Introduction of Computer:

Computer is an advanced electronic device that takes raw data as input from the user and processes these data under the control of set of instructions (called program) and gives the result (output) and saves output for the future use. It can process both numerical and non-numerical (arithmetic and logical) calculations.

 A computer has four functions:

a. accepts data	**Input**
b. processes data	**Processing**
c. produces output	**Output**
d. stores results	**Storag**

Data: It is the collection of raw facts, figures & symbols.

Example: Names of students and their marks in different subjects listed in random order.

Information: It is the data that is processed & presented in an organized manner.

Example: When the names of students are arranged in alphabetical order, total and average marks are calculated & presented in a tabular form, it is information.

Input (Data) ⟶ Process (Data) ⟶ Output (Information)

Computer is basically composed of the following:

1. Hardware
2. Software

Hardware: Refers to physical, electrical and mechanical components of a computer.
 For example keyboard, mouse…

Software: Refers to a program or set of instructions that is written to achieve a specified task.

Program: Set of instructions that enable a computer to perform a given task.

Programmer: Is a person who gives orders to the computer, a programmer should know at least one of the programming languages.

Computer system consists of three units:
- ✓ Input device
- ✓ Central Processing Unit (CPU)
- ✓ Output device

Input device: Reads data from input media and enters to the Computer in a coded form, the devices like keyboard, mouse and scanner are commonly used as input devices.

The basic parts of a desktop computer are the **computer case, monitor, keyboard, mouse** and **power cord**. Each part plays an **important role** whenever you use a computer.

-The system unit **(computer case)** is the metal and plastic box that **contains the main components** of the computer, including the motherboard, central processing unit (CPU), and power supply. The front of the case usually has an **On/Off button** and one or more **optical drives**.

Central Processing Unit:

The central processing unit (CPU), also called a **processor**, is located inside the **computer case** on the motherboard. It is sometimes called the brain of the computer, and its job is to

carry out commands. Whenever you press a key, click the mouse, or start an application, you're sending instructions to the CPU.

The CPU consists of:

❖ Storage or memory unit

❖ Arithmetic and Logic Unit (ALU)

❖ Control unit.

Memory unit: Stores program and data.

The data stored can be accessed and used whenever required by the CPU for necessary processing. This memory unit is usually referred as primary storage section.

Arithmetic and Logic unit (A L U): Performs arithmetic and logical functions.

Control Unit: The control unit controls the overall activities of the components of the computer.

Units of memory: The computer stores a character in the storage cells with binary (0,1) mechanism. Thus the basic unit of memory is a bit (binary digit 0, 1).

- To store a character, a computer requires 8 bits or 1 byte.

