# BASICS OF COMPUTER ORGANIZATION

➤ What is a computer?

- The word computer comes from the word "compute" which means "to calculate".

- Thereby, a computer is an electronic device that performs arithmetic calculations at a very high speed.

- A computer can also be called as a data processor because it can store, process and retrieve data whenever desired.

➤ What is data processing?

- The activity of processing a data using computer is called as data processing.

- Data is raw material used as input and information is processed data obtained as output of data processing.
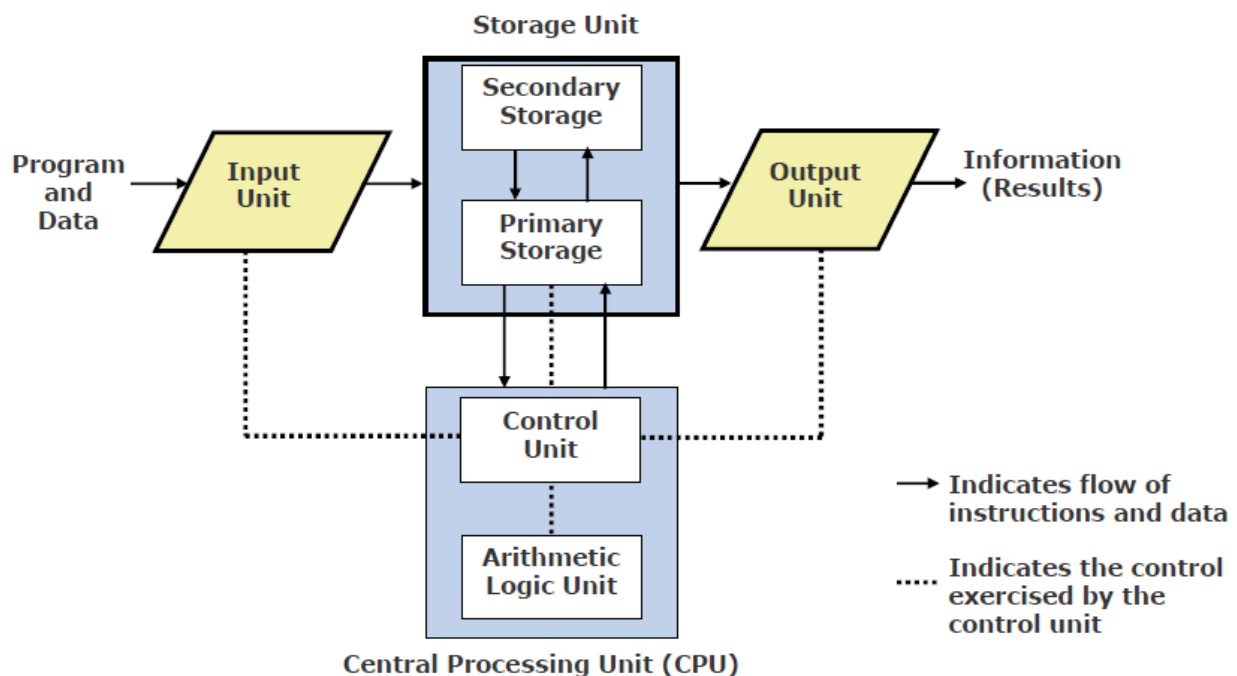
DATA

↓

| Capture Data |

↓

| Manipulate Data |

↓

| Output Results |

↓

INFORMATION
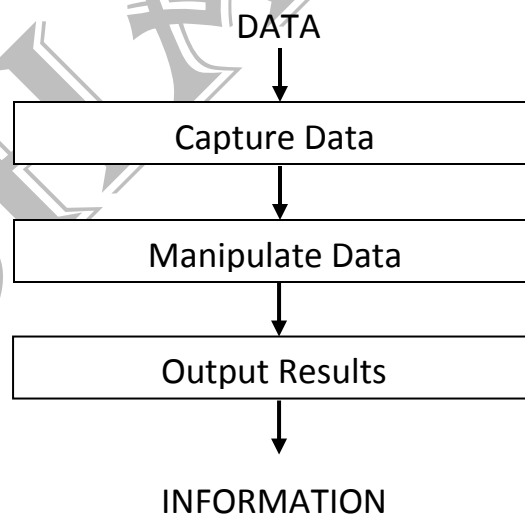
➤ What are the Five Basic Operations of a Computer System?

