall be able to scale up to new environment by enhancing the server processing capacity and developing a proper application.

On the whole a client server computing system is very adaptable to the organizational changes such as enterprises break into smaller, independent business units or enterprises growing in size.

How does the client server share responsibilities? The following example, tries to explain it in a very simple way.

Client: A client initiates a request. For example, you may initiate a request to access your result from a University Result system (you may assume that this system is available through a LAN). In fact, for initiating such a request you may need to pass through an authentication process such as entering your user ID and password. Please also note that for a well developed system you might have a Graphical User Interface (GUI) based interface, where you just need to click a button such as "Show Result".

Server: It processes the request made by the client and returns the result. Some common server softwares include UNIX, LINUX and Windows 2007 server etc. On receiving the request from your terminal, the server will process this request and generate resultant data and send it in a predefined format to your client.

Web Servers

As discussed above, a server processes the request made by clients. Now, you extend the client server domain on the Internet application the World Wide Web. What you can clearly identify is that you can make a request for a web page from the server. This implies that you are a web client and the server from which you make a request is a **Web Server**. As a web client you just need to run an application program called a browser whereas the web server is software that fulfils the request of web clients.

A web server normally has:

- A high end computer with web server software. The three most popular web server software are:
 - Apache HTTP Server, available in public domain.
 - Microsoft Internet Information Services (IIS)
 - Sun Java System Web Server
- A very good Internet connection speed so that it can support multiple simultaneous users
- Its own domain name and IP address. (we will discuss about them later)

But, how is information exchange between the web client and web server achieved? This whole communication is managed by a protocol called the Hyper Text Transfer Protocol (HTTP). However, the only protocol that works on Internet as told to you in the previous unit is TCP/IP. So what is this HTTP? Please note HTTP can work only over a connection that is managed by TCP. Thus, it is a higher level protocol that uses the services of TCP

HTTP specifies the list of actions that lead to transfer of a requested information exchange between a web client and web server.

Whenever you wish to visit a web page on the internet, you request that page from a web server. When you type a URL into your browser (for example, "http://www.abc.com/"), your web browser requests the page (or file) named index.htm from the web server and the web server sends the page back to the web browser:

Find the latest version of HTTP.

URL - Uniform Resource Locator - identifies the GLOBAL address of a document or resource on the WWW

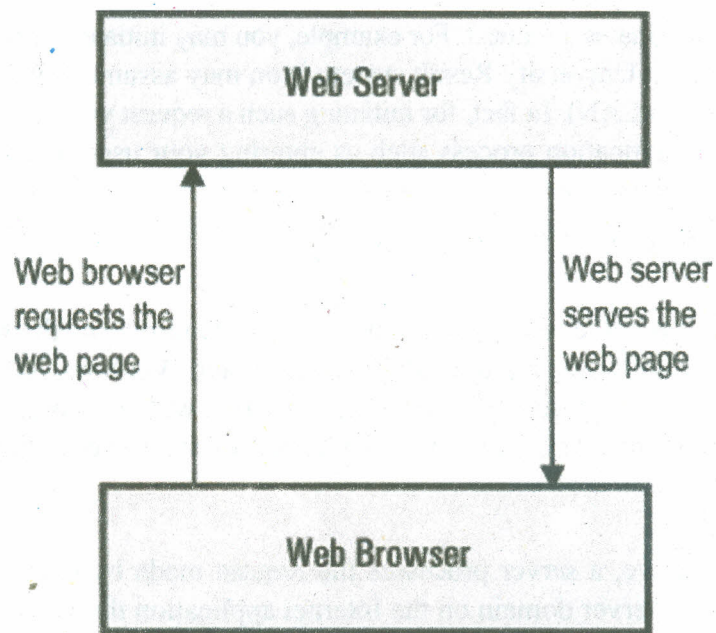


Figure 1.10: Interaction of Web Server and Web Browser

The Figure 1.10 identifies how web browser and web server interacts with each other. Let us identify these steps in more details:

1. As a first step you may put a URL like <http://www.abc.com/index.html> or equivalent Domain name www.abc.com as the address of the website that you want to access through your web browser.
2. The Web browser tries to resolve the IP address of the website www.abc.com by the information available in its own cache memory. If web server does not have the information about IP address stored in its cache, it requests the IP address from Domain Name System (DNS) servers. The DNS server tells the browser about the IP address of the website.
3. Once the web browser knows the IP address of the website, it then requests the web page (index.html page which is the home page in the present example) from the web server.
4. The web server responds by sending back the requested web page. If the requested page does not exist then it will send back the appropriate error message.
5. Your web browser receives the page from the web server and displays it as per the display requirements of the web page.

1.6 STRUCTURE OF INTERNET

As discussed earlier Internet is a global network. But, how are these computers connected? The Internet is basically built up of multiple smaller networks called the subnets. Each computer system on a subnet must have unique IP address. All these subnets are connected together with network devices called routers, and each subnet may also contain its own subnets.

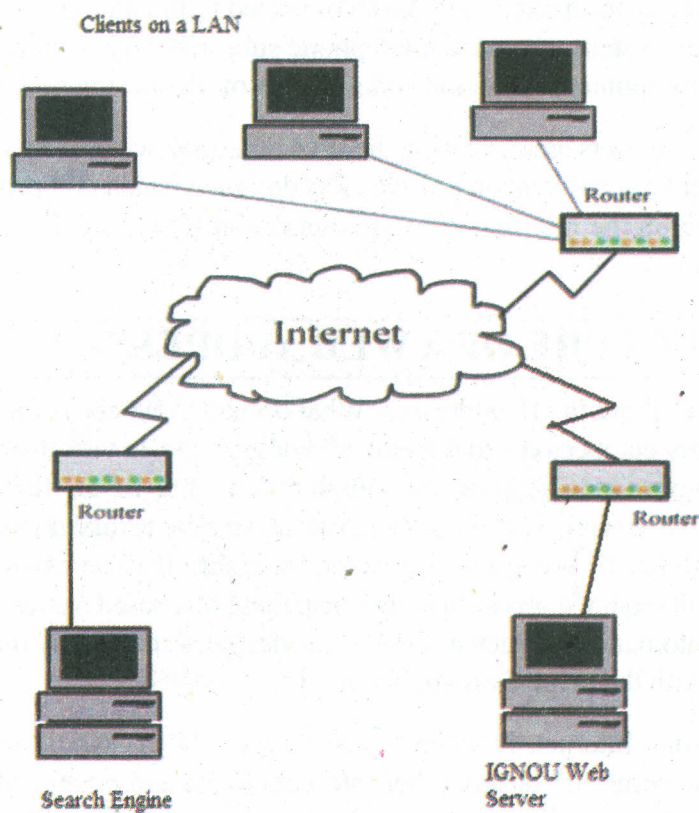


Figure 1.11: Structure of Internet

Figure 1.11 is a top level view of the structure of the Internet as a cloud of many routers that are connected to each other. You may be able to connect to any of the search engines or any of the web servers like IGNOU web server through many alternative routes.

TCP and IP (TCP/IP) are the two core protocols of the Internet Protocol suite. The TCP primarily provides the reliable delivery of stream of byte from a computer or a program to another computer or a program. It breaks the data stream into packets at the source and makes sure that all the packets are assembled orderly at the destination. The IP protocol on the other hand identifies the location of source and the destination. Any computer on Internet is identified by its unique IP address. Currently two standards versions of IP are available viz. Internet Protocol Version 4 (IPv4) which is currently being used on most of the Internet. An IPv4 address is a 32 bit address. The following diagram shows an IPv4 address:

A Network Interface Card is an interface card used in many LANs. Each of these cards may have a unique Media Access Control (MAC) address.

IP address: 192.168.1.97 in various forms

Decimal	192	168	1	97
Hexadecimal	C 0	A 8	0 1	6 1
Binary	1 1 0 0 0 0 0 0	1 0 1 0 1 0 0 0	0 0 0 0 0 0 0 1	0 1 1 1 0 0 0 1

Figure 1.12: IP address

IPv4 address is a series of four numbers separated by dots (.). The four numbers ranges between 0 and 255. So IPv4 address takes only 4-bytes or 32-bits) of computer memory. Not all the IPv4 addresses may be used to identify a computer. Some addresses of IPv4 are not used at all due to certain restrictions. In addition, some addresses are reserved for example; the IP address 255.255.255.255 is used for broadcasts. Every device, computer, printer or peripheral connected to a TCP/IP network must have its own IP address. IP addresses are unique and universal. Two devices on the Internet can never have the same addresses and the address

Every time when a computer is connected to a Network it may acquire a unique dynamic IP address or a Static IP address. Find more about it from the further readings.

used by a device is accepted by any host connected to the internet. This is similar to the telephone system where each telephone subscriber has a unique telephone number with the country and region codes as part of identifying scheme.

As the numbers of users are increasing the IPv4 addresses will run short. Therefore, a 64 bit Internet Protocol Version 6 (IPv6) was designed which is at present actively being deployed on the Internet. For more details on IPv6, please refer to further readings.

1.7 STRUCTURE OF A WEB ADDRESS

Now, you know about the IP addresses. What do you think about the IP address? Are not they very cumbersome to remember? For example, to visit IGNOU web site the address www.ignou.ac.in is far simpler than that of an IP address like 190.10.10.247. Obviously what we want to use are simpler textual domain addresses instead of complex IP addresses. However, to enable the use of simple textual address, you will require a service that will map these text based names to respective IP addresses automatically. Such a service was designed in 1983 by the University of Wisconsin with the name Domain Name System (DNS).

In the present day Internet, Domain Name System (DNS) should keep track of address of each computer or any other internet device and email addresses. The DNS translate the web address or email address to respective IP address. For example, the DNS translates address like www.ignou.ac.in into a numeric computer understandable IP address. It sounds simple, but, remember on Internet you are dealing with millions of addresses and every day this list is increasing. All these computers have to have a unique address. Therefore, DNS follows a hierarchical naming scheme that is supported by distributed database system to ensure no duplicate names are issued at all. Figure 9 shows the hierarchical structure of domains names. For example, traversing the hierarchy from the top you can track down ignou.ac.in as:

First you can find the *in* (India) in the top level country domains. Within this domain find the *ac* (Academic) sub domain. Please note most of the Indian Universities will be in this sub-domain. Finally, in the *ac* you can find the entry for *ignou*. This entry should point to the IP address for the ignou.ac.in for the WWW as well as for the mail server. This is how the DNS finds the addresses, thus, is a very efficient system.

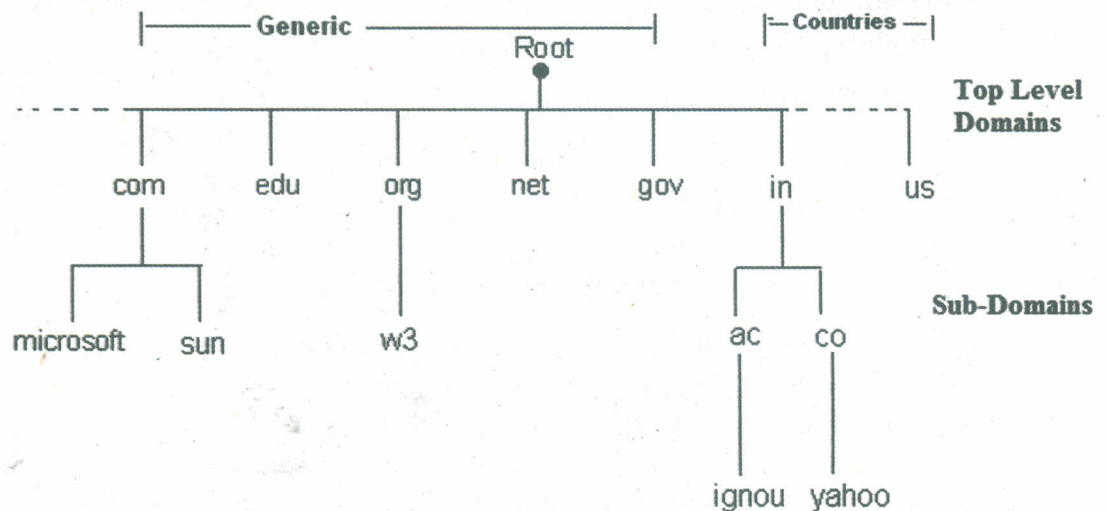


Figure 1.13: A sample portion of domain names on Internet

A web page address like- <http://www.ignou.ac.in/students/result.html> consists of

- The protocol, http (Hyper Text Transfer Protocol) to access the page,
- the www.ignou.ac.in identifies the DNS name of IGNOU's WWW server and
- the name of the page accessed by you is result.html which resides in the student's folder within the website.

This address is called the URL. URL stands for Uniform Resource Locator.

You can now clearly see that a URL consists of three parts - The first part is used to tell the browser what kind of server it will connect to. In the example above, the browser will connect to a web server using Hypertext transfer Protocol (HTTP). Other protocols that we can use in this field of an URL are ftp, gopher, smtp etc. the protocol is always followed by "://"

The range of Registered Ports is in between 1024-49151.

The second part of an URL is a fully Qualified Domain Name (www.ignou.ac.in). In an URL, the fully qualified domain name identifies the site running the server. Web servers use ports 80 by default, but some servers have been set up to use other ports. For this, an URL can contain a port number following the domain name and separated from it by a colon (www.ignou.ac.in:80), it's optional to write a port number with domain name. If the URL contains no port number, the default port is used.

The first two parts of an URL are used to begin navigation in the web. Each web server has a home page and a directory to store the entire document related to the web page like images, audio, video files.

The third component of URL is an optional pathname for a particular document itself. In above example (<http://www.ignou.ac.in/students/result.html>), it consists of a file name result.html that is in the directory student (/students/result.html) in the specified web site.

1.8 LET US CONNECT TO INTERNET

You need access to the Internet. This may either be from a dial-up, direct-line (over coaxial cable, fiber optic or copper wires), Wi-Fi, satellite and cell phones. Until recently, the two primary methods of accessing the Internet were through a direct connection, allowing users of local area networks (LANs) to go online through their school or workplace systems, and dial-up connections through a modem and phone line. Let's discuss these methods in detail:

1.8.1 Direct Connection

This is a permanent connection, which can be set up over a high-speed communication link. This is normally used in organizations, using cable modem (used for cable Internet) and DSL connect to the Internet. This kind of connection is established between your LAN server and the Internet host/server. You may request for a connection as and when desired from your LAN server. It may have a direct line or may dial the number of the Internet server to establish a link. In current years, more high-speed connections have gained in popularity. These include cable, Digital Subscriber Lines, more usually know as DSL, and Integrated Services Digital Network (ISDN). This dedicated high-speed connection is best suited for larger organizations, which have to serve many internal and external customers. This kind of link allows you to become information provider round the clock. This connection allows full

connectivity to Internet. However, due to their own security, privacy or policy reasons, organizations may choose not to use all the connectivity features.

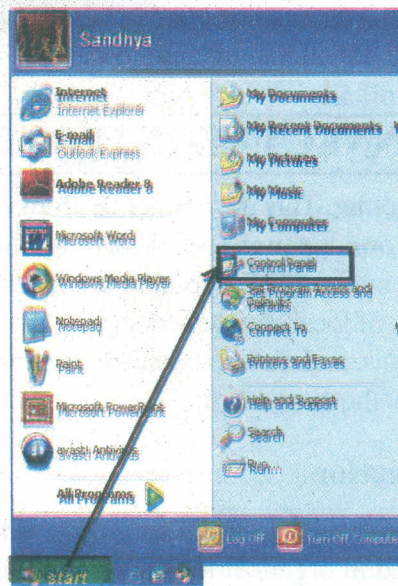
1.8.2 Dial-up Connection

Dial-up connection is the most common form of connectivity because all it requires is that the users have a phone line, which almost everyone does. However, because they rely on phone lines, which have limited transmission capacity, dial-up modems are very slow. In addition, for dial up connection to the Internet, you need to have a computer account on an ISP. For using the account, you must provide the host machine with the username and password. Recently some broadband services have been started by BSNL and MTNL in India. The broadband connection offers more exciting multi-media applications, such as audio, video, dynamic animation, etc. The difference between these high-speed connections and dial-up modems does not lie only in the amount of information that is transportable via the connection. Unlike dial-up connections, these methods of connectivity do not tie up phone lines, or other vital services. As a result, users are able to keep them connected at all times, without tying up their phone.

