Hardware & Software
Year 7 | Theme 2
Knowledge Organiser

KEYWORDS

Hardware – physical components that make up a computer system
Software – programs used by the computer
Device – an object or machine that has been invented for a particular purpose
Computer System – combination of hardware and software
Input – data going **in** to the computer system
Process – instructions being executed
Output – data going **out** of the computer system

System Software – software designed to provide a platform for other software e.g. operating system

Operating System– manages the computers hardware, applications and utility software e.g. Windows or Mac

Application Software or (Apps)– software designed for a specific purpose e.g. Microsoft Word or Google Chrome

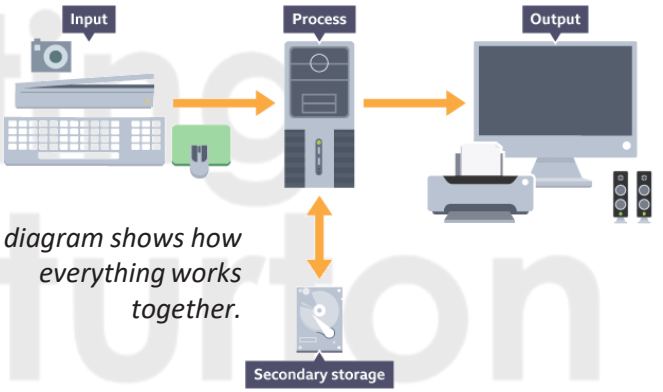
Utility Software- software designed to help maintain a computer e.g. Antivirus software

Computer Systems

A computer system requires both **hardware** and **software** to function. Aside from the internal components of a computer, additional hardware allows the user to communicate with the system through **inputs** and **outputs**.

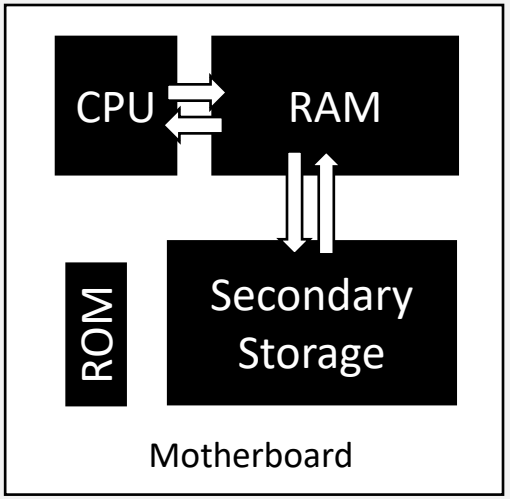
Input device	Output device
Mouse	Screen
Keyboard	Speakers
Camera	Printer
Microphone	LEDs

The table below shows some examples of input and output hardware.



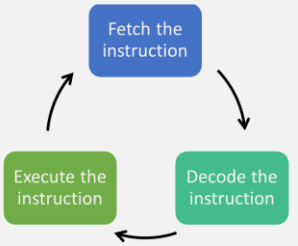
This diagram shows how everything works together.

Inside a Computer



CPU – Central Processing Unit (the brains of the computer)
The CPU is where processes such as calculations are carried out. Whatever is done on our computers, such as checking emails, playing games and doing homework, the CPU has processed the data we use.

The basic operation of a computer is called the 'fetch-execute' cycle. The CPU fetches the **instruction** from its **memory (RAM), decodes** the instruction and then **executes** it. This is done repeatedly from when the computer is booted up to when it is shut down.



RAM – **Random Access Memory** - The computers main memory which holds programs that are **currently running**. RAM is **volatile**!

ROM – **Read Only Memory** – contains the program to **boot** up the computer.

Secondary Storage – **permanent** data storage to store files/programs/apps e.g. hard drive in a computer or flash memory in a phone e.g. a phone with 64GB of storage.

The Cloud

The Cloud is a way of storing your files remotely, i.e. not on your device..Large data centres around the world store your files and they are accessed via The Internet

Modern Technology

Virtual Reality (VR) is a form of computer simulation which allows users to interact with real-life situations
Autonomous Cars An autonomous car is a vehicle capable of sensing its environment and operating without a person in control

Types of Software

The operating system is needed to perform a number of tasks. It provides:

- **user interface**,
- manages the use of memory
- Manages opening, closing, saving and deleting of files.
- Most operating systems have features that look after the security of the computer with usernames and passwords.

Examples of operating systems include Windows, Linux, Mac OSX, Android and iOS.

Computing @ Turton