1. **Inputting:** The process of entering data and instructions into the computer system.

2. **Storing:** Saving data the instructions to male them readily available for initial or additional processing whenever required.

3. **Processing:** Performing arithmetic operations(add subtract, multiply, divide, etc) or logical operations (Comparisons like equal to less than, greater than, etc.) on data to convert them into useful information.

4. **Outputting:** The process of producing useful information or results for the user such as a printed report or visual display.

5. **Controlling:** Directing the manner and sequence in which all of the above operations are performed.

➤ Draw and explain the block diagram of a computer.

1. <u>**Input unit:**</u>

- **An input unit of a computer system performs the following functions:**

    a. It accepts (or reads) instructions and data from outside world.

    b. It converts these instructions and data in computer acceptable form.

c. It supplies the converted instructions and data to the computer system for further processing.

2. **Output unit:**

- **An output unit of a computer system performs the following functions:**

  a. It accepts the results produced by the computer, which are in coded form and hence, cannot be easily understood by us.

  b. It converts the coded results to human acceptable (readable) form.

  c. It supplies the converted results to outside word.

3. **Storage unit:**

- **The storage unit of a computer system holds (or stores) the following:**

  a. Data and instructions required for processing (received from input devices).

  b. Intermediate results of processing.

  c. Final results of processing , before they are released to an output device.

There are basically two types of storage devices:

1. **Primary Storage:**

- Used to hold running program instructions.

- Used to hold data, intermediate results, and results of ongoing processing of job(s).

- Fast in operation.

- Small Capacity.

- Expensive.

- Volatile(Looses data on power dissipattion)

2. **Secondary Storage**

- Used to hold stored program instructions.

- Used to hold data and information of stored jobs.

- Slower than primary storage.

- Large capacity.

- Lot cheaper than primary storage.

- Retains data even without power.

4. <u>**Arithmetic Logic unit:**</u>

- **Arithmetic Logic Unit of a computer system is the place where the actual executions of instructions takes place dutring processing operation.**

- The basics of ALU are as below:

    > It is one of the two basic components of CPU.

    > The actual execution of instructions takes place in ALU.

    > Has some special purpose registers.

    > Has necessary circuitry to carry out all the arithmetic and logic operations included in the CPU instruction set.

5. <u>**Control unit:**</u>

- **Control Unit of a computer system manages and coordinates the operations of all other components of the computer system.**

- The basics of CU are as below:

    > It is one of the two basic components of CPU.

    > It acts as the central nervous system of a computer system.

> Selects and interprets program instructions, and coordinates execution.

> It has some special purpose register and a decoder to perform these activities.

6. Central Processing Unit:

- It is the brain of a computer system.

- It is responsible for controlling the operations of all other units of a computer system.

Arithmetic Logic Unit (ALU)   +   Control Unit (CU)   =   Central Processing Unit (CPU)
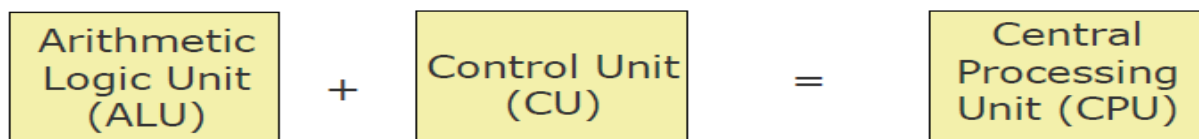
- It performs all major calculations and components.

- It activates and controls the operations of other units of a computer system.

