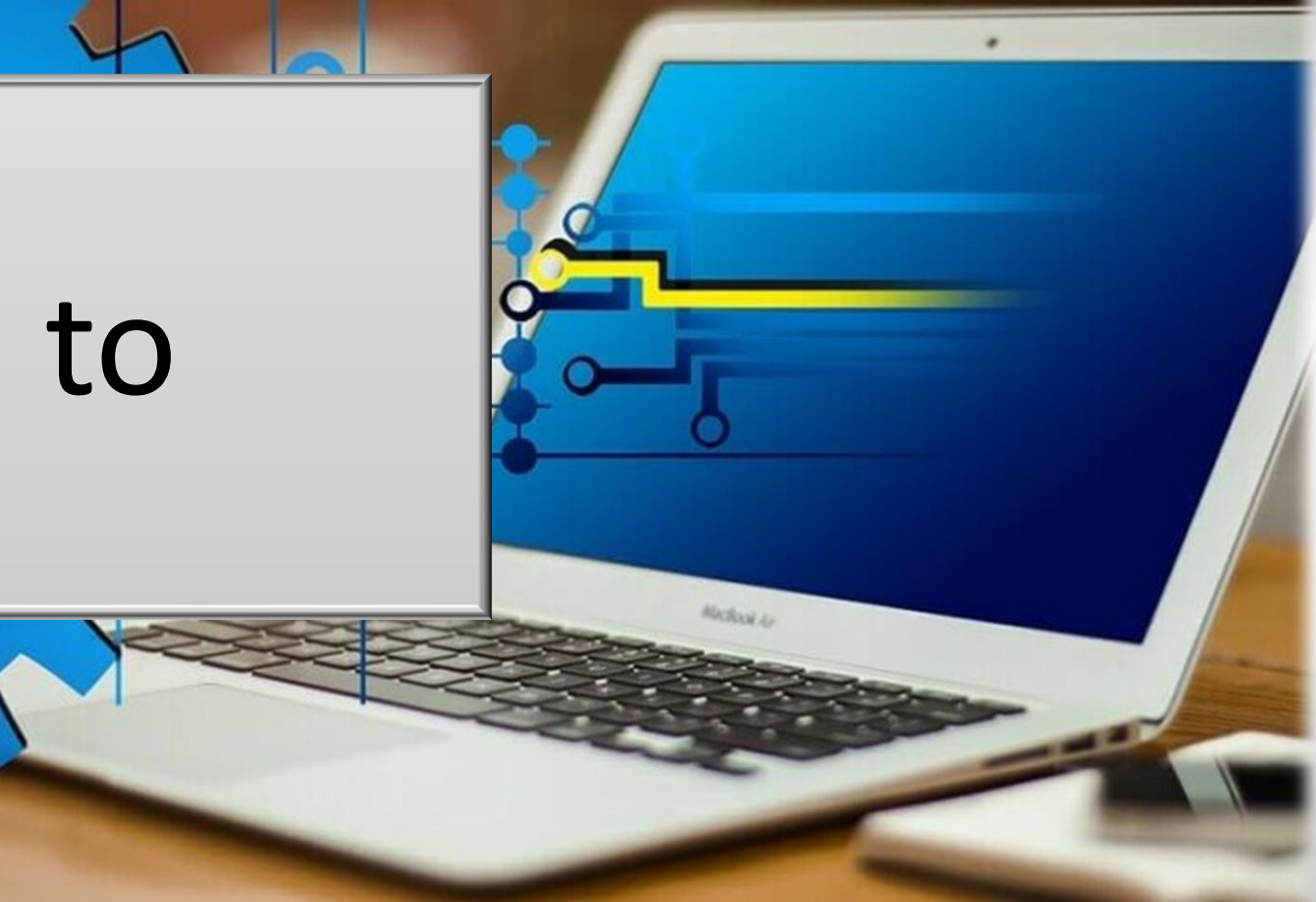# Introduction to Computer

introduction

- Computer

A computer is an electronic device, operating under the control of instructions stored in its own memory that can accept data (input), process the data according to specified rules, produce information (output), and store the information for future use .