1 Byte = 8 bit

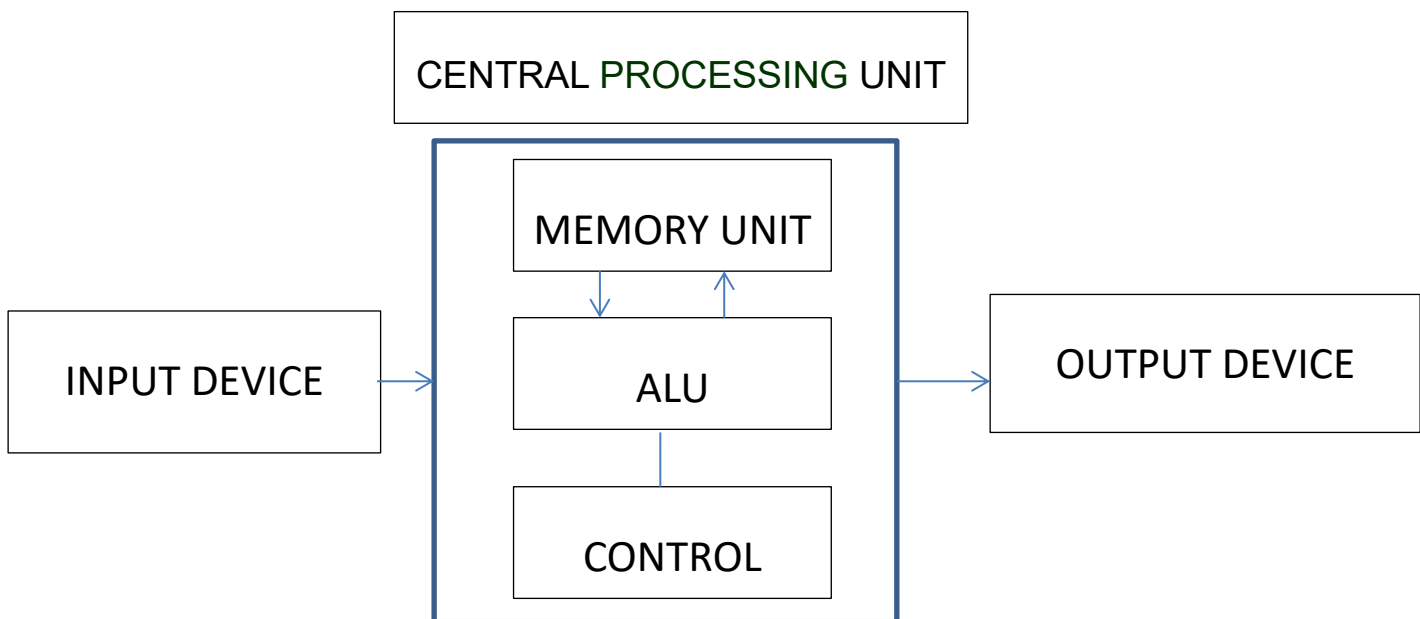1 KB (Kilobyte) = 1024B

1 MB (Megabyte) =1024 KB

1 GB (Gigabyte) =1024 MB

1 TB (Terabyte) =1024 GB

Output devices

Any device that is capable of representing information on a computer is called an Output device.

Output devices receive information from the CPU and present it to the user in the desired form.

