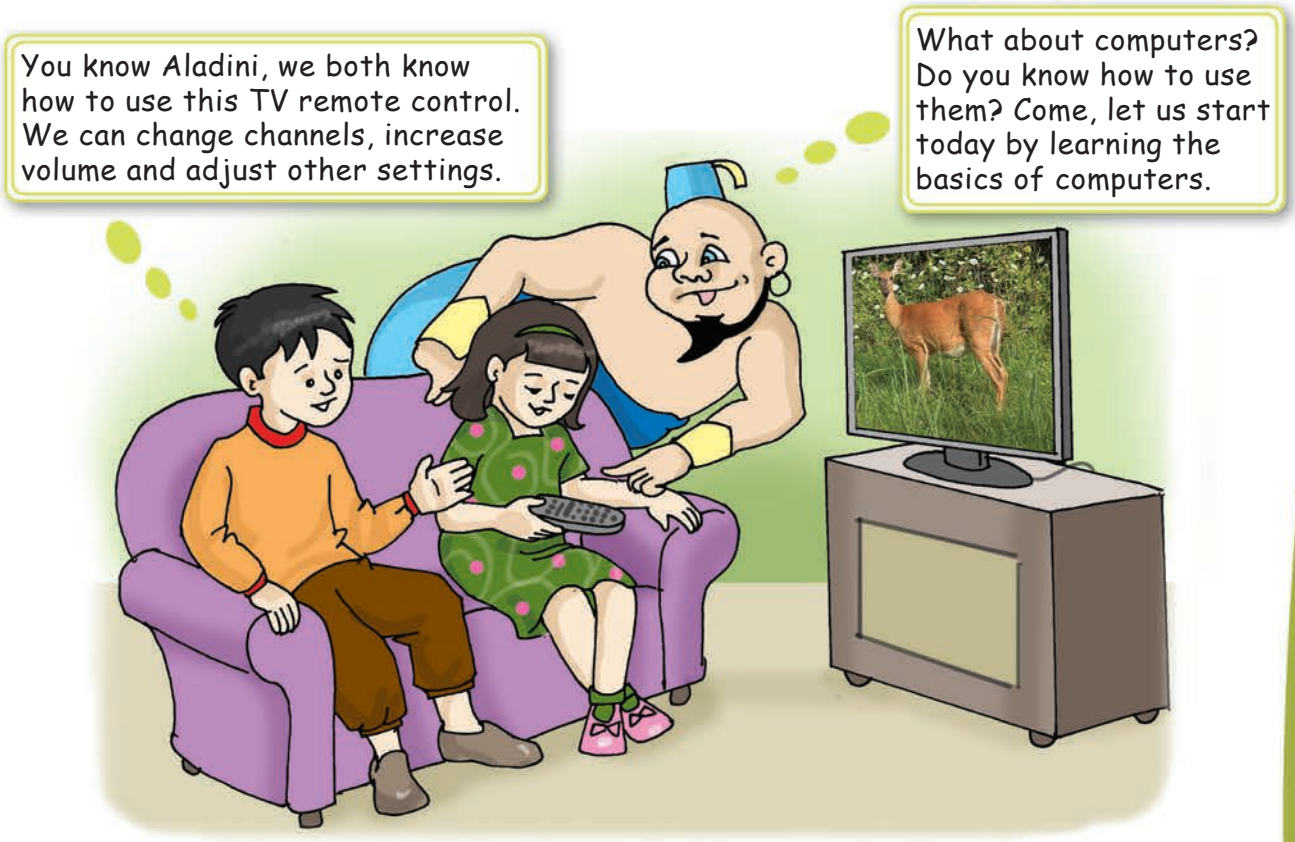
Chapter 1

COMPUTER BASICS



Computer is an electronic machine that works according to the instructions given by us. The usage of computer has grown in the past few years.

OBJECTIVES

- Uses of computers
- Characteristics of computers
- IPO cycle
- Input, Output and Storage devices
- Hardware and Software

USES OF COMPUTERS

Computers play an important role in our everyday life. Let us look at some of the areas in which computers are used.

➤ At **home**, computers are used for drawing pictures, typing letters and assignments, paying bills, booking tickets, listening to music and watching movies.

