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BASIC CONCEPTS OF COMPUTER

1.1 INTRODUCTION

A computer is a programmable machine designed to perform arithmetic and logical operations automatically and sequentially on the input given by the user and gives the desired output after processing. Computer components are divided into two major categories namely hardware and software. Hardware is the machine itself and its connected devices such as monitor, keyboard, mouse etc. Software are the set of programs that make use of hardware for performing various functions.

1.2 OBJECTIVES

After going through this lesson you would be able to:

- familiarise yourself with characteristics of computers
- identify the basic components of a computer
- explain the importance of various units of a computer
- differentiate between system software and application software
- explain the importance of operating system
- get acquainted with open source
- appreciate the need of computer security

1.3 CHARACTERISTICS OF COMPUTERS

The characteristics of computers that have made them so powerful and universally useful are speed, accuracy, diligence, versatility and storage capacity. Let us discuss them briefly.

Speed

Computers work at an incredible speed. A powerful computer is capable of performing about 3-4 million simple instructions per second.

Accuracy

In addition to being fast, computers are also accurate. Errors that may occur can almost always be attributed to human error (inaccurate data, poorly designed system or faulty instructions/programs written by the programmer)

Diligence

Unlike human beings, computers are highly consistent. They do not suffer from human traits of boredom and tiredness resulting in lack of concentration. Computers, therefore, are better than human beings in performing voluminous and repetitive jobs.

Versatility

Computers are versatile machines and are capable of performing any task as long as it can be broken down into a series of logical steps. The presence of computers can be seen in almost every sphere – Railway/Air reservation, Banks, Hotels, Weather forecasting and many more.

Storage Capacity

Today's computers can store large volumes of data. A piece of information once recorded (or stored) in the computer, can never be forgotten and can be retrieved almost instantaneously.

1.4 COMPUTER ORGANIZATION



Fig.1.1: Computer System

A computer system (fig.1.1) consists of mainly four basic units; namely input unit, storage unit, central processing unit and output unit. Central Processing unit further includes Arithmetic logic unit and control unit, as shown in Figure 1.2.

A computer performs five major operations or functions irrespective of its size and make. These are

- it accepts data or instructions as input,
- it stores data and instruction
- it processes data as per the instructions,
- it controls all operations inside a computer, and
- it gives results in the form of output.

1.4.1 Functional Units:

a. Input Unit: This unit is used for entering data and programs into the computer system by the user for processing.

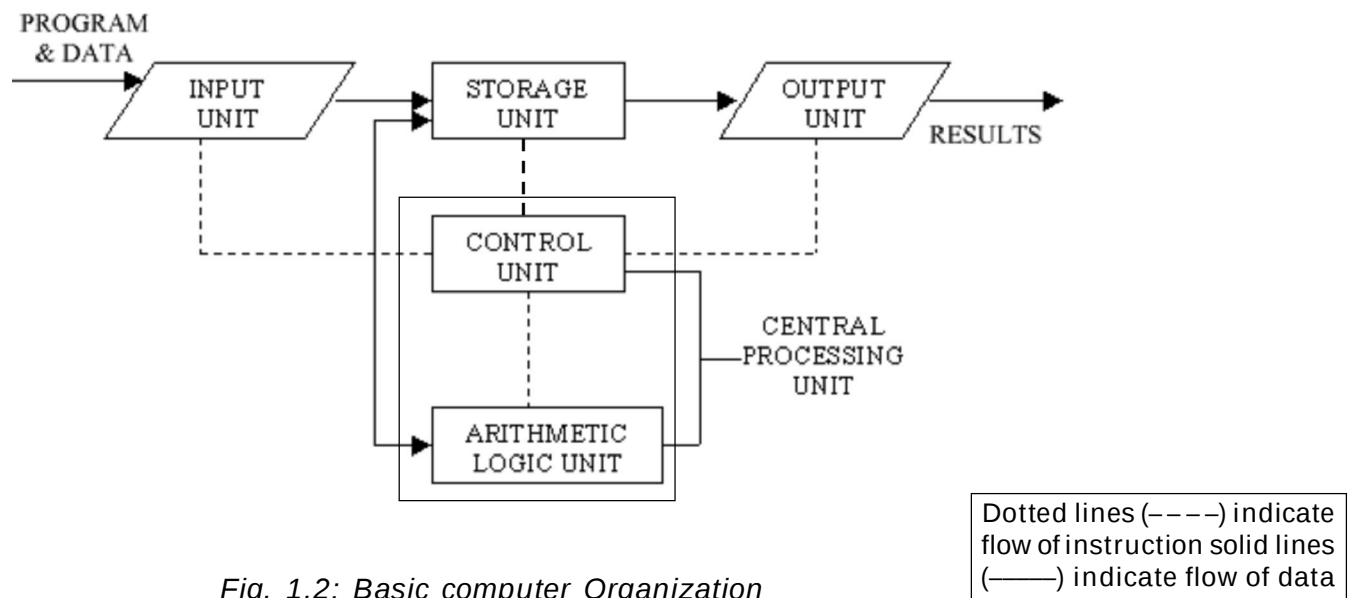


Fig. 1.2: Basic computer Organization

b. Storage Unit: The storage unit is used for storing data and instructions before and after processing.

- c. **Output Unit:** The output unit is used for storing the result as output produced by the computer after processing.
- d. **Processing:** The task of performing operations like arithmetic and logical operations is called processing. The Central Processing Unit (CPU) takes data and instructions from the storage unit and makes all sorts of calculations based on the instructions given and the type of data provided. It is then sent back to the storage unit. CPU includes Arithmetic logic unit (ALU) and control unit (CU)
 - **Arithmetic Logic Unit:** All calculations and comparisons, based on the instructions provided, are carried out within the ALU. It performs arithmetic functions like addition, subtraction, multiplication, division and also logical operations like greater than, less than and equal to etc.
 - **Control Unit:** Controlling of all operations like input, processing and output are performed by control unit. It takes care of step by step processing of all operations inside the computer.

1.4.2 Memory

Computer's memory can be classified into two types; primary memory and secondary memory

- a. **Primary Memory can be further classified as RAM and ROM.**
 - **RAM** or Random Access Memory is the unit in a computer system. It is the place in a computer where the operating system, application programs and the data in current use are kept temporarily so that they can be accessed by the computer's processor. It is said to be 'volatile' since its contents are accessible only as long as the computer is on. The contents of RAM are no more available once the computer is turned off.
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ROM or Read Only Memory is a special type of memory which can only be read and contents of which are not lost even when the computer is switched off. It typically contains manufacturer's instructions. Among other things, ROM also stores an initial program called the 'bootstrap loader' whose function is to start the operation of computer system once the power is turned on.

b. Secondary Memory

RAM is volatile memory having a limited storage capacity. Secondary/auxiliary memory is storage other than the RAM. These include devices that are peripheral and are connected and controlled by the computer to enable permanent storage of programs and data.

Secondary storage devices are of two types; magnetic and optical. Magnetic devices include hard disks and optical storage devices are CDs, DVDs, Pen drive, Zip drive etc.

- **Hard Disk**



Fig. 1.3: Hard Disk

Hard disks are made up of rigid material and are usually a stack of metal disks sealed in a box. The hard disk and the hard disk drive exist together as a unit and is a permanent part of the computer where data and programs are saved. These disks have storage capacities ranging from 1GB to 80 GB and more. Hard disks are rewritable.

- **Compact Disk**

Compact Disk (CD) is portable disk having data storage capacity between 650-700 MB. It can hold large amount of information such as music, full-motion videos, and text etc. CDs can be either read only or read write type.

- **Digital Video Disk**

Digital Video Disk (DVD) is similar to a CD but has larger storage capacity and enormous clarity. Depending upon the disk type it can store several Gigabytes of data. DVDs are primarily used to store music or movies and can be played back on your television or the computer too. These are not rewritable.

1.4.3 Input / Output Devices:

These devices are used to enter information and instructions into a computer for storage or processing and to deliver the processed data to a user. Input/Output devices are required for users to communicate with the computer. In simple terms, input devices bring information INTO the computer and output devices bring information OUT of a computer system. These input/output devices are also known as peripherals since they surround the CPU and memory of a computer system.

a) Input Devices

An input device is any device that provides input to a computer. There are many input devices, but the two most common ones are a keyboard and mouse. Every key you press on the keyboard and every movement or click you make with the mouse sends a specific input signal to the computer.

- **Keyboard:** The keyboard is very much like a standard typewriter keyboard with a few additional keys. The basic QWERTY layout of characters is maintained to make it easy to use the system. The additional keys are included to perform certain special functions. These are known as function keys that vary in number from keyboard to keyboard. (see fig. 1.4)
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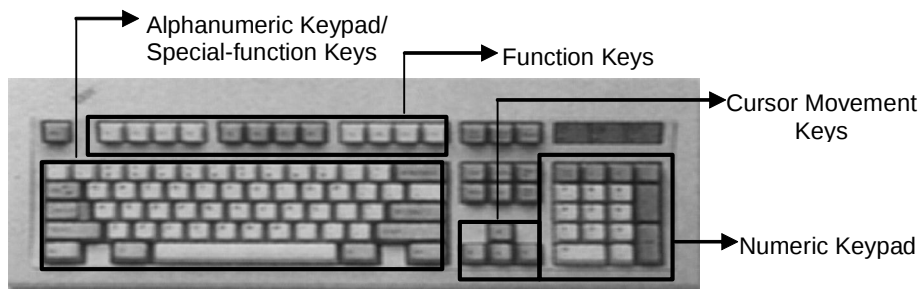


Fig. 1.4: Keyboard

- **Mouse:** A device that controls the movement of the cursor or pointer on a display screen. A mouse is a small object you can roll along a hard and flat surface (Fig. 1.5). Its name is derived from its shape, which looks a bit like a mouse. As you move the mouse, the pointer on the display screen moves in the same direction.



Fig. 1.5: Mouse

- **Trackball:** A trackball is an input device used to enter motion data into computers or other electronic devices. It serves the same purpose as a mouse, but is designed with a moveable ball on the top, which can be rolled in any direction.
 - **Touchpad:** A touch pad is a device for pointing (controlling input positioning) on a computer display screen. It is an alternative to the mouse. Originally incorporated in laptop computers, touch pads are also being made for use with desktop computers. A touch pad works by sensing the user's finger movement and downward pressure.
 - **Touch Screen:** It allows the user to operate/make selections by simply touching the display screen. A display
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screen that is sensitive to the touch of a finger or stylus. Widely used on ATM machines, retail point-of-sale terminals, car navigation systems, medical monitors and industrial control panels.

- **Light Pen:** Light pen is an input device that utilizes a light-sensitive detector to select objects on a display screen. (Fig. 1.6)

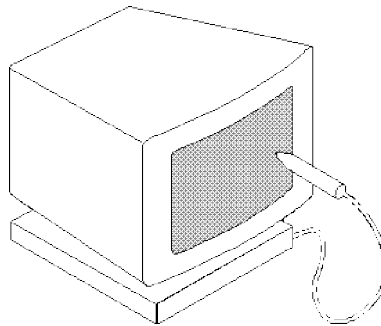


Fig. 1.6 Light Pen

- **Magnetic ink character recognition (MICR):** MICR can identify character printed with a special ink that contains particles of magnetic material. This device particularly finds applications in banking industry.
 - **Optical mark recognition (OMR):** Optical mark recognition, also called mark sense reader is a technology where an OMR device senses the presence or absence of a mark, such as pencil mark. OMR is widely used in tests such as aptitude test.
 - **Bar code reader:** Bar-code readers are photoelectric scanners that read the bar codes or vertical zebra strips marks, printed on product containers. These devices are generally used in super markets, bookshops etc.
 - **Scanner:** Scanner is an input device that can read text or illustration printed on paper and translates the information into a form that the computer can use. A scanner works by digitizing an image. (Fig. 1.7)
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Fig. 1.7 Scanner

b. Output Devices:

Output device receives information from the CPU and presents it to the user in the desired form. The processed data, stored in the memory of the computer is sent to the output unit, which then converts it into a form that can be understood by the user. The output is usually produced in one of the two ways – on the display device, or on paper (hard copy).

- **Monitor:** is often used synonymously with “computer screen” or “display.” Monitor is an output device that resembles the television screen (fig. 1.8). It may use a Cathode Ray Tube (CRT) to display information. The monitor is associated with a keyboard for manual input of characters and displays the information as it is keyed in. It also displays the program or application output. Like the television, monitors are also available in different sizes.



Fig. 1.8: Monitor

- **Printer:** Printers are used to produce paper (commonly known as hardcopy) output. Based on the technology used, they can be classified as Impact or Non-impact printers.

Impact printers use the typewriting printing mechanism wherein a hammer strikes the paper through a ribbon in order to produce output. Dot-matrix and Character printers fall under this category.

Non-impact printers do not touch the paper while printing. They use chemical, heat or electrical signals to etch the symbols on paper. Inkjet, Deskjet, Laser, Thermal printers fall under this category of printers.

- **Plotter:** Plotters are used to print graphical output on paper. It interprets computer commands and makes line drawings on paper using multicoloured automated pens. It is capable of producing graphs, drawings, charts, maps etc. (Fig. 1.9)

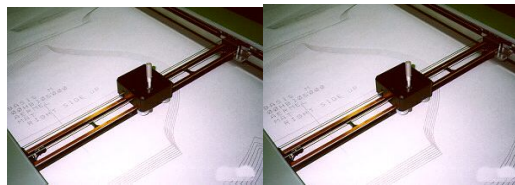


Fig. 1.9 Plotter

- **Facsimile (FAX):** *Facsimile machine*, a device that can send or receive pictures and text over a telephone line. Fax machines work by digitizing an image.
 - **Sound cards and Speaker(s):** An expansion board that enables a computer to manipulate and output sounds. Sound cards are necessary for nearly all CD-ROMs and have become commonplace on modern personal computers. Sound cards enable the computer to output sound through speakers connected to the board, to record sound input from a microphone connected to the computer, and manipulate sound stored on a disk.
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1.5 COMPUTER SOFTWARE

Computer software is the set of programs that makes the hardware perform a set of tasks in particular order. Hardware and software are complimentary to each other. Both have to work together to produce meaningful results. Computer software is classified into two broad categories; system software and application software.

1.5.1 System Software:

System software consists of a group of programs that control the operations of a computer equipment including functions like managing memory, managing peripherals, loading, storing, and is an interface between the application programs and the computer. MS DOS (Microsoft's Disk Operating System), UNIX are examples of system software.

1.5.2 Application software:

Software that can perform a specific task for the user, such as word processing, accounting, budgeting or payroll, fall under the category of application software. Word processors, spreadsheets, database management systems are all examples of general purpose application software.

Types of application software are:

- **Word processing software:** The main purpose of this software is to produce documents. MS-Word, Word Pad, Notepad and some other text editors are some of the examples of word processing software.
 - **Database software:** Database is a collection of related data. The purpose of this software is to organize and manage data. The advantage of this software is that you can change the way data is stored and displayed. MS access, dBase, FoxPro, Paradox, and Oracle are some of the examples of database software.
 - **Spread sheet software:** The spread sheet software is used to maintain budget, financial statements, grade sheets, and sales records. The purpose of this software is organizing numbers. It also allows the users to perform
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simple or complex calculations on the numbers entered in rows and columns. MS-Excel is one of the example of spreadsheet software.

- **Presentation software:** This software is used to display the information in the form of slide show. The three main functions of presentation software is editing that allows insertion and formatting of text, including graphics in the text and executing the slide shows. The best example for this type of application software is Microsoft PowerPoint.
- **Multimedia software:** Media players and real players are the examples of multimedia software. This software will allow the user to create audio and videos. The different forms of multimedia software are audio converters, players, burners, video encoders and decoders.

1.6 COMPUTER LANGUAGE

Computer language or programming language is a coded syntax used by computer programmers to communicate with a computer. Computer language establishes a flow of communication between software programs. The language enables a computer user to dictate what commands the computer must perform to process data. These languages can be classified into following categories (Fig. 1.10).

1. Machine language
2. Assembly language
3. High level language

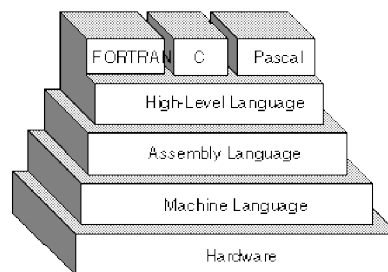


Fig. 1.10: Computer Languages

1.6.1 Machine Language

Machine language or machine code is the native language directly understood by the computer's central processing unit or CPU. This type of computer language is not easy to understand, as it only uses a binary system, an element of notations containing only a series of numbers consisting of one and zero, to produce commands.

1.6.2 Assembly Level Language

Assembly Level Language is a set of codes that can run directly on the computer's processor. This type of language is most appropriate in writing operating systems and maintaining desktop applications. With the assembly level language, it is easier for a programmer to define commands. It is easier to understand and use as compared to machine language.

1.6.3 High Level Language

High Level Languages are user-friendly languages which are similar to English with vocabulary of words and symbols. These are easier to learn and require less time to write.

They are problem oriented rather than 'machine' based.

Program written in a high-level language can be translated into many machine languages and therefore can run on any computer for which there exists an appropriate translator.

1.6.4 Compiler & Interpreter

These are the programs that execute instructions written in a high-level language. There are two ways to run programs written in a high-level language. The most common is to compile the program; the other method is to pass the program through an interpreter.

a. Compiler

A compiler is a special program that processes statements written in a particular programming language called as source code and converts them into machine language or "machine code" that a computer's processor uses.

Compiler translates high level language programs directly into machine language program. This process is called compilation. (Fig 1.11)

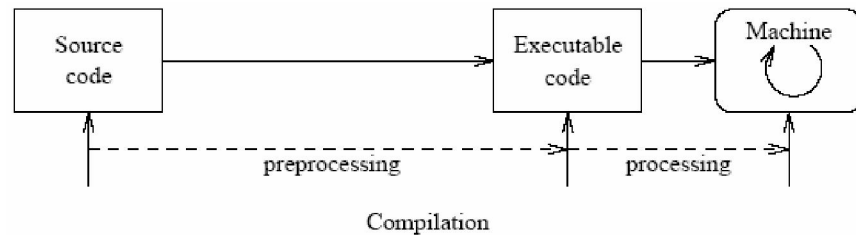


Fig. 1.11: Compilation

b. Interpreter

An interpreter translates high-level instructions into an intermediate form, which it then executes. Compiled programs generally run faster than interpreted programs. The advantage of an interpreter, however, is that it does not need to go through the compilation stage during which machine instructions are generated. This process can be time-consuming if the program is long. (Fig 1.12)

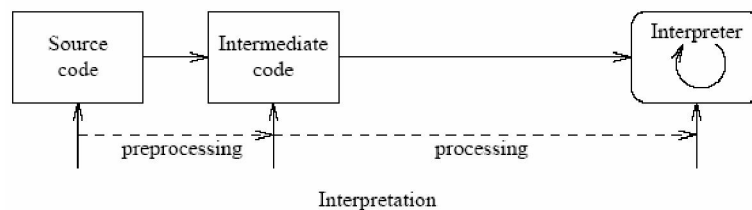


Fig. 1.12: Interpretation

1.6.5 Open source software:

Open source refers to a program or software in which the source code (the form of the program when a programmer writes a program in a particular programming language) is available to the general public for use and/or modification from its original design free of charge.

Open source code is typically created as a collaborative effort in which programmers improve upon the code and share the changes within the community.

The rationale for this movement is that a larger group of programmers not concerned with proprietary ownership or financial gain will produce a more useful and bug-free product for everyone to use.

The basics behind the Open Source Initiative is that when programmers can read, redistribute and modify the source code for a piece of software, the software evolves. Open source sprouted in the technological community as a response to proprietary software owned by corporations.

Proprietary software is privately owned and controlled. In the computer industry, proprietary is considered the opposite of open. A proprietary design or technique is one that is owned by a company. It also implies that the company has not divulged specifications that would allow other companies to duplicate the product.

1.7 OPERATING SYSTEM

An operating system is a software component of a computer system that is responsible for the management of various activities of the computer and the sharing of computer resources. It hosts several applications that run on a computer and handles the operations of computer hardware. Users and application programs access the services offered by the operating systems, by means of system calls and application programming interfaces. Users interact with a computer operating system through Command Line Interfaces (CLIs) or Graphical User Interfaces known as GUIs. In short, an operating system enables user interaction with computer systems by acting as an interface between users or application programs and the computer hardware. Some of the common operating systems are LINUX, Windows, etc.

1.8 WINDOWS XP DESKTOP ELEMENTS

Start Menu

When clicked on the start button, start menu appears on the screen giving all the available options to start using the

Windows (See Fig. 1.13). Desktop icons provide access to commonly used programs, folders and files.



Fig. 1.13

Overview of the options available in the start menu.

Task	Description
All Programs	Displays a list of installed program, which a user can start or use
My Documents	Displays a list of documents used by the current user
My Recent Documents	Displays a list of recently used documents by the current user
My Picture	Displays a list of pictures/photos used by the current user
My Music	Displays a list of music/songs used by the current user
Control Panel	Displays a list of utilities to configure the computer system and install software and hardware
Printers and Faxes	Displays a list of currently installed printers and faxes in the current computer system

Help and Support	Start the XP help and support program to find how to do a task in windows
Search	Helps the user to find any file or folder from a list of document used by the current user.
Run	Starts an application program or executes a DOS command
Log Off	Log off the currently logged in user of the system
Turn Off Computer	Close currently opened program, log off the current user and switch off the computer system.

Task Bar

When you start the computer system, then start button and task bar appears on the bottom of the screen and by default remains visible when Windows is running (See Fig. 1.14).

Whenever a program is run or a window is opened, an icon representing the program appears on the taskbar. To switch between windows or program, click on the icon representing the window on the task bar. When the program or window is closed, the icon disappears from the task bar.

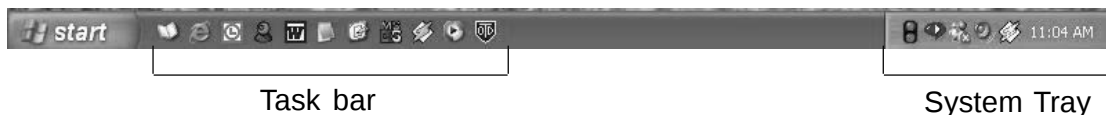


Fig. 1.14

The system tray is part of the task bar and displays the current time as well as the status icons.

1.8.1 Start a Program

To start a program, do the following;

1. Click on the **Start** Button.
2. Click on the **All Programs**, you will see a list of all the program icons and program folders.
3. Point to the desired folder say **Accessories** and select the desired program to run such as **Paint**.

1.8.2 Quit a Program

To quit a program, select the close button (**x**) in the upper-right corner of the window OR

Click on **File** menu and select **Close** option.

1.8.3 Getting Help

Online help and support provided is of great help in using and learning windows. One can get help on a specific topic or on current task which is being executed. To start help

- click on the **Start** button
- click on **Help and support** option

A list of help and support topics and online tutorial is displayed on the screen (see Fig. 1.15). One can use the tabs in the screen to search for the desired information in several ways.



Fig. 1.15

- Click on a topic or task to know more about how to get the job done or type in a search word to locate the help on a specific topic.

- Click on the **Index** tab to locate specific topic listed alphabetically and the follow the instructions displayed on the screen.
- Click on **Favourites** tab to add Help Topics, search results to your Favourites list to make them easy to locate in the future
- Click on **History** to pick from a list of Help and Support pages that you have read in the past.
- Click on **Support** to get various kind of online support such as Microsoft online support, News Group on Windows.
- Click on **Option** to configure the help and support center as per your requirement.

To close Help and Support windows, select the close button (×) in the upper-right corner of the window.

1.8.4 Searching Files and Folders

If you don't know where a document or folder is located, you can use the Search option to locate it in the local storage such as Hard Disk, CD or in the network drive (if the system is part of a network). The Indexing Service provided by the Search maintains an index of all the files on your computer, making searches faster.

To search for a file or folder

1. Click **Start**, and click on **Search**.
 2. Select **All files and folders** from the left hand side of the windows (see Fig. 1.16).
 3. Type the name of the file or folder in part or full, or type a word or phrase that exists in the file to be searched.
 4. If you do not know either piece of information select one or more of the remaining options:
 - In **Look in**, click the drive, folder, or network you want to search.
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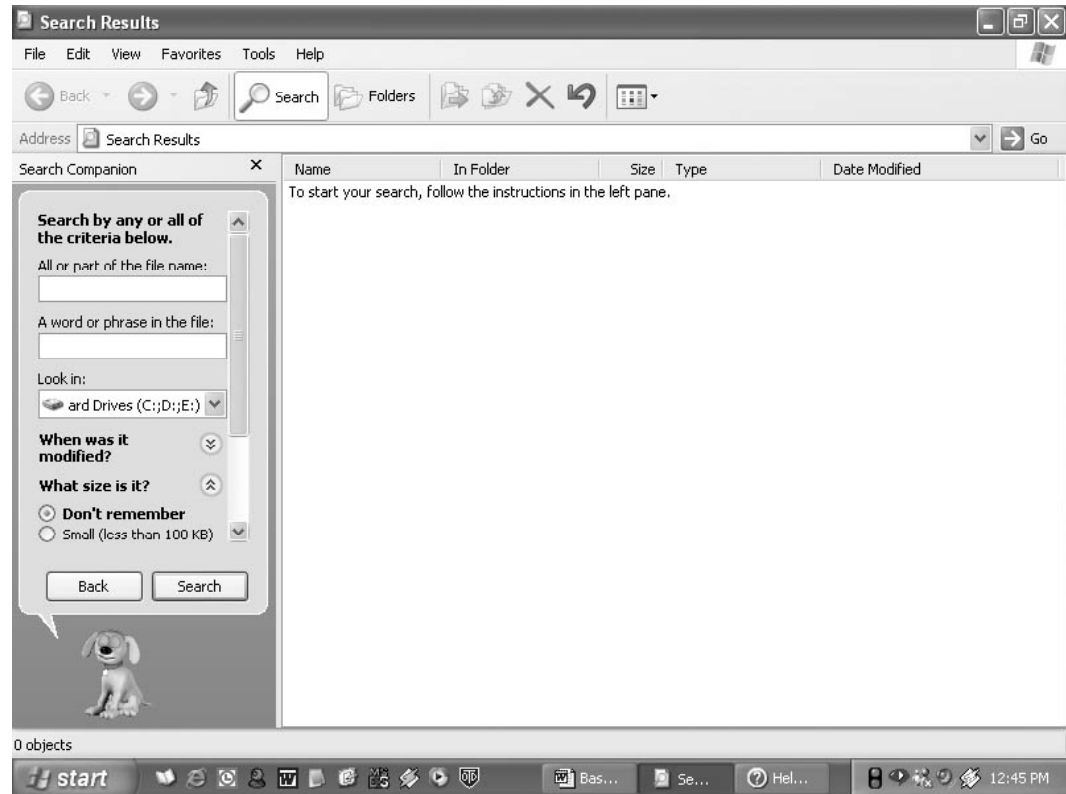


Fig. 1.16

- Click on **When was it modified?** to look for files that were created or modified on or between specific dates.
 - To look for files of a specific size, click on **What size is it?** Select a size.
 - Click on **More advanced options** to specify additional search criteria.
5. Once you finish specifying the search criteria, click on Search to locate the file.

Similarly you can search for specific information on Internet, or people in your address book, search for a printer or a computer on your network.

1.8.5 Changing System settings

By using Control Panel's tools you can customize the way Windows look and work! Also you can install new hardware, add and remove (install/uninstall) software programs, change the look and feel of your desktop and much more. It also includes a number of administrative tools in Administrative

Tools option for better administration of Windows in terms of User Management, Event viewer, Component Service etc. To start Control Panel and use the available tool, do the following;

- Click on **Start**
- Click on **Control Panel**
- Select the desired tool to use

For example to create a new or modify the settings for an existing user click on 'User Account' icon in the control panel.

1.8.6 Using 'My Computer' for browsing your disk drives

Your disk drives hold all the information on your computer: all the files, folders, programs as well as the documents. My Computer displays the contents of floppy, hard disk, CD-ROM, and network drives. One can also search for and open files and folders, and use options in Control Panel to modify computer's settings.

- To use My Computer, click on **Start**, and then click on **My Computer** or double click the **My computer** icon on the desktop. My computer windows opens to show all the drives present on your computer. (see Fig. 1.17).

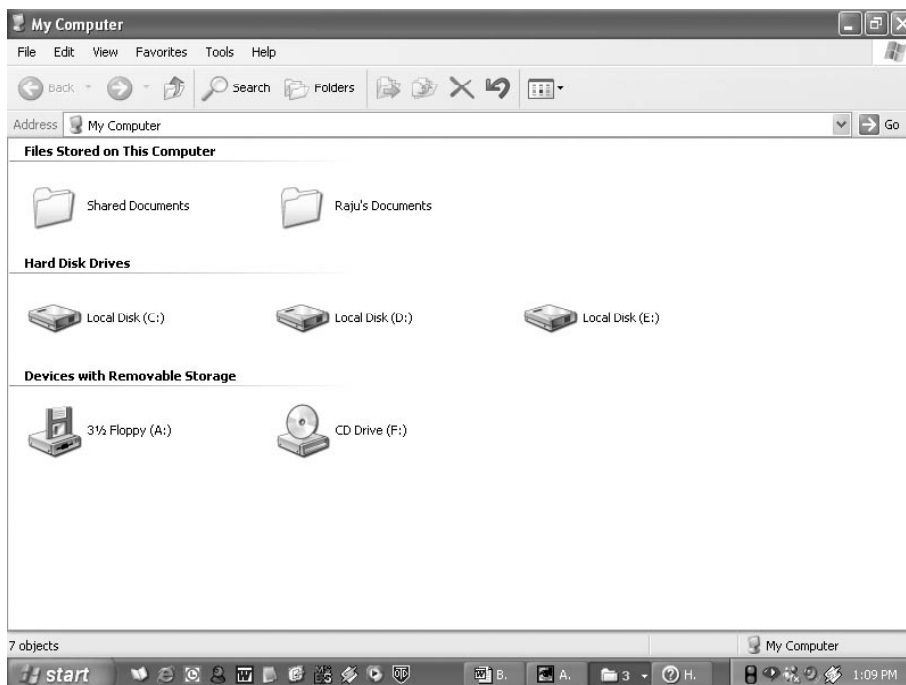


Fig. 1.17

Display the storage Contents

- To see what's on your hard disk, under **Hard Disk Drives**, double-click the drive you want to see such as C:, D: etc.
- To find a file or folder on a CD-ROM, or other media, under **Devices with Removable Storage**, double-click on the respective storage media you want to see.
- To find a file in a folder, under **Files Stored on This Computer**, double-click a folder.

1.9 FILE MANAGEMENT IN WINDOWS

File management in windows can be done through Windows Explorer or My Computer. Windows Explorer displays the hierarchical list of files, folders, and storage drives (both fixed and removable) on your computer. It also lists any network drives that have been mapped to as a drive letters on your computer. Windows Explorer can be used to copy, move, rename, and search for files and folders. For example, to copy a file, you can open a folder that contains the desired file to be copied or moved, and then just drag and drop the file to target folder or drive. (see fig. 1.18)

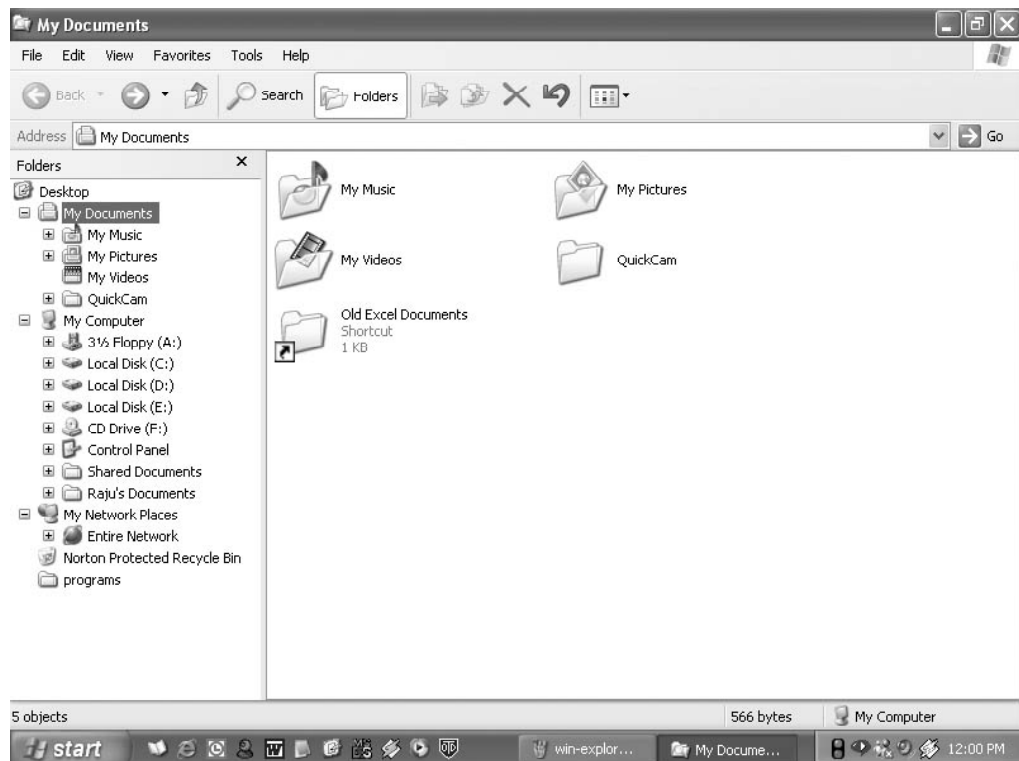


Fig. 1.18

When files or folders are deleted from hard disk, Windows places them in the Recycle Bin, from where they can be retrieved, until the Recycle Bin is made empty. Files or folders deleted from a removable storage media such as network drive are permanently deleted and are not sent to the Recycle Bin.

1.9.1 Using Windows Explorer

Windows offer another utility "Windows Explorer" which helps you in working with files and folders on your computer.

To open Windows Explorer,

- Click on **Start**,
- Point to **All Programs**,
- Point to **Accessories**, and then click on **Windows Explorer** (see Fig. 1.19)

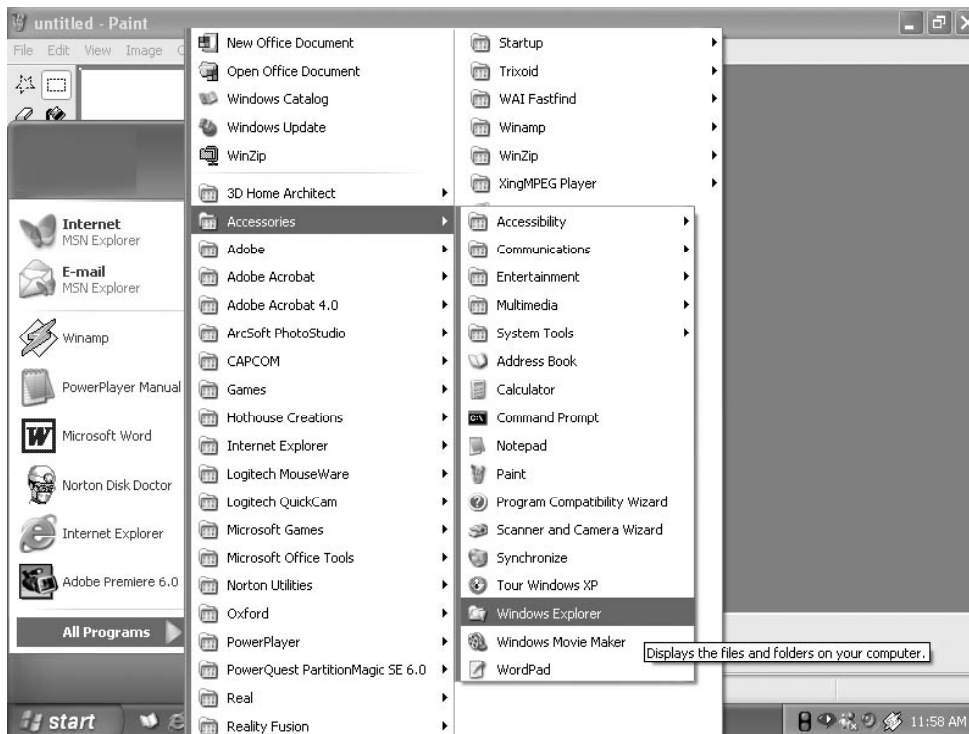


Fig. 1.19

The left pane of the Explorer window shows a hierarchy of all the drives, folders and desktop items on your computer. A drive or folder that contains other folders has a plus sign to the left of the icon. Click the plus sign to expand it and see the folders inside. (see Fig. 1.20)

1.9.2 Opening drives and folders

Two drives nearly all computers have are a floppy drive (drive A:) and a hard drive (drive C:). If you have more than one drive, then they are named D:, E: and so on. If you have a CD drive or a DVD drive, it also is named with a letter. Opening a hard drive is easy. Just double click the icon representing the drive you want to open. Files and folders contained in the drive are now shown in the opened window. Now for opening a folder, double click its icon.

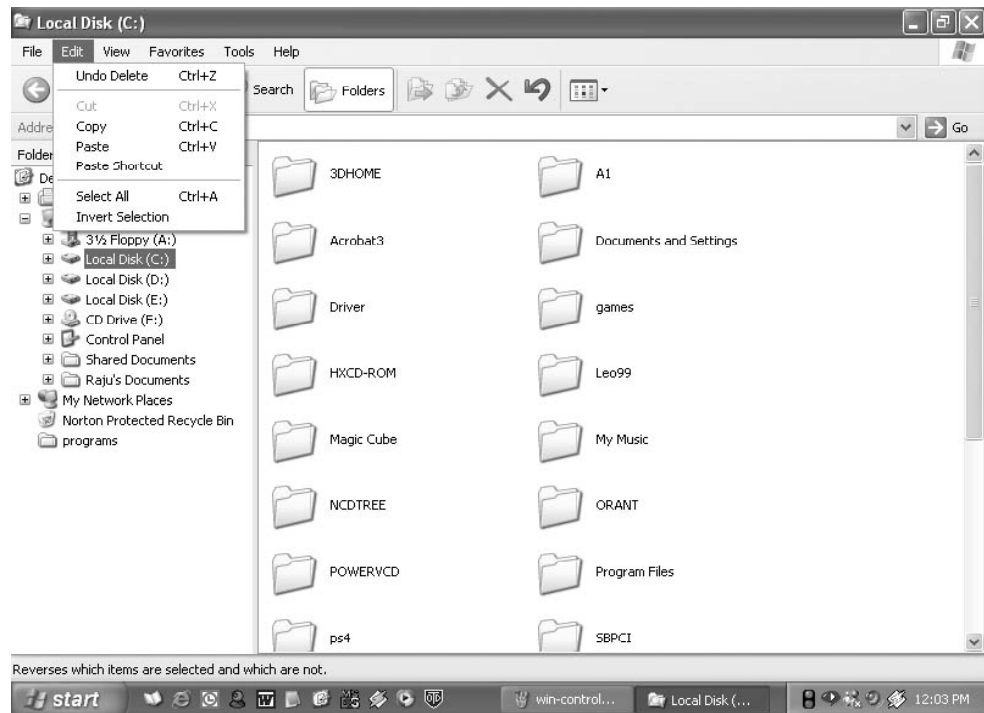


Fig. 1.20

1.9.3 Copying or Moving a file or Folder using My Document

- Click on **Start**, and then click on **My Documents**.
 - Click the file or folder to be copied. More than one file or folder can be copied at a time.
 - To select more than one consecutive files or folders, click the first file or folder, press and hold down SHIFT key, and then click the last files or folders.
 - To select non-consecutive files or folders, press and hold down CTRL key, and then click each of the files or folders to be copied.
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- Under **Edit menu**, select **Copy**.
- Select the target drive or folder to which you want to copy the files
- Under **Edit menu**, select **Paste** to copy the desired file or folder to the target drive.

1.9.4 View file details

1. Click on **Start**, and then click on **My Documents**.
2. Double-click the folder that contains the files to be viewed.
3. On the **View** menu, click **Details** (see Fig. 1.21).
4. It will display all the details about the files such as Name, Type, size etc.

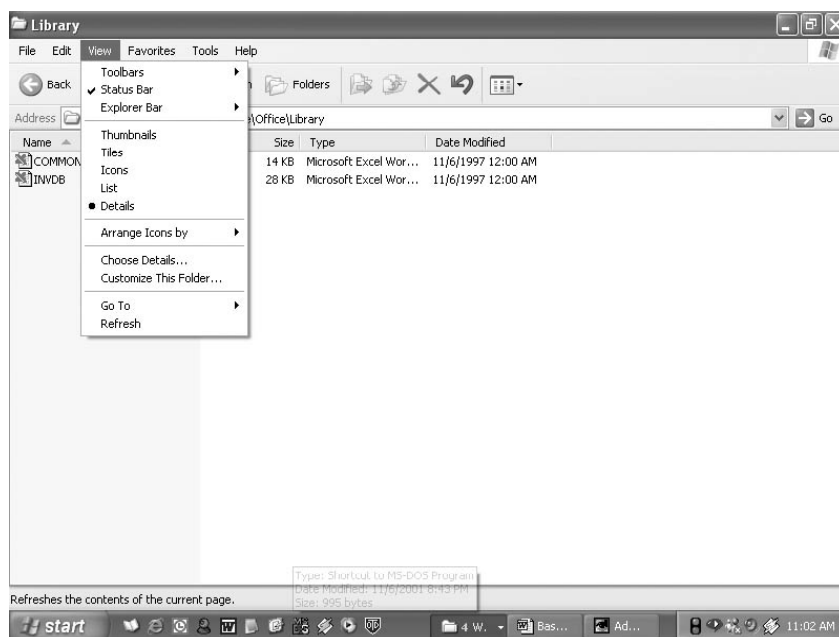


Fig. 1.21

1.9.5 Copying and moving files using Explorer

- Click **Start**, point to **All Programs**, point to **Accessories**, and then click **Windows Explorer**.
- Make sure the destination for the file or folder you want to move is visible (see Fig. 1.22).

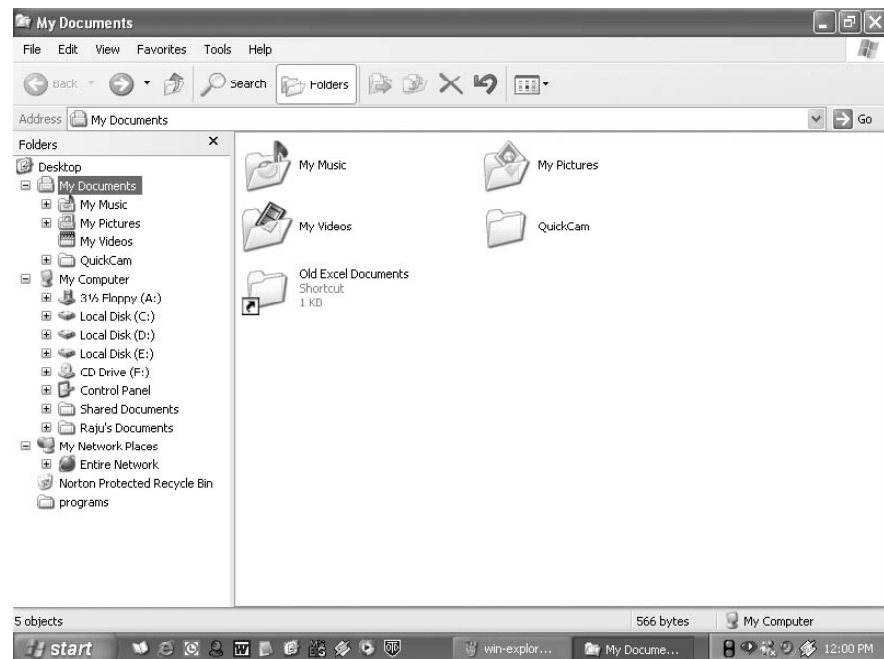


Fig. 1.22

- Drag the file or folder from the right pane and drop it on to the destination folder in the left pane to move the file or folder there.
- If you drag an item while pressing the right mouse button, you can move, copy, or create a shortcut to the file in its new location.
- To copy the item instead of moving it, press and hold down CTRL while dragging.
- If you drag an item to another disk, it is copied, not moved. To move the item, press and hold down SHIFT while dragging.
- Dragging a program to a new location creates a shortcut to that program. To move a program, right-click and then drag the program to the new location.

