

Year 10 ICT Knowledge Organiser 1 : Input Devices

1. PERIPHERAL DEVICES

A **peripheral device** is an **internal or external** device that connects directly to a computer or other digital device but does not contribute to the computer's primary function, such as computing. It helps users access and use the functionalities of a computer.

2. INPUT DEVICES

An **input device** is a piece of equipment that **allows data to be entered** into a computer. These devices are used to create digital products.

3. CAPTURING IMAGES

Digital camera: A way of capturing a digital image. Commonly embedded within smart devices now.



Scanner: To digitise documents which means to **convert** a hard copy (paper) **into a digital** version stored on a computer. There are two types of scanner: **flatbed** and **handheld**.



Graphics tablet: It allows the user to input a drawing to the computer using a type of pen called a stylus.



4. NAVIGATION

Mouse: A mouse is used to select, drag and drop items, control tools and scroll through pages

Trackball Mouse: includes a large ball on the top or side that can be controlled by the thumb.

Gaming: designed to play for long periods with customisable buttons, making it more efficient.

Touchpad: a pointing device built into a keyboard on devices like a laptop.



5. KEYBOARDS

QWERTY: a standard keyboard used to allow fast input of data into a computer.

Braille: uses raised symbols on each key to aid users with a visual impairment.

Concept: uses symbols/symbols images on each key to allow fast input of data.



6. SOUND

MIDI keyboard: a way of inputting sounds to a computer through digital signals.



Microphone: Used to input data that can be converted digitally or outputted to an output device like speakers.



7. SENSORS

Sensors continuously record data and **input** it into the computer for a specific purpose. They may take readings on:

- temperature
- light
- humidity
- infrared
- pH levels
- pressure
- motion



8. READERS

QR code reader: scans a QR code, normally found on a **mobile phone** and get information about a product or service.

Barcode reader: reads a barcode to be transferred to a computer. E.g. information about a product in a supermarket.

RFID reader: A small chip to identify electromagnetic fields using **radio waves** and can be used from a distance. E.g. tags on clothes in shops.

Magnetic stripe reader: inputs the information held on the **black magnetic stripe**. E.g. on the back of bank cards

Biometrics: uses unique **physical characteristics** of an individual to input data into a computer such as: eye (**retina** and **iris**) recognition, **facial recognition** or **fingerprints**. E.g. FaceID

Year 10 ICT Knowledge Organiser 2 : Output and Storage Devices

1. PERIPHERAL DEVICES

A **peripheral device** is an **internal or external** device that connects directly to a computer or other digital device but does not contribute to the computer's primary function, such as computing. It helps users access and use the functionalities of a computer.

2. OUTPUT DEVICES

This is a piece of equipment that allows users to **receive data** from a computer. Outputs can be audio, visual or in physical hard-copy form.

3. VISUAL OUTPUT

Monitor: To **view** your work on a **screen**, you need a display screen, also known as a monitor. The mouse controls the pointer, but the screen allows you to **see** where the pointer is and navigate the system.



Projector: used to view data on a larger screen. E.g. in assemblies, or conferences.

4. AUDIO OUTPUT

Speakers: allows the user to hear sound, from listening to music, watching a video, or hear alerts on a computer system. Speakers are **important** for users with **visual impairments**.



Headphones: alternative output device for sound. They have the advantage of delivering sound **only** to the **person** using them. They are good for busy environments e.g. call centres. Headphones that include a microphone are useful for audio/video meetings.



5. PHYSICAL OUTPUTS

Inkjet printer: common **household** printer which prints content on paper. **Cheap** to buy and set up. Prints to a **good quality**.

Laser Printer: **quicker** and **more economical** form of printing on paper. **More expensive** to set up initially. Often found in **businesses**.

3D printer: use instructions from **CAD** software and create a **3D design** of a product. Useful when creating a **prototype**.

Dot matrix printer: It has small pins on a print head that hit against an ink-soaked ribbon to make a mark on **multiple sheets** of paper at once.

Dye-sublimation printer: uses **heat** to print on a **variety of materials**.

6. STORAGE

We need to use storage devices to **save** and **keep data**. They can be **internal or external** devices and are either **magnetic, optical or solid-state** storage. The device we choose depends on a range of factors.

7. MAGNETIC STORAGE

Magnetic storage uses different patterns in a magnetisable material to store data and is a form of non-volatile memory.

Hard disk drive (HDD): one of the most common storage devices for a computer system. **Large** storage **capacity**, **quick** read-write **speeds**, **cheap per GB**. Used in everyday computers and laptops.

Magnetic tape drive: **expensive** form of storage. **Very large capacity**, robust, **slower** read-write **speeds**. Used for archiving and backup.

8. OPTICAL STORAGE

*Optical storage uses laser beams to record and retrieve digital data. Relatively **low-cost**, particularly for **mass production**.*

CD/DVD: CDs have **moderate storage** for music. DVDs have **high storage** for films. Great for backups.

Blu-ray: Similar to DVDs but have **faster access speeds** and **higher storage**.

