



2

HARDWARE AND SOFTWARE

CHAPTER OBJECTIVES

- Hardware
- Software

We have learnt that a computer is a helpful electronic device that processes information or data. It has the ability to store, retrieve and process data. It is capable of doing different types of jobs at the same time. Various elements combine together to create a complete computer system.

A computer system consists of two major elements:

1. HARDWARE
2. SOFTWARE

! IMPORTANT FACT

Hardware is directed by the software to execute any command or instruction.

HARDWARE

The collection of elements that we can physically see and touch is known as Hardware.

Let us compare it with our body. As we already know, a human body is made up of different parts like eyes, ears, nose, arms, legs etc. All these parts can be seen and touched. The outer parts of a body are visible but the inner parts like brain, lungs, heart etc. are not normally visible. Similarly, in a computer, we can see these parts of the hardware that are outside, such as the monitor and the keyboard etc. They are attached to the CPU by cables. Some hardwares like the mother board, RAM and the hard disk are inside the CPU. They become visible only when the cabinet of the CPU is opened up.

Computer hardwares can be divided into the following categories:

- (i) Input Devices
- (ii) Output Devices
- (iii) Storage Devices

! IMPORTANT FACT





A combination of hardwares and softwares forms a perfect computing system.





INPUT DEVICES

The input devices allow us to communicate with the computer. They are used to enter data and give instructions to the computer. We have already discussed about the Keyboard and the Mouse in the previous chapter. In this topic, we will learn about more input devices:

Input Devices	Image	Description
Scanner		Scanner is used to scan the text or pictures and send the scanned data to the computer. It captures images from the physical items and converts them into digital formats. Scanners are of three types – Flat Bed scanner, Sheet Bed scanner and Hand Held scanner.
Light Pen		Light pen looks like a normal pen that can be used on a special pad. Whatever we write with it gets displayed on the screen. It can be used to point or select an object or text and to draw pictures. It is also known as a STYLUS.
Joystick		Joystick is mainly used for playing games. It helps to move the selected item on the screen.
Trackball		Trackball is an input device which consists of a small box with a ball on its top. When you move the ball with your thumb, the pointer moves along with it on the screen.
Microphone		Microphone is used to record audio signals in the computer. Its short form is Mic. It is used to accept input in the form of audio signals.
Web Camera		Web Camera is used to share pictures and also for having live chats with friends and relatives via internet. It can also be used to take photographs.





Track pad



Track Pad or Touch pad is an input device which is mostly used in Laptop computers. A track pad is designed to be controlled with your finger.



Digital Camera



Digital Cameras are used to take photographs or videos, which are stored in it digitally or on a removable computer memory.



OUTPUT DEVICES



Output devices are used to send data to other users. Usually, a display device is considered as an output device because it displays the texts, graphics and other information. We will learn more about some output devices.



Output Devices	Image	Description
<h3>Monitor</h3>		<p>Monitor is an output device that displays information in visual form. This information is known as a soft copy. A monitor looks like a television screen. When you type something on the keyboard, it is displayed on the monitor screen. Monitor is also known as VDU. VDU stands for Visual Display Unit.</p>
<h3>Printer</h3>		<p>Printer is used to produce a hardcopy of the output. Hardcopy means output in a printed form on a sheet of paper. The hardcopy is called the printout. Some printers can print only in black and white while others can print in any color.</p>
<h3>Speakers</h3>		<p>Speakers are used to produce output in the form of audio signals. You can hear the recorded sound or audio file with the help of speakers. You can increase or decrease the volume of the audio according to your needs.</p>





STORAGE DEVICES

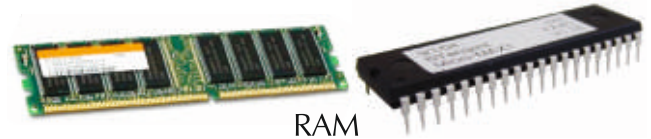
A Storage Device is a computer hardware that is used to remember/store data. It is also known as Memory. There are two types of memories.

1. Primary Memory/Internal Memory/Main Memory
2. Secondary Memory/External Memory

❖ **Primary memory** is used to store data. This type of memory has a limited capacity. It's data accessing speed is faster than the secondary memory.

(a) RAM (Random Access Memory)

(b) ROM (Read Only Memory)



❖ **Secondary memory** refers to an external storage device that can be used to store data or information permanently. It contains programs and data that is currently not needed by the CPU for processing. It includes:

i) Hard Disk

ii) Compact Disk

iii) DVD

iv) Pen Drive, etc.