1.9.6 Create a new folder

Folders help you to organize your files. You can create a folder either by using My Computer window or through Windows Explorer. You can create a Folder in any existing disk drive or folder or on the windows desktop. The steps for creating a folder are:

1. Click on **Start**, and then click on **My Documents**
2. Under **File** menu click **New** and select **Folder**. (see Fig. 1.23)
3. A new folder is displayed with the default name, **New Folder**.
4. Type a name for the new folder, and then press ENTER.
5. A new folder can also be created directly on the desktop by right-clicking a blank area on the desktop, pointing to **New**, and then clicking **Folder**.

1.9.7 Rename a file or folder

1. Click on **Start**, and then click on **My Documents**
2. Click on the file or folder you want to rename.
3. Under **File** menu click on **Rename** (see Fig. 1.23).
4. Type the new name, and then press ENTER key.
5. Alternately file or folder can also be renamed by right-clicking it and then clicking on **Rename**.

1.9.8 Delete a file or folder

1. Click on **Start**, and then click on **My Documents**
 2. Click on the file or folder you want to delete.
 3. Under **File** menu click on **Delete** (see Fig. 1.23).
 4. Files or folders can also be deleted by right-clicking the file or folder and then clicking **Delete**.
 5. Deleted files or folders are stored in the **Recycle Bin**, till they are permanently removed from the Recycle Bin.
 6. To retrieve a deleted file, double-click the **Recycle Bin** icon on the desktop. Right-click on the file to be retrieved, and then click **Restore**.
 7. To permanently delete a file, press and hold down SHIFT key and drag it to the Recycle Bin.
-

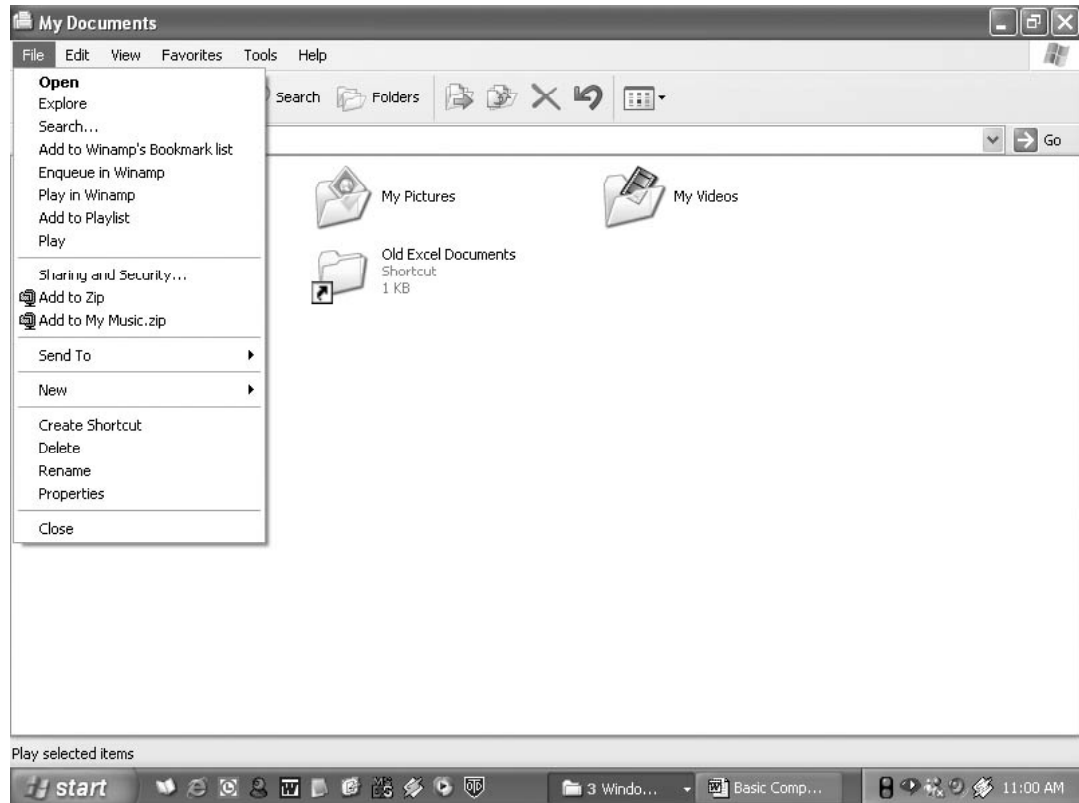


Fig. 1.23

1.10 COMPUTER SECURITY

Security has always been an overriding concern of human kind. For many organization, information plays a very important role in running business. Therefore, it becomes necessary to safeguard information from reaching the illegal hands. When data takes the shapes of digital form, a different security procedure is required. This branch of security is called computer security.

Information technology has also some loopholes associated with it, like the possibility of stealing of vital information and intentionally implanting destructive or malicious programs on the other's computer system. The motive behind such activities is to show down the pace of an organization and harm it economically. We shall discuss now about these malicious programs which are often called virus, worms, Trojan horse, logic bomb, spyware and so on.

1.10.1 Virus

Virus is a program which has been written to interfere with the normal functioning of the computer. It does this by clogging the memory of the system by making copies of itself or it may destroy critical information used by other computer programs.

There are three main types of viruses: **Boot sector viruses** which infect the boot sector in the hard disk and affect the partition table, **File viruses** attach with executable files. The commonly infected files are those with COM or EXE extensions. The third, **System viruses** infect specific system files such as command.com. Computer viruses can be grouped into Time Bomb, Trojan Horse, Worm etc. Time Bomb will start on a particular date, at a particular time. The computer will lose its ability to function properly.

The virus known as Trojan Horse will enter into a computer through an e-mail or free programs that have been downloaded from the internet and cause plenty of damage. Viruses known as Worms are constructed to infiltrate on the legitimate data processing programs and alter or destroy the data. Worm programs often use network connections to spread from one computer system to another system, thus, worms attach system that are linked through communication lines.

1.10.2 Protecting computer system using antivirus software

In case the virus is present, it becomes our duty to use some anti-virus software for preventing virus attacks in future. Anti-virus software falls into two categories: Scanners and Integrity checkers.

A scanner is a program that will detect the virus by checking the files on the disk, the boot sector of the disk and programs in the memory by looking for the signature of the virus. The signature is a piece of program code that is unique to the virus. It is very necessary to update regularly the virus scanner that you have bought. This is essential because new viruses are constantly appearing.

Integrity checkers work using simple checksums or complicated algorithms or cryptographic checksums which check if a file has been modified. It may be boring for you to check for virus every time you run the system. But you should not worry. Help is at hand with HomeGuard a unique device which once fitted to the computer automatically scans in the background for viruses. If there are viruses found in the system, HomeGuard will clean it up automatically without even having to press a key.

1.10.3 Precautions to be taken against viruses

- Install a memory-resident program in RAM that will detect and warn if a virus is present.
- Do not allow hardware engineers or sales persons to put a write enabled floppy into your computer unless they can guarantee that it is not infected.
- Backup copies of all programs and data files should be kept.
- Backup copies of programs should be held as read-only disks to prevent infection.
- At least 2 copies of the backup must be kept.
- Never boot your machine with a floppy from an unknown source.
- Always write-protect your disk when you use it in another machine.

INTEXT QUESTION 1.1

1. What are the characteristics of a computer?
 2. How many types of printers are commonly used?
 3. State TRUE or FALSE
 - (a) All code or data is stored and processed in computers using two symbols; 0 and 1.
 - (b) Machine code is also known as source code.
-

1.11 WHAT YOU HAVE LEARNT

In this lesson, you have learnt about computer organization, its characteristics (speed, accuracy, diligence, versatility, and storage capacity) that have contributed towards making it such a popular device. The differences between concepts like hardware/software, system/application software, ROM/RAM was also explained. Various types of input, output and secondary storage devices along with their usages, were also studied.

1.12 TERMINAL QUESTIONS

1. What are the basic units of a computer system?
2. What is application software? Explain with the help of examples.
3. Write short notes on
 - a. Operating system
 - b. Compiler
 - c. Assembly language
 - d. Control unit

1.13 ANSWER TO INTEXT QUESTIONS

Intext Question 1.1

1. Computer characteristics :
 - Speed
 - Accuracy
-

- Diligence
 - Versatility
 - Storage capacity
2. Two types or Impact & Non Impact Printer
 3. (a) true
(b) false

BASICS OF DATA COMMUNICATION AND COMPUTER NETWORKING

2.1 INTRODUCTION

Computers are used to generate information. Generated information is not useful in itself. The information must be delivered to the right person at the right time. Often information must be transmitted from one location to another. This process is called data communication. Here, we will be concerned with the hardware, software and procedures used in data communication.

Office automation is based on communication; the transfer of information. Advances in communication technology, combined with rapidly evolving computer technology, have made possible much of the progress in the field. Electronic communication consists of telecommunication and data communications. Telecommunication refers to the use of telephone, telegraph, and radio or television facility to transmit information, either directly or via computer. Data communication means the transfer of data or information between computers devices.

2.2 OBJECTIVES

After going through this lesson, you would be able to:

- learn the basic elements of data communication system.
 - describe communication protocols and data transmission modes.
-

- explain the use of computer network.
- describe different components of computer network
- identify different types of network

2.3 DATA COMMUNICATION

Data communication is the active process of transporting data from one point to another. Networks are communication system designed to convey information from a point of origin to a point of destination. Note that they are communication system, not computer system. The operative word is communication, the transfer of information from one device to another.

Networks come in two flavors – **local** as in local area network, which cover a small area and have a finite, relatively small, number of users and **global** or long-haul, which cover long distance and have an unlimited number of users. Telephone networks are long network. It refers to the transmission of the digital signals over a communication channel between the transmitter and receiver computers. Communication is possible only with wired and wireless connectivity of the computers with each other.

The effectiveness of a data communication system depends on three fundamental characteristics:

- **Delivery:** The system must deliver data to the correct destination. Data must be received by the intended device or user and only by that device or user.
- **Accuracy:** The system must deliver data accurately. Data that have been altered in transmission and left uncorrected are unusable.
- **Timeliness:** The system must deliver data in a timely manner. Data delivered late are useless. In the case of video, audio and voice data, timely delivery means delivering data as they are produced, in the same order that they are produced, and without significant delay. This kind of delivery is called real-time transmission.

2.3.1 Data Communication Component

The following are the basic components for working of a communication system. (see fig. 2.1)

1. Transmitter
2. Receiver
3. Medium
4. Message
5. Protocol

The transmitter sends the message and the receiver receives the message. The medium is the channel over which the message is sent and the protocol is the set of rules that guides how the data is transmitted from encoding to decoding. The message of course is central to all the components. The message is the data that is being communicated.

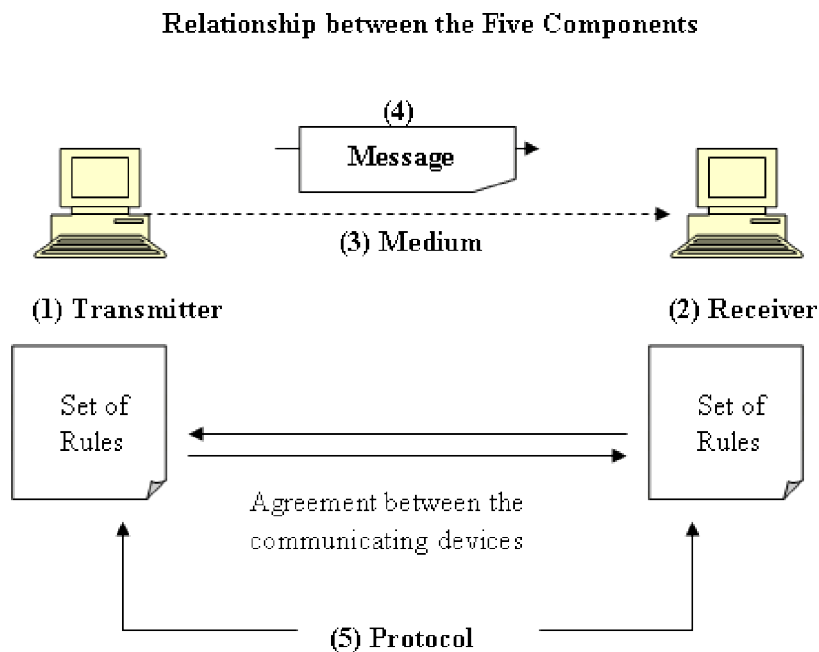


Fig 2.1 : Data Communication Components

Transmitter: The transmitter is the device that sends the message. It can be a computer, workstation, telephone handset, video camera, and so on.

Receiver: The receiver is the device that receives the message. It can be a computer, workstation, telephone handset, television, and so on.

Medium: The transmission medium is the physical path by which a message travels from sender to receiver. It can consist of twisted pair wire, coaxial cable, fiber-optic cable, laser or radio waves (terrestrial or satellite microwave).

Message: The message is the transmission (data) to be communicated. It can consist of text, number, pictures, sound, or video or any combination of these.

Protocol: A protocol is a set of rules that governs data communication. It represents an agreement between the communicating devices. Without a protocol, two devices may be connected but not communicating, just as a person speaking German cannot be understood by a person who speaks only Japanese.

2.4 COMMUNICATION MEDIA

Following are the major communication devices which are frequently used:

- **Wire Pairs:** Wire pairs are commonly used in local telephone communication and for short distance digital data communication. They are usually made up of copper. Using these wire pairs data transmission speed is normally 9600 bits per second in a distance of 100 metre.
 - **Twisted pair:** Twisted pair wire is the most widely used medium for telecommunication. Twisted-pair cabling consist of copper wires that are twisted into pairs. Ordinary telephone wires consist of two insulated copper wires twisted into pairs. Computer networking cabling (wired Ethernet as defined by IEEE 802.3) consists of 4 pairs of copper cabling that can be utilized for both voice and data transmission. The use of two wires twisted together helps to reduce crosstalk and electromagnetic induction. The transmission speed ranges from 2 million bits per second to 10 billion bits per second. Twisted pair cabling comes in two forms which are Unshielded Twisted Pair (UTP) and Shielded twisted-pair (STP) which are manufactured in different increments for various scenario.
 - **Coaxial cable:** Coaxial cable is widely used for cable television systems, office buildings, and other work-sites for local area networks. The cables consist of copper or aluminum wire wrapped with insulating layer typically of
-

a flexible material with a high dielectric constant, all of which are surrounded by a conductive layer. The layers of insulation help minimize interference and distortion. Transmission speed range from 200 million to more than 500 million bits per second.

- **Optical fiber:** Optical fiber cable consists of one or more filaments of glass fiber wrapped in protective layers that carries data by means of pulses of light. It transmits light which can travel over extended distances. Fiber-optic cables are not affected by electromagnetic radiation. Transmission speed may reach trillions of bits per second. The transmission speed of fiber optics is hundreds of times faster than for coaxial cables and thousands of times faster than a twisted-pair wire. This capacity may be further increased by the use of colored light, i.e., light of multiple wavelengths. Instead of carrying one message in a stream of monochromatic light impulses, this technology can carry multiple signals in a single fiber.

Wireless technologies

- **Terrestrial microwave:** Terrestrial microwaves use Earth-based transmitter and receiver. The equipment looks similar to satellite dishes. Terrestrial microwaves use low-gigahertz range, which limits all communications to line-of-sight. Path between relay stations spaced approx, 48 km (30 mi) apart. Microwave antennas are usually placed on top of buildings, towers, hills, and mountain peaks.
- **Communications satellites:** The satellites use microwave radio signals as their telecommunications medium which are not deflected by the Earth's atmosphere. The satellites are stationed in space, typically 35,400 km (22,000 mi) (for geosynchronous satellites) above the equator. These Earth-orbiting systems are capable of receiving and relaying voice, data, and TV signals.

2.5 TYPES OF COMMUNICATION SERVICES

A term used to describe the data-handling capacity of a communication service is bandwidth. Bandwidth is the range of frequencies that is available for the transmission of data. A narrow range of frequencies in a communication system is analogous to a garden hose with a small diameter. The flow of

information in such a system is restricted, just as is the flow of water in the narrow hose. Wider bandwidths permit more rapid information flow. The communication data transfer rate is measured in a unit called baud. Baud is identical to bits per second. Therefore, a rate of 300 baud is 300 bits per second.

Communication companies such as American Telephone and Telegraph (AT&T) and Western Union are called common carriers, and they provide three general classes of service for both voice and data communication:

- Narrowband handles low data volumes. Data transmission rates are from 45 to 300 baud. The low-speed devices might use narrow band communications.
- Voiceband handles moderate data transmission volumes between 300 and 9600 baud. They are used for applications ranging from operating a CRT to running a line printer. Their major application is for telephone voice communication hence, the term voiceband.
- Broadband handles very large volumes of data. These systems provide data transmission rates of 1 million baud or more. High-speed data analysis and satellite communications are examples of broadband communication systems.

2.6 MODEM

A modem (modulator-demodulator) is a device that modulates an analog carrier signal to encode digital information, and also demodulates such a carrier signal to decode the transmitted information. The goal is to produce a signal that can be transmitted easily and decoded to reproduce the original digital data. Modems can be used over any means of transmitting analog signals, from light emitting diodes to radio.

A modem modulates outgoing digital signals from a computer or other digital device to analog signals for a conventional copper twisted pair telephone line and demodulates the incoming analog signal and converts it to a digital signal for the digital device.

In recent years, the 2400 bits per second modem that could carry e-mail has become obsolete. 14.4 Kbps and 28.8 Kbps modems were temporary landing places on the way to the much higher bandwidth devices and carriers of tomorrow. From early

1998, most new personal computers came with 56 Kbps modems. By comparison, using a digital Integrated Services Digital Network adapter instead of a conventional modem, the same telephone wire can now carry up to 128 Kbps. With Digital Subscriber Line (DSL) systems, now being deployed in a number of communities, bandwidth on twisted-pair can be in the megabit range.

2.6.1 Types of Modems

- Landline Modems
- Wireless Modems
- LAN Modems

A. Landline Modems:

Landline modems are modems which connect to the public switched telephone network (PSTN). To connect to PSTN, these modems have a jack known as RJ-11, or regular phone jack. A telephone cable with a RJ-11 plug connects the modem to the nearest phone jack, which also conforms to the RH-11 standard. Landline modems can be further classified into the followings types:

- 1. Internal modems:** This device is a circuit board that plugs into one of the expansion slots of the computer. Internal modems usually are cheaper than external modems, but when problems occur, fixing and troubleshooting the modem can sometimes prove to be quite difficult. The telephone line plugs into the modem port in the back of the computer. Most internal modems come installed in the computer you buy. Internal modems are more directly integrated into the computer system and, therefore, do not need any special attention. Internal modems are activated when you run a communications program and are turned off when you exit the program. This convenience is especially useful for novice users.

Internal modems usually cost less than external modems, but the price difference is usually small. The major disadvantage with internal modems is their location: inside the computer. When you want to replace an internal modem you have to go inside the computer case to make the switch.

2. **External modems:** This device is attached to the back of the computer by way of a cable that plugs into the modem port. It is usually less expensive and very portable. It can be used with other computers very easily by unplugging it and plugging it into another computer. This is the simplest type of modem to install because you don't have to open the computer. External modems have their own power supply and connect with a cable to a computer's serial port. The telephone line plugs into a socket on the rear panel of the modem.

Because external modems have their own power supply, you can turn off the modem to break an online connection quickly without powering down the computer. Another advantage over an internal modem is that an external modem's separate power supply does not drain any power from the computer. You also can monitor your modem's connection activity by watching the status lights.

3. **Voice/data/fax modems:** This device can be hooked up to your telephone and used to send information to your computer. Your computer can also send information to a fax machine. Most computer modems are modems with faxing capabilities.
4. **PC Card modem:** These modems, designed for portable computers, are the size of a credit card and fit into the PC Card slot on notebook and handheld computers. These modems are removed when the modem is not needed. Except for their size, PC Card modems are like a combination of external and internal modems. These devices are plugged directly into an external slot in the portable computer, so no cable is required other than the telephone line connection. The cards are powered by the computer, which is fine unless the computer is battery-operated. Running a PC Card modem while the portable computer is operating on battery power drastically decreases the life of your batteries.

B. Wireless Modems:

Wireless modems are radio transmitters/receivers installed into mobile computing devices (i.e. devices that are used while you are moving such as mobile phones, laptops etc.)

Using wireless modems, one can connect to a network while being mobile. Unlike landline modems, wireless modems do not plug into an RJ-11 jack.

C. LAN Modems:

LAN modems allow shared remote access to LAN (Local Area Network) resources. LAN modem comes fully preconfigured for single particular network architecture such as Ethernet or Token Ring and/or particular network software such as IPX, NetBIOS, NetBEUI etc.

2.6.2 Working of Modem

Modems convert analog data transmitted over phone lines into digital data so that computers can read; they also convert digital data into analog data so it can be transmitted. This process involves modulating and demodulating the computer's digital signals into analog signals that travel over the telephone lines. In other words, the modem translates computer data into the language used by telephones and then reverses the process to translate the responding data back into computer language.

2.7 COMPUTER NETWORK

A computer network is interconnection of various computer systems located at different places. In computer network two or more computers are linked together with a medium and data communication devices for the purpose of communicating data and sharing resources. The computer that provides resources to other computers on a network is known as server. In the network the individual computers, which access shared network resources, are known as nodes.

2.7.1 Characteristics of a Computer Network

The primary purpose of a computer network is to share resources:

- You can play a CD music from one computer while sitting on another computer
 - You may have a computer that doesn't have a DVD or BluRay (BD) player. In this case, you can place a movie disc (DVD or BD) on the computer that has the player, and then view the movie on a computer that lacks the player
-

- You may have a computer with a CD/DVD/BD writer or a backup system but the other computer doesn't have it. In this case, you can burn discs or make backups on a computer that has one of these but using data from a computer that doesn't have a disc writer or a backup system
- You can connect a printer (or a scanner, or a fax machine) to one computer and let other computers of the network print (or scan, or fax) to that printer (or scanner, or fax machine)
- You can place a disc with pictures on one computer and let other computers access those pictures
- You can create files and store them in one computer, then access those files from the other computer(s) connected to it

2.7.2 Concept of Networking:

A computer network, often simply referred to as a network, is a collection of hardware components and computers interconnected by communication channels that allow sharing of resources and information. Networks may be classified according to a wide variety of characteristics such as the medium used to transport the data, communications protocol used, scale, topology, and organizational scope. The rules and data formats for exchanging information in a computer network are defined by communications protocols.

2.7.3 Properties of Network

1. Facilitate communications:

Using a network, people can communicate efficiently and easily via email, instant messaging, chat rooms, telephone, video telephone calls, and video conferencing.

2. Permit sharing of files, data, and other types of information

In a network environment, authorized users may access data and information stored on other computers on the network. The capability of providing access to data and information on shared storage devices is an important feature of many networks.

3. Share network and computing resources

In a networked environment, each computer on a network may access and use resources provided by devices on the network, such as printing a document on a shared network printer. Distributed computing uses computing resources across a network to accomplish tasks.

2.8 BENEFITS OF NETWORK

- **File sharing:** Network file sharing between computers gives you more flexibility than using floppy drives or Zip drives. Not only can you share photos, music files, and documents, you can also use a home network to save copies of all of your important data on a different computer. Backups are one of the most critical yet overlooked tasks in home networking.
 - **Printer / peripheral sharing:** Once a home network is in place, it's then easy to set up all of the computers to share a single printer. No longer will you need to bounce from one system or another just to print out an email message. Other computer peripherals can be shared similarly such as network scanners, Web cams, and CD burners.
 - **Internet connection sharing:** Using a home network, multiple family members can access the Internet simultaneously without having to pay an ISP for multiple accounts. You will notice the Internet connection slows down when several people share it, but broadband Internet can handle the extra load with little trouble.
 - **Multi-player games:** Many popular home computer games support LAN mode where friends and family can play together, if they have their computers networked.
 - **Internet telephone service:** Voice over IP (VoIP) services allows you to make and receive phone calls through your home network across the Internet.
-

- **Home entertainment:** Newer home entertainment products such as digital video recorders (DVRs) and video game consoles now support either wired or wireless home networking. Having these products integrated into your network enables online Internet gaming, video sharing and other advanced features.

2.9 TYPES OF NETWORK

There are many different types of networks. However, from an end user's point of view there are three basic types:

- Local Area Network
- Wide Area Network
- Metropolitan Area Network

2.9.1 Local Area Network (LAN):

A local area network (LAN) supplies networking capability to a group of computers in close proximity to each other such as in an office building, a school, or a home. A LAN is useful for sharing resources like files, printers, games or other applications. A LAN in turn often connects to other LANs, and to the Internet or other WAN.

Most local area networks are built with relatively inexpensive hardware such as Ethernet cables, network adapters, and hubs. Wireless LAN and other more advanced LAN hardware options also exist. LAN is a computer network that spans a relatively small area. Most LANs are confined to a single building or group of buildings. However, one LAN can be connected to other LANs over any distance via telephone lines and radio waves. Most LANs (as shown in Fig. 2.2) connect workstations and personal computers. Each node (individual computer) in a LAN has its own CPU with which it executes programs, but it is also able to access data and devices anywhere on the LAN.

This means that many users can share expensive devices, such as laser printers, as well as data. Users can also use the LAN to communicate with each other, by sending e-mail or engaging in chat sessions. There are many different types of LANs-token-ring networks, Ethernets, and ARCnets being the most common for PCs.

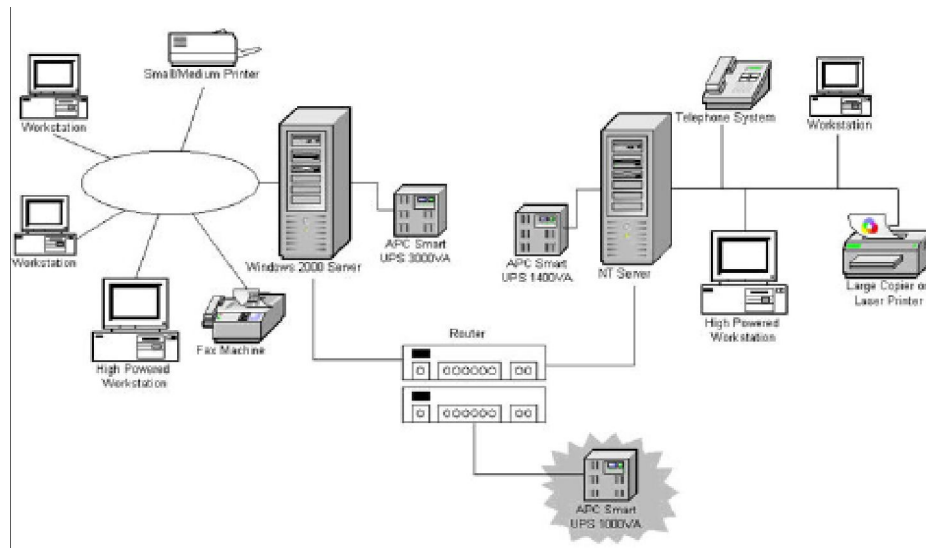


Fig. 2.2 LAN

2.9.2 Wide Area Networks (WANs)

The term Wide Area Network (WAN) usually refers to a network which covers a large geographical area, and use communications circuits to connect the intermediate nodes. A major factor impacting WAN design and performance is a requirement that they lease communications circuits from telephone companies or other communications carriers. Transmission rates are typically 2 Mbps, 34 Mbps, 45 Mbps, 155 Mbps, 625 Mbps (or sometimes considerably more).

2.9.3 Metropolitan Area Network (MAN)

A Metropolitan Area Network (MAN) is one of a number of types of networks (see also LAN and WAN). A MAN is a relatively new class of network, it serves a role similar to an ISP, but for corporate users with large LANs.

2.10 IMPORTANT TERMS USED IN NETWORKING

Voice Messaging

It is a new communication approach which is similar to electronic mail except that it is audio message rather than text messages that are processed. A sender speaks into a telephone rather than typing, giving the name of the recipient and the

message. That sender's voice signal is then digitized and stored. The system can then either deliver the message at a specified time in future or it can be retrieved from a database by the recipient. The message is reconverted back into its analog format when it is delivered or retrieved so that the recipient hears it as the original sender's voice on a telephone. Voice messaging requires a computer with an ability to store the audio messages in digital form and then convert them back in an audio form upon verification. Each user has a voice mailbox in secondary storage and special equipment converts the audio message to and from the digital form. The main advantage of voice mail over electronic mail is that the sender does not have to type. Voice mail also makes it easy to include people in the firm's environment in a communication network.

Hub

A hub is typically the least expensive, least intelligent, and least complicated. Its job is very simple: anything that comes in one port is sent out to the others. Every computer connected to the hub "sees" everything that every other computer on the hub sees. The hub itself is blissfully ignorant of the data being transmitted. For years, simple hubs have been quick and easy ways to connect computers in small networks.

Switch

A switch does essentially what a hub does but more efficiently. By paying attention to the traffic that comes across it, it can "learn" where particular addresses are. For example, if it sees traffic from machine A coming in on port 2, it now knows that machine A is connected to that port and that traffic to machine A needs to only be sent to that port and not any of the others. The net result of using a switch over a hub is that most of the network traffic only goes where it needs to rather than to every port. On busy networks this can make the network significantly faster.

Router

A router is the smartest and most complicated of the bunch. Routers come in all shapes and sizes from the small four-port broadband routers that are very popular right now to the large industrial strength devices that drive the internet itself. A simple way to think of a router is as a computer that can be programmed to understand, possibly manipulate, and route the data its being asked to handle. For example, broadband routers include the ability to “hide” computers behind a type of firewall which involves slightly modifying the packets of network traffic as they traverse the device. All routers include some kind of user interface for configuring how the router will treat traffic. The really large routers include the equivalent of a full-blown programming language to describe how they should operate as well as the ability to communicate with other routers to describe or determine the best way to get network traffic from point A to point B.

Network Repeater

A repeater connects two segments of your network cable. It retimes and regenerates the signals to proper amplitudes and sends them to the other segments. When talking about, ethernet topology, you are probably talking about using a hub as a repeater. Repeaters require a small amount of time to regenerate the signal. This can cause a propagation delay which can affect network communication when there are several repeaters in a row. Many network architectures limit the number of repeaters that can be used in a row. Repeaters work only at the physical layer of the OSI network model.

Bridge

A bridge reads the outermost section of data on the data packet, to tell where the message is going. It reduces the traffic on other network segments, since it does not send all packets. Bridges can be programmed to reject packets from particular networks. Bridging occurs at the data link layer of the OSI model, which means the bridge cannot read IP addresses, but only the outermost hardware address of the packet. In our case the bridge can read the ethernet data which gives the hardware address of the destination address, not the IP address. Bridges forward all broadcast messages. Only a special bridge called a translation bridge will allow two networks of different

architectures to be connected. Bridges do not normally allow connection of networks with different architectures. The hardware address is also called the MAC (media access control) address. To determine the network segment a MAC address belongs to, bridges use one of the following:

- **Transparent Bridging:** They build a table of addresses (bridging table) as they receive packets. If the address is not in the bridging table, the packet is forwarded to all segments other than the one it came from. This type of bridge is used on ethernet networks.
- **Source route bridging:** The source computer provides path information inside the packet. This is used on Token Ring networks

Router

There is a device called a router which will function similar to a bridge for network transport protocols that are not routable, and will function as a router for routable protocols. It functions at the network and data link layers of the OSI network model.

Gateway

A gateway can translate information between different network data formats or network architectures. It can translate TCP/IP to AppleTalk so computers supporting TCP/IP can communicate with Apple brand computers. Most gateways operate at the application layer, but can operate at the network or session layer of the OSI model. Gateways will start at the lower level and strip information until it gets to the required level and repackage the information and work its way back toward the hardware layer of the OSI model.

2.11 TELECONFERENCING

The term teleconferencing refers to electronic meetings that involve people who are at physically different sites. Telecommunication technology system allows meeting participants to interact with one another without travelling to the same location. Three different types of teleconferencing exist: audio teleconferencing, video teleconferencing and computer conferencing.

2.11.1 Audio Conferencing

Audio conferencing is the use of voice communication equipments to establish an audio link between geographically dispersed persons, one that allows them to conduct a conference. The conference call was the first form of audio conferencing and is still in use. Some firms install more elaborate systems consisting of private, high-quality audio communications circuits that can be activated with the flip of a switch.

Audio conferencing does not require a computer. It only requires a two-way audio communications facility.

Audio conferencing is best suited for firms that are spread over a wide area. However, since it is a form of synchronous communication that requires all participants to be present at the same time, it is difficult to schedule conferences when time zones are far apart.

2.11.2 Video Conferencing:

Video conferencing is the use of television equipment to link geographically dispersed conference participants. The equipment provides both sound and picture. Like audio conferencing, video conferencing also does not necessarily require a computer.

With video conferencing, participants can see and hear each other. Generally, participants gather in relatively expensive, specially equipped rooms that can handle the complexities of simultaneous video and audio transmission.

There are three possible video conferencing configurations.

One-Way Video and Audio: Video and audio signals are sent from a single transmitting site to one or more receiving sites. This is a good way for a project leader to disseminate information to team members at remote locations.

One-Way Video and Two-Way Audio: People at the receiving sites can talk to people at the transmitting site, while everyone views the same video images.

Two-Way Video and Audio: The video and audio communications between all sites are two-way. Although this is the most effective of the electronically aided conferencing approaches, it can be the most expensive as well.

2.11.3 Computer Conferencing

A third form of electronic conferencing is computer conferencing. There is a fine line between this system and E-mail. Both use the same software and hardware. Two factors determine this application, who uses the system, and the subject matter.

E-mail is available to any one who has access to the network and that includes practically everyone in the office. Also, the E-mail system can be used for any purpose. Computer conferencing, on the other hand, is the use of a networked computer that allows particular task. Computer conferencing is more disciplined form of E-mail.

Unlike an audio conference, a computer conference group can consist of large number of participants. One of the largest computer conferences was formed within IBM to include anyone who had an interest in the IBM PC. Its members exceeded 40,000, and there were over 4,000 separate topic areas.

Computer conferencing differs from audio and video conferencing because it can be used within a single geographic site. A person can use computer conferencing to communicate with someone in the office next door.

INTEXT QUESTION 2.1

1. State TRUE or FALSE
 - (a) The basic components for working of a communication system are transmitter, medium, receiver, message and protocol.
 - (b) The technique by which a digital signal is converted to analog form is known as modulation.
-

2.12 WHAT YOU HAVE LEARNT

In this lesson you learnt about the importance and modes of data communication through computers. Computers can communicate with one another through computer networking. There are mainly two types of computer network: LAN and WAN. We discussed about various types of modems used for data communications such as land line modems, wireless modems and LAN modems. At the end we discussed about various types of teleconferencing.

2.13 TERMINAL QUESTIONS

1. What is computer network? What are its main objectives?
2. Explain in brief different communication media?

2.14 ANSWER TO INTEXT QUESTIONS

Intext Question 2.1

1. (a) True (b) True

INTRODUCTION TO INTERNET

3.1 INTRODUCTION

In the present age of information Technology, use of Internet is becoming quite popular for accessing information on any topic of your interest. It also provides tremendous opportunities to students, researchers and professionals for getting information on matters related to academic and professional topics and lot more. In the present world, most of the people who have computers around themselves use Internet to access information from the World Wide Web, exchange messages & documents and e-services.

3.2 OBJECTIVES

After going through this lesson, you would be able to:

- explain various terminology used in internet
- use various services provided by internet
- search the desired information over internet
- define e-mail and its various features
- explain the process of downloading file.

3.3 INTERNET

The **Internet** is a global system of interconnected computer networks that use the standard Internet protocol suite (TCP/IP) to serve billions of users worldwide. It is a *network of networks* that consists of millions of private, public, academic, business, and government networks, of local to global scope,

that are linked by a broad array of electronic, wireless and optical networking technologies. The Internet carries a vast range of information resources and services, such as the inter-linked hypertext documents of the World Wide Web (WWW) and the infrastructure to support electronic mail.

3.3.1 Uses of Internet

Internet has been the most useful technology of the modern times which helps us not only in our daily lives, but also our personal and professional lives developments. The internet helps us achieve this in several different ways.

For the students and educational purposes the internet is widely used to gather information so as to do the research or add to the knowledge of various subjects. Even the business professionals and the professionals like doctors, access the internet to filter the necessary information for their use. The internet is therefore the largest encyclopedia for everyone, in all age categories. The internet has served to be more useful in maintaining contacts with friends and relatives who live abroad permanently.

3.3.2 Advantages of Internet:

- **E-mail:** Email is now an essential communication tools in business. With e-mail you can send and receive instant electronic messages, which works like writing letters. Your messages are delivered instantly to people anywhere in the world, unlike traditional mail that takes a lot of time. Email is free, fast and very cheap when compared to telephone, fax and postal services.
 - **24 hours a day - 7 days a week:** Internet is available, 24x7 days for usage.
 - **Information:** Information is probably the biggest advantage internet is offering. There is a huge amount of information available on the internet for just about every subject, ranging from government law and services, trade fairs and conferences, market information, new ideas and technical support. You can almost find any type of data on almost any kind of subject that you are looking for by using search engines like google, yahoo, msn, etc.
-

- **Online Chat:** You can access many 'chat rooms' on the web that can be used to meet new people, make new friends, as well as to stay in touch with old friends. You can chat in MSN and yahoo websites.
- **Services:** Many services are provided on the internet like net banking, job searching, purchasing tickets, hotel reservations, guidance services on array of topics engulfing every aspect of life.
- **Communities:** Communities of all types have sprung up on the internet. Its a great way to meet up with people of similar interest and discuss common issues.
- **E-commerce:** Along with getting information on the Internet, you can also shop online. There are many online stores and sites that 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. It has got a real amazing and wide range of products from household needs, electronics to entertainment.
- **Entertainment:** Internet provides facility to access wide range of Audio/Video songs, plays films. Many of which can be downloaded. One such popular website is YouTube.
- **Software Downloads:** You can freely download innumerable, softwares like utilities, games, music, videos, movies, etc from the Internet.

3.3.3 Limitations of Internet

- **Theft of Personal information:** Electronic messages sent over the Internet can be easily snooped and tracked, revealing who is talking to whom and what they are talking about. If you use the Internet, your personal information such as your name, address, credit card, bank details and other information can be accessed by unauthorized persons. If you use a credit card or internet banking for online shopping, then your details can also be 'stolen'.
 - **Negative effects on family communication:** It is generally observed that due to more time spent on Internet, there is a decrease in communication and feeling of togetherness among the family members.
-

- **Internet addiction:** There is some controversy over whether it is possible to actually be addicted to the Internet or not. Some researchers, claim that it is simply people trying to escape their problems in an online world.
- **Children using the Internet** has become a big concern. Most parents do not realize the dangers involved when their children log onto the Internet. When children talk to others online, they do not realize they could actually be talking to a harmful person. Moreover, pornography is also a very serious issue concerning the Internet, especially when it comes to young children. There are thousands of pornographic sites on the Internet that can be easily found and can be a detriment to letting children use the Internet.
- **Virus threat:** Today, not only are humans getting viruses, but computers are also. Computers are mainly getting these viruses from the Internet. Virus is is a program which disrupts the normal functioning of your computer systems. Computers attached to internet are more prone to virus attacks and they can end up into crashing your whole hard disk.
- **Spamming:** It is often viewed as the act of sending unsolicited email. This multiple or vast emailing is often compared to mass junk mailings. It needlessly obstruct the entire system. Most spam is commercial advertising, often for dubious products, get-rich-quick schemes, or quasi-legal services. Spam costs the sender very little to send — most of the costs are paid for by the recipient or the carriers rather than by the sender

3.4 SERVICES OF INTERNET -E-mail, FTP, Telnet

Email, discussion groups, long-distance computing, and file transfers are some of the important services provided by the Internet. Email is the fastest means of communication. With email one can also send software and certain forms of compressed digital image as an attachment. News groups or discussion groups facilitate Internet user to join for various kinds of debate, discussion and news sharing. Long-distance computing was an original inspiration for development of

ARPANET and does still provide a very useful service on Internet. Programmers can maintain accounts on distant, powerful computers and execute programs. File transfer service allows Internet users to access remote machines and retrieve programs, data or text.

(a) E-Mail (Electronic Mail)

E-mail or Electronic mail is a paperless method of sending messages, notes or letters from one person to another or even many people at the same time via Internet. E-mail is very fast compared to the normal post. E-mail messages usually take only few seconds to arrive at their destination. One can send messages anytime of the day or night, and, it will get delivered immediately. You need not to wait for the post office to open and you don't have to get worried about holidays. It works 24 hours a day and seven days a week. What's more, the copy of the message you have sent will be available whenever you want to look at it even in the middle of the night. You have the privilege of sending something extra such as a file, graphics, images etc. along with your e-mail. The biggest advantage of using e-mail is that it is cheap, especially when sending messages to other states or countries and at the same time it can be delivered to a number of people around the world.

It allows you to compose note, get the address of the recipient and send it. Once the mail is received and read, it can be forwarded or replied. One can even store it for later use, or delete. In e-mail even the sender can request for delivery receipt and read receipt from the recipient.

(i) Features of E-mail:

- One-to-one or one-to-many communications
- Instant communications
- Physical presence of recipient is not required
- Most inexpensive mail services, 24-hours a day and seven days a week
- Encourages informal communications

(ii) Components of an E-mail Address

As in the case of normal mail system, e-mail is also based upon the concept of a recipient address. The email address

provides all of the information required to get a message to the recipient from any where in the world. Consider the e-mail ID.

john@hotmail.com

In the above example john is the username of the person who will be sending/receiving the email. Hotmail is the mail server where the username john has been registered and com is the type of organization on the internet which is hosting the mail server.

(b) FTP (File Transfer Protocol)

File Transfer Protocol, is an Internet utility software used to upload and download files. It gives access to directories or folders on remote computers and allows software, data and text files to be transferred between different kinds of computers. FTP works on the basis of same principle as that of Client/Server. FTP "Client" is a program running on your computer that enables you to communicate with remote computers. The FTP client takes FTP command and sends these as requests for information from the remote computer known as FTP servers. To access remote FTP server it is required, but not necessary to have an account in the FTP server. When the FTP client gets connected, FTP server asks for the identification in terms of User Login name and password of the FTP client (Fig. 3.1). If one does not have an account in the remote FTP server, still he can connect to the server using anonymous login.