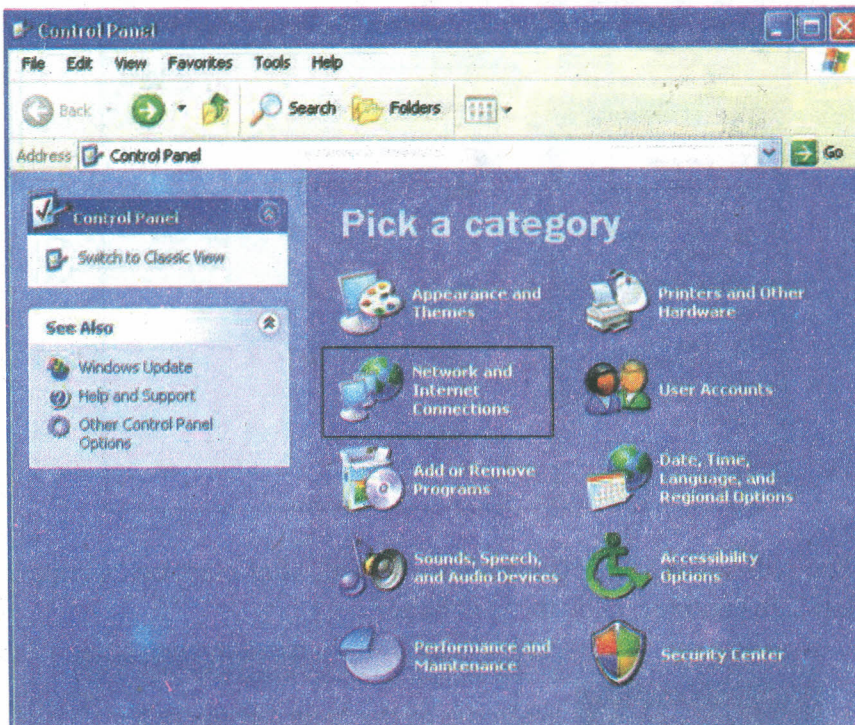
1.8.3 Setup Internet Connection

This section will show you how to set up your computer so you can connect to Internet using dial up Internet connection. We are using Windows XP for explaining you about the Internet connection; however, other Windows operating systems are having similar Internet Connection Wizard. We are assuming an example of home user who wishes to use a dial up connection through the telephone line. You can follow the steps given if you want to connect to Internet with us.

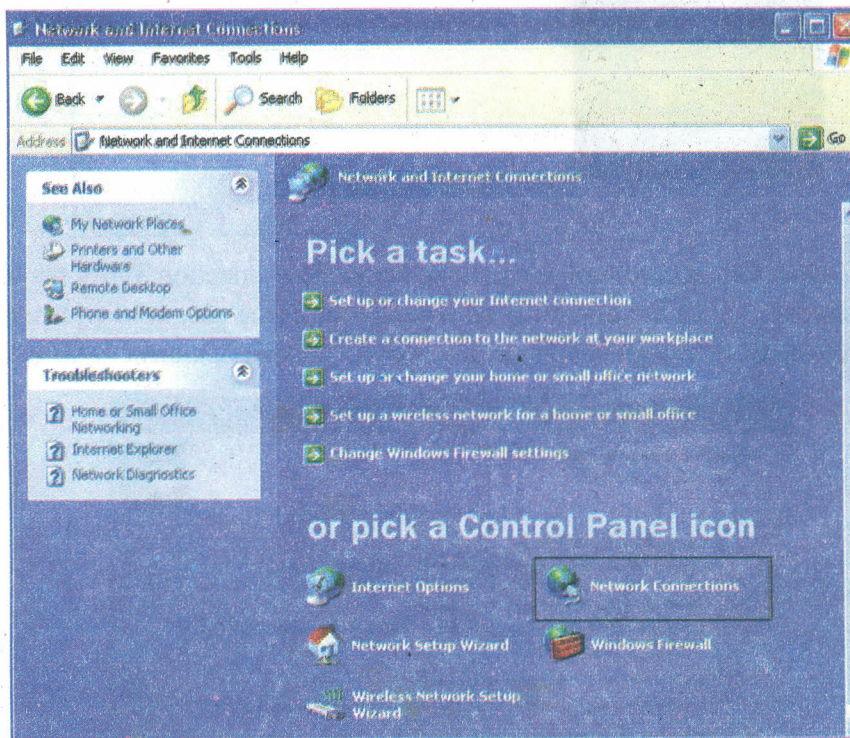
Step 1: Open your “Start menu” and select “Control Panel”.



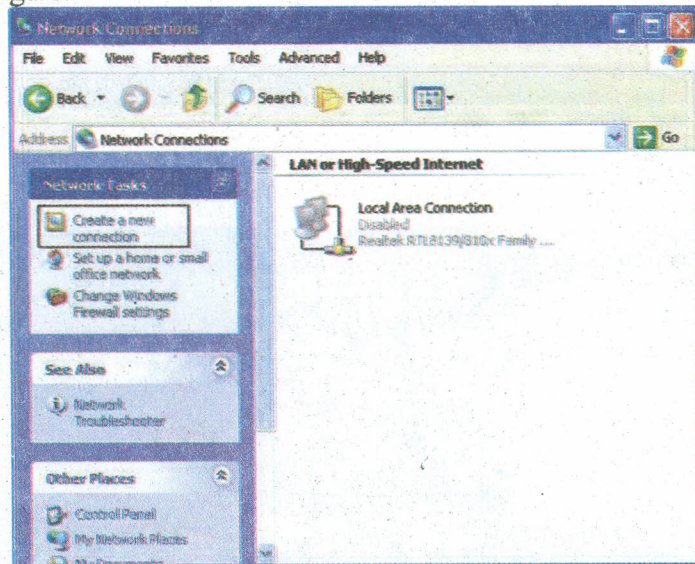
Step 2: When Control Panel window is opened, choose the “Network and Internet Connection” icon.



Step 3: Now open “Network Connection”.



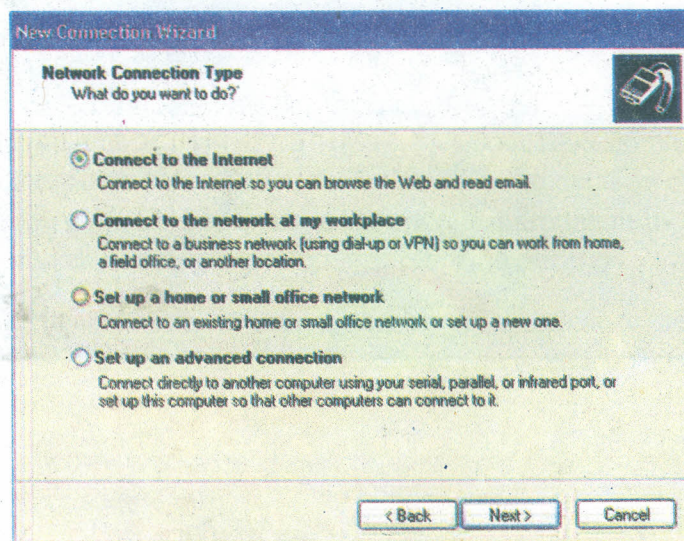
Step 4: Click on a link “Create a New Connection”, which is shown in the boundary in the given figure.



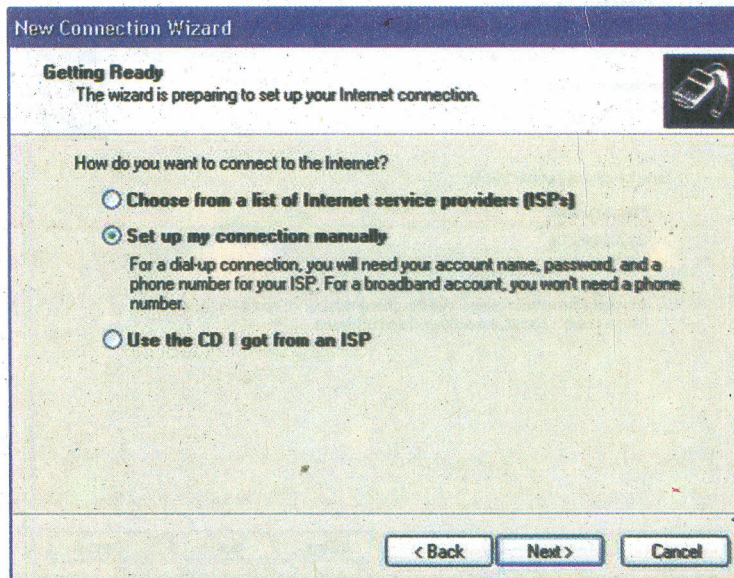
Step 5: You will see the New Connection Wizard, after click on “Create a New Connection”. To continue, click the next button.



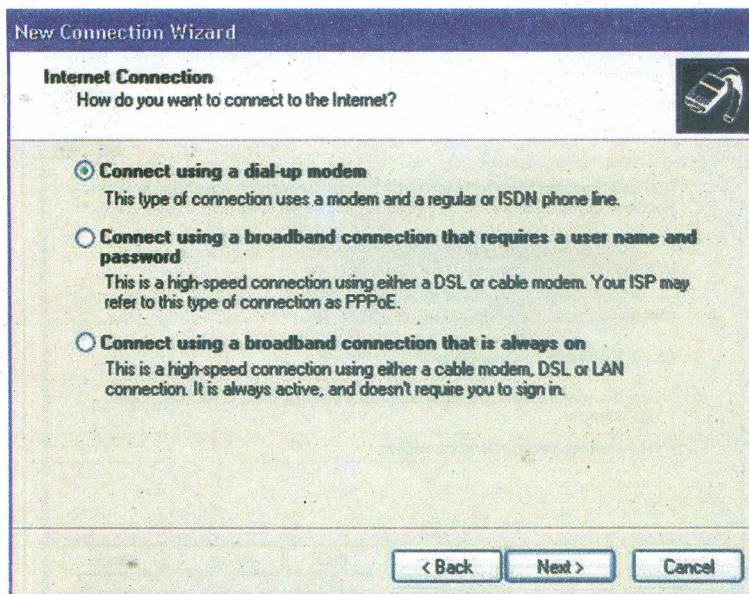
Step 6: Connection wizard will ask you the Network connection Types which you want to choose. As we are assuming an example of home user who wishes to use a dial up connection through telephone line, we will choose “Connect to the Internet” Option.



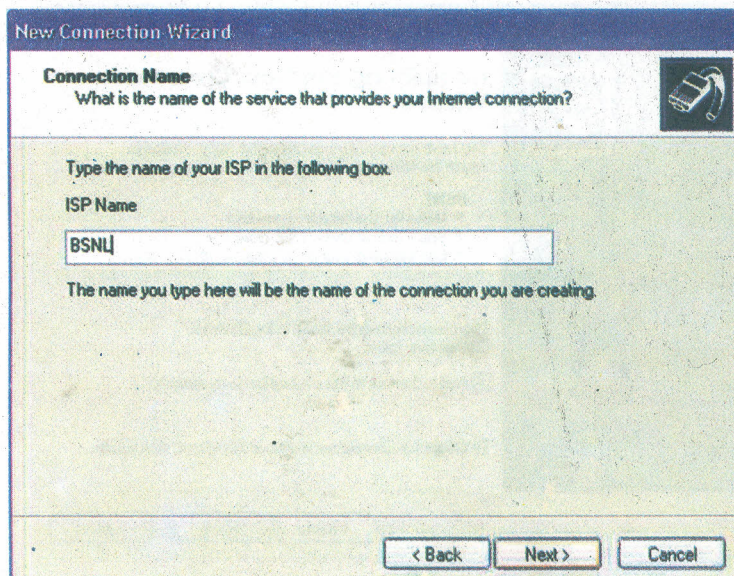
Step 7: We assume that we know the ISP provider and we do not have any CD for installing automatically. Hence, we select “Set up my connection manually” option.



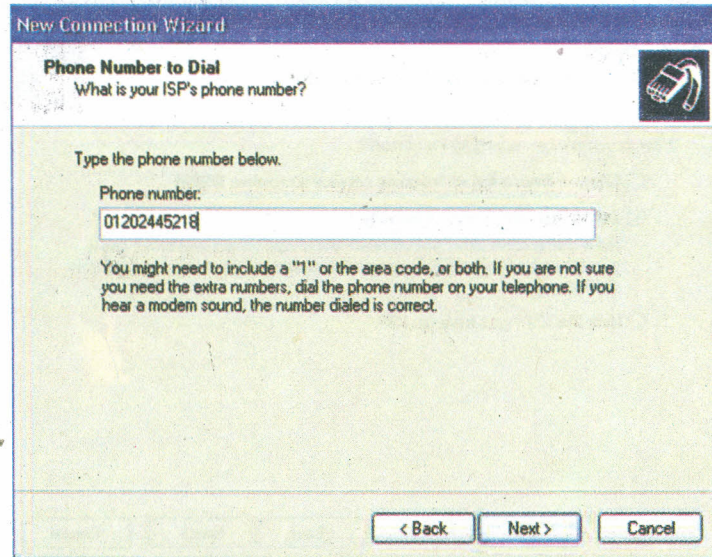
Step 8: We are using a dial up modem hence we will select the first option as given below in the figure.



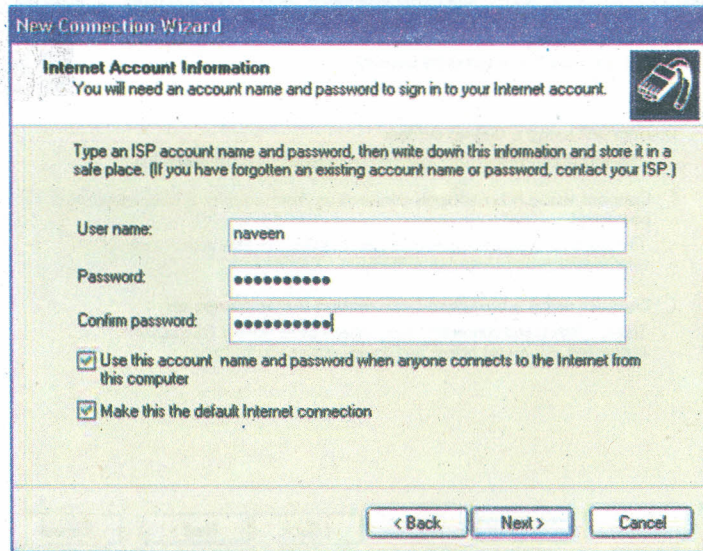
Step 9: Enter “BSNL (Bharat Sanchar Nigam Limited)” into the Internet Service Provider (ISP) box and then click the “Next” button to continue.



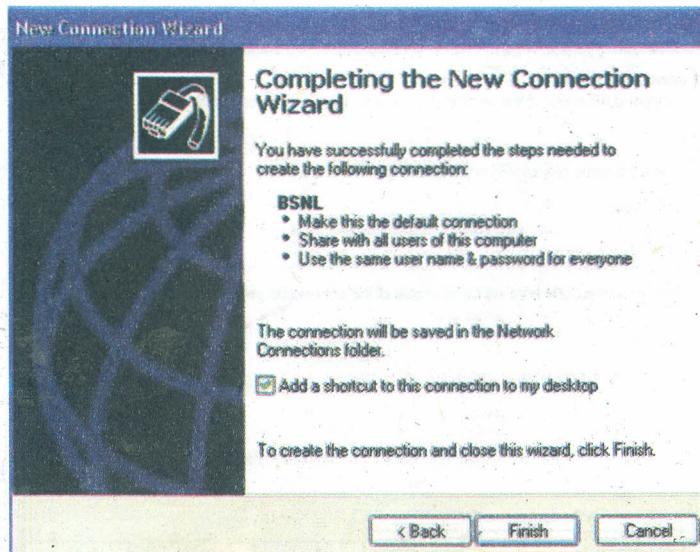
Step 10: Enter the telephone number with STD code given by ISP for dial up connection to Internet in the text box "Phone Number". For example, we have typed a phone number 01202445218.



