



Know Your Computer

SNAP RECAP

1. What are the features of a computer that makes it better than a human being?
2. What do you mean by input-processing-output cycle?
3. How is data stored in computers? What do you mean by primary and secondary memory?
4. What are computing devices?

LEARNING OBJECTIVES

You will learn about:

- early calculating devices
- evolution of computers
- classification of computers
- functional components of a computer
- categorisation of software

Introduction

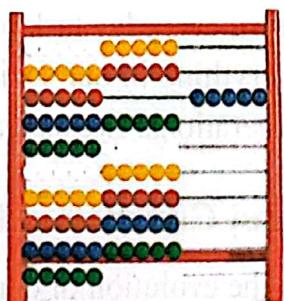
A computer is an electronic device that accepts data from the user, processes it and gives the desired output. It is a machine capable of performing calculations with the help of a mechanical computing device. The evolution of computers started way back in the late 1930s. Computers at that time used only binary language for their operations.

Early Calculating Devices

A few calculating devices used prior to the development of computers are discussed here.

Abacus

Abacus, the first calculating machine, was developed in China. It was used to count numbers and perform simple calculations such as addition and subtraction.



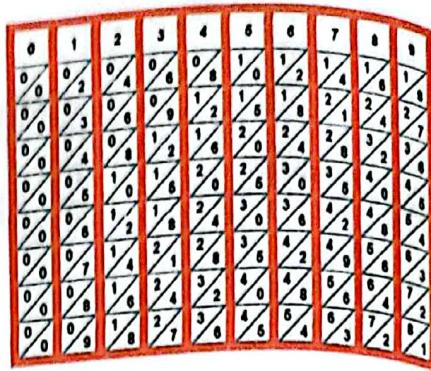
Abacus

Napier's Bones

Napier's Bones was developed by Sir John Napier. The device was used to perform calculations involving addition, subtraction, multiplication and division. It was named so because the numbers were carved on bones or strips of wood.



Pascaline



Napier's Bones

Pascaline

Pascaline, one of the first mechanical calculators, was invented by Blaise Pascal in the year 1642. Though it could perform only addition and subtraction, yet it became very popular.

Difference Engine

Difference Engine was designed by Charles Babbage in the year 1822. Difference engine is an early digital device which could perform mathematical and astronomical calculations. It was also capable of storing data temporarily and print the output by punching the result.

Analytical Engine

Analytical engine was designed by Charles Babbage in the year 1837. It was the first mechanical general purpose computer which followed typical IPO cycle used in modern day computers. The machine took input using reader as an input device. It was made up of mill, the calculating unit called CPU in modern computers.

Evolution of Computers

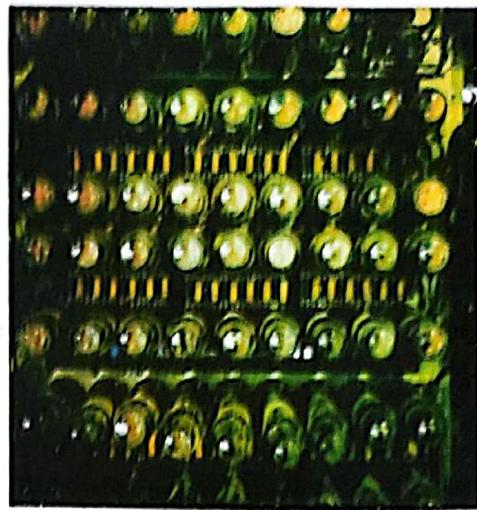
From everyday task to moving satellites in space, computers have revolutionised almost everything in our society. The development of computers has been classified into generations. Let us learn about them.

First Generation Computers (1940–1956) – Vacuum Tube

In the evolution of computers, the first generation was characterised by the use of vacuum tubes. The first generation computers were built to solve physics equations.

using electronic vacuum tubes as switching components. These used machine language. A machine language is a low-level programming language and is written using long strings of 0s and 1s for computing. Machine language varies with the computer used.

The first generation computers were expensive and bulky. The vacuum tubes did not support multitasking. Programs written in machine language were cumbersome and difficult to remember.



Vacuum tubes

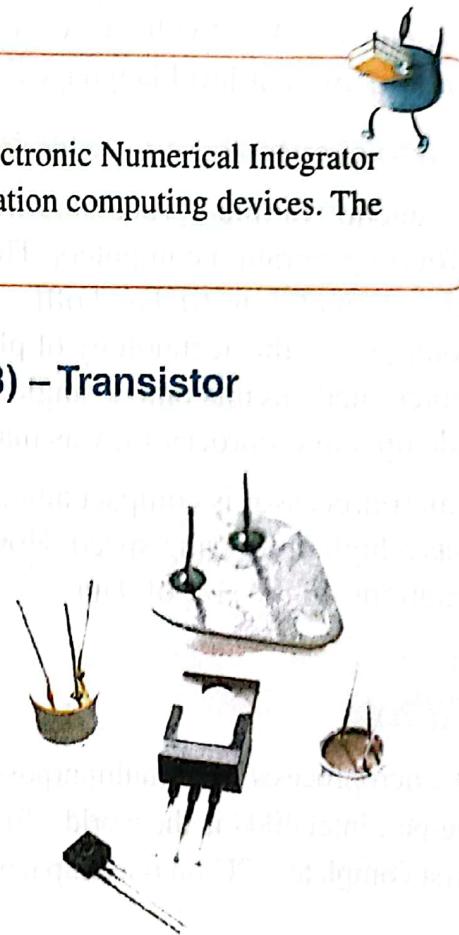
FACT FILE

The Universal Automatic Computer (UNIVAC) and Electronic Numerical Integrator and Computer (ENIAC) are the examples of first generation computing devices. The UNIVAC was the first commercial computer.

Second Generation Computers (1956–1963) – Transistor

In the 1960s, transistor based computers replaced vacuum tubes which marked the second generation of computers. Transistors made computers smaller and cheaper. They also made computers energy efficient, but the transistors were subject to damage because of the emission of large amounts of heat from the computer.

Computers belonging to this generation used punched cards for input. They used assembly language, which is a low-level programming language. This language is based on the English alphabet. The instructions are written in the form of codes. Assembly language were machine dependent, and had to be written based on the configurations of the computer.)

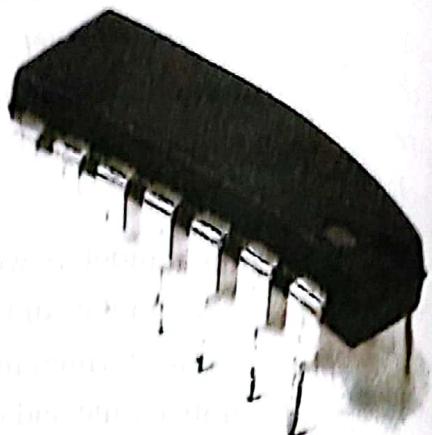


Various transistors

Third Generation Computers (1964–1971) – Integrated Circuit

The integrated circuit based computers marked the third generation of computers. Small transistors were placed on silicon chips, called semiconductors, which increased the speed and efficiency of computers.

The third generation computers were based on high-level languages. A high-level language uses the english alphabet and mathematical symbols. It was easy to use and understand. It was not machine dependent. The programs written in a high-level language are called source programs. For example, Fortran, COBOL, BASIC, C, C++, Java are a few examples of high-level languages.



Integrated circuit chip

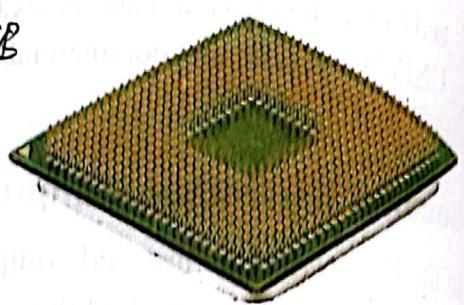
Fourth Generation Computers (1971–2010) – Microprocessor

Introduction of microprocessors was the hallmark of fourth generation computers. They facilitated automation of industrial and office processes.

Around 1970, this technology of placing thousands of integrated circuits onto a single silicon chip, that made up a microprocessor, was made available.

A microprocessor is compact and easy to maintain.

It has a high processing speed. However, it has limitations on the size of data.



Microprocessor

FACT FILE

A microprocessor is a multipurpose, programmable device that takes input and provides output. Intel 4004 is the world's first commercially available microprocessor. It was the first complete CPU on one chip designed by Intel Corporation.



Fifth Generation Computers (2010 onwards) – Artificial Intelligence

The development of fifth generation computers is underway. They are based on the principles of artificial intelligence and natural language recognition. This technique will be used to design robots.

FIB

Developers are aiming at developing computers capable of organising themselves. So, the evolution of computers still continues.

Classification of Computers

On the basis of their size and speed, computers are generally classified as:

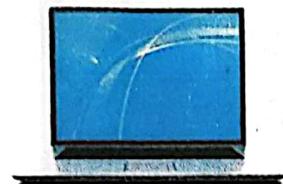
1. Microcomputer
2. Mainframe computer
3. Minicomputer
4. Supercomputer

Microcomputer

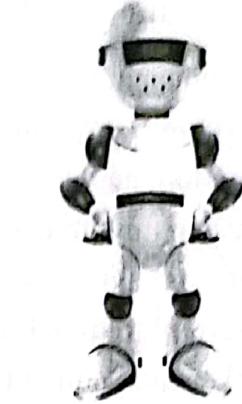
Microcomputer was a commonly used term earlier for personal computers. A personal computer assemblage consists of CPU, computer memory (primary and secondary) and various input and output devices. Only one person can use it at a time. It is slow and has relatively less storage capacity as compared to a minicomputer or a mainframe computer. It is commonly used in classrooms, homes, banks, universities, etc.

There are various kinds of microcomputers available nowadays. Let us study about them.

Desktop PC: It is a microcomputer designed to fit comfortably on top of a desk, typically with the monitor in front and the system unit on the side.



Laptop



Fifth generation computers



Desktop PC

Laptop: It is a portable microcomputer.

You can keep it on your lap. Nowadays, laptop computers are more commonly called **notebook computers**.



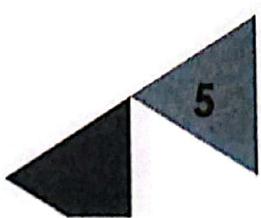
Tablet

• **Tablet:** It is a mobile computer. It offers the users a touchscreen environment that may or may not be accompanied by a stylus (a pointing device). They are available in a variety of sizes and have a built-in/virtual keyboard.



Smartphones

Smartphone: It is a mobile phone built on a mobile OS. It has enhanced features as compared to an ordinary mobile phone like compact digital cameras, GPS, web-browsers, Wi-Fi and broadband facility.

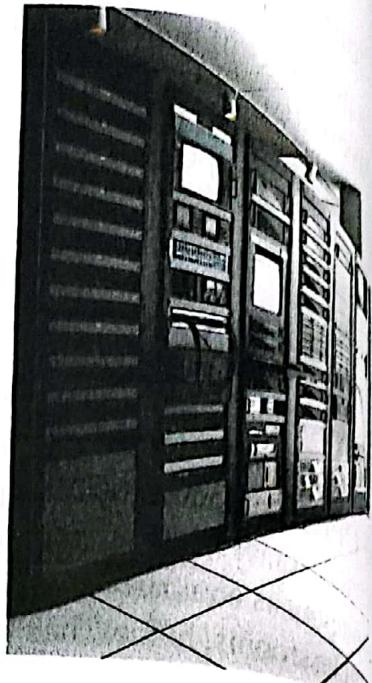


Mainframe Computer

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Mainframe computers are very large, often filling an entire room. They can store an enormous amount of information, and perform many tasks simultaneously. They can communicate with many users at the same time and are very expensive. Mainframe computers usually have several terminals connected to them. These terminals look like small computers but are only used for sending and receiving information from the actual computer using wires. Terminals can be located either in the same room with the mainframe computer, or they can also be in different rooms, buildings, cities, etc.

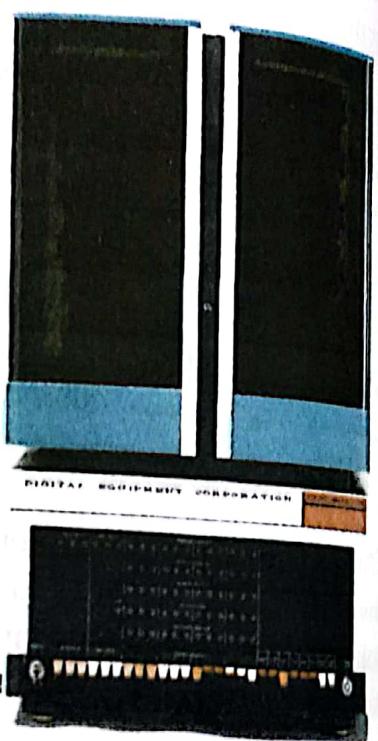
Large businesses, government agencies, banks and universities usually use mainframe computers. Big hospitals, airline reservation companies, and many other sizeable companies prefer mainframe computers because of their capability of retrieving enormous data.



Mainframe computers

Minicomputer

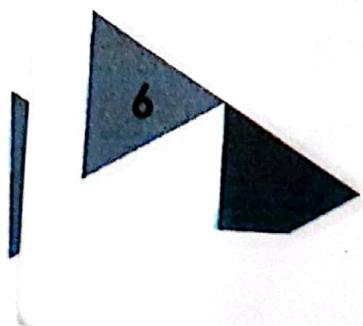
A minicomputer is much larger than a microcomputer and also much more expensive. It thus lies between microcomputers and mainframe computers and are often referred to as **midrange computers**. It possesses most of the features found on a mainframe computer, but on a limited scale. It can still have many terminals, but not as many as the mainframe. It can store a large amount of information, but not usually as much as the mainframe computers. It uses an enhanced instruction set to facilitate scientific processing and commercial applications. Medium and small businesses and colleges typically use minicomputers.



