

Computer Hardware and System Start up

Key Learning Outcomes;

By the end of this chapter, learners should be able to:

- a) know the physical devices of a computer system and how each operates.
- b) assemble a computer system.
- c) safely start and shut down a computer system.
- d) use computer peripheral tools.

Key words

1. Hardware
2. Device
3. Booting
4. Peripheral

Introduction

In this chapter you will learn about the physical parts of the computer and their use in everyday life.

Different parts of a computer are assembled to make a complete system. These parts may be manufactured by the same company or different companies.

Some of the hardware parts are internal components (within the system case) while others are peripherals (externally connected to the system case through a port).

As a computer user, you should know how to assemble the hardware parts and safely start the computer.

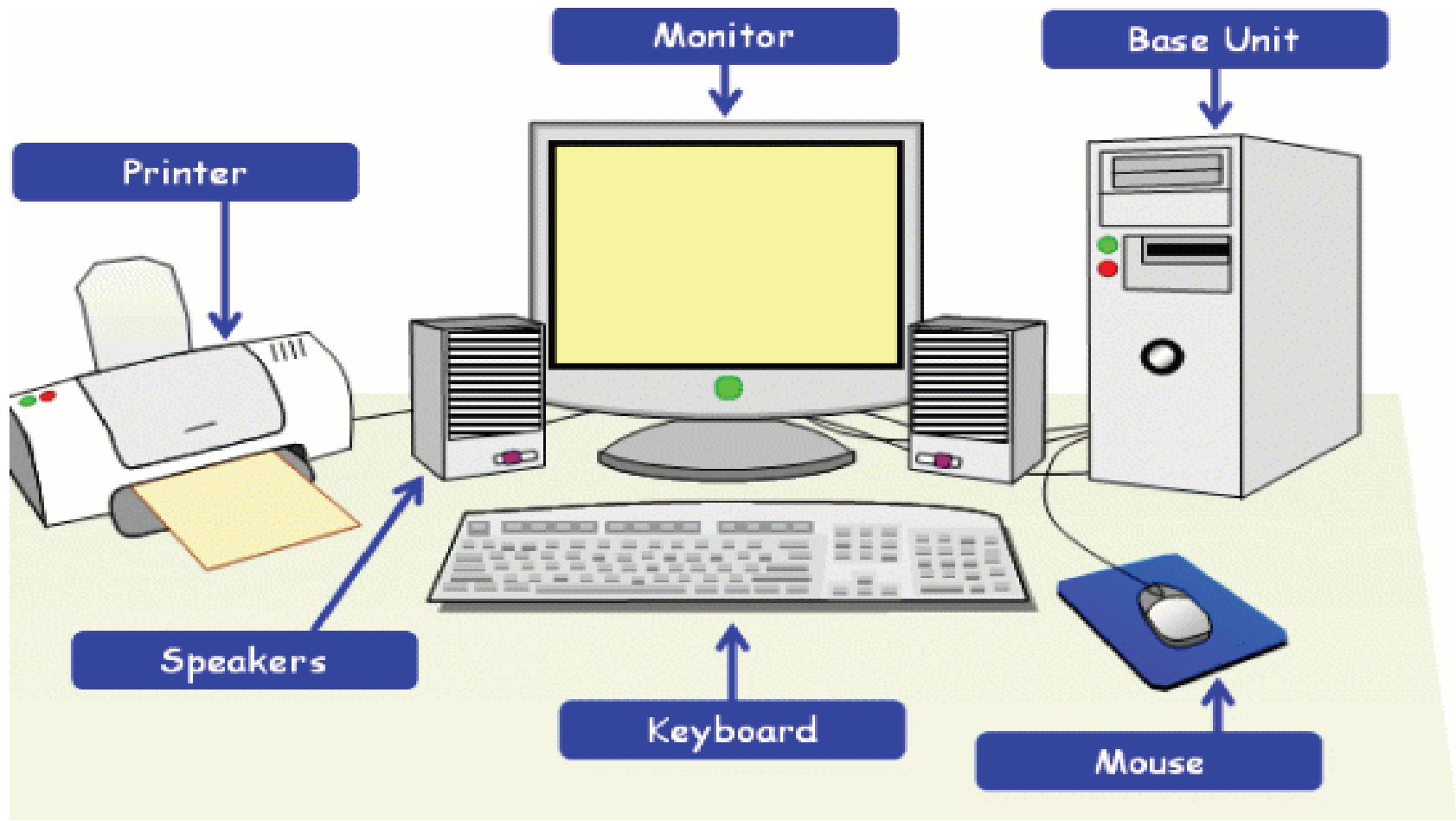
Computer Hardware parts



Meaning of Computer Hardware

Have you ever used a desktop computer? You realize that there is not any single part called a Computer. Generally, a computer is a system of many parts working together as shown in **Figure 2.1. below**

Computer Hardware



Meaning of Computer Hardware

The *tangible parts that you can touch and feel such as the monitor, keyboard, mouse, disk drives, printer, scanner and speakers*, are collectively referred to as **hardware**.