COMPUTER FUNDAMENTALS
UNIT – 1
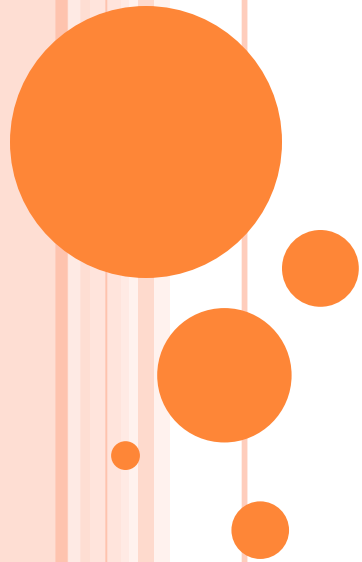
Prepared by: Prof. Disha H. Parekh Doshi

BASIC WORKING OF PERIPHERAL DEVICES

- DATA is a collection of independent and unorganized facts.

- INFORMATION is the processed and organized data presented in a meaningful form.

- DATA PROCESSING is the course of doing things in a sequence of steps.

- COMPUTER is an electronic machine that follows a set of instructions in order that it may be able to accept and gather data and transform these into information.
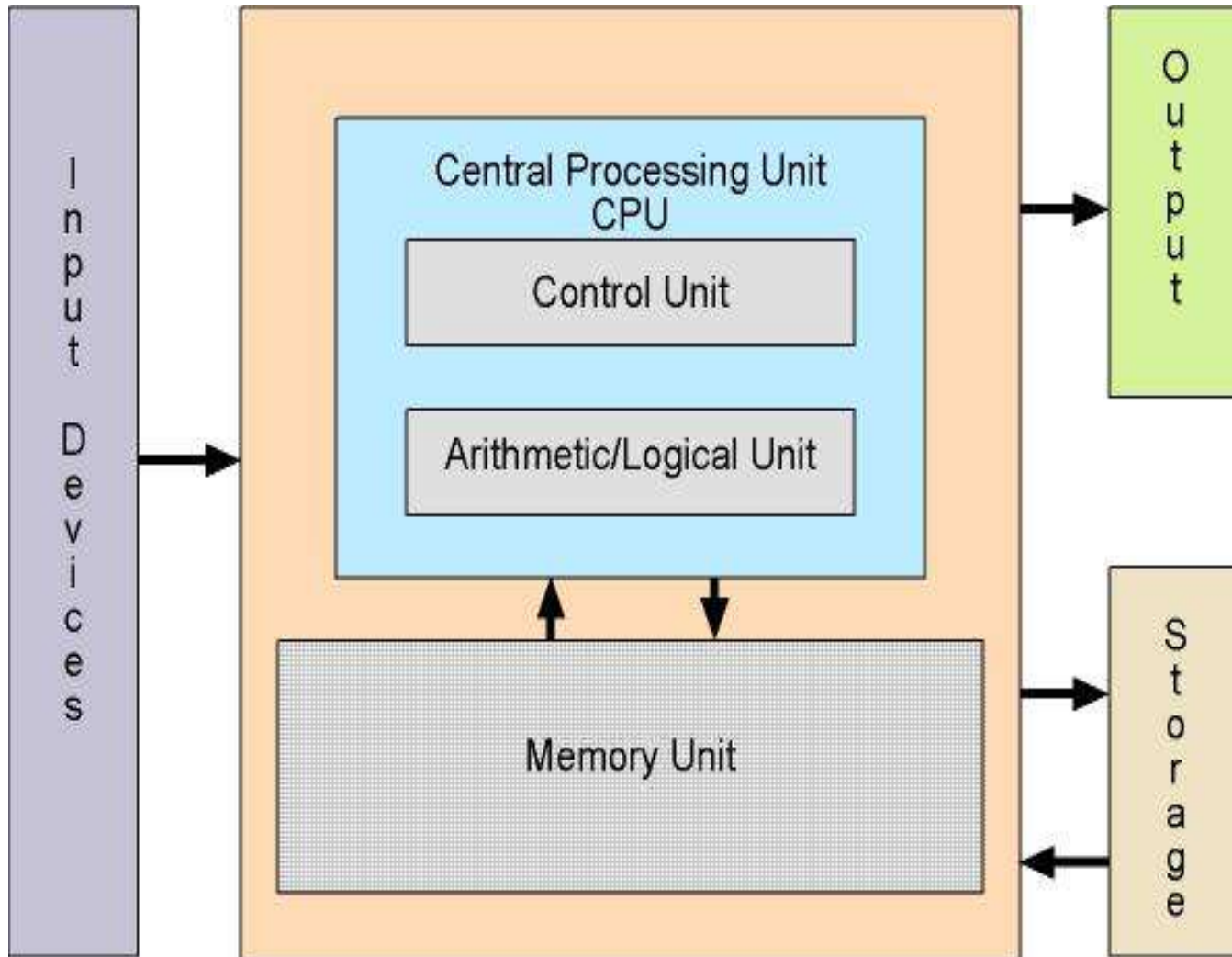
BASIC WORKING OF PERIPHERAL DEVICES