9. SOLID-STATE STORAGE

*Solid-state storage devices use integrated circuits and flash memory to store data. They have **no moving parts**, making them **portable** and **robust**, a safer option than magnetic storage for transportation.*

Solid-state drive (SSD): **robust** and **portable**. **High access speeds**. More **expensive per GB** than HDD.

Pen/USB sticks: light and **robust**. Compatible with many devices. **Fast access speeds**, **reasonable cost per GB**.

Memory cards: **robust** and **portable**, fits into many mobile devices. **Reasonable cost for large storage capacity**.

9. CLOUD STORAGE

A type of storage where data is transferred and stored on remote systems that maintain, control and back up over the internet. Limited free storage for users, businesses can pay for upgraded usage (including admin rights and higher storage). Increasingly popular.

Year 10 ICT Knowledge Organiser 3 : Basic Internal Components

1. MOTHERBOARD

A circuit board that acts as the **central hub** in a computer system for everything to connect, **allowing communication** between internal components. It connects the **power supply** and defines the components that can control the computer.

2. NETWORK INTERFACE CARD

A NIC is a small circuit board that allows the computer to **connect to a network, controlling the data flow** on that network.

3. SOUND CARD

Generates sound that can be recorded and played. **Converts sound from analogue to digital data** (e.g. recording from a microphone to store as an audio file) **and vice versa**.

4. GRAPHICS/VIDEO CARD

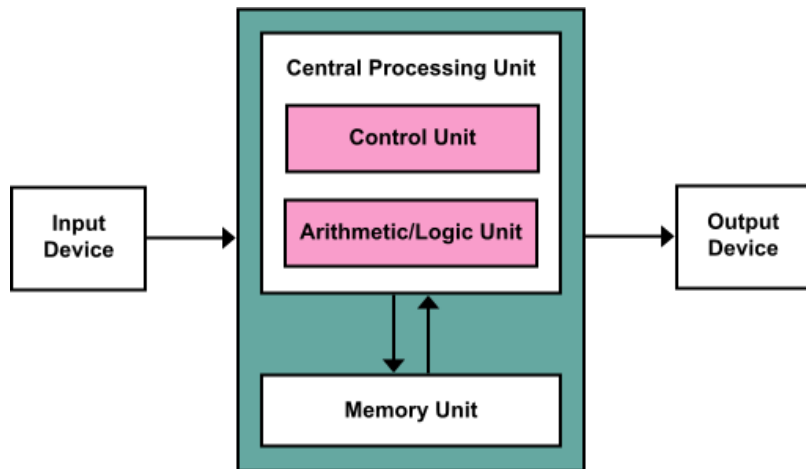
Can be **built into the motherboard or separately attached**. It **outputs images** to a display, **controlling each pixel** on the screen. A high-quality graphics card is required for gaming.

5. THE CENTRAL PROCESSING UNIT (CPU)

Control unit (CU): manages instructions and the transfer of data.

Immediate access store (IAS): holds data and programs currently in use for quick access by the CPU.

Arithmetic-logic unit (ALU): performs arithmetic calculations (e.g. addition, division, etc.) and logical operations (e.g. AND, OR and NOT).



6. PORTS

A port is an interface between the computer, and its input and output devices to allow instructions and data to flow between them.

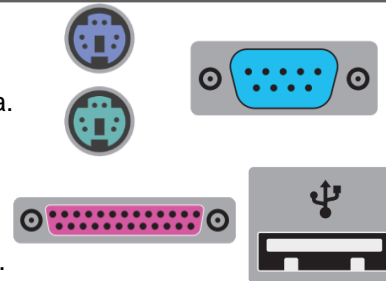
7. DEVICE PORTS

PS/2: connection for mice and keyboards. Colour-coded for ease-of-use.

Serial port: used by sensors collecting data.

Parallel port: used by printers, hard drives and modems.

USB port: industry standard connection, allowing digital data transfer through cables. It has largely replaced the other device ports.



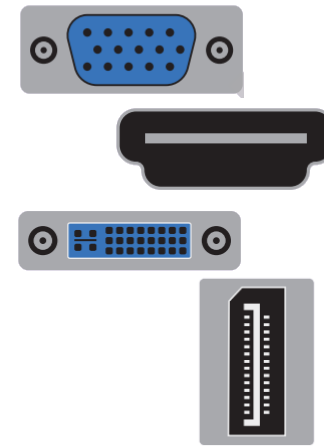
8. VISUAL PORTS

VGA port: a video graphics array port sends analogue video signals between devices. Commonly used for projectors.

HDMI port: a high-definition multimedia interface. Has largely replaced the VGA port.

DVI port: the digital visual interface is versatile, supporting both analogue and digital signals. Used for high-quality digital video and audio. Most audio-visual equipment has a DVI-I port.

DisplayPort: used to connect a video source to a computer. Can transfer audio, USB and other types of data.



9. NETWORK PORTS

Ethernet port (802.3): allows Ethernet cables to be plugged in to connect to a wired network. Also used to provide an internet connection by connecting to a Wi-Fi router or modem.