DEC PDP-8 minicomputer

Supercomputer

Supercomputer is one of the many types of modern computing machines, which are big, powerful and capable of doing very speedy calculations. It is because of their high



speed processing ability that supercomputer systems are used in graphic animation, weather forecasting, nuclear research works, petroleum research works, crypt analysis, molecular modelling, etc.

The difference between the mainframes and supercomputers is that while mainframe machines are primarily used for a number of purposes, supercomputers are designed to serve a single purpose.



Supercomputer

ACTIVITY

- A. Search more about application areas of minicomputers, supercomputers and mainframe computers. Document your findings using MS Word. Ensure that you have put in at least five applications of each type of computer.
- B. Make a chart of early calculating devices along with their inventors. Also, mention their uses.

Functional Components of a Computer

The functional components of a computer are (Fig. 1.1):

Input Unit

Central Processing Unit (CPU)

Output Unit

Fig. 1.1 Functional components of a computer

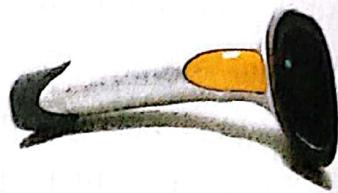
The input and output units attached to a computer are called computer peripherals.

Input Unit

Data is accepted by a computer through the input unit connected to it. The standard input device is a keyboard. Examples of other input devices are Joystick, Mouse, Web camera, Magnetic Ink Character Recognition Reader (MICR), Optical Mark Recognition Reader (OMR), Optical Character Recognition (OCR), Light pen, Touchscreen, Smart Card Reader, Digital reader, etc.

You have already read about some of the commonly used input devices in earlier classes. You will learn about a few more here.

Bar Code Reader: It is used by a computer to scan and identify the product or item codes in supermarkets, book stores, and many other places. The code for each item, be it the price code, item code etc., is a unique combination of vertical bars and can be identified by a bar code reader.



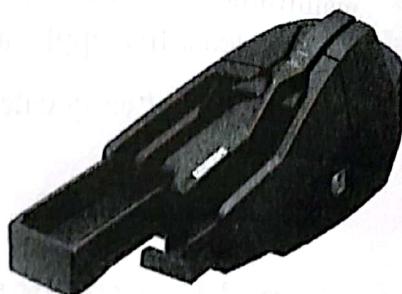
Bar code reader

FACT FILE

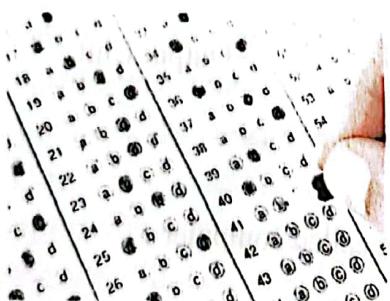
Quick Response (QR) codes are special barcodes that can be read using QR reading devices, mainly installed as an application on smartphones. These codes link the user directly to text, emails or websites.

Magnetic Ink Character Recognition (MICR)

Reader: It reads the special characters printed using a special magnetic ink on cheques, etc. Cheque number, bank code and branch code are printed on cheques using magnetic ink, making them difficult to forge. The MICRs scan this information and are thus capable of sorting cheques.



Magnetic Ink Character Reader



An OMR sheet

Optical Mark Recognition (OMR) Reader: It is used for recognising a pre-specified space on a paper that is marked by a pencil or pen. It is commonly used for marking the answers on examination sheets.

Central Processing Unit

The Central Processing Unit (CPU) is the control centre of a computer. It guides, directs and governs its performance. It is known as the brain of the computer. The CPU has three components which are responsible for different functions. These are discussed here.

Arithmetic Logic Unit (ALU): The ALU performs all arithmetic and logical operations within a computer. This part provides the arithmetic and decision making capability to a computer.

Control Unit (CU): The CU controls and guides the interpretation, flow and manipulation of all data and information. The CU sends control signals until the required operations are done properly by the ALU and the memory.

Another important function of the CU is program execution, that is, carrying out all the instructions stored in the program. The control unit even controls the flow of data from the input devices to memory and from memory to the output devices.

Memory Unit (MU): MU is that part of the computer where the data is stored and is accessible to the CPU. The various measurement units of computer memory are given here.

1. **Bit:** A bit means a binary digit, that is, there are only two possibilities for each digit, either 0 or 1. A bit is an elementary unit of the memory.
A number of bits when combined together in different ways are used for storing data in a computer.
2. **Byte:** A group of 8 bits is called a byte. One byte is the smallest unit which can represent a meaningful data item or a character in a computer. Memory is generally measured in terms of bytes.
3. **Nibble:** A group of 4 bits is called a nibble.

The computer memory can also be expressed in other units and their interrelationship is given below:

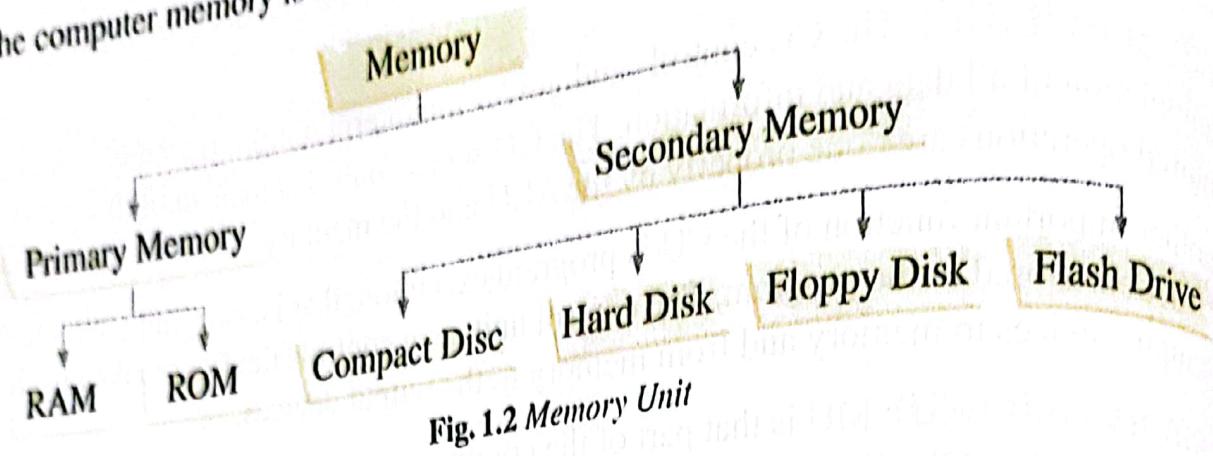
1 Byte	= 8 Bits	1024 Terabyte (TB) = 1 Petabyte (PB)
1024 Bytes	= 1 Kilobyte (KB)	1024 Petabyte (PB) = 1 Exabyte (EB)
1024 Kilobyte (KB)	= 1 Megabyte (MB)	1024 Exabyte (EB) = 1 Zettabyte (ZB)
1024 Megabyte (MB)	= 1 Gigabyte (GB)	1024 Zettabyte (ZB) = 1 Yottabyte (YB)
1024 Gigabyte (GB)	= 1 Terabyte (TB)	

FACT FILE

1 kilobyte is equal to 1024 bytes and not 1000 bytes as it is 2^{10} raise to the power 10.



The computer memory is classified as given in Fig. 1.2.



Primary Memory

Primary memory is the basic requirement of a computer. It determines the size and number of software that a computer can store. Primary memory stores two types of programs: **system software** and **application software**. You will learn more about them later in this chapter.

Moreover, the primary memory limits the amount of data that a computer can process. The CPU can use this memory directly while processing information. On the basis of volatility of storage of data, primary memory is classified into volatile memory (RAM) and non-volatile memory (ROM) as shown in Table 1.1.

Table 1.1 Difference between RAM and ROM

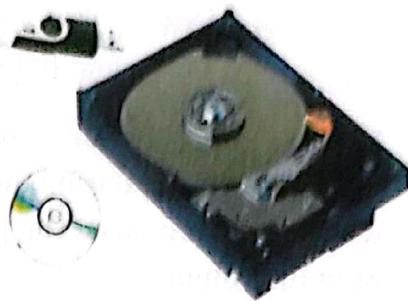
Random Access Memory (RAM)	Read Only Memory (ROM)
<ol style="list-style-type: none">1. It is a temporary memory.2. It is volatile in nature, that is, the information stored in RAM is designed to clear when the computer is turned off.3. It is the main internal storage area that a computer uses to run programs and store data. It is also called read/write memory.	<ol style="list-style-type: none">1. It is a permanent memory.2. It is a non-volatile memory, that is, the information stored in ROM is retained even when the computer is turned off.3. It is a built-in computer memory that can be read by a computer but cannot be modified. It is a memory unit that can only be read.

Secondary Memory

Secondary memory is also known as **auxiliary memory**. It is used for storing data or programs on a temporary or on a permanent basis. The secondary memory is available

in the form of storage devices. For example, floppy disk, hard disk, compact disc, flash drive, etc.

The CPU cannot access secondary memory directly while processing information. The data is transferred to the primary memory when required. The computer uses its input and output devices to access data stored in the secondary memory.



Storage devices

FACT FILE

Cache memory can be used for increasing the capacity of the primary memory and to make the processing faster.



Output Unit

Output unit is for getting information from a computer. For example, the Visual Display Unit (VDU) or the monitor is an output device that displays the information on the screen. The information shown on a display unit is called **soft copy**. Speakers are the output devices which produce output in the form of audio. You can also obtain information from a computer on a physical medium such as paper and transparency with the help of a printer. Printed information is called **hard copy**.

Now, let us learn about a few more output units.

Liquid Crystal Display (LCD)

Projector: Output from a computer can also be viewed on a large screen or flat surfaces other than the monitor using an LCD projector.

It is usually used for showing PowerPoint presentations in many organisations.



Plotters: These are the output devices used for making high-quality graphics, charts, diagrams, maps, etc. Plotters use an ink jet or ink pens to create the desired output on paper.

There are different type of plotters available. The three basic types of plotters are:

1. **Inkjet Plotter:** It sprays small droplets of ink onto a piece of paper thereby creating an image.

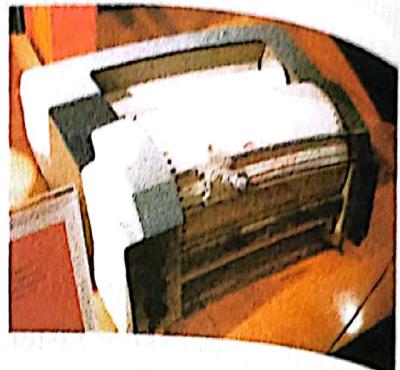
2. **Flatbed Plotter:** The pen or the inkjet moves in horizontal and vertical directions over a fixed horizontal flat surface on which a paper is mounted.
3. **Drum Plotter:** It uses a drum revolver or roller to move the paper and the pen or the jets of the ink during the printing process. The paper is placed over the drum which is then rotated. The pen is moved along the horizontal or vertical direction to print the output.



Inkjet plotter



Flatbed plotter



Drum plotter

ACTIVITY

- A. Make a list of the latest input, output and storage devices available in the market these days.
- B. What are the uses of flash drives? Find out the range of their storage capacities.
- C. Using the Internet, find out the various storage capacities of RAM available in the market.

Categorisation of Software

A software is a set of programs that runs a computer system. Computer software is stored and executed with the help of computer hardware. Major categories of software that form part of a computer system are discussed here.

System Software

System software is a program that manages and supports the resources and operations of a computer system while it executes various tasks such as processing of data and

FACT FILE

Computer works on the theory of GIGO (Garbage In Garbage Out). It means that wrong input will give wrong output.

information, controlling the hardware components and allowing users to use the application software. In other words, system software is a bridge between the computer system hardware and the application software. Operating system (OS) is an example of system software.

System software controls the internal computer operations. It can be further classified into two categories.

Operating System: An operating system is a software which acts as an interface between the user and the computer (that is, all computer resources). It is an important component that controls all other components of the computer system. Without an operating system, a computer is of no use. Some of the commonly used operating systems are Windows, DOS, UNIX, etc.

Language Translators: These are used to translate programming languages. There are three types of language translators.

Compiler: It translates the high-level language program into machine language. It converts the entire program in one go and reports all the errors of the program along with their line numbers at the end. For example, C language uses a compiler. The translated program is called the **object program** or the **object code**.

Interpreter: It translates a program written in high-level language into machine language by converting and executing it line by line. If there is any error in any line, the interpreter reports it immediately and program execution cannot resume until it is rectified. However, it is a smaller program than a compiler. For example, BASIC uses an interpreter as the translator.

Assembler: It is a language translator that converts a program written in assembly language into machine language.

Application Software

Application software is a set of programs necessary to carry out operations for a specified application. These are the programs written by programmers to enable computers to perform a specific task. Various application software and their examples are given below.

Table 1.2 *Various Application Software and their examples*

Application Software	Example(s)
• Word processors	• MS Word
• Presentation tool	• MS PowerPoint

- Spreadsheet package
- Database Management System
- Business software
- Image/ Video editing

- MS Excel, Lotus 123
- MS Access, Sybase
- Inventory management, payroll system, Financial accounting, Hotel management, etc.
- GIMP, Photoshop, Windows Movie Maker, etc.

Utility Software

Utilities are application programs which assist a computer by performing housekeeping functions like backing up disk or scanning/cleaning viruses or arranging information. They ensure the smooth functioning of a computer.

Some important utilities are text editor used for creating and editing text files, backup utility that facilitates the backing-up of disks, compression utility that facilitates compression of files, disk defragmentation utility that attempts to minimise the fragmentation on the disk, and anti-virus software that ensures a virus-free environment.

FACT FILE



The open source application software provides the source code along with the .exe file so that users can make changes in the code to suit their requirements. The open source substitute of MS Office is OpenOffice.

ACTIVITY

- A. Make a list of commonly used utility softwares.
- B. Read more about open source application softwares.
- C. Make a chart on the evolution of computer languages. Classify them based on whether they use a compiler or an interpreter.