- **Block Diagram of a Computer:**

System Unit · Screen · Monitor · Speaker · Speaker · Keyboard · Mouse · Microphone
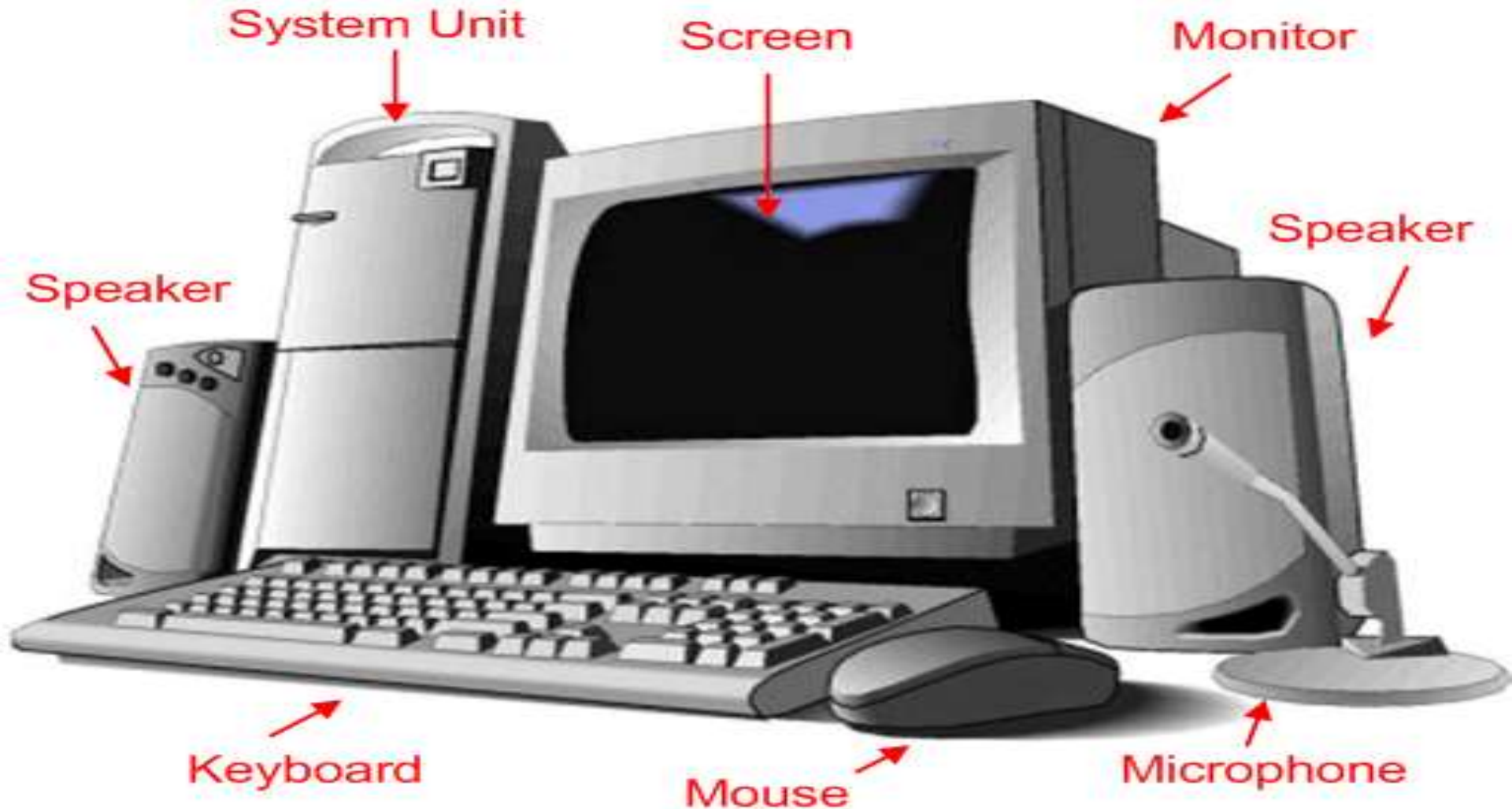
BASIC WORKING OF PERIPHERAL DEVICES