Using anonymous login anyone can login in to a FTP server and can access public archives; anywhere in the world, without having an account. One can easily Login to the FTP site with the username anonymous and e-mail address as password.

(i) Objectives of FTP :

- Provide flexibility and promote sharing of computer programs, files and data
 - Transfer data reliably and more efficiently over network
 - Encourage implicit or indirect use of remote computers using Internet
 - Shield a user from variations in storage systems among hosts.
-

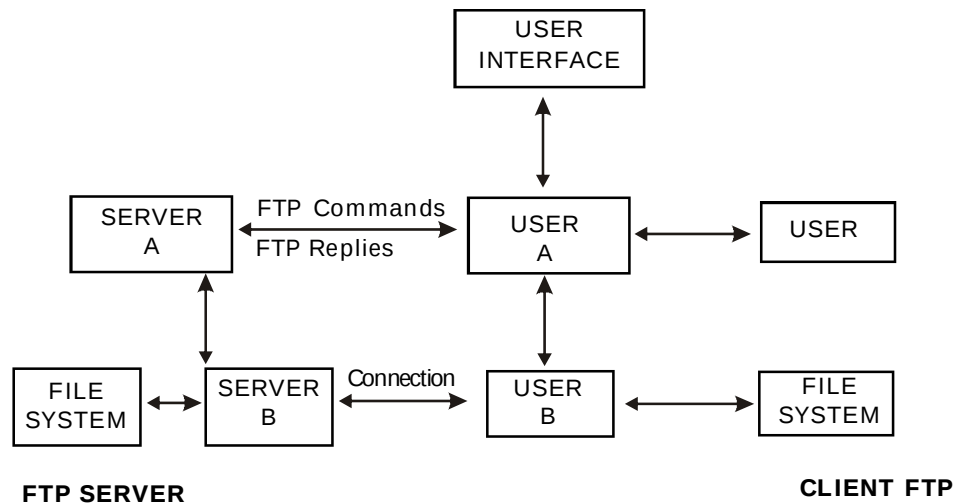


Fig. 3.1

(ii) The basic steps in an FTP session

- Start up your FTP client, by typing ftp on your system's command line/'C>' prompt (or, if you are in a Windows, double-click on the FTP icon).
- Give the FTP client an address to connect. This is the FTP server address to which the FTP client will get connected
- Identify yourself to the FTP remote site by giving the Login Name
- Give the remote site a password
- Remote site will verify the Login Name/Password to allow the FTP client to access its files
- Look directory for files in FTP server
- Change Directories if required
- Set the transfer mode (optional);
- Get the file(s) you want, and
- Quit.

(c) Telnet (Remote Computing)

Telnet or remote computing is telecommunication utility software, which uses available telecommunication facility and allows you to become a user on a remote computer. Once you

gain access to remote computer, you can use it for the intended purpose. The TELNET works in a very step by step procedure. The commands typed on the client computer are sent to the local Internet Service Provider (ISP), and then from the ISP to the remote computer that you have gained access. Most of the ISP provides facility to TELNET into your own account from another city and check your e-mail while you are travelling or away on business.

The following steps are required for a TELNET session

- Start up the TELNET program
- Give the TELNET program an address to connect (some really nifty TELNET packages allow you to combine steps 1 and 2 into one simple step)
- Make a note of what the “escape character” is
- Log in to the remote computer,
- Set the “terminal emulation”
- Play around on the remote computer, and
- Quit.

3.5 TYPES OF INTERNET CONNECTIONS

There are five types of internet connections which are as follows:

- (i) Dial up Connection
- (ii) Leased Connection
- (iii) DSL connection
- (iv) Cable Modem Connection
- (v) VSAT

3.5.1 Dial up connection

Dial-up refers to an Internet connection that is established using a modem. The modem connects the computer to standard phone lines, which serve as the data transfer medium. When a user initiates a dial-up connection, the modem dials a phone number of an Internet Service Provider (ISP) that is designated to receive dial-up calls. The ISP then establishes the connection, which usually takes about ten seconds and is accompanied by several beepings and a buzzing sound.

After the dial-up connection has been established, it is active until the user disconnects from the ISP. Typically, this is done by selecting the “Disconnect” option using the ISP’s software or a modem utility program. However, if a dial-up connection is interrupted by an incoming phone call or someone picking up a phone in the house, the service may also be disconnected.

Advantages

- Low Price
- Secure connection – your IP address continually changes
- Offered in rural areas – you need a phone line

Disadvantages

- Slow speed.
- Phone line is required.
- Busy signals for friends and family members.

3.5.2 Leased Connection

Leased connection is a permanent telephone connection between two points set up by a telecommunications common carrier. Typically, leased lines are used by businesses to connect geographically distant offices. Unlike normal dial-up connections, a leased line is always active. The fee for the connection is a fixed monthly rate. The primary factors affecting the monthly fee are distance between end points and the speed of the circuit. Because the connection doesn’t carry anybody else’s communications, the carrier can assure a given level of quality.

For example, a T-1 channel is a type of leased line that provides a maximum transmission speed of 1.544 Mbps. You can divide the connection into different lines for data and voice communication or use the channel for one high speed data circuit. Dividing the connection is called multiplexing.

Increasingly, leased lines are being used by companies, and even individuals, for Internet access because they afford faster data transfer rates and are cost-effective if the Internet is used heavily.

Advantage

- Secure and private: dedicated exclusively to the customer
- Speed: symmetrical and direct
- Reliable: minimum down time
- Wide choice of speeds: bandwidth on demand, easily upgradeable
- Leased lines are suitable for in-house office web hosting

Disadvantages

- Leased lines can be expensive to install and rent.
- Not suitable for single or home workers
- Lead times can be as long as 65 working days
- Distance dependent to nearest POP
- Leased lines have traditionally been the more expensive access option. A Service Level Agreement (SLA) confirms an ISP's contractual requirement in ensuring the service is maintained. This is often lacking in cheaper alternatives.

3.5.3 DSL connection

Digital Subscriber Line (DSL) is a family of technologies that provides digital data transmission over the wires of a local telephone network. DSL originally stood for *digital subscriber loop*. In telecommunications marketing, the term DSL is widely understood to mean Asymmetric Digital Subscriber Line (ADSL), the most commonly installed DSL technology. DSL service is delivered simultaneously with wired telephone service on the same telephone line. This is possible because DSL uses higher frequency bands for data separated by filtering. On the customer premises, a DSL filter on each outlet removes the high frequency interference, to enable simultaneous use of the telephone and data.

The data bit rate of consumer DSL services typically ranges from 256 kbit/s to 40 Mbit/s in the direction to the customer (downstream), depending on DSL technology, line conditions, and service-level implementation. In ADSL, the data throughput

in the upstream direction, (the direction to the service provider) is lower, hence the designation of *asymmetric* service. In Symmetric Digital Subscriber Line (SDSL) services, the downstream and upstream data rates are equal.

Advantages:

- **Security:** Unlike cable modems, each subscriber can be configured so that it will not be on the same network. In some cable modem networks, other computers on the cable modem network are left visibly vulnerable and are easily susceptible to break in as well as data destruction.
- **Integration:** DSL will easily interface with ATM and WAN technology.
- High bandwidth
- Cheap line charges from the phone company.
- Good for “bursty” traffic patterns

Disadvantages

- **No current standardization:** A person moving from one area to another might find that their DSL modem is just another paperweight. Customers may have to buy new equipment to simply change ISPs.
- **Expensive:** Most customers are not willing to spend more than \$20 to \$25 per month for Internet access. Current installation costs, including the modem, can be as high as \$750. Prices should come down within 1-3 years. As with all computer technology, being first usually means an emptier wallet.
- **Distance Dependence:** The farther you live from the DSLAM (DSL Access Multiplexer), the lower the data rate. The longest run lengths are 18,000 feet, or a little over 3 miles.

3.5.4 Cable Modem Connection

A **cable modem** is a type of Network Bridge and modem that provides bi-directional data communication via radio frequency channels on a HFC and RFoG infrastructure. Cable modems

are primarily used to deliver broadband Internet access in the form of cable Internet, taking advantage of the high bandwidth of a HFC and RFoG network. They are commonly deployed in Australia, Europe, Asia and Americas.

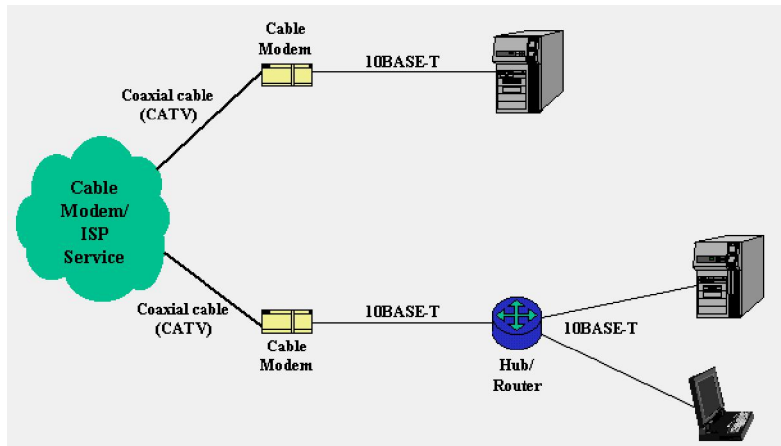


Fig.3.2 : Cable modem connection

Figure 3.2 shows the most common network connection topologies when using cable modems. The cable TV company runs a coaxial cable into the building to deliver their Internet service. Although fed from the same coax that provides cable TV service, most companies place a splitter outside of the building and runs two cables in, rather than using a splitter at the set-top box. The coax terminates at the cable modem.

The cable modem itself attaches to the SOHO computing equipment via its 10BASE-T port. In most circumstances, the cable modem attaches directly to a user's computer. If a LAN is present on the premises (something many cable companies frown upon), some sort of router can be connected to the cable modem.

Advantages

- **Always Connected:** A cable modem connection is always connected to the Internet. This is advantageous because you do not have to wait for your computer to "log on" to the Internet; however, this also has the disadvantage of making your computer more vulnerable to hackers.
- **Broadband:** Cable modems transmit and receive data as

digital packets, meaning they provide high-speed Internet access. This makes cable modem connections much faster than traditional dial-up connections.

- **Bandwidth:** Cable modems have the potential to receive data from their cable provider at speeds greater than 30 megabits per second; unfortunately, this speed is rarely ever realized. Cable lines are shared by all of the cable modem users in a given area; thus, the connection speed varies depending upon the number of other people using the Internet and the amount of data they are receiving or transmitting.
- **File Transfer Capabilities:** Downloads may be faster, but uploads are typically slower. Since the same lines are used to transmit data to and from the modem, priority is often given to data traveling in one direction.
- **Signal Integrity:** Cable Internet can be transmitted long distances with little signal degradation. This means the quality of the Internet signal is not significantly decreased by the distance of the modem from the cable provider.
- **Routing:** Cable routers allow multiple computers to be hooked up to one cable modem, allowing several devices to be directly connected through a single modem. Wireless routers can also be attached to your cable modem.
- **Rely on Existing Connections:** Cable modems connect directly to preinstalled cable lines. This is advantageous because you do not need to have other services, such as telephone or Internet, in order to receive Internet through your cable modem. The disadvantage is that you cannot have cable internet in areas where there are no cable lines.

Disadvantages

- Cable internet technology excels at maintaining signal strength over distance. Once it is delivered to a region, however, such as a neighborhood, it is split among that region's subscribers. While increased capacity has diminished the effect somewhat, it is still possible that users will see significantly lower speeds at peak times when more people are using the shared connection.
-

- Bandwidth equals money, so cable's advantage in throughput comes with a price. Even in plans of similar speeds compared with DSL, customers spend more per Mb with cable than they do with DSL.
- It's hard to imagine, but there are still pockets of the United States without adequate cable television service. There are far fewer such pockets without residential land-line service meaning cable internet is on balance less accessible in remote areas.

3.5.5 VSAT

Short for very small aperture terminal, an earthbound station used in satellite communications of data, voice and video signals, excluding broadcast television. A VSAT consists of two parts, a transceiver that is placed outdoors in direct line of sight to the satellite and a device that is placed indoors to interface the transceiver with the end user's communications device, such as a PC. The transceiver receives or sends a signal to a satellite transponder in the sky. The satellite sends and receives signals from a ground station computer that acts as a hub for the system. Each end user is interconnected with the hub station via the satellite, forming a star topology. The hub controls the entire operation of the network. For one end user to communicate with another, each transmission has to first go to the hub station that then retransmits it via the satellite to the other end user's VSAT.

Advantages

Satellite communication systems have some advantages that can be exploited for the provision of connectivity. These are:

- Costs Insensitive to Distance
- Single Platform service delivery (one-stop-shop)
- Flexibility
- Upgradeable
- Low incremental costs per unit

Disadvantages

However like all systems there are disadvantages also. Some of these are

- High start-up costs (hubs and basic elements must be in place before the services can be provided)
- Higher than normal risk profiles
- Severe regulatory restrictions imposed by countries that prevent VSAT networks and solutions from reaching critical mass and therefore profitability
- Some service quality limitations such the high signal delays (latency)
- Natural availability limits that cannot be mitigated against
- Lack of skills required in the developing world to design, install and maintain satellite communication systems adequately

3.6 DOWNLOADING FILES

Downloading is the process of copying a file (such as a game or utility) from one computer to another across the internet. When you download a game from our web site, it means you are copying it from the author or publisher's web server to your own computer. This allows you to install and use the program on your own machine.

Here's how to download a file using Internet Explorer and Windows XP. (This example shows a download of the file "dweepsetup.exe" from Dexterity Games.) If you're using a different browser such as Netscape Navigator or a different version of Windows, your screen may look a little different, but the same basic steps should work.

1. Click on the download link for the program you want to download. Many sites offer multiple download links to the same program, and you only need to choose one of these links.
2. You may be asked if you want to save the file or run it from its current location. If you are asked this question, select "Save." If not, don't worry — some browsers will automatically choose "Save" for you. (Fig. 3.3(a))

3. You will then be asked to select the folder where you want to save the program or file, using a standard “Save As” dialog box. Pay attention to which folder you select before clicking the “Save” button. It may help you to create a folder like “C:\Download” for all of your downloads, but you can use any folder you’d like.
 4. The download will now begin. Your web browser will keep you updated on the progress of the download by showing a progress bar that fills up as you download. You will also be reminded where you’re saving the file. The file will be saved as “C:\Download\dweepsetup.exe” in the picture below. (Fig. 3.3(b))
- Note:** You may also see a check box labeled “Close this dialog box when download completes.” If you see this check box, it helps to **uncheck** this box. You don’t have to, but if you do, it will be easier to find the file after you download it.
5. Depending on which file you’re downloading and how fast your connection is, it may take anywhere from a few seconds to a few minutes to download. When your download is finished, if you left the “Close this dialog box when download completes” option unchecked, you’ll see a dialog box as shown in fig. 3.3(c) :

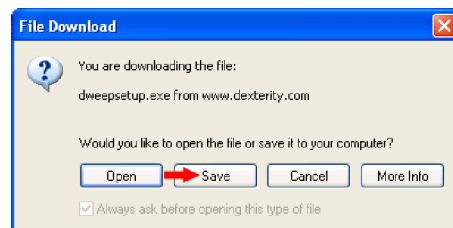


Fig 3.3.(a) Downloading Window

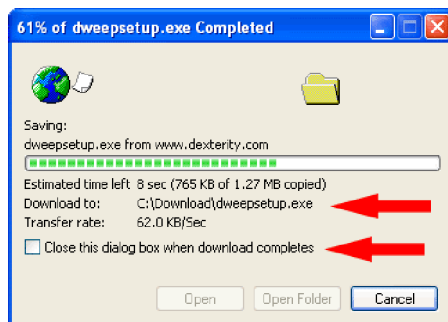


Fig 3.3.(b) Downloading Window

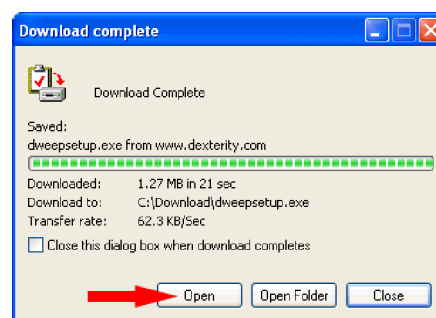


Fig 3.3.(c) Downloading Window

6. Now click the “Open” button to run the file you just downloaded. If you don’t see the “Download complete” dialog box, open the folder where you saved the file and double-click on the icon for the file there.

What happens next will depend on the type of file you downloaded. The files you’ll download most often will end in one of two extensions. (An extension is the last few letters of the filename, after the period.) They are:

- o **.EXE files:** The file you downloaded is a program. Follow the on-screen instructions from there to install the program to your computer and to learn how to run the program after it’s installed.
- o **.ZIP files:** ZIP is a common file format used to compress and combine files to make them download more quickly. Some versions of Windows (XP and sometimes ME) can read ZIP files without extra software. Otherwise, you will need an unzipping program to read these ZIP files. Common unzipping programs are WinZip, PKZIP, and Bit Zipper, but there are also many others. Many unzipping programs are shareware, which means you will need to purchase them if you use them beyond their specified trial period.

INTEXT QUESTION 3.1

1. What are the different types of Internet Connection?
 2. Fill in the blanks:
 - (a) A _____ is a type of Network Bridge and modem that provides bi-directional data communication via radio frequency channels on a HFC and RFoG infrastructure.
 - (b) The _____ is a global system of interconnected computer networks that use the standard Internet protocol suite (TCP/IP) to serve billions of users worldwide.
 - (c) VoIP stands for _____, referring to the protocol that underlies all Internet communication.
-

3.7 WHAT YOU HAVE LEARNT

In this lesson you learnt about the Internet, its importance and types of internet services and different types of internet connections have also been discussed along with their advantages and disadvantages.

3.8 TERMINAL QUESTIONS

1. What is Internet? What are its advantages and disadvantages?
2. What are the various services of internet?
3. Explain in brief different types of internet connection.

3.9 ANSWER TO INTEXT QUESTIONS

Intext Question 3.1

1. The types of internet connection are:
 - Dial up Connection
 - Leased Connection
 - DSL connection
 - Cable Modem Connection
 - VSAT
2. (a) cable modem (b) Internet (c) Voice-over-Internet Protocol

4

OFFICE PRODUCTIVITY TOOLS Part I

4.1 INTRODUCTION

Office Productivity tools are software programs designed to make computer users more productive and efficient at their workplace. Office productivity tools range from word processing to spreadsheet, presentation and database etc. In this lesson we shall consider two productivity tools for doing word processing and spreadsheet related work.

4.2 OBJECTIVES

After going through this lesson you would be able to:

- explain basic menu details of Word processing
 - create, save, and modify Word files
 - protect a Word document quickly and efficiently
 - enter and edit data in a worksheet
 - format data and worksheets
 - perform various types of calculations in worksheet using formulas and functions
-

4.3 STARTING WORD PROGRAM

You can start the WORD program as follows

1. Click on the **Start** button.
2. In the menu that appears select **All Programs→ Microsoft Office→Microsoft Office Word 2007**



Fig.4.1

In a few seconds you will see Word screen on the monitor

4.4 WORD SCREEN LAYOUT

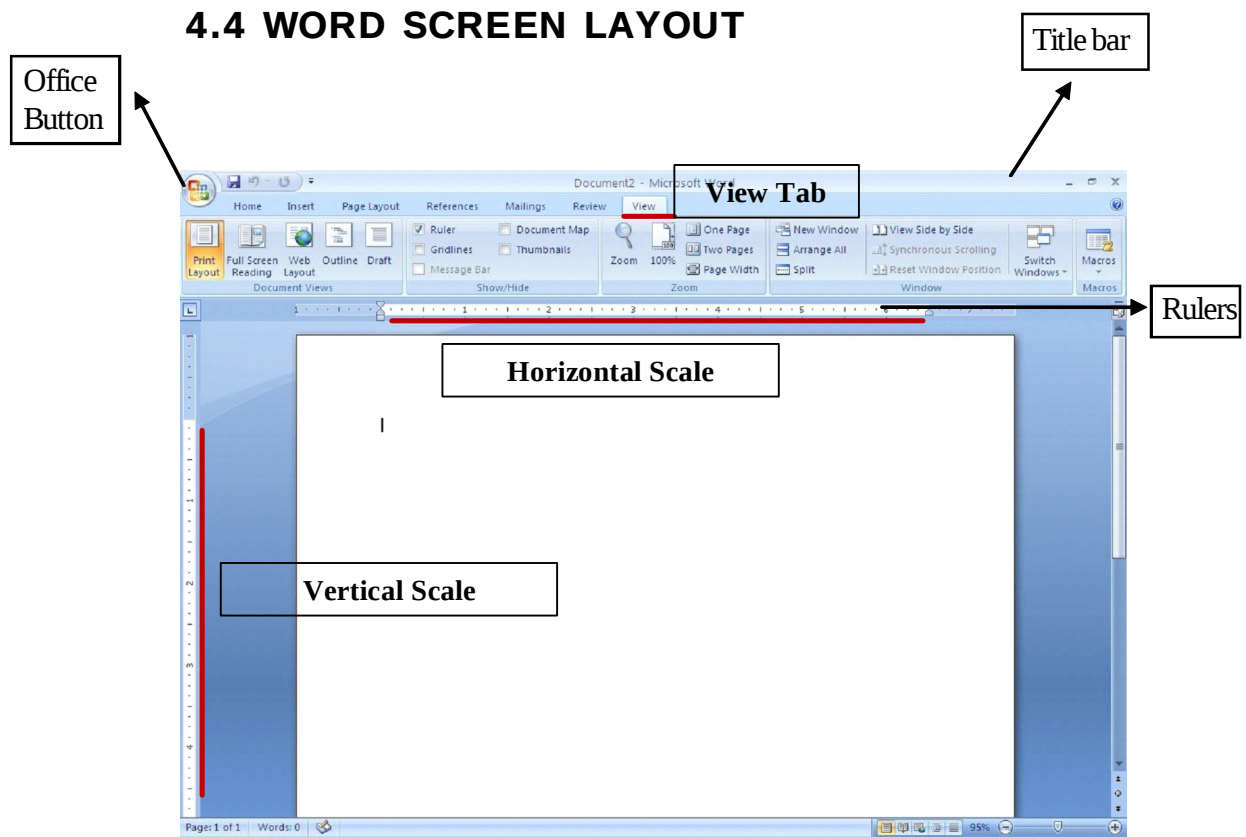


Fig.4.2 Word Screen

Office button

It is one of the important part of the screen used in file management containing menus like New, Open, Print etc.

Title bar

Title bar is the topmost part of the screen which contains quick access tool bar on the left, title of the document in the centre and the sizing buttons on the extreme right of it.

Ribbon

The Ribbon is designed to help you quickly find the commands that you need to complete a task.

Rulers

The rulers display horizontal and vertical scales that reflect the width and height of your typing area. The horizontal scale is

invaluable when you want to quickly set tabs, margins, and indents. Select the View tab on the main word screen to be able to select/deselect the Ruler/Gridlines and other options.

Typing Area

The open area below the ribbon is writing or typing area. There are certain objects that are a permanent part of the typing area. These are: (a) Insertion Point, (b) Mouse Pointer

- (a) Insertion Point:** The black vertical blinking line is the cursor and place where it is blinking is insertion point that is initially at the top left side of the typing area i.e., at the beginning of the document. It indicates the place where your typing is inserted into the document. As you type, the blinking line continuously moves along towards right.
- (b) Mouse Pointer:** When you move the mouse around in the typing area, the mouse pointer is in the shape of a thin I-beam. As you move the mouse near the menu bar and toolbars, the mouse pointer becomes a pointing arrow. .

Scrollbars

The typing area is bordered on the right side by the vertical scroll bar with a scroll button and arrows. The single down arrow scrolls through the document line by line. The double down arrow allows you to move to the top of the next page. The double up arrow allows you to move to the top of the previous page. The double down arrow allows you to move to the top of the next page. You can also drag the vertical scroll button up and down the scroll bar to move up and down through the document.

Status bar:

It is situated at the bottom of the screen and contains status of the document.

4.5 MANAGING DOCUMENTS

This section of the lesson explains how to open a new/existing document, save a document, print a document, finding a document, and closing an opened document. There are several

ways to create new documents, open existing documents, and save documents in Word. Click on the Office Button to use one of the following options from the menu pull down bar.

To Create a New Document

- Click **New** button on pull down menu bar.

Or

- Press **CTRL+N** keys on the keyboard.

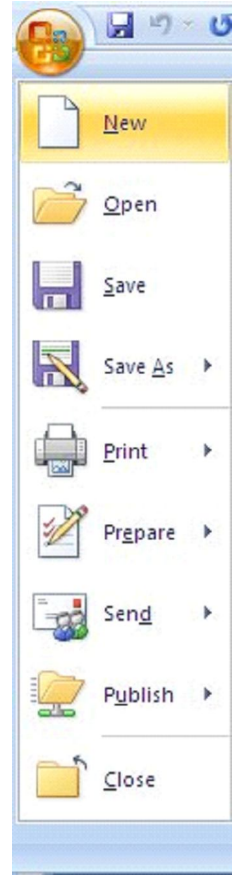


Fig.4.3

To enter text, just start typing in the text area. As you type, the text will appear where the blinking cursor is located and will move from left to right. Unlike with a typewriter, you need not press ENTER key at the end of each line, the text automatically shift to next line.

To Open an Existing Document

To open an existing document, follow one of the following methods:

- Click the **Open** button on the pull down menu.

Or

- Press **CTRL+O** keys on the keyboard.
-

Each of the above method will show the **Open** dialog box.
Choose the file and click the **Open** button.

To Save a New/Existing Document

To save a new/existing document that is opened, follow one of the following methods:

- Click the **Save** button on the pull down menu.

Or

- Press **CTRL+S** keys on the keyboard.

If the document is already named and saved earlier, it will simply save the document. On the other hand, if the file is a new document then it will prompt you by opening **Save As** dialog box. Select the folder where you want to place your document in **Save In:** box, type the name of the document in **File Name:** box, and then click **OK**. You can also save a new document by choosing **CTRL→S** on the keyboard and then selecting the above actions in **Save As** dialog box.

To Close a Document

Close the current document by selecting **Office Button→Close** command on the menu bar or click the **Close** icon if it is visible on the Standard toolbar.

4.6 EDITING A DOCUMENT

Editing a document includes basic three tasks. Inserting text, Deleting text and Replacing text

Inserting Text

To insert the text in an existing document, follow the steps given below:

1. Move the cursor by using the arrow buttons on the keyboard or positioning the mouse and clicking the left button where you want to insert the text.
2. Type the text you want to insert.

Deleting Text

Use the **BACKSPACE** and **DELETE** keys on the keyboard to delete text. **Backspace** will delete the text to the left of the cursor and **Delete** will erase the text to the right

Replacing Text

Word can combine the steps of deleting unwanted text, positioning the insertion point, and inserting replacement text. To replace text, follow the steps given below:

1. Select the text to be removed as explained above.
2. Start typing the new text. Observe that the new text is replacing the selecting text.

4.7 FORMATTING DOCUMENT

Formatting a document mainly involves formatting of Font and Paragraph.

Font Formatting

Using the **Formatting** toolbar is the easiest way to change many attributes of text. If the toolbar as shown below is not displayed on the screen, select **Home Tab**. Under Home Tab you can select desired Formatting commands under **Font**, **Paragraph** subtask as per the diagram given below.

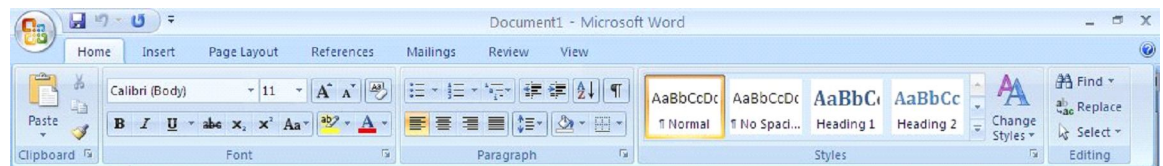


Fig.4.4

- **Font Face** - Font is the basic typeface in which your words are displayed. Font comes in families such as Times New Roman or Ariel. Each font family has a specific way of formatting individual letters.
 - **Font Size** - It determines how large each letter will appear. The font size is measured in points (1/72 of an inch). Click on the white part of the font size box in the **Font Formatting** subtask menu to enter a value for the font size or click the arrowhead to the right of the box in the Formatting toolbar to view a list of font sizes available.
 - **Font Style** - Font style determines the emphasis or weight that the letters have when they are displayed. Each font can be displayed as **bold**, *italicize*, and underline.
-

- **Alignment** - Text can be aligned to the left, center, or right side of the page or it can be justified across the page.
- **Numbered and Bulleted Lists** - Lists are used to highlight the main points of the document.
- **Increase/Decrease Indent** - Change the indentation of a paragraph in relation to the side of the page.
- **Outside Border** - Add a border around a text selection.
- **Highlight Color** - Use this option to change the color behind a text selection. The color shown on the button is the last color used. To select a different color, click the arrowhead next to the image on the button.
- **Text Color** - This option changes the color of the text. The color shown on the button is the last color chosen. Click the arrowhead next to the button image to select another colour.

Line Spacing: Line Spacing determines the height of each line of text in the paragraph. The default (single line spacing) depends on the size of the font characters. The preview area demonstrates the relative effect of single, one-and-a-half and double line spacing.

4.8 BULLETED AND NUMBERED LISTS

Bulleted lists and Numbered lists are often used to bring main points to a reader's attention.

Creating a Bulleted and Numbered Lists

To create a bulleted or numbered list, use the list features provided by Word. Click the **Bulleted List** button or **Numbered List** button on the formatting toolbar. Then type the first entry and press **ENTER**. This will create a new bullet or number on the next line. If you want to start a new line without adding another bullet or number, hold down the **SHIFT** key while pressing **ENTER**. You can also type the text first, highlight the section, and press the **Bulleted List** or **Numbered List** buttons to add the bullets or numbers.

4.9 WORKING WITH TABLES

Tables

There are two ways to add a table to the document using the Insert feature:

1. Click on the **Insert Table** tab on the standard tool bar and select table icon from the sub-task menu
2. Drag the mouse along the grid, highlighting the number of rows and columns required for the table. And as you select the number of rows and columns, accordingly the table will get created on the document.
3. Alternatively select **Insert** Tab→**Table** from the sub-task menu bar. Then select Insert Table options to display the input screen for number of rows and columns the table will have.



Fig. 4.5



Fig.4.6

4.10 ADDING GRAPHICS

Word accepts most popular graphic file formats in use today, and it comes with large collection of ready-to-use clip art. You can also import your own graphic files from any source such as scanners and digital cameras. You can also create your own artwork by using drawing tools in Word. The tools to insert graphics in to the document are available in Illustrations groups under **Insert** tab from the main tab bar.

4.11 COPYING TEXT AND MOVING TEXT

Copying Text

Copying means to make a copy of the selected text and insert it at another location, leaving the original text unchanged. To copy text, follow the steps given below:

1. Select the text that will be copied.
2. Select **Home→Clipboard** sub task menu command on the menu bar, or click the **Cut** button on the standard tool bar, or press **CTRL+X** keys. This will move the text to a clipboard.
3. Choose **Home→Clipboard** sub task menu command on the menu bar, click the **Copy** button on the standard toolbar, or press **CTRL+C** keys to copy the text to the clipboard.

Moving Text

Moving text means to remove (cut) the selected text from one location and insert (paste) it at another location. To move text follow the steps given below:

1. Select the text that will be moved.
2. Select **Home→Clipboard** sub task menu command on the menu bar, or click the **Cut** button on the standard tool bar, or press **CTRL+X** keys. This will move the text to a clipboard.
3. To paste cut text, move the cursor to the location you want to move the text to and select **Home→Clipboard** sub task menu command on the menu bar, click the **Paste** button on the standard toolbar, or press **CTRL+V** keys.

To move a small amount of text a short distance, the drag-and-drop method may be quicker. Highlight the text you want to move, click the selection with the mouse, drag the selection to the new location, and release the mouse button.

SPELLING AND GRAMMAR

The spelling and grammar checkers check for misspelled words or grammar errors. Word will automatically check for spelling and grammar errors as you type unless you turn this feature off. To use the spelling and grammar checker, follow these steps:

1. Select button from the main tab bar or press **F7** button on the key board.
2. The **Spelling and Grammar** dialog box will notify you of the first mistake in the document and misspelled words will be highlighted in red.
3. If the word is spelled correctly, click the **Ignore** button or click the **Ignore All** button if the word appears more than once in the document.

4.12 PAGE LAYOUT

In this section, you will learn designing pages suiting to your needs. For instance, the page setup options which included paper size and page orientation etc. are normally set either by you or by default at the beginning of the opening a new document. These options are available under **Page Layout** tab and can easily be changed at any time according to your needs

Page Margins

There are two methods by which you can change the page margins of your document: (a) using ruler and (b) using Page Setup dialog box.

(a) Using Ruler

1. Move the mouse over the area where the white ruler changes to grey
2. When the cursor becomes a double-ended arrow, click with the mouse and drag the margin indicator to the desired location.
3. Release the mouse when the margin is set.

(b) Using Page Set-up Dialog Box

The margins can also be changed using the Page Setup dialog box:

Select **Page Layout** Tab and click on the command on the menu bar and choose the **Margins** button under **Page Setup** sub task group to display the margin dialog box .

4.13 HEADERS AND FOOTERS

A header is text that is added to the top margin of every page such

as a document title or page number and footer is text added to the bottom margin. Follow these steps to add or edit headers and footers in the document.

1. Select **Insert→Header and Footer** subtask menu on the main tab bar. Click on the Header or Footer option as per the requirement

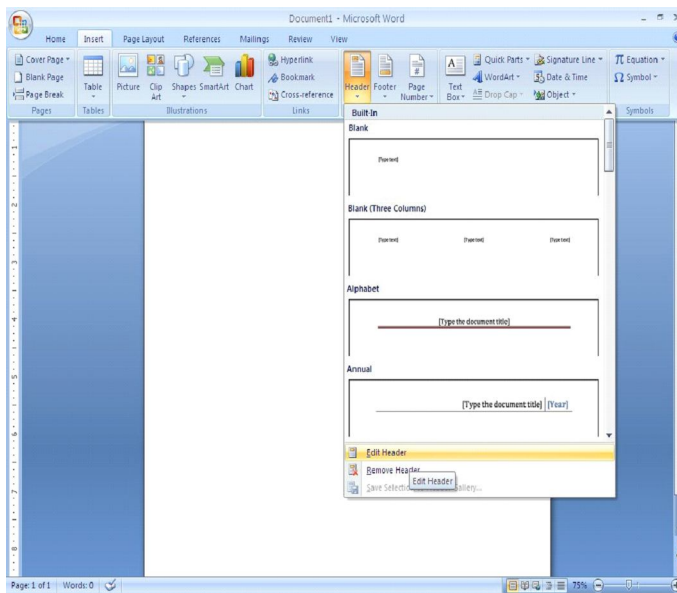


Fig 4.7

2. On selecting **Header** option, header toolbar will appear and the top of the page will be highlighted.
3. Type the heading in the **Header** box. You may use many of the standard text formatting options such as font face, size, bold, italics, etc.

Similarly you can select the designated command for Footer and customized it as per requirement.

4.14 PAGE NUMBERS

Use these steps to add page numbers to a document as shown in figure.

1. Select **Insert→ Page Numbers** from the main tab bar and the following dialog box will appear.
-

2. Select the Position of the page numbers by choosing “Top of page” or “Bottom of page” from the **Position** drop-down menu.
3. Click **OK** when finished.

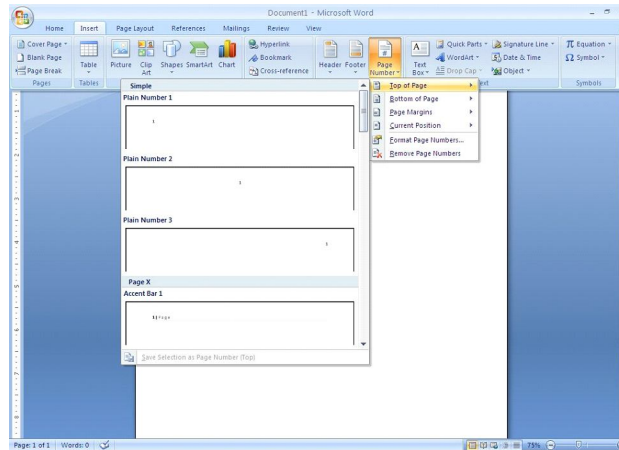


Fig. 4.8

4.15 PRINTING DOCUMENTS

While printing a document you have the following options in **Print** dialog box:

1. Name of the printer (if you have more than one printers).
2. Choose paper size, orientations, resolution etc. by pressing Properties button.
3. Print the entire document

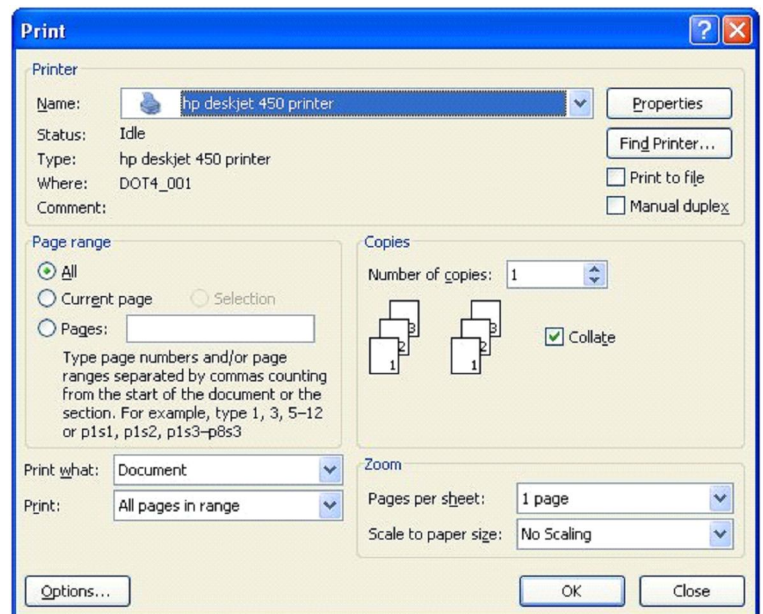


Fig. 4.9

or only current page or specific pages or even the selected part of the document.

4. Print a draft copy, which omits graphics to allow faster printing.
5. Number of copies to be printed, etc.

To print a document or selected pages follow the steps given below:

1. Open the document to be printed.
2. Choose **Office Button→Print** command on the menu bar. The **Print** dialog box will open. Select the Options like print range, Number of copies, Printer name etc. See that printer is switched on and the paper is available in the printer tray.
3. Click **OK**.

4.16 EXIT WORD PROGRAM

When finished your work in Word and closing all the files, you can quit the Word program by selecting **Office Button→Exit** command on the menu bar.

4.17 MAIL MERGE

Mail merge is one of the importing features of Word which is used to produce letters, mailing labels and envelopes and send it to different people or organization. Mail Merge requires three types of documents:

- (a) **Main Document:** In a Mail Merge operation, the personalized document (such as, a standard letter, or mailing label) is known as the main document. It is the document containing the text and graphics that stay the same for each version of the merged document.
 - (b) **Data Source:** Data source is a file that contains the names and addresses or any other information that vary with each version of a mail-merge document
 - (c) **Merge Document:** When you merge the main document with data source, a third document called merge document
-

will be produced. The merge document can be merged to the screen to view letters along with addresses; or directly to the printer to print the letters along with addresses.

To do Mail Merge in Word click on the '**Mailings**' tab on the main tab bar to activate the mailings features and tools, which comprises subtask such as "**Create**", "**Start Mail Merge**", "**Write & Insert Fields**", "**Preview Results**" and "**Finish & Merge**"

Mail Merge Wizard

The Mail Merge wizard guides you through the process of doing a mail merge. This involves creating and editing main document; creating a new data file, opening an existing data file; and merging the data fields with main document. To use Mail Merge Wizard, select **Mailings**→**Start Mail Merge** subtask from the main tab bar. Then select **Step by Step Mail Merge Wizard** option on the subtask bar.

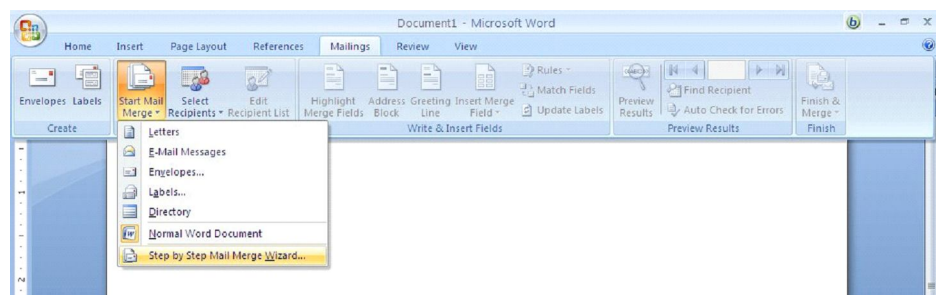


Fig 4.10

The **Mail Merge Wizard** menu will appear on the screen. This will help you to create mail merge documents in customised step manner.

Select Document Type

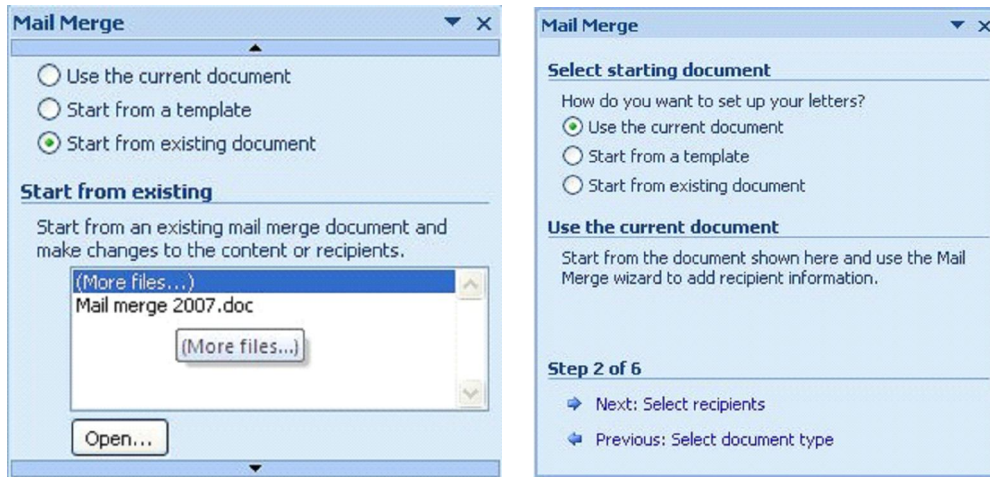
Selecting a Document Type is the first step towards creating a mail merge document. Using this option you can choose the type of main document such as Letters, E-Mail Messages, Envelopes, Labels, Directory

When you select Letters type, you can use this letter to send to a group of people with a personalised letter that is received by different people in that group with different address. Select **Letters** from the options given in the Select Document type box and click on the “Next: Starting document” located on the lower end of the Wizard dialog box to move to the next step.

Select Starting Document

1. The 2nd step in the process is to select starting document under Letters option. There are three options available.

Use the current document: This is to use the current document shown and use the mail merge features to add recipients address or information.



(a)

(b)

Fig. 4.11

Start from a Template: Similarly if you don't have a drafted letter for use, you can choose for ready to use mail merge template already available with Word 2007 .