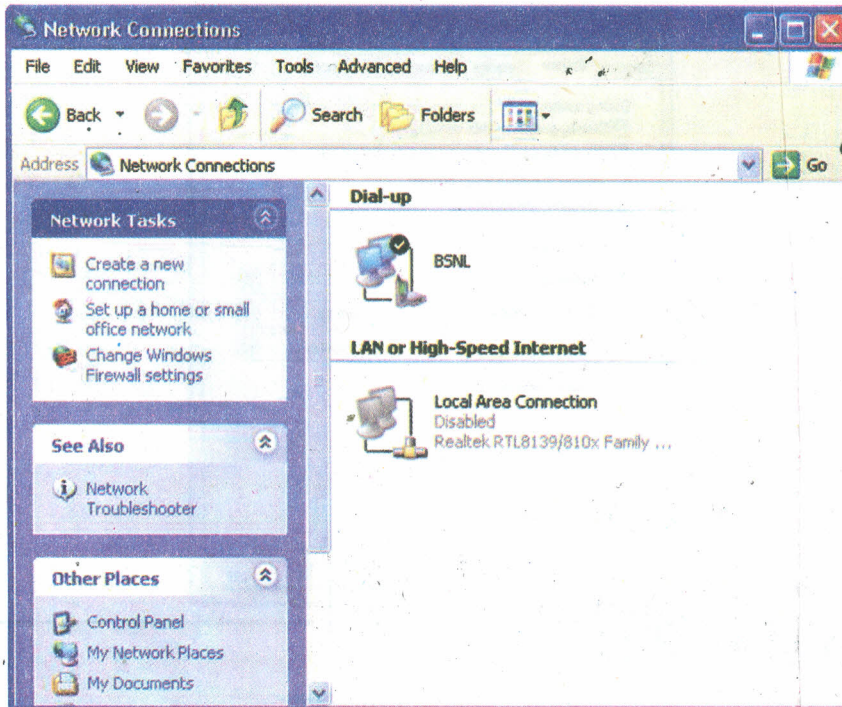
Step 11: Enter your username and password into the provided boxes and then click the "Next" button to continue. You must confirm your password in the Confirm password box.



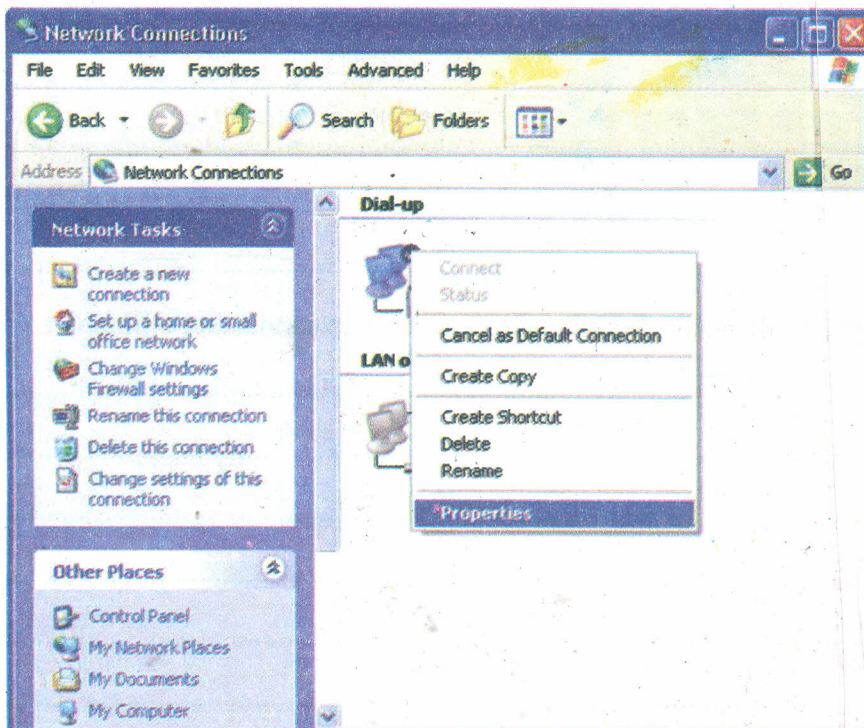
Step 12: Click the checkbox to "Add a shortcut to this connection to the desktop". Click on Finish button.



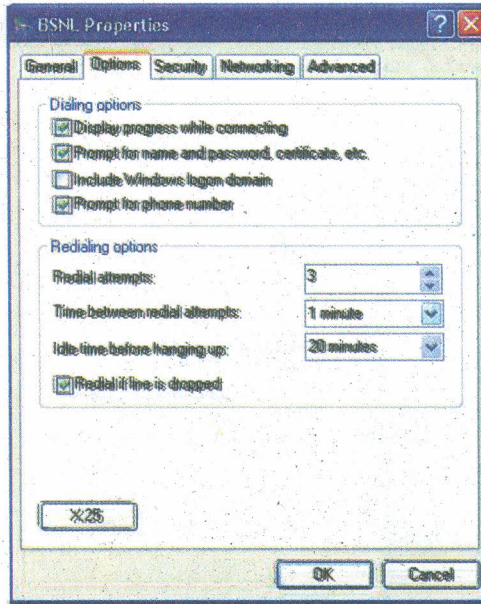
Step 13: After completing the New Connection Wizard you can see that the dialup connection icon has appeared in Network Connection Window.



Step 14: To open the properties of dialup connection that you named BSNL, Right Click the icon of BSNL.



Step 15: You can check and make the setting of this dialup connection according to your need, like security parameter you can adjust according to you. In addition, there are some networking and advance option available which we are sure that you will try them.



Check Your Progress III

Note: a) Write your answer in the space provided.

b) Check your answer with the possible answer provided at the end of the unit.

1) Explain different components of a web address.

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2) Explain differences between direct and dialup connection of Internet.

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3) What is VoIP? Explain its advantages.

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1.9 LET US SUM UP

This unit is an effort for answering some of the fundamental queries about Internet, a network of networks where a lot of information exists and is meant to be utilised by you. We have tried to give an overview of How to connect to Internet and what you can do on Internet. The number of advantages of Internet notwithstanding, it has some disadvantages and problems too. During the use of the Internet, your personal details like name, address, phone number, etc. can be accessed by other people. If you use a credit on Internet, then your credit card details can also be stolen which could be similar to giving someone a blank check. Further, spamming (which refers to sending unsolicited emails in bulk) is emerging as severe nuisance, that serves no purpose and needlessly blocks the complete system. In addition, pornography is a serious matter concerning the Internet, particularly when it comes to immature children. It is hoped that the brief overview of the Internet that this unit has attempted to provide will introduce Internet without a lot of technical background. The next unit of this block will help you to understand the web browser in detail because ultimately browser is the only aperture through which you can see the Internet.

1.10 REFERENCES AND SUGGESTED READINGS

- Alexis Leon and Mathews Leon (1999), *Fundamentals of Information Technology*, Leon TechWorld publication.
- Dr. Larry Leng (2004), *Computer Fundamental*, Wiley Dreamtech Publication.
- Suresh.K.Basandra (2003), *Computer Today*, Galgotia publication.
- <http://www.eiu.edu>
- <http://www.neiu.edu>
- http://public.pacbell.net/faq/general_faq.html

1.11 CHECK YOUR PROGRESS - POSSIBLE SOLUTIONS/ANSWERS

Check Your Progress I

- 1) There are various ways like email, messenger services, chatting, social networking sites, blog and groups etc... We can share our ideas, knowledge, feeling using these applications and can join different groups, discussion forums or create our own blogs.
- 2) Blog is a website where entries are written as commentary or news on a particular subject such as food, politics, or local news. It encourages students

to keep a record of their ideas and thinking over time. It helps you to give critical feedback on any topic. Blogs are famous as personal diary on internet where we can write our thoughts, feelings, share pictures etc. with the rest of the world.

- 3) File Transfer Protocol (FTP) is a standard tool to handle transfer and sharing of files across internet. It does the following:
 - Connect to remote machine using Hp account and password.
 - Browse directories and mark files for transfer.
 - Then just by a click files are transferred to our computer.
- 4) VPN (Virtual Private Network) allows office worker to work on his/her account from a distance, it can open a remote desktop session into his normal office PC using a secure Virtual Private Network (VPN) connection via the Internet. This gives the worker complete access to all of his or her normal files and data, including e-mail and other applications, while away from the office. Therefore, VPNs are more secure and easy to use from anywhere.

Check Your Progress II

- 1) Firewall is software that works on some set of rules and instructions given by you. A firewall helps to keep your computer more secure and protect from many security problems like Hacking, Trojan Horse, Virus, etc. It restricts information that comes to your computer from other computers, giving you more control over the data on your computer and providing a line of defense against people or programs (including viruses and worms) that try to connect to your computer without invitation.
- 2) A stack of protocols called TCP/IP (Transmission Control Protocol/Internet Protocol) implements different rules to handle the data communication from source machine to destination machine. For sending a message from source machine to destination machine, TCP divides the message data into little data packets. It also adds special information e.g. the packet position, error correction code etc. To make sure those packets at the destination can be reassembled correctly and without any damage to data. The role of IP is to put destination-addressing information on such packets.

Check Your Progress III

- 1) Web address typically is composed of three parts:
 - a. A protocol name (a protocol is a set of rules and standards that enable computers to exchange information) www
 - b. The location of the site or the name of the organization that maintains the site (like ignou).
 - c. A suffix that identifies the kind of organization it is (such as .ac.in for academic organization in India)
- 2) Direct connection is a permanent connection, which can be set up over a high-speed communication link. This is normally used in organisations and corporate DSL connect to the Internet. However, Dial-up connection is the most common form of connectivity because all they required was that the user has a phone

- line. But as they rely on phone lines, which have limited transmission capacity, dial-up modems are slow. In addition, for dial up connection to the Internet, you need to have a computer account on a host machine.
- 3) Voice over Internet Protocol (VoIP) is a technology that allows you to make voice calls using an Internet. It may allow merging of voice and data network for better interaction among teachers and students. Some Internet service provider's still termite as not legal.

UNIT 2 PAY ROLL

Structure

- 2.0 Objectives
- 2.1 Introduction
- 2.2 Goals of a Pay Roll System
- 2.3 Calculating Total Income and Tax Payable
 - 2.3.1 Exclusion of income not chargeable to tax
 - 2.3.2 Computation of Gross total income
 - 2.3.3 Deductions from Gross total income
 - 2.3.4 Calculating total income
 - 2.3.5 Application of rates of tax on total income
 - 2.3.6 Surcharge
 - 2.3.7 Education Cess on income tax
 - 2.3.8 Advance tax and tax deducted at source
 - 2.3.9 Filing return of income
 - 2.3.10 Working examples of calculating total income and total tax payable
- 2.4 Calculating the Pay Roll
- 2.5 Recording the Pay Roll
- 2.6 Application Software on Internet
- 2.7 Let Us Sum Up
- 2.8 References and Further Readings
- 2.9 Check Your Progress – Possible Solutions/Answers

2.0 OBJECTIVES

After going through this unit, you will able to:

- Understand the three broad goals of a pay roll system;
- Calculate gross wages, deductions and net pay for individual employees;
- Make entries to record the following, given pay roll register totals and related data;
- Wages earned and related liabilities for a pay roll period; and
- The employer's pay roll tax expense and related liabilities for a pay roll period.

2.1 INTRODUCTION

As discussed earlier this block introduces some basic applications of a computer. This unit and the next unit describe the applications of a computer for general purposes. One of these applications is the pay-roll application. You will find that many a times you may face the situation where you need to distribute wages to employees. In most such cases papers are prepared manually and therefore, are somewhat more difficult to maintain. This unit concentrates on accounting and taxation for the payment of employee salaries and wages and on accounting for related pay roll deductions and taxes. The unit shows how the net pay of an employee can be

calculated after taking care of the mandatory deductions like income tax, educational cess etc.

2.2 GOALS OF A PAY ROLL SYSTEM

A pay roll system maintains the details of the wages paid to the employees of an organisation. This is an important activity as each employee is to be duly paid, in keeping with the Government rules and regulations. An electronic pay roll system helps in maintaining the pay roll with minimum efforts. The broad goals of a pay roll system are:

- *To allow distribution of salaries and wages only for services actually rendered to the entity / organisation.*

Responsibility for this goal is sometimes divided amongst several departments within an entity. A personnel department, for example, may be responsible for authorizing the employment of workers at given rates of pay. A timekeeping department may be charged with keeping track of the time, for which employees work. A pay roll department may be responsible for computing amounts due and for ensuring that payments are made to only those persons authorized to receive them.

- *To process data quickly enough to permit prompt payment of salaries and wages that are due.*

Gathering and processing pay roll data takes considerable time. Yet, employees expect to be paid on scheduled pay dates. Therefore, another goal of a pay roll system is to process data quickly enough to permit prompt payment of the salaries and wages that are due.

- *To comply with the government regulations*

Employers must comply with a variety of requirements by state and central government. Some of these requirements have to do with taxes that must be deducted from the employee's earnings. Others subject employers to taxes that are measured by the amount of salaries and wages paid to the employees. Still other requirements are concerned with the fair treatment of employees by their employers. Pay roll records must be kept in sufficient detail to provide information for use in complying with the various government regulations.

2.3 CALCULATING TOTAL INCOME AND TAX PAYABLE

To briefly introduce the concept of income we can say, the definition of income as per the Income Tax Act begins with the words "Income includes". Therefore, it is an inclusive definition and not an exclusive one. Such a definition does not confine the scope of income but leaves room for more inclusions within the ambit of the term. Income can be categorized under various heads.

Salaries	Income from Property	Profits and gains from business	Capital gains	Income from other sources
----------	-------------------------	------------------------------------	---------------	------------------------------

Figure 2.1 : Heads of income

We are dealing with pay roll in this unit, therefore we will be taking into account the income from salary only. We will not be considering various

facts like income from other sources, clubbing of income of spouse, minor child etc.

Please Remember:-*"If the reader wishes to get an in-depth knowledge of the other categories of income as well, further reading of these topics is recommended."*

Income tax is levied on an individual's total income. Such total income has to be computed as per the provisions contained in the Income Tax Act, 1961. Let us go step by step to understand the procedure of computation of total income for the purpose of levy of income tax.

2.3.1 Exclusion of income not chargeable to tax

There are certain incomes which are wholly exempt from income tax e.g. Agricultural income etc.. These incomes have to be excluded and will not form part of gross total income. Also, some incomes are partially exempt from income tax e.g. House Rent Allowance, Dearness Allowance, Education Allowance etc. These are only excluded to the extent of the limits specified in the Act. The balance income over and above the prescribed exemption limits would enter computation of total income and has to be classified under the relevant head of the income.

Just to give you a brief description of allowances :

In India, **dearness allowance** (D.A) is part of a person's salary. D.A. is calculated as a percent of the basic salary. This amount is then added to the basic salary along with house rent allowance to get the total salary. *" Recommendations have been made by the Sixth Central Pay Commission - decision of government relating to the grant of Dearness Allowance to central government servants is going to be at a rate of 16% of basic pay from 1.7.2008"*.

