

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

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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.



Flat Screen

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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.



Flat Screen

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.



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Touch Screen



USE:	Advantages	Disadvantages
<p>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.</p> <ul style="list-style-type: none">• Mobile Phones/Tablets• Terminals at POS/Banks/Stations	<ul style="list-style-type: none">• 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.	<ul style="list-style-type: none">• Screen could become damaged, dirty, less visible etc.• Difficult to input high volumes of information compared to using a keyboard.

Projector



USE:	Advantages	Disadvantages
<p>Multimedia projectors are used when projecting signals from various (Computer, TV) devices onto a large screen.</p> <ul style="list-style-type: none">• Classrooms• Offices• Training Presentations• Home cinema systems	<ul style="list-style-type: none">• 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.	<ul style="list-style-type: none">• 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.

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Inkjet Printer



USE:	Advantages	Disadvantages
<p>Inkjet printers are used when low output volumes are required.</p> <ul style="list-style-type: none">• Home use to print homework or single pages/images.	<ul style="list-style-type: none">• Cheap high quality printing.• Cheaper to buy compared to laser printers.• Small in size – takes up less desk space.	<ul style="list-style-type: none">• Ink cartridge can run out quickly and be expensive to replace.• Slow printing compared to laser printer.

Laser Printer



USE:	Advantages	Disadvantages
<p>Laser printers are used when High output volumes are required.</p> <ul style="list-style-type: none">• Schools• Offices	<ul style="list-style-type: none">• High quality printing• Printing is fast especially when printing in high volumes.• Toner lasts longer than inkjet cartridge – cost effective.• Prints quietly.	<ul style="list-style-type: none">• Laser printer is more expensive to buy.• Colour laser printers are more expensive to run compared to black and white laser printers.

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Dot Matrix Printer



USE:	Advantages	Disadvantages
<p>Dot Matrix is a type of printing which uses a print head which presses against an inked ribbon whilst moving back and forth.</p> <ul style="list-style-type: none">• Shop receipts• Airline tickets• When duplicates (carbon copies) are required.	<ul style="list-style-type: none">• Not affected by hot/dusty environments.• Can print carbon copies (useful when additional copies need to be signed).• Cheap to run and maintain.	<ul style="list-style-type: none">• Very slow printing• Poor Quality printing• Noisy compared to other printers.

Wide Format Printer

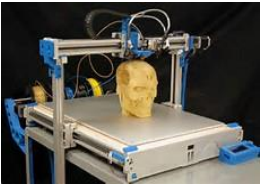
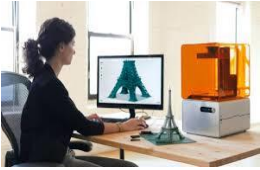


USE:	Advantages	Disadvantages
<p>Wide Format printers are generally used when large format printing is required.</p> <ul style="list-style-type: none">• Banners• Billboards• Signs• Posters• Photographs and Art	<ul style="list-style-type: none">• High resolution printing compared to laser and inkjet printers.• Large printouts• Companies are able to print in house which is cheaper than asking another company to print.	<ul style="list-style-type: none">• Generally expensive to buy and maintain.

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3D Printer



USE:	Advantages	Disadvantages
<p>3D Printers can produce solid objects by building layer upon layer.</p> <ul style="list-style-type: none">• Prosthetic limbs• Manufacturing Parts• Medical Applications• Construction• Fashion/Arts	<ul style="list-style-type: none">• Products can be customised .• Prototypes can be created quickly.• Parts can be created which are no longer manufactured.• Artificial organs can be created.	<ul style="list-style-type: none">• Counterfeits products could be created.• Dangerous objects could be printed if used inappropriately.• Very expensive printer.

Speakers



USE:	Advantages	Disadvantages
<p>Speakers are required to output sound. Essential for video conferencing, movies, computer games etc.</p>	<ul style="list-style-type: none">• Speakers can be used wirelessly using Bluetooth technology.• Sounds can be amplified.• Surround sounds systems to give a more realistic experience.	<ul style="list-style-type: none">• Not as personal compared to headphones – can be heard by everyone.• An underpowered amplifier playing at high volumes can damage a speaker.

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



Type

Motors

(Spins things around)

Use

- 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 green house
- Control heat in an oven



Lights

(Creates light)

- Security lights
- Car Dashboard – e.g. to alert driver of low fuel.
- Lights in greenhouse