Fig 1.1 *Listening to music*

Fig 1.2 *Making bills in a shop*

➤ Computers are used for storing lists of items and making bills in **shops**.

➤ At **schools**, computers are used for typing circulars, test papers, preparing time tables, maintaining fee records of students, etc. Computers are also used for teaching in schools. The use of computers has made learning easy and interesting for students.

Fig 1.3 *Teacher using a computer*

Fig 1.4 *Computers in office*

➤ Computers are used for sending and receiving mails, storing records, and doing calculations in **offices and banks**.

➤ At **railway stations and airports**, computers keep track of the details like arrival, departure and number of seats available in a train or an aeroplane.

Fig 1.5 *Keeping track of arrival and departure time of trains*

➤ In **hospitals**, computers are used for maintaining the records of patients, testing eyes, etc. Various medical tests and preparation of reports is done using computers.

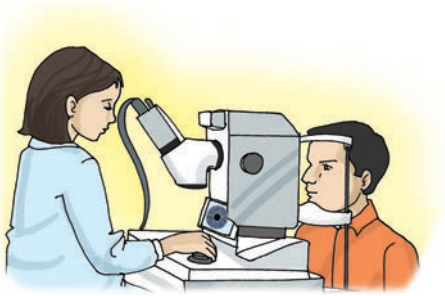


Fig 1.6 *Eyes testing*

Fig 1.7 *Designing a building*

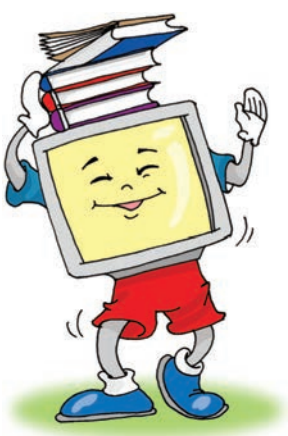
➤ Computers are used for **designing** buildings, aeroplanes, clothes.

➤ Computers are very useful for **scientific research.** They can be used for launching of satellites, weather forecasting, etc.

Fig 1.8 *Launching satellite*

CHARACTERISTICS OF COMPUTERS

A computer has certain characteristics that make it different from other machines.



- **Speed**. A computer can perform large number of calculations quickly.
- **Accurate**. A computer always gives correct results.
- **Diligent**. A computer does not get tired. It can keep working for long hours and can do same work again and again.
- **Reliable**. A computer does not make mistakes.

WORKING OF A COMPUTER

Before we discuss the working of a computer, let us first study some daily-life examples to understand the way we perform tasks by following the **IPO (Input-Process-Output) cycle**.

➤ Daily-life Examples of IPO Cycle

Let us study some common daily-life examples of IPO cycle.

- **To Prepare Pizza:**

INPUT	PROCESS	OUTPUT
pizza base with toppings	bake pizza in microwave	hot yummy pizza

- **To Prepare Mango Shake:**

INPUT	PROCESS	OUTPUT
mango pulp, sugar, milk	blend in the mixer grinder	mango shake

- **To Make Clay Models:**

INPUT	PROCESS	OUTPUT
clay	child playing with clay	toys made with clay

Similarly, a computer also follows the IPO cycle.

A computer receives data or instructions through the **input devices**. The entered data is **processed** or changed into meaningful information by **CPU (Central Processing Unit)**. The result of processing is known as **output**. The output is displayed through the **output devices**. **Storage devices** are used to store the results or the output so that they can be used later.

Quick Fact

GIGO stands for Garbage In Garbage Out. It means if you give waste input, you get waste output.

The following diagram illustrates the concept of working of a computer system in relation to IPO cycle.

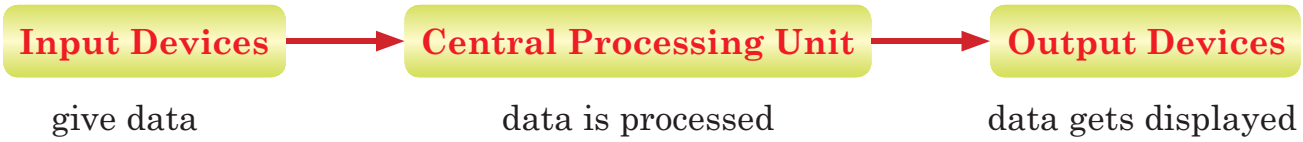


Fig 1.9 *IPO cycle*

INPUT DEVICES

The input devices allow you to communicate with the computer. They are used to enter data and instructions. For example, keyboard, mouse, scanner, microphone are input devices.