Note: *Central government institutions use a fixed rate of DA and HRA but it may vary with public and private institutions.*

House rent allowance (HRA) [section 10(13A)] – *"HRA is a special allowance specifically granted to an employee by his/her employer towards payment of rent for residence of the employee."* *Based on the recommendation of Sixth Central Pay Commission, the earlier classification of cities has been revised viz. A-1 to "X"; A, B-1 & B-2 to "Y" and C & unclassified to "Z". In determining the revised classification, the population of urban agglomeration area of the city has been taken into consideration. Accordingly, the rates of House Rent Allowance shall be as*

Table 2.1: LIST OF CITIES/TOWNS WHERE HOUSE RENT ALLOWANCE IS ADMISSIBLE TO CENTRAL GOVERNMENT EMPLOYEES

Sl. no.	STATES	CITIES CLASSIFIED AS "X"	CITIES CLASSIFIED AS "Y"
1.	Andhra Pradesh	Hyderabad	Vijaywada , Warangal, Vishakhapatnam, Guntur
2.	Assam		Guwahati
3.	Bihar		Patna
4.	Chandigarh		Chandigarh
5.	Chattisgarh		Durg Bhilai Nagar, Raipur
6.	Delhi	Delhi	
7.	Gujarat		Ahemdabad, Rajkot, Jamnagar, Bhavnagar, Vadodara, Surat
8.	Harayana		Faridabad*
9.	Jammu Kashmir		Srinagar, Jammu
10.	Jharkhand		Jamshedpur, Dhanbad, Ranchi
11.	Karnataka	Bengaluru	Belgaum, Hubli-Dharwad, Mangalore, Mysore
12.	Kerala		Kozhikode, Kochi, Thiruvananthapuram
13.	Madhya Pradesh		Gwalior, Indore, Bhopal, Jabalpur
14.	Maharashtra	Greater Mumbai	Amravati, Nagpur, Aurangabad, Nashik, Bhiwandi, Pune, Solapur, Kohlapur
15.	Orissa		Cuttack, Bhubaneswar
16.	Punjab		Amritsar, Jalandhar, Ludhiana
17.	Pondicherry		Pondicherry
18.	Rajasthan		Bikaner, Jaipur, Jodhpur, Kota
19.	Tamil Nadu	Chennai	Salem, Tiruppur, Coimbatore, Tiruchirappalli, Madurai
20.	Uttarakhand		Dehradun
21.	Uttar Pradesh		Moradabad, Meerut, Ghaziabad*, Aligarh, Agra, Bareilly, Lucknow, Kanpur, Allahabad, Gorakhpur, Varanasi
22.	West Bengal	Kolkata	Asansol

* Only for the purpose of extending HRA on the basis of dependency

Classification of cities/towns Rate of House Rent Allowance as a percentage of basic pay

X	30%
Y	20%
Z	10%

The remaining cities/towns in various States/Union Territories which are not covered by classifications as "X" or "Y" are classified as "Z" for the purpose of HRA.

Note:

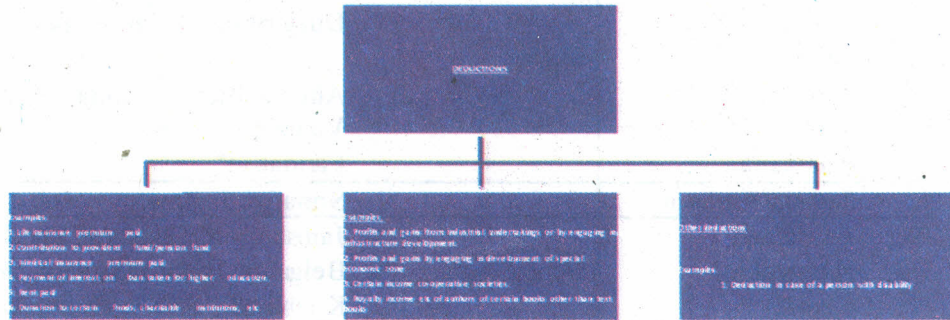
- Exemption is not available to an individual who lives in his/her own house, or in a house for which she has not incurred the expenditure of rent.
- Salary for this purpose means basic salary plus dearness allowance, if provided in terms of employment and commission as a fixed percentage of turnover.

2.3.2 Computation of Gross total income

The final figures of income after allowing deductions, allowances and other adjustments are then aggregated to arrive at the gross total income.

2.3.3 Deduction from Gross total income

Amounts must be withheld from employee wages and salaries to comply with state, central other laws. In addition, amounts may be withheld, at request of employees, for union dues, insurance premiums, savings programs and other purposes. *Withholdings from gross pay of employees are called deductions.* There are various kinds of deductions from gross total income:



A maximum total deduction of Rs 1,00,000 of deductions is allowed for the year 2007-2008

Figure 2.2: Deductions

2.3.4 Calculating total income

The income arrived at, after claiming the above deductions is known as **Total Income**. It is also called the **Taxable Income**. It should be rounded off to the nearest multiple of Rs 10.

Check Your Progress I

Note: a) Write your answer in the space provided.

b) Check your answer with the possible answer provided at the end of the unit.

1) What is an allowance? Is percentage of allowance exemption fixed for every kind of allowance?

.....

.....

.....

2) How many kinds of allowances are there? Give two examples of allowances.

.....

.....

3) What is deduction and what is the maximum deduction allowed for a year?

.....

.....

.....

2.3.5 Application of rates of tax on total income

The rates of tax for different classes of individuals are prescribed by the Annual Finance Act. "These rates are subject to change every year. The following rates are applicable for year 2007-2008". Please note that these rates are just taken as illustration and you should use the current rates for the calculations.

FOR RESIDENT MEN BELOW THE AGE OF 65 YEARS

(i) Where the total income does not exceed Rs.1,10,000	Nil
(ii) Where the total income exceeds Rs. 1,10,000 but does not exceed Rs.1,50,000	10% of the amount by which the total income exceeds by Rs.1,10,000
(iii) Where the total income exceeds Rs.1,50,000 but does not exceed Rs.2,50,000	Rs.4000 plus 20% of the total amount by which the total income exceeds Rs.1,50,000
(iv) Where the total income exceeds Rs.2,50,000	Rs.24,000 plus 30% of the amount by which the total income exceeds Rs.2,50,000

FOR RESIDENT WOMEN BELOW THE AGE OF 65 YEARS

(i) where the total income does not exceed Rs.1,45,000	Nil
(ii) where the total income exceeds Rs.1,45,000 but does not exceed Rs.1,50,000	10% of the amount by which the total income exceeds Rs.1,45,000
(iii) where the total income does not exceeds Rs.1,50,000 but does not exceed Rs.2,50,000	Rs.500 plus 20% of the amount by which the total income exceeds Rs.1,50,000
(iv) where the total income exceeds Rs.2,50,000	Rs.20,500 plus 30% of the amount by which the total income exceeds Rs.2,50,000

FOR SENIOR CITIZENS (BEING RESIDENT INDIVIDUALS OF THE AGE OF 65 YEARS OR MORE)

(i) where the total income does not exceed Rs.1,95,000	Nil
(ii) where the total income exceeds Rs.1,95,000 but does not exceed Rs.2,50,000	20% of the total amount by which the total income exceeds Rs.1,95,000
(iii) where the total income exceeds Rs.2,50,000	Rs.11,000 plus 30% of the amount by which the total income exceeds Rs.2,50,000

Example 1: Suppose Mr Rajiv is 35 years old and has a total income of Rs 6,00,000. Therefore, to compute his gross tax liability we will use the tax slab for men. Using Microsoft excel to do the computations can make this tedious looking task very easy and simple. **Here we are using the tax slab for resident men below 65 years of age**

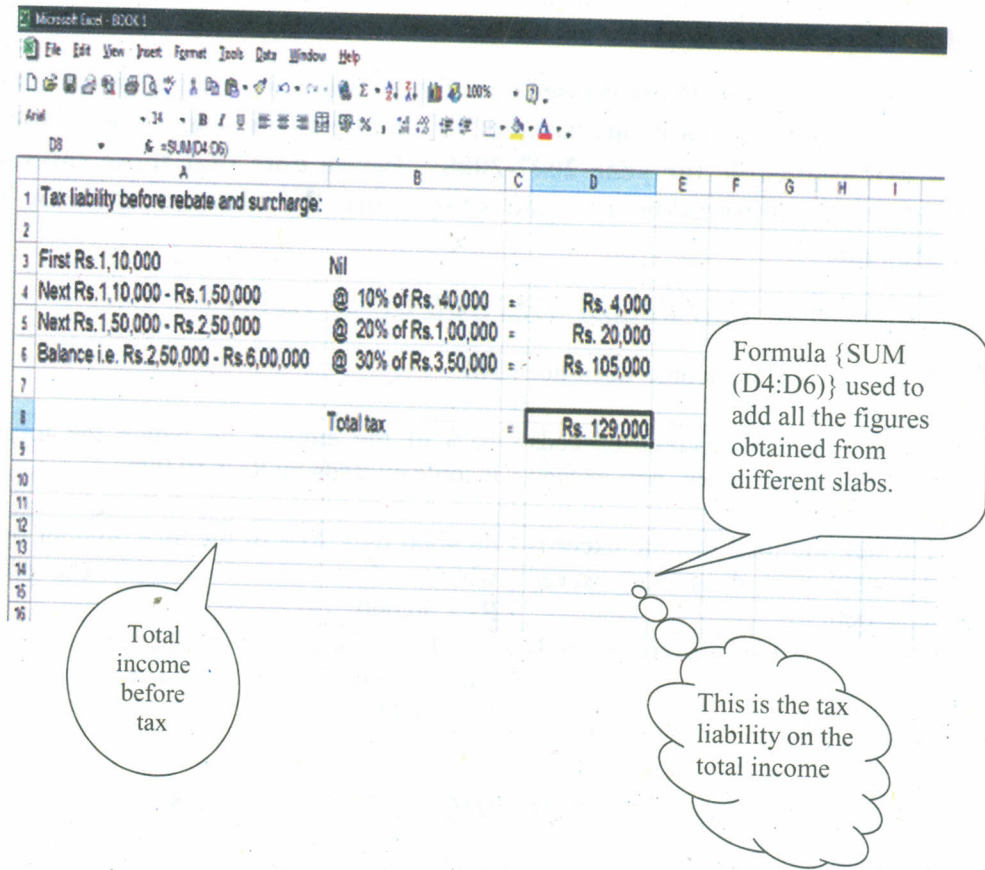


Figure 1.3: A sample tax calculation

Example 2: Now if we consider Sonia, who is 35 years old and has a same amount of total income i.e. Rs 6,00,000. Then what will be her gross tax liability. **Here we are using the tax slab for women under the age of 65**

This is the tax liability on total income.

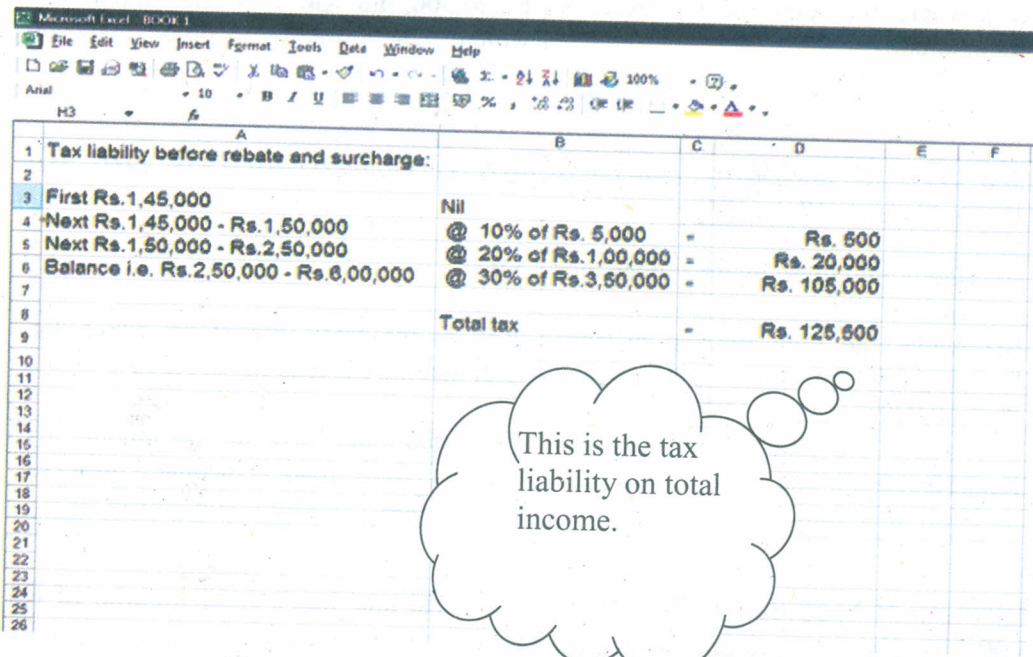


Figure 1.4: Sample Tax calculation for example

We can conclude by these examples, that the total income remaining same the gross tax may be different based on the rules.

2.3.6 Surcharge

Surcharge is an additional tax payable over and above the income tax. Surcharge is levied as a percentage of income tax. At present, the rate of surcharge for firms and domestic companies is 10% and for foreign companies is 2.5%, if their total income exceeds Rs 1 crore. *For individuals, surcharge would be levied @ 10 % if their total income exceeds Rs 10 lakh.*

- In case of such individuals having a total income exceeding Rs10,00,000, the additional amount of income tax payable (together with the surcharge) on the excess of income over Rs 10,00,000 should not be more than the amount of income exceeding Rs 10,00,000. This is called '**Marginal relief**'.

Illustration: Suppose Mr. X has a total income of Rs.10 lakhs.

$$\begin{aligned} \text{Tax on this income} &= \text{Rs.0} + 10\% \text{ of Rs.40,000} + 20\% \text{ of Rs.1,00,000} + 30\% \\ &\quad \text{of Rs.7,50,000} \\ &= \text{Rs.2,49,000} \end{aligned}$$

Surcharge is not attracted on this tax since the total income does not exceed Rs.10 lakhs.

However, if his total income is Rs.10,30,000, then

$$\begin{aligned} \text{Tax on this income} &= \text{Rs.0} + 10\% \text{ of Rs.40,000} + 20\% \text{ of Rs.1,00,000} + 30\% \\ &\quad \text{of 7,80,000} \\ &= \text{Rs.2,58,000} \end{aligned}$$

$$\begin{aligned} \text{Add: Surcharge} &= \underline{\text{Rs.25,800}} [10\% \text{ of Rs.2,58,000}] \\ &= \underline{\text{Rs.2,83,800}} \end{aligned}$$

On comparing the two situations, it is seen that for Rs.30,000 [i.e. Rs.10,30,000 – Rs.10,00,000] increase in the total income, the tax liability including surcharge has increased by Rs.34,800 [i.e. Rs.2,83,800 – Rs.2,49,000].

$$\text{Marginal relief} = \text{Rs.34,800} - \text{Rs.30,000} = \text{Rs.4,800}$$

$$\text{Tax payable} = \text{Rs.2,49,000} + \text{Rs.30,000} = \text{Rs.2,79,000}$$

2.3.7 Education Cess on income tax

The income tax, as increased by the surcharge, is to be further increased by an additional surcharge called education cess @ 2%. The education cess on income tax is for the purpose of providing universalized quality basic education in India. This is payable by all individuals who are liable to pay income tax irrespective of their level of total income tax plus surcharge, if applicable. This is leviable from 2008-2009 to fulfill the commitment of the government to provide and finance secondary and higher education.

2.3.8 Advance tax and tax deducted at source

Although the tax liability of an individual is determined only at the end of the year, tax is required to be paid in advance in certain installments on the basis of estimated income. In certain cases, tax is required to be deducted at source (TDS) from the income by the payer at rates prescribed in the Act. Such deduction should be made either at the time of accrual or at the time of payment, as prescribed by the Act. For

example, in case of salary income, the obligation of the employer to deduct tax at source arises only at the time of payment of salary to the employees. Such tax deducted at source has to be remitted to the credit of central government through any branch of RBI, SBI or any authorized bank. If any tax is still due on the basis of return of income, after adjusting advance tax and tax deducted at source, the individual has to pay such tax (called self-assessment) tax) at the time of filing of the return.

2.3.9 Filing return of income

The income tax act contains provisions for filing of return of income. Return of income is format in which the individual furnishes information as to his/her total income and tax payable. The particulars of income earned under different heads, gross total income, deductions form gross total income, total income and tax payable by the individual are required to be furnished in a return of income. In short, a return of income is the-declaration of income by the individual in the prescribed format.

2.3.10 Working examples of calculating total income and total tax payable

Now to give a better understanding of how the pay roll system works in real world we can take into consideration this monthly pay slip which a bank employee receives at the end of the month after receiving his/her pay.