GLOSSARY

- Abacus** It is the first calculating machine that performed simple arithmetic calculations.
- Analytical engine** It is the first mechanical general purpose computer which follows typical IPO cycle used in modern day computers.
- Application software** It is a set of programs necessary to carry out operations for a specified application.
- Assembler** It converts a program written in assembly language into machine language.
- Assembly language** It is a low-level programming language which uses English words.
- Bit** It means a binary digit.
- Byte** It is a group of eight bits.
- Compiler** It is a language translator that translates high-level language program into machine language.
- Desktop** It is a computer designed to fit comfortably on the top of a desk.
- Difference engine** It is an early digital device which was designed to perform mathematical and astronomical calculations.
- High-level language** It is a language that uses the english alphabet and mathematical symbols and on which the third generation of computers are based.
- Interpreter** It is language processor which converts high-level language program into machine language by converting and executing it line by line.
- Laptop** It is a portable computer that can be placed on your lap.
- Machine language** It is a language written using long strings of 0s and 1s for computing.
- Mainframe computer** It is a very large computer, often filling an entire room.
- Microcomputer** It is a commonly used term for personal computers.
- Minicomputer** It is much larger than a microcomputer, and is also much more expensive.
- Napier's Bones** It was used for performing simple arithmetic calculations.
- Nibble** It is a group of 4 bits.
- Operating system** It is a software that acts as an interface between the user and the computer.
- Pascaline** It was one of the first mechanical calculators to be developed.
- Primary memory** It determines the size and number of software that a computer can store.
- Secondary memory** It is the memory used for storing data or programs on a temporary or on a permanent basis.
- Smartphone** It is a mobile phone built on a mobile OS with enhanced features compared to an ordinary mobile phone.

Source program	It is a program written in a high-level language.
Supercomputer	It is a modern computing machine that is capable of giving speedy calculations.
System software	It is the software that controls the internal computer operations.
Tablet	It is a mobile computer with a touchscreen and a built in virtual keyboard.
Utility software	It is a set of application programs that assist the computer by performing housekeeping functions.



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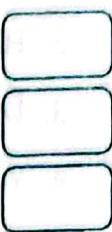
- Some of the early calculating devices are Abacus, Napier's Bones Pascaline, Difference engine and Analytical engine.
- First generation computers were characterised by the use of vacuum tubes. They used machine language.
- Second generation computers were marked by the replacement of vacuum tubes with transistors. They used assembly language.
- Third generation computers were marked by the use of integrated circuits. They were based on high-level languages.
- Introduction of microprocessors was the hallmark of fourth generation computers.
- The fifth generation computers are being developed. They are going to be based on the principles of artificial intelligence and natural language recognition.
- Computers are commonly classified on the basis of their size and speed as microcomputer, minicomputer, mainframe computer and supercomputer.
- Functional components of a computer are input unit, Central Processing Unit and output unit.
- The CPU has three components which are responsible for different functions: ALU, CU and MU.



A. State whether true or false.

- The first generation of computers was based on integrated circuits.
- Secondary memory is also known as auxiliary memory.

3. Business software are those application programs that assist the computer by performing housekeeping functions.
4. In an Inkjet plotter, the pen moves in horizontal and vertical directions.
5. Pascaline was one of the first mechanical calculators to be developed.



B. Match the following.

- | | |
|------------------------------|--|
| 1. Fifth generation computer | a. Computers used in classrooms, homes, banks, universities, etc. |
| 2. Microcomputer | b. Based on the principle of artificial intelligence |
| 3. Hardware | c. Hallmark of fourth generation computers |
| 4. Microprocessor | d. A bridge between computer system hardware and application software. |
| 5. Operating system | e. The physical components of the computer which you can touch and feel. |

C. Give full forms of the following.

1. ALU
2. OCR
3. MICR
4. LCD
5. VDU

D. Fill in the blanks.

1. were introduced in second generation computers.
2. invented Analytical engines.
3. Third generation computers were based on languages.
4. Our laptops are computers.
5. is a language translator which converts assembly language to machine language.

E. Answer the following questions.

1. Name the different generations of computers.

- How are computers classified on the basis of their size and speed?
- Differentiate between the two types of primary memory available in computers.
- What is the use of plotters? Also, describe the various types of plotters.
- Differentiate between a compiler and an Interpreter.

LAB WORK

- Search more about early calculating devices. Make a presentation describing technology used in the devices.
- Secondary memory is available in the form of storage devices. Find out the important features of a few secondary storage devices available in the market these days and make a report or a presentation. Take help of the Internet, library resources, etc.

PROJECT WORK

Make a presentation on 'Classification of Computers'. Write about the important features and use of each type of the computer. Take help of the internet to make the presentation and insert pictures wherever possible. Make the last slide of presentation as bibliography or credits and put the URLs of all the sites from where you have collected the information.

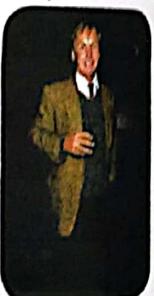
WHO AM I?

I was born on 1 June, 1956.

I have designed operating system 86-DOS for the Intel 8086 with Seattle Computer Products.

I am also known as 'The Father of DOS'.

I am





Operating System

SNAP RECAP

1. What is an operating system?
2. What are the common operating systems available in market these days?
3. Why do you need an operating system?

LEARNING OBJECTIVES

You will learn about:

- booting
- functions of an OS
- types of OS
- operating system interface
- importance of shut down

Introduction

Computers cannot function on their own. They require programming instructions to work and manage the system. This job is done by an operating system. *An operating system is a system software. It may be regarded as the backbone of a computer, and is an interface between the user and the computer.* It performs the basic tasks of a computer. These are given below.

1. It recognises input from the keyboard.
2. It sends output to the display screen.
3. It keeps track of files and directories on the disk.
4. It controls the peripheral (input and output) devices such as printers.
5. It acts as an interface between the hardware of a computer and the user.

Some of the commonly used operating systems are Disk Operating System (DOS), MS Windows, Linux, Windows NT and Mac OS.

Booting

Booting is a process that starts the operating system when the user turns on a computer system. It is a self-starting process.

Types of Booting

Booting is basically of two types:

Warm Boot: It is pressing the Restart button while the computer is already on.

Cold Boot: It is pressing the Power button when the computer is switched off.

FACT FILE

The technology upgradation that is different from its previous type is called a version. The various versions of Windows are Windows 95, Windows 98, Windows 2000, Windows ME, Windows NT, Windows XP, Windows Vista, Windows 7, Windows 8 and Windows 10.

Process of Booting

When you switch on a computer, the operating system is loaded into RAM automatically.

It follows the sequence given below. These steps are part of a booting process.

1. As soon as the computer is turned on, a software, namely, Basic Input/Output System (**BIOS**) is run. This software is built into a computer's ROM.

BIOS starts the operating system and supports the transfer of information between hardware devices.

2. BIOS first conducts a Power-On Self Test (**POST**) to make sure all the components of the computer are in a working condition with a proper power supply.

The BIOS then looks for the special boot programs that will actually load the operating system from the hard disk.

3. A computer may have several disks or drives. The operating system is loaded in one of the disks. BIOS first looks for a floppy disk on drive A. If there is no system disk in it (where the operating system is loaded), BIOS then looks for the system files at a specific place on your hard disk.

4. BIOS next looks at the first sector of the hard disk, and copies the information from it onto specific locations in RAM. This information is known as the **Boot Record** or **Master Boot Record (MBR)**.

5. MBR program will now load the system files of an operating system into the RAM.

Once the system files are loaded, the OS is ready to take control of the system. OS remains in the computer's memory till the power is on.

Let us now observe the flowchart showing the process of booting (Fig. 2.1).

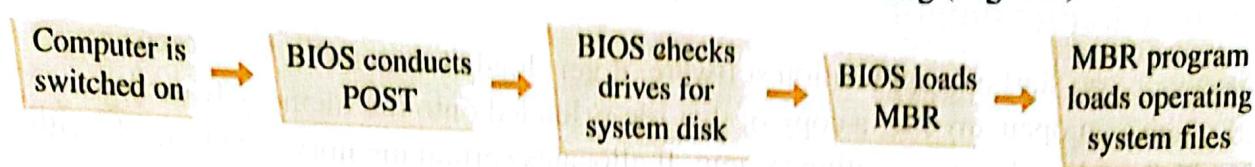


Fig. 2.1 Flowchart showing the process of booting

Functions of an Operating System

An operating system does the job of a system manager. It performs various important functions (Fig. 2.2) as given.

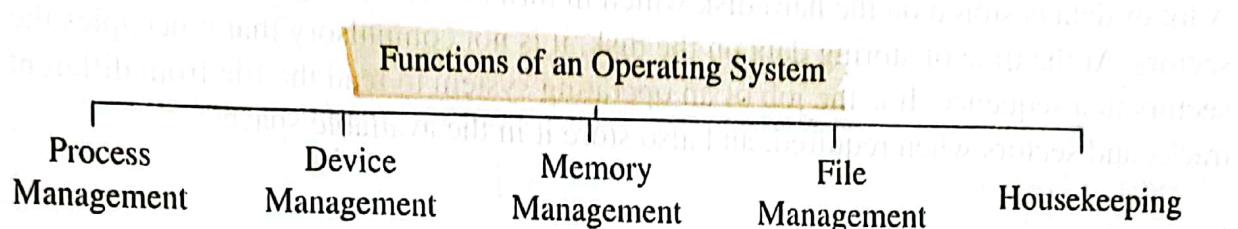


Fig. 2.2 Various functions of an operating system

Process Management

An operating system controls and schedules the processes for execution by the CPU. It is responsible for allocating the CPU's time to each process. For example, you are working on an MS Word document. In turn, it may cause several other background processes to begin, such as, virus checks, memory management, etc.

After a job is done or a process is completed, the CPU becomes idle. After that if there are other processes in queue (Fig. 2.3), then the time is allocated to each process of the CPU. This whole system is managed to ensure maximum output from the system.

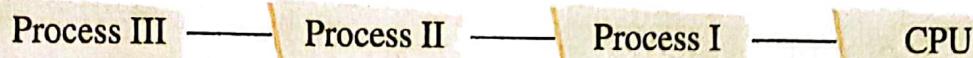


Fig. 2.3 CPU process queue

Device Management

Device management is an important function of an operating system. It coordinates and controls the various input and output devices attached to the system. When the system is ready to take input, then the input device is made available to the user and when the processing job is over, then the output is redirected to the output device.

FACT FILE

The operating system needs a software, called **device driver**, to recognise the input and the output devices attached to the computer.



Memory Management

Whenever you start any application software, it gets loaded onto the system memory and when you open any file, a copy of that file is loaded onto the memory from the disk. This is done by an operating system. It allocates certain memory area to itself with the help of the booting process and sets aside the remaining area for various application programs.

File Management

A lot of data is stored on the hard disk which in turn is formed of millions of tracks and sectors. At the time of storing data on the disk, it is not compulsory that it occupies the sectors in a sequence. It is the job of an operating system to read the file from different tracks and sectors when required, and also store it in the available space.

Housekeeping

Housekeeping includes all the services necessary to ensure smooth operation of the computer system, like security, protection, resource accounting, back up, etc.

Types of Operating Systems

Single-user Operating System

As the name implies, single-user operating system is designed so that only one user can effectively work on a computer at a time. This is the type of operating system most people use on their desktops and laptops today. Windows 98, DOS and Mac OS are a few examples of a single-user operating system.

Multi-user Operating System

A multi-user operating system supports multiple users at the same time and/or different times. The operating system must make sure that the requirements of the different users are balanced. Also, each of the programs they are using has sufficient and separate resources so that a problem with one user does not affect the entire community of users. For example, Linux, Unix Windows NT and Novell Netware can support hundreds and thousands of networked users.

Operating System Interface

The operating system provides a platform on which the application program runs. It provides an interface which can be classified further.

Character User Interface (CUI)

In CUI, the operating system provides an environment where the user needs to type a command to perform a particular action. For example, Disk Operating System (DOS).

Graphical User Interface (GUI)

In GUI, the operating system provides a graphical environment where the mouse acts as a pointing device. The user can perform an action just by a mouse-click. For example, Windows operating system.

Importance of Shut Down

By now you are well aware that Windows remains in the computer memory till the power is on. After completing the work, these operating system files are sent back to the hard disk properly so that no damage is caused to these files. This process is known as **shut down** of an operating system.

If you switch off the computer without giving a proper shut down command then there are very high chances of losing the data, and it may also damage the Windows operating system.

To shut down a computer properly

Click on **Start** \Rightarrow **Shut down** option (Fig. 2.4).

For other options, click on the arrow right to **Shut down** option. It generally shows the following options:

- **Switch user:** It switches the user without closing the programs currently in use.
- **Log off:** It closes all programs running on the computer. However, the computer still runs.
- **Lock:** It locks the computer and the work on programs running can be resumed on unlocking the computer.
- **Restart:** If due to some error the computer needs to be shut down, then it can be restarted by using the **Restart** option. This option shuts down the Windows properly and then starts it again immediately.

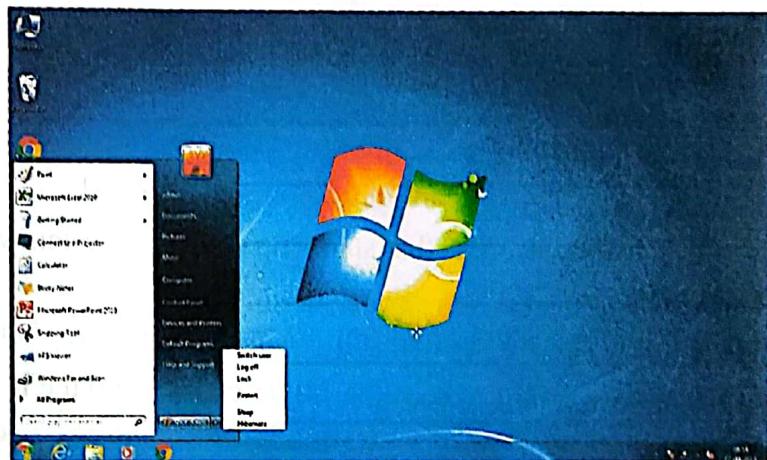


Fig. 2.4 Using Start menu to shut down

- **Sleep:** It puts the computer in a low-power state and saves the work being done so that it can be resumed from the point where it was left off.

