

Input devices and output device :

***Input devices:**

It sends information to computer system for processing . It only allow for input of data to computer, such as keyboard, mouse ,..

Example of Input devices

1- keyboard :

It is used in the input information to computer system . Keyboard is most common input device is used today. The data and instruction are input by typing on the keyboard . The message typed on the keyboard reaches the memory unit of a computer . it is connected to a computer via cable or wireless . Apart from alphabet and numeral keys, it has other function keys for performing different functions.



Fig.1 keyboard

2- Mouse

Mouse is pointing input device will allow you to point the command on the computer screen and click it by using right or left button to send it to your computer. It is designed to be used on the flat surface(mouse pad) . Mouse is a hand held device that you can move with your hand to point and click (right or left) on your screen to send commands to your computer .

When the mouse is moved on mouse pad a light beam underneath reflect to give motion to the pointer on the screen .

Mouse will interact with graphical interface. It is connected to a computer via wired (cable)or wireless .



Fig.2 stander mouse

The common type of the mouse

a- TrackBall mouse

It has ball mechanism to move the pointer or cursor on the screen . It is stationary input device that include a ball in the middle of two buttons and easily rolled with finger to move the pointer on the screen .The device has sensor to detect the rotation of ball .It remains stationary ,you don't need to move it on the flat surface . So it is an ideal device if you have limited desk space .



Fig.3 Trackball mouse

b- optical mouse

It come with optical technology(Laser technology) that control cursor movement by visible or invisible light beam(red light).



Fig.4: optical mouse

c-Touchped

It works as mouse come with a laptop computer.It lets you control the movement of cursor or pointer by moving your finger over touchpad .

It has a limited area where you can point and click.

d- Wireless mouse :

This type of mouse lacks cable and use wireless technology to control the movement of cursor .

3- Scanner:

We can store pictures ,photographs, diagrams and document into the computer with help of scanner . The scanner reads(scan) the printed picture , drawing or document and convert it into a digital file (image file) which can be edited or storage on a computer.

A scanner can be connected to a computer using USB cable .



Fig.:scanner

4 -Digital Cameras

A digital camera can be used in the same way a traditional camera can, but instead of storing images on rolls of film which require developing, the images are stored digitally in memory housed within the camera.

These pictures can easily be transferred to your computer and then manipulated within any graphics programs which you have installed on your computer.

Currently they are limited by the quality of the image recorded and the number of pictures which you may store within the camera.



Fig :Digital camera

5- Webcam

Web cam is a short form of Web Camera. The Web has become increasingly interactive . You can now use a small digital movie camera (a Web cam) mounted on the PC monitor to allow two-way communication involving not just text Communication but sound and video communication as well.



Fig: webcam

5- Light pen:

A light pen is another pointing device that can be used in the computer. It is normally like a pen and is used to directly point at the objects seen on the screen . You can also draw various objects on the computer screen through a light pen .



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Fig : using a light pen to highlight text on the screen.

6- Touch screen

It is an electronic visual display that responds to touch . In this technology , the computer screen is divided into different areas(often buttons or icons). It allows user to select options(icons) from a screen by simply touching them by human finger , pen or any other pointing device.

It easy to use and work well with icons , allowing options(icons) to be selected easily . You can give any sort of information to the computer by touching it.



Fig : Touch Screen

7- Voice input for PC (Microphone)

Microphone is input device that take analogue sound waves and convert them into electrical signals(digital signals) suitable for a computer to understand. It allow you to talk to PC and see text appear on the screen .You can store voice data in the computer by speaking in front of the microphone.



Fig : Microphone input device

8- Joystick:

It also pointing input device like a mouse . It is made up of a vertical stick with a spherical base . The base is fitted in a socket that allows free movement of the stick . The movement of stick controls the cursor or pointer on the screen . Mostly It is used for playing games on the computer .While playing the games on the

computer , the user need to move the objects quickly on the screen . With the movement of the vertical stick , the objects can be moved in all the directions easily .



Fig: Joystick input device

***Output device:**

It display the results of the processing . It only receive the output from a computer and display it , such as monitor , printer, ...

1- Monitor :

This is the most common output device connected with the computer to display the processed information . It looks like a TV and is also know as VDU(Visual Display Unit) . Pictures are displayed by using a large number of very small dots on screen called pixels that are arranged in matrix form . Each pixel contain a red , green and blue which can be individually adjusted to create any color when combined . The number of pixels that the monitor can show on its screen is referred to as the resolution of the screen .The output produced on the screen is called Soft Copy Output because it can not retained for long time .

Soft copyt output is output copy of document stored in memory and can be seen on screen , It can modified easily .

it is intangible and it is digital version .

The two commonly types of monitor are :

a- Cathode Ray Tube (CRT)

The CRT is vacuum tube that contains one more electron guns and phosphorescent screen and is used to display images. It

modulation , accelerates , and deflected electron beam onto screen to **create the image** .Where CRT contains millions of tiny red , green and blue phosphor dots that glow when struck by an electron beam that travels the screen to create a visible image

***The advantage of CRT monitor** is better color representation , less expensive and have a better viewing angle

***The disadvantage of CRT** is **big and heavy** because there is a **vacuum tube** inside it , **require a lot of power to run** , **less quality** and **produce a lot of heat** .

b- Liquid Crystal Display(LCD)

LCD or Liquid Crystal Display is a flat electronic display which is very commonly used in, laptops, modern desktop , televisions, digital watches and calculators etc. It make use of **light modulating properties of liquid crystal** and **polarization of light** for its operation to display image .

***The advantage of LCD**

IS small size (less thickness) , **less weight** , **require less power** and **high quality** .