- **Block Diagram of a Computer:**

BASIC WORKING OF PERIPHERAL DEVICES
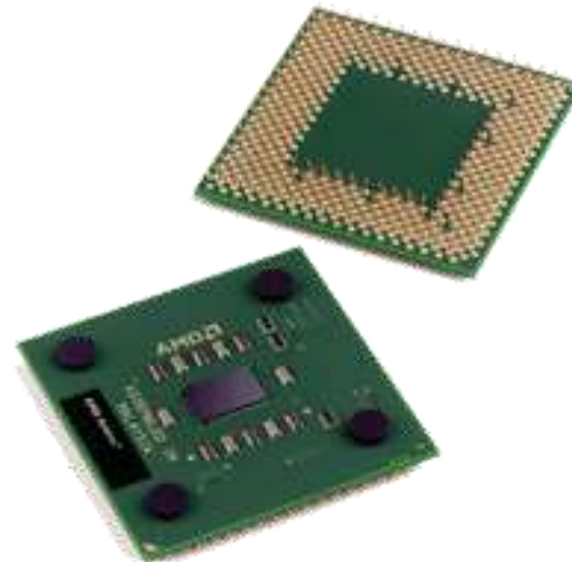
Basic hardware of a PC system:

- Central Processing Unit (CPU)
- Memory Unit
- Input Devices
- Output Devices
- Secondary Storage Devices

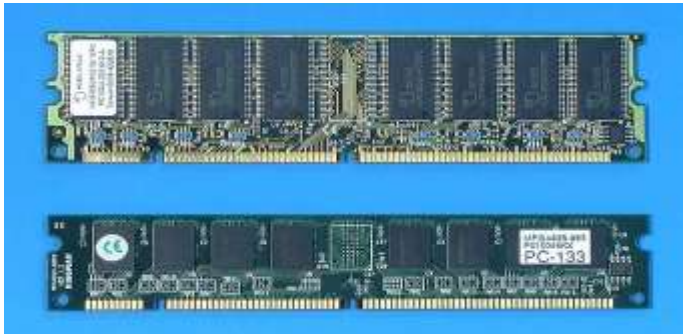# BASIC WORKING OF PERIPHERAL DEVICES

1. Central Processing Unit

- Brain of the computer.

