

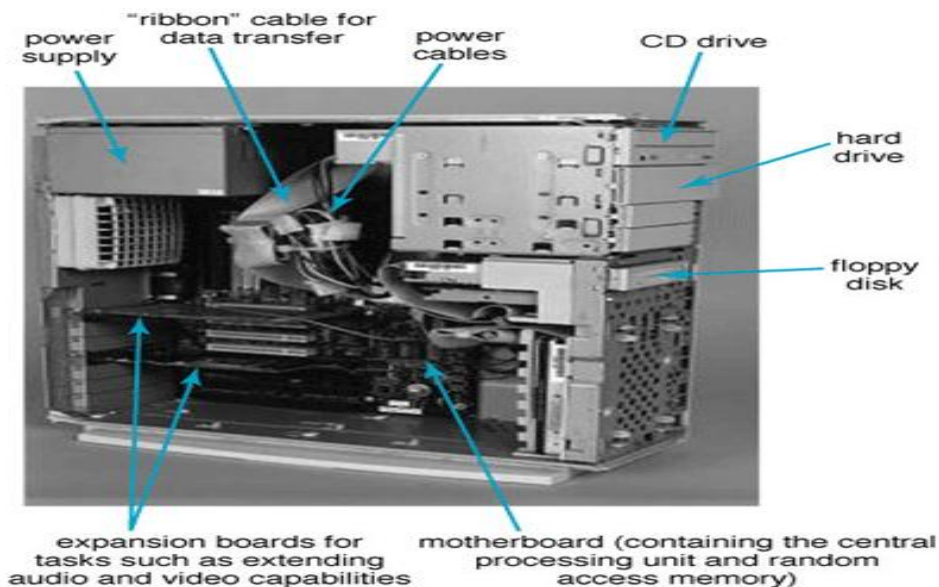
Hardware:

Main Parts of Computer:

It consists of the following:

1. The System Unit .
2. The Motherboard.
3. The Central Processing Unit CPU .
4. Memory Unit (RAM and ROM).
5. Input Unit .
6. Output Unit .

Figure 1.5 Computer Hardware Components



Source: James A. Folts Photography.

The System Unit :

This is the main case where the most important parts reside inside . One of the most important parts is the Motherboard . It is an electronic board where the Central Processing Unit CPU , the main memory RAM, and the Read Only Memory ROM reside . Inside case you will also find the Hard Disk and the CD/DVD Drive . on the outside from the back you will find the ports where Input /Output devices get connected . There are two forms of the unit case : Desktop and Tower .

The Motherboard :

An electronic Main board where all processing and memory units live . Motherboards come in all shapes and sizes . but recently they are becoming smaller and smaller .

The Central Processing Unit CPU :

The CPU is the most important piece in your computer . All processed information goes through the CPU . it does all the calculations and processing . your computer speed is measured by a measuring unit called Megahertz (MHz) and these days by Gigahertz (GHz), which is actually the speed of the internal clock . A 3.0 GHz clock means that it does 3 billion cycles in one second and the CPU can do 3 billion operations in a second .

Figure 5.1 Intel Pentium 4 Processor



Source: Intel Corporation.

Every CPU has three main parts :

1- The Control Unit (CU)

Which receive the instructions and send it to its destination .

2- The Arithmetic Logic Unit (ALU)

Which processes the logical and arithmetic operations such as addition and multiplication .

3- Registers: which store very small amount of data and instructions for short period of time

The Random Access Memory (RAM)

Is also called the main memory which contains three parts :

- 1-** The first part is for operating system (OS) .
- 2-** The second part is for programs to be executed .
- 3-** The third part is for data . (i.e. your letters ,emails , and other variables which are usually reserved by your running programs) .

The Read Only Memory (ROM):

Is a memory for reading only . Data located on ROM stays on it after the PC is Shut off , while data on RAM is volatile which means it will disappear once the PC is shot off .

Input Units :

These are hardware parts which are used to feed commands and data into the computer.



1- Bar code reader

A bar code reader is a device that can read and interpret bar codes and input the data into the computer.

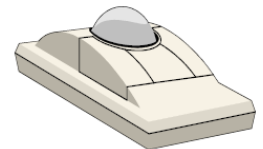


2- Lightpen

A light pen is a device which is sensitive to variations in patterns on a surface. Light pens act like a miniature scanner and can read text as they are dragged across the printed page. This can be transferred directly to the current open document.

3- Touchpad

A touchpad is a device that senses pressure to guide the pointer on the computer screen. It is generally a small square area below the keyboard.



4- Trackball

A trackball acts as a type of overturned mouse. The ball is on the top side of the object. By rolling the ball you can move the pointer across the screen. Some keyboards have an in-built trackball.

Output Unit :

These are hardware parts that the computer uses to send us the results of the processing.

1- Monitors

are the video screens used with most computers that display input as well as output.

There are two categories of screen:

- ✓ **CRT screens:** The cathode ray tube (CRT) type screen is usually called a monitor and makes use of the same technology as a television screen.
- ✓ **Solid state screens:** Solid state screens, also known as **LCD** or Liquid Crystal Displays, make use of tiny transistors to emit light and create an image.

2- Printers

Printers produce a hard copy of the output on paper. *There are three main types of printer:*

- ✓ *Dot matrix*
- ✓ *Inkjet*
- ✓ *Laser.* The following table compares the three types.

	Dot matrix	Inkjet	Laser
Initial cost	Low	Medium	High
Cost per printed page	Low	High	Medium
Speed	Low	Medium	High
High volumes	No	No	Yes
Noise level	High	Low	Low
Print quality	Low	Medium	High
Print graphics	No	Yes	Yes
Print in colour	No	Some	Some
Print source	Ink ribbon	Ink	Toner powder

3- Speakers

Modern computers using the appropriate software can turn text in a document into audible speech. This is known as **speech synthesis**. Other types of software allow music and other sounds to be created and played back.

Input/Output Devices

A *touchscreen* is a special type of screen in which the screen not only displays output but also responds to being touched.

example is their use in autotellers at banks. Part of the screen contains information. Other parts may contain a menu. When you touch one of the icons on the screen, the system responds to the associated command.

Computer Performance :

There are some factors which effect the computer performance like :

- 1- CPU Speed.*
- 2- RAM Size .*
- 3- Hard Disk Size and Speed .*
- 4- The Operating System .*

1- CPU Speed:

Today computers speed is measured by a unit called Giga Hertz (GHz) . This is actually the speed of the CPU , which measured the number of operations it processes in each second . A 2.8 GHz means it processes 2.8 billion instructions per second .

2- RAM Size :

Is another factor that affects the performance of the PC .When you click on a program for execution , Windows OS loads it into memory to run ; whoever , if the program is too large to fit in the memory .

3- Hard Disk Size and Speed :

Probably , these days the size of the hard disk is becoming less of a factor when it comes to the performance of the computer , but the speed is a good factor because the faster hard disk is the faster to load programs into the main memory .

4- The Operating System :

The OS is not part of the hardware ;however a buggy OS and full of problems will affect the performance of the PC terribly .