Block Diagram of Computer (CPU):-

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        ┌─────────────────────────────────┐
        │  CENTRAL PROCESSING UNIT         │
        └─────────────────────────────────┘
        ┌─────────────────────────────────┐
        │      ┌──────────────────┐        │
        │      │   MEMORY UNIT     │        │
        │      └──────────────────┘        │                ┌──────────────────┐
┌──────────────┐      ↓  ↑             │                │                  │
│              │   ┌──────────────────┐   │      →        │  OUTPUT DEVICE   │
│ INPUT DEVICE │ → │       ALU        │   │                │                  │
│              │   └──────────────────┘   │                └──────────────────┘
└──────────────┘      │                   │
        │      ┌──────────────────┐        │
        │      │     CONTROL       │        │
        │      └──────────────────┘        │
        └─────────────────────────────────┘
```

Operating System (OS): Operating system is special kind of software that control and manage all the hardware of the computer, the most well-known OS is Microsoft Windows.

CPU SPEED: Computers speed is measured by a unit called (Giga Herts-GHz), which measures the number of operations it processes in each second.

Primary memory:

Primary memory is divided into Random Access Memory (RAM) and Read Only Memory (ROM).

Secondary memory:

Secondary memory are called storage device. Example of secondary memory devices are: Hard disk, floppy disks, CD ROMs etc

NOTE:

• The CPU can read and write to RAM but can only read from the ROM but not write into ROM.

• RAM is volatile but ROM is not volatile.

(Random Access Memory): RAM

While a program being is executed it requires data, such data is stored in RAM, and the data stored in RAM is volatile i.e. when there is a power failure the data in the RAM is lost. Whenever new data is stored in RAM the previous data is erased.

- RAM stores all running processes (applications) and the current running OS.

Read only Memory (ROM):

Information can only be read from and not written or changed onto ROM.

It stores some basic input – output instructions to operate the computer. The storage of data and instructions in ROM is permanent. It does not depend on the power supply. I.e., it is non-volatile memory.

Secondary Memory (External storage):

The primary memory which is faster (and hence expensive) is generally not sufficient for large storage of data. As a result, additional memory, called the (auxiliary or secondary) memory is used.

Files: A file is a container in a computer system for storing information. Files used in computers are similar in features to that of paper documents used in library and office files. Files can be stored on optical drives, hard drives or other types of storage devices. Every program, image, video, song, and document is stored as a file.

Folders: In computers, a folder is the virtual location for applications, documents, data or other sub-folders. Folders help in storing and organizing files and data in the computer.

File Extensions: Files are identified by a short (extension) at the end of their name. For example, ABC.JPG is a JPEG image, ABC.DOC is a Microsoft Word document file, and ABC.EXE is an executable application in Windows.

Shortcut: Shortcuts are pointers to files or programs and are used to access the files and programs. It can be deleted without affecting the original program.

Task Bar: Is the streak that goes horizontally at the bottom of the screen. The task bar shows the programs running on the computer.

Path: The exact location of a file, including drive letter, directory, subdirectory, and filename, as in the following:
C:\My Documents\BIOLOGY\HAWLER.doc.

Control Panel: The control panel is used to change the computer's hardware and software setting:

1. **Backspace**: This key deletes letters backward.

2. **Delete**: This key deletes letters forward.

3. **Shift**: This key, when pressed WITH another key, will perform a secondary function.

4. **Spacebar**: This key enters a space between words or letters.

5. **Tab**: This key will indent what you type, or move the text to the right. The default indent distance is usually 0.5 inch.

6. **Caps** Lock: Pressing this key will make every letter you type capitalized.

7. **Control** (Ctrl): This key, when pressed WITH another key, performs a shortcut.

8. **Enter**: This key either gives you a new line, or executes a command (pressed in a word processing program, it begins a new line).

9. **Number Keypad**: These are exactly the same as the numbers at the top of the keyboard; some people just find them easier to use in this position.

10. **Arrow Keys**: Like the mouse, these keys are used to navigate through a document or page.

Information Technology: is a broad term which covers all aspects of the use of computer technology. It includes not only hardware and software, but also communication technology

applied to linking computer systems, software engineering, and the administration and use of computer systems.

Resolution: An important characteristic of all screens is their resolution. Each point of light on the screen is called a pixel. The resolution of a screen is the maximum number of pixels that the screen can display.

List of Common Control Key Shortcuts

- **Ctrl+A** These two keys will select all text or other objects.
- **Ctrl+B** Bold highlighted text.
- **Ctrl+C** Copy any selected text or another object.
- **Ctrl+D** Bookmark an open web page or open font window in Microsoft Word.
- **Ctrl+E** Center text.
- **Ctrl+F** Open find window.
- **Ctrl+G** Open Find in a browser and word processors.
- **Ctrl+H** Open the Find and Replace in Notepad, Microsoft Word, and WordPad
- **Ctrl+I** Italicize text.
- **Ctrl+J** View downloads in browsers and set justify alignment in Microsoft Word.

- **Ctrl+N** Create a new page or document.
- **Ctrl+O** Open a file in most programs.
- **Ctrl+P** Open a print window to print the page you're viewing.
- **Ctrl+R** Reload page in browser or right align text in a word processor.
- **Ctrl+S** Save the document or file.

- **Ctrl+U** Underline selected text.
- **Ctrl+V** Paste any text or another object that has been copied.
- **Ctrl+W** Close open tab in a browser or close a document in Word.
- **Ctrl+X** Cut selected text or another object.
- **Ctrl+Y** These keys will redo any undo action.
- **Ctrl+End** Moves cursor to the end of a document instead of end of the line.
- **Ctrl+Z** Pressing these two keys will undo any action.
- **Ctrl+Esc** Open the Windows Start Menu.
- **Ctrl+Tab** Switch between open tabs in browsers or other tabbed programs.
- **Ctrl+Shift+Tab** Will go backwards (right to left).
- **Ctrl+⇧ Shift+Z** Redo

- **Ctrl+Home** Top (start of document or window)
- **Ctrl+Insert** Copy
- **Ctrl+PgDn** Next tab
- **Ctrl+PgUp** Previous tab
- **Ctrl+Tab** ⇆ Next window or tab
- **Ctrl+⇧ Shift+Tab** ⇆ Previous window or tab
- **Ctrl+←** Previous word
- **Ctrl+→** Next word
- **Ctrl+Delete** Delete next word
- **Ctrl+←Backspace** Delete previous word
- **Ctrl+Alt+←Backspace** Restart X11
- **Ctrl+Alt+↑** Rotate screen right-side up
- **Ctrl+Alt+↓** Rotate screen upside down
- **Ctrl+Alt+←** Rotate screen left
- **Ctrl+Alt+→** Rotate screen right
- **Ctrl+⇧ Shift+Esc** Open task manager