FACT FILE

Like Sleep in desktop PCs, Hibernate is a power-saving mode developed for laptops. It keeps the active documents and programs running on the hard disk and puts the computer in low-power state so that work can be resumed quickly. This allows the users to restore work even in case of power failure.

ACTIVITY

Read more about mobile operating systems. List the various mobile OS available in the market.

GLOSSARY

BIOS A built-in software into a computer's RAM.

Booting It is a process that starts the operating system when the user turns on a computer system.

Cold boot It is the process of pressing on the Power button when the computer is shut down.

MBR It is the information that BIOS copies onto the RAM.

Multi-user operating system It supports multiple users at the same time and/or different times.

Operating system It is a system software that is an interface between the user and the computer.

POST Power-On Self Test conducted by BIOS to make sure all the components of the computer are in a working condition.

Single-user operating system It is a system where only one user can effectively work on a computer at a time.

Warm boot It is the process of pressing the Restart button while the computer is already on.



2

1. An operating system performs several basic functions.
2. When you switch on a computer, the operating system is loaded onto the RAM automatically in a specific sequence.
3. An operating system does the job of a system manager and performs the following important functions: process management, device management, memory management, file management and housekeeping.
4. In CUI, the operating system provides an environment where the user needs to type a command to perform a particular action. For example, Disk operating system.
5. In GUI, the operating system provides a graphical environment where the user can perform an action by just a mouse-click. For example, Windows operating system.
6. In Windows, after completing the work, operating system files are sent back to the hard disk properly to prevent damage. This process is known as shut down of an operating system.



A. State whether true or false.

1. Pressing on the Power button when the computer is switched off is called warm boot.
2. An operating system sends output to the display screen.
3. When the system is switched on, then the BIOS loads onto the RAM.
4. Multi-user operating system is selected when one user needs to do one thing at a time.
5. An operating system is an application software.

B. Circle the odd one out from the following.

- | | | | |
|-----------------|--------------------|-------------------|---------|
| 1. DOS | Windows | MBR | Mac |
| 2. Housekeeping | Process management | Device management | Booting |
| 3. MBR | BIOS | RESTART | POST |
| 4. Switch user | Lock | CUI | Sleep |

C. Give one word for the following.

1. Pressing the Restart button while the computer is already on.
2. An interface between the user and the computer.
3. A graphical environment where a mouse acts as a pointing device.
4. The process of pressing on the Power button when the computer is switched off.
5. A process that starts the operating system when the user turns on a computer system.

D. Answer the following questions.

1. What is an operating system? What basic tasks does it perform?
2. Enlist the steps of booting.
3. Differentiate between the two operating system interfaces.
4. Why is it important to properly shut down your computer?
5. Discuss the various types of operating systems.

LAB WORK



- A. Find out the difference between the term Multi-user, Multi-tasking and Multi-processing Operating Systems and write the differences between them in a word document. Support your answer using suitable examples.
- B. Start the computer in your lab and observe the booting process. Depict the booting process with the help of a flowchart.

PROJECT WORK

Make a presentation on important functions of an operating system. Try to get more information about each function mentioned in the chapter. Take the help of the internet and insert pictures wherever possible. Make the last slide of presentation as Bibliography or credits and put the URL of all the sites from where you have collected the information.



MS Word 2010 – Advanced Features

SNAP RECAP

1. What do you understand by formatting an MS Word document?
2. Do you know the difference between the terms font face, font size and font style?
3. In how many ways can you align text in a document?

LEARNING OBJECTIVES

You will learn about:

- headers and footers
- footnotes and endnotes
- drop cap
- tab stop
- using Show/Hide tool
- format painter
- columns
- how to increase and decrease indentation
- thesaurus
- borders and shading
- page setup and margins
- applying built-in styles

Introduction

You have already studied about some of the features of MS Word 2010 and the different formatting tips.

MS Word 2010 also provides certain additional features that make your work easy and well-structured. You can add page numbers, headers and footers, and can also look up a word in the Thesaurus to find similar words.

Headers and Footers

A header or footer can be in the form of text or graphics such as a page number, the date or a company logo that is usually printed at the top or bottom margin of each page in a document. They give identification to a page while accessing the document.

Inserting a Footnote or an Endnote

The mentioned steps are followed to insert a footnote or an endnote:

1. In your MS Word 2010 document, click on the position where you want a reference for the note to be added.
2. Click on **References** tab \Rightarrow **Footnotes group** \Rightarrow **Insert Footnote/Endnote** option. A footnote/endnote will be added (Fig. 3.4).

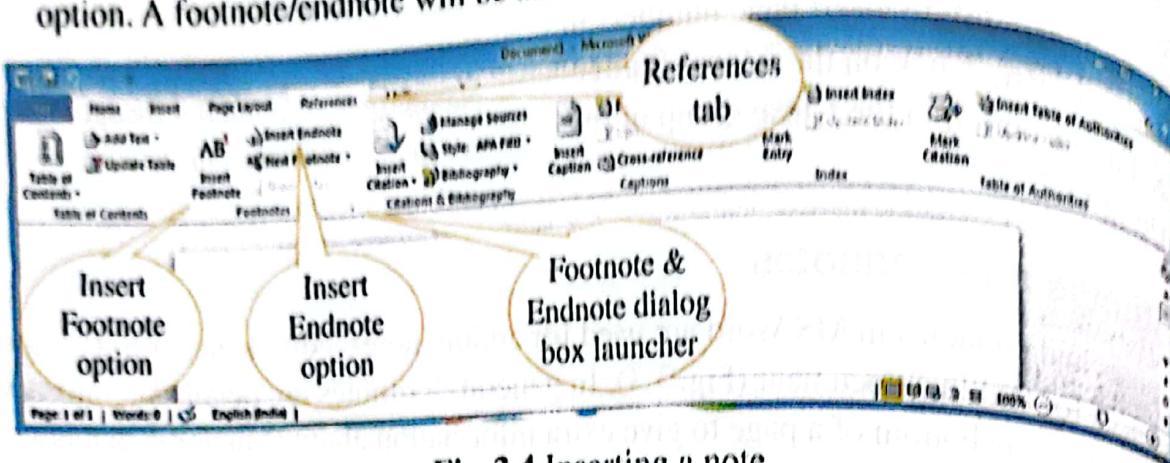


Fig. 3.4 Inserting a note

3. Click on the **Footnote and Endnote dialog box launcher** in the **Footnotes** group.
4. To create a footnote, click on the **Footnotes:** option and for the endnote click on the **Endnotes:** option in the **Location** section. It can even be formatted. You can select the location of footnotes and endnotes from the respective drop-down lists in the **Location** section. You can also format the numbering and choose to apply the changes to the whole document or a particular part of it using the options in **Format** and **Apply Changes** sections, respectively.

Now, click on **Insert**.

5. A note reference appears at the position where you clicked on the document. You can now add the note text and then scroll to the next position in the document where you want to insert a footnote or an endnote.

FACT FILE

By default, the footnotes are numbered as 1, 2, 3 ... and the endnotes as i, ii, iii

MS Word 2010 automatically applies the correct number format when additional footnotes or endnotes are inserted in a document.

Drop Cap

Drop Cap is a feature provided by MS Word in which the first character of the paragraph is bigger, and dropped on the subsequent lines of the paragraph to mark the beginning of the paragraph (Fig. 3.5). You can use this feature while writing stories.

Follow these steps to use Drop Cap feature of MS Word 2010.

1. In the Word 2010 document, write the letter which you want to show as a Drop cap.
2. Click on **Insert** tab. Then go to **Text** group and click on **Drop Cap** drop-down list.
3. Click on **Drop Cap Options...** from the drop-down list. The **Drop Cap** dialog box opens.
4. Select the desired option from **Position**.
5. Select the desired font of the dropped letter from the **Font:** drop-down list in the **Options** section.
6. Select the desired option from the **Lines to drop:** list.
7. Increase the distance between the text and the dropped letter with the help of **Distance from text:** list. Click on **OK**.

Tab Stop

Tab Stop refers to a preset text position. The Tab Stop feature in MS Word enables the user to change the default distance covered by the Tab key for the preparation of a columnar data in MS Word.

Press the **Tab** key to move the cursor half an inch forward in an MS Word document.

Inserting Tab Stop

Tab Stop can be inserted at any position on the ruler within the margins. When a Tab Stop is set, MS Word automatically removes the default Tab Stops to the left.

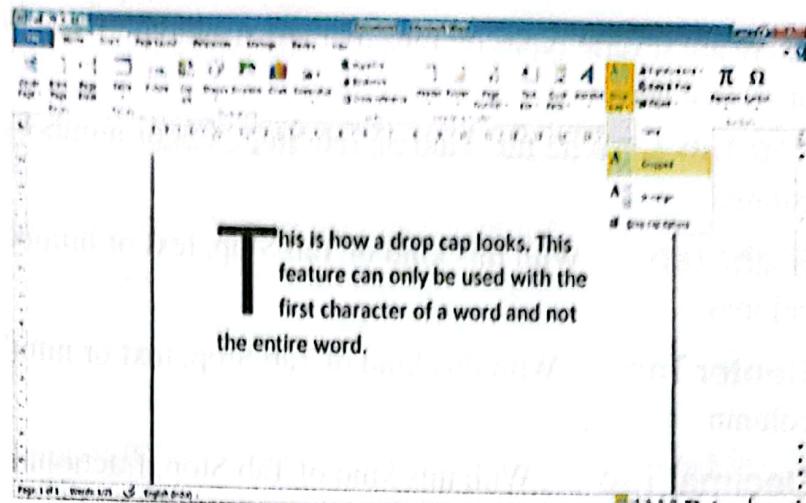


Fig. 3.5 Drop Cap drop-down list

FACT FILE

You can use the Drop Cap feature only with the first character of a word and not the entire word.



There are several types of Tabs that are available in MS Word 2010. A few are discussed here.

Left Tab : With this kind of Tab Stop, text or numbers are left-aligned in the column.

Right Tab : With this kind of Tab Stop, text or numbers are right-aligned in the column.

Center Tab : With this kind of Tab Stop, text or numbers are center-aligned in the column.

Decimal Tab : With this kind of Tab Stop, fractional figures are aligned in such a way that all the decimal points are vertically aligned.

Deleting Tab Stop

Select each tab and drag it towards the document to delete tab stops.

Let us create a list of marks of students (Fig. 3.6).

To create this list, a few steps need to be followed. These are:

1. Select the **Left Tab** from the Tab Selector, placed on the left side of the ruler.
2. Click at the desired position on the **Horizontal Ruler** to define the location of the **Left Tab**. Type **ROLL NO.** Now, select the **Right Tab** from the Tab Selector.
3. Click at the desired position on the **Horizontal Ruler** to define the location of the **Right Tab**. Bring the cursor to **ROLL NO** and press the **Tab** key. Write **SECTION**. Select the **Center Tab** from the Tab Selector.
4. Click at the desired position on the **Horizontal Ruler** to define the location of the **Center Tab**. Bring the cursor to **SECTION** and press the **Tab** key. Write **TEST 1**. Now, select the **Decimal Tab** from the Tab Selector.
5. Click at the desired position on the **Horizontal Ruler** to define the location of the **Decimal Tab**. Bring the cursor to **TEST 1** and press the **Tab** key. Write **TEST 2**.

Section	Test 1	Test 2
A	78	90
B	85	92
A	80	75

Fig. 3.6 Using Tab Stop

- Move to the new line and type the values for each column. Move to the next column using Tab key. Once the list is completed, delete Tab Stop.

Using Show/Hide Tool ¶

There are some non-printing characters that are used for displaying the formatting of a word document. They only appear on the screen and not in the printout. In order to display Word's non-printing characters, click on the **Show/Hide ¶** option in the **Paragraph** group of the **Home** tab.

The following are some of the symbols representing the usage of the keyboard key at that location in the document. These are displayed when the Show/Hide button is ON.

Symbols	¶	.	→
Keys	Enter key	Space Bar	Tab key

Format Painter ⚡

Format Painter is one of the features of MS Word 2010 which allows the user to copy the format from one place to another.

Follow these steps to copy the format:

- Place the cursor on the paragraph text that contains the formatting to be copied.
- Click on **Home** tab → **Clipboard** group → **Format Painter** option.
- The mouse pointer changes to .
- Select the paragraph text on which the format is to be copied.

Columns

MS Word allows the user to display data in the form of vertical columns in the same way as it appears in a newspaper. An already created document can also be converted into columns.

How to Make Columns in MS Word 2010

- Select **Page Layout** tab. Then click on **Columns** drop-down list from **Page Setup** group (Fig. 3.7) and select the column style of your choice.

