
COMPUTER STUDIES NOTES

OUTPUT DEVICES



Output Devices

Soft copy output devices e.g.

1. Visual display unit –Liquid Crystal Display (LCD), flat panel, cathode ray;
2. Cathode Ray Tube (CRT)
3. Sound output
4. light emitting

Hard copy output devices e.g.

1. printers (impact, non-impact)
2. plotters

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Output Devices

An output device is a peripheral device which gives out a result of a processing activity in the computer. It receives data in form of pulses from the CPU and converts into a form that computer users can understand and interpret.

Output devices can be classified as *softcopy output* and *hardcopy output*

1. **Soft copy output devices e.g.**

this is information that can be displayed on the screen or listened to. This information is said to be intangible. Output devices such as the monitor, speakers and Light emitting diode (LED) are said to produce softcopy output therefore they are called softcopy output devices.

a. Visual display unit –Liquid Crystal Display (LCD), flat panel, cathode ray;

Monitors

A monitor (*also called screen or visual display unit (VDU)*) is an electronic peripheral device used to display information in the form of text, pictures and video, enabling the user to monitor what is going on in the computer. Examples of monitors include: CRT- cathode ray tube, LCD-liquid crystal display, GPD- gas plasma display.

Common words used with monitors

1. **Pixel** – pixel stands for picture elements. It is the smallest unit of a digital graphic that can be displayed on the screen and controllable by the computer.
2. **Resolution** – this is the measure of how fine the detail is on the screen. Either, resolution is the number of pixels per square unit. 1280×800 .
3. **Screen size** - The size of a screen is usually described by the length of its diagonal, which is the distance between opposite corners, usually in inches.
4. **Contrast** – this is the measure of how light or dark an image is on the screen.



i) ***CRT-cathode ray tube***

A CRT works by moving an electron beam back and forth across the back of the screen. Each time the beam makes a pass across the screen, it lights up phosphor dots on the inside of the glass tube, thereby illuminating the active portions of the screen. By drawing many such lines from the top to the bottom of the screen, it creates an entire screenful of images.

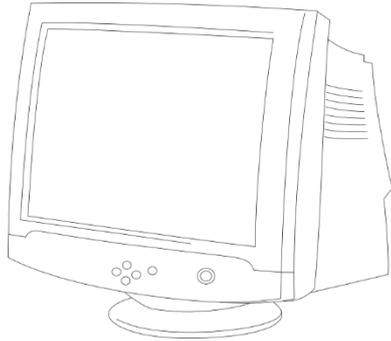


FIGURE 1: CRT MONITOR

The CRT monitors consume a lot of power and are bulky thus cannot be practical for use in portable devices. However they don't have angle distortion (variation in the relative brightness depending on viewing angle) as the LCD screens.

ii) ***Liquid Crystal Display (LCD)***

A Liquid crystal display (LCD) is a thin, flat display device made up of any number of color or monochrome pixels arrayed in front of a light source or reflector. It uses very small amounts of electric power, and is therefore suitable for use in battery-powered electronic devices. The LCD is made of two sheets of a flexible polarizing material with a layer of liquid crystal solution between the two.



FIGURE 2: LCD MONITOR

LCD monitors consume less power and are less bulky making them suitable for portable devices. There are two technologies used to make LCDs thus Passive Matrix and Active matrix. *In passive matrix*, LCDs create images by scanning the entire screen. This type of LCDs requires little power but have poor clarity. While *active matrix displays* are made using *thin film transistor* technology, hence the name TFT. These displays consume more energy than passive matrix but offer better clarity.

iii) *Sound output*

Produce sounds such as peeps, audio or digital. Examples include: speakers. Further, the sounds from the computer can be heard from the built-in case speaker, or the speakers which are plugged into the sound card.

