Introduction to Computer and Hardware

Contents of Lecture:

- What is a computer?
- Computer Hardware

What is a computer?

- A **computer** is an electronic device that manipulates information, or data. It has the ability to **store**, **retrieve**, and **process data**.

- **Some Usage**
  - ✓ A computer is use to **type documents**, **send email**, **play games**, and **browse the Web**.
  - ✓ Also use it to **create spreadsheets**, **presentation** and even **video**.

- There are two components of computer system:
  - ✓ Hardware
  - ✓ Software

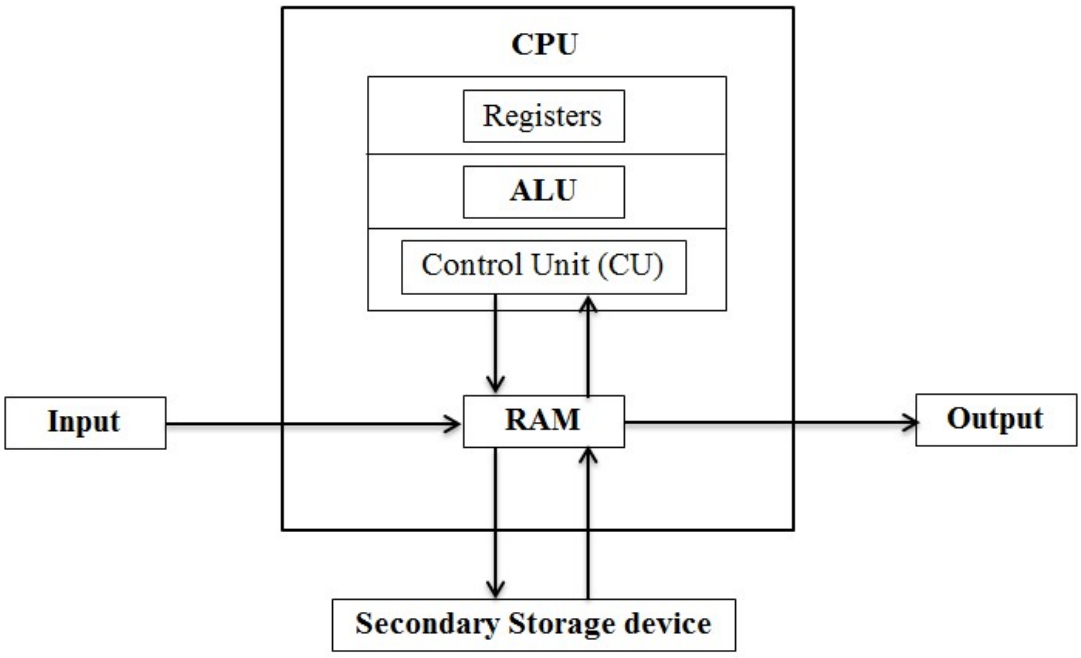
Computer Hardware

- **Computer hardware** is the collection of physical elements that constitutes a computer system.

- Computer hardware is various devices such as: the **keyboard**, **screen**, **mouse**, **disks**, **memory**, **CD-ROM** and **processing units**.

- Almost every computer may be seen as being divided into **six logical units**.
  1. Input Unit
  2. Output Unit
  3. Memory Unit
  4. Arithmetic and Logic Unit (ALU)
  5. Central Processing Unit (CPU)
  6. Secondary Storage

- Following figure illustrates the Basic hardware units of a computer:



Basic hardware units of a computer

1. Input Unit

- Input unit allow the user to enter information into the system, or control its operation.
- This unit obtains information from various input devices and places this information at the disposal of the other units so that the information may be processed.

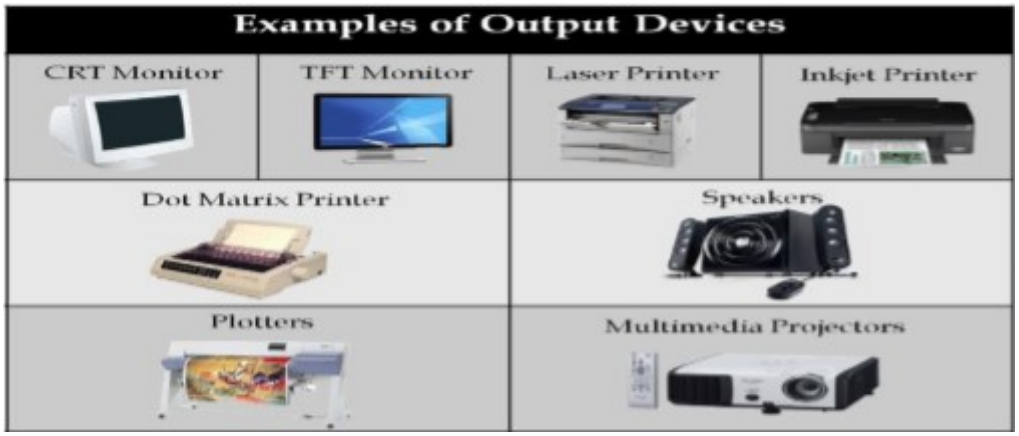
- Most personal computers have a mouse and keyboard, but laptop systems typically use a touchpad instead of a mouse.
- Other input devices include:

2. Output Unit

- This unit takes information that has been processed by the computer and places it on various output devices to make information available for use outside the computer.

