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Since 1993

HARDWARE (ICT) CLASS – 6TH

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DOEACC QUALITY ASSURANCE IN COMPUTER EDUCATION

LAST CLASS : INPUT DEVICE

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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

OUTPUT DEVICE

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Output Device : The output devices are the devices which are used to display the result generated by the computer system. The key distinction between an input device and an output device is that an input device sends data to the computer (CPU) , whereas an output device receives data from the computer (CPU). Monitor, printer, plotter, speaker are the example of output devices.

List of Most Common Output Device :

1. Monitor
2. Printer
3. Headphones
4. Speakers
5. Projector
6. Sound Card
7. Video Card
8. Braille Reader
9. Speech-Generating Device

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MONITOR : The monitor is the common output device mostly used It is a softcopy output device. It can be thought of as a high resolution TV set. The monitor can also determine if the display will be color, black and white, or include graphical objects (pictures).

Older computer monitors made use of cathode ray tubes (CRT), which made them large, heavy and inefficient. Nowadays, flat-screen LCD monitors are used in devices like laptops, PDAs and desktop computers because they are lighter and more energy efficient. A monitor is also known as a screen or a visual display unit (VDU).

Two types of monitors are used.

- CRT monitors.
- Non CRT monitors

OUTPUT DEVICE (CRT MONITOR)

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CRT (CATHOD RAY TUBE) MONITOR : Most computer monitors are based on Cathode Ray Tube (CRT) technology. The basic operation of these tubes is similar to that in television sets.

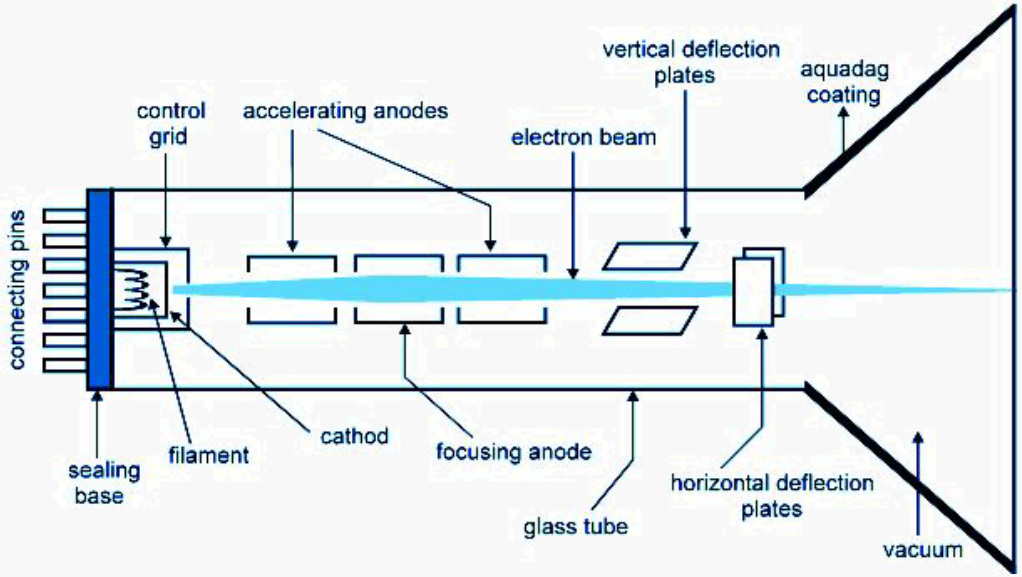
In CRT display CRT is a specialized vacuum tube in which images are produced when electron beam strikes a phosphor surface.CRT monitor contains cathode, control grid, acceleration anode, deflection plates & phosphor coated screen.

ADVANTAGES OF CRT DISPLAY

- Produce more colours.
- Price is lower than LCD & Plasma.
- High contrast ratio.
- Can easily increase brightness of monitor by reflecting the light.

DISADVANTAGES OF CRT DISPLAY

- High power consumed.
- Heavy to pick up and carry.
- Large space required.