➤ Keyboard

The computer **keyboard** has many keys on it. You can type or enter data by pressing various keys on the keyboard. You will learn more about the keyboard in the next chapter.

Fig 1.10 *Keyboard*

➤ Mouse

A computer **mouse** is used to move the arrow or the mouse pointer on the computer screen. A mouse helps us point and select things on the monitor. You can enter or input data by clicking the mouse.

A computer mouse has two or three buttons. But nowadays **scroll mouse** is more popular. A scroll mouse has a wheel in the centre of the two buttons. This wheel is called the **scroll wheel**.

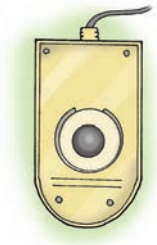


Fig 1.11 *Ball mouse (as seen from below)*

A mouse can be a **ball mouse** or an **optical mouse**. A ball mouse has a rubber or metal ball under it. The ball moves as you work with the mouse. An optical mouse has a red light under it. The optical mouse is better than a ball mouse.

Fig 1.12 *Optical mouse (as seen from below)*

You can perform different actions with a computer mouse. They are discussed here.

- **Left-click**. When you press and release the left mouse button, it is called left-click. Left-clicking the mouse button lets you select an item on a computer screen. For example, you left-click on the START button to activate it.

Fig 1.13 *Left-click*

- **Right-click**. When you press and release the right mouse button, it is called right-click. Right-clicking a mouse displays a list of options related to the clicked item.

For example, when you right-click the **My Computer** icon, it displays a list of options related to **My Computer**.

Fig 1.14 *Right-click*

- **Double-click**. When you quickly press and release the left mouse button twice, it is called double-click. Double-clicking opens the window or a program related to the clicked item.

For example, when you double-click the **My Computer** icon, it opens the My Computer window.

- **Drag-and-drop**. Drag-and-drop is used to change the position of an item.

For example, you can use drag-and-drop to change the position of an icon on the desktop.

➤ Scanner

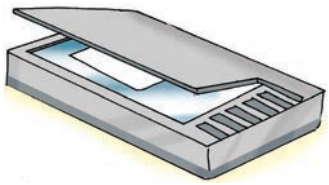


Fig 1.15 *Scanner*

Just as Xerox machine copies text and images from one paper to another, a **scanner** copies the text and images from a paper onto a computer. In other words, a scanner creates an electronic copy of the printed paper.

Fig 1.16 *Microphone*

➤ Microphone

A **microphone** is used to input sound into a computer. It can be used to record different sounds. For example, you can narrate a story and get it recorded on the computer using a microphone.

QUICK QUESTION

1. Match the following.

I	II
(i) a computer works by following this cycle	(a) double-click
(ii) device for copying text from paper onto computer	(b) microphone
(iii) quickly pressing the left mouse button twice	(c) keyboard
(iv) records the voice	(d) IPO cycle
(v) an input device used for typing	(e) drag-and-drop
(vi) to change the position of an object	(f) scanner

CPU

Fig 1.17 *CPU box*

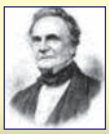
CPU stands for **C**entral **P**rocessing **U**nit. CPU is called the brain of a computer. CPU is responsible for processing the data given by the user. The process of changing the entered data into meaningful information is known as **processing**. CPU is always kept inside a box called the **CPU box**. All the parts of the computer are connected to the CPU box through wires.

CPU is made up of three main parts. They are:

1. Arithmetic and Logical Unit (ALU)
2. Control Unit (CU)
3. Memory Unit

QUICK FACT

Charles Babbage is known as the Father of Computers.



➤ Arithmetic and Logical Unit (ALU)

All the calculations in a computer are done by **ALU**. It performs arithmetic calculations like addition, subtraction, multiplication and division. It also performs logical operations like .nding the greater number (>), smaller number (<), etc.

➤ Control Unit (CU)

CU works like a supervisor or a manager and checks that all the computer operations are taking place correctly. It controls the working of all the parts of a computer.

➤ Memory Unit

CPU stores all the data and instructions that need to be processed in **the memory unit**. The memory unit then passes this data and instructions to the ALU or CU.