! IMPORTANT FACT

Most storage devices use either magnetic or optical storage media.

Hard Disc		Hard disk is a non-volatile magnetic storage device and can store large amounts of data.
Compact Disc		CD or Compact Disc is an optical storage medium for bulk storage of data. It is a shiny circular plate that is used to store large amounts of data.
DVD		DVD or Digital Versatile Disc is a digital optical disk that can store any kind of digital data. A DVD can hold more data than a CD. A CD uses only one side of the disk to store data but a DVD uses both the sides.





Pen Drive



Pen Drive is a small and portable storage device. It is used via the USB port of a computer. It can be easily carried in a pocket or a bag.



Identify these devices and write down their names.



SOFTWARE



A Software is a set of instructions, data or programs used to operate computers and execute specific tasks. A hardware cannot function without the software, while without the hardware, the software cannot perform the required tasks. Both are interdependent on each other.



Let us understand software with the help of an example.



You all must have seen and used a music system. Parts like the speaker, CD and DVD etc, which we can touch, are the hardware. Can you touch the music or songs recorded on a CD or a DVD? No, because that is softwares. A CD or a DVD is a hardware, but the songs, music or movies which are stored in it are software and they cannot be touched.



So, software as we described, comes in the form of applications and programs. They follow a set of instructions to perform certain tasks. For example, Paint, Tux Paint, Notepad and Microsoft Word are softwares. There are



There are two types of softwares. There are :

1. System Softwares
2. Application Softwares

! IMPORTANT FACT

A software is created using high-level programming.





SYSTEM SOFTWARE

System software is a type of computer program that is designed to run a computer's hardware and application programs. The system software is the bridge that connects a user of a computer with the hardware. It is basically the driver of a computer.

The operating system is the best known example of system software. It allows you to use the computer system and work on it.

Windows 7, Windows 8, Windows 10, UNIX, LINUX, MS DOS are some examples of operating systems.

APPLICATION SOFTWARE

Application software is a program or group of programs designed for computer users. It helps us to do a specific type of work. Application softwares include database programs, word processors, web browsers and spreadsheets.

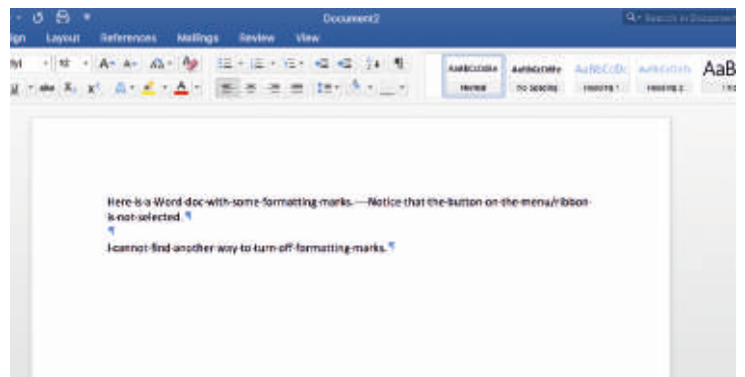
For example : Look at the figure. This is a microwave oven. It performs a specific task i.e. to cook and bake food. You cannot perform any other tasks with it like washing utensils or making shakes.