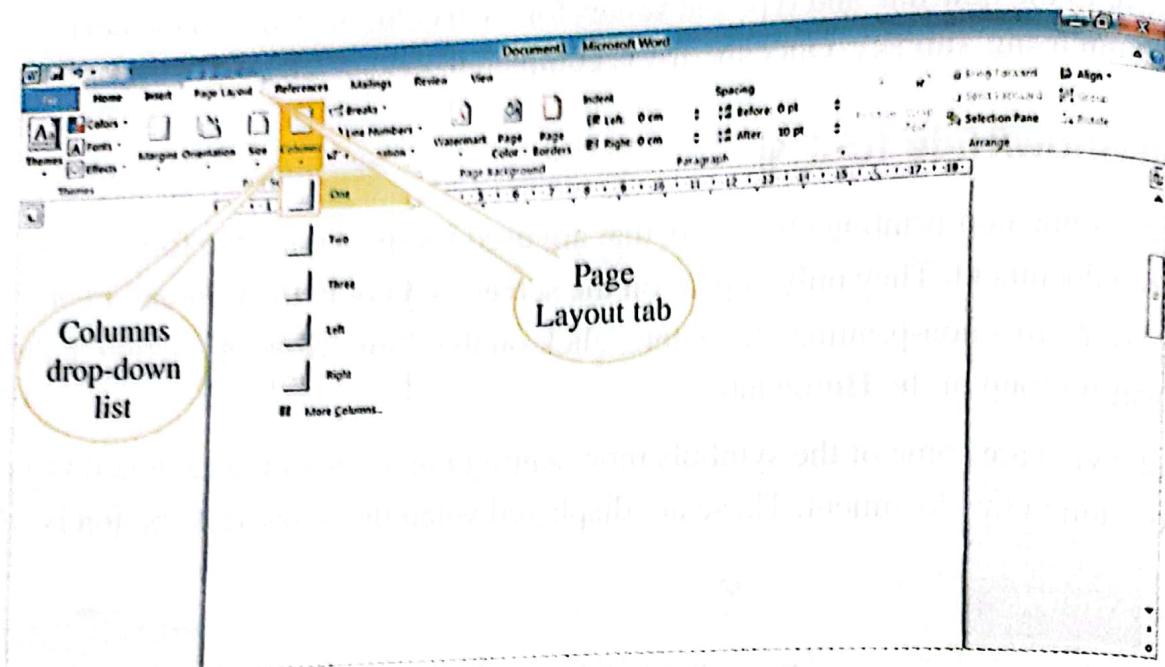


Fig. 3.7 Inserting columns

2. For choosing more column styles select, **More Columns...** option. The **Columns** dialog box opens (Fig. 3.8).

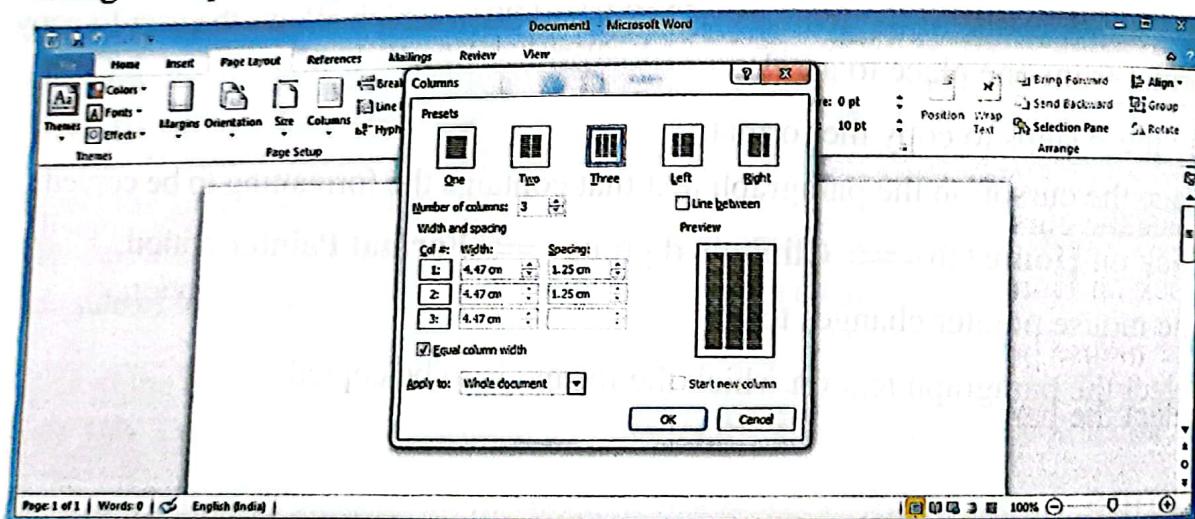


Fig. 3.8 Creating Columns

3. Select the desired number of columns, say, 'Three' with the help of **Number of columns:** list.
4. Select if **Line between** option checkbox if you want a line to be visible between the columns in the document.
5. To give equal width between the three columns created, click to tick the **Equal column width** checkbox in the **Width and spacing** section.

- If **Equal column width** checkbox is not selected, then select the desired width and spacing between the columns from **Col#: Width: and Spacing:** lists.
- In **Apply to:** drop-down list, select **This point forward** option to apply this effect in the document from current position onwards or else select **Whole document**.
- Click on **OK**.

Increase or Decrease Indentation

Hanging indent is the way of representing a paragraph when the first line of the paragraph is more towards the left side than the following ones. You usually use this feature in ordered or unordered lists in documents. This is not a good example to show hanging indent.

How to Increase Indent

If you want to increase the indent, which means pushing the text one tab space towards the right, then you need to follow these steps:

- Place the cursor at the place where you wish to increase indentation.
- Click on **Home tab** \Rightarrow **Paragraph group** \Rightarrow **Increase Indent** option .

How to Decrease Indent

If you want to decrease the indent, which means pushing the text one tab space towards the left, then you need to follow these steps:

- Place the cursor over the place where you wish to decrease indentation.
- Click on **Home tab** \Rightarrow **Paragraph group** \Rightarrow **Decrease Indent** option .

Thesaurus

MS Word 2010 has some features that help you to look up for meanings/synonyms (words with similar meaning) for a given word. One of these features is **Thesaurus**. The basic function of Thesaurus is to look up synonyms for a particular word. It is just like a dictionary, and can be used for replacing a word with one of its synonyms.

FACT FILE

Columns are always treated as different pages. The cursor will come to the next column only when the first column is full. Enter key can be used to go to the next column. Alternately, you may choose **Layout \Rightarrow Break \Rightarrow Column** to take the cursor to the next column.

FACT FILE

There are 9 levels of indentation in MS Word. This means you can decrease or increase the indents of the paragraph to 9 levels.

Follow the given steps to use the Thesaurus in MS Word 2010.

1. Select the word for which you want an alternative word.
2. Click on the **Review** tab then click on the **Thesaurus** option from the **Proofing** group (Fig. 3.9). The **Research** task pane appears.

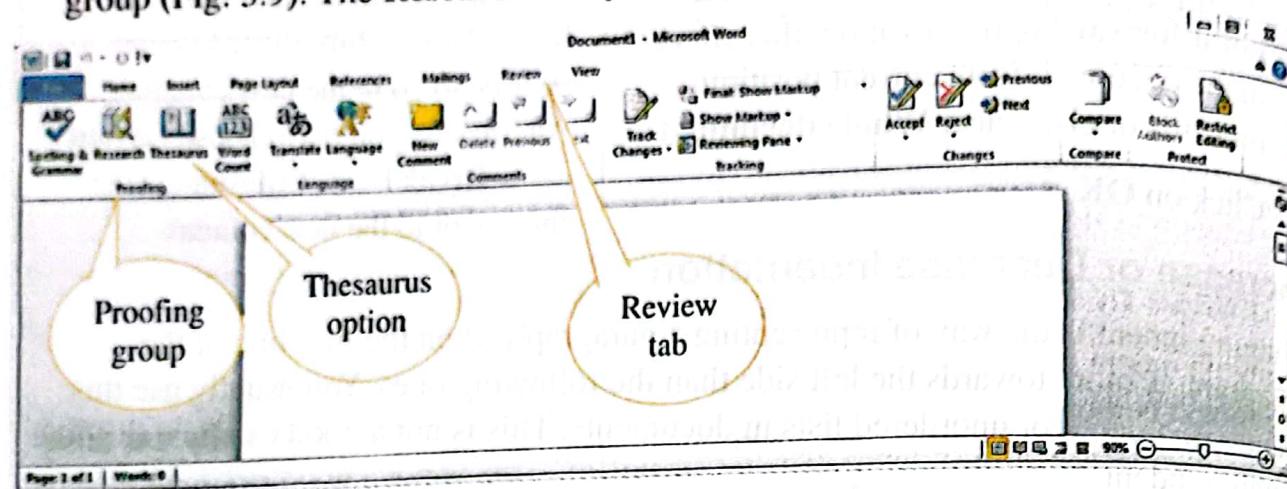
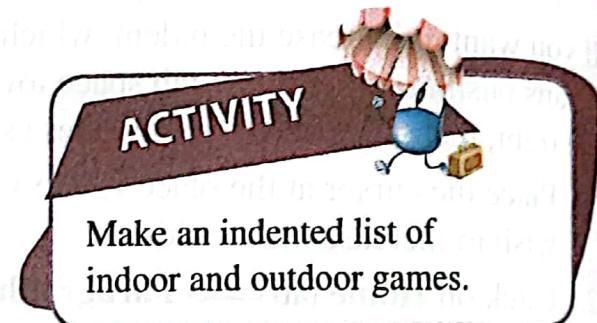


Fig. 3.9 Using Review tab to access Thesaurus option

3. The **Search for:** field displays the word you have selected and for which you want another word. Below this it contains the drop-down list of all reference books. Here, **Thesaurus: English (U.K.)** is selected.
4. Below it, a list of suggested synonyms appears. To use one of the words, point to it, click the down arrow key. Click **Insert** or **Copy** from the drop-down list.



Borders and Shading

MS Word allows users to add borders and apply shading options to a page and/or the selected text. A border is a line or a pattern surrounding the page or a cell in the margin area. You can set the text apart from the rest of the document by adding borders and shading.

Applying Shading

The steps to apply shading to a page in MS Word 2010 are:

1. Select the paragraph(s) where you wish to apply shading.
2. Click on the **Page Layout** tab, then **Page Borders** option from the **Page Background** group.

- The Borders and Shading dialog box opens (Fig. 3.10). Click on the Shading tab.
- Select the colour of your choice in the Fill section.
- Select appropriate options from the Style: and Color: drop-down lists in the Patterns section.
- Select the desired option from the Apply to: drop-down list in Preview section. Click on OK.

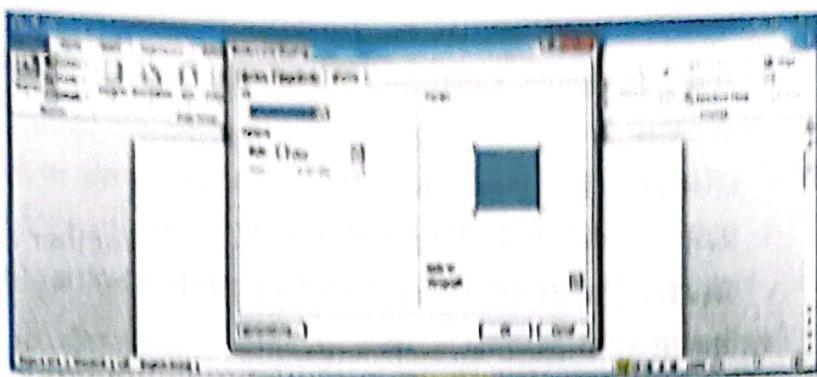


Fig. 3.10 Borders and Shading dialog box

To remove shading in the Fill section, click on **No Color** option from the drop-down list. In the Patterns section, select **Clear** option from the Style: drop-down list. Click OK.

Page Setup and Margins

Page margins are the blank spaces near the edges of the page. Texts and graphics are normally confined or set over the printable area inside the margins. However, some items can be positioned on the margins. For example, headers, footers and page numbers.

You generally work using the default Page Margins but you can also alter them using the following steps:

- Click on **Page Layout** tab. Then click on **Page Setup** dialog box launcher from the **Page Setup** group.
- The **Page Setup** dialog box appears (Fig. 3.11). It has three tabs: **Margins**, **Paper** and **Layout**. Select the **Margins** tab.
- In the **Margins** tab, in the **Margins** section, select the desired option.

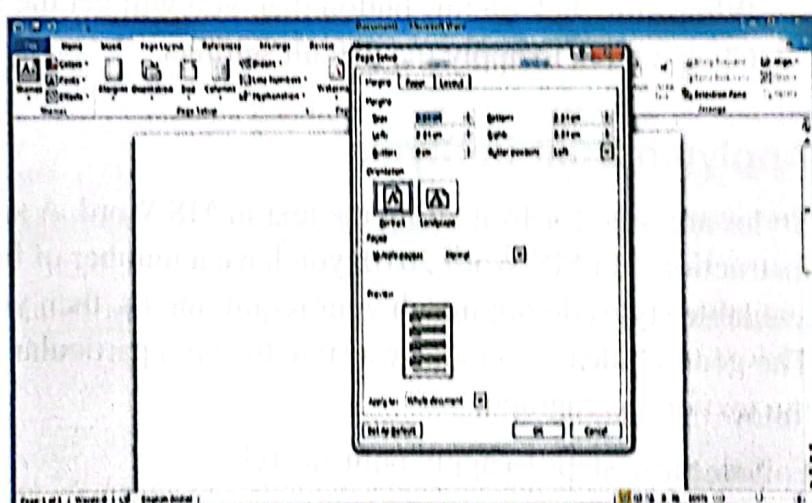


Fig. 3.11 Page Setup dialog box

- **Top:, Bottom:, Left: and Right:** lists to increase or decrease sizes of the four margins.
- **Gutter:** The list to add extra space to the side or top margin of a document you plan to bind. A gutter margin ensures that the text does not hide due to binding.
- **Gutter Position:** This position controls whether the gutter goes on the left-side or top-side.

4. In the **Orientation** section, select:

- **Portrait** option to print the document vertically.
- **Landscape** option to print the document horizontally.

5. In the **Pages** section, select the appropriate option from **Multiple pages:** drop-down list:

- **Normal** option for getting the normal document.
- **Mirror margins** option for setting the facing pages in a document such as books, magazines, etc.
- **2 pages per sheet** option for printing two pages on one sheet.
- **Book fold** option for creating booklets with the specific number of pages.

6. In the **Preview** section, select either of the options from **Apply to:** drop-down list:

- **The Whole document** option
- **This section** option
- **This Point forward** option

7. Click on **Set As Default...** button to reset the default values for the Page Margin. When you click on this button then you will get the **Microsoft Word** dialog box. Click on **Yes** to apply the default settings.

Applying Built-in Styles

Styles are used for formatting the text in MS Word. A style is a set of formatting instructions. In MS Word 2010, you have a number of built-in formatting styles. If the available styles do not match your requirements, then you can create your own style. The general idea is to modify a style to suit a particular formatting need and apply it to the text or a paragraph.