Start from existing document: If you already have a document available with you, you can select the existing mail merge document and make necessary changes to the content of the letter and/or recipients. Now you type the body of the letter as follows fig.4.12

15 January 2011
To

Dear,
We are happy to inform you that you have been admitted for the course Certificate in Data Entry Operations offered by NIOS. Your enrollment number is ____ Quote this number for all your correspondence with the School or writing assignments or writing term examinations.

With best wishes.

Director (Vocational)
NIOS
NOIDA

Fig. 4.12

Save your document.

Creating a Data Source

The 3rd step in Mail Merge Wizard is to select a list of recipients or address to whom the drafted letter will be addressed and dispatched.

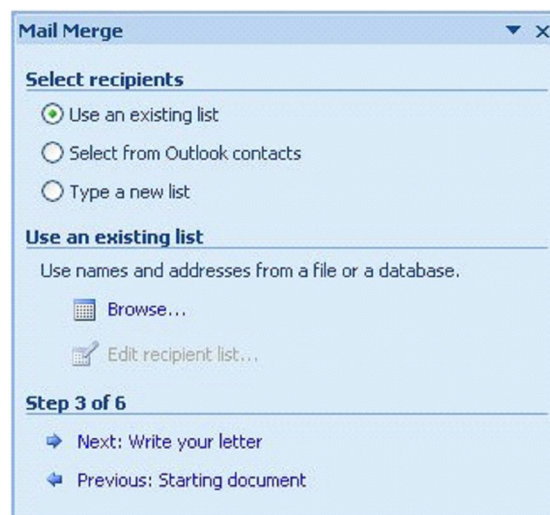


Fig. 4.13

If you do not have existing database information, you must create your own data source of the fields of information that will be inserted into the letter or any other main document. For example,

a Mail Merge letter which you have created earlier might require that you have the following fields in address list of students as data source: Name, Address1, Address2, City, State, and PIN Code.

Creating a Data Source Using Mail Merge Helper

You can use the Mail Merge Wizard to create a Microsoft Word, Excel or Access database data source.

Follow these steps to create a data source using Mail Merge Wizard: Open a new blank document if you have not yet created the main document or open your existing main document.

1. Select **“Type a new list”** from the **“Select Recipients”** dialog box in step 3 of the Mail Merge Wizard (Fig 4.13) and then select **“Create”** option
2. A dialog box appears to create a list with new set of data such as Title, First Name, Last Name, Company Name and Address Line 1 and so on.
3. You can start entering data to the respective field as per your requirement directly into the displayed **New Address List** dialog box.
4. If you want to **Customize Columns** in the new address list to remove or add any other field as per your requirement, click on the customised button located on the lower right side of the New Address List dialog box.
5. This will display a list of available data field to which you can add a customised data field, delete or rename an exiting data field in the list. Once done click on the **“OK”** button.
6. When you finish specifying the required data fields to the new address list, click **OK**. The **Save As** dialog box appears.
7. Locate the folder that you want to save the data source in, type a file name, and then click **Save As** in the Save As dialog box. The file will be saved with an extension name .mdb (Microsoft Database).

Merging Documents

Once if you have created your main document and data source document, the next two steps in mail merge are to insert merge

fields in the main document and then merge data in the main document.

To merge the fields in the main document you may have to do some editing in the main document. Follow these steps as defined:

1. Click on the location of your letter where you want the addresses to be displayed and then
2. Select **Address block** option on the dialog box displayed in step 4 of the Mail Merge Wizard. The **Mail Merge Wizard** displays the **Insert Address Block** dialog box.
3. Using **Insert Address Block** you can select the individual address field to be inserted into the main letter.
4. After you complete the main document and insert all of the merge fields, click on the **Office Button** and select **Save As** option. Now select "Word Document" to save the file as a Word 2007 document or Select "Word 97-2003 Document" to save it as Word 97 or 2003 compatible document. Name the document, and then click **Save**. Now your main document will work as merge document.

Merging the Data into the Main Document

Merging the data into the main document is the last step of the Mail **Merge Wizard**. Click on the << or >> button to display the preview of the main letter with address data before you close the merge document and take the printout of the letter. Once finished click on the "Next: Complete the Merge" option on the dialog box to complete the merging process.

4.18 FEATURES OF SPREADSHEET

The new results-oriented user interface makes it easy for you to work in Microsoft Office Excel. Commands and features that were often buried in complex menus and toolbars are now easier to find on task-oriented tabs that contain logical groups of commands and features. Many dialog boxes are replaced with drop-down galleries that display the available options, and descriptive tooltips or sample previews are provided to help you to choose the right option.

Starting Spreadsheet

1. Click on the **Start** button
2. In the menu click **All Programs -> Microsoft Office-> Microsoft Office Excel, 2007.**

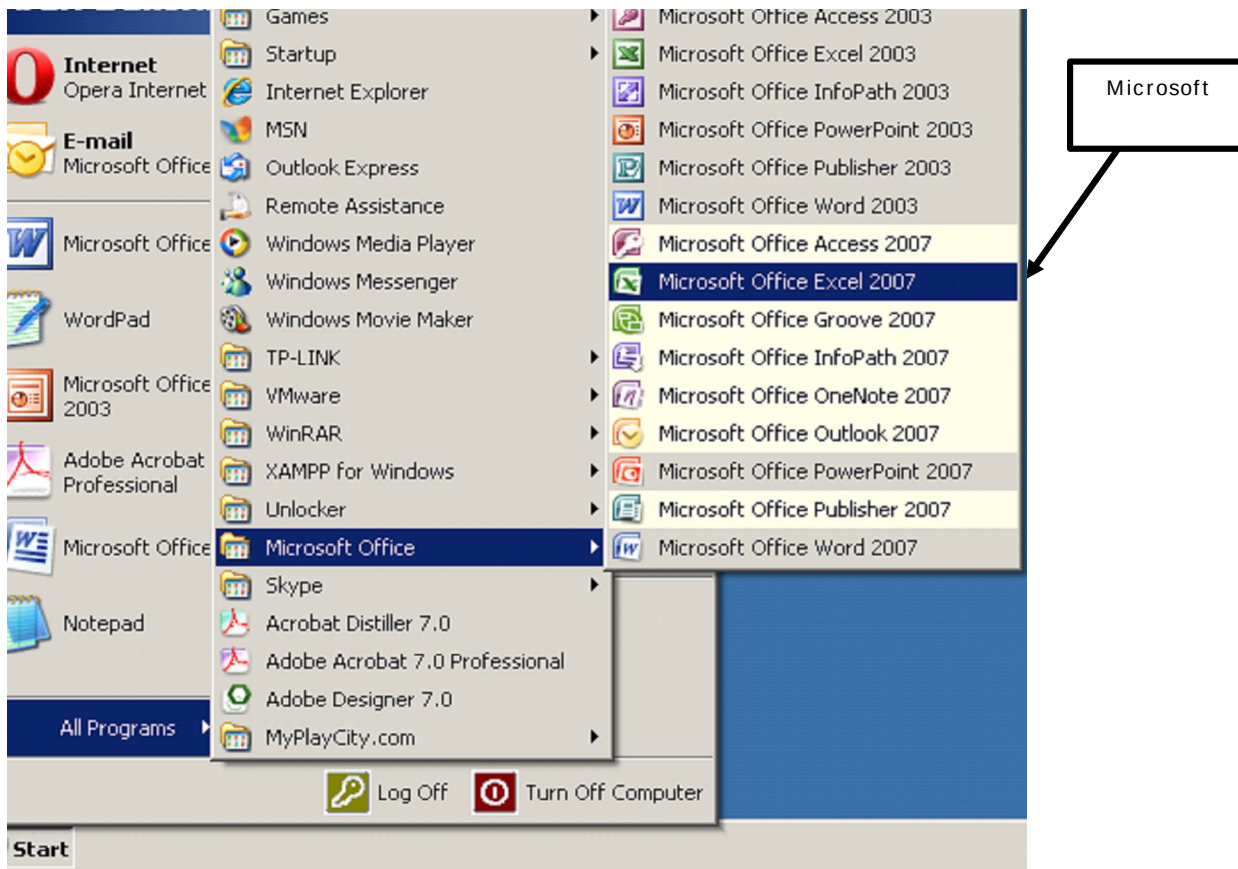


Fig 4.14

It will start MS Excel 2007. The opening Excel screen is shown in Figure 4.15 and the description of all the screen features are shown in table.

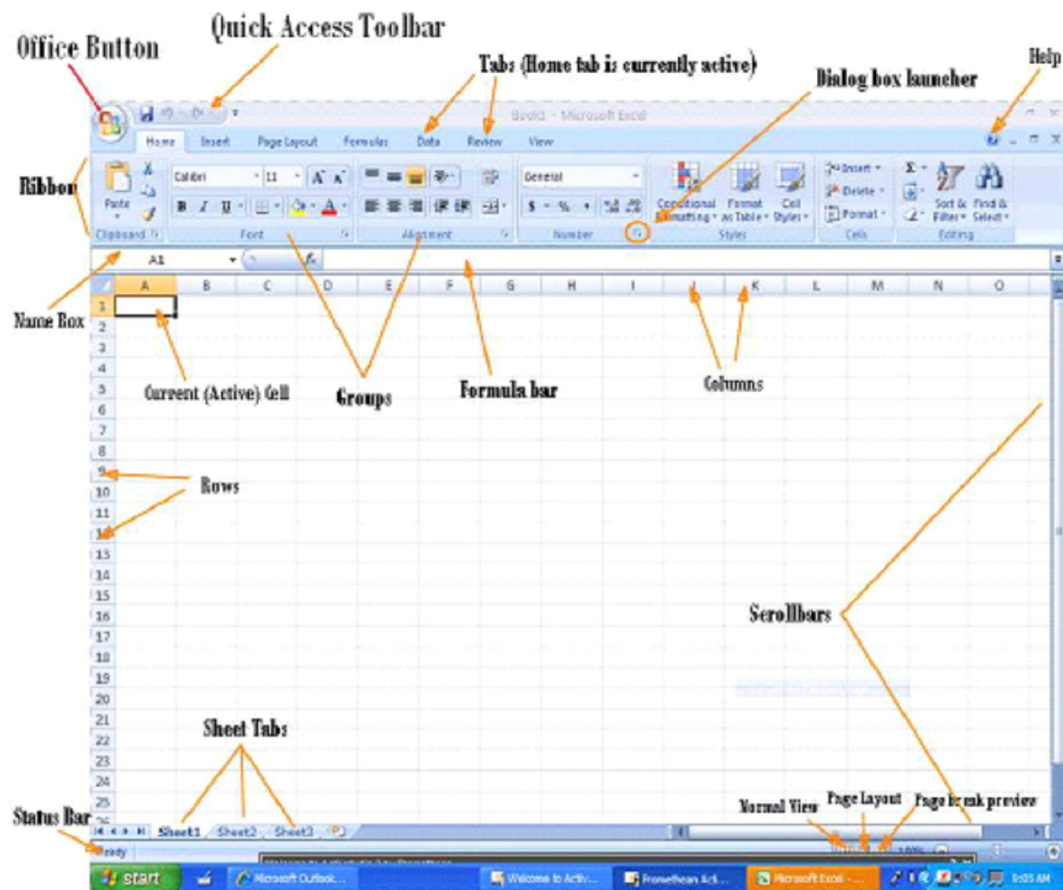


Fig.4.15 Spreadsheet Screen

Table 4.1: Excel Screen Features

Office Button	Displays as a Microsoft Office logo and,when clicked, displays a list of document management actions, such as save or print, and a list of recently opened workbooks.
Quick Access toolbar	Contains buttons for commonly used commands which can be executed with a single mouse click.
Tabs	Commands and features in the ribbon are organized into related groups which are accessed by clicking a tab name.
Title bar	Displays workbook name followed by Microsoft Excel.
Ribbon	Area from which commands and features for performing actions on a cell or worksheet are accessed. Begin by selecting a tab and then choosing the command or feature.

Name box	Displays the active cell address or name assigned to active cell.
Formula bar	Displays the contents stored in the active cell.
Active cell	Location in the worksheet that will display typed data or that will be affected by a command.
Worksheet area	Contains calls used to create the worksheet.
Vertical and horizontal scrollbars	Used to view various parts of the worksheet beyond the current screen.
Sheet tabs	Identifies the worksheets in the workbook. Use these tabs to change the active worksheet.
Status bar	Displays current mode, action messages, View buttons, and Zoom slider.

4.19 WORKSHEET

Information is created in Excel in a worksheet and is saved in a file called a workbook. Each Excel file is a workbook that can hold many worksheets. The worksheet is a grid of columns (designated by letters) and rows (designated by numbers). The letters and numbers of the columns and rows (called labels) are displayed in grey buttons across the top and left side of the worksheet. The intersection of a column and a row is called a cell. Data is entered into a cell. Columns are lettered from A to Z, AA to AZ, BA to BZ and so on. Similarly Rows are numbered 1, 2, 3, and so on. A column letter and a row number together identify a cell which is called cell address.

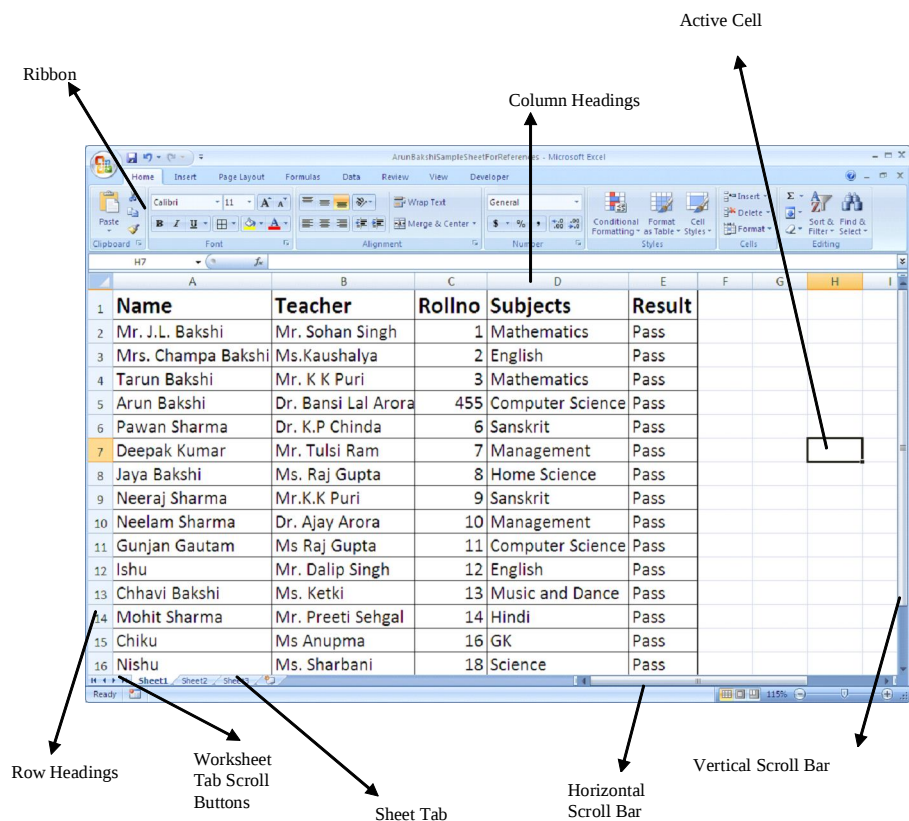


Fig.4.16

Creating New Workbook

A workbook is a collection of many worksheets. You can create a blank workbook or create a new workbook based on an existing workbook. By default, a workbook opens with three worksheets and it can contain a maximum of 255 worksheets.

For creating a new workbook:

1. Click on the **MS Office** button.
2. Click on **New**.
3. In the new dialog box, click **Blank workbook**.
4. Click on **create** button.

• Opening Workbook

To work on any worksheet in a workbook, first of all you have to open a workbook.

1. Click on the **MS Office** button.
2. Click on **open**. (or press **ctrl + O** Keys together)
3. In the open dialog box, choose drive, folder name that contains the workbook.
4. Click on **Open**.

• Saving a workbook

1. Click on **MS Office** button.
2. Click on **Save As**.
3. In **Save As** dialog box, specify the location where you want to save the file in the **Save in** box.
4. In the **File name** box, give the name of the file.
5. In the **save as type** box, give the type of the file.
6. Click save button.

• Closing a Workbook

1. Click on **MS Office** button.
 2. Choose **Close**
 3. You can select **Exit Excel** command to exit from MS Excel.
-

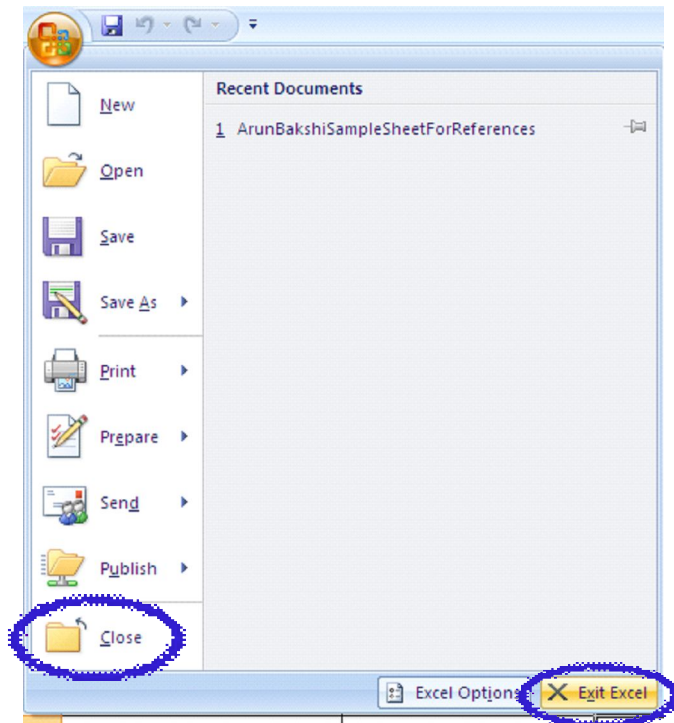


Fig. 4.17

Selecting, Adding and Renaming Worksheets

Insert a new worksheet

To quickly **insert a new worksheet at the end** of existing worksheets Click the Insert Worksheet tab as shown (encircled) in figure.

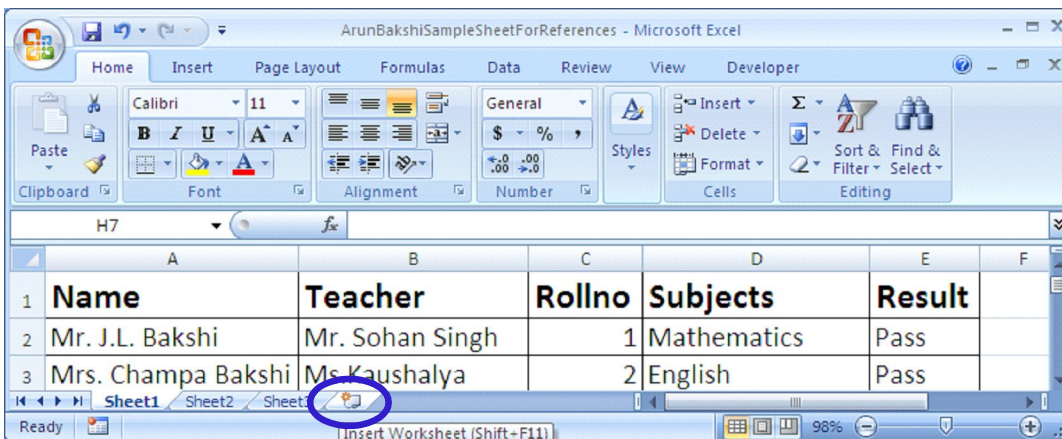


Fig.4.18

To insert a new worksheet before an existing worksheet,

Select and right click the worksheet before which you want to insert a new worksheet. Select Insert Option from Pop Up menu. In the Insert dialog box click on the worksheet and then click on OK. Name the worksheet as **Sheet 2**.

To rename a worksheet

To rename a worksheet follow the steps as:

1. Right click on the worksheet tab which you want to rename
2. Select rename from the Pop Up menu, the sheet name gets highlighted.
3. Type new name for the Worksheet (Chemistry in our example)
4. Previous name sheet 2 has been renamed as 'chemistry' as shown in figure 4.19

4.20 SELECTING CELLS AND RANGES

To enter data into your worksheet you must first have a cell or range selected. When you open an Excel worksheet, cell A1 is already active by default. An active cell will appear to have a darker border around it than other cells on the worksheet. The simplest way to select a cell is with your mouse pointer. Move your mouse to the desired cell and click on it with right button. Whatever you type goes into the cell. To select a range of cells, click on one cell, hold down the left mouse button and drag the mouse pointer to the last cell of the range you want to select. You can also use keyboard shortcuts given at the end of this lesson for selecting cells.

Another way to select particular range of cells is

Go to Name Box→Select range by typing (for example A1:C5)→Press Enter

All the cells between range A1 to C5 will be selected

4.21 ENTERING AND EDITING DATA

Entering data in a cell of the Excel Worksheet involves following steps:

1. Click on the desired cell where you want to enter data.
2. Type your data in the active cell.
3. Press **Enter**.

Text in a cell can include any combination of letters, numbers and keyboard symbols. A cell can contain upto 32000 characters.

Editing your Excel worksheet data is very easy. You can edit your data by any of the following ways:

1. Select the cell containing data to be edited. Press F2. Use Backspace key and erase the wrong entry. Retype the correct entry.
2. Select the cell and simply retype the correct entry.
3. If you want only to clear the contents of the cell, select the cell and press Delete key.
4. To bring back the previous entry, either click on **Undo** button on standard Toolbar or select **Edit→Undo** command or use keyboard shortcuts **CTRL+Z**.

4.22 FIND AND REPLACE DATA IN A WORKSHEET

You may want to locate a number or text that is already typed in the worksheet. This is done through **Home Tab→Find**. You can also locate your data and replace with new data with **Home Tab→Find→Replace**

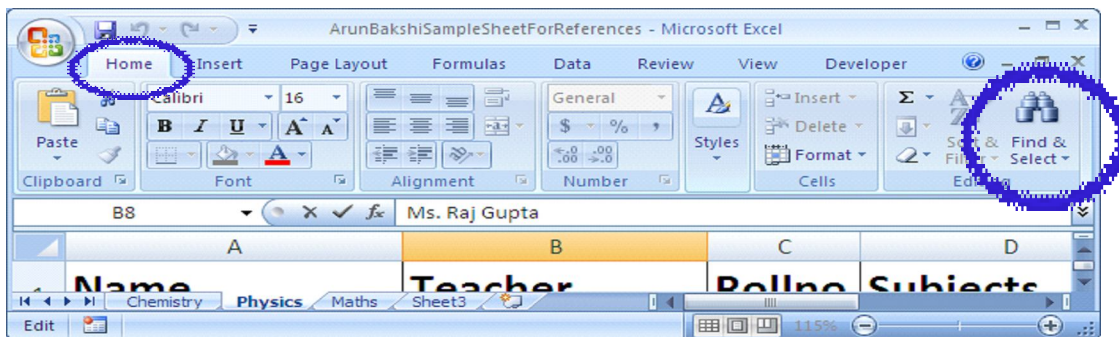


Fig. 4.19

4.23 MODIFYING A WORKSHEET

Insert Cells, Rows, Columns and Delete Cells

Insert blank cells in a worksheet

- Select the cell or the range (range: Two or more cells on a sheet. The cells in a range can be adjacent or nonadjacent) of cells where you want to insert the new blank cells. Select the same number of cells as you want to insert. For example, to insert five blank cells, you need to select five cells.
- On the **Home** tab, in the **Cells** group, click the arrow next to **Insert**, and then click **Insert Cells**.
- You can also right-click the selected cells and then click **Insert** on the shortcut menu.
- In the **Insert** dialog box, click the direction in which you want to shift the surrounding cells.

Insert rows in a worksheet

For inserting rows in a worksheet, the steps are given below:

- To insert a single row, select the row or a cell in the row above which you want to insert the new row. For example, to insert a new row above row 5, click a cell in row 5.
- To insert multiple rows, select the rows above which you want to insert rows. Select the same number of rows as you want to insert. For example, to insert three new rows, you need to select three rows.
- To insert nonadjacent rows, hold down CTRL while you select nonadjacent rows.

Alternate method of inserting rows is; on the **Home** tab, in the **Cells** group, click the arrow next to **Insert**, and then click **Insert Sheet Rows**.

Insert columns in a worksheet

For inserting columns in a worksheet the steps are given below:

- To insert a single column, select the column or a cell in the column immediately to the right of where you want to insert the new column. For example, to insert a new column to the left of column B, click a cell in column B.
-

- To insert multiple columns, select the columns immediately to the right of where you want to insert columns. Select the same number of columns as you want to insert. For example, to insert three new columns, you need to select three columns.
- To insert nonadjacent columns, hold down CTRL while you select nonadjacent columns.

Alternate method of inserting columns is; on the **Home** tab, in the **Cells** group, click the arrow next to **Insert**, and then click **Insert Sheet Columns**.

Delete cells, rows, or columns

1. Select the cells, rows, or columns that you want to delete.
2. On the **Home** tab, in the **Cells** group, do one of the following:
 - To delete selected cells, click the arrow next to Delete, and then click Delete Cells.
 - To delete selected rows, click the arrow next to Delete, and then click Delete Sheet Rows.
 - To delete selected columns, click the arrow next to Delete, and then click Delete Sheet Columns.
3. If you are deleting a cell or a range of cells, using the **Delete** dialog box, click **Shift cells left**, **Shift cells up**, **Entire row**, or **Entire column**.

Move or copy entire cells

When you move or copy a cell, Excel moves or copies the entire cell, including formulas and their resulting values, cell formats, and comments.

1. Select the cells that you want to move or copy.
 2. On the **Home** tab, in the **Clipboard** group, do one of the following:
 - To move cells, click **Cut**. **Keyboard shortcut** or press CTRL+X.
 - To copy cells, click **Copy**. or press CTRL+C.
 3. Select the upper-left cell of the paste area.
-

4. On the **Home** tab, in the **Clipboard** group, click **Paste**. Or press CTRL+V.

Move or copy entire cells by using the mouse

By default, drag-and-drop editing is turned on so that you can use the mouse to move and copy cells.

1. Select the cells or range of cells that you want to move or copy.
2. Do one of the following:
 - To move a cell or range of cells, point to the border of the selection. When the pointer becomes a move pointer, drag the cell or range of cells to another location.

Copy cell values, cell formats, or formulas only

When you paste copied data, you can do any of the following:

- Convert any formulas in the cell to the calculated values without overwriting the existing formatting.
 - Paste only the cell formatting, such as font color or fill color (and not the contents of the cells).
 - Paste only the formulas (and not the calculated values).
1. Select the cell or range of cells that contains the values, cell formats, or formulas that you want to copy.
 2. On the **Home** tab, in the **Clipboard** group, click **Copy**.
 3. Select the upper-left cell of the paste area or the cell where you want to paste the value, cell format, or formula.
 4. On the **Home** tab, in the **Clipboard** group, click the arrow below **Paste**, and then do one of the following:
 - To paste values only, click **Paste Values**.
 - To paste cell formats only, click **Paste Special**, and then click **Formats** under **Paste**.
 - To paste formulas only, click **Formulas**.

Drag and Drop method of moving cells

If you are moving the cell contents only a short distance, the drag-and-drop method may be easier. Simply drag the highlighted border of the selected cell to the destination cell with the mouse.

4.24 PAGE BREAKS

To set page breaks within the worksheet, select the row you want to appear just below the page break by clicking the row's label. Then choose **Page Layout→Setup Group→Breaks→Input Page Break**. Excel will start a new page from the row selected.

4.25 PAGE SETUP

Page setup is necessary to set the page layout, margins etc. before printing. For this first Select **File→Page Setup** from the menu bar. Page setup dialog box appear. In this dialog box there are various options for formatting the page, setting margins, and adding headers and footers.

4.26 PRINT PREVIEW

Print preview helps to view the worksheet before the final printout is taken. It helps to edit the worksheet if required as per the need.

The steps to see the print view of document are;

Select Print from Office Button→Select print→Click Print Preview.

Click the buttons like **Next** and **Previous** with respect to Print Preview Tab. Select the **Zoom** button to view the pages closer. Make page layout modifications needed by clicking the **Page Setup** button. Click **Close** to return to the worksheet or **Print** to continue printing.

4.27 PRINT

To print the worksheet, select Print from Office Button. Print dialog box appears with the following:

1. **Print Range** - Select either all pages or a range of pages to print.
 2. **Print What** - Select selection of cells highlighted on the worksheet, the active worksheet, or all the worksheets in the entire workbook.
 3. **Copies** - Choose the number of copies that should be printed. Check the **Collate** box if the pages should remain in order.
 4. Click **OK** to print.
-

INTEXT QUESTIONS 4.1

1. State True or False
 - (a) Sheet tab identifies the worksheets in the workbook.
 - (b) By default, three worksheets are included in each workbook.
 - (c) To enter data in a worksheet, you need not have to select a cell or a range.
2. To view shortcut menu, we need to:
 - (a) Click the mouse
 - (b) Right click the mouse
 - (c) First click and then right click the mouse
3. To copy the selected text you can use this key combination:
 - (a) ctrl + x
 - (b) ctrl + v
 - (c) ctrl + c
 - (d) All of the above
4. Ctrl+F is the keyboard shortcut for
 - (a) Help
 - (b) Find
 - (c) Replace
 - (d) Save
5. What is the command on the menu bar to save:
 - (a) a new file
 - (b) existing file

4.28 USING FORMULAS

Formulas are used for simple addition, subtraction, multiplication and division as well as for complex calculations.

To manipulate data and extract useful information from Excel worksheets, formulas play very important role. In Excel, formulas are used to calculate results from the worksheet data. When there is some change in the data, such formulas automatically calculate

the updated results with no extra efforts on the part of the user. There is a new feature introduced by Excel 2007, which enables you to create formulas which use columns names from a table, when you are working with table. This feature helps the user to make formulas much easier to read.

• **Entering Formulas**

A formula can have any or all of the following elements

- Must begin with the 'equal to' = sign.
- Mathematical operators, such as + (for addition), – (for subtraction), * (for multiplication) and / (for division) and logical operators such as < (less than) or > (greater than) etc.
- References of cell (including named ranges and cells)
- Text or Values
- Functions related to the worksheets, for example SUM or AVERAGE

The current cell in which you have entered a formula will display the result after the formula is completely entered. Also, when you select or click on a cell which is having some formula, the formula will appear in the formula bar.

In Excel 2007, the formulas are available in the Formulas Tab. If you click on the Formulas tab, you can see the corresponding ribbon display with available formulas, as shown in Figure 4.20

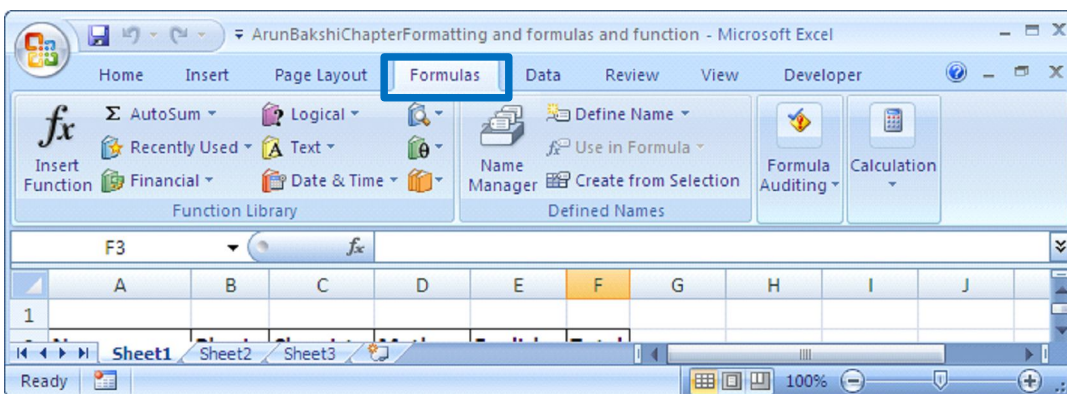


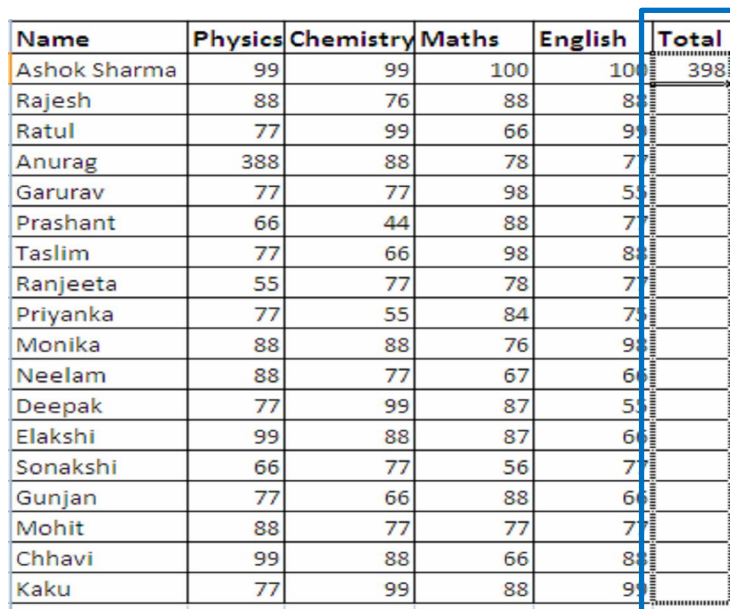
Fig. 4.20

For entering a formula, the steps are as follows:

1. Select the cell in which you want to enter the formula.
-

2. Then type an equal to sign =.
3. Type a value, cell reference or function.
4. If the formula is complete press Enter key or click the Enter box in the formula bar. If the formula is incomplete proceed further.
5. Type the operator such as (+) or (-).
6. Return to step 3.

Following are a few examples of formulas:



Name	Physics	Chemistry	Maths	English	Total
Ashok Sharma	99	99	100	100	398
Rajesh	88	76	88	88	
Ratul	77	99	66	99	
Anurag	388	88	78	77	
Garurav	77	77	98	55	
Prashant	66	44	88	77	
Taslim	77	66	98	88	
Ranjeeta	55	77	78	77	
Priyanka	77	55	84	77	
Monika	88	88	76	99	
Neelam	88	77	67	66	
Deepak	77	99	87	55	
Elakshi	99	88	87	66	
Sonakshi	66	77	56	77	
Gunjan	77	66	88	66	
Mohit	88	77	77	77	
Chhavi	99	88	66	88	
Kaku	77	99	88	99	

Fig. 4.21

In the above example, in the cell F3, just type = B3+C3+D3+E3 (see Figure). It will return sum of the marks in physics, chemistry, maths and English

- **Copying a formula**

Just drag the handle and bring down to cover the remaining cells in the column total. This will automatically copy the formula and calculate the corresponding sum of the respective rows of the other students.

The alternate way of copying a formula is:

1. Activate source cell.
-

2. Click copy button.
3. Select destination cell.
4. Click paste button.

Entering Cell Reference

Cell reference allows you to use values from different parts of a worksheet and execute. You can use any cell or group of cells in a formula. The steps are as follows:

1. Select the cell for the formula.
2. Type = sign.
3. Point to the cell you want to enter in the formula and click on it. The address of the cell appears at the formula bar.

Using operators in Formulas

Various types of operators can be included in Excel formulas. The following table shows the name and description of these operators.

Operators	Sign	Type of operation
Arithmetic	+	Addition
	–	Subtraction
	*	Multiplication
	/	Division
	%	Percentage
	^	Exponentiation
Comparison	<	Less than
	>	Greater than
	<=	Less than or equal to
	>=	Greater than or equal to
	<>	Not equal to
Text	& (ampersand)	Joins text within quotationmarks. (concatenation)

Order of Operations

Excel 2007 follows a set of rules when applying operators in a formula. Working from the first calculation to the last, Excel 2007

evaluates operators in the order shown in the following table

Operator	Definition
–	Negations (e.g., –1)
%	(percents)
^	(exponentiations)
* and /	(multiplication) and (division)
+ and –	Addition and subtraction

If you want to change the order in which calculations are performed then enclose in parenthesis, those terms which you want to calculate first. For example the result of the following two formulas will be different because of parenthesis.

	Formula	Result
i)	= 6 + 15 / 3	11
ii)	=(6 + 15) / 3	7

Examples of formulas

Some examples of formulas are given as follows:

If A1 = 2, B1 = 3, C1 = 4, D1 = 5 then

- (i) = B1 * C1 will give result as 3 * 4 = 12
- (ii) = A1 * B1 – C1 + D1 will give result as 2 * 3 – 4 + 5 = 7
- (iii) = ((A1 * B1) + C1) / D1 will give result as ((2 * 3) + 4) / 5
= (6 + 4) / 5 = 10 / 5 = 2

4.29 FUNCTIONS

Functions are the built in formulas used to perform calculations in Excel on specific values called the arguments. Structure of a formula utilizing a function begins with the equal to sign = followed by the name of the function, and then the arguments. Functions which are used frequently such as SUM function are made available in the form of buttons in the Home tab.

Entering Functions in a Worksheet

There are two ways by which you can enter functions in a worksheet:

- a) **Direct method:** In this method, function name and required arguments are entered directly in the formula bar.
- b) **By inserting a function:** Insert function button (*fx*) is available under the Formulas tab

The steps are as follows:

1. First click on the cell where you want to enter the formula.
2. Click on **Formulas tab**.
3. Then click on **Insert function**. **Insert Function** dialog box opens.
4. In the dialog box, type the function description and click on **Go**.
5. Select a function category. List of functions appears. Select the appropriate function.
6. Description of the function and the syntax appears in the lower part of the dialog box. Go through it and be satisfied that it is the exact function, you want to use.
7. Click on OK or double click the function. Function Arguments dialog box appears.
8. Selected function displays in the formula bar as well as in the cell simultaneously.
9. Enter the arguments in the text boxes shown in the function argument dialog box.
10. Click OK.

Auto Sum Function

The sum of cell values can also be done with the help of AutoSum function.

Following steps explains how to do that.

- Click on the cell F3
 - Select the Formulas tab
 - Click AutoSum from the function library group.
 - Select Sum
 - Press Enter
-

Alternatively, you can write = SUM(B3:E3) in the Cell F3 to get the sum of the Physics, Chemistry, Maths and English marks.

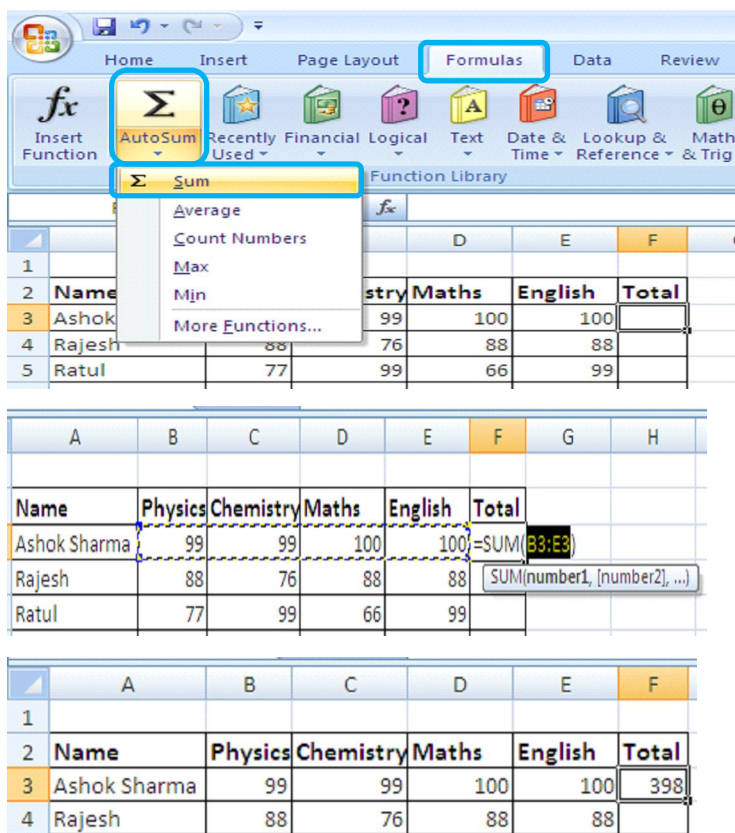


Fig. 4.22

Apart from sum there are other functions also, like average, Count Numbers, Max, Min and many other Functions.

4.30 CHARTS

Charts allow you to present data entered into the worksheet in a visual format using a variety of chart types. Before you can make a chart, you must first enter data into a worksheet. Formatted charts come in various types ranging from columns, line, pie, area, scatter and others. Charts can be placed in the same worksheet as the data or it can be inserted into its own sheet. To create a chart, first-select the cells containing the data, you want to put into chart and then choose chart type.

There are various types of charts to help you to display data in different ways as per the need of the viewers. You can create a

new chart or can change the existing chart, from the wide range of chart.

Column Charts

This type of chart is used to compare values across categories. They give very effective results to analyze the data of the same category on a defined scale.

Line Charts

Line charts can be used to display continuous data over time with respect to a common scale. Thus Line Charts are best suitable for viewing data trends at equal intervals of time.

Pie charts

In a situation where one has to show the relative proportions or contributions to a whole, a pie chart is very useful. In case of pie chart only one data series is used. Small number of data points adds more to the effectiveness of pie charts. Generally there should be maximum five or six data points or slices in a pie chart.

Bar Charts

Bar charts are used to show comparisons between individual items. To make a bar chart the data should be arranged in the form of rows and columns on a worksheet.

XY (Scatter) charts

XY charts are also known by other names like scatter grams or scatter plots. The point of difference between XY charts and other types of charts is that in XY charts both axes display values i.e. they have no category axis. Such type of charts is generally used to show the relationship among two variables.

4.31 FORMATTING WORKSHEETS

Formatting helps to make our work more presentable. It also helps the user to understand the worksheet more easily with respect to its purpose.

There are three locations where the Excel 2007 formatting tools are available.

1. In the home tab
2. In the mini toolbar that appears when you right click a range or a cell
3. In the format cells dialog box.

Home Tab and the Formatting Tools

Home tab provides the quick access to the most commonly used options with respect to the formatting requirements. You can select a cell or a range and then use the tools like Font, Alignment or Number groups as per the need (Fig. 4.23).

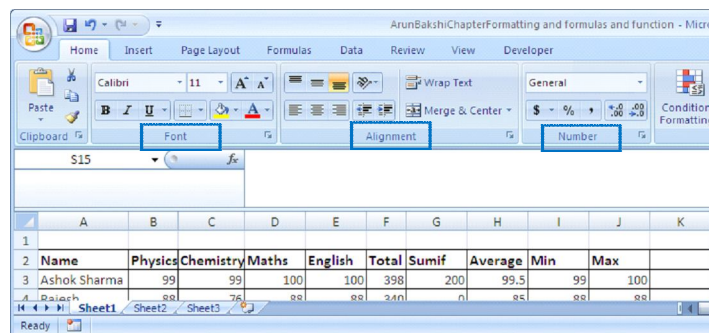


Fig. 4.23

Using the Mini Toolbar

Shortcut menu appears when you right click a cell or a range selection. A mini toolbar also appears above the shortcut menu which contains controls for common formatting.

Using the Format Cells dialog box

Although most of the formatting related requirements gets fulfilled by the controls available on the Home tab of the Ribbon, some special types of formatting are fulfilled by using Format cells dialog box.