Microwave Oven

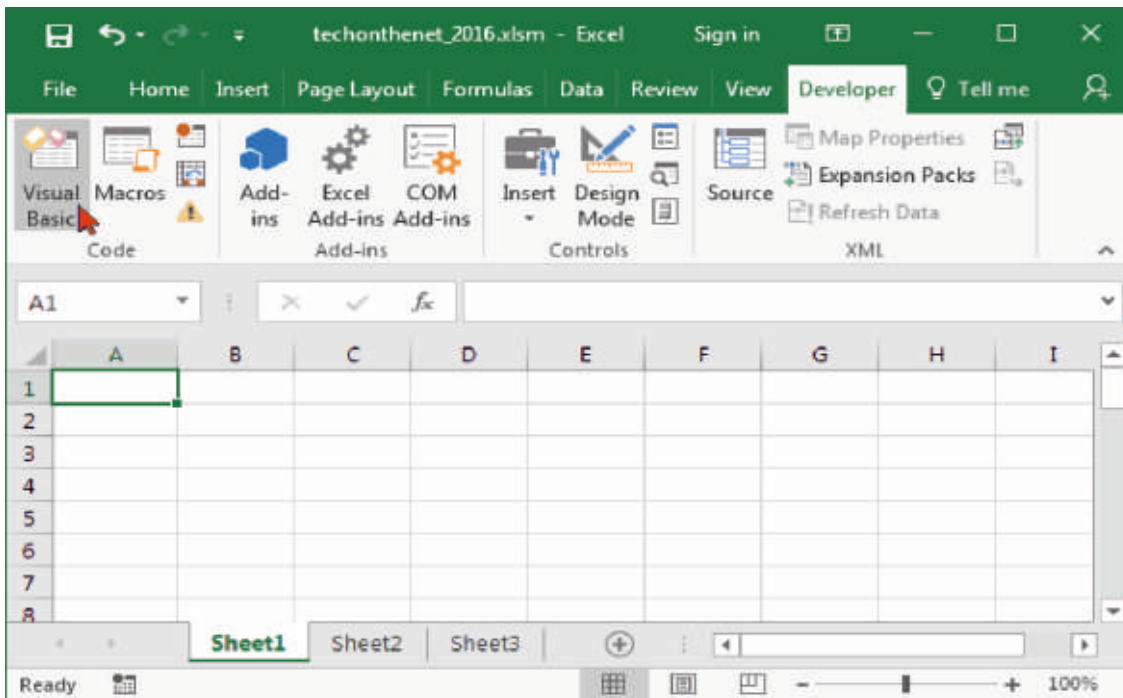
Types of Application Softwares

1. **Word Processing Software:** This software is used to create, edit, format and print a document. Some examples of word processing software's are MS Word, Word Perfect, Open Office etc.
2. **Spreadsheet Software:** A Spreadsheet software is an application that is capable of organizing, storing and analysing data in a tabular form. Some examples of Spreadsheet software's are MS Excel, PySpread, Lotus 123, VisiCalc etc.



A MS Word Document

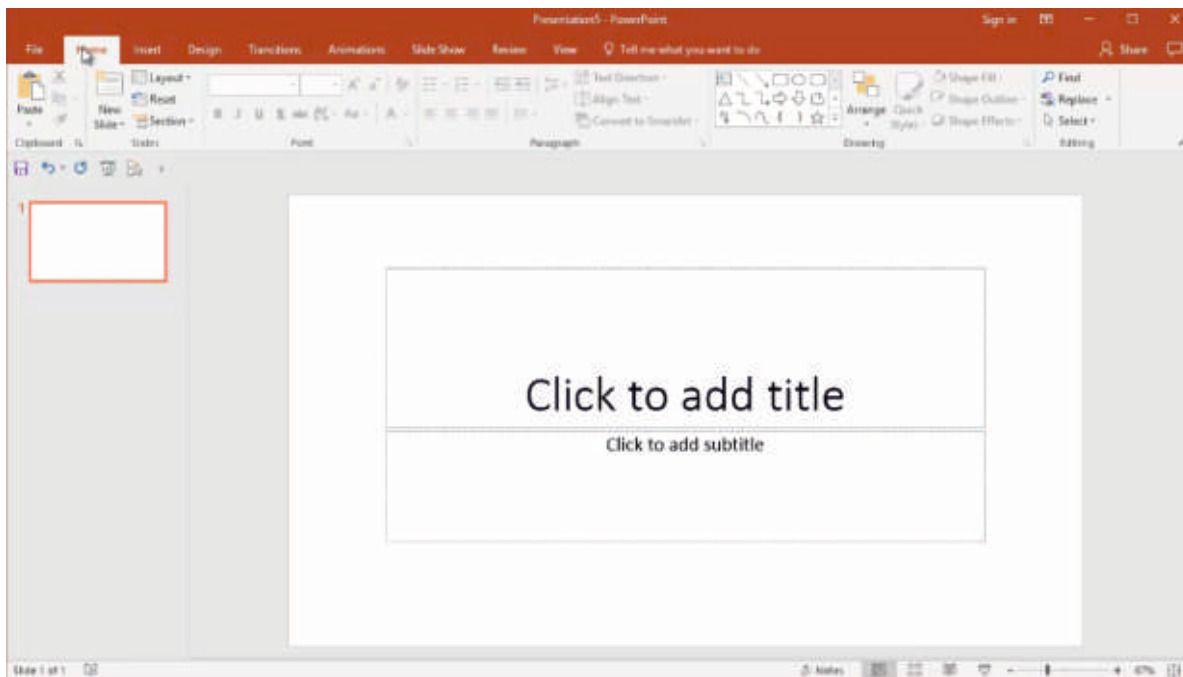




The MS Excel Program

- 3. **Presentation Software:** A Presentation software is used to display information in the form of a slide show.

Some examples of presentation softwares include MS PowerPoint, FlowVella, Prezi etc.