Follow these steps to apply built-in style:

1. Select the text or paragraph.
2. Click on **Home** tab then click on **Styles** group from **Styles** list.

OR

Click on Styles dialog box launcher (Fig. 3.12). A Styles dialog box will appear.

From here you can:

- Choose from the listed options.
- Use **Clear All** option to remove all styles from the document.

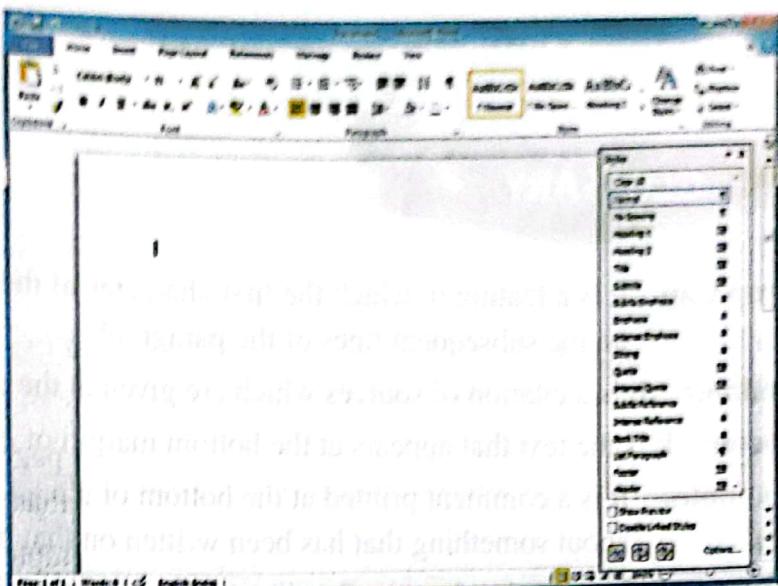


Fig. 3.12 Styles pane

Use **Show Preview** checkbox to see the effect of the style on the document before writing anything.

QUICK KEY

Apply Heading 1	Alt + Ctrl + 1	Normal Style	Ctrl + Shift + N
Apply Heading 2	Alt + Ctrl + 2	Paste Format	Ctrl + Shift + V
Apply Heading 3	Alt + Ctrl + 3	Thesaurus	Shift + F7
Apply List Bullet	Ctrl + Shift + L	Insert Footnote	Ctrl + Alt + F
Cancel	Esc	Show/Hide option	Ctrl + Shift + *
Hanging Indent	Ctrl + T	Insert Endnote	Ctrl + Alt + D
Copy Format	Ctrl + Shift + C	Styles	Alt + Ctrl + Shift + S

ACTIVITY

Create and design an admission form for a quiz competition. Apply in-built styles of MS Word 2010 wherever possible.

GLOSSARY

Drop Cap It is a feature in which the first character of the paragraph is bigger and dropped on the subsequent lines of the paragraph.

Endnote It is a citation of sources which are given at the end of a document.

Footer It is the text that appears at the bottom margin of every page.

Footnotes It is a comment printed at the bottom of a page which gives extra information about something that has been written on that page.

Hanging Indent It is when the first line of the paragraph is more towards the left side than the following ones.

Header It is the text that appears at the top margin of every page.

Mirror margins It is for setting the facing pages in a document such as books.

Page margins It is the blank space near the edges of the page.

Style It is a set of formatting instructions.

Tab Stop It refers to a preset text position.

Thesaurus Its basic function is to look up synonyms for a particular word.



3

1. Page numbers are helpful in documents that have more than one page.
2. The non-printing characters are visible on the screen using Show/Hide tool.
3. Format Painter allows the user to copy the formatting from one place to another.
4. MS Word allows the user to display the data in the form of vertical columns.
5. You can increase and decrease indent using the corresponding options.
6. MS Word allows the user to apply borders and shading effects to a page and selected text.
7. Styles are used for formatting text in MS Word. It also offers a number of built-in formatting styles.



EXERCISE

A. State whether true or false.

1. The Footer section is used for placing the text that appears in the beginning of every page.
2. Drop cap represents the first line hanging over the rest of the lines.
3. The Format Painter option copies the format from one place to another.
4. Mirror margins refers to a preset text position.
5. The Style is for looking up synonyms for a particular word.

B. Fill in the blanks.

1. You can use to look up synonyms for a particular word.
2. To print the document vertically you can use the option.
3. can be applied using Borders and Shading dialog box.
4. A is a set of formatting instructions.
5. The non-printing characters are visible on the screen using tool.

C. Give one word for the following:

1. The first line is a little more towards the left than the following lines.
2. It is used for making books and magazines.
3. It decides whether the content on the page will be printed/viewed in portrait or landscape.
4. It is used to copy the font settings of a text to another text.
5. This option is used to organise a page in the form of a newspaper columns.

D. Answer the following questions.

1. What is the purpose of a Tab key? How can you change its default shift?

2. Name the different margins available in Page Setup dialog box.
3. Why do you use page numbers in a document?
4. Using a suitable example, differentiate between Footnote and Endnote.
5. How can you insert page numbers in a MS Word 2010 document?

LAB WORK



- A. Design a Table of Contents page for a book up to three sub-headings. Arrange the table in two columns.
- B. Using Drop Cap feature for the first letter, write a paragraph on the topic 'How did you spend your summer vacation?'.

PROJECT WORK

Design your own school newspaper. Gather the news from various sources and categorise them into the headings given below:

- School Important announcements
- Planning of some upcoming event/Any event like Annual Day or Sports Day
- Winners of some inter-school and intra-school events
- Results of the recently conducted exam
- Class information
- Class Assembly
- Others

Use all the important features learnt so far in MS Word 2010.



Introduction to Email

SNAP RECAP

1. What is the Internet?
2. Why do you need the Internet?
3. What do you understand by an Email?

LEARNING OBJECTIVES

You will learn about:

- Uniform Resource Locator
- email
- advantages and disadvantages of email
- creating and opening an email account
- composing an email
- signing out from an email account

Introduction

The Internet is a network that links

millions of computers around the world. It contains a vast amount of information, and offers other services such as email, newsgroups and file sharing. Today, the Internet has revolutionised how people use computers. For example, one can read news stories and movie reviews, check airline and railway schedules, book tickets, shop for various items, find information on any subject, see street maps, get the weather forecast for the city, and communicate with others through the Internet.

Email is one of the most popular uses of the Internet. It is a fast and convenient way to communicate with others. You can send a message to anyone with an email address, and it will arrive almost instantly in the recipient's email inbox – even if they live halfway across the world.

In this chapter, you will learn about some of the features of email. However, before you proceed further, you must first know that in order to communicate, every computer connected to the Internet has a unique address which consists of a set of characters.

Uniform Resource Locator (URL)

Uniform Resource Locator (URL) is an address that uniquely identifies a location on the Internet. Every file on the Internet has a URL. A URL is the address for a website (Fig. 12.1).

For example, <https://www.cambridge.org>.

The format of the URL is:

protocol://host/path/filename

For example, in the URL <https://www.cambridge.org>:

Protocol is https

Host computer name is www

Lower level domain name is cambridge

Upper level domain name is org

Filename is default.aspx

Upper level domain name gives you the information about the organisation to which the website belongs. For example,

com indicates commercial enterprise

edu indicates educational institution

gov indicates government entity

mil indicates U.S. military entity

net indicates network access provider

org indicates usually non-profit organisations

In addition, domain names are further categorised to identify and locate files stored on the servers in different countries around the world. These are referred to as country codes, and are standardised by the International Standards Organisation (ISO). For example,

ch indicates Switzerland

jp indicates Japan

in indicates India

de indicates Germany

uk indicates United Kingdom

ca indicates Canada



Fig. 12.1 URL

FACT FILE

It is not necessary to type https:// while typing the web address. It shows by default.



TRY THIS



Try accessing a website without using https://. See if you are able to access the webpage.

The URL is not case sensitive, that is, it can be written in lower case as well as uppercase. For example, www.thesaurus.com and WWW.THeSAURus.COM will direct you to the same page.

Domain Name System (DNS)

When URL is translated into a numeric address, that address becomes the Domain Name System (DNS).

The DNS is a worldwide system of servers that stores location pointers to websites. It stores the information in form of an IP (Internet Protocol) address. It works as a phone book for the Internet. It converts the alphanumeric URL address into the numeric IP address. When you type the alphanumeric address in the Address Bar of the Web Browser, the DNS translates it into the IP address. It then contacts the web server and asks for a specific file located on its site.

Email

Email stands for **Electronic Mail**. It is a fast and convenient way to communicate with others via Internet. In fact, it is the most commonly used feature of the Internet. Everyday, people using the Internet send each other billions of email messages. Obviously, email has become an extremely popular medium of communication nowadays. You can send an email message to any person with an email address. You can receive messages from anyone who knows your email address, and then read and reply to those messages. When you receive an email message, you can forward it to others without retyping it. You can also send an email message to many people simultaneously.

Besides text, you can send almost any type of file in an email message, including documents, photographs and music. A file sent along with an email message is called an **attachment**. Email systems have a mail server which sends and receives a mail. A **mail server** is a computer that serves as an electronic post office for email. The mail exchanged across networks is passed between mail servers that run specially designed software and follow standardised protocols for handling mail messages and attachment files.

TRY THIS



Open Run on your system. Type CMD in the Open: box and click OK. The cmd. exe box appears. Type ping followed by name of a website say microsoft.com and press enter. You will get the IP address of the website.

FACT FILE



Hotmail, one of the first free email service providers, was founded by Sabeer Bhatia.

Email Address

Using an email service is just like using a letter box (Fig. 12.2). If you do not have a letter box, then you will not be able to send or receive your mails.

To send and receive your emails you need to create an email account. This account can be accessed by using an email address. This address is a combination of a username and a hostname, and is written as `username@hostname`. For example, `mymail@hotmail.com`, `abc@yahoo.com`, `xyz@gmail.com`.

Username: It can be any name given by the user.

Hostname: It is the name of the email server that provides email services.



Fig. 12.2 Sending a mail

Advantages of Email

Some advantages of using the email services are given below.

Convenient

One advantage of email over the telephone or regular mail is its convenience. You can send a message at any time of the day or at night. If the recipients are not connected to the Internet when you send the message, they will find the message waiting for them the next time they check their email.



Immediate

Your message is delivered instantly from your computer to any other computer whether it is in a nearby locality or halfway across the world (Fig. 12.3). No other method of delivery can provide such prompt service.

Fig. 12.3 Sending an email is convenient and fast

Inexpensive

Compared to telephone calls, faxes, courier or postal service, email is less expensive. In fact, it is free at times. No stamp or paper cost is involved. The cost has nothing to do with distance, and in many cases, the cost does not depend on the size of the message either.

Bulk Data Transfer

You can send any type of data like text, video, sound, documents, pictures, etc. through email. The text goes as simple email and the rest of the files go as an attachment with the email. The person receiving the email should have the appropriate software to use those attachment files.

Environment-friendly

Email is a green and environment-friendly way of sending messages as it does not involve the use of paper in terms of writing pads, envelopes, stamps, etc. For different companies also, the email is a cheaper and a faster medium to advertise. It is also greener as precious trees are not wasted.

You can create a 'green email signature' hanging out at the bottom of your mail with the help of your teacher. It consists of a disclaimer that talks about how you can use your email to save the environment (Fig.12.4). For example, many people print their emails so that they can refer back to them.

You can create a signature disclaimer that asks if they really need to print that email. You can also talk about the benefits to the environment by not printing the email because it uses paper and paper manufacturing requires to cut trees.

Emails, thus, help in saving paper and reducing the demand for paper. When the paper demand goes down, the paper factories will produce less paper. This means fewer trees will have to be cut down. Thus, you can initiate a very interesting chain reaction that will save the Earth. Remember, *every small measure taken to save the environment counts, so do your bit.*



Fig. 12.4 Green email signature

Disadvantages of Email

There are some disadvantages of using the Email services. These are given below.

Unwanted Emails

Since your email address is stored on the mail server, you may also receive some unwanted mails. These unwanted messages are known as **junk mails** or **spam mails**.

Privacy Concerns

You can secure your email accounts by entering a password. However, if somebody knows your password then that person can easily access your account and may read or send messages through it. Moreover, email messages are passed through several networks. There are many possibilities for someone to intercept or read your email. Thus, email is not necessarily private.

False Representation of Identity

Anyone can create an email account even by giving false personal details. Some people misrepresent themselves. Without an identifiable source, the message sender's identity and claims cannot be validated.

ACTIVITY

Think about more advantages and disadvantages of emails and create a poster for the same.

Creating and Opening an Email Account

Creating an email account is simple. The easiest way to create an email account and get the email address is to use a free online service. First, choose an email service, for example, Yahoo, Hotmail, Gmail, etc. Then, decide what email address you wish to have (Fig. 12.5).

Let us try creating an email account on www.gmail.com.



FACT FILE

You can send emails only when you are connected to the Internet.

Fig. 12.5 Creating an email address

1. Open the web browser and type in the address gmail.com in the Address Bar. The following screen will appear (Fig. 12.6).
2. If you already have an account then you may just enter your **Username**, **Password** and click on the **Sign in** button. But to create a new account, you need to click on **Create account** button on the screen, as shown in Figure 12.6. You will now see the following screen displaying an online form (Fig. 12.7).
3. In this online form, you have to enter your details such as your name, your choice of the username and password, etc. Once you have filled in everything correctly then you need to verify your phone number.