- It directs and controls the entire computer system and performs all arithmetic and logical operations.
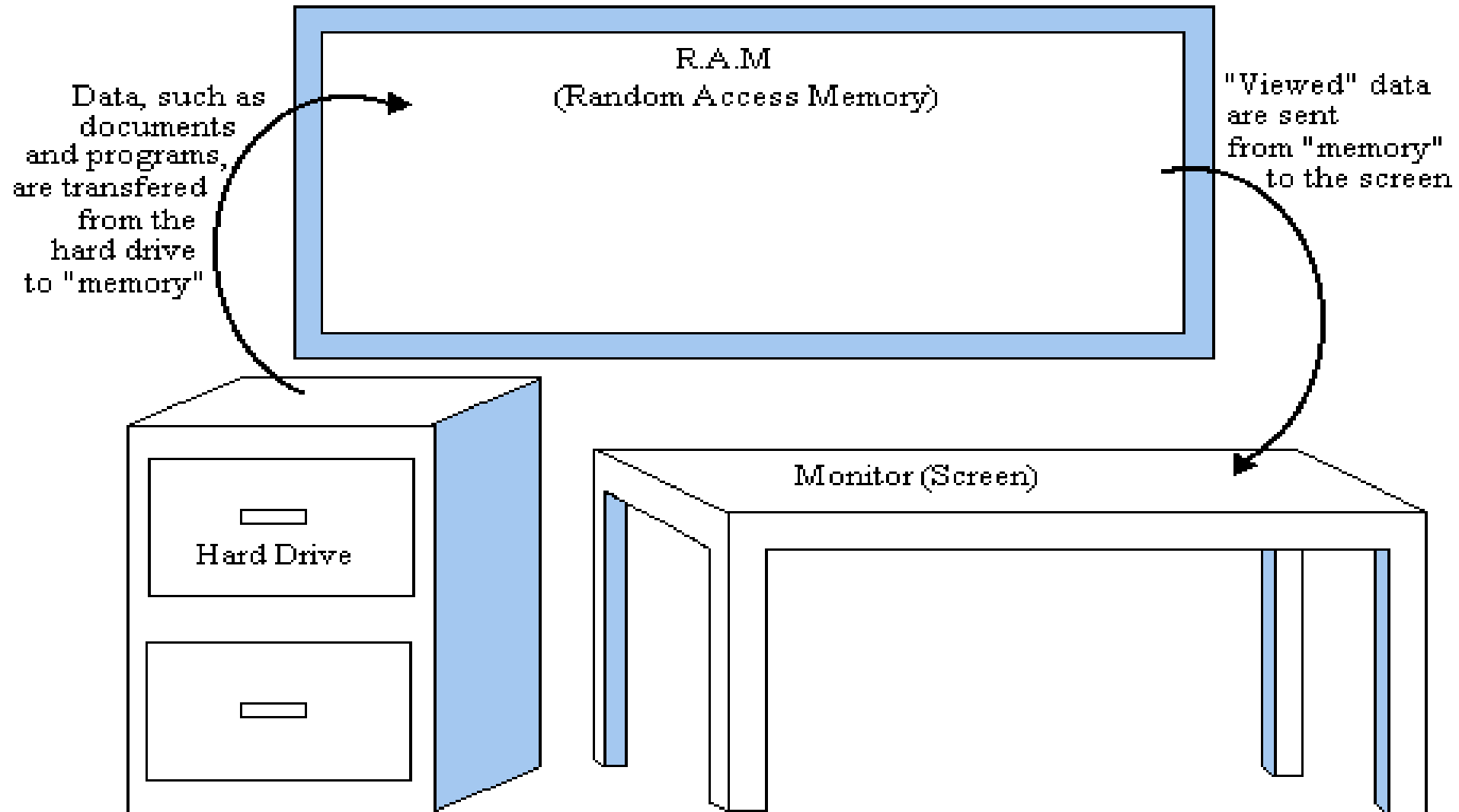

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BASIC WORKING OF PERIPHERAL DEVICES

2. Memory Unit

- Where the programs and data are stored .
  - READ ONLY MEMORY (ROM) contains the pre-programmed computer instructions such as the Basic Input Output System (BIOS).
  - RANDOM ACCESS MEMORY (RAM) is used to store the programs and data that you will run. Exists only when there is power.

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BASIC WORKING OF PERIPHERAL DEVICES

R.A.M
(Random Access Memory)

Data, such as documents and programs, are transfered from the hard drive to "memory"

"Viewed" data are sent from "memory" to the screen

Hard Drive

Monitor (Screen)

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BASIC WORKING OF PERIPHERAL DEVICES

3. Input Devices

- Allows data and programs to be sent to the CPU.
  - Keyboard
  - Mouse
  - Joystick
  - Microphone
  - Webcam
  - Scanner
  - Monitor

BASIC WORKING OF PERIPHERAL DEVICES

3. Input Devices: KeyBoard

- Traditional keyboards
- Flexible keyboards
- Ergonomic keyboards
- Wireless keyboards
- PDA keyboards

Roll it up.
Lay it flat.