	A	B	C	D	E	F	G	H
1	EARNINGS :		REGULAR		ADJUSTMENT		TOTAL	
2								
3	Basic Pay		Rs. 18,800.00		Rs. 0.00		Rs. 18,800.00	
4	Dearness allowance		Rs. 7,478.64		Rs. 0.00		Rs. 7,478.00	
5	House rent allowance		Rs. 2,397.00		Rs. 0.00		Rs. 2,397.00	
6	CCA		Rs. 540.00		Rs. 0.00		Rs. 540.00	
7	Fixed Personal Pay		Rs. 560.00		Rs. 0.00		Rs. 560.00	
8	Fixed Personal Pay-DA		Rs. 25.00		Rs. 0.00		Rs. 25.00	
9	Fixed Personal Pay-HRA		Rs. 50.00		Rs. 0.00		Rs. 50.00	
10								
11	GROSS EARNINGS :		Rs. 29,850.64		Rs. 0.00		Rs. 29,850.00	
12								
13	DEDUCTIONS :							
14								
15	P.F		Rs. 1,936.00		Rs. 0.00		Rs. 1,936.00	
16	Income Tax		Rs. 630.00		Rs. 0.00		Rs. 630.00	
17	BSBS		Rs. 134.00		Rs. 0.00		Rs. 134.00	
18	BCI officer's Ass. New Delhi		Rs. 80.00		Rs. 0.00		Rs. 80.00	
19								
20	GROSS DEDUCTIONS :		Rs. 2,780.00		Rs. 0.00		Rs. 2,780.00	
21								
22	NET SALARY CREDITED :						Rs. 27,070.00	
23	% OF GROSS DEDUCTION	9.31%						
24								
25								
26								
27								

Figure 1.5: A Sample pay slip

Explanation on the pay slip :

- Person’s gross income consists of Basic pay, which is a part of salary for everyone. It also includes Dearness allowance (D.A) which is a certain percentage of basic pay as is the House Rent Allowance (H.R.A). D.A. and H.R.A. varies as mentioned earlier in different public and private institutions. In all government institutions the percentage is fixed.

- Gross income also includes other allowances such as CCA i.e. City Compensatory Allowance, Fixed Personal Pay etc. There are other kinds of allowances as well which one might get as a part of salary eg travel allowances, washing allowances. These allowances also vary in different institutions in various sectors: but, they form a part of the gross income.
- Now we come to deductions. As can be seen, Provident Fund (P.F) refers to a specified amount which is to be deducted from the salary of the employee as his contribution to the fund. The employer also generally contributes the same amount to the fund. The contribution of the employer and employee is then remitted to the Employees' Provident Fund Organisation (EPFO) – a statutory Government body.. Interest earned on this amount is also credited to the account of the employee. It is mandatory to deduct a certain percentage of the income as P.F. If the employee wishes to make some more savings in the form of P.F that percentage can go up according to his/her will to some extent.
- The other major deduction which can be seen is the income tax. One must wonder how can income tax be deducted when the annual gross income is not confirmed. Tax liability can only be determined at the end of the year but income tax is deducted monthly on an accrual basis. At the year end when tax return is filed, if there is any credit earned or if extra tax has been deducted then that extra money is returned to the employee or if some debt is owed due to less deduction, employee has to pay that amount.
- The other deductions shown in this salary slip are voluntary or charged by the institution. There can be deductions like these which also vary from public sector to private sector institutions.

Now to give a better understanding of what happens at the year end, when an employee files his/her return, let's take another example. The next three screens show the process using sample data.

Microsoft Excel - SALARY SLIP

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A10 (c) Profits in lieu of salary u/s 17(3) (as per form no. 12BA, wherever applicable)

	A	B	C	D
1	TDS CIRCLE WHERE ANNUAL RETURN/STATEMENT UNDER SECTION 206 IS TO BE FILED	PERIOD FROM	TO ASSESSMENT YEAR	
2				
3		2007-2008	2008-2009	
4				
5	DETAILS OF SALARY PAID AND ANY OTHER INCOME TAX DEDUCTED			
6				
7	1. GROSS SALARY			
8	(a) Salary as per provision contained in section 17(1)	Rs. 362,305		
9	(b) Value of perquisites u/s 17 (2) (as per form 12BA wherever applicable)	Rs. 3,420		
10	(c) Profits in lieu of salary u/s 17(3) (as per form no. 12BA, wherever applicable)	Rs. 0		
11	(d) TOTAL	Rs. 365,725		
12				
13	2. LESS: ALLOWANCE TO THE EXTENT EXEMPT UNDER SEC 10	Rs. 0		
14				
15	3. BALANCE (1-2)	Rs. 365,725		
16				
17	4. DEDUCTIONS			
18	(a) ENTERTAINMENT ALLOWANCE	Rs. 0		
19	(b) TAX ON EMPLOYMENT	Rs. 0		
20				
21	5. AGGREGATE OF 4 (A & B)	Rs. 0		
22				
23	6. INCOME CHARGEABLE UNDER THE HEAD SALARIES (3 - 5)	Rs. 365,725		
24				
25	7. ADD: ANY OTHER INCOME } OTHERS	Rs. 0		
26	REPORTED BY EMPLOYEE } HSG. INT.	Rs. 0		
27				
28	8. GROSS TOTAL INCOME (6 + 7)	Rs. 365,725		
29				
30	9. DEDUCTION UNDER CHAPTER VI - A			
31	(A) U/S 80C, 80CCC & 80CCD			

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Figure 1.6(a) : A sample return part (a)

Explanation on the terms used in the diagram as above:

1. Gross salary amounts to Rs. 3,65,725 which also includes perquisites. Term "Perquisite" indicates some extra benefits in addition to the amount that may be legally due by way of contract for services rendered. In modern term an employee normally includes monetary salary and perquisites like housing, car etc. Perquisites may be provided in cash or in kind. In this example they have been provided in cash.
2. Now this employee has not claimed any exemptions in form of H.R.A etc. which are exempted to some extent if legally claimed.

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	A	B	C
		GROSS	DEDUCTION
			MAXIMUM DEDUCTION
32	(a) SECTION 80C	Rs. 22,499	Rs. 22,499
33	A. PF, VPF	Rs. 5,846	Rs. 5,846
34	B. LIC	Rs. 0	Rs. 0
35	C. GSLI, NSS	Rs. 0	Rs. 0
36	D. NSC	Rs. 0	Rs. 0
37	E. NSC INT.	Rs. 60,000	Rs. 60,000
38	F. PPF	Rs. 0	Rs. 0
39	G. VLIP, M. FUND	Rs. 0	Rs. 0
40	H. HSG LOAN	Rs. 0	Rs. 0
41	I. BK DEP/ INFRA	Rs. 0	Rs. 0
42	J. TUITION FEES	Rs. 12,000	Rs. 12,000
43	(b) SECTION 80CCC	Rs. 0	Rs. 0
44	(c) SECTION 80CCD	Rs. 0	Rs. 0
45			
46	TOTAL (a+b+c)	Rs. 100,345	Rs. 100,345
47			
48	(B) OTHER SECTIONS (80E, 80G, ETC)		
49		GROSS	QUALIF
50	(a) 80-U	0	0
51	(b) 80-D/DD/DB/E	0	0
52	(c) 80-G/80GG/GGA	0	0
53			
54	10. AGGREGATE OF DEDUCTABLE AMOUNT UNDER CHAPTER VI-A (9A-9B)	Rs. 100,000	
55			
56	11. TOTAL INCOME (8-10)	Rs. 265,725	
57			
58	12. TAX ON TOTAL INCOME	Rs. 25,223	

Figure 1.6(b): A sample return part (b)

- As told earlier, maximum amount of deductions that can be claimed for year 2007-2008 is Rs 1,00,000. This employee has had deductions from P.F, P.P.F (Personal Provident Fund) and his childrens' school tuition fees. All these deductions amount to Rs 100,345 which is greater than Rs 1,00,000. Therefore the amount exceeding Rs 1,00,000 cannot be claimed as deduction.
- Now, when we subtract deductions from the gross income we get the total income of the employee, that amounts to Rs 2,65,725
- Now, assume that this salary slip and return filed belongs to a women employee of the bank. Therefore, when we apply the women income tax slabs on this amount of Rs. 2,65,725 we can calculate the income tax which amounts to Rs. 25,223.

Microsoft Excel - SALARY SLIP

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	A	B	C	D
59				
60	13. SURCHARGE (ON 12 ABOVE)	Rs. 0		
61				
62	14. EDUCATION CESS (ON 12+13 ABOVE)	Rs. 757		
63				
64	15. TAX PAYABLE (12+13+14)	Rs. 25,980		
65				
66	16. RELIEF U/S 89 (ATTACH DETAILS)	Rs. 0		
67				
68	17. TAX PAYABLE (15-16)	Rs. 25,980		
69				
70	18. LESS : (A) TAX DEDUCTION AT SOURCE	Rs. 25,980		
71	(B) TAX DEDUCTED BY OTHERS	Rs. 0		
72	(C) TOTAL OF A+B	Rs. 25,980		
73				
74	19. TAX PAYABLE(+) / REFUNDABLE(-) (17-18)	Rs. 0		
75				
76				
77				
78				
79				
80				
81				
82				
83				
84				
85				
86				
87				
88				
89				
90				

Sheet1 / Sheet2 / Sheet3

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Figure 1.6(c): A Sample return part (c)

6. As mentioned earlier, there is no surcharge levied on this amount as the income does not exceed Rs 10,00,000
7. There is an education cess of 2% on the income tax. Therefore, when we apply the education cess on the income tax it comes out to be Rs 757.
8. At the end, total income tax liability including Rs 757 of education cess and Rs. 0 of surcharge comes to Rs 25,980.

2.4 CALCULATING THE PAYROLL

There are number of employees working at different levels in an organizational structure. Some are at shaft level, others at middle level and few at higher level. They could be regular, ad-hoc or contractual employees.. The calculations to arrive

at gross pay for employees are normally combined on a pay roll register. *A pay roll register is a record form that shows detailed pay roll information for each employee for the pay period and shows the summarized total for all employees included on the register.*

Separate registers may be maintained for different divisions within an organization.

Example

MONTHLY CLERICAL PAYROLL REGISTER			
NAME	SALARY	OVERTIME	GROSS EARNINGS
Rajiv	20,256	0	20,256
Neha	20,256	0	20,256
Subhash	20,256	400	20,656
Kareem	20,256	250	20,506
Bobby	20,256	400	20,656
			Rs1,02,330

This is an example showing a how a company might maintain its clerical division's pay roll register. This form of register can be maintained manually or using the latest computer technology and software depending on the institution's budget and policy.

2.5 RECORDING THE PAY ROLL

The pay roll register can be viewed as a special journal, with the gross wages total posted directly to the wage expense account and the deductions and the net pay totals to the liability accounts.

Example

Date	Journal	Debit	Credit
May 23	Wage Expense	Rs 1,02,330	
	Provident Fund		20,450
	Income Tax		10,230
	BSBS		1,025
	Wages payable		70,625

Check Your Progress II

Note: a) Write your answer in the space provided.

b) Check your answer with the possible answer provided at the end of the unit.

- 1) Mr Rajiv is an 70 year old male with a total income of Rs7,50,000 for year 2007-2008. Calculate Mr Rajiv's gross tax liability for the year.

.....

.....

2) If Mr Rajiv was 50 years old with same total income what difference would it make to his gross tax liability?

3) What will be the surcharge, marginal income if the total income is (a) Rs 6,00,000 (b) 13,00,000?

2.6 APPLICATION SOFTWARE ON INTERNET:

Today various application softwares are available on internet to manage your pay roll system. Some are freely available while others are paid ones. Apart from simply calculating tax deductions & allowances these softwares support a number of other related activities as well, for example : Leave Management, Organizational Chart Preparation, Employee Management etc. They give complete solution according to organization size and need.

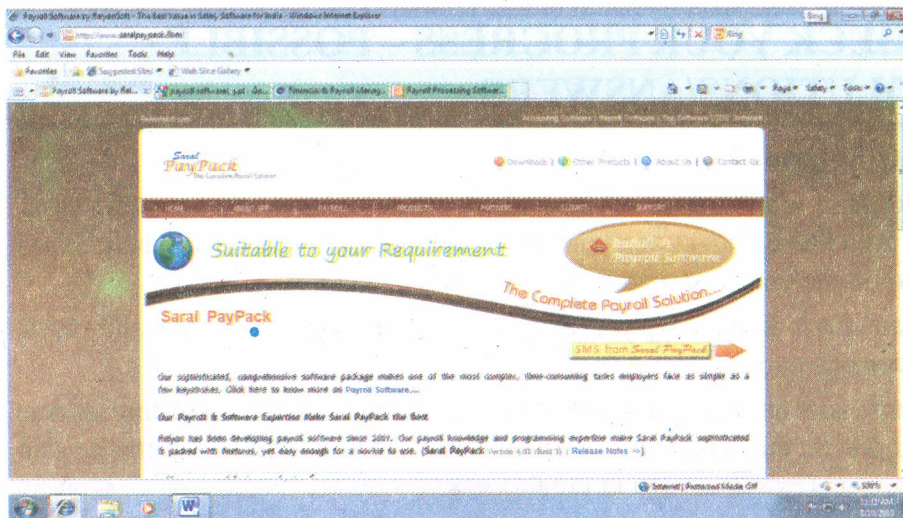


Figure 1.7: Paypack Pay roll Software:An Example of paid software

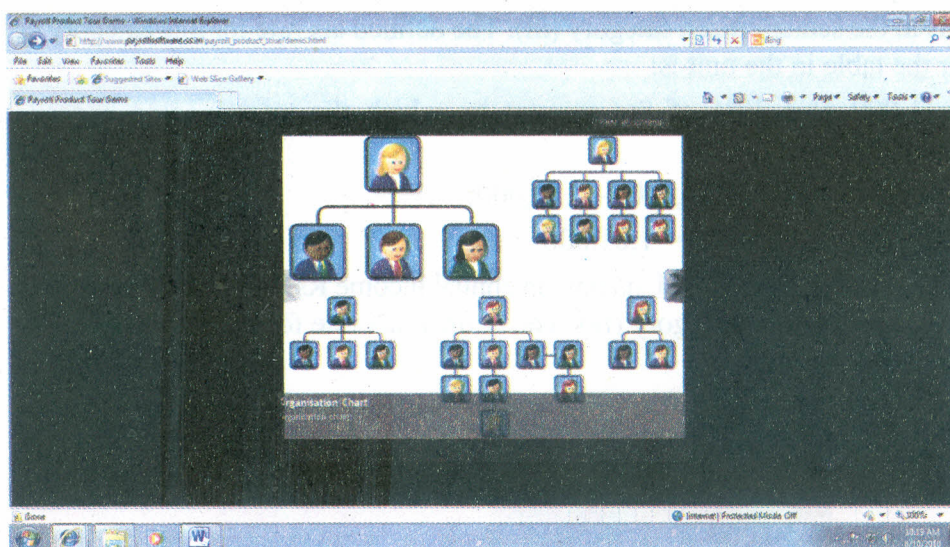


Figure 1.8: Organisation Chart in an Application Software

2.7 LET US SUM UP

In this unit we have learnt how a pay roll system works in the real world. We have also had a look at what all steps are needed to calculate **Total Income** and **Total Tax Payable**. We have worked a few practical examples to calculate tax payable using the different tax slabs. We have seen an example of a salary slip and how a return is filed. To take into account how the employer calculates and records the pay roll information in his system, we have seen a few examples of that as well. Further reading is recommended to get an in depth knowledge of the tax system.

2.8 REFERENCES OF FURTHER READING

- Payroll Accounting : Timothy F. Carse and Jefferey Slater, Mcgraw-Hill Publishing Company
- Payroll Procedures-Manual and Computer : Robert W. Fuller, South-Western Thomson Learning
- Essentials of Payroll : Management and Accounting : Steven M. Bragg, John Wiley & Sons
- Implementing Tally Payroll: A. K. Nadhani, BPB
- <http://www.saralpaypack.com>
- http://www.payrollsoftware.co.in/payroll_product_tour/demo.html

2.9 CHECK YOUR PROGRESS – POSSIBLE SOLUTIONS/ANSWERS

Check Your Progress I

- 1) An allowance is a financial help provided by the employer on a long term basis. There is no fixed amount of a kind of allowance that is exempted. These things depend on the employer and applicable Income tax rules.
- 2) There are many different types of allowances, for example, house rent allowance, education allowance.
- 3) Deduction is an amount that is deducted from the salary while calculating Income Tax. At present the maximum deduction is calculated as per the income tax slab rates..

