IECS

COMPUTER EDUCATION & SKILL DEVELOPMENT

Fully Recognised Institute of NIELIT

Since 1993

HARDWARE (ICT) CLASS – 5TH

राष्ट्रीय इलेक्ट्रॉनिकी एवं सूचना प्रौद्योगिकी संस्थान
NIELIT

DOEACC
QUALITY
ASSURANCE
COMPUTER
EDUCATION

LAST CLASS : INSIDE THE SYSTEM UNIT

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System Fan

Floppy

Heat Sink

Power Supply

Hard Drive

Optical Drive

Motherboard

Processors (CPU)

RAM Moduels

System unit (chassis) is a set of electronic components of a computer that provides the proper its operating. There are Twelve main system unit components :

- **Motherboard**

- **Processor**

- **RAM/ Memory stick**

- **Optical Drive**

- **Hard Drive**.

- **Heat Sink with CPU Fan -**

- **Floppy Drive / Zip Drive**

- **System Fan**

- **Power Supply**

- **ROM –**

- **Video Card -**

- **Expansion Card (Daughter Board)-**

IPO CYCLE (INPUT - PROCESSING – OUTPUT) IECS
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IPO stands for Input Process Output. When you work on your PC you give input to the PC with the help of keyboard or any input device. The CPU then process it and give you your desired output. For Example- You give input as 2+2 computer processes it and displays your output as 4.
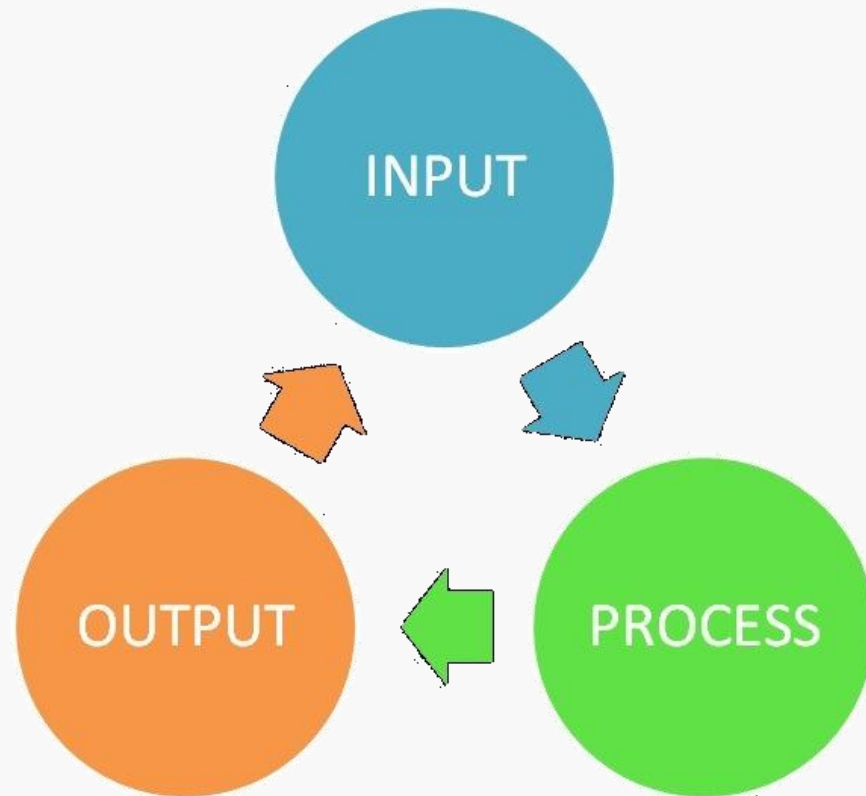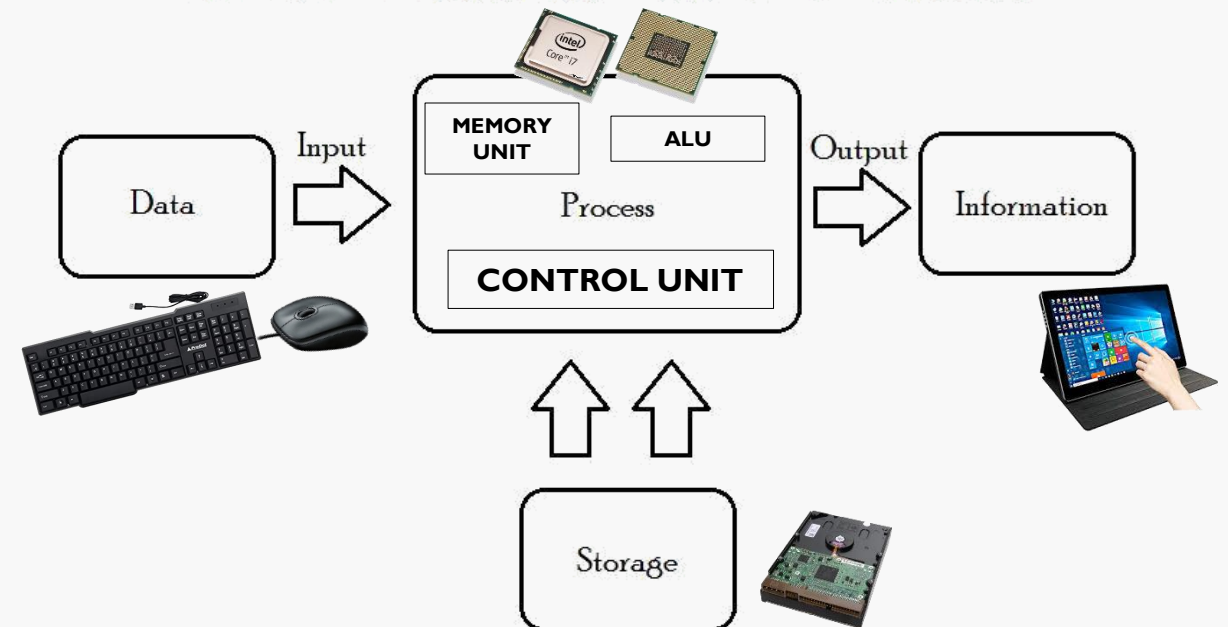
INPUT DEVICE