4.32 DATE AND TIME FORMAT

If you enter the date “January 1, 2001” into a cell on the worksheet, Excel will automatically recognize the text as a date and change the format to “1-Jan-01”. To change the date format, select the **Number tab** from the **Format Cells** window. Select “Date” from the Category box and choose the format for the date

from the Type box. If the field is a time, select “Time” from the Category box and select the type in the right box. Date and time combinations are also listed. Press OK when finished.

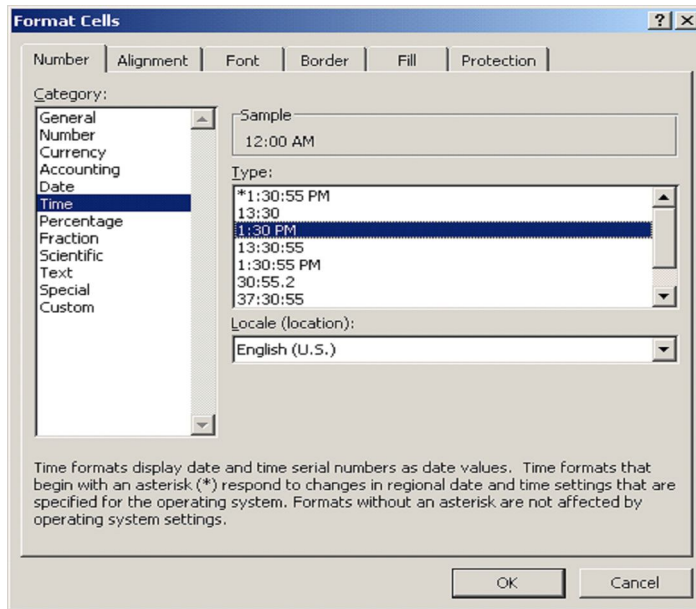


Fig. 4.24

4.33 FORMATTING COLUMNS AND ROWS

Sometimes the contents of the columns do not fit in its width. So, to adjust them within the width of the column. As you can observe, in the column C, the column header is not fully visible. There are two methods: a) Resizing rows & column and b) Using Autofit

(a) Resizing Rows and Columns

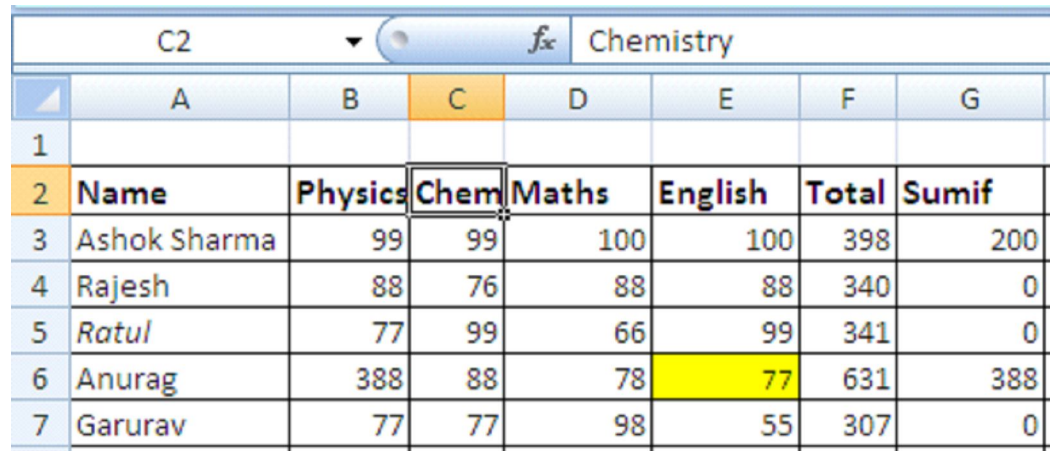
Set a column to a specific width

1. Select the column or columns that you want to change.
2. On the **Home** tab, in the **Cells** group, click **Format**.
3. Under **Cell Size**, click **Column Width**.
4. In the **Column width** box, type the value that you want.

Set a row to a specific height

1. Select the row or rows that you want to change.

2. On the **Home** tab, in the **Cells** group, click **Format**.
3. Under **Cell Size**, click **Row Height**.
4. In the **Row height** box, type the value that you want.



	C2						
	A	B	C	D	E	F	G
1							
2	Name	Physics	Chem	Maths	English	Total	Sumif
3	Ashok Sharma	99	99	100	100	398	200
4	Rajesh	88	76	88	88	340	0
5	Ratul	77	99	66	99	341	0
6	Anurag	388	88	78	77	631	388
7	Garurav	77	77	98	55	307	0

Fig. 4.25

(b) Steps to AutoFit Columns

- Click on Column Header/or any other cell in the column to change its width.
- Click Home tab.
- Select format from the cells group on the ribbon.

INTEXT QUESTIONS 4.2

6. Write True or False for the following statements.
 - (a) Format cells dialog box offers you more option than the alignment buttons on the formatting toolbar.
 - (b) If you want only to clear the contents of the cell, select the cell and press Delete key.
 - (c) If the field is a time, select "time" from the category box of Format cells dialog box.
 - (d) To unhide the column Right click on the selected column and then select unhide from the pop up menu.
 - (e) Autofit option is used to fit the worksheet in the workbook.
 - (f) The use of Scrollbars is set margins in a document.
-

7. Fill in the blanks
- (a) If the toolbar is not already visible on the screen select _____.
 - (b) In Excel all styles are _____.
 - (c) Hiding columns or rows will help you to _____ worksheet from unwanted changes.
 - (d) A mini tool bar also appears above the short cut menu when you _____ click a cell or a range.
 - (e) To change the data format select the _____ from the format cells window.
 - (f) The _____ command in the menu bar is used to access the Bullets and Numbering dialog box.
-

4.34 WHAT YOU HAVE LEARNT

In this lesson you learnt about main features of Wordprocessing and spreadsheets like create, format and Print a document and worksheet. Apart from that you learnt about how to add table, bullets and numbering and use of mail merge in word. In Spreadsheet you learnt about the use of formulas and functions in a worksheet. On the basis of data entered in a worksheet you can create a bar chart, area chart, line chart or pie chart, you can add title, legend, data labels and grid lines to the chart.

4.35 TERMINAL QUESTIONS

1. Write short notes on
 - (a) Scrollbars
 - (b) Font Style
 - (c) Line spacing
 - (d) Merging documents
 2. Write the steps for copying and moving text in wordprocessing.
-

3. What is the difference between Print preview and Print commands?
4. Explain the concept of functions. What are the steps for entering functions in a worksheet?
5. What are the different types of Charts? Explain in brief.

4.36 FEEDBACK TO INTEXT QUESTIONS

1. (a) True (b) True (c) False
 2. (b)
 3. (c)
 4. (b)
 5. (a) File → Save (b) File → Save As
 6. (a) True (b) True (c) True
(d) True (e) True (f) False
 7. (a) view toolbar formatting (b) cell style
(c) prevent (d) Right
(e) number tab
(f) Format Bullets and Numbering
-

5

OFFICE PRODUCTIVITY TOOLS Part II

5.1 INTRODUCTION

Two of the productivity tools viz. word processing and spreadsheet have already been discussed earlier. In this lesson we will discuss remaining tools viz., database management and presentation.

One of the most powerful applications of computers is its capability to store, organize, and retrieve large quantities of data. An organized collection of related data is referred to as a **database**. A database is a collection of objects that allow you to store data, organize and retrieve it in any way you want.

After having a pool of useful information, may be in the form of a document, spreadsheet, database or any other form, it is required to present it before audience in a most effective manner. For this purpose a very powerful presentation tool in the form of Microsoft PowerPoint 2007, has been discussed.

This package is a complete presentation tool which will present you ideas in a simple, concise and interesting manner. Even if you are not multimedia expert, this tool helps you create slides and present exciting slide shows.

5.2 OBJECTIVES

After going through this lesson you would be able to:

- explain the terms like database, table, record, field, datatype;
- create a database from scratch or using template;
- create tables for data entry in datasheet view and design view;
- create queries using wizard and design view;
- create a Form using various tools;
- create report in different ways;
- create presentations using different types of slides;
- add various multimedia features to slide;
- save and print a database, query reports, and presentation

5.3 STARTING ACCESS PROGRAM

You can start your Access program in different ways. One way is using Start button:

1. Click on the **Start** button.
2. In the menu that appears select **All Programs→Microsoft Office →Microsoft Office Access 2007** (Fig. 5.1).

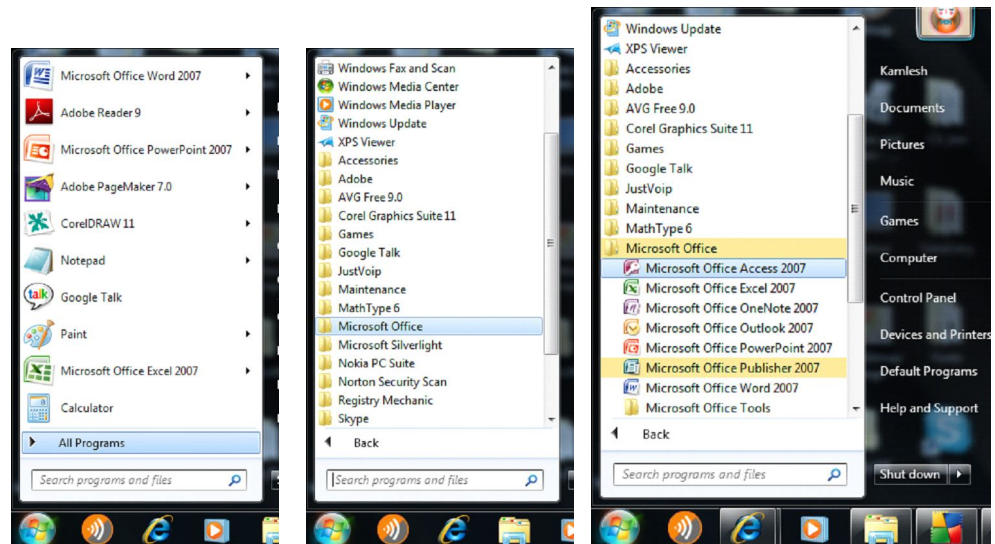


Fig 5.1

In few seconds you will see **Getting Started with Microsoft Office Access** screen on the monitor (Fig. 5.2).

You have the following three options:

- (i) Open a Blank Database
- (ii) Open a Microsoft template
- (iii) Open a Recent Database

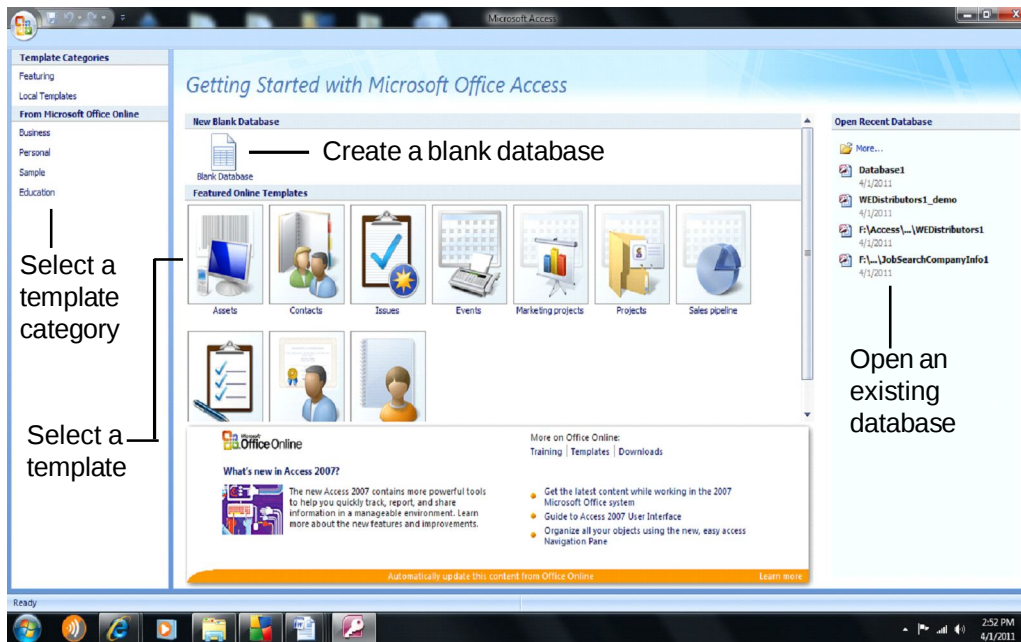


Fig 5.2

5.3.1 Creating a Database from the scratch

Choose the option Open a **Blank Database** for creating a Database from the scratch.

1. Blank database with the default name **Database1** appears as shown in Fig. 5.3.

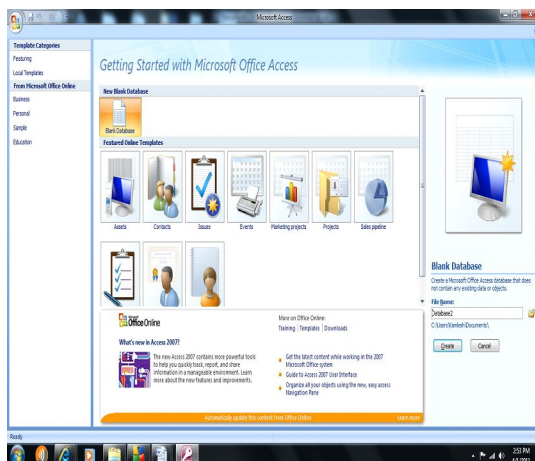


Fig 5.3

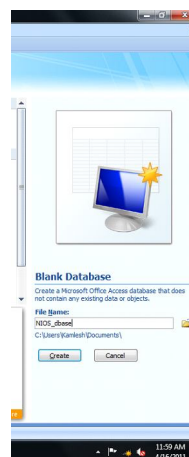


Fig 5.4

2. Type the file name of the database e.g. **NIOS_dbase** (Fig 5.4).
(It is recommended to create a general database before creating tables and forms.)
3. Browse and select **folder**
4. Click **Create**.

Your database file **NIOS_dbase** is saved in the specified folder and opens for you to **create an Access table** in datasheet view (Fig 5.5).

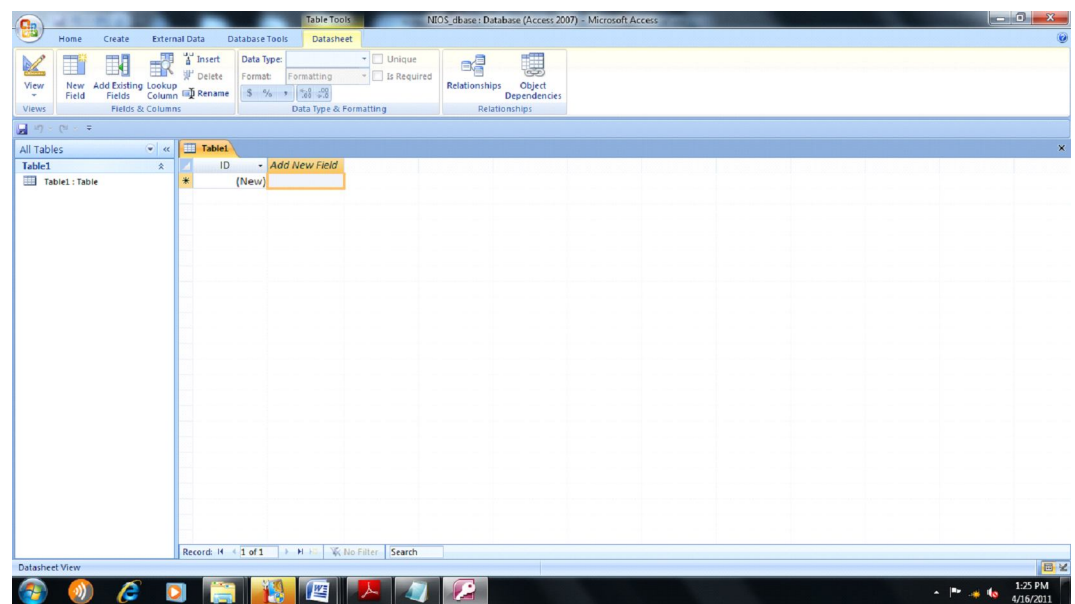


Fig 5.5

5.3.2 Creating a Database using Template

You can create a database by using Template in following ways:

- (i) Select suitable **Featured Online Templates** from the relevant Template Category as shown earlier in Fig. 5.2.
 - (ii) In the Ribbon click **Create tab** as shown in Fig. 5.6 (a) and in the **Tables group** bring cursor at **Table Templates** (Fig. 5.6(b)) and click it. Then select and click the desired Template from the drop down list of template as shown in Fig. 5.6 (c) and the template opens as shown in Fig. 5.6(d).
-

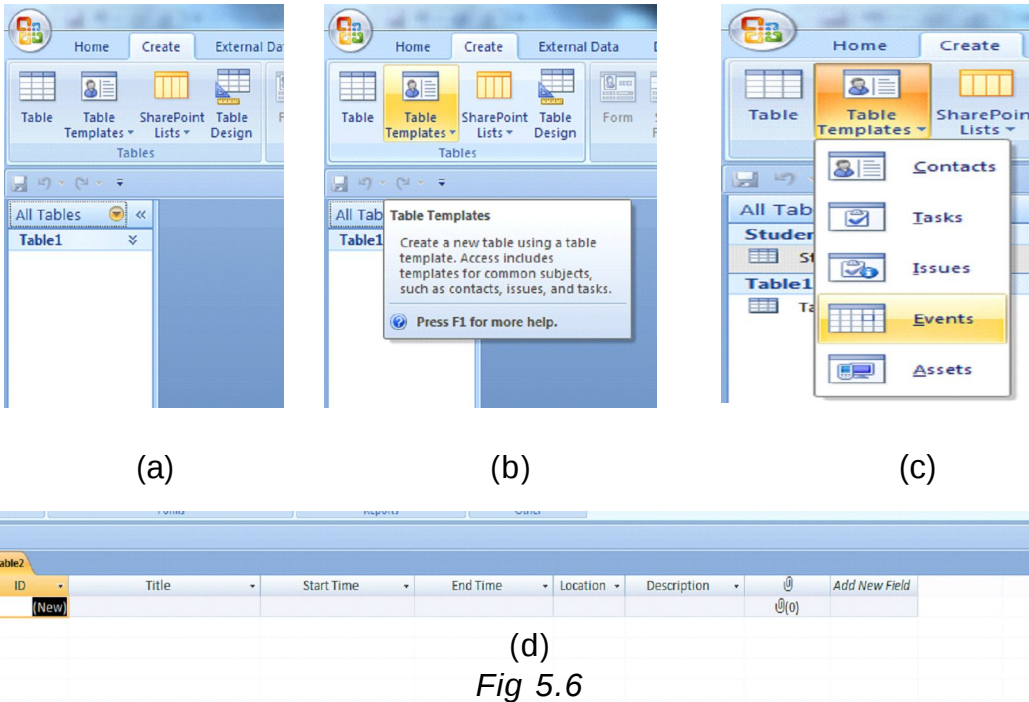


Fig 5.6

5.3.3 To Open an Existing Database

Click a database in the Open Recent Database list as shown earlier in Fig. 5.2 or click **More** and browse for the desired database.

5.4 HOW ACCESS STORES DATA IN TABLES

Access 2007 stores data in tables which look more like the cells of a spreadsheet with columns and rows. Each row represents a **record**, and each column represents a **field**. Table 5.1 is an example of a **Table** having **Details of Students**. In this Students database each student would be considered as a **record** and each record (student) consists of headings or categories called **fields or attributes**, and each record in the database is formatted in the same way.

Table 5.1: Details of Students

Enrolment No.	First Name	Surname	Mother's Name	Gender	Date of Birth	City
1	Sohan	Verma	Rama Devi	Male	15/01/1992	Patna
2	Mohan	Nath	Veena Rani	Male	10/11/1991	Gwalior
3	Meghna	Kishore	Deepa Kishore	Female	28/02/1990	Agra
4	Ashita	Agrawal	Abha Agrawal	Female	26/03/1993	New Delhi
5	Rohit	Goel	Kavita Goel	Male	10/07/1992	Mysore
6	Anshul	Agrawal	Hansi Agrawal	Male	26/11/1995	Gwalior

5.5 ENTER DATA INTO A TABLE

Once a table has been created, data can be entered.

1. If your new table is not open, double click on its title, in the **Navigation Pane**.
2. In the **Home tab**→**Views group**, select **Datasheet View**. (The default view for a new table is **Datasheet view**.)
3. The first field (column) is automatically named **ID**, the data type is **AutoNumber** and it is the assigned **Primary Key**. Generally Primary keys are not required but they are needed to combine two or more tables, columns, or rows in a database. **Primary key** is a **unique number**, i.e., it cannot be duplicated.
4. Double click on **Add New Field** and type in the new field name **F_name** for the First Name, **L_name** for Last name of the student and so on as given in Table 5.1. When entering field names, do not use spaces or punctuation.
5. Type in **Sohan**, in the first row under the field **F_name**.
6. The Data Type is set to **Text**. While entering numbers or date, the data type would be set to **Number** or **Date and Time** and so on.

Complete the table by entering data (as given in Table 5.1). The screen will look like Fig 5.7.

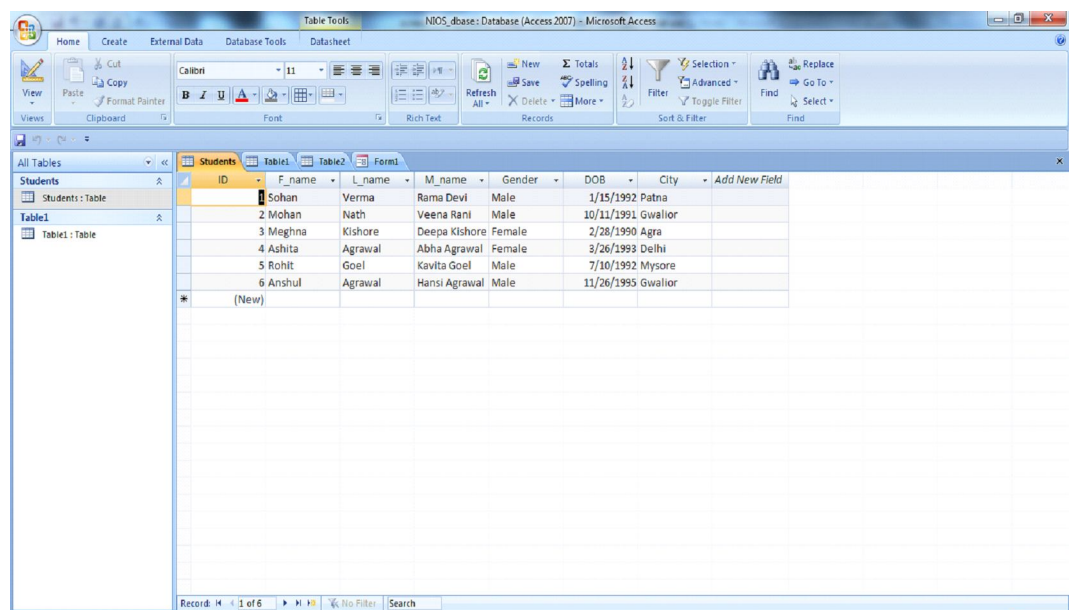


Fig. 5.7

5.5.1 Data Types

It is important to assign appropriate data types as given in Table 5.2 to a field since they specify what type of data can be entered into a field.

Table 5.2

Data Type	Description
Text	Can contain text, numbers, or a combination that do not require calculations such as addresses, phone numbers, etc. Maximum number of characters, including spaces, is 255 characters.
Memo	Similar to the text field but can hold huge data.
Number	Can have Numeric data only
Date/Time	Date and Time information
Currency	Currency up to precisely 4 decimal places
AutoNumber	Use when sequential, random, or replication ID numbers are needed. Access creates a unique number for each new record. This is often the primary key for the table.
Yes/No	Use when Yes/No, True/False, or On/Off are necessary.
OLE Object	Add objects such as Excel workbooks or Word documents that are linked or embedded.
Hyperlink	Link to files, objects or web links.
Attachment	Attachments such as images, spreadsheets, documents, and charts.

IN TEXT QUESTIONS 5.1

1. State True or False.
 - (a) A database is an organized collection of records.
 - (b) A database can hold only one Table.
 - (c) A particular field has same Data type for all the records in a table.

- (d) Data type Number can have the data Rohan.
 - (e) Primary key for three records in a Table has same data.
2. Fill in the Blanks.
- (a) Vertical column in a table is known as
 - (b) No two records in a Table can have same data for
3. Which of the following Data type can have ONLY one of the two fixed values?
- (a) AutoNumber
 - (b) Number
 - (c) Yes/No
 - (d) Date/Time
4. Which of the following Data type can be assigned to a Primary key?
- (a) AutoNumber
 - (b) Memo
 - (c) Yes/No
 - (d) Text
-

5.6 SAVE A TABLE

Saving a table with a specific title will help when organizing information, creating queries, forms, and pages, and connecting to other tables.

1. To save the current table, click the **Save** button in the **Quick Access Toolbar**.
 2. You can also get to a **Save** button through the **Office Button**.
 3. You can use **Save As**, from the **Office Button** to rename the database, save a copy or to save it in another format.
-

5.7 CHANGE VIEWS

A view is a way of looking the data stored in tables. Two possible ways for viewing the data are **Datasheet view** and **Design view**. View buttons are provided in the lower right corner of the Access window which help you to switch from one view to other. You can also use view buttons on the Home tab to change views.

5.7.1 Adding Fields in Datasheet View

By default, **Access 2007** creates one field in each new table, the **ID** field. This field auto-numbers to give each record in the table a unique number identifier. Recall that records are the rows in a table.

To add more fields to a table in **Datasheet View**, **double click** on the **Add New Field** header. The **Add New Field** text will disappear from the header. Name the field by typing the name directly into the header. Press the **tab** key on your keyboard to move to the next field.

5.7.2 Adding Fields in Design View

In **Design View**, the field names are along the left-hand column instead of across the top like in Datasheet View.

Creating or editing a table in Design View gives you freedom to construct a table with specifications for data collection. You do not type in the actual data in this screen. You are setting up the table structure - field names, data types, field size, etc.

To add a new field to a table in **Design View**, just **click** in the cell where you want the new field and type the field name. When you switch back to Datasheet View, your new field appears as its own column.

In Design View, you have many field property options that you can set to ensure that data can only be entered in certain formats. Setting these options is a good idea if you want to make sure the data that you have in your database is correct in all respect.

5.8 CHANGING COLUMN WIDTH

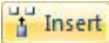
When you create a table from scratch in the Datasheet View, Microsoft Access assigns it a default width. That width may

appear to be too narrow or too wide to accommodate data. You can widen or narrow a column in many ways.

To change the width of a column position, place the mouse on the right border of a column header. The mouse pointer would change into a horizontal double arrow crossed by a vertical line . Drag in the desired direction, left or right until you get the desired width. If you double-click, the column would be resized to the maximum width of the column.

5.8.1 Inserting a Column/ Field

Inserting a column consists of adding one between two existing fields. You can do it in any of the following ways:

- To insert a column using the **Ribbon**, first click a **cell** under the column that will succeed it. Then, in the **Fields & Columns** section of the **Datasheet tab**, click the **Insert** button .
- To insert a column from the table, right-click the column that will succeed it and click **Insert Column**.
- To insert a field from the **Field Templates**, click and drag it from the Field Templates and drop it to the left of the column that will succeed it.
- To insert a field in **Design View**, select the field before which a field is to be inserted, click the **Design** tab on the **Ribbon** and then the **Tools** group click **Add rows**. A blank field will be inserted.

5.8.2 Moving Fields

If you want to rearrange the order in which your fields appear in a table, Access 2007 lets you easily move them around. To move a field in **Datasheet View**, **drag and drop** the field to the location you want. To do this:

- **Click** on the field header for the field you wish to move.
 - **Move the mouse** in the area of the header.
 - When the cross with arrows appears, hold down your left mouse button.
 - With the left mouse button still held down, move the cursor to where you would like the field to appear.
-

- Release the mouse button and the field appears in its new location.

5.8.3 Deleting Fields

To delete a field in **Datasheet View**, just click on the field header and then select **Delete** from the **Field & Column** command group. This is found on the **Datasheet** tab on the **Ribbon**.

To delete a field in **Design View**, select the field to be deleted, click the **Design** tab on the **Ribbon** and then in the **Tools** group click **Delete rows**.

5.9. MODIFYING A TABLE IN DESIGN VIEW

If you print the table which is shown in fig. 5.7 as it is, it is not clear what F_name or M_name stands for. Is it first name and middle name or father's name and mother's name? Similarly we see that Gender is having only two values. Either it is male or female. Therefore, in order to give suitable table headings or changing the data type, you can edit the table which is done in Design view.

If you need to change data types, click on the down arrow in the box next to **Data Type** to make your selection.

1. The default view for a new table is **Datasheet** view. In the **Home tab Views group**, select the **Design View** button to switch to **Design View**.
 2. To add or edit fields, type in the **Field Name** column. When entering field names, do not use spaces or punctuation.
 3. You can set more specific settings for your data types in **Design View**. For example, select the field ID, locate the **General** tab and label the **Caption** as Enrolment No.
 4. Similarly type a label for the **Captions** e.g. **First Name**, **Last Name** and **Mother's Name** for fields **F_name**, **L_name** and **M_name** and the set the **Field Size** as 30, 20 and 40 respectively. The field size indicates that the data cannot exceed the specified limit.
 5. Select the field Gender and under **Data Type**, click on the down arrow and select an appropriate data type Yes/No (Fig. 5.8) and in General Tab for caption type Female?
-

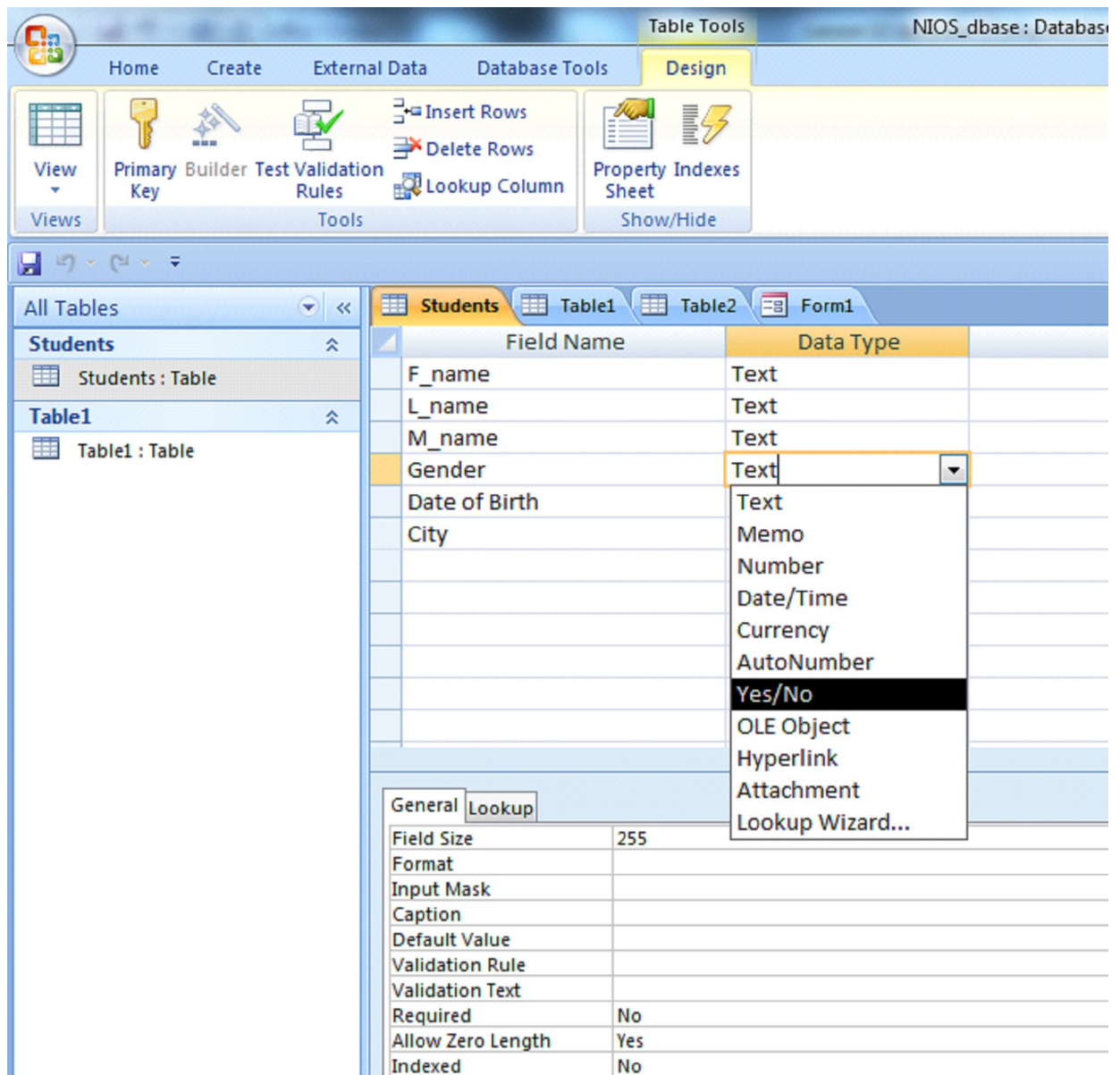


Fig. 5.8

Edit the field DOB with the caption as Date of Birth and the Date Format from Short Date to Medium Date (Fig. 5.9).

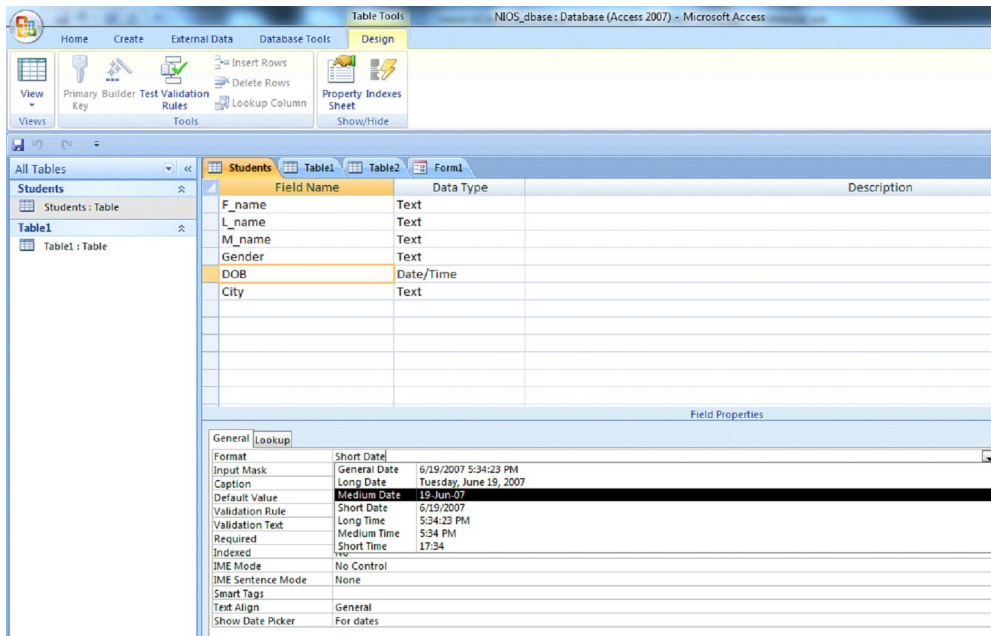


Fig. 5.9

Now your Students table will look as shown in Figure 5.10.

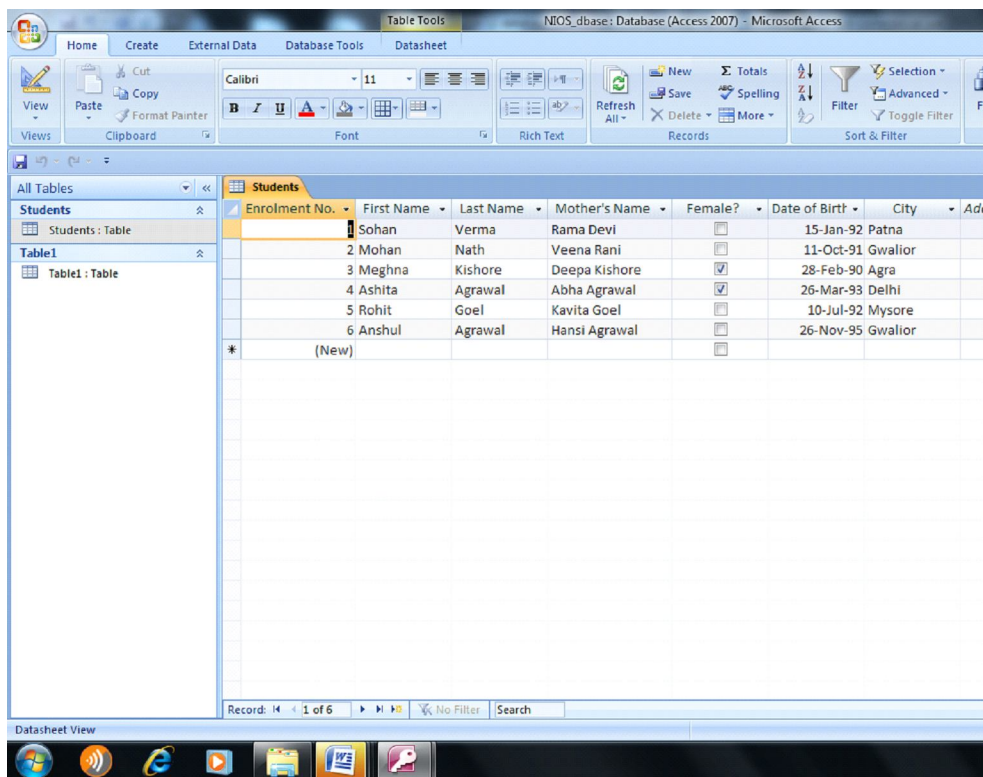


Fig 5.10

5.10 TO RENAME A TABLE

With the table closed, **right click** on the **Table** you wish to rename in the **Navigation Pane**. Select the **Rename** option that appears in the menu.

The table name will be highlighted and a cursor will appear, which means you can now **type in the new name**. **Left click** anywhere outside of the Table name to make the change.

5.11 CLOSE A DATABASE AND EXIT ACCESS

The following points describe how you close a database and exit Access.

5.11.1 To close a database

1. Click the Microsoft **Office** button. A menu appears.
2. Click **Close Database**. Access closes the database.

5.11.2 To exit Access

1. Click the Microsoft **Office** button. A menu appears.
2. Click **Exit Access**. You exit Access

IN TEXT QUESTIONS 5.2

5. State True or False.
 - (a) By default Access 2007 opens two tables.
 - (b) Field properties are available in Design view.
 - (c) Drag and drop is not used to move fields.
 - (d) If a data in a cell is changed then it is updated in all the objects of that database.
 6. Fill in the Blanks.
 - (a) Commonly there are views used for viewing a table data.
 - (b) Generally the table is edited in View.
-

5.12 CREATING QUERIES

Access 2007 has a powerful feature of queries. Queries actually mean the question you asked from the database to get the desired result. A query can be designed to extract data from one or more database tables. Queries in Access can be created in various ways and range from very simple field selection to complex conditional statements or calculations.

Access 2007 allows you to create queries in two ways.

- (1) Using the query wizard
- (2) Using design view.

5.12.1 Creating a simple query using the query wizard

When you use this method for creating query, the query wizard guides you through a series of dialogue boxes and you can proceed by selecting various options. The steps are given as follows:

1. Click **create** tab
2. In the **other** group, click on the **query wizard** (Fig 5.11).
3. When **new query** dialogue box appears, Select **simple query wizard** and click OK (Fig 5.12).

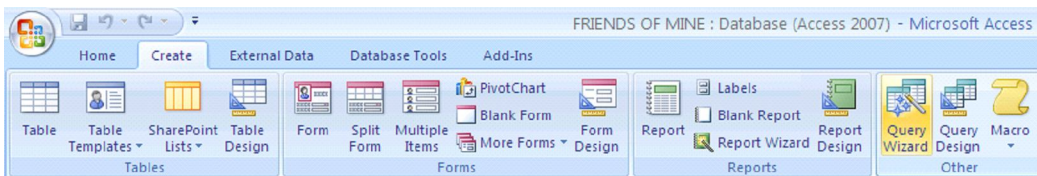


Fig 5.11

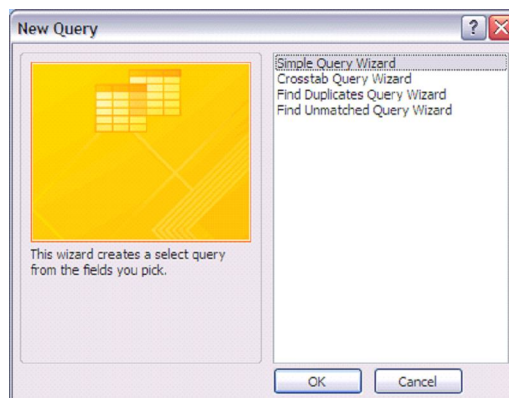


Fig 5.12

4. A **simple query wizard** dialogue box appears. From the **Tables/Queries** list box, select the table on which you want to create the simple query. Here we have selected the table named **Friends of Mine** (Fig 5.13).
5. All the fields of selected table are shown in the **available field's** area. Select the field you want to add in your query and then click on the **> button**. If you want to select all the fields than you can click on **>> button**. (See fig 5.13)

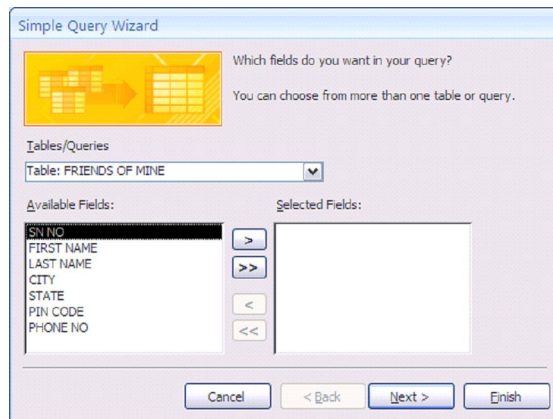


Fig 5.13

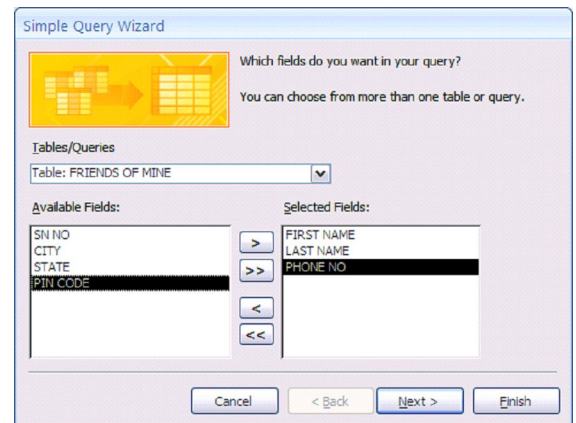


Fig 5.14

6. In Fig 5.14, it has been shown how to select one field from the **available field's** area and move it to the **selected field's** area. In this case we have selected 3 fields, first name, last name and phone number.

