

Year 7 Computer Science 7.1

A computer system is a combination of **hardware** and **software** that work together to process data.

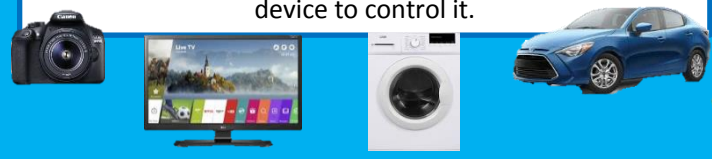
Hardware: physical components that make up a computer system.

Software: programs/applications that run on a computer.

General purpose system: a computer system designed to perform multiple tasks. e.g. tablet, laptop, smartphone.



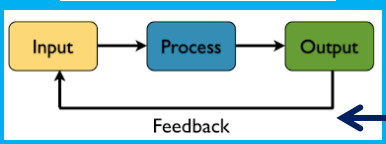
An **embedded system:** a dedicated system built into a device to control it.



Benefits of embedded systems:

- ✓ easier to design .
- ✓ cheaper to produce.
- ✓ more **efficient** at doing their job.

System Lifecycle Diagram



Computer systems work by taking **INPUTS** **PROCESSING** them and producing **OUTPUTS**.

INTERNAL Hardware: physical components that make up a computer system (**inside the case**)

The Central Processing Unit (CPU):

the CPU **processes** data and instructions.



The Power Supply and Fan:

the power supply pumps **energy** around the system and the fan keeps the system **cool**.



The Case:

the case keeps all the internal components in place and **protects** them from damage.



Random Access Memory:

stores any **OPEN** programs or data that is **IN USE**.



The Motherboard:

the motherboard **connects** all the components together allowing messages to be sent between them.



Hard-Disk Drive (HDD):

the HDD **stores** data that is **not open or in use** (permanently).



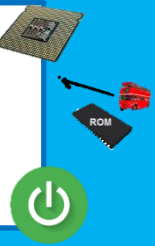
ROM (Read Only Memory)

ROM holds a program called the BIOS. This checks all the hardware is working and gets the computer ready to be used.



When the power button is pressed, the CPU fetches the 'boot up' instructions from ROM.

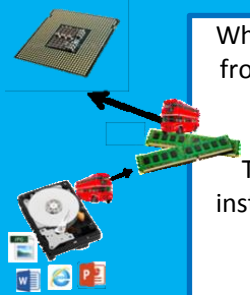
The CPU processes these instructions to start up the computer.



When a program is opened, it is moved from the hard-drive to Random Access Memory (RAM).

The CPU then fetches the program instructions one by one from RAM, and processes them.

When the program is closed, the program instructions return to the hard-drive.



Peripherals are **external** hardware components. (**connected to a computer**).

Peripheral	Peripheral name	Input?	Output?
	Mouse	x	
	Webcam	x	
	Microphone	x	
	Printer		x
	Projector		x
	Monitor		x
	Keyboard	x	
	Speakers		x

Data, combination, cycle, physical, component, category, embedded, internal, external, regulate, dedicated.



What I need to know:

Define computer system.			
Define hardware.			
Define software			
Define general purpose system and give an example.			
Define embedded system and give an example.			
Explain the benefits of using embedded systems in devices instead of general purpose systems.			
State the name of the cycle that all computer systems follow. Draw the diagram.			
Define internal hardware.			
List the names of the 6 main internal hardware components.			
Outline the function of the CPU.			
Outline the function of the power supply and fan.			
Outline the function of the case.			
Outline the function of RAM.			
Outline the function of the motherboard.			
Outline the function of the hard disk drive.			
Outline the function of ROM			
Describe what happens when the power button is pressed.			
Describe what happens when a program is opened.			
Define the term peripheral.			
Name 6 peripherals and state whether they input or output data.			
<i>Can you give the definitions of the tier two words for this unit and use them in a sentence to do with computer science. E.g. a computer processes <u>data</u>.</i>			