***The disadvantage of LCD**

1- **The image can be difficult to see in bright light** .

2- **LCD have a fuzzy viewing angle**



1- CRT Monitor



2- LCD Monitor

2- printer :

This is an important output device of the computer system . It gives a printed output of the result that appears on the monitor screen on paper. Printed output is also called Hard Copy Output because unlike monitor , this output can be preserved even if the computer is switched off.

Hard copy output is printed on paper .It can not be modified easily. It is tangible and is physical version .

There are two types of printers:

2.1 Impact Printers

2.2 Non Impact Printer

2.1 : Impact Printers:

Impact Printers print the characters by striking them on the ink ribbon , which is then pressed on the paper. The characteristics of impact printers are the following :

- Very low consumable cost.
- Very noisy

These printers are of two types:

2.1.1 Character printers

2.1.2 Line printers

2.1.1 Character printer:

Character printer is the printer which print one character at a time .Example of these printer are

- *Dot Matrix printer
- *Daisy Wheel

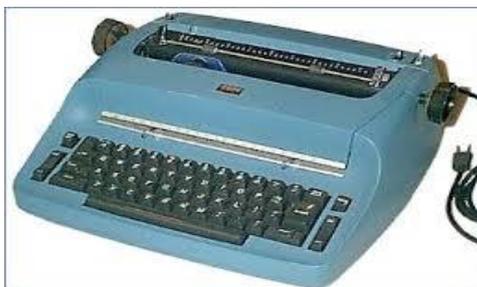


Fig : character printer

2.1.2: Line printer

Line printer is the printer which print one line at the time . Example of these printer are :

- *Drum Printer
- *Chain Printer



Fig : line printer

2.2 :Non –impact printer :

Non –impact printers print characters without using the ink ribbon .These printers print complete page at the time ,thus they are also called as Page Printers .

The characters of Non-impact printers :

- Faster than Impact printers
- They are not noisy
- High quality
- Support many fonts and different character size .

These printers are of two types :

2.2.1 Laser Printers

2.2.2 Inkjet Printers

2.2.1 : Laser Printers :

They are higher speed and high quality device that use laser beam to produce the dots needed to form the characters to be printed on a page. These printers are expensive and can not be used to produce multiple copies of a document in a single printing .Laser printers produce very high quality text and graphs .



Fig : laser printer

2.2.2:Inkjet Printers:

They print characters by spraying small drops of colored ink onto paper. Inkjet printers produce high quality output .They make less noise because no hammering is done and these have many styles of printing modes available . Color printing is also possible .Some models of inkjet printers can produce multiple copies of printing .Also these printers are less Expensive , slow and less resolution quality as compared to Laser printers .



fig : inkjet printer

3-plotter

It is used to print a photograph, drawing image that stored in the computer . It is an output device which provides a high quality of printed output , It is generally used by engineers and architects .



Fig : plotter

4- Speakers

Speakers are output device connected to a computer by sound card that outputs sounds generated by the computer. It converts **digital signals** into **analogue sound waves that are suitable for user**. These devices are used to listen to the music and sounds played by the computer. They come in a different shapes and sizes.



Fig: speaker

5-Headphones ;

they give sound output from the computer. It converts digital signals into analogue sound waves that are suitable for user. **They are similar to speakers , except they are worn on the ears so only one person can hear the output at a time .**

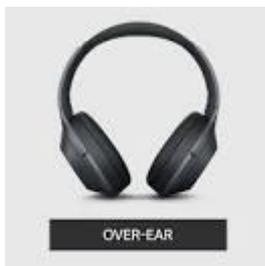


Fig: headphone

***Input/ output devices:(I/O Devices)**

Some devices can be used **both send input and display output** at the same time and they are called Input/ Output devices(I/O devices) , such as secondary memory (CDrw.Ram , DVD rw.ROM , Hard disk , floppy disk, Flash memory..)

***Input/ output Interface :**

Input / output Interface provides a method for transferring information between **processor** and **external input/ output devices** i.e ,**peripherals device** . These Input / Output interface in computer system are exists in the form of **special hardware component** between the **system bus** and **peripherals** .

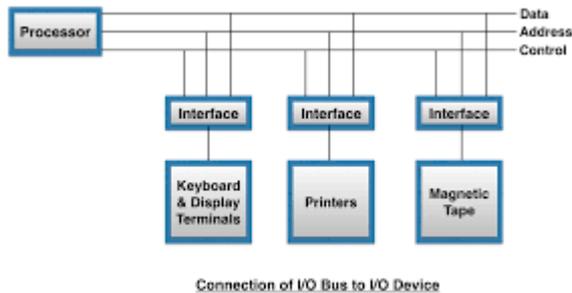


Fig : input/ output Interface

Input interface:

It transform the input data and instructions fed to the computer through its input devices into the binary codes which are acceptable to the computer.

Output interface :

It transform the information obtained from data processing from binary form to human acceptable form.

The **purpose** of Input / output Interface **is to resolve the differences that exit between the processor and each peripheral devices** .

The Major Differences are :

1. **Peripheral devices are electromechanical and electromagnetic devices and CPU and Memory are electronic devices . Therefore a conversion of signal values may be needed .**
- 2-The data transfer rate of peripherals devices is usually slower than the transfer rate of CPU a synchronization mechanism may be needed.

3-Data codes and formats in peripherals devices differ from the codes and formats in the CPU and memory .

H.W : What are the differences between

1- input device and output device

2- input device and input/ output device (I/O Devices)

3- Soft copy output and Hard copy output

H.W :What are the advantage of Laser Printer

H.W :Compare between laser printer and inkjet printer

H,W: What are the reason for using Input / Output Interface

H.W : What are the differences between Input Interface and Output Interface

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