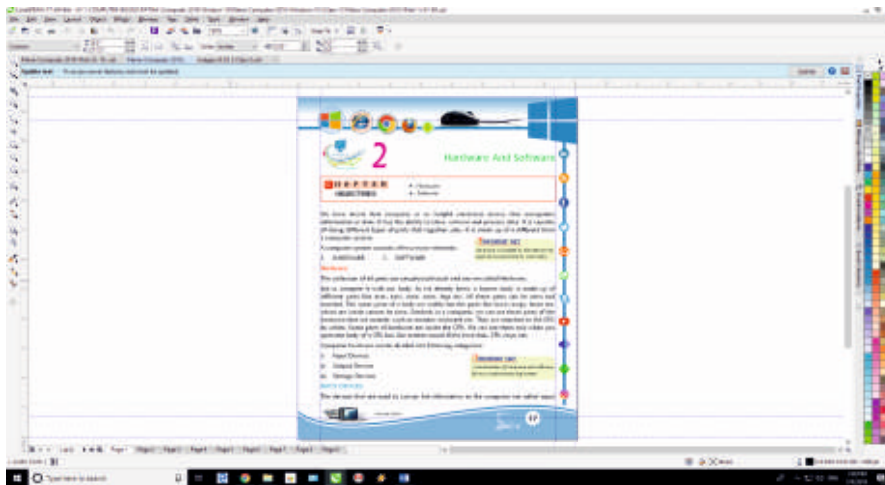
The MS PowerPoint Software





4. **Desktop Publishing Software:** Desktop Publishing software is an application meant for graphic designers and non-designers to create visual communication such as brochures, business cards, posters, web pages, greeting cards and more.

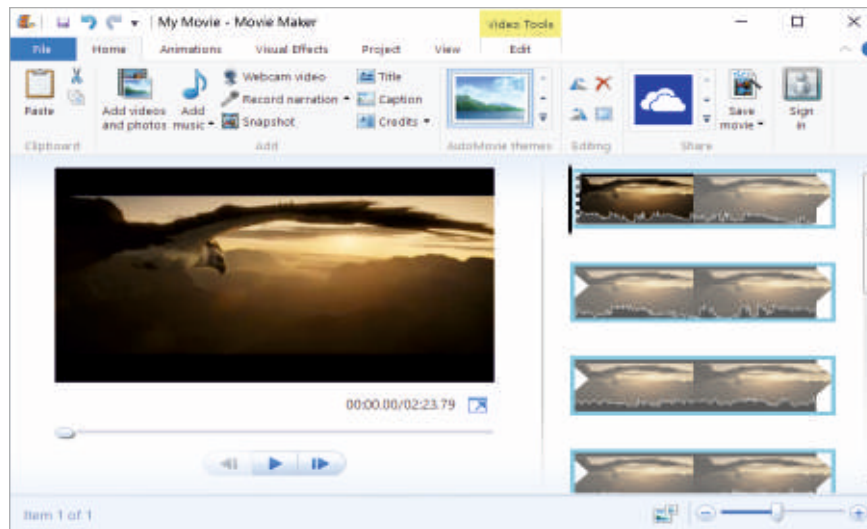
Some examples of desktop publishing softwares include Microsoft Publisher, Scribus, Corel draw, Adobe InDesign etc.



Microsoft Publisher

5. **Multimedia Software:** These software's help in the creation of multimedia content and in enhancing the visual and auditory features of existing material. These can be used to create movies, videos, animations, cartoons, etc.

Some example of Multimedia software's include Adobe Flash, Windows Movie Maker, Adobe Premier etc.