Input Device : The Data & Instruction are entered into a computer through input device. Firstly Input Device convert our data into a suitable binary form called zero and one. The most commonly used or primary input devices on a computer are the keyboard and mouse.

List of Most Common Input Device :

1. Keyboard
2. Mouse
3. Joy Stick
4. Light pen
5. Track Ball
6. Scanner
7. Graphic Tablet
8. Microphone
9. Magnetic Ink Card Reader(MICR)
10. Optical Character Reader(OCR)
11. Bar Code Reader
12. Optical Mark Reader(OMR)
13. Touch Screen
14. Web Cam
15. Mic
16. Camera

Input Devices

Camera

Scanner

Microphone

Touch screen

Joystick

Track ball

Mouse

Keyboard

Web cam

Track ball

INPUT DEVICE (KEYBOARD)

Keyboard : Keyboard is the most common and very popular input device which helps to input data to the computer. The layout of the keyboard is like that of traditional typewriter, although there are some additional keys provided for performing additional functions. It contains sets of keys such as alphabets, number & special signs. Keyboards are of two sizes 84 keys or 101/102 keys, but now keyboards with 104 keys or 108 keys are also available for Windows and Internet. There are two types of keyboard. 1. General purpose keyboard, 2. Special purpose keyboard.

Sr.No	Keys & Description
1	Typing Keys These keys include the letter keys (A-Z) and digit keys (09) which generally give the same layout as that of typewriters.
2	Numeric Keypad It is used to enter the numeric data or cursor movement. Generally, it consists of a set of 17 keys that are laid out in the same configuration used by most adding machines and calculators.
3	Function Keys The twelve function keys are present on the keyboard which are arranged in a row at the top of the keyboard. Each function key has a unique meaning and is used for some specific purpose.
4	Control keys These keys provide cursor and screen control. It includes four directional arrow keys. Control keys also include Home, End, Insert, Delete, Page Up, Page Down, Control(Ctrl), Alternate(Alt), Escape(Esc).
5	Special Purpose Keys Keyboard also contains some special purpose keys such as Enter, Shift, Caps Lock, Num Lock, Space bar, Tab, and Print Screen.