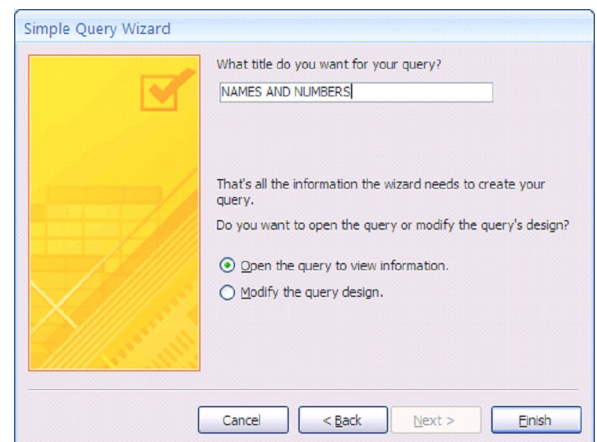


Fig 5.15

7. Click on the **next** button. Next screen appears as shown in Fig 5.15.
8. Type a title for your query in the box provided as shown in Fig 5.15. Here title for the query is **Names and numbers**.

9. Click on the **finish** button.
10. Access 2007 displays the result of query in the form of a table as shown in Fig 5.16. Since we have asked only for 3 fields, First name, last name and the phone number to be shown from the table **Friends of Mine**, only these 3 fields are displayed as you can see in Fig 5.16. This is a simple query.

FRIENDS OF MINE		NAMES AND NUMBERS
FIRST NAME	LAST NAME	PHONE NO
RAMESH	TALWAR	1123456789
SAGAR	DOGRA	1122234345
MANAV	SHANKAR	1204553360
GEETA	AWASTHI	1204555556
VANDITA	BAHUGUNA	1204556768
SURBHI	SARANG	1122222222
RAKESH	KUMAR	1123837367
VANDITA	SAXENA	1204545454
RAJESH	BHATIA	1204678769
PUJA	KAPOOR	1122228980
*		

Fig 5.16

5.12.2 Creating Query Using Design View

A query can also be created using **Design View** in which you can define the structure of query. To create a query, you open the tables on which you are going to base your query in Query Design view, and then use the options to create your query. Click the **Run** button to display the results. Queries can be saved for later use also. The steps are as follows:

1. Click the **Create** tab.
2. Click the **Query Design** button in the **other** group. The **Show Table** dialog box appears (Fig. 5.17).
3. Click on the **tables** tab. A list of tables appears.
4. Double Click to choose the table on which you want to base your query. Here **student_pers** table has been selected (Fig 5.17). (You can select more than one table also).
5. Click **Add**. The table appears in the window.
6. Click **Close** to close the show table box. Access changes to Query Design view. If you select more than one table, you have to show relationship between them through Primary key.

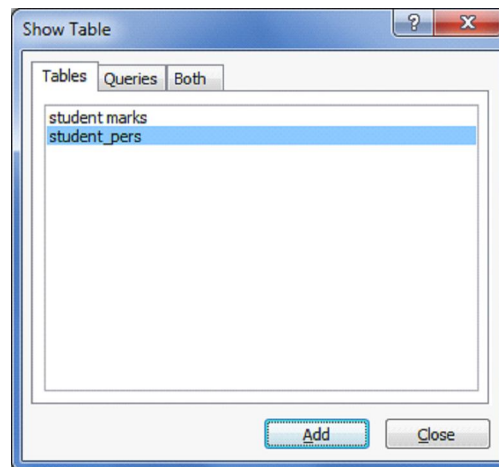


Fig 5.17

To Show a single column:

1. Click on the field name you want to display. (In this case it is **student name** field of **student_pers** table).
2. Drag it in the field line or you can double click on the field to bring it to the field line (Fig. 5.18).
3. Click the **Run** button. Access shows the column you chose (Fig. 5.19).

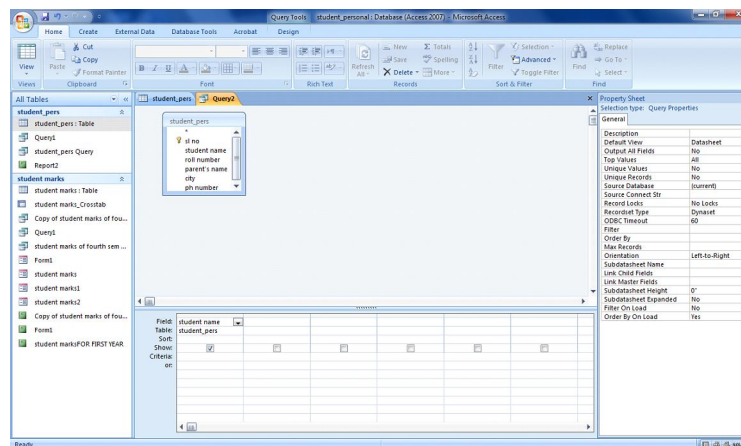


Fig 5.18

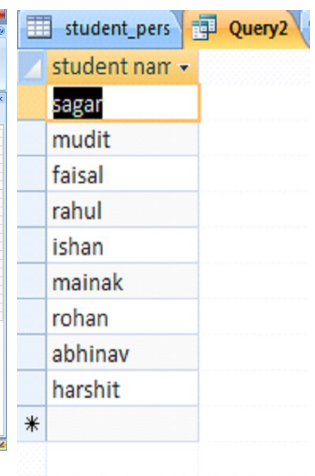


Fig 5.19

Showing Multiple Columns

You can use an Access query to show multiple columns of data. On the **Field line** in **Query Design view**, choose the field name of each field you want to show in the same order as you want to display them in the query. The steps are as follows:

1. As the students table is already selected you can select the field from the given list.
2. Click on the field names you want to show one by one in the order you want to display them. For example you can place **roll no** field before the **student name** field in the field's grid area (Fig 5.20).

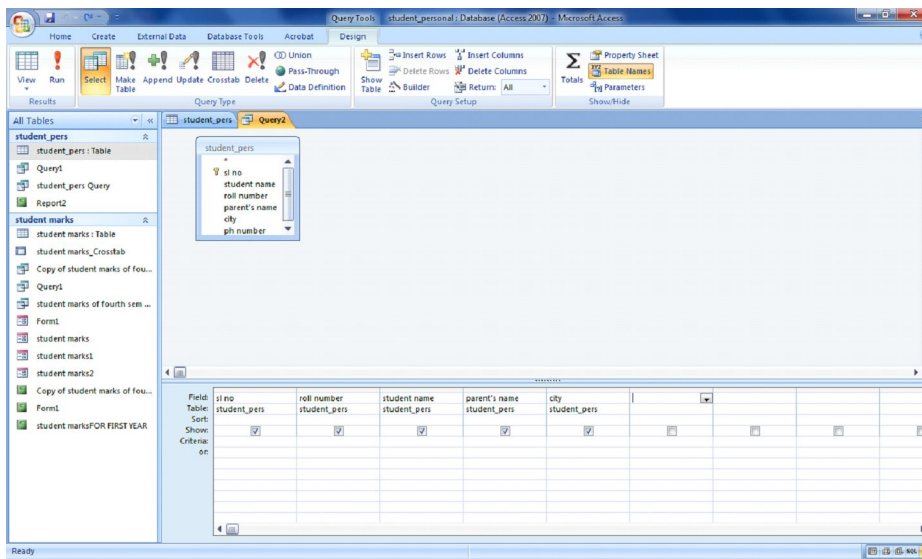


Fig 5.20

3. Click the **Run** button. Access displays the columns you chose (Fig 5.21).

sl no	roll number	student name	parent's name	city
1	45	sagar	p.k arya	noida
2	30	mudit	s.k sharma	ghaziabad
3	15	faisal	t.k singh	delhi
4	40	rahul	r.k sinha	delhi
5	20	ishan	g.p singh	noida
6	28	mainak	a.c chaturvedi	gurgaon
7	43	rohan	n.k bahuguna	noida
8	3	abhinav	p.p arora	noida
10	17	harshit	r.k bhatia	delhi
*				

Fig 5.21

5.13 SORT A QUERY

When creating a query, you can sort the columns in ascending or descending order by choosing the option you want on the Sort row in Query Design view. The steps are as follows:

1. Open the **student_pers** table in the design view
2. Select and drag the fields in the field grid area in the order you want them to be displayed.
3. Click in the **sort row** in the column which you want to sort (in this case it is the **State** column) and Click the down pointing arrow that appears and then choose **ascending** (or **descending**) from the drop down list (Fig 5.22).
4. Click **Run** button.
5. The sorted column is shown along with others in the Fig 5.23.

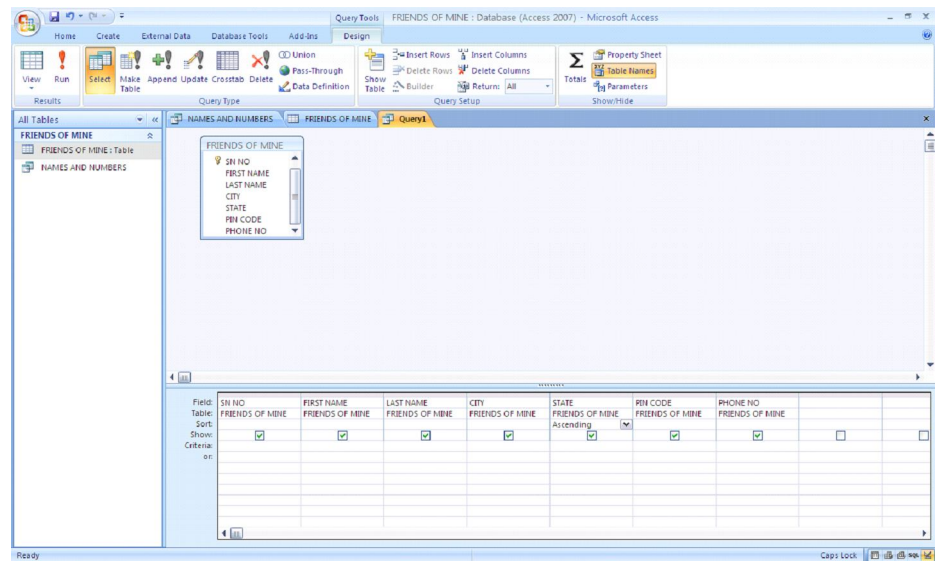


Fig 5.22

SN NO	FIRST NAME	LAST NAME	CITY	STATE	PIN CODE	PHONE NO
10	PUJA	KAPOOR	DELHI	DELHI	110006	1122228980
7	RAKESH	KUMAR	DELHI	DELHI	110007	1123837367
6	SURBHI	SARANG	DELHI	DELHI	110006	1122222222
2	SAGAR	DOGRA	DELHI	DELHI	110092	1122234345
1	RAMESH	TALWAR	DELHI	DELHI	110007	1123456789
9	RAJESH	BHATIA	GHAZIABAD	U.P	201010	1204678769
8	VANDITA	SAXENA	NOIDA	U.P	201004	1204545454
5	VANDITA	BAHUGUNA	GHAZIABAD	U.P	201014	1204556768
4	GEETA	AWASTHI	NOIDA	U.P	202004	1204555556
3	MANAV	SHANKAR	GHAZIABAD	U.P	201014	1204553360

Fig 5.23

5.14 EXTRACTING RECORDS USING CRITERIA STATEMENTS

Adding a criteria statement to the query design grid will help you to extract only those records which match the given criteria and which you want to display from the complete table.

You can use logical operators such as = (equal), <> (not equal), > (greater than), or < (less than) to restrict the records you retrieve. For example, if you only want to display friends who live in DELHI, enter = **"DELHI"** in the State column on the Criteria line. Access will only retrieve records where the value in the State column is equal to DELHI. Selection criteria are not case-sensitive, so Access will retrieve records where the entry is DELHI, delhi, Delhi, or dELHI.

The list of logical operators which you can use in making criteria statements in making your query is given in the table 5.3.

TABLE 5.3

Logical Operators			
Operator	Meaning	Field Type	Entry Format
=	Equal to	Character Number Date	= "DELHI" = 5 = #12/16/98#
<>	Not equal to	Character Number Date	<> "DELHI" <> 5 <> #2/16/97#
>	Greater than	Character Number Date	> "DELHI" > 5 > #7/16/98#
>=	Greater than or equal to	Character Number Date	>= "DELHI" >= 5 >= #6/21/96#
<	Less than	Character Number Date	< "DELHI" < 5 < #4/18/98#
<=	Less than or equal to	Character Number Date	<= "DELHI" <= 5 <= #11/19/98#
In	Equal to any item in a list	Character Number Date	In ("DELHI", "UP") In (5, 9, 17) In (#2/11/99#, #2/3/96#, #12/15/98#)
Not In	Not equal to any item in a list	Character Number Date	Not In ("DELHI", "UP") Not In (5, 9, 17) Not In (#2/17/97#, #2/3/96#, #12/15/98#)
Between	Between two values, greater than or equal to one and less than or equal to the other	Character Number Date	Between "C" And "F" Between 5 And 10 Between #1/1/98# And #12/31/99#

To retrieve specific records, the steps are as follows:

1. Open a table or query in Query Design view.
2. Choose the field names you want to display in the order you want to show them.
3. Choose the field names you want to sort by in the order you want to sort.
4. Under the fields you want to sort by, choose Ascending or Descending.
5. Deselect the Show button for columns you do not want to display.
6. Enter your selection criteria on the **Criteria** line (Here the criteria entered in the **state** column is = "DELHI") (Fig 5.24).
7. Click the **Run** button. The query results can be viewed in the Fig 5.25.

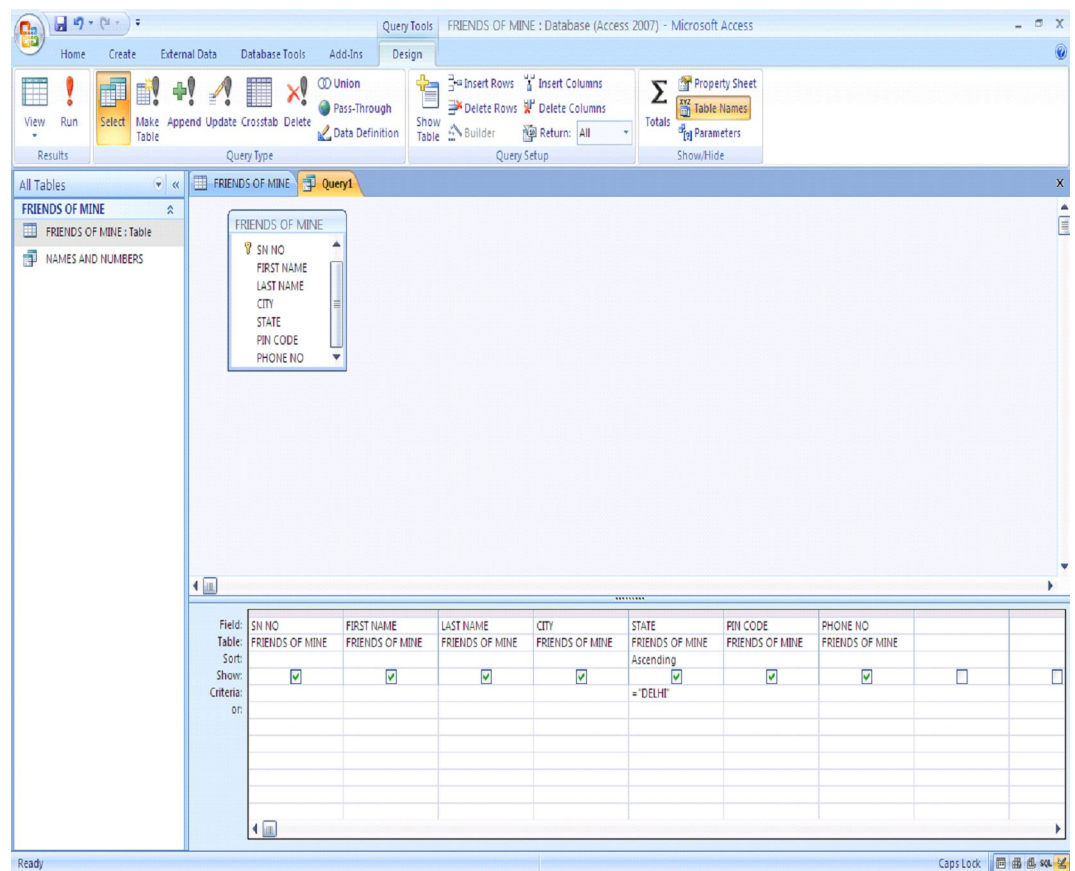


Fig 5.24

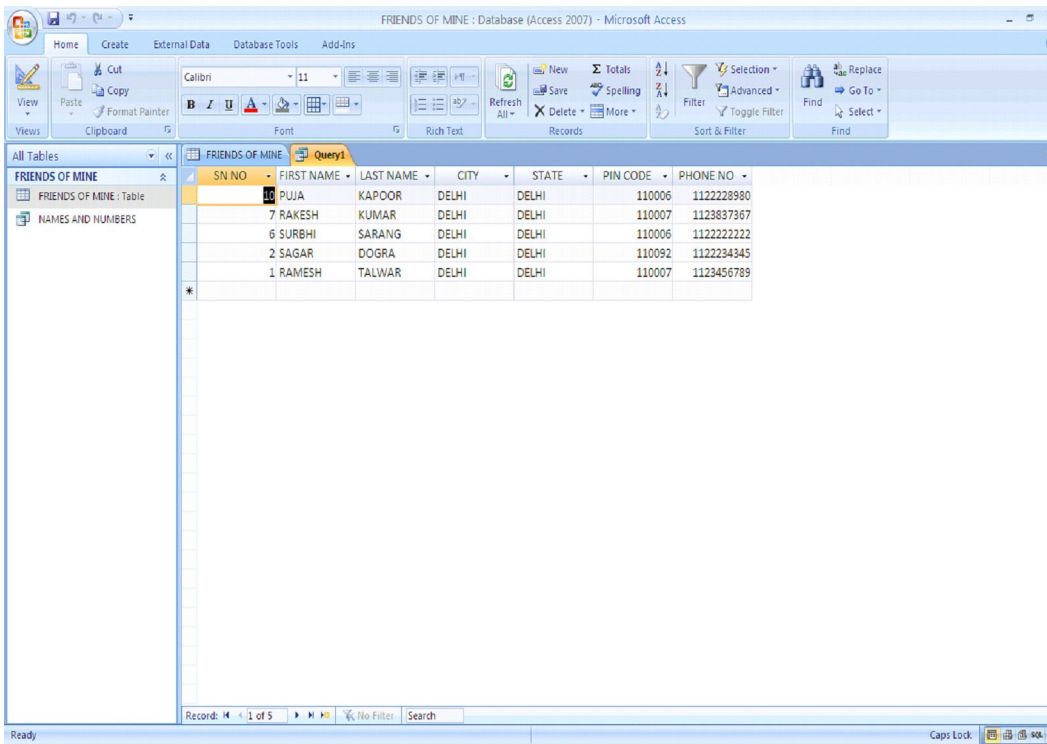


Fig 5.25

Adding Multiple Criteria

You can apply multiple criteria to the same table. If you place two criteria on the same line, Access will only retrieve records where both criteria are met. For example, if you want all records where the **State** is equal to “UP” and the **CITY** is equal to **GHAZIABAD**, you would set the **State** field to = “UP” and the **CITY** field to = “GHAZIABAD” and you would place both criteria on the same line.

The steps for using **and** criteria are shown in Fig 5.26 and result is shown in Fig 5.27.

If you place one set of criteria on the **Criteria** line and the second set of criteria on the **Or** line, Access will retrieve records where either of the two criteria is satisfied. You can add additional **and** and **or** statements by using the lines below the **Or** line. For **And** clauses, place the criteria on the same line; for **Or** clauses, place the criteria on separate lines.

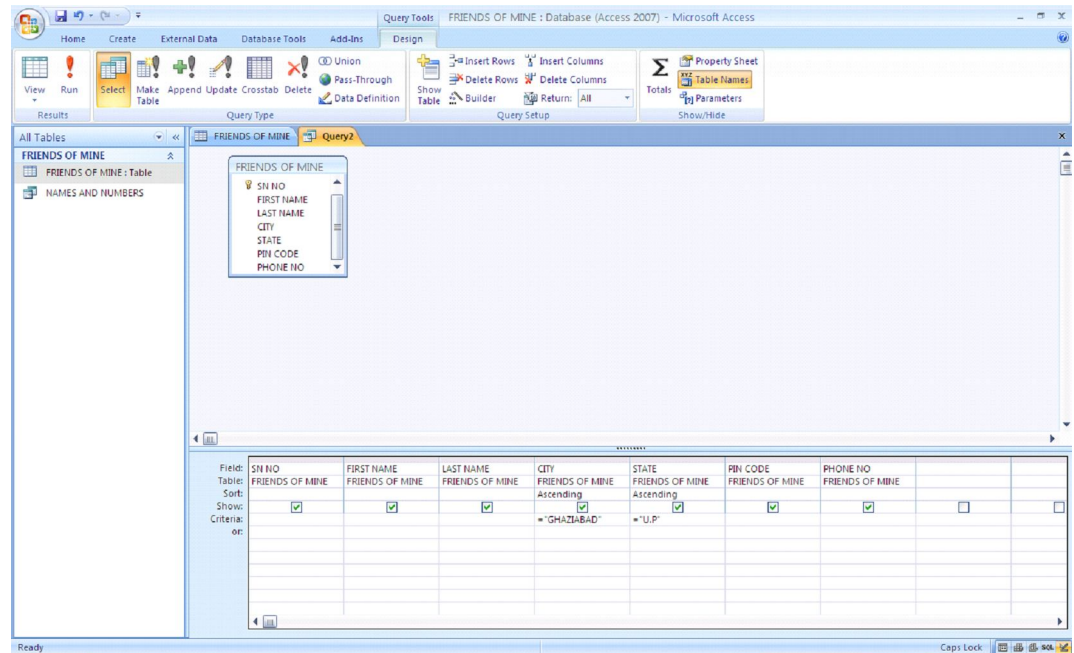


Fig 5.26

Field	Table	Sort	Shows	Criteria	or
SN NO	FRIENDS OF MINE		☒		
FIRST NAME	FRIENDS OF MINE		☒		
LAST NAME	FRIENDS OF MINE		☒		
CITY	FRIENDS OF MINE	Ascending	☒	"GHAZIABAD"	
STATE	FRIENDS OF MINE	Ascending	☒	"U.P."	
PIN CODE	FRIENDS OF MINE		☒		
PHONE NO	FRIENDS OF MINE		☒		

SN NO	FIRST NAME	LAST NAME	CITY	STATE	PIN CODE	PHONE NO
3	RAJESH	BHATIA	GHAZIABAD	U.P.	201010	1204678769
5	VANDITA	BAHUGUNA	GHAZIABAD	U.P.	201014	1204556768
3	MANAV	SHANKAR	GHAZIABAD	U.P.	201014	1204553360

Fig 5.27

5.15 SAVE A QUERY

After you create a query, you can save it. You can re-run a saved query at any time. If you change the data on which the saved query is based, you will see the changes when you re-run the query. The steps are as follows:

1. Click the **Save** button on the **Quick Access** toolbar. The **Save As** dialog box appears.
2. Type the name you want to give to your query.
3. Click OK. Access saves the query. (Fig 5.28)

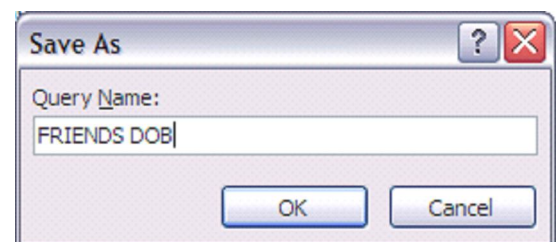


Fig 5.28

4. Alternately you can also save by right-clicking a query's tab and then selecting save from the menu that appears.
5. Once you have saved a query, you can run it by opening the Navigation pane and then clicking the name of the query.

INTEXT QUESTIONS 5.3

7. Fill in the blanks.
 - a) Simple query wizard option is available in the———
— dialogue box.
 - b) Access 2007 displays the result of query in the form of a —————.
 - c) Queries can be created using the Query Wizard or the —————view.
 - d) In order to see the result of query in design view, you have to click on the ————button.
 - e) —————operators are used to extract specific records which meet the given criteria.
 8. Write TRUE or FALSE.
 - a) While sorting the records two options available are Up and Down.
 - b) A query is saved with a name.
 - c) Queries actually mean the questions you ask from the database to get the required result.
 - d) You cannot run a saved query at any given time.
 - e) To show the result of query, click on the “Final” button.
-
-

5.16 FORMS

A form is a graphical representation of a table. One can add, update and delete records in table by using a form. A form is very useful to use when the table contains numerous fields. Forms make it easy for you to access information in a database. With a **form**, you can focus on one record in a database at a time and can view, add and delete data from that record.

5.16.1 Creating a Form using the Form Tool

Form tool in access 2007 can be used to create a form with a single mouse- click. To create a form with this tool, steps are as follows:

1. In the **Navigation Pane**, select the table or query to create a form.
2. Click on the **create** tab
3. In the **forms** group, click **form** (Fig. 5.29)
4. Form is created displaying it in layout view along with the **form layout tools** i.e. **Format tab** in the **ribbon**. (Fig 5.30)

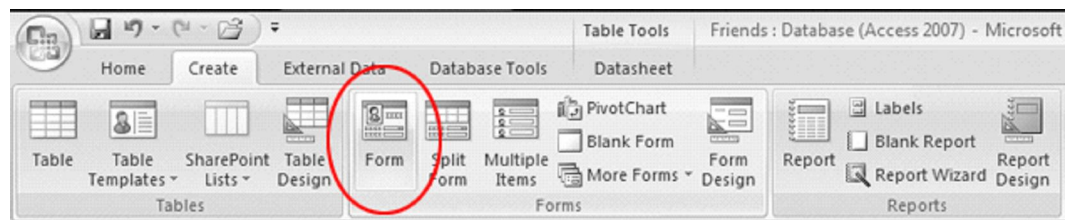


Fig 5.29

5.16.2 Creating a Form using Form Wizard

1. Click the **create** tab
2. In the **forms** group, click **more forms** (Fig. 5.31)

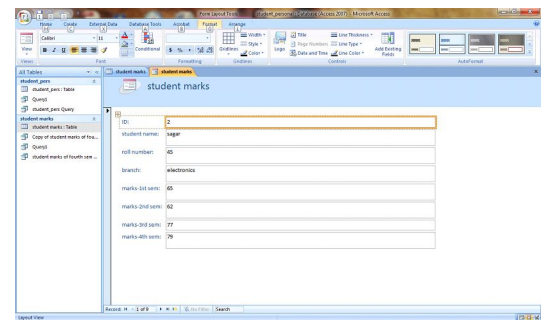


Fig 5.30

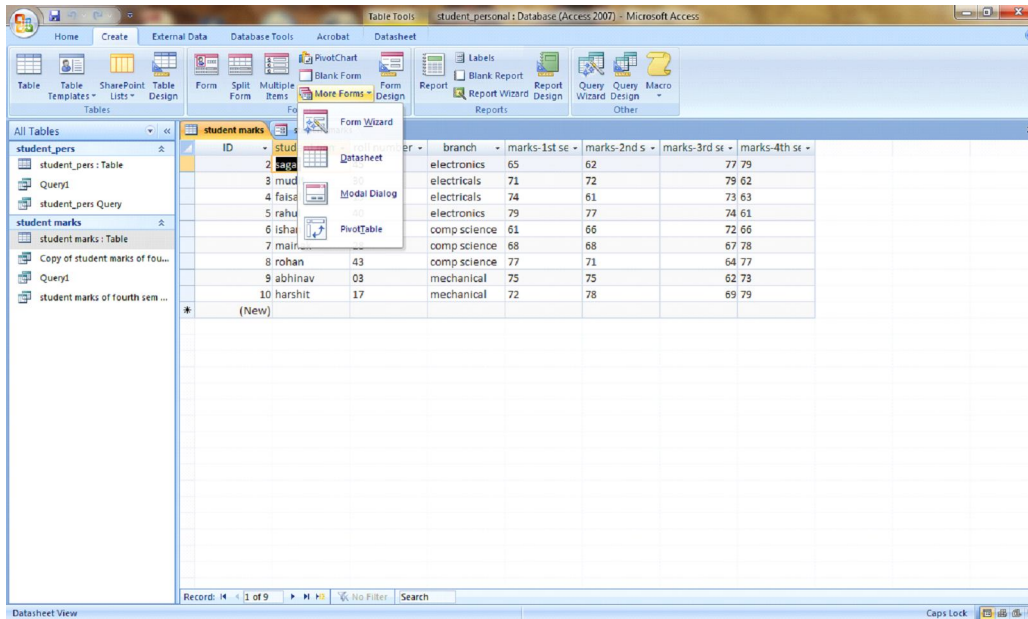


Fig 5.31

- When you click **form wizard**, a **Form wizard** dialog box appears. (Fig 5.32)
- From the **available fields** area, select the fields one by one which you want in your form. Click **> button**. To select all fields click on **>> button**.

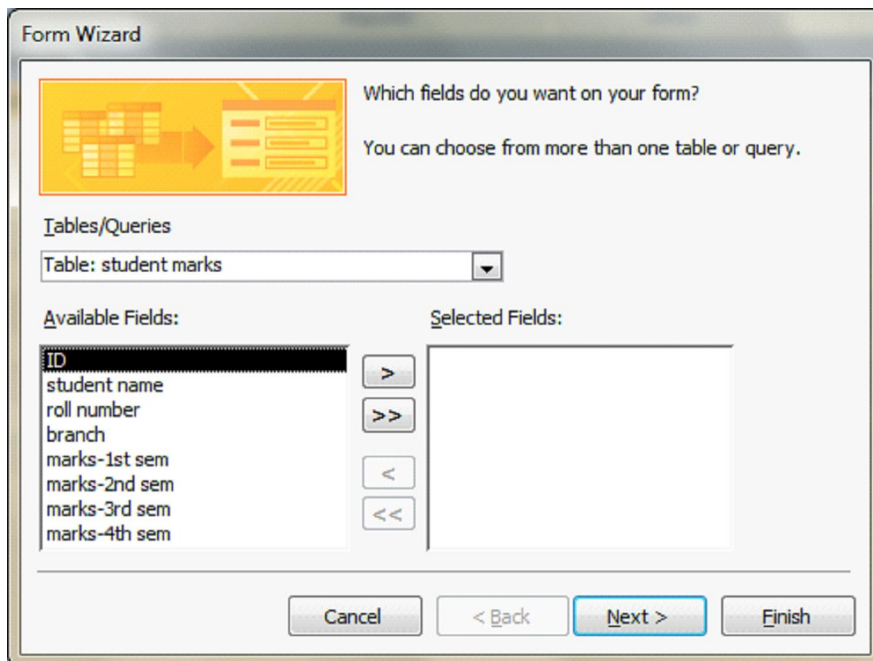


Fig 5.32

5. Now click **Next** button (Fig. 5.32)
6. Select a layout for the form. The various layout for forms available are columnar, tabular, datasheet and justified and click **Next** button (fig. 5.33).

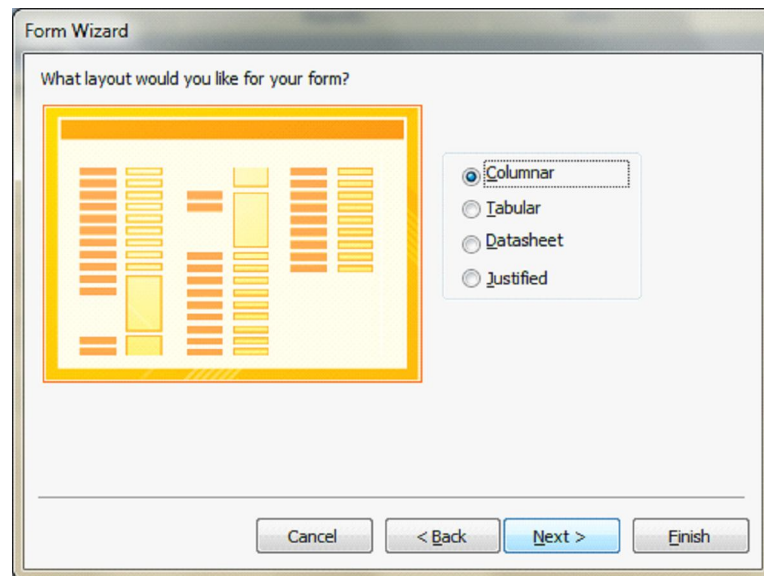


Fig 5.33

7. Choose a style you want for the form (Fig. 5.34) and click **Next** button.

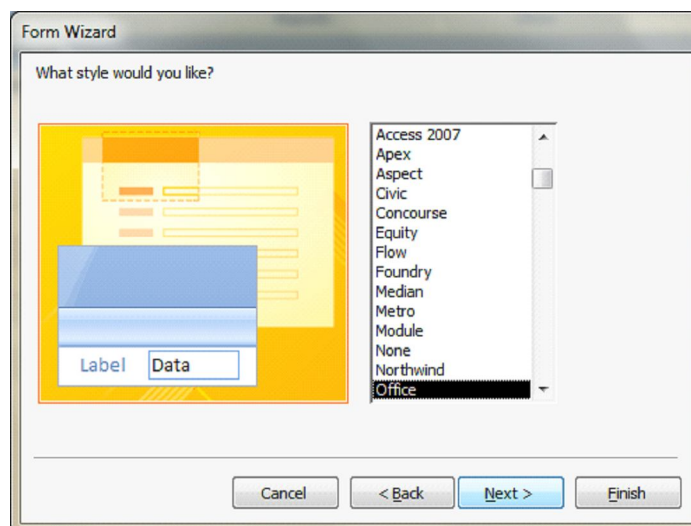


Fig 5.34

8. Provide a title for the form. (Fig. 5.35) and click **Finish** button.
-

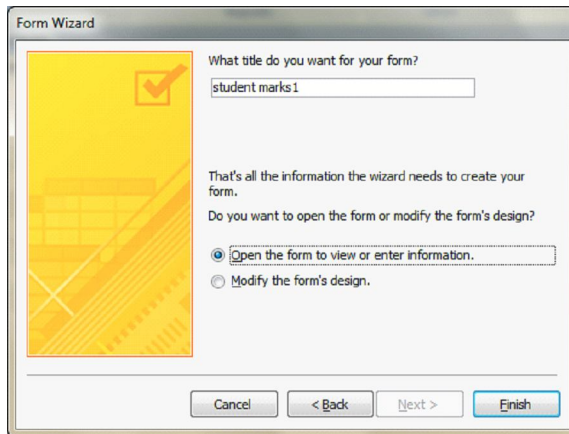


Fig 5.35

The form will open in Form View (Fig. 5.36)

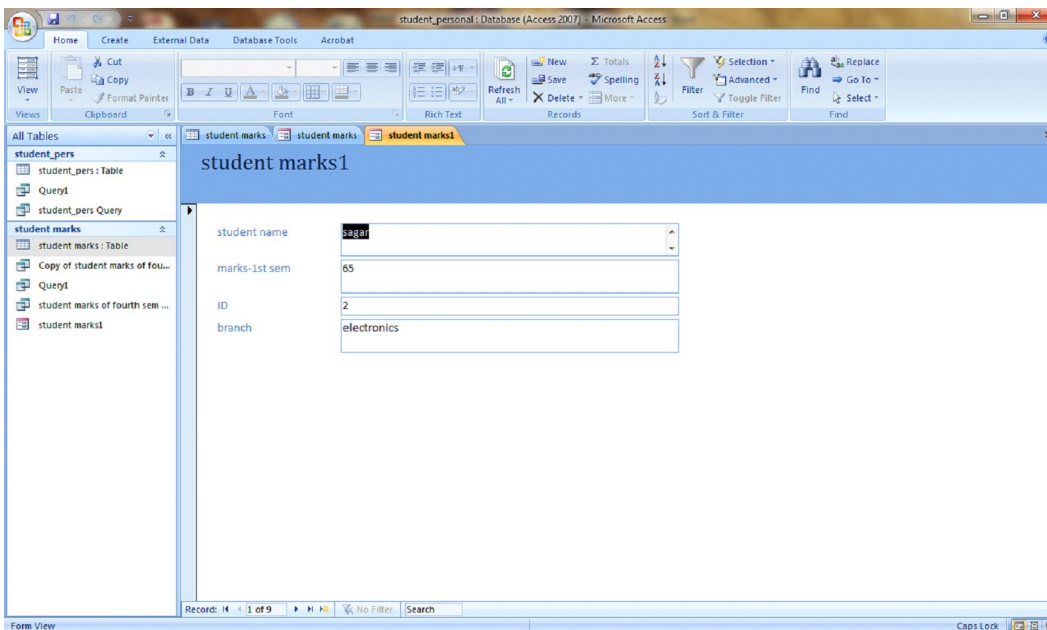


Fig 5.36

5.17 REPORTS

Although tables, queries and form can be printed, they may not look very professional, as they are not designed for printing purposes. Reports, however, are designed to take the data from a table or selected by a query and printed in a professional looking layout. Report allows you to group, sort and manipulate the data to suit your requirements. Reports are the most powerful and flexible way to view and print the information in your database. To make your data more presentable for others to record and easily understand, you would need to create reports.

5.17.1 Creating a Report using Report Tool

The Report tool in Access 2007 helps you to create a report very fast. Steps are as follows:

1. In the Navigation Pane, click the **table or query** for which you want to make a report.

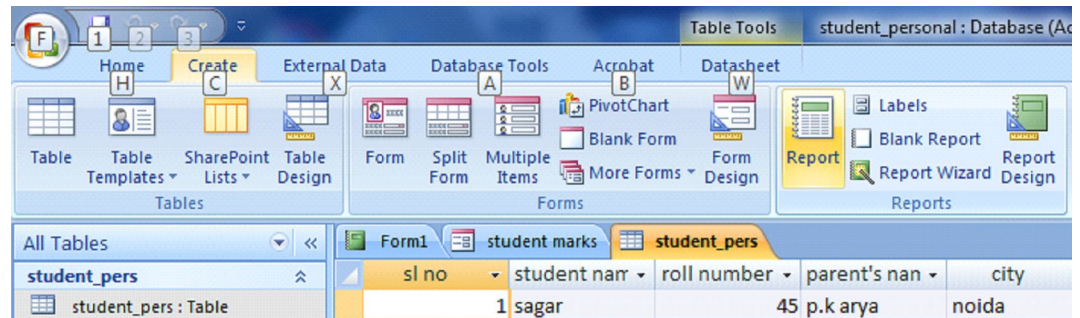
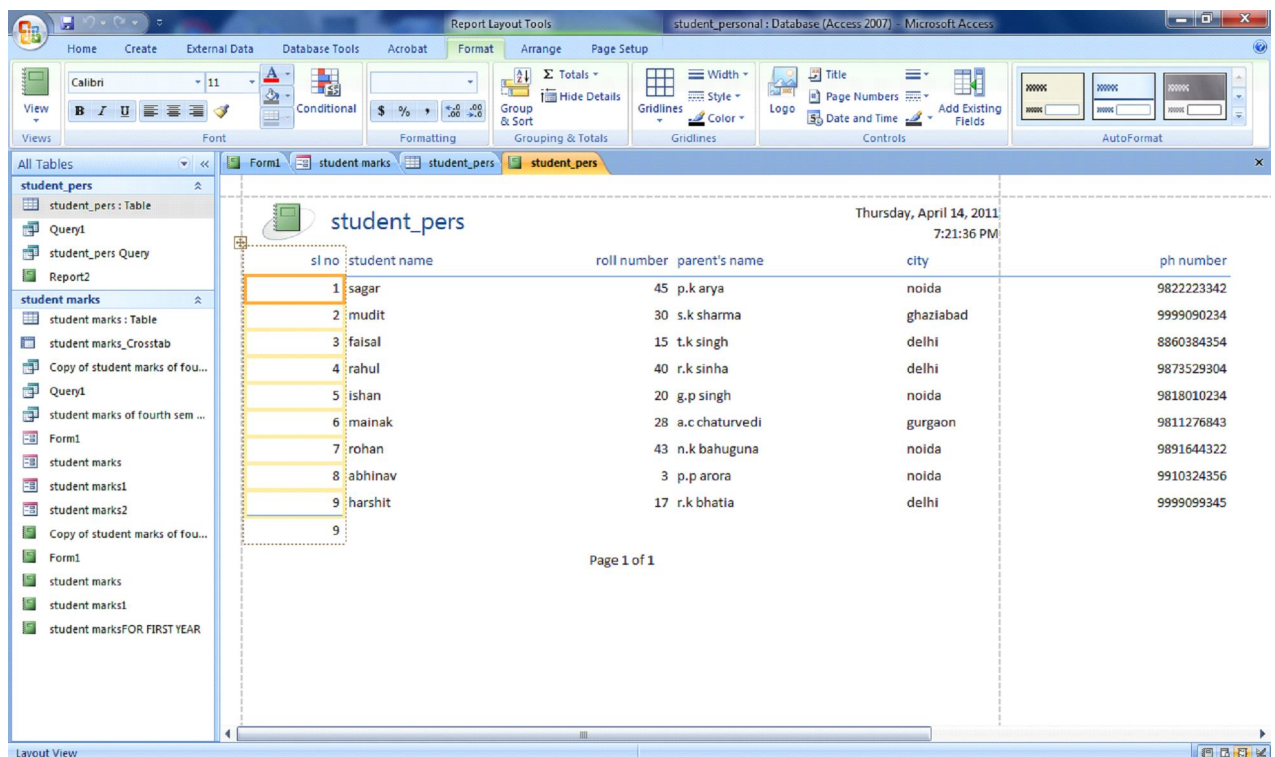


Fig 5.37

2. Click the **create** tab, in the **Reports** group, click **Report**. (Fig 5.37)
3. Report is generated and displayed in layout view along with the **Report Layout Tools** i.e. **Format Tab** in the ribbon (Fig 5.38).



5.17.2 Creating a Report Using Report Wizard

Report Wizard can be used to include the selected fields in your report and specify how the data is grouped and sorted. Fields from more than one table or query, can also be used if you have already specified the relationship between the tables and queries.

Various steps are as follows:

1. Click the **Create Tab**, in the forms group, click **Report wizard** button. A Report Wizard dialog box appears (Fig. 5.39).

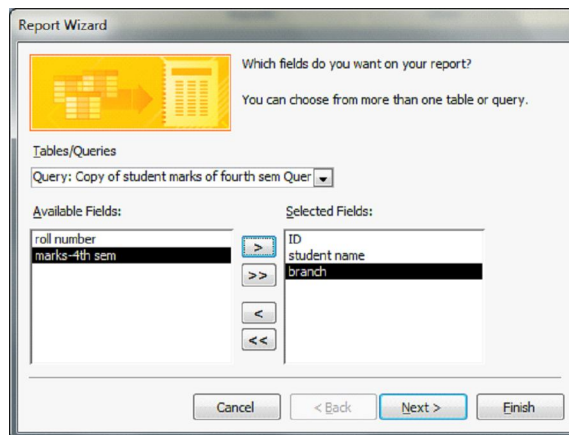


Fig 5.39

3. From **Available Fields**: area, select the fields which you want in your report and click **> button**. To select all the fields present in the Available Fields: area, click **>> button**. To remove a field from the Selected Fields: area click the **< button**. To remove all the fields, click the **<< button**. Click **Next** button.
4. Additional dialog box appears, asking for grouping your data by a specific field (Fig 5.40).
5. Click a field name displayed in the box, Click **> button** and then click **Next** button.