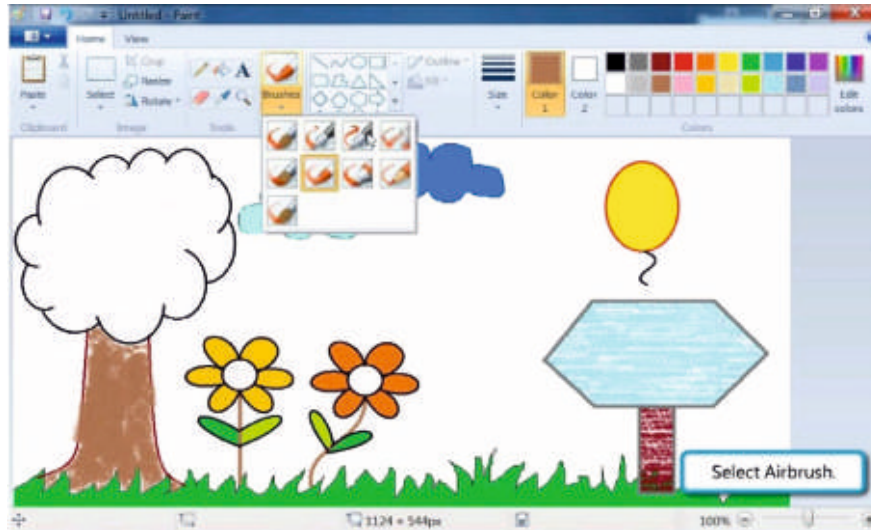
The Movie Maker Software





6. **Graphics Software:** These softwares are used to create graphics such as images, photographs, logos, charts, graphs etc. They can also be used to edit images and graphics.

Some examples of graphics software's are Paint, Photoshop, Adobe Illustrator etc.



The MS Paint Graphics Software

Snapshot

- ◆ A computer system consists of two major elements – Hardware and Software.
- ◆ The collection of all parts that we can physically touch and see are called hardware.
- ◆ Computer Hardware includes input, output and storage devices.
- ◆ The devices that are used to convey the information to the computer are called input devices.
- ◆ Output devices are used to display/print the output. Example: Monitor, Printer etc.
- ◆ Storage devices are a type of computer hardware that are used to store data. They are also known as Memory.
- ◆ ROM and RAM are the two types of primary memory.
- ◆ Secondary memory includes Hard Disk, Pen Drive, CD, DVD etc.
- ◆ A Software is a set of programs.
- ◆ A System software is a set of programs that helps in the core running of a computer system. Example: Operating System
- ◆ Application software is a program or a group of programs designed for the users. Example : MS Word, MS Excel.





CHECK YOUR KNOWLEDGE



A. Tick (✓) the correct option.

- What is processed data ?
 a. Input b. Output c. Data
- Hardware is the part of a computer system.
 a. Transparent b. Logical c. Physical
- What type of memory is RAM ?
 a. Main b. Internal c. External
- Which of the following is a Secondary Storage device?
 a. ROM b. DVD c. Track Ball
- acts as an interface between a user and the computer hardware.
 a. Operating System b. Hard Disk c. MS Power Point



B. Fill in the blanks by choosing correct words from the brackets:

- Read Only Memory is in nature. (volatile/non-volatile)
- is a multimedia software. (Corel Draw/ Windows Movie Maker)
- Application softwares is used to perform some tasks. (general/ specific)
- Microphone is used to record an (audio/video)
- is used to create presentations. (MS PowerPoint/ MS Excel)





C. State True or False:


- Light pen is also called a STYLUS.
- The Trackball is used as a mouse and therefore is an example of an output device.
- A Pen Drive is small in size, light in weight and can be carried easily.
- A user manual instructs you on how to use a software.
- An Operating System does not allow us to use a computer system and work on it.





D. Write two sentences about the given pictures given below. First name them.

1. 

2. 

3. 

4. 

5. 

E. Answer the following questions.

1. In which two general groups can a computer system be categorized?

2. What do you understand by Hardware? Give examples.

3. Define the term Software. Name its types.

4. What are Output devices?

5. What are Input devices ? Explain.

6. Define a Operating System.





7. What is the difference between a System software and an Application software ?

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8. What are the functions of an Operating system ?

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Activity Time

For Teachers:

- ❖ Explain the differences between a hardware and a software, to the students.

For Students:

- ❖ Divide the class into two groups and discuss the topics – hardware and software.
- ❖ Write about any five hardware and softwares that you have come to know about.

Hardware

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Software

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My Activity

Read the given clues and find the words from the word grid.

- The unit that stores information.
- Information that we get after processing.
- A device used to type numbers, letters or words.
- A device used to store huge amount of data and information.
- A device used to hear sounds and music stored in a computer.
- A device used to record audio signals in a computer.
- A device that can read words, pictures or numbers from a paper and store them in a computer.

S	S	T	S	P	E	A	K	E	R	S	M	A
T	C	U	A	M	T	E	Y	Z	E	Z	N	W
J	A	J	K	E	Y	B	O	A	R	D	B	S
E	N	F	E	M	K	P	W	O	G	U	E	X
H	N	E	U	O	L	L	E	S	S	D	W	D
W	E	W	N	R	A	O	U	T	P	U	T	E
N	R	R	Z	Y	V	X	G	T	A	U	Z	R
M	E	M	O	R	Y	U	N	I	T	Y	X	T
G	O	H	A	R	D	D	I	S	K	T	D	F
M	I	C	R	O	P	H	O	N	E	R	E	G

