



Year 8 Computing

Ark Globe Academy

Remote Learning Pack 2

Spring Term

Session	Title	Work to be completed	Resource provided	Outcome	On-Line Support
1	The Computer System	1. Read notes on topic. 2. Complete knowledge worksheet.	Notes, Worksheet	Completed worksheet questions	www.bbc.co.uk/bitesize/topics/zmpsgk7
2	Hardware	1. Read notes on topic. 2. Complete knowledge worksheet.	Notes, Worksheet	Completed worksheet questions	www.bbc.co.uk/bitesize/topics/zmpsgk7
3	Internal Components	1. Read notes on topic. 2. Complete knowledge worksheet.	Notes, Worksheet	Completed worksheet questions	www.bbc.co.uk/bitesize/topics/zmpsgk7
4	Von Neumann Vs Embedded Systems	1. Read notes on topic. 2. Complete knowledge worksheet.	Notes, Worksheet	Completed worksheet questions	www.bbc.co.uk/bitesize/topics/zmpsgk7



The Computer System

What is a computer?

A computer is a system where you **input data**, it **processes** the data and then **outputs** data.



What is a computer made of?

Computers are made of two parts: **hardware** and **software**.



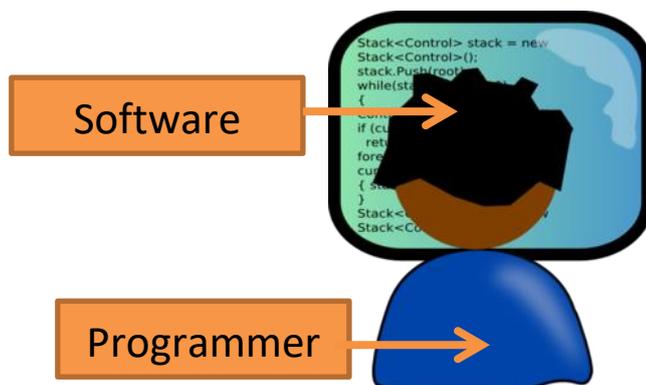
What is hardware?

Hardware is the **physical** part of the computer. It is the part that you can **touch**.

Hardware includes the electronic components that are inside the computer.

What is software?

Software is a **list of instructions**, that **programmers** write. The instructions are **processed / run** by the hardware.

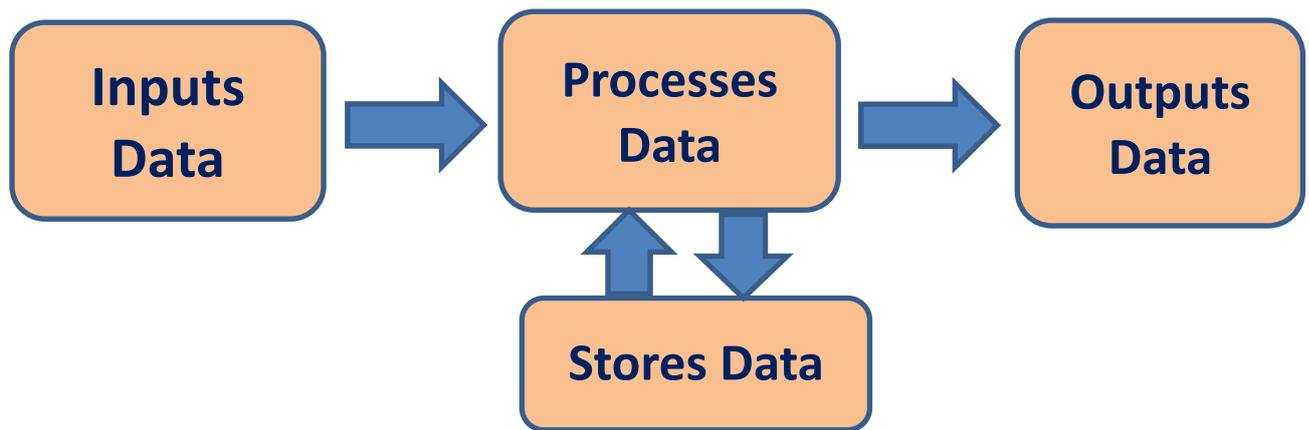




Hardware

What does a computer do?

A computer **inputs data**, **processes** the data and **outputs** data. Sometimes we want to **store** the data to process it later. All these computer activities are represented in the hardware diagram that you see below.



The arrows in the diagram show how the data moves.

- 1) So the data is first input, then processed.
- 2) From being processed the data can either be stored or be output.
- 3) The data that is stored can go back to being processed, that is why there is an arrow coming into and one going out from storage.

What are peripherals?

A peripheral is any **hardware** connected to a computer that **inputs** or **outputs data**.