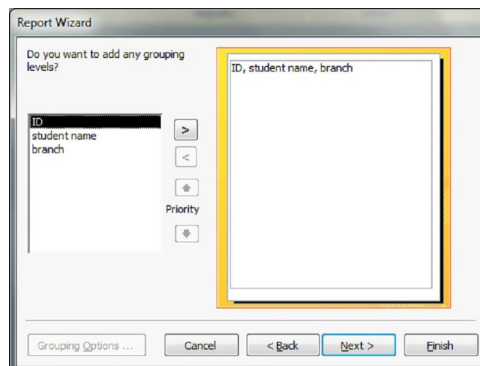


Fig 5.40

6. In this dialog box choose a field for sorting your data in report student name as field been choosen (Fig 5.41). Click next button.
7. Select a layout for the report from the layout group (Fig 5.42).

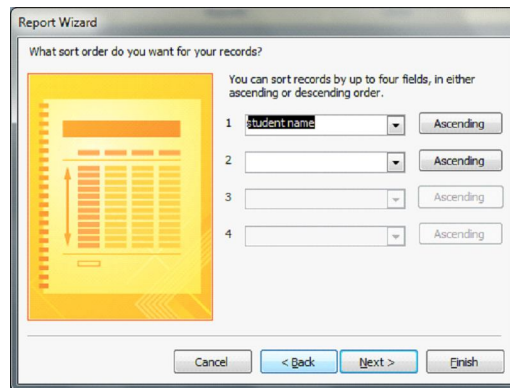


Fig 5.41

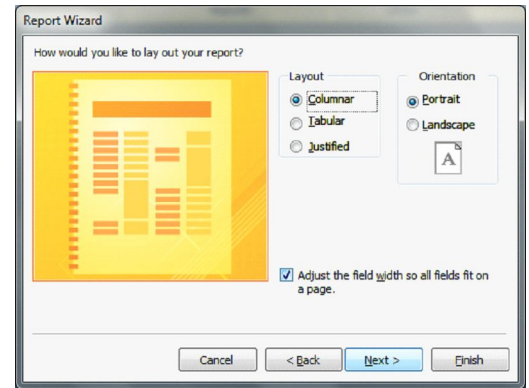


Fig 5.42

8. Select orientation of the page from orientation group, click **Next** button. In the dialog box that appears, choose a style you want for this report (Fig 5.43).
9. Click next button provide a title for the report and click **Finish** button.

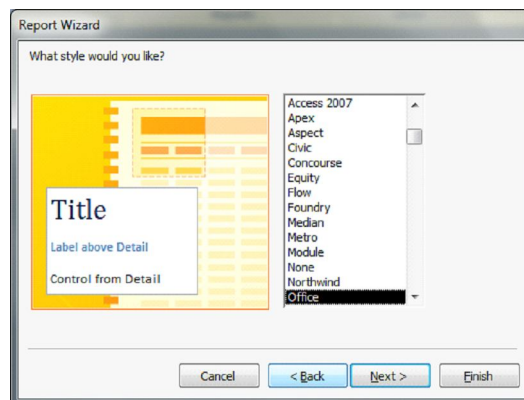


Fig 5.43

The report will open as shown in the Fig 5.44.

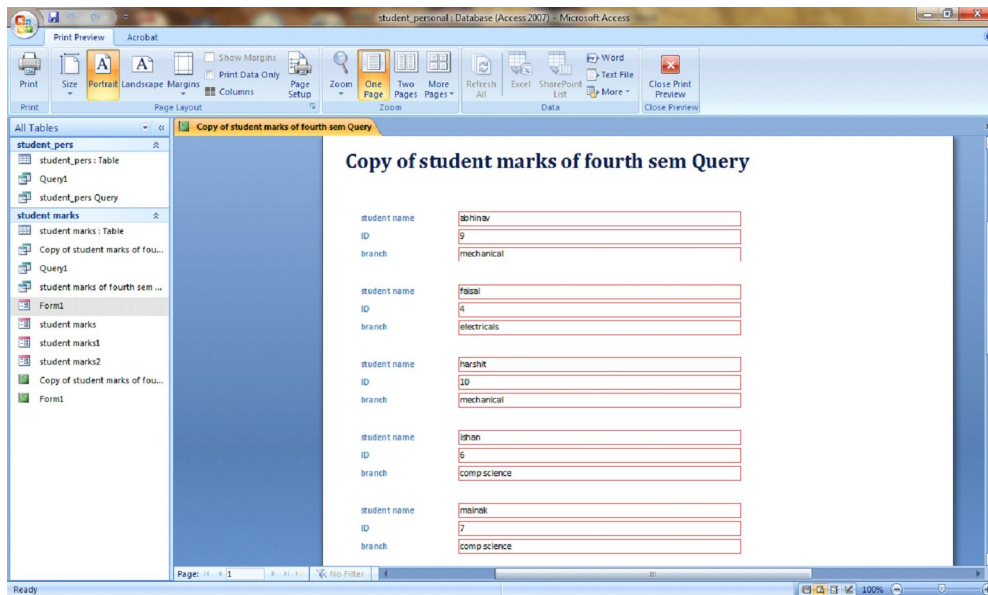


Fig 5.44

5.17.3 Creating a Report using Blank Report Tool

Steps for creating this report are as follows:

1. Click **create** tab, in the report group, click **Blank Report** button.

A blank report is opened in Layout view along with the Field List Pane (Fig 5.45).

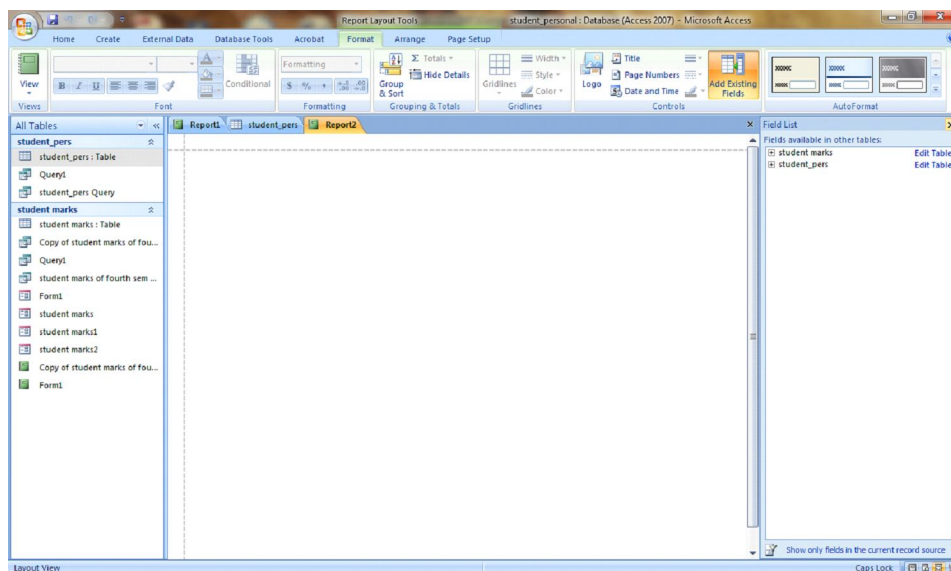


Fig 5.45

2. In the Field List pane, click the plus sign (+) against the table that contains the fields to be include in the report (Fig 5.46).

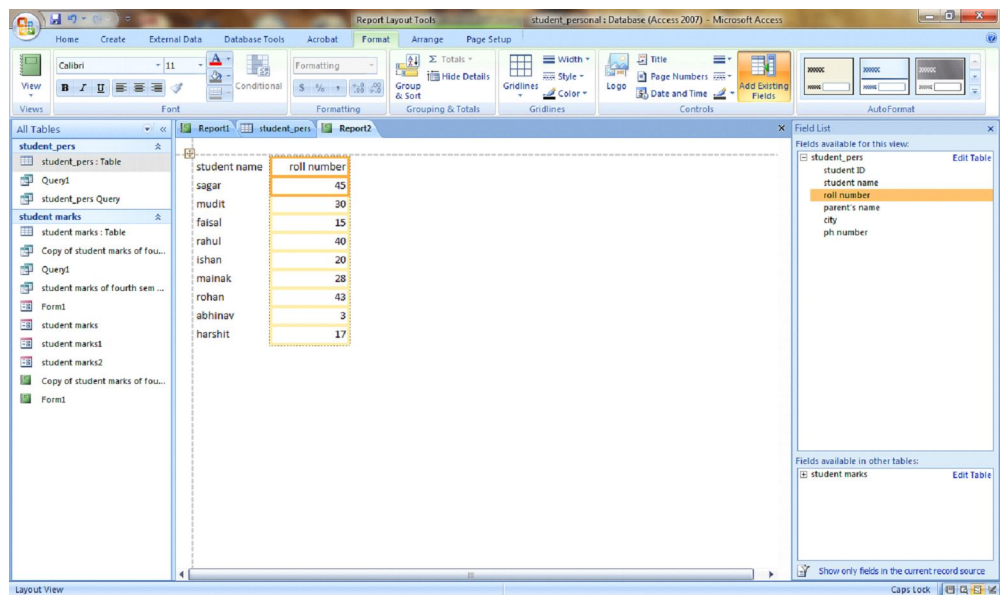


Fig 5.46

To add a field to the report, double-click it. If you want to add tools in the report like title, page numbers, etc., click under **Format** tab and in the **controls** group, click the tool which you want.

After adding tool, the report will appear as shown in Fig 5.47.

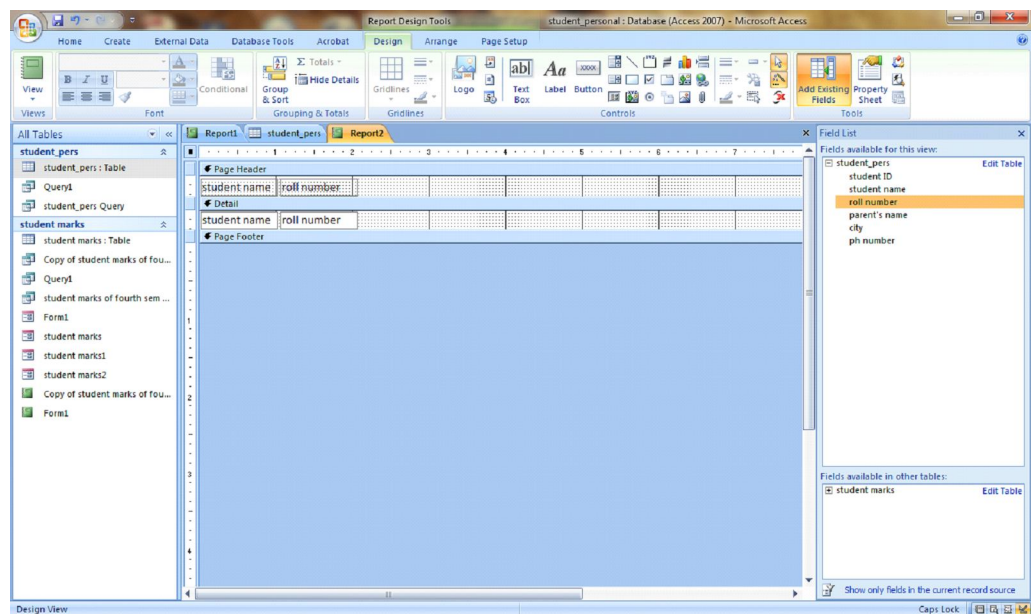


Fig 5.47

5.18 SECTIONS OF A REPORT

The design of a report in Access 2007 has following sections (Fig 5.48).

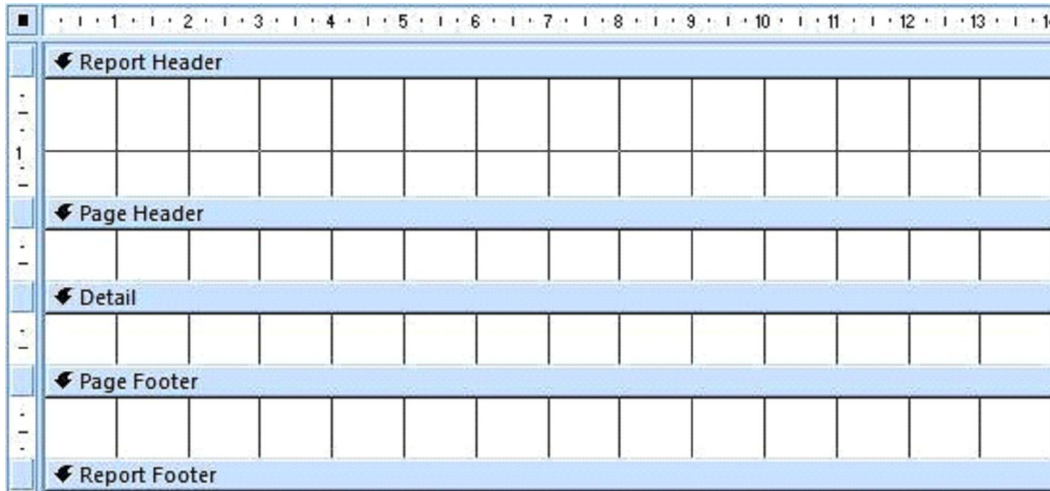


Fig 5.48

- **Report Header:** It is at the beginning of the report and contains information that might normally appear on a cover page, such as a title.
- **Page Header:** Presented at the top of every page. For example, fields of the table.
- **Group Header:** Presented at the beginning of each new group of records.
- **Detail:** Presented once for every row in the record source.
- **Group footer:** Printed at the end of each group of records.
- **Page Footer:** Printed at the end of every page. Use a page footer to print page numbers.
- **Report Footer:** Printed just once at the end of the report. Use the report footer to print report totals or other summary information for the complete report.

5.19 PRINT PREVIEW A REPORT

Various steps to print Preview a report are as follows:

1. Click on the **MS office button**, menu appears. (Fig. 5.49)

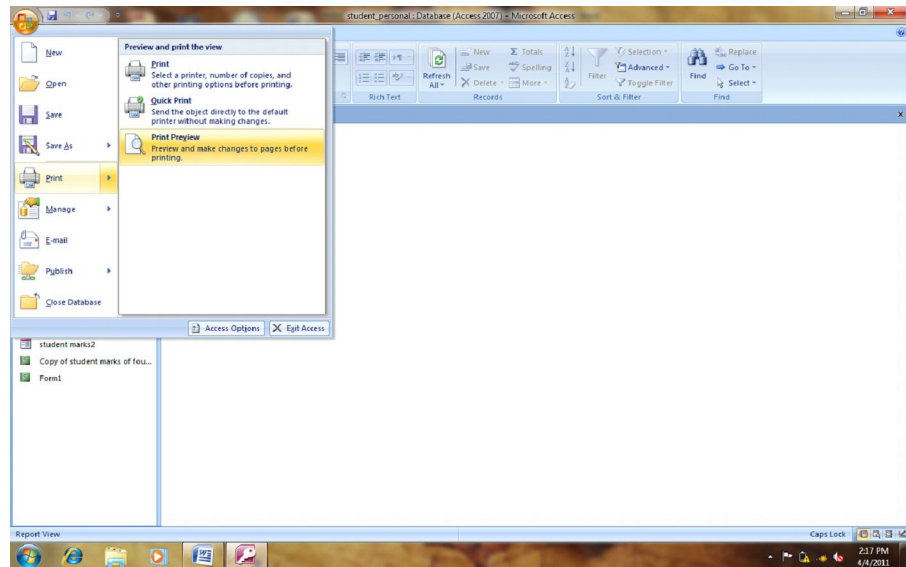


Fig 5.49

2. Now, point the cursor in Print option (Fig 5.50), click on Print Preview.
3. Access switches to Print Preview mode.

5.20 PRINTING A REPORT

1. Click on the **MS office** button, click on the **Print** option. A **print** dialog box appears (Fig 5.51). Provide the desired information before printing and click on OK button to print the report.

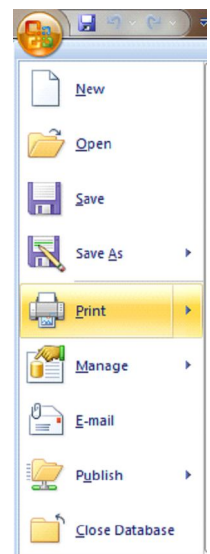


Fig 5.50

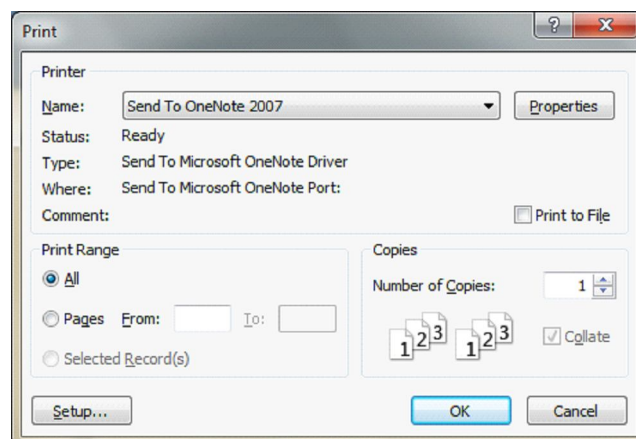


Fig 5.51

5.21 STARTING A POWERPOINT PROGRAM

You can start your PowerPoint program in different ways. One way is using Start button:

1. Click on the **Start** button.
2. In the menu that appears select **All Programs**→**Microsoft Office**→**Microsoft Office PowerPoint 2007** (Fig. 5.52). In few seconds you will see PowerPoint screen on the monitor (Fig. 5.53).

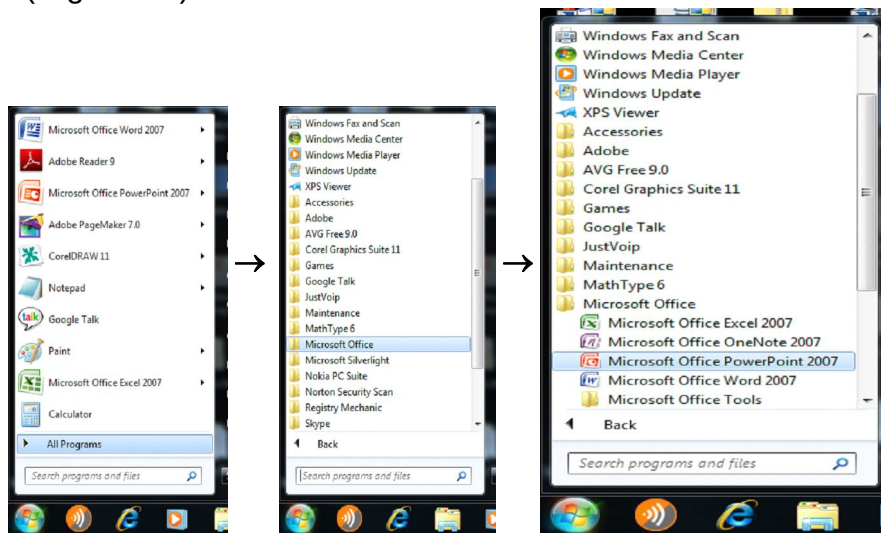


Fig. 5.52

5.22 CREATING PRESENTATIONS

When you start your PowerPoint Program, you see a Blank presentation.

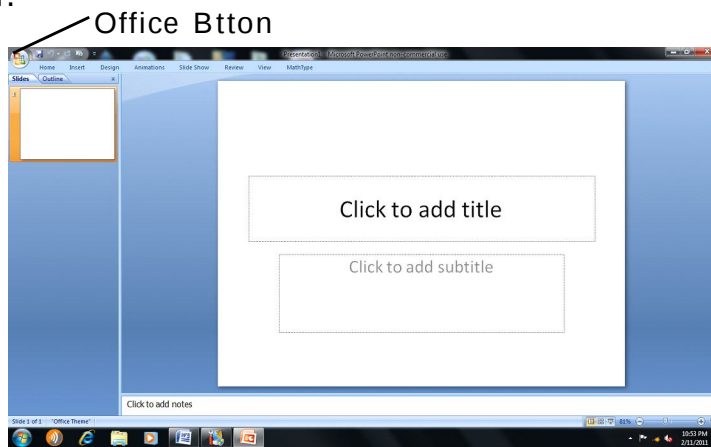


Fig. 5.53

*Note: In PowrePoint 2007 **Office button** replaces the **File menu** of other programs and the bar below the title bar is known as the **Ribbon** (**Menu** and **Tool** bars of some other programs).*

Ribbon consist of a number of **Tabs** (Home, Insert,) . Tabs are designed to be task oriented

Groups within each Tab break a task into **subtasks**

Command button in each group carry out a command or display a menu of **commands**.

You can also go to **Office button** on the top left corner of the page and click on **New**. You can choose a blank presentation from the page displayed (Fig. 5.54).

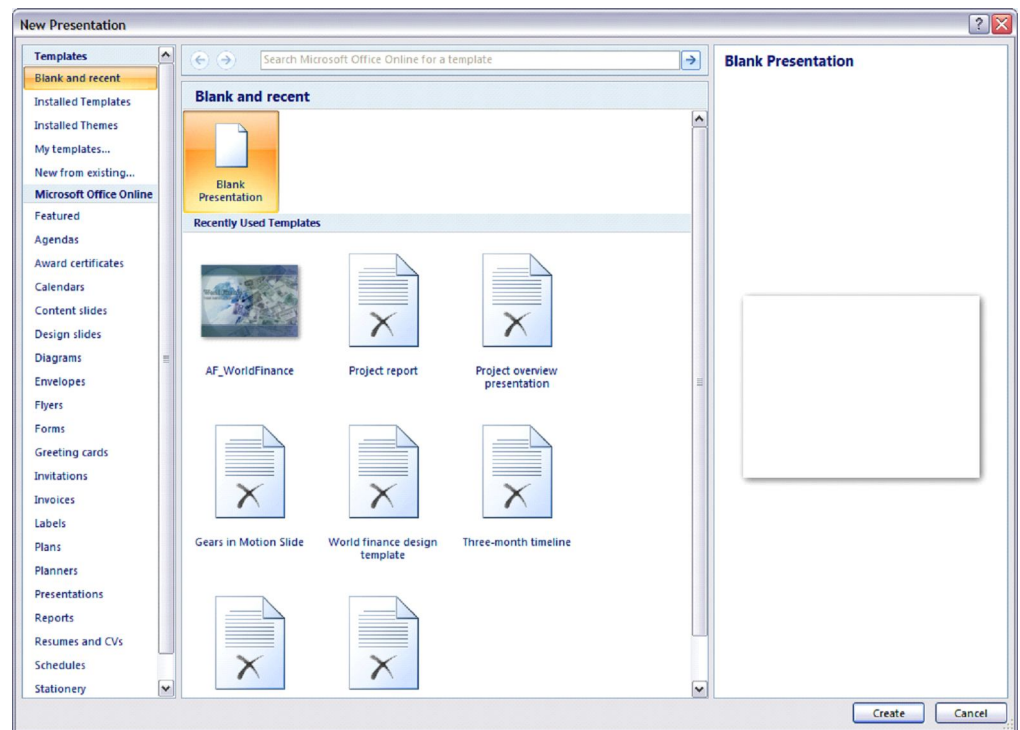


Fig. 5.54

5.22.1 Installed templates

Select the **Installed templates** tab and then select the desired template (Fig. 5.55). The Installed template provides templates and ideas for a variety of presentation types. Select the template you want and move through the wizard by clicking ↓ button or the

scroll-bar after making necessary choices. Choose the type of presentation you would like and click on **Create** when finished.

Your presentation is ready for show.

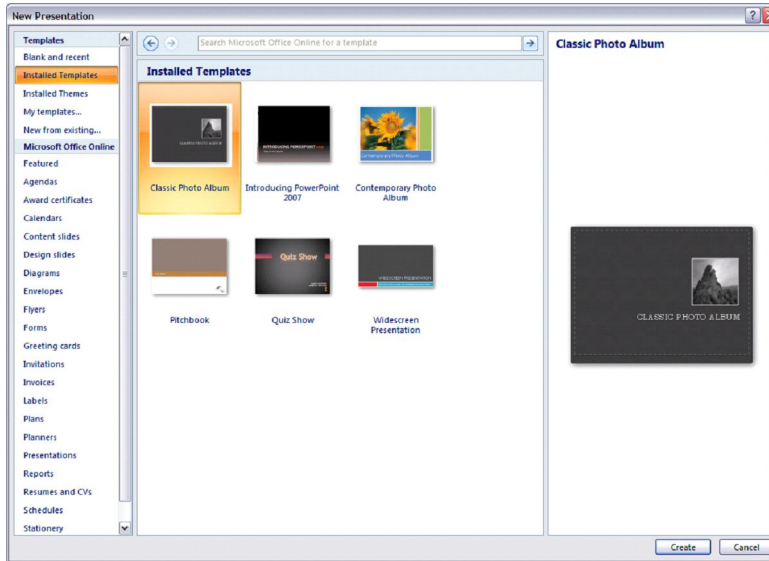


Fig. 5.55

5.22.2 Design Template

Click on the Installed Themes box to select the Design Template you want to use. A number of template names will appear in the white box. These **Installed Themes** give you different backgrounds and text formatting to begin your presentation. Preview each design by highlighting the template name on the list. Press **Create** after you have chosen the design (Fig. 5.56).

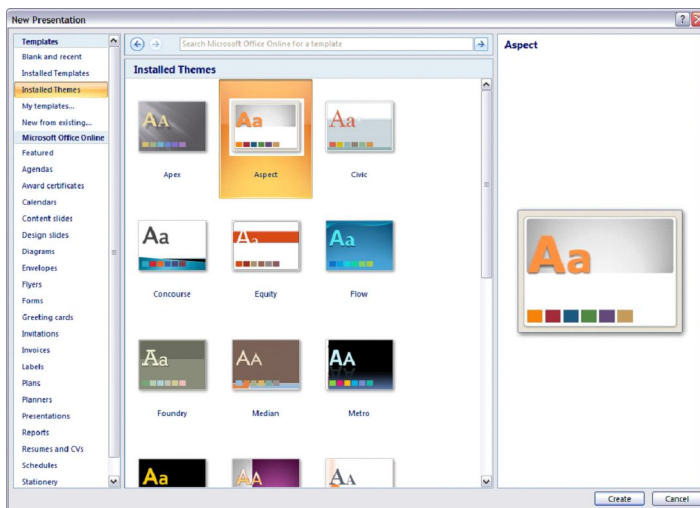


Fig. 5.56

5.22.3 Slide Layouts

If you do not choose any template, you can start your presentation by choosing a Blank presentation option from the New Presentation dialog box shown earlier in fig. 5.54.

Once you have chosen a blank form for your new presentation, the first slide of your presentation appears. You can right click on the slide to choose the layout you want. There are nine different slide layouts from which to choose (Fig. 5.57). You simply make your selection and click on it. Each choice described below, dictates how your completed slides will appear.

1. **Title Slide:** This option is useful for beginning a presentation; use this slide if you want to include subtitles or smaller text underneath a title.
2. **Title and Content:** Anytime you need to make a list of things that fall underneath a general subject, choose this layout.

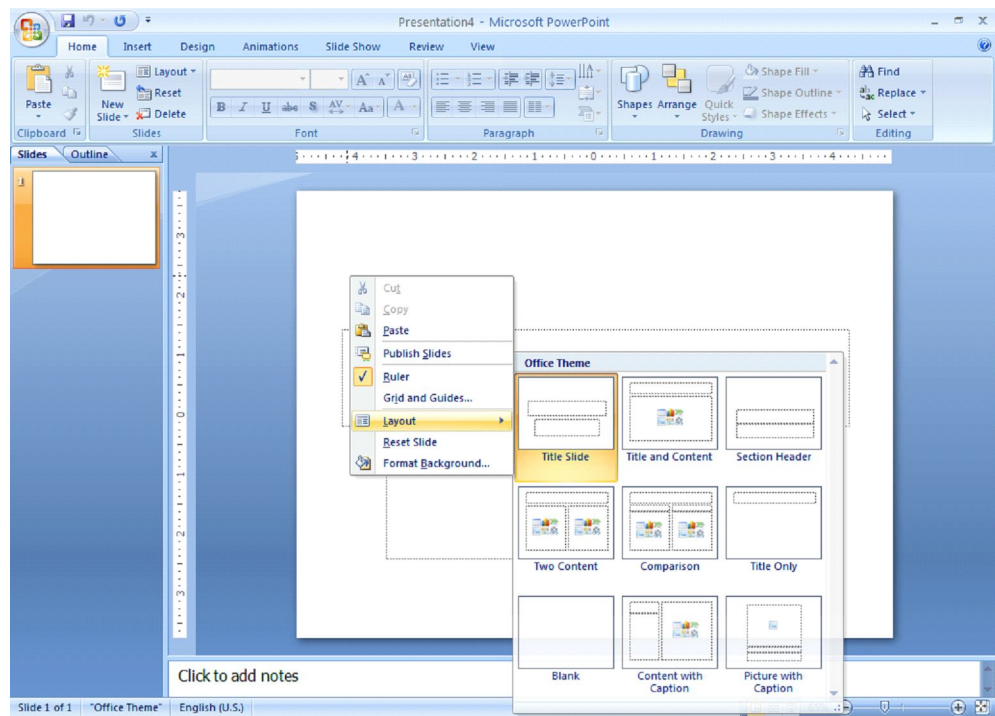


Fig. 5.57

3. **Section Header:** This option is useful for making a major section within the presentation
 4. **Two Content:** This is a useful option for putting different elements or text boxes.
 5. **Comparison:** This is a useful option for doing pro/con lists.
-

6. **Title Only:** This option is great for the beginning of a presentation. No subtitles are included in this layout
7. **Blank:** Use this layout if you want a blank slide formatted according to the master Slide.
8. **Content with caption:** Use this option to describe the content (usually a graphic object like a chart or picture) on the right side of the slide and Title with description on the left side.
9. **Picture with caption:** Use this option to place title over one linked object.

5.22.4 Selecting the content

There are six types of elements shown inside the text box which are listed below. You can select from the contents within the slide (Fig. 5.58).

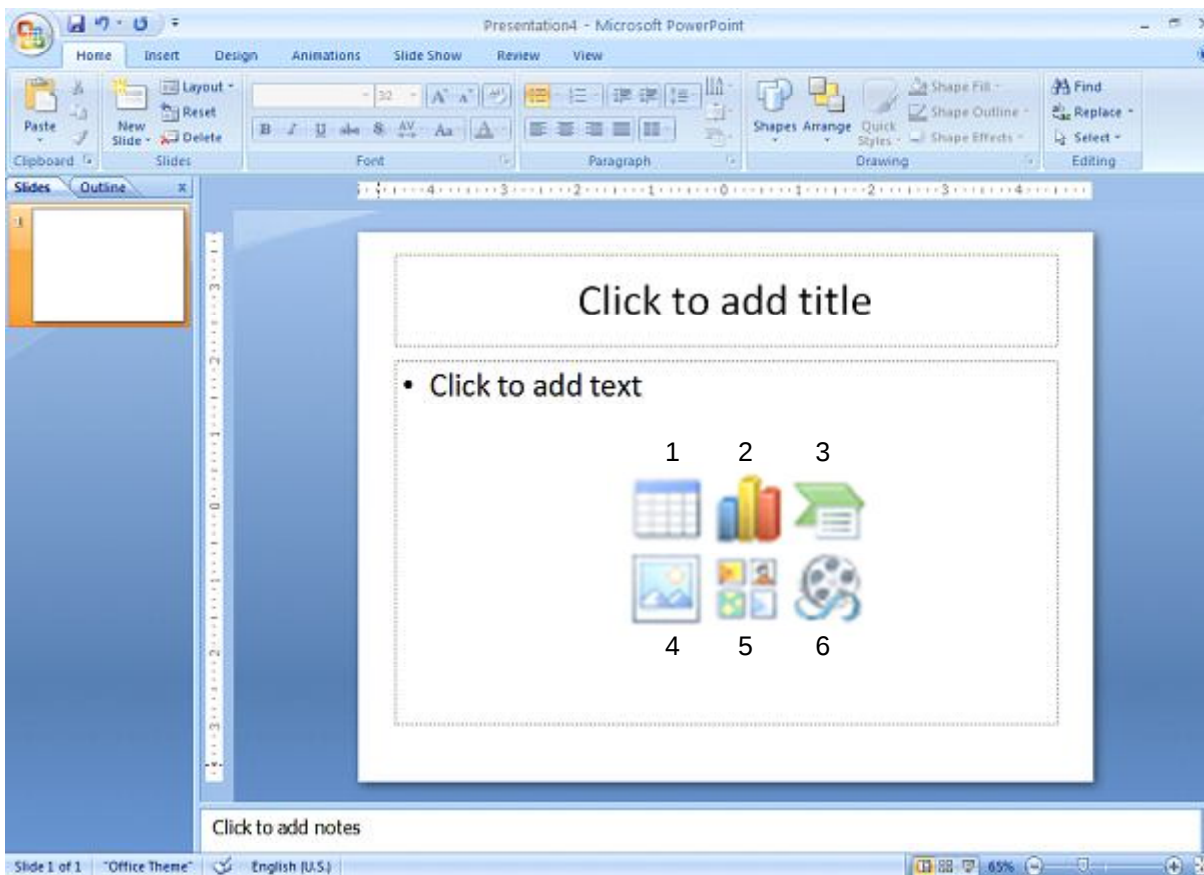


Fig. 5.58

1. Insert table

2. Insert chart
3. Insert SmartArt Graphic
4. Insert picture from file
5. Insert Clip Art
6. Insert Media Clip

5.22.5 Open an Existing Presentation

Select the **Open** tab from the **Office** button to open an existing presentation. Select the folder in which the file is located, from the **Look in:** drop-down menu and highlight the file on the list. Click **Open** to open the presentation (Fig. 5.59).

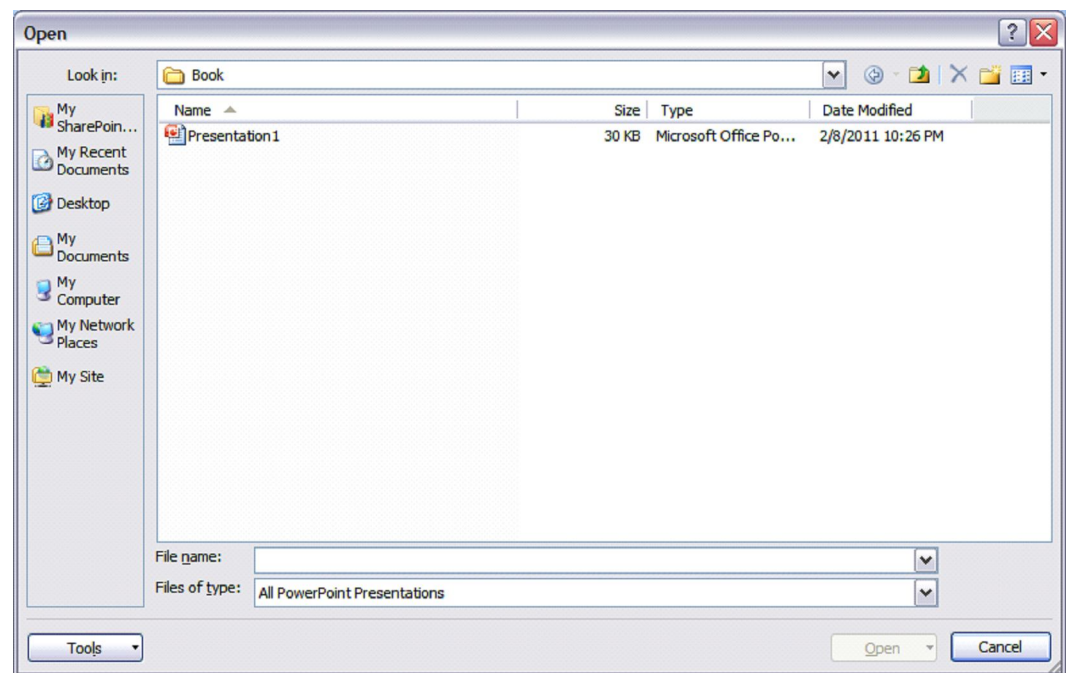
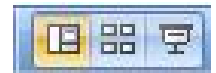


Fig. 5.59

5.23 VIEWING SLIDES



PowerPoint consists of multiple views to help you in the creation and presentation of your slides. These views are Normal, Slide Sorter, and Slide Show. The first two views are for creating your presentation and the last one is for presentation of slide show. You can access these views by clicking the respective view buttons at the bottom right of the PowerPoint window (Fig. 5.60).

Or select the View and then the respective command on the menu bar. For example, if you want to choose Normal view, select **View→ Normal** command on the menu bar.

5.23.1 Normal View

The Normal View divides the screen into three sections: the main window, where the current slide is displayed; the outline pane on the left; and the notes pane at the bottom. This is where you will do most of your work. You can resize each pane by clicking its border and dragging it to the size that you want it to be. To access Normal view, click on **Normal** view button at the bottom right of the window or select **View→ Normal** command on the menu bar.

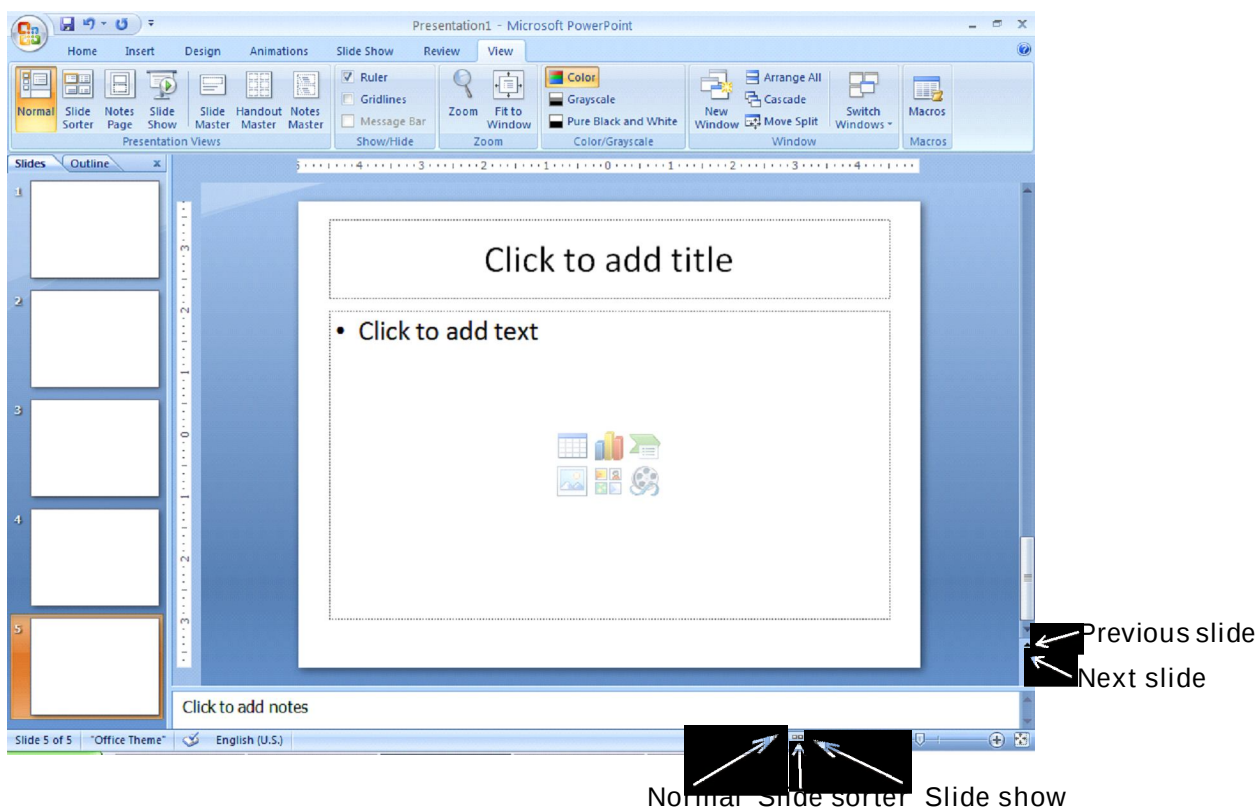


Fig. 5.60

5.23.2 Slide Sorter View

A small image of each slide is displayed on Slide Sorter View. Slides can easily be ordered and sorted using this view. You can also use this view to add special effect, such as the transactions

that occur when each new slide appears. To access **Slide Sorter** view, click on **Slide Sorter** view button at the bottom right of the window or select **View→Slide Sorter** command on the menu bar (Fig. 5.61).

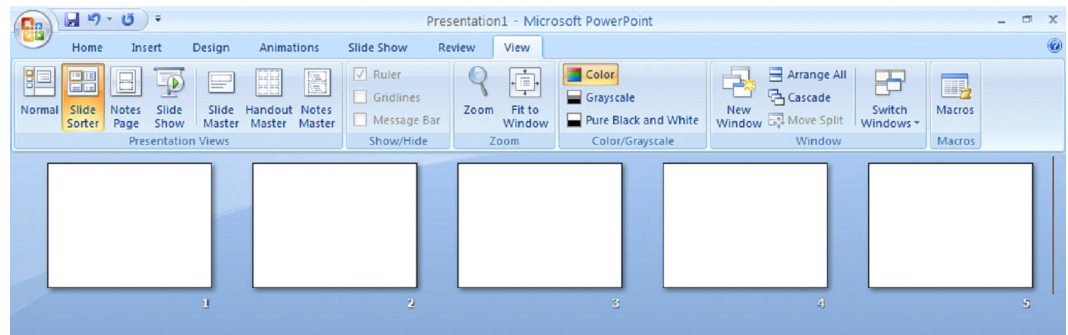


Fig. 5.61

5.23.3 Slide Show View

The Slide Show View is the view to use when you preview your presentation to make sure every thing is in place, or when you deliver a presentation to an audience. Because all sounds, animations, hyperlinks, and action settings of your presentation will be working, you can see exactly how your show will turn out. To access Slide Show view, click on **Slide Show** button at the bottom right of the window or select **View→Slide Show** command on the menu bar.

5.24 DESIGN TIPS

Although, PowerPoint provides you with some very powerful tools to give excellent presentations, making the wrong design choices can defeat all your efforts. Making the right decisions is not difficult. By following the guidelines below, you can prepare best slides.

1. Use contrasting colors for the text and the background so the text will be easy to read.
 2. Use font size large enough to be seen from the back of the room where the presentation will be held. A font size of 24-point or larger is recommended.
 3. Use short phrases and sentences to convey your message.
 4. Use simple slide transitions. Too many different transitions will distract your audience from the subject of the presentation.
-

5. Avoid cluttering the slides with too much text or graphics. Your audience should hear what you have to say and not be distracted by a busy screen.
6. Keep text simple and easy to read by not using many different text effects such as **bold**, *italics*, underlining, larger font size for emphasis within a sentence, or a different font all on the same slide.

5.25 WORKING WITH SLIDES

Slides are the building blocks of your presentation. You can also create or use layouts and designs, add notes and create handouts, and customize the look of your slides. You can create new slides by inserting them into your show. When you create a new slide, you can use any of the nine layouts available (Refer to Section 5.22.3) in the **New Slide** dialog box or choose a blank slide. Once you have created a new slide, you can insert various elements such as text, pictures, graphs, tables etc.

5.25.1 Applying a Design Template

To add a design template or change the existing one, select **Design** tag on the Ribbon. Select the template by clicking on it (Fig. 5.62).

