Parts of Computer and Storage Devices

By completing this module, you will be able to understand and learn the following:

- Definition of hardware
- Different parts of a Computer
- How Computers work
- Parts of a Computer
  - Control unit
  - ALU
  - Memory
- Input and output devices
- Storage Devices

Hardware:

The term **hardware** covers all of those parts of a computer that are tangible objects. Circuits, displays, power supplies, cables, keyboards, printers and mice are all hardware.

**Motherboard** - The motherboard is the main circuit board of a microcomputer. It is also known as the motherboard or system board.
CPU - The CPU is the central electronic chip that determines the processing power of the computer.

Memory - Memory is a part of the computer that temporarily stores applications, documents, and system operating information.

Bus - A bus is an electronic line that allows 1s and 0s to move from one place to another.

Expansion Slots - Expansion slots appear on the motherboard. They are sockets into which adapters are connected.

Ports and Connectors - A port is a connector located on the motherboard or on a separate adapter.

Bays - A bay is a space inside the computer case where a hard drive, floppy drive or CD-ROM drive sits.

Power Supply - A power supply changes normal household electricity into electricity that a computer can use.

Sound Components - A sound card lets a computer play and record high quality sound.

How computers work:

A general purpose computer has four main sections: the arithmetic and logic unit (ALU), the control unit, the memory, and the input and output devices (collectively termed I/O). These parts are interconnected by busses, often made of groups of wires.
Working Principle of computer:

Control Unit:

The control unit (often called a control system or central controller) directs the various components of a computer. It reads and interprets (decodes) instructions in the program one by one. The control system decodes each instruction and turns it into a series of control signals that operate the other parts of the computer.

Arithmetic/logic unit (ALU):

The ALU is capable of performing two classes of operations: arithmetic and logic.

The set of arithmetic operations that a particular ALU supports may be limited to adding and subtracting or might include multiplying or dividing, trigonometry functions (sine, cosine etc) and square roots.

Logic operations involve Boolean logic: AND, OR, XOR and NOT. These can be useful both for creating complicated conditional statements and processing Boolean logic.

Memory:

A computer's memory can be viewed as a list of cells into which numbers can be placed or read. Each cell has a numbered "address" and can store a single number. The computer can be instructed to "put the number 123 into the cell numbered 1357" or to "add the number that is in cell 1357 to the number that is in cell 2468 and put the answer into cell 1595". The information stored in memory may represent practically anything. Letters, numbers, even computer instructions can be placed into memory with
equal ease. Since the CPU does not differentiate between different types of information, it is up to the software to give significance to what the memory sees as a series of numbers.

Computer main memory comes in two principal varieties: random access memory or RAM and read-only memory or ROM. RAM can be read and written anytime the CPU commands it. But ROM is pre-loaded with data and software that never changes, so the CPU can only read from it. ROM is typically used to store the computer's initial start-up instructions.

**Input and output devices:**

**Input**

The input hardware allows the entry of data into the computer. The primary devices used are the keyboard and mouse.

**Keyboard** - The keyboard looks like the typewriter. A numeric keypad is located to the right of the keyboard. Numeric keys have the same placement as a 10-key calculator, which allow the operator to enter data rapidly.
**Mouse** - The mouse is a device that helps control the movement of the insertion point on the screen.

**Central Processing Unit (CPU)**

The central processing unit or (CPU) is the "brain" of the computer. It contains the electronic circuits that cause the computer to follow instructions from ROM (read only memory) or from a program in RAM (random access memory).

**Output**

Output devices such as a monitor or printer make information given as input available for use or to view.

**Computer Storage Devices**

Different kinds of computer storage devices are available for data storage. Storing data in such storage devices helps in avoiding use of too much space on the computer's hard drive.
They can also help to keep the computer's hard drive from crashing, along with keeping it running at top speed.

The most common storage devices are:

- Floppy Disks
- Zip Disks
- Compact Discs (CD) + RW
- CD + R
- Digital Video Disc (DVD) + RW
- DVD + R
- Flash/ Pen drive

**Floppy Disk** - They are plastic square disks, usually with a silver or black sliding piece going across the top. These disks come in a variety of colors and they hold about 144 million bytes (MB). (Bytes are characters, symbols and letters).

**Zip Disk** - They look like a floppy disk, but they are a little thicker. This disk also comes in a variety of colors and holds about 200 MB of data.

**CD + RW Disc** (Compact Disc Rewriteable) - This disc looks like a regular CD. The only difference is that we can write data on this disc and erase it as many times...
as we want. It works just like a floppy disk or a zip disk. A CD + RW disc holds about 650 MB.

**CD + R Disc** (Compact Disc Recordable) - This one is a CD that can be used to record data. It’s mostly used to record audio. Once it's been written on, it is not possible to rewrite or erase anything off it. This compact disc comes in different sizes, but they are usually silver in color. (Some CDs are black in color and they actually don’t get as many scratches on them as the silver ones do. They are also a lot less fragile).

**A DVD – R Disc** (Digital Video Disc - Recordable) - These discs hold the space of about 4.7 GB and are used to record movies.

**A DVD + RW Disc** (Digital Video Disc Rewriteable) The primary advantage of DVD-RW over DVD-R is the ability to erase and rewrite to a DVD-RW disc. According to Pioneer, DVD-RW discs may be written to about 1,000 times before needing replacement. DVD-RW discs are commonly used for volatile data, such as backups or collections of files. They are also increasingly used for home DVD video recorders. One benefit of using a rewritable disc is, if there are writing errors when recording data, the disc is not ruined and can still store data by erasing the faulty data.
**Flash Drive** - This a storage device that comes in many colors and has a stick shape to it. They are very small in size, but they can hold anywhere between 256 MB and 8 GB of material on them.

**The other storage devices are:**

- Removable Hard Drive
- Internet Hard Drive
- Flash
- PC Cards
- Smart Cards
- Storage Tapes
- Memory Sticks
- Smart Media

**Removable Hard Drive** - This is a disk drive in which a plastic or metal case surrounds the hard drive. It can be inserted and removed just like a floppy disk.

**Internet Hard Drive** - This one is a service on the Internet that provides storage space to computer users. This service offers about 25 MB of space, but it could be more, depending on the service type.
**PC Card** - This is a thin credit card size device that fits into a PC card slot, usually on a notebook computer. This card simply adds storage to most notebooks.

**Smart Cards** - These are the size of an ATM card. When inserted into a smart card reader, they can read and update data.

**Storage Tape** - This one is a magnetically coated ribbon of plastic, capable of storing large amounts of data at a very low cost. Usually, storage tapes are a little bigger than audio tapes. Older computers used tape and tape drives, but even today, some people still back their systems up with storage tape. These tapes hold between 20 GB to about 110 GB of data. An external tape drive can be purchased separately as well, but those are even harder to find.
Miniature Mobile Storage Media

This is used mostly with handheld computers and digital cameras.

**Memory Stick** - This is a rectangular shaped disk that is used mostly with digital cameras and notebook computers. They hold approximately 128 MB.

**Micro Drive** - This is a square disk that has 4 GB of space and is used with digital cameras and handheld computers.

These are just some of the storage devices that are available today. So, the next time you want to save something that takes up a large amount of space on your hard drive, think twice about it and consider using one of these storage devices instead. One of these devices could save you a lot of space on your hard drive and keep your system running at its best!