OUTPUT DEVICES

The output devices are used to display the results of processing to the user. For example, monitor, printer, speakers are output devices.

➤ Monitor

Monitor looks like a TV screen. The actions that you perform using a mouse or a keyboard are displayed on a monitor. You can also view pictures and cartoons using the monitor.

Monitor is also known as **VDU**. VDU stands for **Visual Display Unit**. There can be two types of monitors.

1. **Cathode Ray Tube monitors (CRT)**
2. **Thin Film Transistor monitors (TFT)**

Fig 1.18 *TFT monitor*

Fig 1.19 *CRT monitor*

These days, the computer systems come with TFT monitors as they occupy less space and emit less heat.

➤ Printer

A **printer** transfers the information that you see on a monitor onto papers. The printed paper is called the **printout**. Some printers can print only in black and white while others can print in any colour.

There are various types of printers available in the market. For example, dot-matrix printer, inkjet printer and laser printer. Of these, laser printers work very fast compared to other printers.

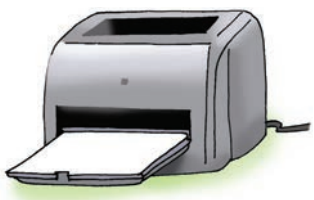


Fig 1.20 *Laser printer*

Fig 1.21 *Inkjet printer*

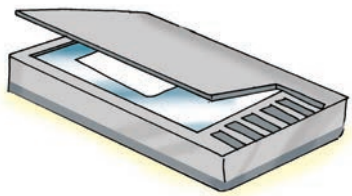


Fig 1.22 *Dot-matrix printer*

➤ Speakers

You can listen to music and sound effects using speakers.

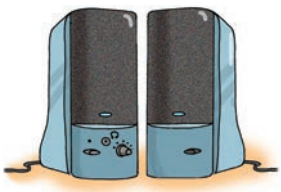


Fig 1.23 *Speakers*

STORAGE DEVICES

You may need to store the results of processing so that you can use them later. The devices used for storing data are known as **secondary storage devices** or **storage media**.

Fig 1.24 *Hard disc*

➤ Hard Disc

Hard disc is the main storage device of a computer. It is present inside the CPU box. It can store large amounts of data. All the work done on a computer can be stored on the hard disc. Later in the book, you will learn to save your work on the hard disc.

➤ CD

CD stands for **Compact Disc**. CDs are circular in shape and can store lots of data. They can be easily carried from one place to another. Most of the programs and games that you use on your computer are also available on CDs.

Fig 1.25 *CD*

Fig 1.26 *DVD*

➤ DVD

DVD stands for **Digital Versatile Disc**. A DVD looks like a CD but can store more data than it. You can store many movies in a DVD.

➤ Pen Drive

Pen drive is a storage device which is very small in size. It can be easily carried in a pocket or bag. Pen drive can be used to store and transfer data from one computer to another.

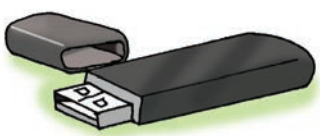


Fig 1.27 *Pen drive*

QUICK QUESTION

2. Who am I?

(a) I am the brain of a computer. — P —

(b) I give you output on paper. — R — — T — —

(c) I am an output device that displays pictures. M — — — T — —

(d) I perform arithmetic and logical calculations. — L —

(e) I control other parts of the computer. — O — — R — L UNIT

(f) I can store lots of movies for you. — V —

HARDWARE AND SOFTWARE

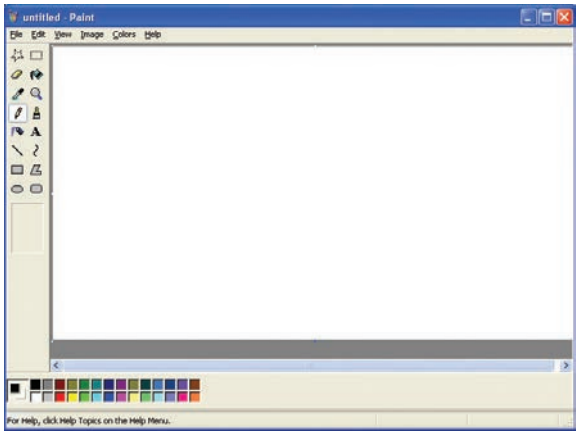
The various components that make up a computer system can broadly be classified into hardware and software.