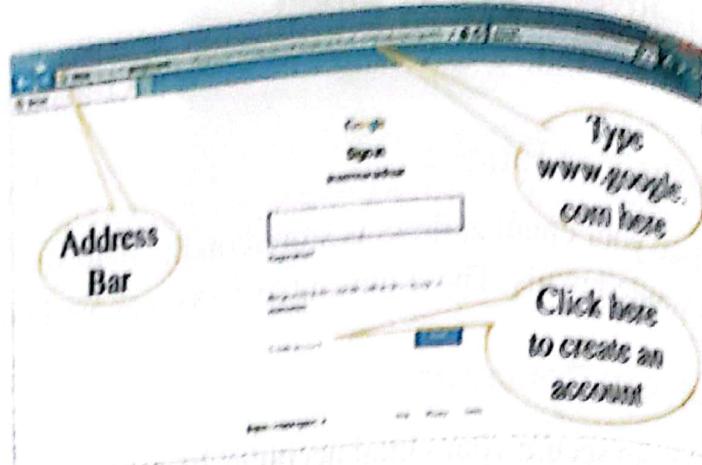


Fig. 12.6 Opening a Gmail account

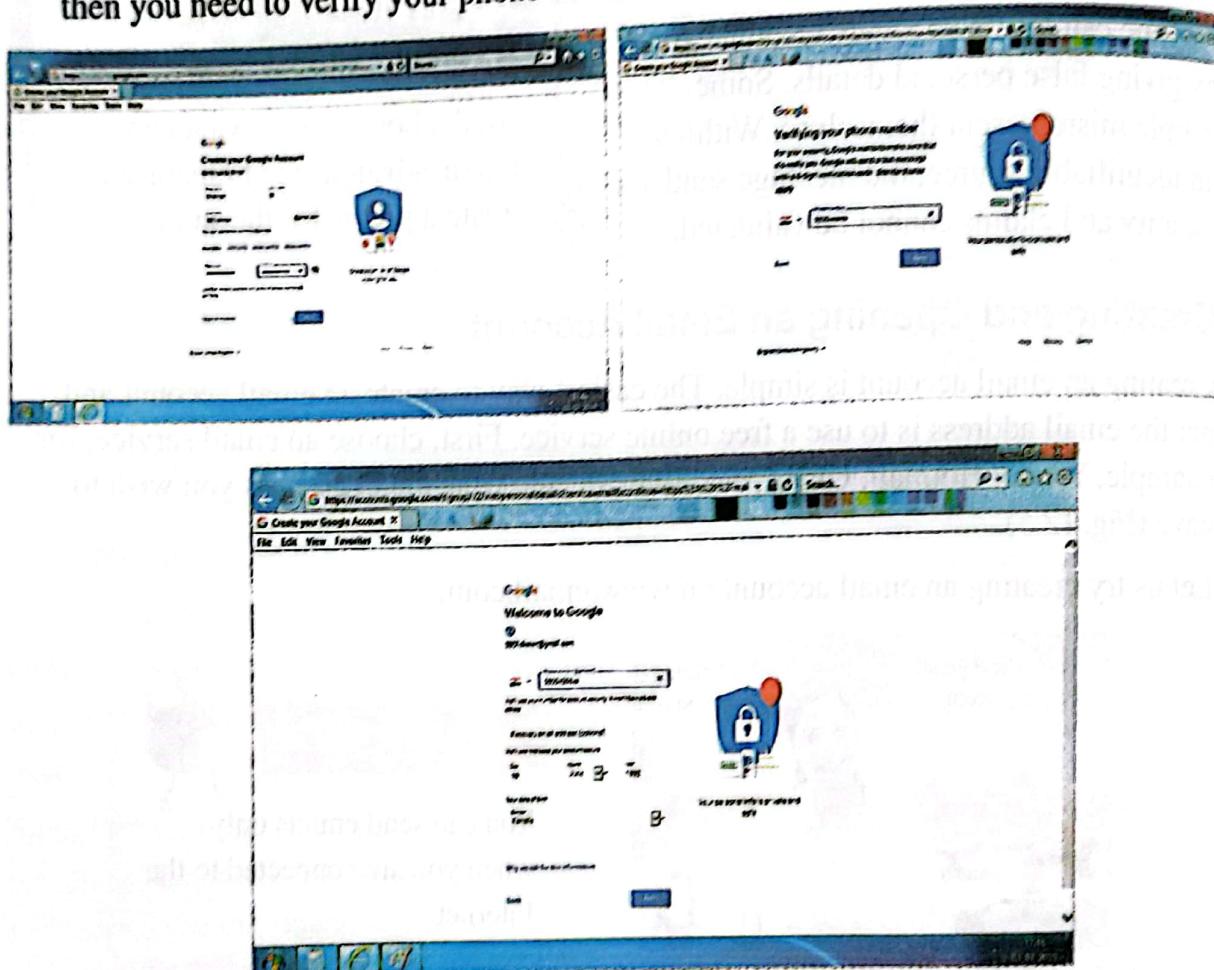


Fig. 12.7 Online form

4. After the account has been created, you will get a 'Welcome' message (Fig. 12.8). You get this message only once – the first time when you open your email account.

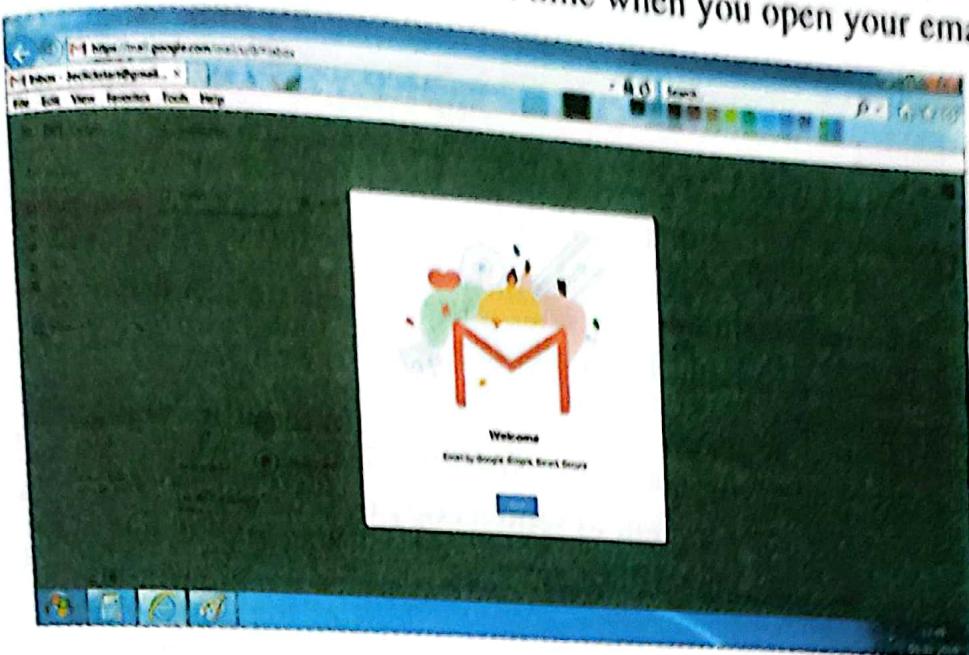


Fig. 12.8 Welcome message

5. Now, to check your mails, click on Next button. Every time you need to check your account, you will have to enter your username and password to open your account in the homepage of Gmail.com.
6. Once your account is opened or you are logged in, the following screen will be displayed where you will see your messages in a folder called **Inbox** (Fig. 12.9). Whenever you receive an email, it will be stored in the inbox. You can click on it, and view the contents of the email.

Most of the email services have an age restriction. In case you don't qualify the age criteria, try creating an account with your parent or teacher.

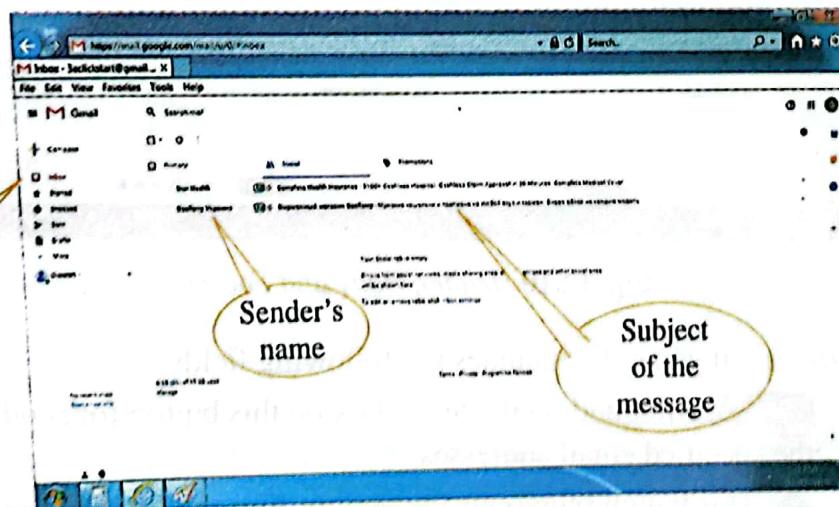


Fig. 12.9 Inbox

Composing an Email

Composing an email means creating an email and then sending it to the recipient. To compose an email, you need to follow a few steps.

1. Click on **Compose** option present on the left side of the window.
2. It consists of three major sections: **Header**, **Body** and **Footer** (Fig. 12.10).
 - a. **Header:** The message header generally includes the following fields:
 - **To:** Here you write the email address of the person (recipient) to whom you wish to send the email.
 - **Cc:** It stands for **Carbon Copy**. It allows you to write email addresses of persons to whom you want to send a copy of the email at the same time.
 - **Bcc:** It stands for **Blind Carbon Copy**. It also contains the email addresses of persons to whom you want to send a copy of the email yet not make the address visible to the rest of the recipients addressed in **To** and **Cc** box.
 - **Subject:** A brief summary of the contents of the message.
 - b. **Body:** The message content is written as plain text with simple formatting features in the body of the message.

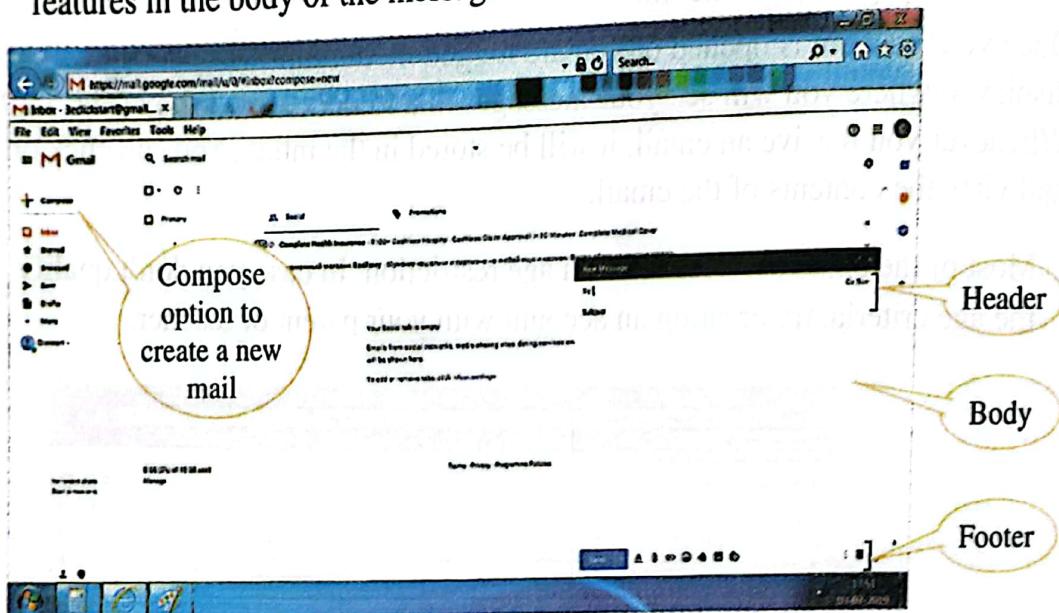


Fig. 12.10 Header, Body and Footer

- c. **Footer:** It generally includes the following fields:

- **Send :** After adding the text, click on this button for sending the message to the specified email addresses.
- **A :** This button represents the options that can be used for formatting the text in the Body of the email. It includes the font type, font size, bold, italic,

underline, bullets and numbering, text colour, and other alignment features. It also consists of an option to remove the formatting done to the text in the email.

- : This button helps to attach a file to the email. The attachments can include text files, photographs, music files, movie files, etc. After attaching a file, the name and size of this file is displayed. One or more types of files can be attached with an email. The time taken to attach a file can vary depending on the size of the file and speed of the Internet connection.
 - : These buttons can be used to insert files using a Drive, photos, links and emoticons (animated facial expressions) in the Body of the email.
 - : A side list appears on pressing this button in the email. It gives the user the option to print an email and also check spellings of the text written in the email.
3. After adding the text, click **Send** button for sending the message.
 4. Gmail automatically saves the document you are currently working on as a draft. In case you do not send this email at the time of its creation, the saved message will be available later in the **Drafts** folder on the left side of the email window.
 5. If you wish to cancel your message, then click on the **Discard** button .

Replying to an Email

You can reply to an email received from a contact.

For replying to an email, follow these steps:

1. Click on the email to open it.
2. Click on the reply arrow in the right corner of the email (Fig. 12.11).
3. A message box opens below the email with the address of the email sender in the 'To' section.

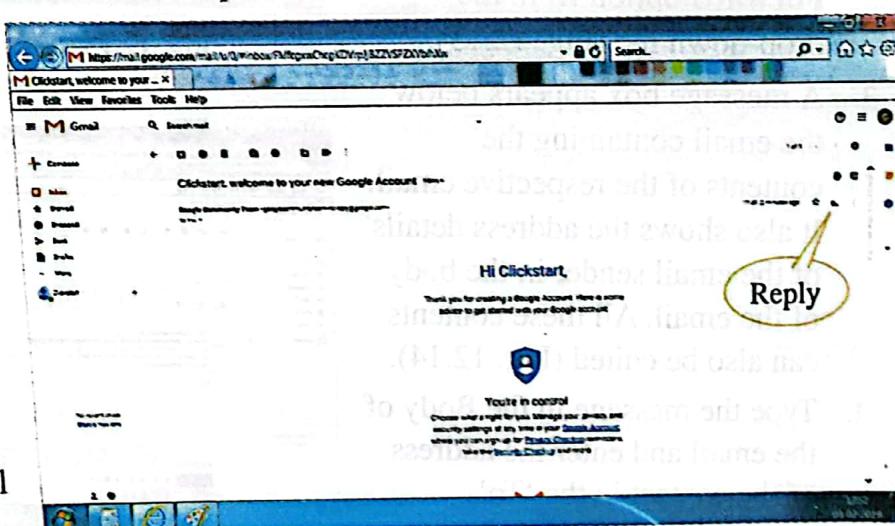


Fig. 12.11 Clicking on the Reply button

- Type your reply in the same message box (Fig. 12.12).
- Click on the Send button.