For a computer to produce sound, the following factors are a necessity:

- a) Sound driver – this is a software that controls sound in the computer
- b) Sound card – this is the hardware device that enables sound in the computer
- c) Speaker – these is a device that produce sound

iv) *Light emitting*

These are indicators that display light when electric current is passed through them. They are used to give warnings the same way a motorist would use signals to indicate when he/she is over taken or taking a turn.



v) **Hard copy output devices e.g.**

this is information recorded on a physical medium such as paper or films. This information is said to be tangible. Devices like printers, microfilm and plotters are said to produce hardcopy output devices. Therefore they are referred to as hardcopy output devices.

1. Printers (impact, non-impact)

A printer is output device that produces text and images on a piece of paper.

Printers are classified in various categories however the common classification is classification according to printing mechanisms.

*Printers classified according to printing mechanisms can either be **Impact printers** or **non-impact printers***

Impact Printers

These printers produce text and images on a piece of paper by striking on an inked ribbon towards the paper using special hammers with characters appended on their heads.

Examples of these printers are a) Dot matrix printer and b) Daisy wheel printers

Non-impact printers

Provide prints by the print head element no coming into actual contact with the stationery but by other means such as thermal or electrostatic.

Examples of non-impact printers include: - inkjet, thermal, laser jet and photo printer.

Comparison between impact and non-impact printers

<i>Impact</i>	<i>Non-impact</i>
Are slow	Are fast
Use inked ribbons	Use thermal or electrostatic means
Can produce coupon multiple copies at a time	Cannot produce multiple copies
Cheaper	Expensive to acquire
Noisy	Quieter
Produce low quality printouts	Produce high quality printouts
Consume a lot of power	Consume less power



Factors to consider when acquiring a printer

- a) **User needs** – users have diversified needs, therefore while acquiring a printer clarify your own needs and familiarize yourself with the best printer for your needs.
- b) **Initial cost** – this is the cost of acquiring the printer from the market.
- c) **Running cost** – this is the cost for maintaining the printer
- d) **Speed of printing** – this is how fast or slow the printing process might be
- e) **Volume of printouts expected** – a printer for a school may handle more work than a printer for home use
- f) **Nature for printouts** – there are various sizes and materials to be printed. i.e. supermarkets and banks print smaller papers than schools others print fabric, boxes, leather, plastics etc.

2. Plotters

This is a computer printer for printing vector graphics. In the past, plotters were used in applications such as computer-aided design, though they have generally been replaced with wide-format conventional printers. Pen plotters print by moving a pen or other instrument across the surface of a piece of paper. This means that plotters are restricted to line art, rather than raster graphics as with other printers.



Questions on topic

1. What is the function of an output device?
2. Output devices can be classified as _____ and _____
3. Fill the table below:

Device	State whether it's (<i>input, output or processing</i>)
a) Monitor	
b) Printer	
c) Keyboard	
d) CPU	
e) Trackball	
f) Joystick	<i>Input device</i>
g) Speaker	
h) Computer memory	
i) Plotter	
j) Mouse	
k) Interactive white board	
l) Light pen	
m) Touch pad	
n) Light emitting diode (LED)	

4. Printed copy is often called?
5. Distinguish between impact and non-impact printers
6. What role do plotters play?
7. Under what circumstances is voice output necessary?
8. Describe six factors to consider when purchasing a printer
9. Define the following words:
 - a) CRT
 - b) Display size



- c) Resolution
- d) Refresh rate
- e) Contrast
- f) VGA

10. State three advantages of LCD display over CRT display

11. State two advantages of a dot matrix printer over a laser printer

12. Which printer is ideal in the following places: (dot matrix, laser printer, inkjet, thermal printer, photo printer,)

- i. In a bank. Why?
- ii. In a stationery shop. Why?
- iii. In a mobile banking shop. Why?
- iv. At home. Why?
- v. In a studio. Why?
- vi. In your school bursar's office. Why?

13. List three factors that are necessary for a computer to produce sound.

14. Kerubo went to purchase a printer from an electronic shop. List **one** item and **three** documents she was issued with after the purchase alongside full set of the printer and its peripherals.

15. What do you understand by the term wireless printer?



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