Check Your Progress II

- 1) Mr Rajiv is 70 years old having an annual income of Rs.7,50,000. He therefore, falls in the senior citizen category (iii). The defined tax rate for this category as per the table in the unit is:

Rs.11,000 plus 30% of the amount by which the total income exceeds Rs.2,50,000

$$= 11,000 + 30\% (7,50,000 - 2,50,000)$$

$$= 11,000 + 1,50,000 = 1,61,000$$

- 2) If Mr Rajiv is 50 years old, having an annual income Rs.7,50,000, then he falls in the Male citizen category (iv). The defined tax rate for this category as per the table in the unit is:

Rs.20,500 plus 30% of the amount by which the total income exceeds Rs.2,50,000

$$= 20,500 + 30\% (7,50,000 - 2,50,000)$$

$$= 20,500 + 1,50,000 = 1,70,500$$

He has to pay Rs 9500 extra.

- 3) (a) Does not attract any surcharge, as income is below 10 lakhs
(b) Suppose Mr. X has a total income of Rs.10 lakhs.

Tax on this income = Rs.0 + 10% of Rs.40,000 + 20% of Rs.1,00,000 + 30% of Rs.7,50,000

$$= \text{Rs.}2,49,000$$

Surcharge is not attracted on this tax since the total income does not exceed Rs.10 lakhs.

However, if his total income is Rs.13,00,000, then

Tax on this income = Rs.0 + 10% of Rs.40,000 + 20% of Rs.1,00,000 + 30% of 10,50,000

$$= \text{Rs.}3,39,000$$

$$\text{Add: Surcharge} = \text{Rs.}33,900 [10\% \text{ of Rs.}3,39,000]$$

$$= \text{Rs.}3,72,900$$

On comparing the two situations, it is seen that for Rs.300,000 [i.e. Rs.13,00,000 – Rs.10,00,000] increase in the total income, the tax liability including surcharge has increased by Rs.1,23,900 [i.e. Rs.3,72,900 – Rs.2,49,000]. Therefore, no marginal relief will be given.

For self practise

The knowledge gained by reading this unit can be used to file your own tax return at the end of the financial year.

UNIT 3 ACCOUNTS

Structure

- 3.0 Objectives
- 3.1 Introduction
- 3.2 What are the objectives of Accounting?
- 3.3 Accounting Terminology
- 3.4 Accounting Equation
- 3.5 Account
- 3.6 Credit and Debit
- 3.7 Journal
- 3.8 Ledger
- 3.9 Trial Balance
- 3.10 Preparation of Final Accounts
- 3.11 Example of Application Software
- 3.12 Let Us Sum Up
- 3.13 References and Further Readings
- 3.14 Check Your Progress - Possible Solutions/Answers

3.0 OBJECTIVES

After going through the unit, you will be able to:

- define accounting;
- list accounting objectives;
- familiarize with accounting terminologies;
- define accounting equations;
- learn the usage of MS-Excel to create simple accounts; and
- prepare ledger, trial balance, final accounting and balance sheets.

3.1 INTRODUCTION

“Accounting is the art of recording, classifying and summarizing information in a significant manner in terms of money, transactions and events which are, in part at least of a financial character, and interpreting the results thereof”.

- American Institute of Certified Public Accountants

Accounting is a process which consists of the following:

- **Financial transactions:** Accounting records only those transactions which can be expressed in monetary terms. Transactions which can not be measured in terms of money can not be recorded.

- **Recording:** Transactions can be recorded in a systematic manner in books of accounts as soon as they occur. They are recorded in a book called **Journal**. This book can be subdivided into further books such as cash journal etc.
- **Classifying:** It is a process of grouping one kind of transactions at one place. The Ledger contains all the accounts of a firm and helps in grouping the transactions under various heads like all the transactions involving cash are recorded under cash account which is there in place in the ledger.
- **Summarizing:** It is a way of presenting data which is there in the ledger in a format which makes it more meaningful and easy to comprehend. This includes preparation of final accounts under various heads like Profit and Loss account, Trading account, Balance sheet etc.

This unit introduces you to some of the basic concepts of accounting and how accounts can be prepared with the help of MS Excel. Some of the terms that has been explained in the unit include Accounting, Ledger, Credit and Debit, Journal, Trial Balance etc. This unit is not attempting to teach you any detailed level of accounting but just making you aware about some of its fundamentals.

3.2 WHAT ARE THE OBJECTIVES OF ACCOUNTING?

As defined in the introduction, accounting is the art of communicating financial information about an organization to its stakeholders. Accounting involves keeping record of business transactions of an organization, followed by finding its profit and loss and financial position.. The basic objectives of accounting are:

1. **Keeping business records:** Accounting is the universal language in which business transactions are recorded. Business has a main objective of keeping a systematic record of the financial transactions which are classified under various accounts and are summarized into financial statements- **Income statement** and **Position statement**.
2. **Calculation of profit or loss:** Another major objective of accounting is to know the net result of everyday business transactions for a period. It is necessary to know whether during the period the firm is making a profit or a loss. For this purpose, a statement called the Income statement or the Profit and Loss statement is prepared. In this statement a summary of a business's revenues resulting from the transactions and subsequent expenses incurred are recorded and a comparison is made to show whether business made a loss or a profit overall during the period. In addition to all this information, record of sales, opening and closing stocks of goods and other factors having a leading impact on the profit or loss are also present.

Such a profit and loss statement is useful not just for CEO's or the management running the business, who want to know whether the policies adopted by them lead to profit or not but also for all the people who have some kind of interest in the running of the business like investors who are interested in buying stock of the business. It is also of great importance to tax authorities to know whether a business followed the procedures and guidelines for reporting of profit or loss. An example of a Profit and Loss account is given below.

Microsoft Excel - profit sheet

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E12

3	Dr.				Cr.
4	PARTICULARS	AMOUNT Rs.		PARTICULARS	AMOUNT Rs.
5					
6	To Purchase	30000		By Sales	50000
7	To Gross Profit c/d	20000			
8					
9		50000			50000
10					
11	To Shop Rent and Lighting	4000		By Gross Profit b/d	20000
12	To Wages	6000			
13	To Net Profit	10000			
14					
15		20000			20000
16					
17					

Figure 3.1: Excel worksheet showing profit and loss Account

3. **Depiction of Financial position:** For a business, knowing Profit and loss are just a part of accounting not the whole of accounting. It is also important to know the financial health of the firm as well. For this purpose, a statement containing the financial assets, liabilities and owner's equity is also prepared. Such a statement is called the **Balance sheet**. An example of a Balance sheet is given below.

Microsoft Excel - balance sheet

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B18

1	A	B	C	D	E
2	BALANCE SHEET OF				
3	as at March 31, 2005				
4	CAPITAL AND LIABILITIES	Rs.		ASSETS	Rs.
5					
6	Capital	195000		Cash in Hand	10,000
7	Creditors (Liabilities for goods purchased)	100000		Cash at Bank	45,000
8	Liabilities for expenses unpaid	10000		Debtors (Receivables)	40,000
9	Bills payable	29500		Stock of Goods on Hand	40,000
10				Furniture	10,000
11				Machinery	95000
12				Land and Buildings	95000
13					
14		335000			335000
15					
16					
17					

Figure 3.2: Excel worksheet showing balance sheet

4. **Providing the information available to various people:** One of the objectives of accounting is to provide financial facts about a business to various interested parties like owners, investors, creditors, employees, tax authorities etc. This enables them in taking the right decision towards their interest in the business.

3.3 ACCOUNTING TERMINOLOGY

Some basic terms used in accounting are as follows:

- **Capital:** It is the amount which a person has invested in a firm or can be claimed from the firm. From a firm's point of view it is liability owed to owner. **Owner is treated separate from the business.** Owner's equity, proprietorship and net worth are all different names given to capital. Expression used to describe capital is

$$\text{Capital} = \text{Assets} - \text{Liabilities}$$

- **Liabilities:** It is the amount which the firm owes to entities not including the proprietors. It can be expressed as

$$\text{Liabilities} = \text{Assets} - \text{Capital}$$

Liabilities are of two types

- Long term liability: those liabilities which are payable after a long time (generally after one year). Examples are long term loans, debenture etc.
 - Current liabilities: those liabilities which are payable in near future (generally within one year). Examples of current liabilities are creditors, bank overdrafts, short term loans etc.
- **Assets:** Assets are everything owned by a person or a company (Tangible or intangible) that can be converted into cash. *"Assets are future economic benefits, the rights, which are owned or controlled by an organisation or individual."* - Finny and Miller. Assets can be classified into
 - Fixed Assets: Fixed assets are those assets which are purchased for a continued and long term use in earning a profit in a business. It includes land, building, furniture, tools, goodwill etc.
 - Current Assets: Current assets are cash and other assets expected to be converted to cash, sold, or consumed either in a year or in the operating period. It includes cash and cash equivalents, short term investments, inventory, prepaid expenses etc.
 - **Debtors:** A person owing money to a firm for the goods or services already rendered is called a debtor. For example when a product is sold to a person on credit for which the person pays in future. He is called a debtor because he owes money to the firm till the date he pays for the product.
 - **Stock:** The term stock means, the goods which are left unsold on a specific date. Stock is valued at cost or market price whichever is less. The stock may be closing or opening stock. The term opening stock refers to the stock left unsold at the start of an accounting period. Whereas the term closing stock means the stock left unsold at the end of the accounting period. *Accounting period generally is for one year. But sometimes it may vary from firm to firm.*
 - **Receivables:** It is the amount yet to be received by the firm, except the amount due from debtors.
 - **Creditors:** Creditor is a person to whom the firm owes some amount of money. For example when goods are purchased on credit, the person or the firm lending becomes the creditor.

- **Payables:** It is a commonly used term for the amount to be paid by the firm except the amount to be paid to the creditors.
- **Proprietor:** Proprietor is the person who invests in a firm and is responsible for taking all the risks associated with the business.
- **Revenue:** It is the amount collected as a result of the operations of the firm. It is the amount added to the capital. Examples of revenue are rent, income, money received from the sale of goods etc.
- **Expense:** It is the amount spent in carrying out day to day operations of the firm, in other words amount spent by the firm to gain some revenue. Examples are payment of salaries, wages etc.
- **Income:** It refers to the profit earned during the accounting period. It can be expressed as

$$\text{Income} = \text{Revenue} - \text{Expense}$$

For example if the goods cost a firm Rs 10000 and were sold for Rs 20000 then in this case 20000 is the revenue and 10000 is the expense. Therefore the income is Rs 10000.

- **Gross Profit:** It is the difference between the revenue earned from the sales of the goods or services rendered and the direct cost incurred in producing that revenue.
- **Net Profit:** Net profit is the amount left after deducting all the expenses i.e. direct and indirect expenses from the gross profit. Net profit may be positive or negative.
- **Discount:** It is the amount of reduction allowed in price of goods by a business.

3.4 ACCOUNTING EQUATION

As already mentioned accounting is the process which begins with the financial transactions. To better understand the effect of financial transactions on business, you can use Accounting Equation. Accounting Equation is based on the dual concept, i.e., every business transaction has a two-sided effect, one on the assets and the other on the claims on the assets. There are various ways of putting the accounting equation. Examples are

$$\text{Assets} = \text{Equities (Total claims)}$$

$$\text{Assets} = \text{Liabilities} + \text{Capital}$$

$$\text{Liabilities} = \text{Assets} - \text{capital}$$

Accounting equation is also known as Balance sheet equation. At any point of time the total assets of the firm will be equal to the liability of the firm and the capital invested in the firm. If there arises any change in the amount of assets or the liabilities, then there is bound to be a subsequent change in the capital of the firm. Accounting equation can be used by keeping three simple principles in mind.

- 1) Transactions are analyzed in terms of variables like assets, liabilities, capital etc.
- 2) Transactions either increase or decrease the variables mentioned in Figure 3
- 3) Effect of the transactions are recorded in the relevant side of the equation

1. Transactions are analyzed in terms of variables like assets, liabilities, capital etc.
2. Transactions either increase or decrease the variables mentioned in Figure 3
3. Effect of the transactions are recorded in the relevant side of the equation

Accounting Equation

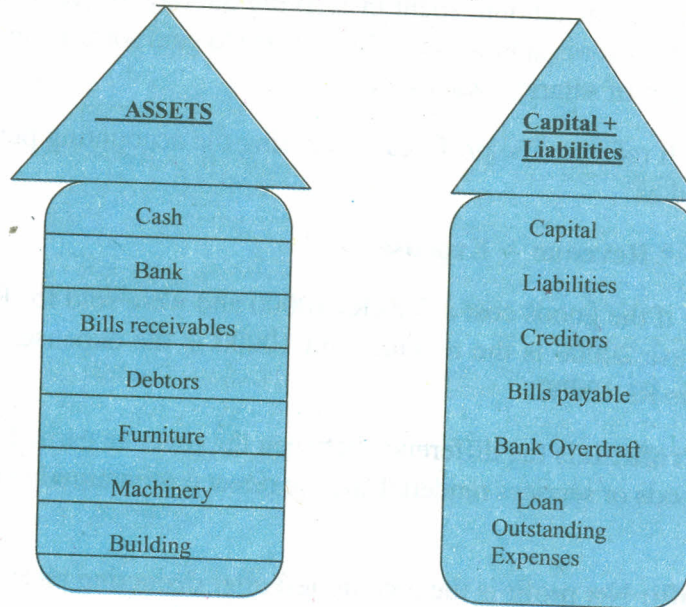


Figure 3.3: Assets, Liabilities and Capital

Now to illustrate, how accounting equation works, let us take few common examples of financial transactions which a business may carry out.