Functionalities of a computer

- Any digital computer carries out five functions in gross terms:
- Data input.
- Data processing.
- Information output.
- Data and information storage.
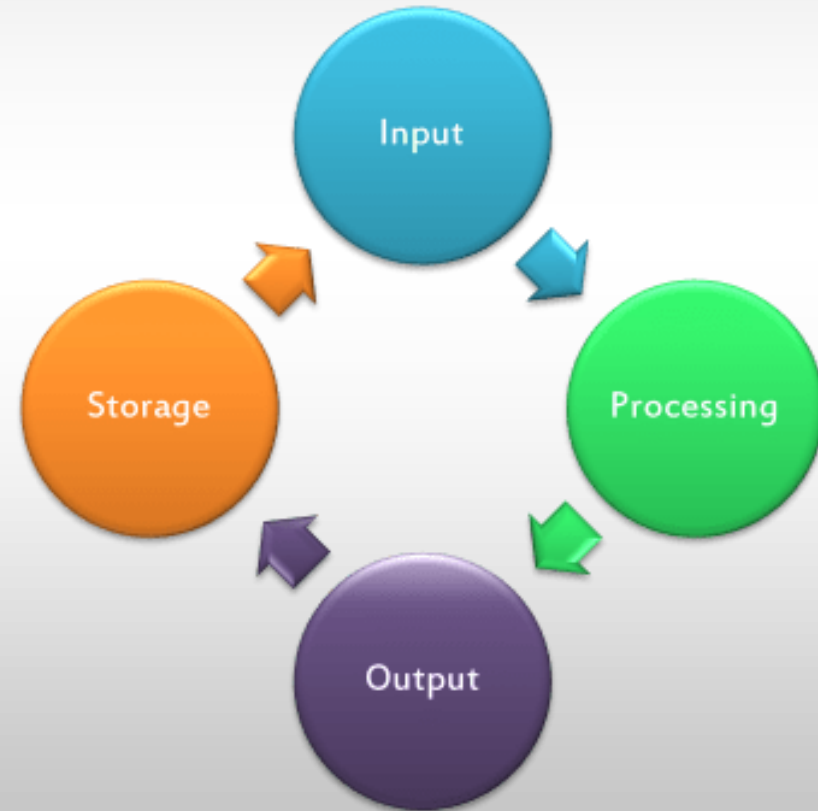
COMPUTER COMPONENT

Computer compnent

HARDWARE

SOFTWARE

HARDWARE

- Computer hardware is the collection of physical elements that constitutes a computer system. Computer hardware refers to the physical parts or components of a computer such as the monitor, mouse, keyboard, computer data storage, hard drive disk (HDD), system unit (graphic cards, sound cards, memory, motherboard and chips), etc. all of which are physical objects that can be touched.

① Monitor   ③ System unit   ⑤ Speaker   ⑦ Keyboard
② Modem   ④ Mouse   ⑥ Printer
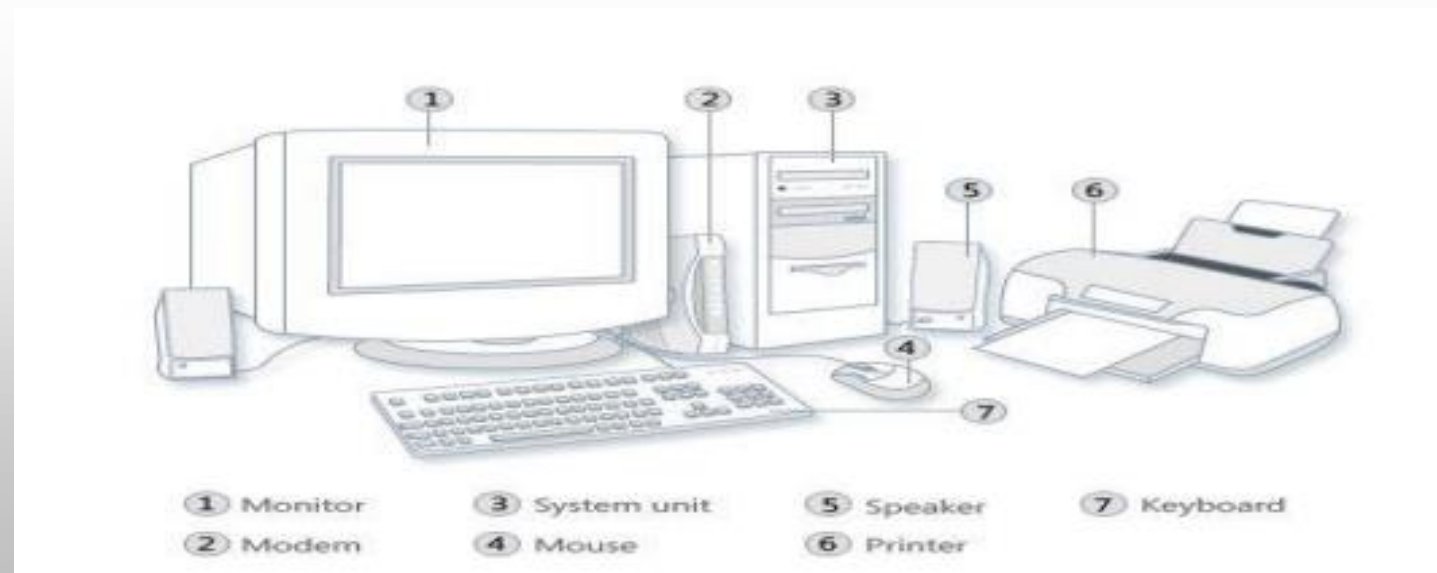
1-Input Devices