INPUT DEVICE (MOUSE)

- **Mouse:** Mouse is the most popular pointing device. It is a very famous cursor-control device having a small palm size box with a round ball at its base, which senses the movement of the mouse and sends corresponding signals to the CPU when the mouse buttons are pressed. Generally, it has two buttons called the left and the right button and a wheel is present between the buttons. A mouse can be used to control the position of the cursor on the screen, but it cannot be used to enter text into the computer. It's also called Pointing Device.

- **The following 5 techniques are used to carry out various operations:**

    POINT : To move the mouse on top of icon

    C LICK : To press & release the left button of mouse at once. Used to open any currently selected icon, menu.

    DOUBLE CLICK : To press & release the left button of mouse twice. Used to open any application or program.
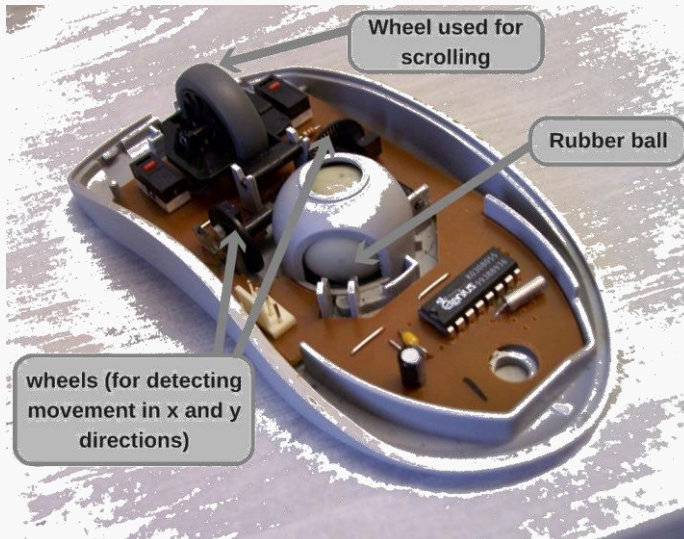
    SIMULTANEOUS-CLICK : Press & release left & right button to gather.

    DRAG: Press the left button down & moved the mouse on screen. Used to move the graphics on screen.

INPUT DEVICE (MOUSE)

- **There are Four Type of Mouse are available such as:**

  1. **Mechanical mouse**

  2. **Optical mouse**

  3. **Serial mouse**

  4. **Wireless mouse**

Wheel used for scrolling

Rubber ball

wheels (for detecting movement in x and y directions)

INPUT DEVICE

Trackball: Trackball is a pointing device which is similar to a mouse. A ball is placed on the track ball device which is used to move the graphic cursor on the screen. It also contains buttons which are used to select a particular item on the screen.To move the graphic cursor on screen, the ball is rolled with the fingers or thumb. The first trackball device was invented by Ralph Benjamin in 1946. Named the "roller ball,"

Joystick : Joystick is a pointing device which is works on the same principle of track ball. It contains a stick which is placed on the spherical ball. The stick is used to move the cursor at desired position left or right or backward or forward. The first joystick was invented at the U.S. Naval Research Laboratory by C. B. Mirick and patented in 1926.

Light Pen : Light pen is a pointing device which is used to draw directly draw on the screen. It is called light pen because it is similar to a pen & senses light. It's an input device in the form of light-sensitive stick used in conjunction with a CRT display.

The light pen allows the user to point out or draw any object on the screen. It is useful for drawing or graphics in the program such as CAD (computer aided design).An engineer, architect or fashion designer can draw directly on screen. The first light pen was invented by Ben Gurley in 1959.