- Most output from computer today is displayed on screens, printed on paper, or used to control other devices.

- Other output devices include:



- Following figures show some input/output devices:

Barcode scanner

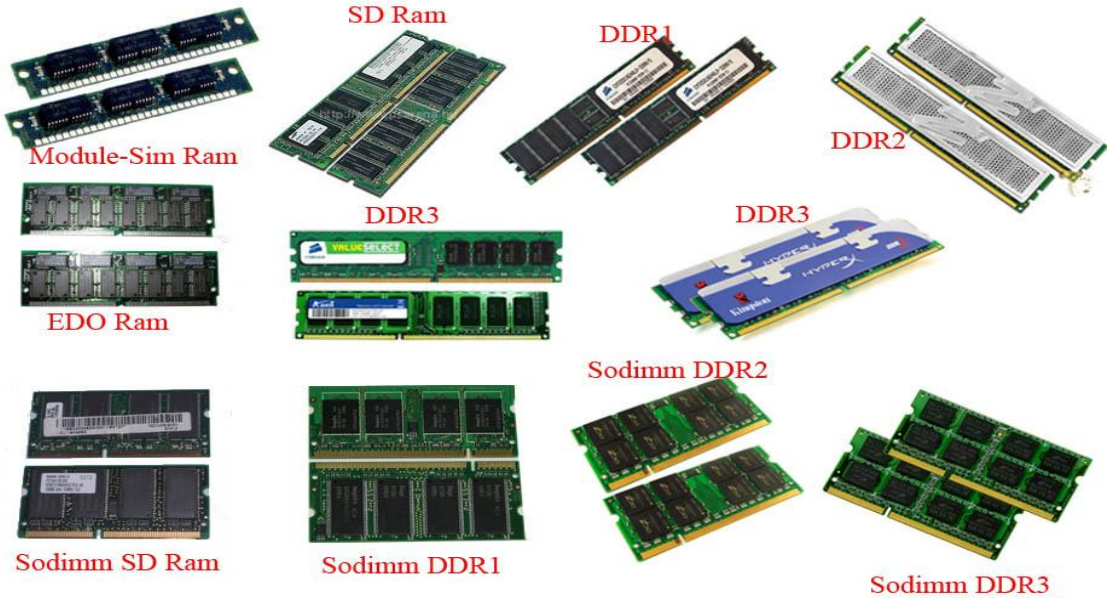
Webcam

Scanner

Digital camera

3. Memory Unit

- The unit supervises the overall operation of the computer. And used to stores information.
- Each computer contains memory of two main types:
  - ✓ **RAM** (**Random Access Memory**) is volatile. Your program and data are stored in RAM when you are using the computer.
  - ✓ **ROM** (**Read Only Memory**) contains fundamental instructions that cannot be lost or changed by the user. ROM is non-volatile.
- Following figures show some **memory devices**



4. Central Processing Unit (CPU)

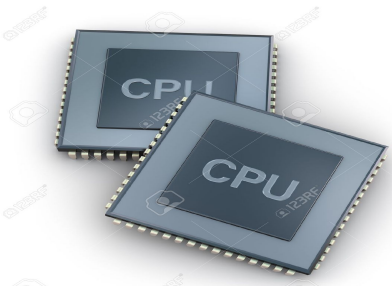
- A CPU is brain of a computer. It is responsible for all functions and processes.
- The CPU is the most important element of a computer system.

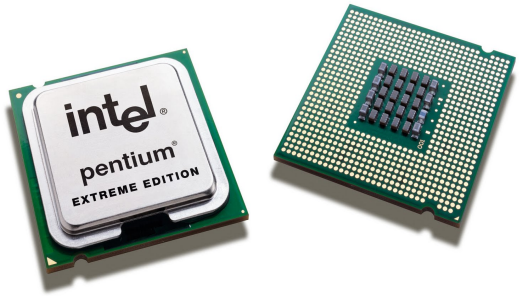
The CPU is comprised of three main parts:

- **Arithmetic Logic Unit** (**ALU**): Executes all arithmetic and logical operations. Arithmetic calculations like as addition, subtraction, multiplication and division. Logical operation like compare numbers, letters, or special characters

- **Control Unit** (**CU**): controls all computer components.
  - ✓ Tells the input unit when information should be read into the memory unit.
  - ✓ Tell the ALU when information from the memory should be used in calculations.
  - ✓ Tells the output unit when to send information from the memory unit to certain output devices.

- **Registers**: Stores the data that is to be executed next, "very fast storage area".





5. Secondary Storage

- Secondary storage devices are used to be permanent storage area for programs and data.

- Virtually all secondary storage is now done on magnetic tapes, magnetic disks and CD-ROMs.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