The opposite of hardware is **software, which refers to the instructions or programs that tell the hardware what to do.**
Software is intangible.

Computer Hardware

Imagine you have been asked to type and produce a letter inviting your head teacher a debating competition in your class on Tuesday at 2:00pm in the main hall.

In this case, you can use a keyboard for typing, a mouse for controlling the cursor on the screen (these are input devices), the printer will be used to produce a hard copy of the work seen on the screen (output). Storage is done within the system unit where a harddisk is the one responsible for this activity.

Activity 2.1: Parts of a computer

1. Discuss and identify whether use of each of the devices labeled in **Figure 2.1** is an input, output, storage, communication or processing device and summarize your findings in the table below:

Label	Name of Device	Category
1	Mouse	Input
2		
3		
4		
5		
6		

Categories of Computer Hardware

Hardware devices are categorized according to their functions. The various hardware categories include **input, storage, processing , output, and communication devices.**

Input devices are used for entering data or information into the computer after which other processes can follow. **Output hardware** is used for producing or displaying information which can be in form of a soft copy or hard copy. **Storage devices** are used for storing data or information for future use. The storage devices can be inside the computer itself (internal) or can be external to the computer. Sometimes storage devices can be looked at in terms of the methods used to store data on them. For example, can you compare a flash disk and a CD? The method of storing data on each of these devices is different.

Activity 2.2: Categories of Computer hardware

1. What is the difference between a soft copy and a hard copy?
Give examples to support you answer.

HARD COPY	SOFT COPY

Activity 2.2: Categories of Computer hardware

2. Move around the computer laboratory or any office in your school and identify other computer hardware devices other than those mentioned in 1) above. Summarize their details in terms of *Name, features, function and category*.

Name	Features	Function	Category

Activity 2.2: Categories of Computer hardware

3. Identify at least one device in each category and demonstrate how it works.

Assembling a Computer System

At the beginning of this chapter, you looked at hardware devices which can be categorized as input devices like mouse, keyboard, microphone, camera; Output devices like monitor, printer, projector, speakers; Storage devices like hard disks, flash disks compact disks; processing devices like a CPU. Some of these devices are summarized in **Figure 2.2 below**.

Figure 2.2: Some examples of computer hardware



Continued

When these devices are connected together, they make a computer system. For a computer system to work well, the above hardware devices must be connected properly. For instance, a keyboard, mouse, monitor should be connected to the System unit, the system unit and monitor then connected to power directly to the sockets or through a UPS by use of power cables.

If you are setting up a newly purchased computer, you will probably find a **how-to use or a user guide in the packaging that includes step-by-step details. However, even if it does not include instructions, you can still set up the computer in just a few easy steps.**

A typical computer Laboratory



Activity 2.3: Assembling a Computer System (Desktop)

1. With guidance from your teacher, assemble a computer system from its various parts provided in the computer laboratory. You can make reference to the guidelines below.

Guidelines

Step 1: Check whether all the devices required are available.

Step 2: Locate the monitor cable. It will usually be either a VGA or DVI cable.

VGA cables will often have **blue connectors** to make them easier to identify.

Step 3: Connect one end of the cable to the monitor port on the back of the computer case and the other end to the monitor. Hand-tighten the plastic covered screws on the monitor cable to secure it.

Step 4: Connect other devices by critically looking at the port types.

Step 5: Locate the power supply cables. Plug the first power supply cable into the back of the computer case, and then into a surge protector. Then, using the other cable, connect the monitor to the surge protector.

Step 6: Finally, plug the surge protector into a wall outlet. You may also need to turn the surge protector on if it has a power switch.

Activity 2.3: Assembling a Computer System (Desktop)

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2. Explain any key steps followed to assemble a computer system in 1. above.

Activity 2.3: Assembling a Computer System (Desktop)

3. What precautions must be taken while assembling a computer system?

Setting up a laptop computer

If you have a laptop, setup should be very easy. Just open it up and press the power button. If the battery is not charged, you will need to plug in the **AC adapter and charge it before using it.** If your laptop has any **peripherals, such as external speakers, you may want to read the** instructions below, since laptops and desktops generally use the same types of connections.

Starting and Shutting down a Computer System

After assembling a computer (see Figure 2.3), the next step is how it can be powered on correctly, used and then shut down with proper procedures. The process of starting a computer is called **booting**.

Figure 2.3: A computer system ready for startup



Stape 1 : Switch ON the pawar button to which your computer is plugged in.