• Input device is any peripheral (piece of computer hardware equipment to provide data and control signals to an information processing system such as a computer or other information appliance.

Examples of Manual Input Devices

Keyboard	Numeric Keypad	Pointing Device	Remote Control
Joystick	Touch Screen	Scanner	Graphics Tablet
Microphone	Digital Camera	Webcams	Light Pens

2-Central Processing Unit (CPU)

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

- **The CPU is comprised of three main parts :**

A- 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

B- Control Unit (CU): controls and co-ordinates computer components.

- 1. Read the code for the next instruction to be executed.

- 2. Increment the program counter so it points to the next instruction.

- 3. Read whatever data the instruction requires from cells in memory.

- 4. Provide the necessary data to an ALU or register.

- 5. If the instruction requires an ALU or specialized hardware to complete, instruct the hardware to perform the requested operation.

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

Primary Memory

1. RAM: Random Access Memory (RAM) is a memory scheme within the computer system responsible for storing data on a temporary basis, so that it can be promptly accessed by the processor as and when needed. It is volatile in nature, which means that data will be erased once supply to the storage device is turned off. RAM stores data randomly and the processor accesses these data randomly from the RAM storage. RAM is considered "random access" because you can access any memory cell directly if you know the row and column that intersect at that cell.

2. ROM (Read Only Memory): ROM is a permanent form of storage. ROM stays active regardless of whether power supply to it is turned on or off. ROM devices do not allow data stored on them to be modified.

Secondary Memory:-

- Stores data and programs permanently :its retained after the power is turned off

1. Hard drive (HD)
2. Optical Disk
3. Flash Disk

DIFFEREN BETWEEN RAM AND ROM?

3-Output devices

- An output device is any piece of computer hardware equipment used to communicate the results of data processing carried out by an information processing system (such as a computer) which converts the electronically generated information into human readable form

