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HOUSE OF ASPIRANTS

COMPUTER

CHAPTER 5

Output Devices

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COMPUTER · CHAPTER 5

Output Devices

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IN THIS CHAPTER

- Types Of Output Devices
- Monitor (Visual Display Unit - Vdu)
- Comparison Of Monitors
- Projector
- Printer
- A. Impact Printer

An **Output Device** is a hardware device that receives processed data from a computer and presents it to the user in a meaningful form such as text, images, audio, video, or printed documents.

An output device displays or produces the result after the computer processes the input data.

Examples

- Monitor
- Printer
- Projector
- Speakers
- Plotter

INPUT → PROCESSING → OUTPUT CYCLE

```
Input Device
(Keyboard, Mouse)
        ↓
CPU
(Processing)
        ↓
Output Device
(Monitor, Printer, Speaker)
```

TYPES OF OUTPUT DEVICES

1. MONITOR (VISUAL DISPLAY UNIT - VDU)

A **Monitor** is the primary output device of a computer. It displays processed information in the form of:

- Text
- Images
- Graphics
- Videos

Types of Monitors

A. CRT Monitor (Cathode Ray Tube)

CRT monitors are based on **Cathode Ray Tube technology** and work similarly to old television sets.



Working

- An electron gun generates electron beams.
- These beams strike the phosphor-coated screen.
- Red, Green, and Blue (RGB) phosphor dots glow to create images.

Main Components

- Electron Gun
- Deflection Plate
- Fluorescent Screen
- Glass Envelope
- Face Plate

B. LCD Monitor (Liquid Crystal Display)

LCD is a flat-panel display that uses liquid crystals between two layers of polarized glass.

Working

- Electric current aligns liquid crystals.
- Crystals control light passing through the screen.
- Images are formed using pixels.



Uses

- Laptops
- Tablets
- Smartphones

C. LED Monitor (Light Emitting Diode)

LED monitors are improved versions of LCD monitors.

Difference from LCD

LCD	LED
Uses CCFL backlight	Uses LED backlight
Higher power consumption	Lower power consumption
Less brightness	More brightness



Uses

- LED TVs
- Laptops
- Computer Monitors
- Smartphones

D. Plasma Monitor

A Plasma Monitor uses small cells filled with noble gases (such as neon and xenon).

Working

- Electric voltage converts gas into plasma.
- Plasma emits ultraviolet light.
- UV light creates images on the screen.



Uses

- Home theatres
- Sports viewing
- Large-screen displays

Exam Point

Plasma Display uses ionized gas (plasma).

COMPARISON OF MONITORS

Feature	CRT	LCD	LED	Plasma
Size	Large	Thin	Very Thin	Thin
Power Consumption	High	Medium	Low	High
Weight	Heavy	Light	Very Light	Medium
Picture Quality	Good	Better	Excellent	Excellent
Technology	Electron Beam	Liquid Crystal	LCD + LED	Plasma Gas

2. PROJECTOR

A **Projector** is an output device that projects images, videos, and presentations onto a large screen or wall.

Uses

- Classrooms
- Conferences
- Meetings
- Movie Theatres



Types of Digital Projectors

A. LCD Projector

Uses:

Liquid Crystal Display Technology

Features

- Bright images
- Good color reproduction

B. DLP Projector(Digital Light Processing)

Working:Uses thousands of tiny mirrors.

Features

- High image quality
- Better contrast
- Widely used in theatres

3. PRINTER

A **Printer** is an output device that produces a permanent copy of information on paper.

Uses

- Reports
- Documents
- Certificates
- Photographs

Classification of Printers

Printers

│

├── Impact Printers

│ ├── Character Printers

│ └── Line Printers

│

└── Non-Impact Printers

├── Laser Printer

└── Inkjet Printer

A. IMPACT PRINTER

Impact printers print by striking an ink ribbon against paper.

Characteristics

- Noisy
- Low print quality
- Can print carbon copies

Types of Impact Printers

1. Character Printers

Print one character at a time.

Unit:Characters Per Second (CPS)

Types:

(i) Dot Matrix Printer

Uses pins in a print head to create characters using dots.

Speed:Approximately 200–500 CPS



Features

- Low cost
- Can print graphics
- Noisy

Exam Point

Dot Matrix = Impact Printer



(ii) Daisy Wheel Printer

Inventor:David S. Lee

Working: Uses a wheel shaped like a flower (daisy).

Speed :25–50 CPS

Features

- Prints only text
- Cannot print graphics
- Very slow

2. Line Printers

Print one complete line at a time.

Unit :Lines Per Minute (LPM)

Speed :500–3000 LPM

Types

- Drum Printer
- Chain Printer
- Band Printer

(i) Drum Printer

Working:Uses a rotating drum containing characters.

