

Computer system

Computer system consists of two parts the Hardware and the Software



Hardware

Personal Computer consists of:

- ✚ Input/output devices
- ✚ Power supply
- ✚ Motherboard

✚ Input devices /Output devices

Input devices

- **Mouse:** the mouse controls a pointer that is displayed on the monitor.
Types of mouse:
 1. **Mechanical Mouse:** it's the traditional type with a rubber ball.

2. **Optical Mouse:** it emits and senses light to detect the mouse movement. It can be used on any surface.
 3. **Wireless Mouse:** or cordless is a battery-powered device that typically uses radio waves or infrared light waves to communicate with the system unit.
- **Keyboard:** one of the most common ways to input data to computer (direct input).
 - **Optical Scanner:** it's a device that optically scans images and printed texts, and converts them into a binary format that a computer can understand, edit, compute and process. The most commonly used scanner is the Flatbed Scanner, which is much like a copy machine. The quality of scanning depends on the number of Dots Per Inch (dpi). The higher the number of dots per inch is, the smaller the pixels will be and the clearer the image will be.
 - **Digital Cameras and Digital Video Cameras:** are similar to the traditional cameras, except that images are recorded digitally on a disk or on the camera's memory instead of being recorded on a film and then downloaded to computer. The analog signal is converted into digital signal using A-D Converter.
 - **Speech Recognition Programs:** use a microphone, a sound card, and special software. These programs allow users to operate computers and to create documents using voice commands.
 - **Touch screen:** is a particular kind of monitor with a clear plastic outer layer. Behind this layer are crisscrossed invisible beams of infrared light. This arrangement enables someone to select actions or commands by touching the screen with a figure.
 - **Barcode Reader: Barcodes** are the vertical zebra striped marks printed on product containers, which show the product's description, latest price, inventory level, and some other information. A Barcode

Reader works by directing a beam of light across the barcode and measuring the amount of light that is reflected back. The scanner converts the light into a series of zeros and ones language computer can understand.

Some of old devices: Punched paper cards, Punched paper tapes and Magnetic tapes

Output devices

Translate the processed information from the computer into a form that humans can understand. The most commonly used output devices are:

- **Monitors:** the most common type of monitors is Cathode-Ray Tube (CRT). There is another type of monitor called **LCD** (Liquid Crystal Display) they are much thinner and require less power to operate than CRTs do.
- **Printers:** transform the information processed by the system unit and present the information on paper. Printers are divided into two basic categories:
 1. **Impact Printers**, which create characters by sticking an inked ribbon against the paper beneath. Example **Dot Matrix Printers**.
 2. **Non-impact Printers** use a variety of techniques to produce characters without physical impact on paper. Examples **Ink-jet printers, Laser Printer**.
- **Plotters:** devices used for producing a wide range of specialized output. Using output from graphics tablets and other graphical input devices, plotters can create maps, images, and engineering drawings.
- **Speakers:** this device is connected to a sound card in the system. It is used to play music, sounds and speech. Speakers can be used either loudspeakers or with headphones.
- Also the old devices mentioned above.

Power supply

The power supply is a device that converts the Alternating Current (AC) available from standard wall outlets (at 110 or 220 volts) into the Direct Current (DC) to run the computer. It also steps the voltage down to the low voltage required by the motherboard.

1. Serial port : mouse , keyboard , speaker, modem
2. parallel port : printer , scanner



- ✚ **Motherboard:** Sometimes alternatively called main board, system board, it is the main electronic circuit board of a microcomputer that connects all system components to each other.



Some of these components are:

- **Processor:** it is device where arithmetic operation and logic operations processing occur. In addition, it coordinates its functions with other computer units. Common manufactures of processors are **Intel, AMD,** and **IBM.**



- **RAM:** This memory called RAM (Random Access Memory): it is a memory that temporarily holds data and instructions that will be needed shortly by the processor.



- **ROM (Read Only Memory):** has programs built into them at the factory. They cannot be written on or erased by the computer user. There are two types of ROM memory will be discussed latter.



- **Buses:** they are a collection of wires on the back of the board through which data is transmitted from one part of motherboard to another. The size of bus known as its width is important because it determines how much data can be transmitted at one time. For example, a 16-bit bus can transmit 16 bit of data, whereas a 32-bit can transmit 32-bit.
- **Slots:** there are different types of slots (sockets) on the motherboard. RAM slots are connectors on motherboard where RAM memory can be upgraded. Expansion slots are used to insert an expansion Cards. They provide more memory or control peripheral devices, Examples on them are: sound cards, video cards, Network Interface cards, etc.



- **Connector Cables (Ribbon Cables):** Some components such as storages devices do not plug directly into the motherboard. Ribbon cables connect the data bus to these components.