➤ Hardware

Hardware refers to the physical parts of a computer that you can touch and feel. All the devices that we have discussed such as keyboard, monitor, CPU, hard disc are examples of hardware.

➤ Software

Hardware alone cannot perform any function. It has to be given instructions. A set of instructions given to the computer to perform a given task is called a **computer program** or **software**. For example, MS Paint, Notepad, Microsoft Word are software, **(Fig 1.28)**.



MS Paint

Fig 1.28 *Example of software*

Recap Time

- A computer is a very useful electronic machine that works according to the instructions given by us.
- Computers are used at many places like homes, schools, banks, offices, hospitals and for scientific research.
- A computer works by taking input, processing it and giving the output. This is known as Input-Process-Output (IPO) cycle.
- CPU is responsible for processing the data given by the user.
- The input device is used to receive data or instructions from the user.
- The output device is used to display the results of processing.
- The storage devices, such as, hard disc, CD, DVD and pen drive are used for storing and transferring data.
- Hardware refers to the physical parts of a computer that you can touch and feel.
- Software is a set of programs or instructions given to a computer to perform a task.

Answer to Quick Questions

1. (i)–(d), (ii)–(f), (iii)–(a), (iv)–(b), (v)–(c), (vi)–(e)
2. (a) CPU, (b) PRINTER, (c) MONITOR, (d) ALU, (e) CONTROL UNIT, (f) DVD

Assessment Time

1 **Circle the correct answer.**

(a) TFT stands for

(i) Thick Film Transistor. (ii) Thin Flat Transistor.

(iii) Thin Film Transistor. (iv) Thick Flat Transistor.

(b) A _____ is used to input sounds into a computer.

(i) speakers (ii) microphone

(iii) printer (iv) CPU

(c) _____ copies text and images from a paper onto a computer.

(i) printer (ii) scanner

(iii) hard disc (iv) microphone

2 **Tick (✓) the correct statement and cross (X) out the wrong one.**

(a) A scanner is an input device. ☐

(b) The results of processing can be displayed with the help of output devices. ☐

(c) It is very difficult to carry a pen drive because of its large size. ☐

(d) A DVD can store more data than a CD. ☐

(e) The Control Unit (CU) of CPU performs the mathematical and logical operations. ☐

(f) A microphone is an example of an output device. ☐

3 **Fill in the blanks using the words given below.**

Software	Input	CPU	Storage	IPO	Control Unit

(a) A computer works by following the _____ cycle.

(b) A set of instructions given to the computer to perform a task is known as _____.

(c) The processing of instructions is done by the _____.

(d) The _____ controls the working of other parts of the computer.

(e) Keyboard and mouse are example of _____ devices.

(f) Hard disc and pen drive are examples of _____ devices.

4 **Find the odd one out.** ***One has been done for you.***

(a) scanner, keyboard, printer, mouse — **printer**

(b) pen drive, CD, mouse, DVD — _____

(c) monitor, MS Paint, hard disc, keyboard — _____

(d) control unit, memory unit, input unit, ALU — _____

(e) printer, monitor, speaker, microphone — _____

(f) left-click, dragging, typing, right-click — _____

5 **Give the full form of the following.** ***One has been done for you.***

(a) CPU **Central Processing Unit**

(b) DVD _____

(c) CU _____

(d) CD _____

(e) IPO _____

(f) ALU _____

6 **Answer the following questions.**

(a) What do you understand by IPO cycle? Give an example.

_____

_____

(b) Name the different components of Central Processing Unit.

_____

(c) Define output devices. Give an example.

_____

_____

(d) How is hardware different from software?

_____

_____

(e) Name any two storage devices.

_____

Activity Time

1. Visit your school computer lab and make a list of the various hardware devices present in the lab. Then classify the hardware devices into input, output and storage devices.
2. Write the names of software programs used by you. (*Hint:* Games that you play are also examples of software)

Notes for the Teacher

- Teacher should familiarise the students with the various input and output devices.
- Different types of monitors (CRT and TFT) and printers can be shown to the students.
- The IPO cycle could be explained by giving more real-life examples.