INPUT DEVICE

Touch Screen : Touch screen is a pointing device. It is most simple & easiest to learn of all input devices. It allows the user to choose from available options by simply touching with their figure to the desired icon or menu item displayed on the computer screen. The term generally refers to touching the display of the device with a finger or hand.

Digitizer (Graphic Tablet) : An input device. Used for converting pictures, map & drawing into digital form. Allows one to hand-draw images and graphics, similar to the way one draws images with a pencil and paper. Also be used to capture data or handwritten signatures.

The device consists of a flat surface upon which the user may "draw" an image using an attached stylus, a pen-like drawing tool. Allows the user to draw sketches directly. Commonly used in CAD by architects & engineers. Used in GIS (geographical information system) for digitizing maps.

Microphone : It's an input device. Used to stores the voice data into the computer system. Microphones are a type of transducer - a device which converts energy from one form to another.

Microphones convert sound waves into electrical energy. Different types of microphone have different ways of converting energy. These vibrations are converted into an electrical current which becomes the audio signal

INPUT DEVICE (IMAGE SCANNER)

- **Scanner** : A scanner is an electronic device which can capture images from physical items and convert them into digital formats, which in turn can be stored in a computer, and viewed or modified using software applications.

- Different types of scanners are available with different resolutions. In the world of electronic data transmission, scanning is considered to be the most cost-effective and reliable way of transmitting images.

- The main advantage of direct entry of information is that users do not have to key the information and another advantage is that through Scanners you can input Graphical Data into the computer. This Provides faster and more accurate data entry. Important types of scanners

There are two types of image scanner:

1. **Flatbed scanner**
2. **Handheld scanner**

INPUT DEVICE

Flatbed Scanner : It's like a zerox machine which consist of box having a glass plate on its top and a lid to covers the glass plate.

The document placed inside the glass plate & light source is situated blow glass plate which moves horizontally from left to write & scanning document line by line.

Handheld Scanner : It contains a set of light emitting diodes encased in small case which can be conveniently held in hand.

To scan a document the scanner is slowly dragged on the document. The scanner has to be dragged carefully & steadily otherwise the document cannot scan properly. Used when higher accuracy is not required.

INPUT DEVICE (OPTICAL SCANNERS)

OMR (OPTICAL MARK READER): OMR is a device that is capable of recognized pre-specified type of mark made by pencil or pen. The Optical Mark Reader is a device which can detect the presence or absence of a mark on a paper. The OMR recognize the marks by focusing a light on the paper being scanned & detect the reflected light pattern from mark. The present mark is detected due to intensity of light being reflected from the mark.

Pencil marks made with soft lead pencil reflect the light which allowing the OMR to determine which response are mark. OMR is used in reading answers sheets, questionnaires.

ADVANTAGES

- Speedy and accurate to generate result.
- Cheap in cost.