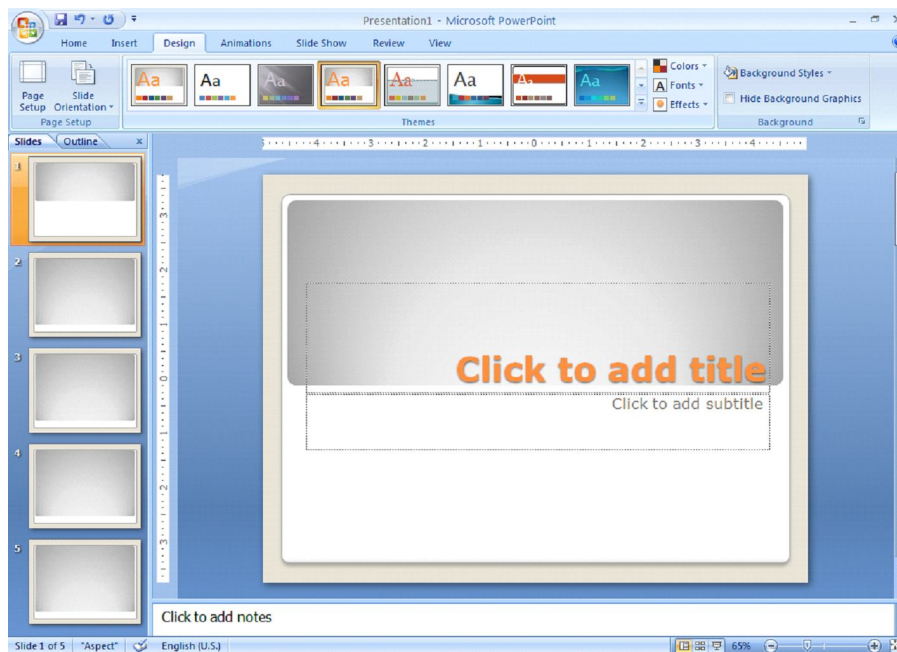


Fig. 5.62

5.25.2 Changing Slide Layouts

To change the layout template of the slide select **Home**→ **Layout** command on the menu bar. The Slide Layout dialog box appears with nine layouts. Click on one of the layout thumbnail images to apply (Fig. 5.63).

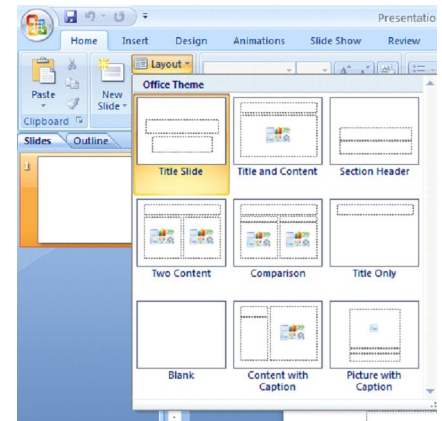


Fig. 5.63

5.25.3 Slides from Outline

Slides from outline provides a way to create slides from text file outline.

You can use this feature to create a group of slides that contain a lot of text. You can also create new slides by typing text in the outline pane. To access the **Insert Outline** dialog box, select **Home** → **New Slide** → **Slide from Outline** command on the menu bar

5.25.4 Duplicate Selected Slides

Duplicate Selected Slides gives you a duplicate of a slide when you need to create similar slides. To insert a copy of the current slide after the current slide, choose the slide you want to duplicate, and then Right click for the **Duplicate Slide** command on the menu bar or press **CTRL+SHIFT+D** keys (Fig. 5.64).

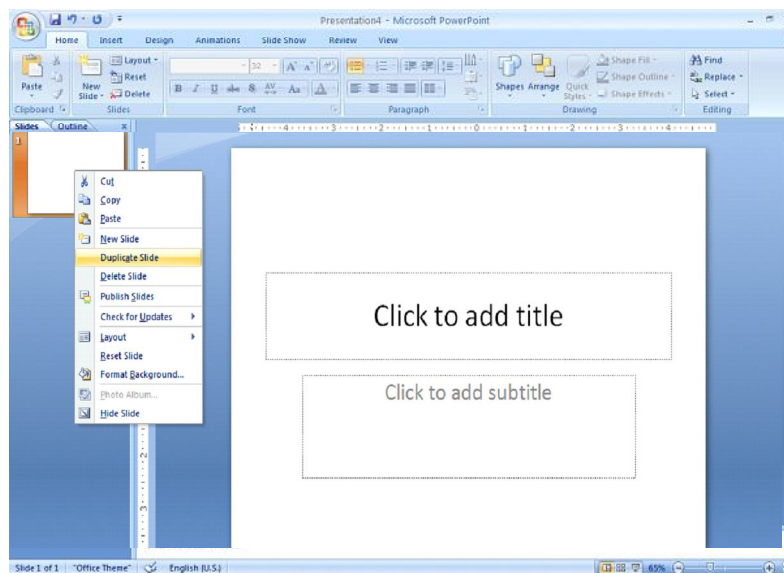


Fig. 5.64

You can also cut/copy and paste slides by selecting the whole slide.

5.25.5 Reordering Slides

To reorder a slide in **Slide Sorter View**, simply click on the slide you wish to move and drag it to the new location (refer to Fig. 5.61). In **Normal** or **Outline View**, click on the slide in the slide pane and move and drag the slide to a new location.

5.25.6 Hide Slides

If you do not want a slide to appear during the slide show, but do not want to delete the slide as it may be used later, the slide can be hidden by right clicking on the slide in the slide pane and selecting **Hide** (Fig. 5.65). You can unhide a hidden slide in a similar manner.

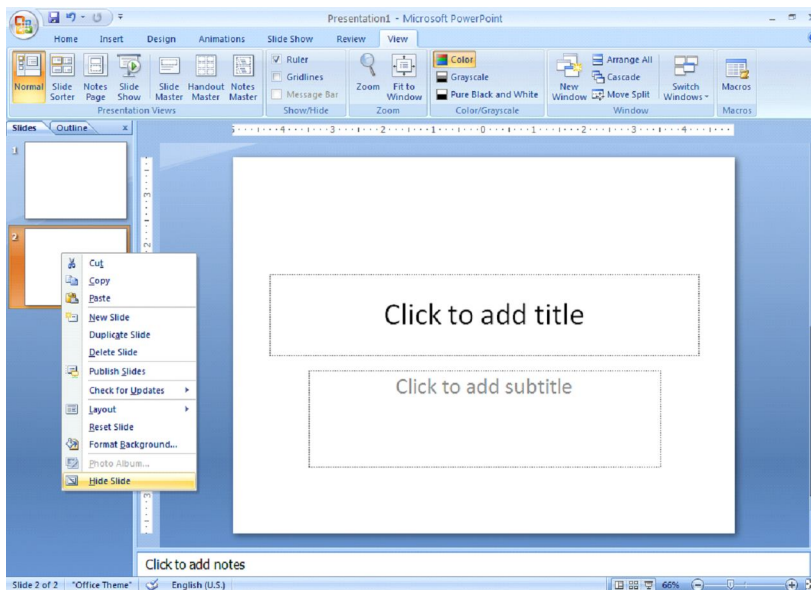


Fig. 5.65

5.25.7 Moving Between Slides

You can move from one slide to another slide by using the following tools:

Scroll Bars: Use the Scroll Bars to move from one slide to another slide or through the text that is displayed in the notes pane and the outline pane.

Next Slide and Previous Slide Buttons: The **Next Slide** and **Previous Slide** buttons move you to the next slide or previous slide in a slide show. These buttons, indicated by a double-arrow, are located at the bottom of the vertical scroll bar (Fig 5.66).

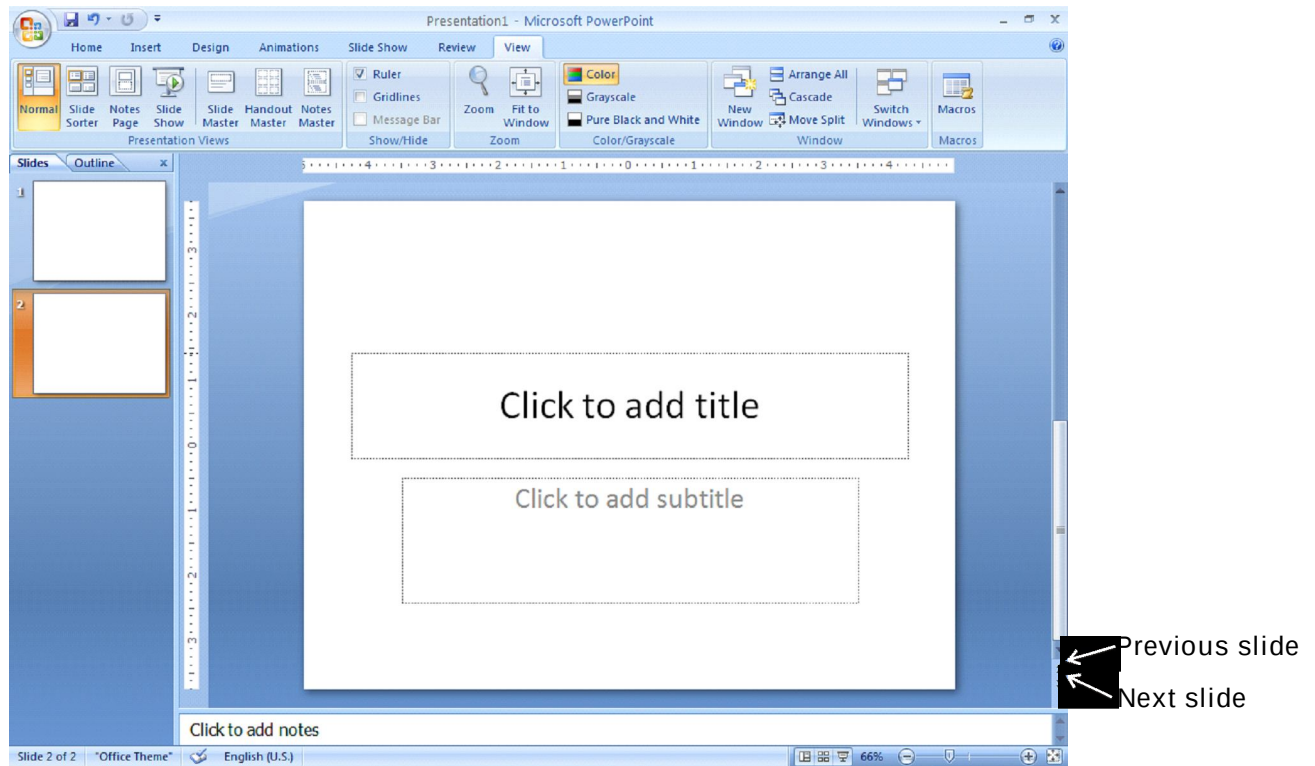


Fig. 5.66

Using Outline Pane: Change to Outline view and then click on the slide that you want to view. You can move around in the outline pane by using your mouse, or by using up and down arrow keys.

INTEXT QUESTIONS 5.4

9. State True or False.
 - (a) In both Normal view and Outline view you can see: current slide, slide outline, and notes.
 - (b) Using the contrasting colors for the text and background of the slides, is not a good practice.
 - (c) While preparing slides use long phrases sentences to convey your message.
10. How many slide layouts are available in New Slide dialog box?
 - (a) 7 (b) 9 (c) 14, (d) 17
11. The PowerPoint dialog box is useful to create a new presentation using:

- (a) Installed templates
 - (b) Open
 - (c) Installed Themes and Blank Presentation
 - (d) both (a) and (c) above
12. Which of the following views is shown in the presentation of slides in a conference?
- (a) Slide view
 - (b) Slide Sorter view
 - (c) Outline view
 - (d) Slide Show view
-

5.26 WORKING WITH TEXT

You can work with text to communicate your ideas to your audience. PowerPoint gives you several ways to insert, edit, and format text for your presentations.

5.26.1 Inserting Text

You can insert text by using the outlining toolbar or inserting text boxes.

Outline Text: The outline text can be used to create slides of a similar nature. By using the Outlining toolbar, you can create heads, lists, and paragraphs. PowerPoint uses the format of your outline to correctly insert text in a slide. Heading 1 becomes the title of a slide, heading 2 becomes the first line of the text box, and so on. When you select a predefined layout and switch over to Outline view as explained earlier, you can see the Outline text options on the left side window. To choose Outlining toolbar, select the Outline pane next to the slide pane on left side below the menu bar.

Text Boxes: The text boxes are the way that PowerPoint puts text on a slide. When you create a slide, and use a specific slide layout, the slide will have one or more text boxes in it. Simply click on the existing text to add new text.

If you want to add a new text box to the slide, select **Insert→Text Box** command on the menu bar and then draw the text box with the mouse at a place where you want to insert the text box.

If you want to resize a text box, follow the steps given below:

1. Select the text box you wish to resize by clicking on it with the mouse. A border with eight handles will appear around the text box. The four handles on the corners will resize the length and width of the box at once while the handles on the sides will resize only in one direction.
2. Click one of the handles as per your requirement and drag it with the mouse. Release the mouse button when it is the size you want to be. Move the text box by clicking and dragging the thick dotted border with the mouse.

If you want to delete a text box from a template, simply click the border of the text box, and then press the **DELETE** key on the keyboard.

5.26.2 Formatting Text

Format Fonts: Select the text that will be formatted by highlighting the text either on the outline or on the slide. You can select from **Home→Font** menu bar or right click on the highlighted selection and select the **Font** menu from the popup shortcut menu (Fig. 5.67). Select a font face, size, style, effect, and color from the **Font** dialog box.

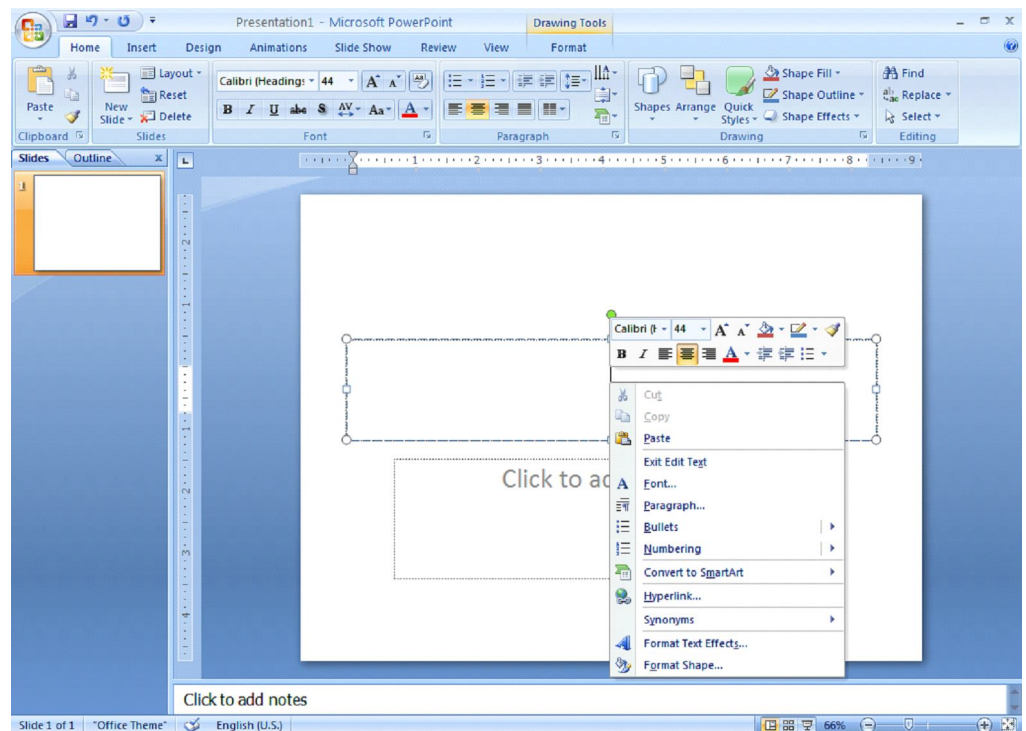


Fig. 5.67

Bulleted Lists on Design Templates: Bulleted lists allow you to clearly display the main points of your presentation on slides. The text boxes on design templates already include bulleted lists. Click the placeholder on the slide to begin adding text and press the **ENTER** key to return to the next line and add a new bulleted item. To go to the next line without adding another bullet, hold down the **SHIFT** key while pressing **ENTER**.

Bulleted List from a Text Box: If you are not creating a bulleted list from an existing placeholder on a design template, or if you would like to add an additional bulleted list, follow these steps to create a new list:

1. In slide view, create a text box by selecting **Insert→Text Box** from the menu bar.
2. "Draw" the text box on the slide by holding down the left mouse button while you move the mouse until the box is the size you want it.
3. Choose the **Bullets** or **Numbering** from the Home → Paragraph menu bar.
4. Change the **Size** of the bullet by changing the percentage in relation to the text.
5. Choose a color for the bullet from the **Color** menu. Click **More Colors** for a larger selection.
6. Select one of the bullet types shown and click **OK** (Fig. 5.68). Or click the **Picture** button to view the **Picture Bullet** window (Fig. 5.69). Select one of the bullets and click **OK**.

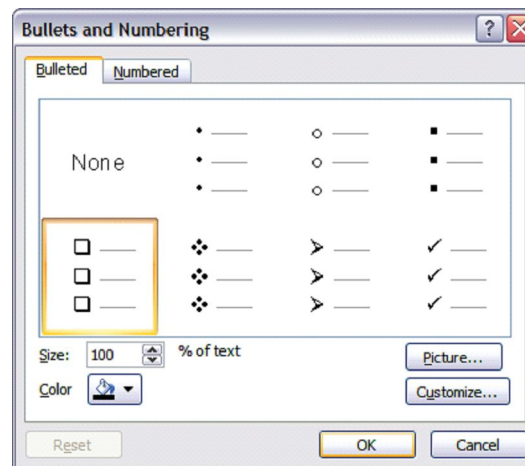


Fig. 5.68

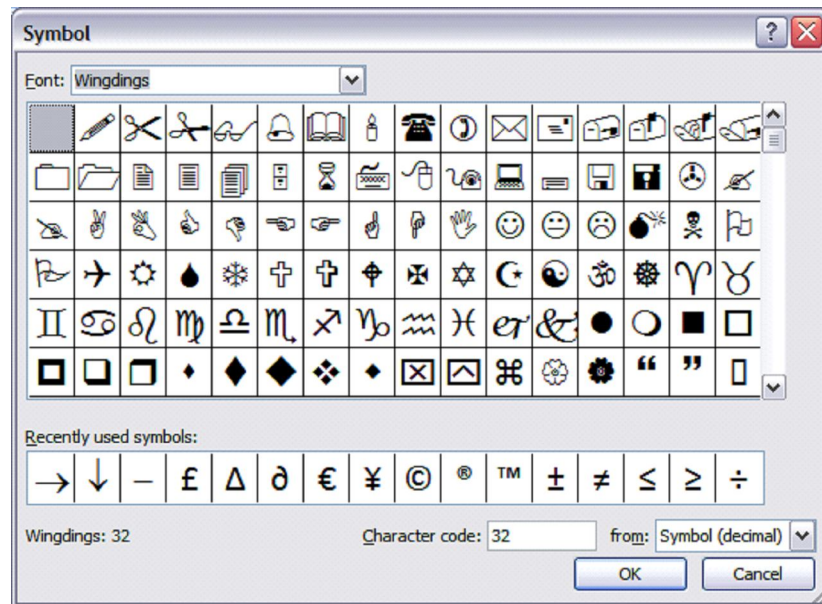


Fig. 5.69

5.26.3 Adding Notes

From **Normal View**, notes can be added to the slide. These notes will not be seen on your presentation, but they can be printed out on paper along with the slide the notes refer to by selecting **Print What: Notes Pages** on the Print menu (Fig. 5.70 and 5.71).

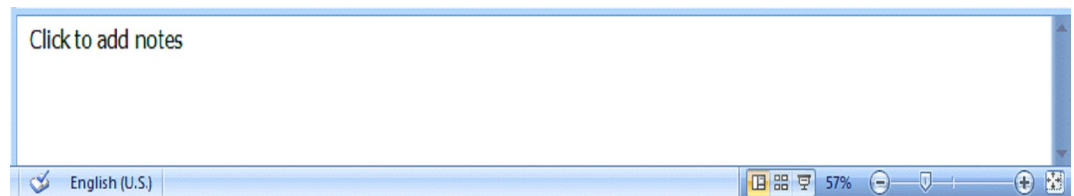


Fig. 5.70

5.27 SAVING AND PRINTING

You can save your presentation slides as a file in a folder. You can also save the slides as Web page so that you can post them on Internet. Printing is similar to what you have done in Word and Excel. Remember to set up your page before printing your presentation slides.

5.27.1 Page Setup

Select **Office button**→**Print Preview** from the menu bar to access options for printing the presentation slides. Select the format the printed slides will be used for, from the **Slides** drop-down menu (Fig 5.71).

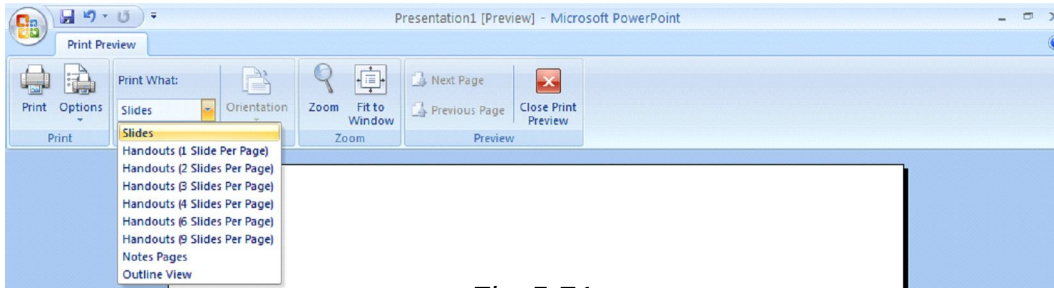


Fig. 5.71

5.27.2 Save as File

To save your presentation slides as a file, select **Office button**→**Save As** command on the menu bar or simply click on the **Save** button on the toolbar on top. The **Save As** dialog box appears. Choose the folder and drive that your file will be located, type the name of the file, and then click **Save** in the Save As dialog box (Fig 5.72).

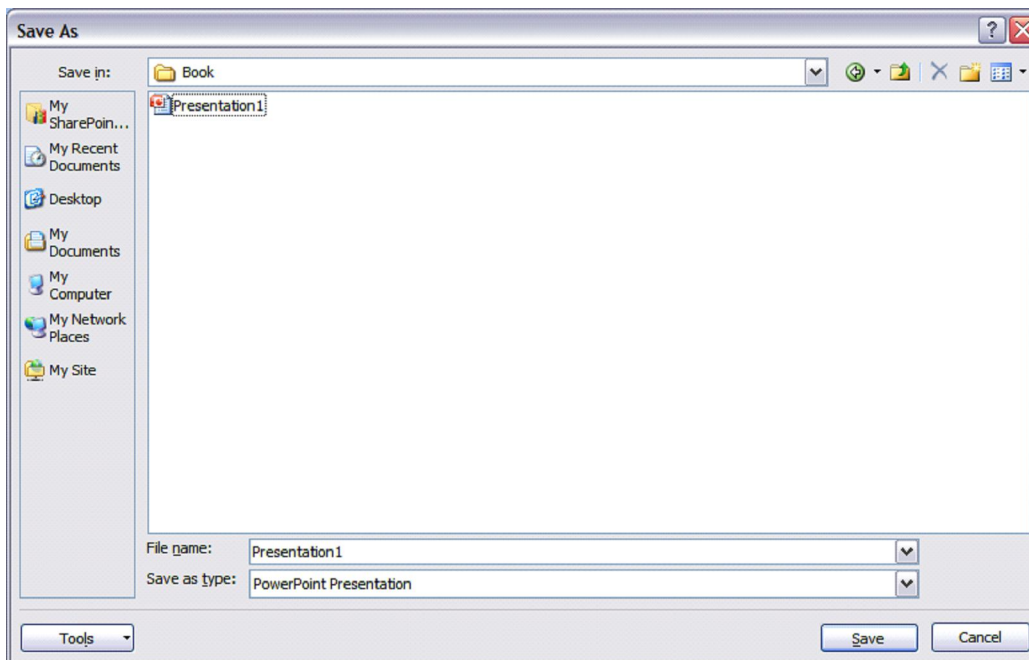


Fig. 5.72

5.27.3 Save as Web Page

Presentations can be saved by selecting **Office button→Save As** command on the menu bar as explained earlier. However, if you want to post PowerPoint presentations on the Internet, you may want to save them as Web pages so that the visitors to your web site can view the presentation even if they do not have PowerPoint installed on their computers. Select **Office→Save As** and select **Web Page** command from the drop down. Choose your web page directory on the network from the **Look in:** drop-down menu and name the file in the **File name:** box. Click **Save** to save the presentation in web format (Fig 5.73).

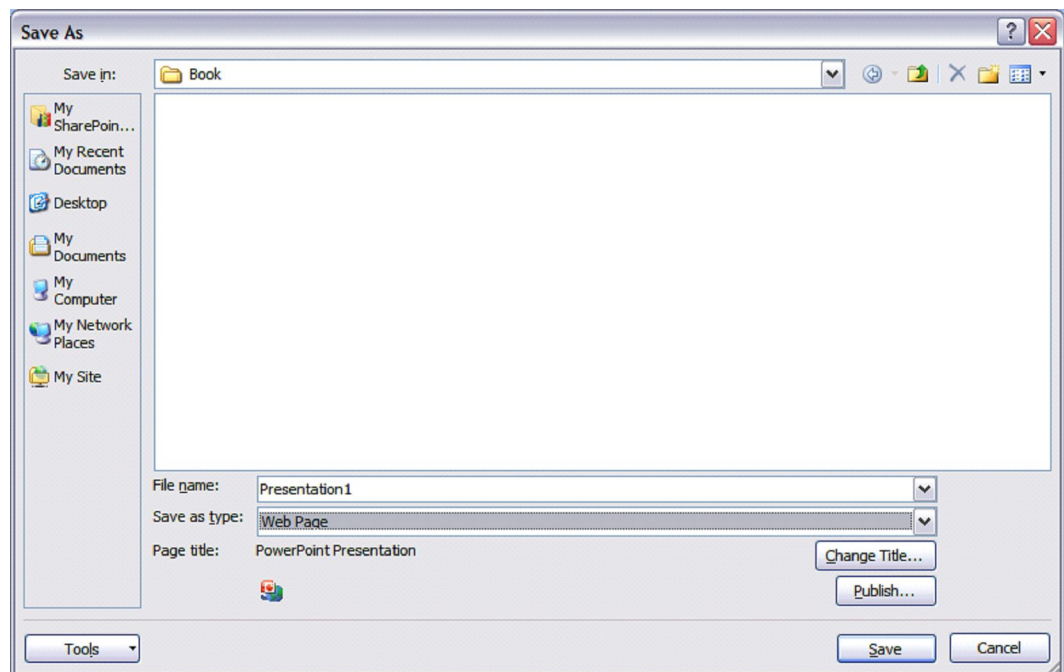


Fig. 5.73

5.27.4 Print

Select **Office button→Print** command on the menu bar to print the presentation. The Print dialog box appears. Choose the following options in the Print box.

Print range - Select **All** to print all the slides in the presentation, **Current slide** to print only the current slide, or enter slide numbers in the **Slides** field to print only certain slides.

Copies - Enter the number of copies of each slide specified in Print range and check the **Collate** box if necessary (Fig 5.24).

Print What -

- **Slides** - prints a full-page slide on each page.
- **Handouts** - prints as many slides as you designate on each page.
- **Notes Page** - prints one slide with that slide's notes on each page
- **Outline view** - prints the outline of the presentation

Click **OK** to print.

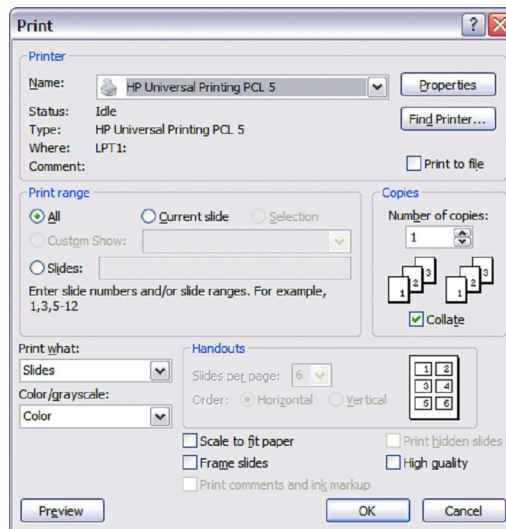


Fig. 5.74

5.28 RUN A SLIDE SHOW

After you create your slides, you can run your slide show.

- Choose the **Slide Show** tab. Click the From Beginning button in the **Start Slide Show** group. OR
- Click the Slide Show icon in the bottom right corner of your screen.

Slide show of your presentation will appear on your screen.

Press ESC key to End the slide show and return to the PowerPoint.

5.29 CLOSE A PRESENTATION

To close the current presentation slides file, select **Office button→Close** command on the menu bar. If the file contains any unsaved changes, you will be prompted to save the file before closing.

5.30 EXIT POWERPOINT PROGRAM

When finished your work in PowerPoint and closed all the files, you can quit the PowerPoint program by selecting **Office button→Exit PowerPoint** command on the menu bar.

INTEXT QUESTIONS 5.5

13. (i) How do you move from one slide to another slide?
- (a) Using Scroll bars
 - (b) Using Next Slide and Previous slide buttons
 - (c) Using outline pane
 - (d) All of the above
- (ii) How do you insert text in a slide?
- (a) Using outline text
 - (b) Inserting text boxes
 - (c) Right clicking
 - (d) (a) and (b) above
- (iii) You can add notes to your slides from:
- (a) Slide Sorter view
 - (b) Normal view
 - (c) Slide Show view
 - (d) (a) and (b)
- (iv) Text can be easily inserted into the slides using:
- (a) Normal view
 - (b) Outline view
 - (c) Slide Sorter view
 - (d) (a) and (b) above
-

5.31 WHAT YOU HAVE LEARNT

In this lesson you have learnt about database and its importance in day-today life. You also learnt how to create a table and modify it. Different ways of creating queries and designing forms and reports have also been discussed. Creation of a powerful presentation using multimedia features for effective communication have also been included at the end.

5.32 TERMINAL QUESTIONS

1. What is a database?
 2. Explain with the help of an example the terms table, field and record.
 3. What is a Data type? Explain with the help of examples any four data types.
 4. What is a primary key and how is it assigned in a table?
 5. How can you create a query based on 2 tables? What is the most necessary condition for creating such type of query?
 6. How can you change the positions of the columns in the query design view? Explain with an example.
 7. Write down short note on the following:
 - (i) Form
 - (ii) Report
 8. Write down the various steps for creating a Form using Form Wizard.
 9. Explain any three features of PowerPoint.
 10. Explain any one method of creating a presentation.
 11. Explain steps in inserting a text box in a slide.
 12. How do you change the amount of space between lines in a text box?
 13. How do you insert picture bullets in slides?
-

5.33 ANSWER TO INTEXT QUESTIONS

Intext Questions 5.1

1. (a) True (b) False (c) True
(d) False (e) False
2. (a) Field (b) Primary key
3. (c)
4. (a)

Intext Questions 5.2

5. (a) False (b) True (c) False (d) True
6. (a) Two (b) Design

Intext Questions 5.3

7. (a) New Query (b) Table
(c) Design (d) Run
(e) Logical
8. (a) False (b) True (c) True
(d) False (e) False

Intext Questions 5.4

9. (a) True (b) False (c) False
10. (b)
11. (d)
12. (d)

Intext Questions 5.5

13. (i) (d) (ii) (d)
(iii) (b) (iv) (d)
-

6

PLANNING AND DESIGNING A WEBSITE

6.1 INTRODUCTION

The main purpose of any website is to deliver specific information or services in an organized and user friendly manner. The success of the website is measured in terms of the number of visitors to the site and the ease with which the visitors find the required information. An effective and efficient website is highly influenced by how well interface is designed and managed. Keeping the scenario in mind, one cannot ignore the importance of proper planning and designing considering the legal rights and hosting the website in a reliable web hosting server.

6.2 OBJECTIVES

After going through this session, you would be able to:

- explain the concept of website planning
 - define the principles of Website Designing
 - define Website its various types and components
 - describe website Hosting and its types
 - get acquainted with domain name registration
 - host a sample website into a free web hosting server
-

6.3 WHAT IS A WEBSITE

A Website is a collection of documents written in the HTML code for an individual, a business house or any other organization. It is typically dedicated to some particular topic or purpose.

Based on their functionality, there are two types of website, Static Website and Dynamic Website. In static website contents are not expected to change frequently whereas in dynamic website contents are changing frequently.

6.4 COMPONENTS OF A WEBSITE

Basic Components of any website are as follows:

- ✓ **Home Page and site-wide template design** to ensure an attractive, functional and consistent appearance of your website.
 - ✓ **Integrated site navigation** to provide clear and consistent access to your site's content.
 - ✓ **Look and feel** of your website, including colors, text and graphics, as well as the way it functions.
 - ✓ **A Logo:** to be displayed in the left corner of each page of your website.
 - ✓ **A site map** to Provide a list of all pages on your site.
 - ✓ **Website Search features** allowing user to search the website for content relevant to their specific interests.
 - ✓ **About page** that includes:
 - o A complete description of you and / or your company
 - o Your website and / or company objectives
 - o Your name, address, phone numbers and e-mail addresses
 - ✓ **Feedback:** that facilitates the customers to ask some queries about your Products and Services.
 - ✓ **A domain name:** Your 'address' on the internet, what people type into their browser to find you. You choose a word or phrase (Example:- mywebsite) and an extension (Example:- .com, .net, .edu), your domain name could be mywebsite.
-

com.

- ✓ **Web Hosting:** The physical place your website resides; includes the computer (called a server) as well as the connection to the Internet and the technology that makes your website work.
- ✓ **Copyright:** Displaying your copyright information at the bottom of each page. Your copyright might look like this:
Copyright @ Year CompanyName

6.5 WEBSITE PLANNING

Planning is the most important part of building a website. Before designing a website, it is necessary to do proper planning as we do in the case of building a house. If you start building your house without giving a thought of planning, the house may end up into an uncomfortable dwelling. Therefore, for building a good website proper planning is required.

The basic steps that help in planning a website are:

- Define your target audience
- Organize your concepts and materials
- Create a directory structure (also called site map)
- Create a sketch of the pages you intend to create
- Design and refine the look and feel of the site

6.5.1 Define your Target Audience

Your site should facilitate the information or services to visitors the way they are looking for. The keys to successfully communicating with your audience are first to identify who they are and then anticipate their reaction to the various elements of your web site. You can tailor almost every aspect of your web site to your target audience - from the way you organize information to the kinds of fonts and images you use.

You need to consider the following points for meeting the above said objectives.

- The viewer's background and previous experience
 - Their interest and tastes
-

- The reason why they are visiting your site
- What is their general age

6.5.2 Organize your Concepts and Materials

You should be clear about the aim of creating your site, whether the aim of the site is:

- to inform
- to promote a product
- to educate audience
- to entertain the audience

Your vision of creating the web site needs to be well defined. Once the goals are defined, organize all your materials and put together any other related documents and pictures you want to work with.

6.5.3 Create a Directory structure

If you think that the site will contain very few files then you can store all of them in just one directory. But if the site is going to be very large and complex, then you will need to organize files into separate directories and sub-directories. Developing a logical directory structure is an essential part of planning your web site. You can have a subdirectory for sound clippings.

6.5.4 Create a Sketch of the web pages

You may like to create a drawing of web pages (Fig. 6.1).

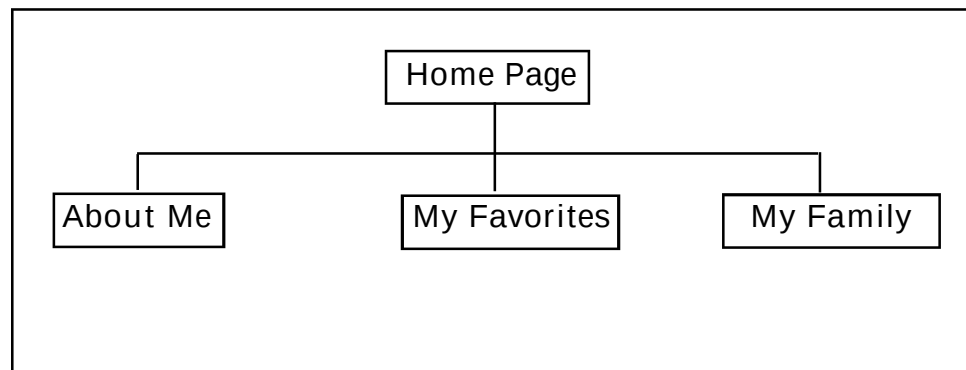


Fig. 6.1 : The Sketch of web site

After setting up a general site plan and directory structures, your contents may fall into certain types. It may be possible to work within various pre-designed templates available on the web designing tools such as Macromedia Dreamweaver.

6.5.5 Develop a Look and Feel

The term Look and Feel means the overall representation of your site. It is the combination of colour, graphics, type and text that help to convey your meaning with style and impact.

Some of the factors you can take into consideration to improve the look and feel of the web site are:

- **Space and Balance:** Every thing should look proportionate and proper.
- **Color:** The colors should look pleasant to the eyes.
- **Font type and size:** Type face of the text and size of the text in the Web pages should be comfortable to read and make the matter easy to understand.
- **Textures:** Background graphics or textures can be annoying while reading text. So be very careful and selective.
- **Special Effects:** Multimedia can be added to your site to make your site appealing. More animation, graphics, sound may cause delay while accessing through a browser.
- **Consistency:** Using a single color scheme throughout is a good way to achieve consistency.

6.6 WEB PAGE DESIGNING

Following are some principles about web page designing which will help you to design an effective web page.

- Present your web page in such a way that the user gets impressed within the first few seconds of visit.
 - Keep on updating web pages on regular basis by providing fresh and latest information.
 - Keep your web pages focused. Don't show everything on one page, use separate pages for separate topics.
 - Make sure that the features used in the web site are compatible to all browsers.
-

- Ensure that buttons and links in the web site behave as expected.
- Use compressed images so that web page gets quickly loaded.

IN-TEXT QUESTIONS 6.1

1. Choose the correct answer:
 - (a) Which of the following options is most appropriate while planning a website:
 - (i) Purpose of website only (ii) Target audience only (iii) Website contents only (iv) All of these
 - (b) The initial stage of planning your website is to:
 - (i) Identify the target audience (ii) Identity the Purpose of the Site (iii) Budgeting (iv) Prepare Blue Print
 - (c) Which of following are the web site design considerations?
 - (i) Easy to read (ii) Easy to navigate (iii) Quick download (iv) all of these
2. Write True or False for the following:
 - (a) A static website is one that may have frequently changing information.
 - (b) A domain name is the address on the internet.

6.7 WEB HOSTING

A web hosting service is a type of Internet hosting service that provides individuals, organizations and users with online systems for storing information, images, video, or any content accessible via the Web.

6.7.1 Types of hosting

- **Free web hosting service:** is free, advertisement-supported web hosting, and has extremely limited functionality when compared to paid hosting.
-

Name of some free web hosts:

Some of the free web hosting services are **Geocities** (geocities.yahoo.com), **Netfirms** (www.netfirms.com), **Freeservers** (www.freeservers.com), **50megs** (50megs.com) , **Freewebs** (www.freewebs.com), **Tripod** (www.tripod.com)

- **Shared web hosting service:** is paid once the Web site is placed on the same server as several hundred other sites. These are somewhat restricted to what can be done.
- **Dedicated web hosting service:** is paid, the user gets his or her own Web server and gains full control over it, however, the user does not own the server.

6.7.2 Various terms associated with Web Site Hosting

Commonly used terms associated with web hosting are :

- **File Storage Space**

How much storage space do you need? It all that depends on what you are planning to do with your website. The amount of space your host provide you is called disk space.

- **Bandwidth**

The number of times your site can be accessed by you or users is called **bandwidth**. If you are expecting a lot of hits (millions of page views) to your site you will need to get the most bandwidth you can afford.

- **Support**

For the companies that do not have 24 hour support, you will have to determine if their phone support hours meet your specific needs. If you plan on working on your web site during all hours of the day, make sure to choose a company with 24/7 phone support.

- **Server Operating System (OS)**

For most basic websites you need not to worry about which OS your web hosting company is using. Most plans are running on either Unix or Linux or Windows.

6.7.3 Web Hosting Service Providers

There are many authorized Government and private web hosting service providers in India. Some of these are:

NIC (www.nic.in) , **Nettigrity** (www.nettigrity.com) , **Net4India** (www.net4india.com), **serversindia**(www.serversindia.net)

6.8 DOMAIN REGISTRATION

A domain name is a way to identify and locate computers connected to the Internet.

While using the internet, you use a domain name when you type a web address, or URL. A **web address** would look something like this: *http://www.example.com* The **domain name** is “*example.com*.”

Some of the common top level domain names with their significance are:

.com is for commercial organizations.

.edu is for educational institute

.ac for academic organizations

.in for country India

.net is for network infrastructure machines and organizations.

.org is for miscellaneous, usually non-profit organizations.

6.8.1 Why Register a Domain?

Domain names are registered for a variety of reasons like:

- to build a website rightway
- buy a name to build a site later
- to protect a company name or trademark
- to have personalized email addresses.

6.8.2 Where to Get a Domain Name?

You get a domain name from a domain name registrar. Accredited Domain Name Registrars in India may be **Government Registrars** or **Private Authorised Registrars**.

Government registrars:

- gov.in, mil.in: **National Informatics Centre (NIC)** is the exclusive registrar for gov.in and mil.in domain names.
- ac.in, edu.in, res.in: **ERNET** is the exclusive registrar for ac.in(Academic), edu.in(Academic) , and res.in (Indian Research Institute) domain names.

Private authorized registrars:

- BiznetIndia Dot Com Private Limited
- Data Infosys Limited
- IndiaLinks Web Hosting Pvt Ltd
- Net4India Limited, dba Net4Domains
- PDR Domain Solutions Pvt. Ltd.
- Pioneer Online
- Rediff.com
- Sify Ltd.
- Silicon House

INTEXT QUESTIONS 6.2

3. State True/False

- (a) Domain name is a way to identify and locate computers connected to the Internet.
- (b) Domain name with .ac extension are meant for account institutes.
- (c) www.nic.in is one of the web hosting service providers.

4. Write True/False for the following domain names.

- | | |
|---------------------------------------|----------------|
| (a) .org is for miscellaneous | (True / False) |
| (b) .com is for common | (True / False) |
| (c) .in is for country India | (True / False) |
| (d) .edu is for educational Institute | (True / False) |

6.9 WHAT YOU HAVE LEARNT

In this lesson we discussed about the different steps of effective planning and designing a website. While designing a website you have to keep in mind the purpose of the website, target audience and content. The website should be easy to read, easy to navigate and easy to find.

6.10 TERMINAL QUESTIONS

1. What do you understand by the term Website Planning? What are the things to consider while planning a website?
2. Why website design is an important phase in website building process? What are the basic website design consideration and principles?
3. What is a website. Name the different type of websites. What are the basic components of any website?
4. Define Web Hosting? What are the various types of hosting services?
5. Define the term Domain name? Why register a Domain? Who are the authorized domain registrars in India?

6.11 ANSWER TO INTEXT QUESTIONS

Intext Questions 6.1

1. (a) (iv) (b) (ii) (c) (iv)
2. (a) False (b) True

Intext Questions 6.2

3. (a) True (b) False (c) True
 4. (a) True (b) False (c) True (d) True
-