Microsoft Excel - Transactions

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	A	B	C
1	ILLUSTRATION		
2			Rs.
3	1. Ram started business with cash		40,000
4	2. Purchased goods on credit		3,000
5	3. Purchased goods for cash		1,000
6	4. Purchased furniture for cash		400
7	5. Withdrew for private use		600
8	6. Paid rent		100
9	7. Received interest		100
10	8. Sold goods on credit (cost Rs 500)		600
11	9. Paid to creditors		300
12	10. Paid salaries		100
13	11. Rent outstanding		100
14	12. Bought furniture for personal use		1,000
15			
16			
17			

Figure 3.4: Excel worksheet showing Transactions

Now in the first transaction Ram starts a business with Rs 40,000. Now using the 3 simple principles given above for application of accounting equation we can say

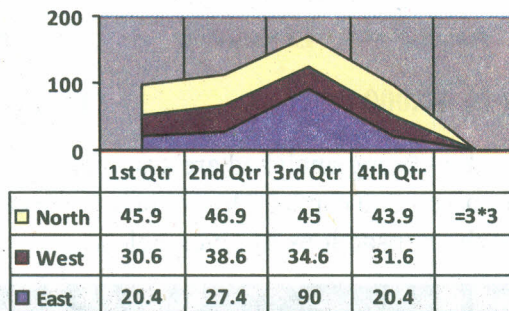
$$\text{Assets} = \text{Liabilities} + \text{Capital}$$

$$(\uparrow) 40,000 \qquad \qquad \qquad (\uparrow) 40,000$$

In this transaction, variables being analyzed are assets and capital. It is causing an increase in the variables assets and capital. Now similarly we can use the accounting equation for the rest of the transactions as given below:

Accounting Equation : Assets = Liabilities + Capital				
No.	Transactions	Assets	=	Liabilities + Capital
		Rs.		Rs.
1	Ram starts business with cash Rs.40000	40000	=	0 + 40000
2	Purchases goods on credit for Rs. 3000	(+) 3000	=	3000 + 0
	NEW EQUATION	43000	=	3000 + 40000
3	Purchases goods for cash for Rs. 1000	(+) 1000		
		(-) 1000	=	0 + 0
	NEW EQUATION	43000	=	3000 + 40000
4	Purchases furniture for cash Rs. 400	(+) 400		
		(-) 400	=	0 + 0
	NEW EQUATION	43000	=	3000 + 40000
5	Withdraws cash for private use Rs. 600	(-) 600	=	0 + (-) 600
	NEW EQUATION	42400	=	3000 + 39400
6	Pays rent for Rs. 100	(-) 100	=	0 + (-) 100
	NEW EQUATION	42300	=	3000 + 39300
7	Receives interest Rs. 100	(+) 100	=	0 + (+) 100
	NEW EQUATION	42400	=	3000 + 39400
8	Sells goods costing Rs. 500 for Rs. 600 in cash	(-) 500		
		(+) 600	=	0 + (+) 100
	NEW EQUATION	42500	=	3000 + 39500
9	Pays to creditors Rs. 300	(-) 300	=	(-) 300 + 0
	NEW EQUATION	42200	=	2700 + 39500
10	Pays salaries Rs. 100	(-) 100	=	0 + (-) 100
	NEW EQUATION	42100	=	2700 + 39400
11	Rent outstanding for Rs. 100	0	=	(+) 100 + (-) 100
	NEW EQUATION	42100	=	2800 + 39300
12	Bought furniture for personal use Rs. 1000	(-) 1000	=	0 + (-) 1000
	NEW EQUATION	41100	=	2800 + 38300

Figure 3.5: Excel worksheet showing transactions



Now we have learnt how each financial transactions affects the financial position of the business. But in the real world number of transactions for any business is very large in number; therefore a different procedure is required to record the transactions so that meaningful information can be drawn from the transactions. Let us start with knowing what account is

3.5 ACCOUNT

An account is a record of relevant transactions put together at one place under one head. It gives us the information not only in monetary terms but also the direction and effect of the transaction. For example a firm paying salaries to us employees will reduce the cash. Similarly interest earned by the firm will increase the cash, also sale of goods and payment received will have some impact on the cash flow of the firm. Now to change the cash balance with every transaction will be a very tedious job, so it will be much easier to put the transactions which reduce the cash on one side and the transactions which increase it, on the other side. This way it will be easier to calculate the net result. All the transactions which increase the cash are added to the opening balance of the account before subtracting the total of all the decreasing transactions (transactions which decrease the cash). The format of an account is given below:

NAME OF THE ACCOUNT, E.G., WAGES ACCOUNT							
Dr.							Cr.
Date	Particulars	Folio	Amount	Date	Particulars	Folio	Amount
		Page or Reference Number of Subsidiary Book, where entry was first recorded.e.g. Cash Book	Amount of the transaction	Date of the transaction	Name of the other account	Page or Reference Number of the Subsidiary book, where entry was first recorded e.g. Cash Book	Amount of the transaction

Debits = Credits

Figure 3.6: Debits versus Credits

Left side of an account as shown is known as debit side, it is exactly identical to the credit side that is the right side. General rule of entering the data is:

1. Increases in assets are recorded on the left hand side (Debit side) of an account and decreases in them on the right hand side (credit side).
2. For liability and capital the exact opposite rule applies, i.e. increases on the right hand side and decreases on the left hand side.

3.6 CREDIT AND DEBIT

Now to know more about what exactly is Credit and Debit. Credit and Debit are simply additions or subtractions from an account

Rules of debit and credit

1. Increase (↑) in assets are debits; Decrease (↓) are credits;
2. (↑) in liabilities are credits; (↓) are debits;
3. (↑) in owner's capital are credits; (↓) are debits;
4. (↑) in expenses are debits; (↓) are credits;
5. (↑) in revenues are credits; (↓) are debits

Now again having a look at few basic day to day transactions and their effect will improve the understanding for the concept.

	A	B	C	D	E	F
1	ANALYSIS OF TRANSACTIONS					
2						
3	TRANSACTIONS	ACCOUNTS INVOLVED	NATURE OF ACCOUNT	HOW AFFECTED	DEBIT Rs.	CREDIT Rs.
4						
5	1.Cash invested in business Rs.20000	Cash and Ashok's Capital	Asset Capital	Increased Increased	20000	20000
6	2.Purchased furniture for Rs.1000	Furniture and Cash	Asset Asset	Increased Decreased	1000	1000
7	3.Purchased goods on credit Rs.500	Goods (Purchases) Amar	Asset Liability	Increased Increased	500	500
8						

Figure 3.7: Excel worksheet showing analysis of transactions

Balancing an account

At the end of the period, that can be a year, month or day, it may be necessary to know the account balance. To know the balance of any account, the two sides are added then the difference between the two is calculated and this difference is the balance. Either it is a credit balance or a debit balance. The debit balance is written on the credit side as "**By Balance c/d**". After this step, the two sides of account become equal. Then the total of both sides are written opposite to each other. Then the debit balance is written on the debit side as "**To Balance b/d**". This amount then becomes the opening balance for the new period. Vice versa happens in case there is a credit balance. To gain a better understanding of this concept we can have a look at the following example of an account.

Please Remember

Generally, Personal Accounts and Real Accounts are balanced. Nominal Accounts are not balanced but are closed directly by transferring the balances to Profit and Loss accounts.

Ram's Cash Account

Dr

Cr

Date	Particulars	Fo lio	Amount	Date	Particulars	Fo lio	Amount
1.Apr	To Capital A/c	53	13,000	4.Apr	By Purchase	17	1,200
2.Apr	To Bank A/c	12	1,000	7.Apr	By Rent	19	2,200
7.Apr	To Ram	14	1,500	9.Apr	By Salary	45	3,300
9.Apr	To sales	10	3,000	9.Apr	By Shyam	18	4,300
				9.Apr	By Suresh	02	1,000
					By Balance c/d		6,500
			18,500				18,500
1.May	To Balance b/d		6,500				

Conclusion that can be drawn from balancing of an account is:

- A debit balance is either an asset (cash, bank) etc. or expenses.
- A credit balance is either income or the amount of investment.

Please Remember***Double Entry System***

The crediting and debiting of the two or more accounts for each financial transaction is known as double entry system. It signifies that every transaction has a double sided effect and both effects are recorded. Example if a business sells some product, then something goes out in return of some other thing. In this case product can be a computer in return of money. Therefore the cash increases in this transaction and inventory decreases.

3.7 JOURNAL

Journal can be described as a book where transactions are recorded carefully indicating, the accounts to debited and credited, the amount and date on which the transaction takes place. It is the initial book where transactions are recorded in a chronological manner. Each entry made in the journal is known as a **Journal Entry**.

Steps in Journalising

- First thing to be considered while preparing the journal is to decide what will be the change in the assets, liabilities and capital for a given financial transactions.
- Thirdly, the amount and the account to be debited is written first. Particulars column contains the account to be debited, then Debit (Dr) amount column contains the amount to be debited.
- Then the amount and account to be credited is written next. In particulars column the account to be credited is written but some space is left before writing the account so that the account to be debited and the account to be credited are not aligned. This is done to facilitate better reading of the journal. Then the amount to be credited is written.

The basic format for a Journal is:

Journal

Date	Particulars	L.F.	Dr. Amount (Rs)	Cr. Amount (Rs)

Please Remember

L.F stands for Ledger Folio in other words where a particular account can be found in the ledger.

Now to give a better understanding of journal and journal entries, lets take a few examples;

- a) Rohan commences business with Rs 40,000. So in this transaction the asset increases. Therefore it has to be debited. But the business now owes that amount to Rohan as capital invested. Therefore increase in capital has to be credited. The journal entry for the transaction will be

Cash A/cDr Rs 40,000	
To capital A/c	Rs 40,000.

- b) Business purchases goods worth Rs 3,000 on credit from Shyam. This transaction increases the stock of goods and therefore the purchases account has to be debited and now business owes Shyam some money, there his account is going to be credited. The journal entry for this transactions will be

Purchases A/cDr Rs 3,000	
To Shyam A/c	Rs 3,000

Further Applications

- c) Business purchases goods for cash, worth Rs 1,000. Therefore the journal entry for this transaction is going to be
- | | | | |
|---------------|--|-------------------|---------------|
| Purchases A/c | | Dr Rs 1,000 | |
| To Cash A/c | | |Rs 1,000 |
- d) Business purchases furniture worth Rs 400 for cash. The journal entry for this transaction will be
- | | | | |
|---------------|--|----------------|-------------|
| Furniture A/c | |Dr Rs 400 | |
| To Cash A/c | | |Rs 400 |
- e) Rohan withdraws Rs 600 for personal use. The journal entry for this transaction will be
- | | | | |
|--------------|--|----------------|-------------|
| Drawings A/c | |Dr Rs 600 | |
| To Cash A/c | | |Rs 600 |
- f) Business pays rent of Rs 750. The journal entry for this transaction will be
- | | | | |
|-------------|--|----------------|-------------|
| Rent A/c | |Dr Rs 750 | |
| To Cash A/c | | |Rs 750 |
- g) Business receives interest of Rs 1500. The journal entry for the transaction will be
- | | | | |
|-----------------|--|------------------|---------------|
| Cash A/c | |Dr Rs 1,500 | |
| To interest A/c | | |Rs 1,500 |
- h) Business sells goods worth Rs 4,500 to Manas on credit. The journal entry for the transaction will be
- | | | | |
|--------------|--|------------------|--------------|
| Manas A/c | |Dr Rs 4500 | |
| To Sales A/c | | |Rs 4500 |
- i) Business pays back Shyam Rs 3,000 for the goods purchased earlier on credit. The journal entry for this transaction will be
- | | | | |
|-------------|--|-----------------|---------------|
| Shyam A/c | |Dr Rs 3000 | |
| To Cash A/c | | |Rs 3,000 |
- j) Business pays salary of Rs 100. The journal entry for this transaction will be
- | | | | |
|--------------|--|----------------|------------|
| Salaries A/c | |Dr Rs 100 | |
| To Cash A/c | | |Rs100 |
- k) Business receives Cash of Rs 4500 from Manas for the goods sold on credit. The journal entry for this transaction will be
- | | | | |
|--------------|--|------------------|---------------|
| Cash A/c | |Dr Rs 4,500 | |
| To Manas A/c | | | Rs 4500 |
- l) Business sells goods worth Rs 2,000 for cash. The Journal entry for this transaction will be
- | | | | |
|--------------|--|------------------|----------|
| Cash A/c | |Dr Rs 2,000 | |
| To Sales A/c | | | Rs 2,000 |

This illustrates how the journal entries are written. Now these journal entries are recorded in a Journal.

Date	Particulars	L.F	Dr Rs.	Cr Rs.
1.	Cash A/c To Capital A/c (It is the amount invested by Ram in the business as capital)		40,000	40,000
2.	Purchases A/c To Shyam A/c (Purchased goods on credit from Shyam)		3,000	3,000
3.	Purchases A/c To Cash A/c (Goods purchased for cash)		1,000	1,000
4.	Furniture A/c To Cash A/c (Purchased furniture on cash)		400	400
5.	Drawings A/c To Cash A/c (Withdrew for personal use)		600	600
6.	Rent A/c To cash A/c (Rent paid)		750	750
7.	Cash A/c To Interest A/c (Received interest)		1500	1500
8.	Manas A/c To Sales A/c (Sold goods to Manas on credit)		4500	4500
9.	Shyam A/c To Cash A/c (Paid Shyam for the credit owed)		3,000	3,000
10.	Salaries A/c To Cash A/c (Salaries paid)		100	100
11.	Cash A/c To Manas A/c (Received cash from Manas for the goods sold on credit)		4,500	4,500
12.	Cash A/c To Sales A/c (Sold goods for cash)		2,000	2,000

Please note as these are just examples to improve the understanding of a Journal we are not considering Dates and L.F in the above Journal.

Advantages of Journal

- 1. Description of transaction:** With each entry in the journal, there is description written below in order to facilitate better understanding of the transaction. This description is called the "Narration" i.e. which narrates the transaction.

2. **Reduces errors:** The errors are reduced in quite a significant number as the debit and the credit amounts are written side by side, which makes them easy to compare.
3. **Ease of reference:** The transactions are recorded according to dates in the journal. Therefore, when a future reference is needed, it makes the task easier as the records are permanently stored in the journal.

Disadvantages of a journal

1. **Hard to use:** The Journal itself will be will very hard to use, if the number of transactions are very large in number.
2. **Cash availability:** If a firm wishes to ascertain the amount of cash balance after each day's operation. It becomes very hard to know the exact amount of cash in hand.
3. **Ineffective in representation:** It is very difficult to know the balance of each and every account, therefore there is a lack of clear presentation.

Please Remember

To overcome all the disadvantages of using a journal, a ledger book is used. But that does not mean the Journal is ineffective. In fact both the ledger book and Journal book are used in the real world.

3.8 LEDGER

It can be defined as a book which contains all the transactions carried out by a business, in a summarized and classified form. Ledger can also be termed as a book containing all the accounts being maintained by a business.

Posting of Entries

Posting is a process of transferring of entries from the journal to the ledger. Journal tells us the accounts to be credited and debited with the amounts as well. While posting the journal entry into the ledger, the amount to be debited is written on the left side of the account. Particulars column in the left hand side contains the name of the account which has to be credited, preceded by the word 'To'. The amount to be credited is written on the right side of the account. Particulars column on the right side contains the other account of the journal entry preceded by the word 'By'. To gain a better understanding just have a look at all the entries in the Journal and how they have been posted in ledger described below.

Please Remember

Balancing of the accounts is done in the same way as described earlier while explaining the working of an Account.

Dr

CASH ACCOUNT

Cr

Accounts

Date	Particulars	Folio	Amount	Date	Particulars	Folio	Amount
	To capital A/c		40,000		By Purchases A/c		1,000
	To Interest A/c		1,500		By Furniture A/c		400
	To Manas A/c		4,500		By Drawings A/c		600
	To Sales A/c		2,000		By Rent A/c		750
					By Shyam A/c		3,000
					By Salaries A/c		100
					By Balance c/d		42,150
			48,000				48,000
	To Balance b/d		42,150				

Dr

CAPITAL ACCOUNT

Cr

Date	Particulars	Folio	Amount	Date	Particulars	Folio	Amount
	To Balance c/d		40,000		By Cash A/c		40,000

Dr

PURCHASES ACCOUNT

Cr

Date	Particulars	Folio	Amount	Date	Particulars	Folio	Amount
	To Shyam A/c		3,000				
	To Cash A/c		1,000				

Dr

SHYAM

Cr

Date	Particulars	Folio	Amount	Date	Particulars	Folio	Amount
	To Cash A/c		3,000		By Purchases A/c		3,000

Dr

FURNITURE ACCOUNT

Cr

Date	Particulars	Folio	Amount	Date	Particulars	Folio	Amount
	To Cash A/c		400		To Balance c/d		400

Dr

DRAWINGS ACCOUNT

Cr

Date	Particulars	Folio	Amount	Date	Particulars	Folio	Amount
	To Cash A/c		600				

Dr

RENT ACCOUNT

Cr

Date	Particulars	Folio	Amount	Date	Particulars	Folio	Amount
	To Rent A/c		750				

Dr

INTEREST ACCOUNT

Cr

Date	Particulars	Folio	Amount	Date	Particulars	Folio	Amount
					By Cash A/c		1,500

Dr

MANAS

Cr

Date	Particulars	Folio	Amount	Date	Particulars	Folio	Amount
	To Sales A/c		4500		By Cash A/c		4,500

Date	Particulars	Folio	Amount	Date	Particulars	Folio	Amount
					By Manas A/c		4,500
					By Cash A/c		2,000

Date	Particulars	Folio	Amount	Date	Particulars	Folio	Amount
	To Cash A/c		100				

Please Remember

We are not considering Dates and Folio here, as it is just an example to improve the understanding of concepts of a Ledger.

Check Your Progress I

Note: a) Write your answer in the space provided.

b) Check your answer with the possible answer provided at the end of the unit.

- 1) What is an account? Prepare a capital account for a business if the initial investment is of Rs 1,50,000.

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- 2) State the significance of the accounting equation. Also write the accounting equation.

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- 3) If Ram purchases tools worth Rs 10,000 for his business, show the effect of such a transaction using the accounting equation?