Basic Working of Peripheral Devices

3. Input Devices: Mouse

- Two types of Mouse are observed:
  - **Mechanical** - a type of computer mouse that has a rubber or metal ball on its underside and it can roll in every direction.
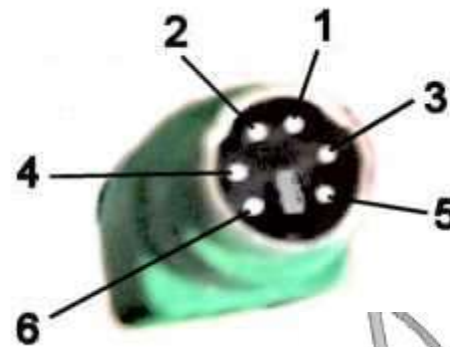 - **Optical:** This type uses a laser for detecting the mouse's movement

BASIC WORKING OF PERIPHERAL DEVICES

3. Input Devices: Mouse

- How a Mouse Hooks Up to a PC?
  - PS/2 Mouse
  - Serial Mouse
  - USB/Cordless Mouse
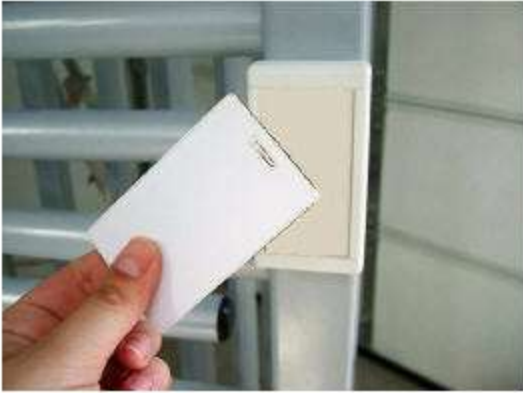
Basic Working of Peripheral Devices

3. Input Devices: Scanners

- An image scanner—often abbreviated to just scanner, although the term is ambiguous out of context (barcode scanner, CT scanner etc.)—is a device that optically scans images, printed text, handwriting or an object and converts it to a digital image.

- Types of scanners are:
  - Optical scanners
  - Card readers
  - Bar code readers
  - Character and mark recognition devices

BASIC WORKING OF PERIPHERAL DEVICES

3. Input Devices: Scanners

BASIC WORKING OF PERIPHERAL DEVICES

4. Output Devices: Display Unit (Monitor)

- Stands for "Visual Display Unit." A VDU displays images generated by a computer or other electronic device. The term VDU is often used synonymously with "monitor".

- Visual display units may be peripheral devices or may be integrated with the other components. For example, the Apple iMac uses an all-in-one design, in which the screen and computer are built into a single unit.

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BASIC WORKING OF PERIPHERAL DEVICES

4. Output Devices: Display Unit (Monitor)

- Early VDUs were primarily cathode ray tube (CRT) displays and typically had a diagonal size of 13 inches or less. During the 1990s, 15" and 17" displays became standard, and some manufacturers began producing displays over 20" in size. At the turn of the century, flat panel displays became more common, and by 2006, CRT displays were hard to find.

- Two types of monitors:
  - Cathode Ray Tube (CRT)
  - Liquid Crystal Display (LCD)

BASIC WORKING OF PERIPHERAL DEVICES

4. Output Devices: Printers

- IMPACT PRINTERS uses pressure by physically striking the paper. Ex. Daisy wheel printers, line printers, dot matrix printers & band printers.

- NON-IMPACT PRINTER does not apply pressure on the paper but instead produces character by using lasers, ink spray, photography or heat.

BASIC WORKING OF PERIPHERAL DEVICES

4. Output Devices: Multimedia Projector

- A multimedia projector is a compact, high resolution, full-color projector capable of projecting text, images, video and audio content. Typically the projector will feature inputs for a computer, DVD player, VCR, CD player and storage device.

- Multimedia projectors are also referred to as data projectors, digital projectors and data/video projectors. These names can apply to both portable and ceiling-mounted units provided that they can project computer output.

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BASIC WORKING OF PERIPHERAL DEVICES
4. Output Devices: Multimedia Projector