Click on the dotted line [...] to see the contents of the email to which you are replying. Select the content and click Backspace button. Remove the attachment by deselecting it.

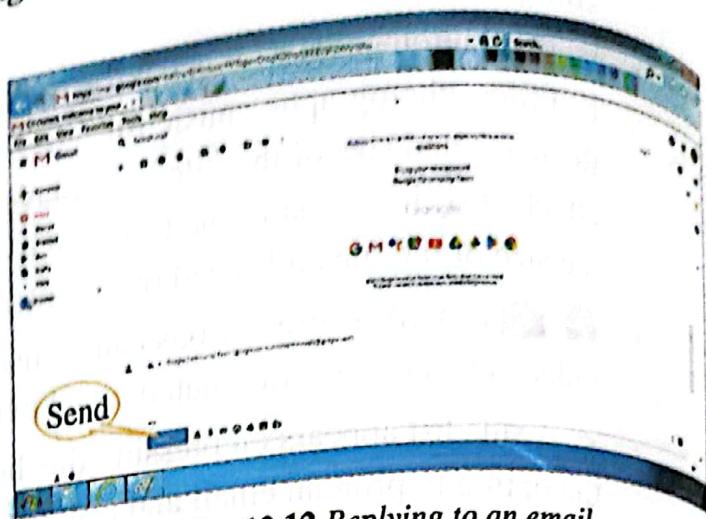


Fig. 12.12 Replying to an email

Forwarding an Email

An email received in the Inbox can be sent to other people. This is called forwarding an email.

Follow these steps to forward an email to a contact:

- Click on the email to open it.
- Click on the arrow next to the **Reply** button and select the **Forward** option from the drop-down list (Fig. 12.13).
- A message box appears below the email containing the contents of the respective email. It also shows the address details of the email sender in the body of the email. All these contents can also be edited (Fig. 12.14).
- Type the message in the Body of the email and enter the address of the contact in the 'To' section.
- Click on the **Send** button.

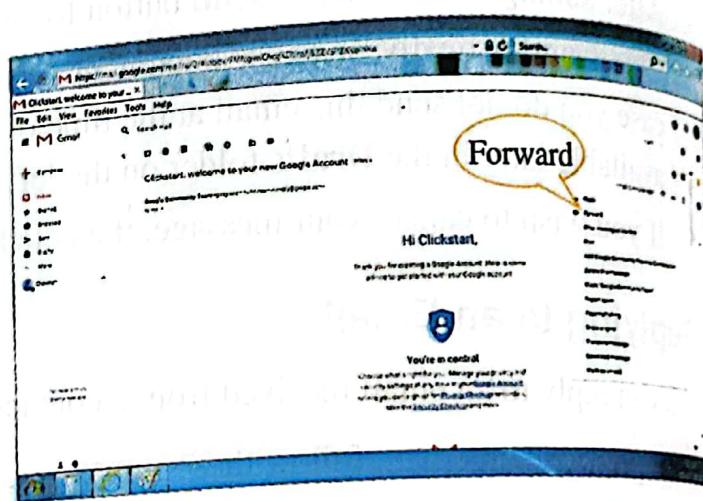


Fig. 12.13 Selecting the forward option

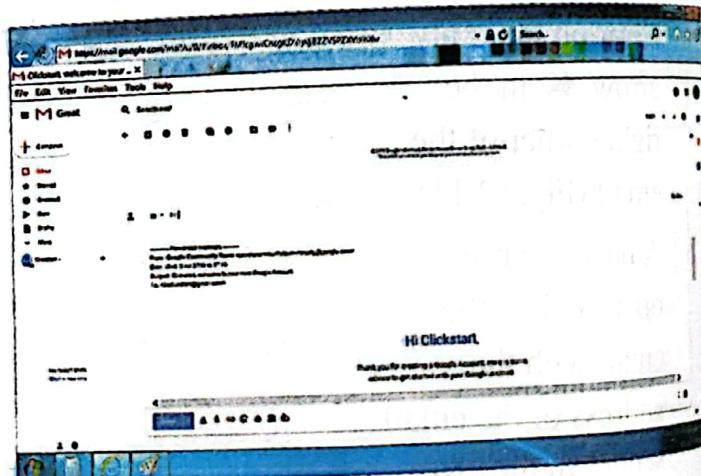


Fig. 12.14 Forwarding an email

Chatting with a Contact

Most of the email services provide their users with the facility to do a live chat with their contacts.

The main advantage of using the live chat feature is that it allows the user to talk to their contacts as if sitting opposite to them.

Follow these steps to chat with a contact:

1. Look at the list of contacts in the left side of the window (Fig. 12.15).

FACT FILE

The drop-down list next to the Reply button has options for deleting and printing the email. On clicking Print, the Print window opens where the user can specify the settings for the message to be printed.

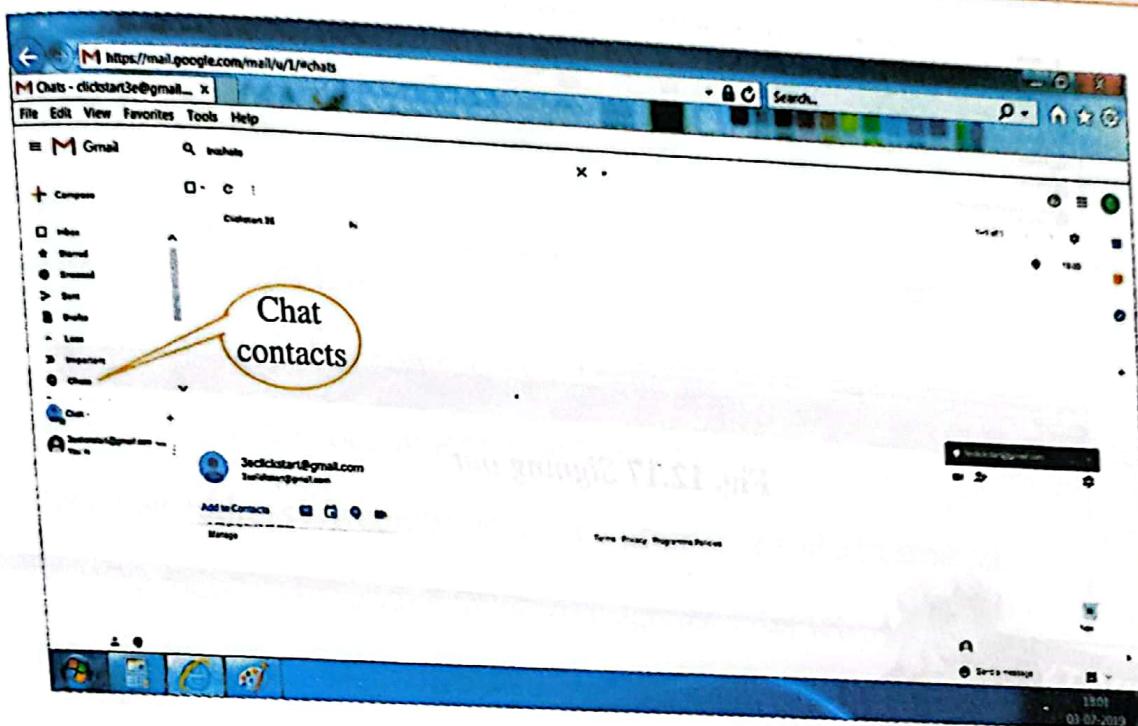


Fig. 12.15 Selecting a contact for chatting

2. Click on the name of the contact with whom you wish to chat.
3. A chat window appears on the lower-right side of the window.
4. Type a message and press Enter. The contact will receive the message sent. They can also reply to the message and send it (Fig. 12.16).

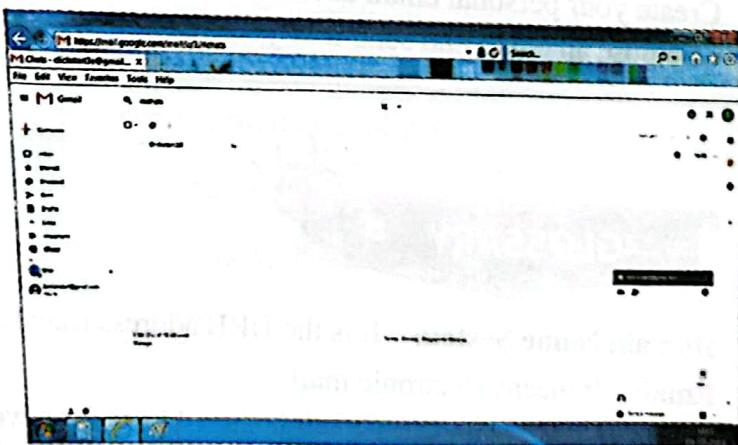


Fig. 12.16 Chatting with the selected contact

Signing Out from an Email Account

It is important to close your email account properly. It ensures that no one else can access it without the password. To sign out, you have to click on the **Sign out** option present in the drop-down list next to your email ID in the upper-right corner of the screen (Fig. 12.17). This will move you out of your account.

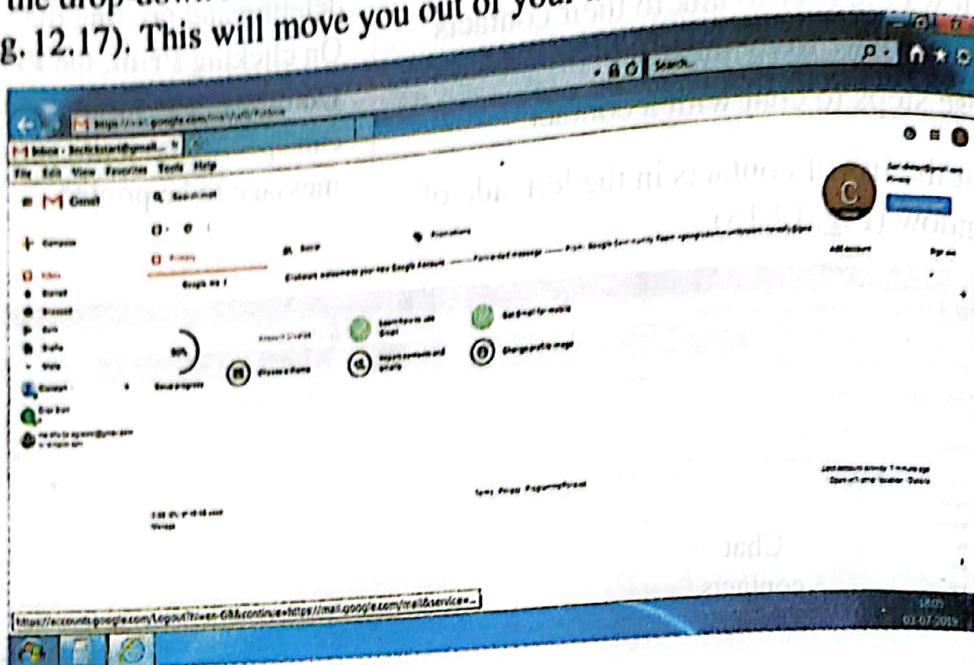


Fig. 12.17 Signing out

ACTIVITY

Create your personal email account under the supervision of your parents/teachers. Compose an email and send it to your friend's email address. Sign out of your account.

GLOSSARY

Domain Name System It is the URL address translated into numeric address.

Email It means electronic mail.

Uniform Resource Locator It is the address for a website.

Emoticons These are animated facial expressions.

1. Email is a medium of sending electronic mails via Internet.
2. Email address is a combination of a username and a hostname.
3. Email is easy to use, very fast, inexpensive and data can be sent in bulk.
4. Email has some disadvantages like spam mails, privacy concerns and misrepresentation of identity.
5. You can easily create an email account by following a simple procedure.
6. Composing a mail means creating an email and then sending it to the recipients.
7. It is important to close your email account properly.



EXERCISE

A. State whether true or false.

1. Internet is a network of computers.
2. Universal Resource Locator is the full form of URL.
3. The email address is a combination of a username and a hostname.
4. DNA is a medium of sending mails through the Internet.
5. A file sent in an email is called an attachment.

B. Match the following.

- | | |
|--------|----------------------------|
| 1. com | a. U.S. military entity |
| 2. edu | b. educational institution |
| 3. gov | c. government entity |
| 4. mil | d. network access provider |
| 5. net | e. commercial enterprise |

C. Give one word for the following:

1. Blind carbon copy
.....
2. Worldwide system of servers
.....
3. Username@hostname
.....

4. Unique address of a website
5. Email server name

D. Answer the following questions.

1. What is a URL? Explain its format.
2. Why do you need an email address?
3. State the advantages and disadvantages of using an email.
4. What do you mean by 'composing an email'?
5. Why is it advisable to sign out of your email account properly?



LAB WORK

Complete the following activity.

1. Open your own email account and create your own green email signature under the supervision of your parents/teachers.
2. Send a 'Hello' message to your friend.
3. Ask your friend to send one message to you. Open it and see the difference in the screen. Can you guess why it looks different?



PROJECT WORK

So many options are available just below the Inbox in our emails. For example, Starred, Drafts, important, etc. Gather some information about each of these and make a presentation in a group of 2 or 3. Mail that presentation to your teacher and parents. Also find out the difference, when you send an email to many recipients using cc and using Bcc.

WHO AM I?

I was born on 8 June 1955.

I am known for inventing World Wide Web.

I implemented the first successful communication between an HTTP client and server.

I won the Turing Award in 2016.

I am