Features

- Very high speed
- Noisy
- Fixed character set

(ii) Chain Printer

Working :Uses a rotating chain with embossed characters.

Features

- High speed
- Noisy

Speed :500–3000 LPM(lines per minute)

(iii) Band Printer

Working :Uses a rotating steel band with embossed characters.

Features

- High speed
- Band can be changed to use different character sets

B. NON-IMPACT PRINTER

Prints without physical contact between print mechanism and paper.

Characteristics

- Quiet operation
- High-quality output
- Faster than impact printers

Unit:Pages Per Minute (PPM)

Types of Non-Impact Printers

(i) Laser Printer

Uses laser technology and powdered toner.

Working

1. Laser creates image on drum.

2. Toner sticks to charged areas.

3. Heat and pressure transfer image to paper.



Resolution :600 DPI(Dots per Inch) or more

Features

- Fast
- High quality
- Suitable for offices

Exam Point

Laser Printer uses Toner, not Ink.

(ii) Inkjet Printer

Prints by spraying tiny droplets of liquid ink.

Working :Uses tiny nozzles to spray ink on paper.



Resolution :At least 300 DPI

Features

- Excellent color printing
- Suitable for photos

- Lower initial cost

Exam Point

Inkjet Printer uses liquid ink cartridges.

Impact vs Non-Impact Printer

Feature	Impact Printer	Non-Impact Printer
Contact with Paper	Yes	No
Noise	High	Low
Speed	Lower	Higher
Print Quality	Lower	Better
Example	Dot Matrix	Laser Printer

4. SPEAKERS

Speakers convert electrical signals into sound.

Uses:

- Listening to music
- Watching videos
- Video conferencing
- Gaming

Exam Point

Speaker = Audio Output Device

5. PLOTTER

A **Plotter** is a specialized output device used for producing high-quality graphics and engineering drawings.

Uses:

- Engineering
- Architecture
- Graphic Design
- CAD Applications
- Maps and Blueprints



Difference from Printer

Printer	Plotter
Prints text and images	Draws precise graphics
Small-size printing	Large-size printing

Printer	Plotter
Less accurate	Highly accurate

Types of Plotters

A. Pen Plotter

Uses pens to draw continuous lines.



Uses:

- Engineering drawings
- Maps

B. Electrostatic Plotter

Uses electrostatic charge to attract toner.

Features

- High resolution
- Excellent color output

C. Inkjet Plotter

Uses inkjet technology for large-format printing.



Uses

- Posters
- Architectural drawings
- Signboards

D. Cutting Plotter

Also called: Vinyl Cutter

Uses

- Sign making
- Vehicle graphics
- Apparel design



E. Laser Plotter

Uses laser beams for creating graphics.



Features

- Very high precision
- Detailed output

SOFT COPY VS HARD COPY

Soft Copy	Hard Copy
Electronic form	Printed form
Displayed on monitor	Printed on paper
Editable	Usually not editable
Example: PDF on screen	Example: Printed PDF

MOST IMPORTANT FACTS FOR EXAMS

- ✓ Monitor is the most common output device.
- ✓ CRT stands for Cathode Ray Tube.
- ✓ LCD stands for Liquid Crystal Display.
- ✓ LED uses LED backlighting.
- ✓ Plasma monitors use ionized gas.
- ✓ Printer produces hard copy output.
- ✓ Dot Matrix is an impact printer.
- ✓ Laser Printer uses toner.
- ✓ Inkjet Printer uses liquid ink.
- ✓ DLP stands for Digital Light Processing.
- ✓ Plotter is used for engineering drawings.
- ✓ Speaker is an audio output device.

ONE-LINE REVISION POINTS

- Monitor displays soft copy output.
- CRT uses electron beams.
- LCD uses liquid crystals.
- LED is an advanced LCD.
- Plasma display uses plasma gas.
- Projector displays output on a large screen.
- Printer produces hard copy.
- Dot Matrix is an impact printer.
- Laser printer uses toner.
- Inkjet printer uses liquid ink.
- Plotter is used for CAD drawings.
- Speaker converts electrical signals into sound.

QUICK REVISION NOTES

Monitor → Soft Copy

CRT → Electron Beam

LCD → Liquid Crystal

LED → LCD + LED Backlight

Plasma → Ionized Gas

Projector → Large Screen Display

Printer → Hard Copy

Impact Printers: Dot Matrix ,Daisy Wheel ,Drum ,Chain

Non-Impact Printers: Laser ,Inkjet

Laser Printer → Toner

Inkjet Printer → Ink

Speaker → Audio Output

Plotter → Engineering Drawings