OUTPUT DEVICE (NON CRT MONITOR)

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LCD (LIQUID CRYSTAL DISPLAY): In LCD, a liquid crystalline material is sandwiched between two glass or a plastic plates. The front plate is transparent and the back plate is reflective.

There is a coating of thin film on the front plate. The coating is transparent and conductive. Its sections (segments) are in the shape of desired characters.

LCDs do not emit their own light. Therefore, a light source is to be used. LCDs simply change the reflection of available light. Today, most LCDs used are of the type that produces dark images on a silver background.

Advantages:

- Light weight as compare to CRT.
- Perfectly flat screen.
- Consumed low electricity power.
- Able to generate higher brightness in images.

Disadvantages:

- Fixed resolution that cannot be changed.
- Expensive than CRT display.
- Limited viewing angle.
- Short life.

OUTPUT DEVICE (NON CRT MONITOR)

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PDP (PLASMA DISPLAYS PANEL) : In Plasma Displays, ionized gas is sandwiched between two glass plates. A number of parallel wires run horizontally as well as vertically.

A small amount of current is passed through one horizontal and one vertical wire to cause the gas to glow at a spot at the intersection of the wires.

The IBM 581 display employs 960 horizontal and 768 vertical pixel as compared to IBM-PC color graphic adapter which is provided with 320 X 200 pixels in medium resolution and 640 X 200 in high resolution.

Advantages:

- Large viewing angle.
- Thinner in width.
- Free standing or can be easily mounted on wall.
- Clear image, brighter viewing angle, better color quality & high contrast ratio.

Disadvantages:

- The plasma displays screens are costly.
- These are available on the selected models of portable computers.
- More electricity than LCD.
- As your plasma get older the brightness get dimmer.

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PRINTER : The printer is a most commonly used output device. It is used to producing the hard copy output. It prints characters, symbols & graphics on the paper. Printer can be categorized according to the technology used in printer, speed, and approach of printing, colors, language & the quality of printing.

Mainly printer can be classified in two types:

- Impact printer
- Non impact printer

IMPACT PRINTER : It works on the same mechanism of type-writer. It forms a character or image by striking mechanism such as hammer or wheel against to ink ribbon, leaving an image on paper. It is oldest technology and still is in used. It can capable to print single character or line at the same time. Commonly types of impact printers are dot matrix, daisy wheel, chain, drum printer.

CHARACTERISTICS OF IMPACT PRINTER:

- Physical contact with paper to produce output.
- Low cost
- Very noisy
- Very slow in printing
- Low quality print out
- Stand with dusty or extreme environment

OUTPUT DEVICE (CHARACTER PRINTER)

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DOT MATRIX PRINTER : Capable to print single character at the same time. Forms characters & images as a pattern of dots. Contains a print head which moves horizontally across paper. Uses 5 × 7 matrix to form a character. Print by hammering the pins on inked ribbon to leave ink impressions on the paper. Able to print 30 to 600 characters per second.

ADVANTAGES:

- Low cost & easily available.
- Cheap in cost.
- Can make carbon copy of print out.
- Low maintenance cost.
- Work with any type of environment.

DISADVANTAGES:

- Slow in speed.
- Very noisy.
- Cannot work perfectly in graphics.

OUTPUT DEVICE (CHARACTER PRINTER)

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DAISY WHEEL PRINTER : Able to print a single character at the same time. Contain a metal wheel on which the characters & numbers are raised on the each petal. The wheel is rotated very fast when the desired characters arrives at correct position a print hammer strike to produce output. Different type of font face can be used by replacing the daisy wheel. Able to print bold letter by striking on specific characters twice or thrice. Capable to print 10 to 50 characters per second.

ADVANTAGES

- Low cost.
- Can make carbon copy of print out.
- Low maintenance cost.
- Printing quality is similar to a type writer.
- Able to print bold characters.
- Allows using different font-face in same document.