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3.9 TRIAL BALANCE

Trial balance can be defined as a statement separately showing the credit and debit balances of all the accounts in the ledger book. It can be prepared by writing down each and every account in the ledger book then entering the totals of debits and the credits in separate columns. The total of the debit column should be equal to the total of the credit column. This is also known as the totals method to compute the trial balance. Trial balance is based on the principle of Double Entry system which has been explained previously, i.e. the amount written to the debit sides of various accounts will equal the amounts written on the credit side of the various accounts.

While preparing the Trial balance, few points to be kept in mind are

- Date on which Trial balance is prepared is written on the top.
- First column contains the name of the account.
- In the next column, the debit amount of the account is written.
- Third column contains the total of the credit side of the account.

- Date on which Trial balance is prepared is written on the top.
- First column contains the name of the account.
- In the next column, the debit amount of the account is written.
- Third column contains the total of the credit side of the account.
- The two columns are totalled at the end.

Working of a Trial balance is explained below using the entries from the ledger.

S.No	Name Of Accounts	L.F.	Dr.Total (Rs)	Cr Total (Rs)
1.	Cash A/c		48,000	5,850
2.	Capital A/c		-----	40,000
3.	PurchasesA/c		4,000	-----
4.	Shyam		3,000	3,000
5.	Furniture A/c		400	-----
6.	Drawings A/c		600	----
7.	Rent A/c		750	-----
8.	Interest A/c		-----	1,500
9.	Manas		4,500	4,500
10.	Sales A/c		-----	6,500
11.	Salaries A/c		100	-----
			61,350	61,350

Objectives of Preparing the Trial Balance

- 1. Accuracy of Ledger Accounts:** Trial balance is the best way to know whether posting of entries from the journal to the ledger book has been done without committing any arithmetical mistakes or not.
- 2. Summary of accounts:** The trial balance helps in summarizing the ledger content therefore, minimizing the use of ledgers. Ledger is only referred to when detail of an account is required.
- 3. Finding of errors:** Trial balance also helps in locating errors, which might have crept in while posting the entries from journal to the ledger book. But only arithmetical errors can be found using the trial balance, not the logical ones.

Limitations of Trial Balance

- 1. Entry posted twice:** If an entry has been posted twice in the ledger, it won't come up while computing the Trial Balance.
- 2. Entry not posted at all:** If the person doing the entries forgets to post one entry into the ledger, that error can not be traced using the Trial balance.
- 3. Amount written wrongly:** If an amount is wrongly written in both the debit and the credit side in the ledger, then Trial Balance is unsuccessful in locating the error.

3.10 PREPARATION OF FINAL ACCOUNTS

As already mentioned above, to present the data which is there in the ledger in a more meaningful and useful manner we prepare the Final Accounts. It is a step by step procedure starting with the preparation of Trading account, then Profit and Loss account is prepared and finally the input from the Profit and Loss account is used to prepare the Balance Sheet. Now let us take an example to understand the preparation of the Final Accounts.

Illustration: A Trial balance is given for a business, prepared on 31st December, 2005. We need to prepare the Final Accounts from the data provided. Also the value of the Closing stock on 31st December, 2005 is given to us i.e. Rs 5000.

Trial Balance

As at 31st December, 2005

Particulars	Dr Amount (Rs)	Cr Amount (Rs)
Capital		15,000
Stock	3,000	
Cash At bank	1,000	
Cash in Hand	500	
Machinery	10,000	
Furniture	1,300	
Purchases	20,000	
Wages	5,000	
Carriage	3,300	
Salaries	7,000	
Discount Given	400	
Discount Received		500
Advertising	5,000	
Office expenses	4,000	
Sales		50,000
Sundry Debtors	9,000	
Sundry Creditors		4,000
	69,500	69,500

Trading Account

Now firstly, Trading account is prepared from the Trial balance given to us. Trading account forms an important part of financial statements. It helps in determining gross profit or gross loss during an accounting period. It includes sales, all the activities directly related to sales of stock i.e. wages, purchases, returns related to purchases and sales, power and fuel, factory lighting etc. Gross profit can be determined using the formula

$$\text{Gross Profit} = \text{Net Sales} - \text{Cost Of Goods Sold}$$

$$\text{Net Sales} = \text{Total Sales} - \text{Sales Return}$$

$$\text{Cost of Goods Sold} = \text{Opening Stock} + \text{Net Purchases} + \text{Direct} \\ + \text{Direct Expenses} - \text{Closing Stock.}$$

$$\text{Net Purchases} = \text{Total Purchases} - \text{Purchases Returns}$$

While preparing the Trading account, opening stock and purchases are written on the debit side, sales and the closing stock is written on the credit side. If the credit side is bigger than the debit side, the difference is written on the debit side as Gross Profit and this amount is transferred to the Profit and Loss account on the credit side and exact opposite happens in case of a Gross Loss

Particulars	Amount (Rs)	Particulars	Amount (Rs)
To Opening Stock	3,000	By Sales	50,000
To Purchases	20,000	By Closing Stock	5,000
To Wages	5,000		
To Carriage	3,300		
To Gross Profit transferred to Profit and Loss A/c	23,700		
	55,000		55,000

Profit and Loss Account

Profit and Loss Account is prepared to ascertain the net profit or net loss for a business for a given accounting period. It begins with the amount which is transferred from the Trading account (in case of a gross profit it recorded in the credit side and in case of a loss it is recorded on the debit side). Then all the indirect expenses which have not been debited to the Trading account are debited to the Profit and Loss account. Indirect Expenses include rent, postage, salaries, advertising, packing, carriage outwards etc. If there is any gain other than the expenses then it is included in the credit side of the Profit and Loss account. If the total of the credit side is greater than the total of the debit side, then the margin represents net profit and vice versa.

PROFIT AND LOSS ACCOUNT

for the year ended 31st Dec, 2005

Particulars	Amount (Rs)	Particulars	Amount (Rs)
To salaries	7,000	By Gross Profit Transferred From Trading A/c	23,700
To Discount Given	400	By Discount Received	500
To Advertising	5,000		
To Office Expenses	4,000		
To Net Profit Transferred to Capital A/c	7,800		
	24,200		24,200

Balance Sheet

Balance sheet can be defined as a statement which represents the assets and liabilities of a firm at a certain date. Balance sheet is prepared from the Real and Personal accounts. The logic behind preparing the balance sheet is to understand what business owes and what it owns on a certain date. It gives us a clear picture of the financial position of the business.

Generally the items that can be found in a balance sheet of a firm are

BALANCE SHEET OF *****

As at *****

Liabilities	Amount (Rs)	Assets	Amount (Rs)
Trade Creditors		Cash in Hand	
Bills Payable		Cash at Bank	
Bank Overdraft		Bills Receivables	
Mortgage		Book Debts	
Loans (Cr)		Loans (Dr)	
Capital		Closing Stock	
Add Interest on Capital		Investments	
Add Net Profit		Furniture	
		Land and Building	
Less Drawings		Goodwill	
Less Income Tax		Patents	
Less Net Loss		Plant and Machinery	

Now Balance sheet can be prepared from the using the value of the net profit that has been transferred from the Profit and Loss account.

BALANCE SHEET

as at 31st Dec, 2005

Particulars	Amount (Rs)	Particulars	Amount (Rs)
Current Liabilities		Current Assets	
Sundry Creditors	4,000	Cash At bank	1,000
Owner's Fund		Cash in Hand	500
Capital	15,000	Sundry Debtors	9,000
Add: Net Profit	7,800	Closing Stock	5,000
	22,800	Fixed Assets	
		Furniture	1,300
		Machinery	10,000
	26,800		26,800

Check Your Progress II

Note: a) Write your answer in the space provided.

b) Check your answer with the possible answer provided at the end of the unit.

- 1) What is the importance of preparing a Trial Balance? Can Balance sheet be prepared without the Trial Balance?

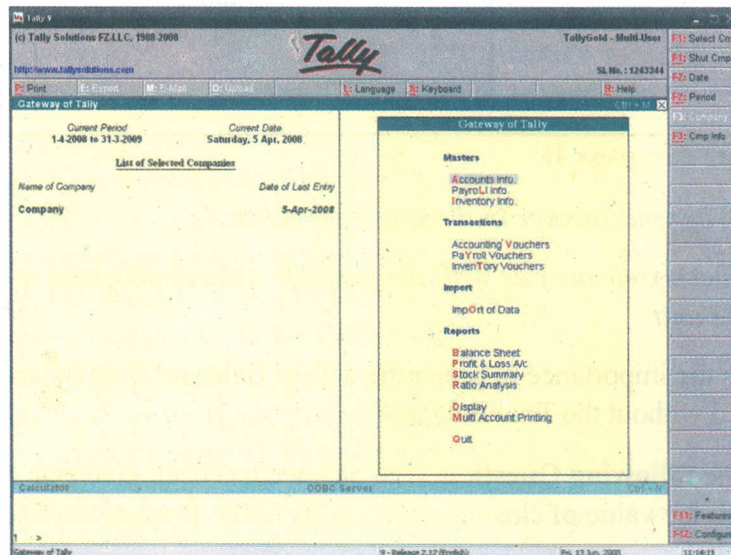
Attempt the following Question Trial balance has been given, along with the closing with the value of closing stock i.e. Rs 6000. Prepare the final accounts using the data

Particulars	Dr . Amount	Cr.Amount
Capital	25,000	
Stock	4,000	

Particulars	Dr . Amount	Cr.Amount
Capital		25,000
Stock	4,000	
Cash At bank	1,000	
Cash in Hand	1000	
Machinery	10,000	
Furniture	1,300	
Purchases	31,000	
Wages	5,000	
Carriage	3,200	
Salaries	7,000	
Discount Given	500	
Discount Received		500
Advertising	5,500	
Office expenses	5,000	
Sales		55,000
Sundry Debtors	10,000	
Sundry Creditors		4,000
	84,500	84,500

3.11 EXAMPLE OF APPLICATION SOFTWARE

Today, various application softwares are available for accounting. Some are freely available on internet while others are paid ones. Some Softwares are embedded with one or more applications as well, for example Pay roll, Graphics etc. One of the more popular ones' is *Tally* accounting software (egTally.ERP 9).



3.12 LET US SUM UP

In this unit we have covered a wide range of topics starting from the very basic of accounts, its definition, objectives etc. We have also learnt about accounting equation, preparation of a Journal and how Journal is used to prepare a ledger. Then we have understood the significance of a Trial balance and preparation of Trading Account,

Profit and Loss Account using the Trial Balance. Important thing to be kept in mind here is that Final Accounts are one of the best ways to represent the accounting information in a summarized manner, which makes it easier to comprehend by all the users. Yet no unit can be comprehensive enough to cover all the aspects of accounts. Therefore further reading of books is required if one wishes to get detailed knowledge of various topics of accounts.

3.13 REFERENCES AND FURTHER READINGS

- Payroll Accounting : Timothy F. Carse and Jeffery Slater, Mcgraw-Hill Publishing Company
- Computer Accounting with Tally 7.2 : Firewall Media
- Computer Applications in Accounting : Neeraj Sharma, Kalyani Publisher
- Management of Computer Accounting : Mamta Jain and Man Chand Khandela, Arihant publishing House
- www.tallysolutions.com

3.14 CHECK YOUR PROGRESS - POSSIBLE SOLUTIONS/ANSWERS

Check Your Progress I

- 1) An account is a record of relevant transactions of an organisation that are put together at one place under one head. An account also involves the direction and effect of the transaction.

The Capital account for the said investment is shown below.

Dr				CAPITAL ACCOUNT				Cr			
Date	Particulars	Folio	Amount	Date	Particulars	Folio	Amount				
	To Balance c/d		150,000		By Cash A/c		150,000				

- 2) The significance of accounting equation is in determining how assets were financed. For example assets may be acquired from borrowed money - they appear as liability or by paying own money – they appear as ownership equity. Sample accounting equations are:

$$\text{Assets} = \text{Equities (Total claims)}$$

$$\text{Assets} = \text{Liabilities} + \text{Capital}$$

$$\text{Liabilities} = \text{Assets} - \text{capital}$$

- 3)

Transaction

Number	Assets	Liabilities	Equity	Explanation
1	+ 10,000	+ 10,000		Purchase from cash or other assets

Check Your Progress II

- 1) Trial Balance is a statement showing the credit and debit balances of all the accounts separately in the ledger book. The total of the debit column and credit columns should match in a Trial Balance. Trial balance should be done prior to Balance Sheet to rule out mistakes.

Suggestion for doing the question: Please make the following accounts for the data given on the lines as discussed in the Unit. The accounts that you can make include "Trading Account", "Profit and Loss Account" and the "Balance Sheet" Use MS Excel to create the Accounts.

BPR-005: Basic Computer Literacy

Block 1 : Basics of Computer

Unit 1 : Introduction to Computers

Unit 2 : Network

Unit 3 : Operating System

Block 2 : Basic Applications of Computers

Unit 1 : Introduction to MS-Word

Unit 2 : Introduction to MS-Excel

Unit 3 : Power Point Presentation

Block 3 : Further Applications

Unit 1 : Internet Overview

Unit 2 : Pay Roll

Unit 3 : Accounts

NOTES

About the Project

IGNOU through the Ministry of Panchayati Raj and under the sponsorship of United Nations Development Programme (UNDP) undertook a project on '**Capacity Building of PRIs Through a Multi-Mode Training Intervention**' as an attempt at empowering and capacity building of elected members of *Panchayats* and development functionaries. It also aimed at institutionalizing mechanisms to strengthen this capacity building intervention. The Project covered six northern states including **Bihar, Haryana, Madhya Pradesh, Rajasthan, Chhattisgarh** and **Uttarakhand** with the **Indira Gandhi National Open University (IGNOU)** as the implementing agency. The Project envisaged joint action by Government established institutions (SIRDs) and NGOs engaged in Capacity Building of PRIs.

In terms of strategy it involved developing a **suitable learning package through a balanced mix of distance learning and conventional training**; adapting the materials to local requirements and implementing the capacity building intervention through distance mode for the elected members of *Panchayats* and train associated development functionaries through face to face mode through a network of SIRDs and NGOs.

In terms of activities and output of the Project, the Project has been able to prepare a multi-media package consisting of 11 self-learning booklets and six video programmes for distribution among the *Panchayats*; undertook capacity building of Collaborating Institutions (CIs); published of local Governance updates in each participating state; conducted BDOs Symposia and orientation programmes for development functionaries. One of the major activities taken up by the above CIs was to undertake hardware mapping of *Panchayats* in 4 Districts in each participating State. The Diploma in Panchayat Level Administration and Development, planned and developed as a part of academic activities of the School of Continuing Education, was also sponsored under the above Project.

About IGNOU & SOCE

The **Indira Gandhi National Open University**, established by an Act of Parliament in 1985, has emerged as the largest Mega University in the democratic world. The University offers 486 Certificates, Diploma, Degree and Doctoral programmes through its 21 schools of Study, 12 Divisions, 14 Centres, 61 Regional Centres, over 3,000 Study Centres, 67 Partner Institutions spread across 35 countries. Additional help is also sought from about 6,000 experts from conventional universities and other organizations, and about 45,000 part-time academic counselors.

IGNOU caters to learners from rural and tribal areas, disability groups, jails and rehabilitation centres, government and non-governmental organizations, parents and home-makers, the employers and the employed.

One of the mandates of the University is to reach out to the disadvantaged by offering programmes in all parts of the country at affordable cost. IGNOU, the National Resource Centre for Open and Distance Learning with international recognition and presence, is expected to provide seamless access to sustainable **and learner centric quality education, skill upgradation and training** to all by using innovative technologies and methodologies and ensuring convergence of existing systems for massive human resource required for **promoting integrated national development** and global understanding.

The **School of Continuing Education (SOCE)** one of the oldest Schools currently has four disciplines assigned to it by the Academic Council. These include: **Rural Development, Nutritional Sciences, Child Development and; Home Science**. The School has currently on offer Ph.D programmes in three discipline areas, two Master's Degree level programmes, one Post Graduate Diploma, two Diploma Programmes, four Certificate Programmes and four elective and application oriented courses in the above mentioned disciplines.