2.3 Output devices and their uses

- Identify output devices and their uses, e.g. CRT monitor, TFT/LCD monitor, IPS/LCD monitor, LED monitor, touch screen (as an output device), multimedia projector, laser printer, inkjet printer, dot matrix printer, wide format printer, 3D printer, speakers, motors, buzzers, heaters, lights/lamps
- Describe the advantages and disadvantages of any of the above devices
2.3 Output devices and their uses

**Cathode Ray Tube (CRT) Monitor**

*Use:* As primary output display for computers.

*Advantage:* **Cheaper** than other monitors and can be used with *light pens*. Resolution is also very good.

*Disadvantage:* Size is bigger – requires more desk space. Could be a safety hazard if not correctly supported.

**Liquid Crystal Display (LCD) Monitor**

*Use:* Have taken over from CRT as primary output display for computers. Also primary output for monitors.

*Advantage:* **Smaller and lighter** so less desk space required. Consumes **less power** and does not generate as much **heat** as CRT monitors.

*Disadvantage:* **Resolution** may not be as good as a CRT monitor.
2.3 Output devices and their uses

**In-Plane Switching IPS/LCD Monitor**

**Use:** IPS is generally used by creative professionals (professional graphic artists).

**Advantage:** Has wide viewing angles by altering the direction of the pixels within the display. Colour reproduction is better than other monitors.

**Disadvantage:** More expensive compared to other monitors.

**Light-Emitting Diode LED Monitor**

**Use:** LED monitors are generally used outdoors in store signs, destination signs and billboards due to their level of brightness.

**Advantage:** LEDS produces better light which improves the colour definition and can be used outdoors in different types of light. LED are also energy efficient and can last along time.

**Disadvantage:** More expensive compared to other monitors.
# 2.3 Output devices and their uses

<table>
<thead>
<tr>
<th>Touch Screen</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
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</table>
| **USE:** A touch screen is a computer display screen that is also an input device. Users can interact with the screen by using their fingers or a special stylus/pen.  
- Mobile Phones/Tablets  
- Terminals at POS/Banks/Stations | • No need for additional input devices.  
• No need for additional buttons.  
• Menus and interface generally very easy to use.  
• Zoom in and rotation is possible. | • Screen could become damaged, dirty, less visible etc.  
• Difficult to input high volumes of information compared to using a keyboard. |

<table>
<thead>
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<th>Projector</th>
<th>Advantages</th>
<th>Disadvantages</th>
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</table>
| **USE:** Multimedia projectors are used when projecting signals from various (Computer, TV) devices onto a large screen.  
- Classrooms  
- Offices  
- Training Presentations  
- Home cinema systems | • Is able to project onto a big screen allowing more people to see the output.  
• Users can gather around one screen – main focal point in classrooms. | • Output resolution may not be the same quality as other devices.  
• Obstacles could affect block the projection.  
• Expensive to buy and difficult to set up. |
## 2.3 Output devices and their uses

### Inkjet Printer

**USE:**
- Inkjet printers are used when **low output volumes** are required.
  - Home use to print homework or single pages/images.

<table>
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<th>Disadvantages</th>
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| - Cheap high quality printing.  
- Cheaper to buy compared to laser printers.  
- Small in size – takes up less desk space. | - Ink cartridge can run out quickly and be expensive to replace.  
- Slow printing compared to laser printer. |

**USE:**
- **Inkjet printers** are used when **low output volumes** are required.
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### Laser Printer

**USE:**
- Laser printers are used when **high output volumes** are required.
  - Schools  
  - Offices

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| - High quality printing  
- Printing is fast especially when printing in high volumes.  
- Tonner lasts longer than inkjet cartridge – cost effective.  
- Prints quietly. | - Laser printer is more expensive to buy.  
- Colour laser printers are more expensive to run compared to black and white laser printers. |

**USE:**
- **Laser printers** are used when **high output volumes** are required.
  - Schools  
  - Offices

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### Dot Matrix Printer

**USE:**

- Dot Matrix is a type of printing which uses a print head which presses against an inked ribbon whilst moving back and forth.
- Shop receipts
- Airline tickets
- When duplicates (carbon copies) are required.

**Advantages**

- Not affected by hot/dusty environments.
- Can print carbon copies (useful when additional copies need to be signed).
- Cheap to run and maintain.

**Disadvantages**

- Very slow printing
- Poor Quality printing
- Noisy compared to other printers.

### Wide Format Printer

**USE:**

- Wide Format printers are generally used when large format printing is required.
  - Banners
  - Billboards
  - Signs
  - Posters
  - Photographs and Art

**Advantages**

- High resolution printing compared to laser and inkjet printers.
- Large printouts
- Companies are able to print in house which is cheaper than asking another company to print.

**Disadvantages**

- Generally expensive to buy and maintain.
### 2.3 Output devices and their uses

#### 3D Printer

**USE:**
3D Printers can produce solid objects by building layer upon layer.
- Prosthetic limbs
- Manufacturing Parts
- Medical Applications
- Construction
- Fashion/Arts

<table>
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| • Products can be customised.  
• Prototypes can be created quickly.  
• Parts can be created which are no longer manufactured.  
• Artificial organs can be created. | • Counterfeits products could be created.  
• Dangerous objects could be printed if used inappropriately.  
• Very expensive printer. |

#### Speakers

**USE:**
Speakers are required to output sound. Essential for video conferencing, movies, computer games etc.

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| • Speakers can be used wirelessly using Bluetooth technology.  
• Sounds can be amplified.  
• Surround sounds systems to give a more realistic experience. | • Not as personal compared to headphones – can be heard by everyone.  
• An underpowered amplifier playing at high volumes can damage a speaker. |
### 2.3 Output devices and their uses

**Actuators** are part of the control process – digital signals are sent by the computer to actuator to **affect** or **control** the real world.

<table>
<thead>
<tr>
<th>Type</th>
<th>Use</th>
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</table>
| **Motors** *(Spins things around)* | • Washing machines  
• Control Fans  
• Control Robot Arms in manufacturing |
| **Buzzer** *(Creates a noise)* | • Used in burglar alarms  
• Microwave ovens and other household appliances  
• Sporting events/Game shows |
| **Heater** *(Increases temperature)* | • Control heat in a central heating system  
• Control heat in a greenhouse  
• Control heat in an oven |
| **Lights** *(Creates light)* | • Security lights  
• Car Dashboard – e.g. to alert driver of low fuel.  
• Lights in greenhouse |