Examples of Output Devices: CRT Monitor, TFT Monitor, Laser Printer, Inkjet Printer, Dot Matrix Printer, Speakers, Plotters, Multimedia Projectors
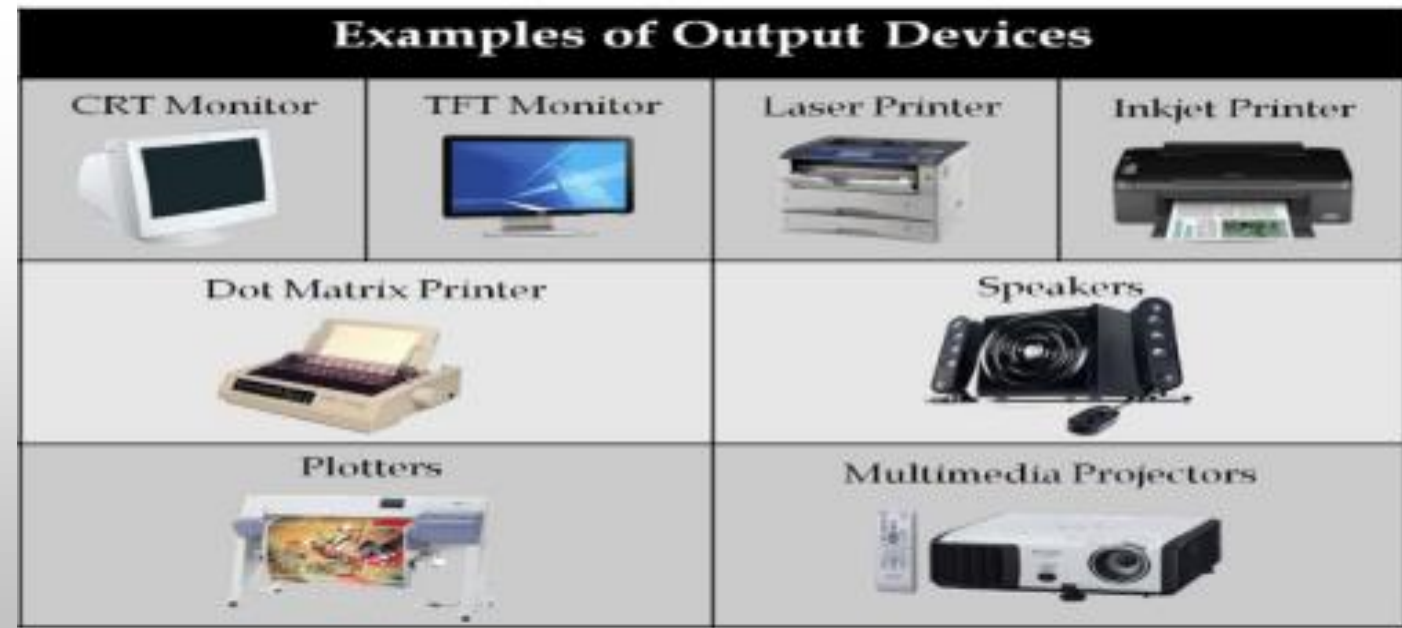
Software

- Software is a generic term for organized collections of computer data and instructions, often broken into two major categories: system software that provides the basic nontask-specific functions of the computer, and application software which is used by users to accomplish specific tasks.

Software Types

A. System software

is responsible for controlling, integrating, and managing the individual hardware components of a computer system so that other software and the users of the system see it as a functional unit without having to be concerned with the low-level details such as transferring data from memory to disk, or rendering text onto a display. Generally, system software consists of an operating system and some fundamental utilities such as disk formatters, file managers, display managers, text editors, user authentication (login) and management tools, and networking and device control software.

B. Application software

is used to accomplish specific tasks other than just running the computer system. Application software may consist of a single program, such as an image viewer; a small collection of programs (often called a software package) that work closely together to accomplish a task, such as a spreadsheet or text processing system; a larger collection (often called a software suite) of related but independent programs and packages that have a common user interface or shared data format, such as Microsoft Office, which consists of closely integrated word processor, spreadsheet, database, etc.;

Comparison Application Software and System Software?

Computers classification

• Personal computer: A small, single-user computer based on a microprocessor. In addition to the microprocessor, a personal computer has a keyboard for entering data, a monitor for displaying information, and a storage device for saving data.

• workstation : A powerful, single-user computer. A workstation is like a personal computer, but it has a more powerful microprocessor and a higher-quality monitor.

• minicomputer : A multi-user computer capable of supporting from 10 to hundreds of users simultaneously.

• mainframe : A powerful multi-user computer capable of supporting many hundreds or thousands of users simultaneously.

• supercomputer : An extremely fast computer that can perform hundreds of millions of instructions per second.

Characteristics of Computer

- Speed: The computer can process data very fast, at the rate of millions of instructions per second.

- Accuracy: Computer provides a high degree of accuracy. For example, the computer can accurately give the result of division of any two numbers up to 10 decimal places.

- Storage Capability: Large volumes of data and information can be stored in the computer and also retrieved whenever required.

- Versatility: Computer is versatile in nature. It can perform different types of tasks with the same ease.

Thank you!