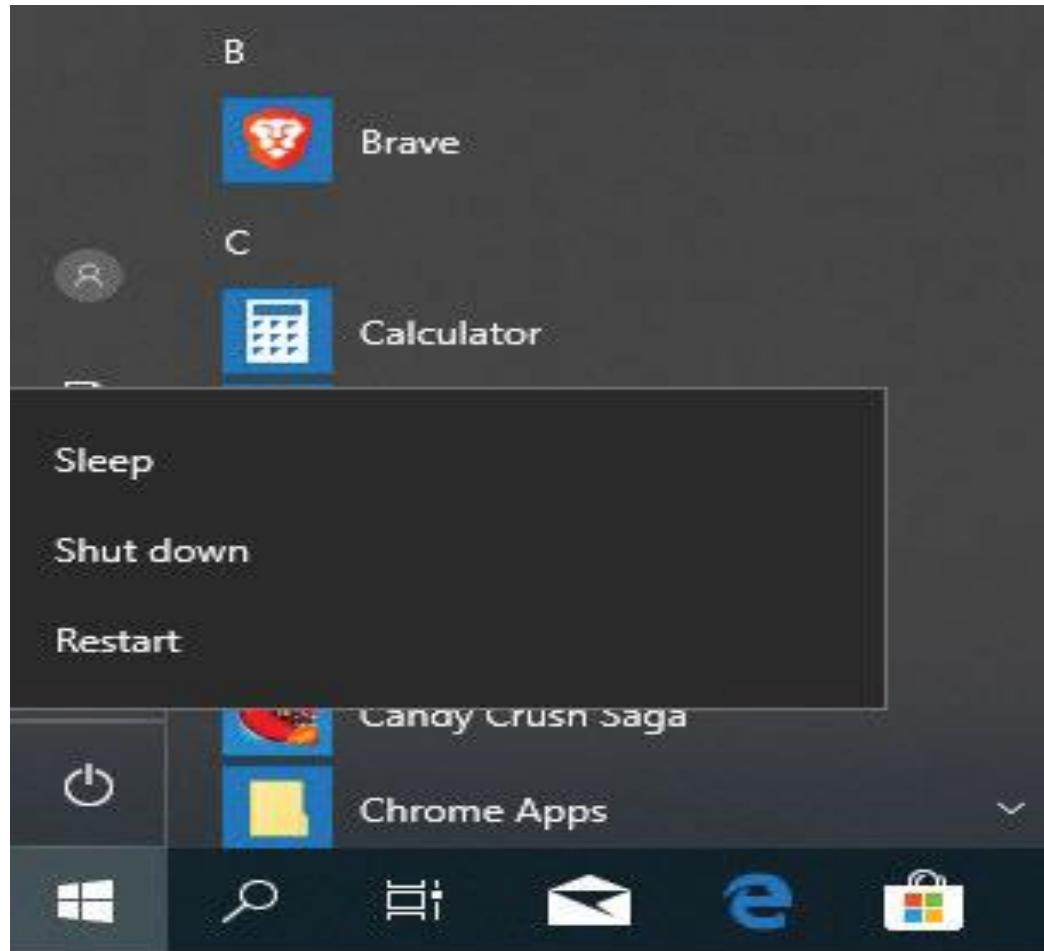
Starting the computer

1. Make sure all the plugs are well connected.
2. Switch on the electricity socket and the Uninterruptible Power Supply Unit.
3. Press the power button on the computer monitor first. It should show signal.
4. Press the power button on the system unit.
5. The computer should now start to boot and load windows.
6. If the welcome screen appears, select your username and enter the password.
7. The Desktop should now appear.
8. Give it time to load the elements and start up programs.

Shutting down a Computer System

1. Turn Off Computer option is Located on the Start menu.
2. The Turn Off Computer dialog has the Turn off the computer, Standby/Hibernate, and Restart Option.
3. Log Off and Switch User options are also located on the Start menu.

Shutting down a Computer System



Procedures of Shutting down a Computer System

Outline the steps of shutting down a computer system

Activity 2.4: Starting and shutting down a Computer System

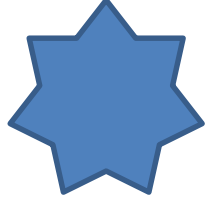
1. Explain the logical order of switching on the assembled computer system and how it can be shut down properly.

Activity 2.4: Starting and shutting down a Computer System

2. Starting from a fully connected computer system, demonstrate how a computer can be switched on and later switched off after use.

Activity 2.4: Starting and shutting down a Computer System

3. What precautions **MUST** be considered in 2) above.



Activity of Integration

Sazamwe Secondary School is planning to have a careers day to sensitize S.1 students about the importance of vocational subjects. The 100 students of S.1 will assemble in the main hall which has a power supply. The career's teacher will share pictures and videos showing areas where various subjects are applicable.

Task

Advise the career's teacher on which computer hardware devices will be needed and how they work to support her presentation to the students.

Assessment Grid

Chapter Summary

In this chapter, the learners have learnt about:

- a) The physical devices of a computer system and how each operates.
- b) How to assemble a computer system.
- c) Safely starting and shutting down a