DISADVANTAGES

- Very slow in speed.
- Very noisy.
- Cannot print graphics

OUTPUT DEVICE (LINE PRINTER)

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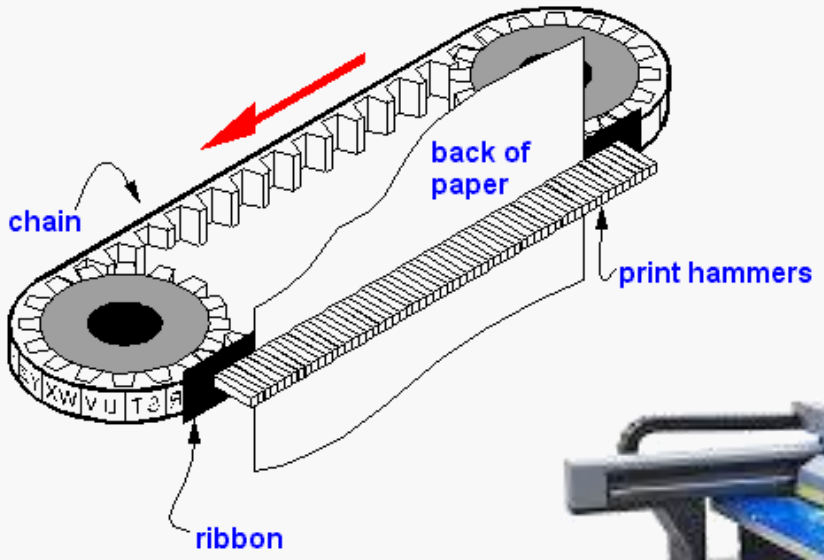
CHAIN PRINTER : Able to print a line at the same time. Consist of a metallic chain on which all characters of character set are embossed. Character set contains 48, 64 or 96 characters. Characters are embossed several times. Chain rotates at high speed when the desired characters in correct position the hammer strikes & the characters are print on paper. Capable to print 400 to 2500 lines per minutes.

ADVANTAGES:

- Low cost than non impact printer.
- Can make carbon copy of print out.
- Chain can be easily changed.
- Allowed to print different type font.
- Printing quality is similar to a type writer.

DISADVANTAGES:

- Slower than non impact printer.
- Very noisy.
- Large & heavy.
- Cannot print graphics.
- Only prints predefined set of characters



OUTPUT DEVICE (NON - IMPACT)

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NON IMPACT PRINTER : Non impact printer forms characters & images on paper without actually striking the paper. Paper & print head come in contact & hence the text or image is formed. Ink jet & laser printer are example of non impact printer.

CHARACTERISTICS OF NON IMPACT PRINTER

- Faster than impact printer.
- Ability to change type face automatically.
- High quality output.
- Support transparency.
- More expensive than impact printer.
- Less maintenance than impact printer.

OUTPUT DEVICE (NON - IMPACT)

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INK JET PRINTER : It's non-impact printer. It's a character printer. Forms characters and all kinds of images by spraying drops of ink on to the paper. Print head contains 64 tiny nozzles. To print a character the printer the printer selectively heats the appropriate set of nozzle as the print head moves horizontally. Inkjet printer can either color or monochrome. Capable to print 30 to 400 characters per minutes.

ADVANTAGES:

- High quality output.
- Silent during the operation.
- Able to print graphics.
- Able to print any characters & graphics.
- Able to generate color & monochrome output.

DISADVANTAGES:

- Slower than dot matrix printer.
- Cannot make carbon copy of print out.
- Expensive than impact printer.

OUTPUT DEVICE (NON - IMPACT)

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LASER PRINTER : It's non-impact printer. It's a page printer. Three main components laser beam, a multi-sided mirror, a photoconductive drum & toner. To print page laser beam is focused on drum by spinning multisided mirror. Drum is electric charged. Toner which is composed of oppositely charged ink particles, stick to the drum. Then toner focused on the paper with heat & pressure to generate output. Low speed laser printer can print 4 to 12 page per minute while high speed laser printer Capable to print 500 to 1000 pages per minutes.

ADVANTAGES:

- High quality output.
- Very faster in speed.
- Silent during the operation.
- Able to print graphics.
- Able to print any characters & graphics.
- Able to generate color & monochrome output.

DISADVANTAGES:

- Very expensive.
- Cannot make carbon copy of print out.