DISADVANTAGE

- Cannot able to read characters.
- Erasing or cancellation is not possible.
- Good quality expensive paper is required.
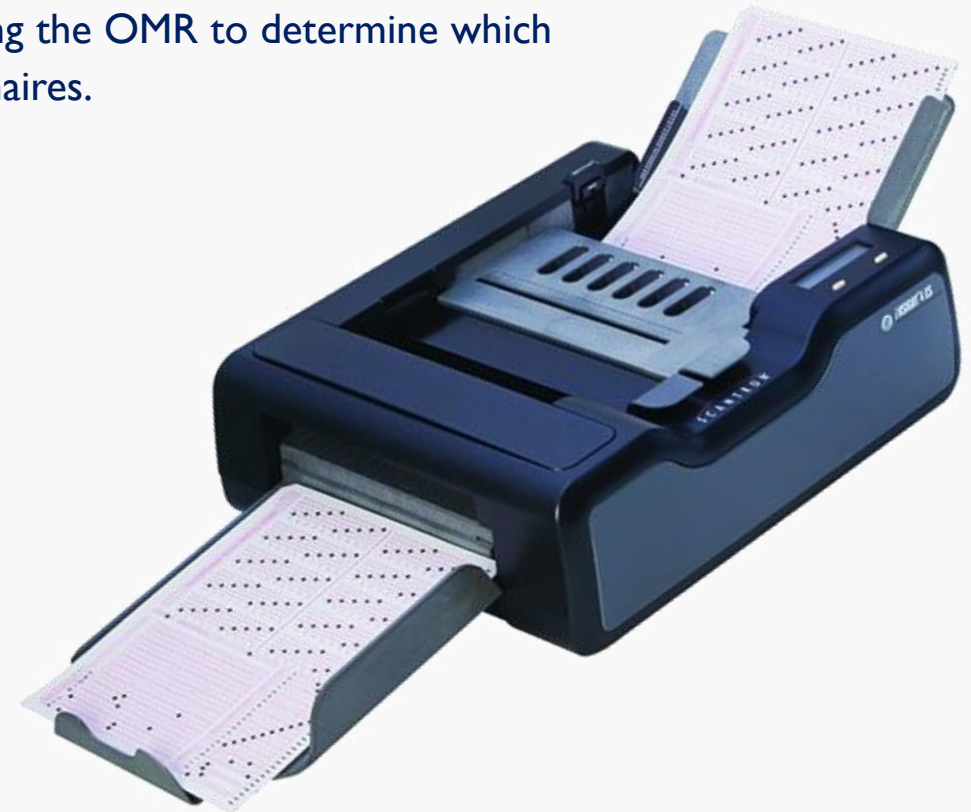
INPUT DEVICE (OCR)

OCR (OPTICAL CHARACTER READER) DEVICE: OCR capable of recognizing alphabets & numbers printed on paper. It can also capable of recognize shape & identify character directly from source document. It is always used with character recognized software.

It converts bitmap images of character to equivalent ASCII code. First it create bitmap image of document & OCR software translate into ASCII code which computer interprets letter, symbol or number. The type of document must be type using OCR fonts. The software design to recognized the standard OCR-A(American standard) & OCRB(European standard)

ADVANTAGES

- Speedy entered data.

- Accept wide range of font using ordinary mark.

DISADVANTAGE

- Expensive

- Scanned properly only if the characters are standard size.

- Dusty paper cant scanned properly.

INPUT DEVICE (MICR)

MICR (MAGNETIC INK CHARACTER RECOGNITION): MICR systems use special ink which can be magnetized, to print characters that can then be read and decoded by special magnetic devices. The common E13B font is used to write these special kinds of cheques. E13B font contains 0-9 numbers & 4 symbols.

Detection of characters is a two step process. First MICR Reader-Sorter reads the data on cheques & sorts the cheques for distribution for further processing. The reading station is used to sense and identify the magnetic characters as they pass through. Magnetized characters are read by the head. E.g. MICR is used in Banks to cheques the MICR systems use special ink which can be magnetized, to print characters cheques.

ADVANTAGES

- Speedy data entry.

- Accurate output.

- Folded or roughly handled cheques are also scanned with same accuracy.

DISADVANTAGE

- MICR software is required.

- Limited fonts are used so used in banking industries only.

INPUT DEVICE

BCR (BAR CODE READER) DEVICE : Data can be coded in the form of small lines which are known as Bar Codes. Bar codes represent the alphanumeric data by combination of vertical lines which contains different width & spacing between them. Bar Code Reader is a device which are used to recognized bar code data.

It scanned the barcode image & converted into alphanumeric value & fed to computer. It uses laser-beam technology. Laser stroke across the pattern of bar which sensed by light sensitive decoder & their reflection of light pattern are converted into electrical pulse which converted it into alphanumeric value.

Various barcodes are available for different use. Most common is UPC (UNIVERSAL PRODUCT CODE). It contain 10 digit first 5 identify the manufacturer name & remaining identify a specific product.

WEB CAMERA : It's an input device. Used to feeds the image to a computer or computer network often via USB or Wi-Fi. Web camera is a hardware camera connected to a computer that allows everyone to connect to internet to view either pictures or motion video.

Most Web cameras are embedded to display with laptop computer or connected with USB or Wi-Fi with a computer. Simple web cam. Consists a digital camera attached to your computer typically through USB.