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HEAD PHONE: Headphones are small speakers that can be worn in or around your ears. Traditional headphones have two ear cups attached by a band that is placed over your head. Smaller headphones, often called earbuds or earphones, are placed inside the outer part of your ear canal.

Like speakers, headphones contain transducers that convert an audio signal into sound waves. Headphones that connect to an analog audio port (such as a 3.5 mm audio jack) process analog audio.

SPEAKER: A device that converts analog audio signals into the equivalent air vibrations in order to make audible sound. When CRT monitors were the norm, speakers designed for computers were shielded to avoid magnetic interference with the CRT's magnetic coil.

A computer speaker is an output hardware device that connects to a computer to generate sound. The signal used to produce the sound that comes from a computer speaker is created by the computer's sound card.

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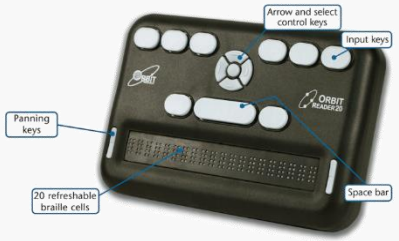
BRAILLE READER : A braille reader, also called a braille display, is an electronic device that allows a blind person to read the text displayed on a computer monitor. The computer sends the text to the output device, where it is converted to Braille and "displayed" by raising rounded pins through a flat surface on the machine.



Braille readers come in various forms, including large units (about the size of a computer keyboard) and smaller units, designed to work with laptops and tablet computers. There are also Braille reader apps for smartphones and tablets that work in conjunction with a Bluetooth braille output device.

SPEECH-GENERATING DEVICES : (SGDs), also known as voice output communication aids, are electronic augmentative and alternative_communication (AAC) systems used to supplement or replace speech or writing for individuals with severe speech impairments, enabling them to verbally communicate. SGDs are important for people who have limited means of interacting verbally, as they allow individuals to become active participants in communication interactions. They are particularly helpful for patients suffering from amyotrophic lateral sclerosis (ALS) but recently have been used for children with predicted speech deficiencies.

There are several input and display methods for users of varying abilities to make use of SGDs. Some SGDs have multiple pages of symbols to accommodate a large number of utterances, and thus only a portion of the symbols available are visible at any one time, with the communicator navigating the various pages. Speech-generating devices can produce electronic voice output by using digitized recordings of natural speech or through speech synthesis—which may carry less emotional information but can permit the user to speak novel messages.

STEPHEN WILLIAM HAWKING

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Stephen William Hawking : (8 January 1942 – 14 March 2018) was an English theoretical physicist, cosmologist, and author who was director of research at the Centre for Theoretical Cosmology at the University of Cambridge at the time of his death. He was the Lucasian Professor of Mathematics at the University of Cambridge between 1979 and 2009.

Hawking's scientific works included a collaboration with Roger Penrose on gravitational singularity theorems in the framework of general relativity and the theoretical prediction that black holes emit radiation, often called Hawking radiation. Hawking was the first to set out a theory of cosmology explained by a union of the general theory of relativity and quantum mechanics. He was a vigorous supporter of the many-worlds interpretation of quantum mechanics.

Hawking achieved commercial success with several works of popular science in which he discusses his theories and cosmology in general. His book *A Brief History of Time* appeared on the *Sunday Times* bestseller list for a record-breaking 237 weeks. Hawking was a Fellow of the Royal Society, a lifetime member of the Pontifical Academy of Sciences, and a recipient of the Presidential Medal of Freedom, the highest civilian award in the United States. In 2002, Hawking was ranked number 25 in the BBC's poll of the 100 Greatest Britons.

In 1963, Hawking was diagnosed with an early-onset slow-progressing form of motor neurone disease (also known as amyotrophic lateral sclerosis (ALS) or Lou Gehrig's disease) that gradually paralysed him over the decades. After the loss of his speech, he was able to communicate through a speech-generating device – initially through use of a handheld switch, and eventually by using a single cheek muscle. He died on 14 March 2018 at the age of 76, after living with the disease for more than 50 years.

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NEXT CLASS (MEMORY DEVICE)