Examples of peripherals

Picture	Name	Function
	Mouse	Input The mouse is used to input the position of the pointer.
	Keyboard	Input The keyboard is used to input characters (text).
	Microphone	Input The microphone is used to input sound.
	Webcam	Input The webcam is used to input images.
	Scanner	Input The scanner is used to input images (often documents).
	Monitor	Output The monitor is used to output images (which can include text).
	Printer	Output The printer is used to output documents and images to paper.



	Speakers	Output The speakers are used to output sound.
	Headphones	Output The headphones are used to output sound.

What are storage devices?

Storage devices are where computers store the data.

Picture	Name	Function
	DVD/CD/BluRay	Storage These disks are used to permanently store data.
	Magnetic Hard disk	Storage These disks are used to permanently store data.
	USB stick / Memory stick	Storage These drives are used to permanently store data.
	Sim card	Storage These cards are used to permanently store data.



Internal Components

What important components are inside a computer?

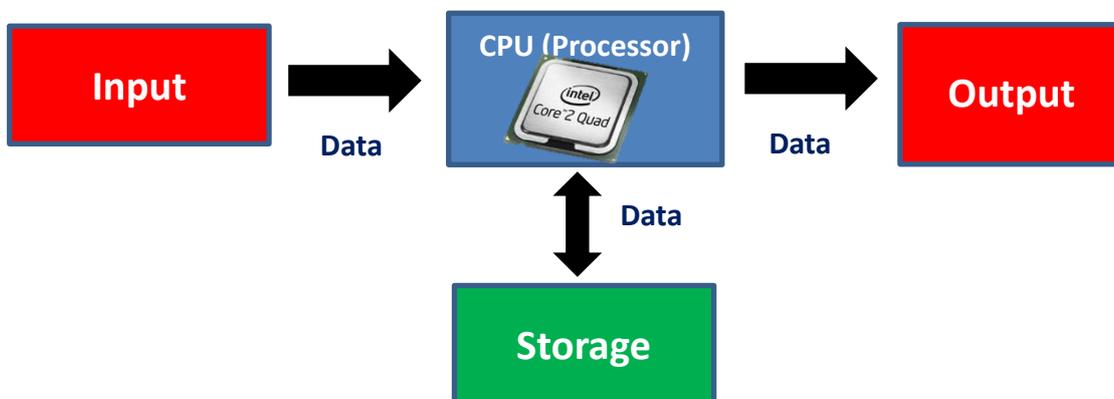
There are many different components **inside of a computer**.

1. The Central Processing Unit or CPU (also called processor)
2. The Random Access Memory or RAM
3. The hard disk

What is the CPU and what does it do?



The CPU (Central Processing Unit) **processes data and instructions.**





What is RAM and what does it do?



RAM is a type of **memory** that **stores data and instructions on a temporary basis**. If the computer has no power, the data is lost. This is because RAM stores the **data and instructions of the software that is currently running**.

What is a hard disk and what does it do?



The hard disk **stores data and instructions on a permanent basis**. That means that the data is not lost when the computer has no power.

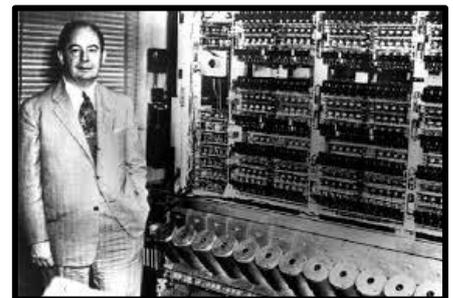
Von Neumann Vs Embedded Systems

What are the two types of computer system you need to know?

- a) Von Neumann design**
- b) Embedded system**

Who was Von Neumann?

Von Neumann was a **computer scientist**. In 1945 Von Neumann created a computer design that is still used today.



What was special about the Von Neumann design?

The Von Neumann design made it possible to **add, delete and update software**.

Which computers use Von Neumann design?

Most modern computers use the Von Neumann design: **Smart phones, tablets, games consoles, laptops and desktop computers**, all use the Von Neumann design.



What is an embedded system?

An embedded system is a computer that:

- 1) **Is part of a bigger machine.** For example, it is part of a microwave or a car.
- 2) Has **one single purpose.** That means that they do only one thing. For example, the computer controlling automatic doors only controls if they open or close.



How can you tell that a computer is an embedded system?

There are 4 things that tell you that a computer is an embedded system:

- 1) The computer only has **one job** (controlling the washing machine, controlling the gates)
- 2) You **cannot install new software** and you **cannot update the software** on it.
- 3) The **user interface** (how you control the computer) **is limited** (a few buttons and dials for a microwave, a sensor for the automatic gates).
- 4) It responds **quickly** to instructions (imagine the trouble if the automatic door does not open when there is someone walking towards it!)



The Computer System

Task 1

A computer is made from how many parts?

What are these parts called?

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.....
.....

Task 2

Write the definition of hardware.

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Task 3

Write the definition of software.

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Task 4

Your thoughts on what a computer system does.

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Task 5

Explain what a computer system does.

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Hardware

Task 1

a) What word can we use to describe input and output hardware?

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.....

b) What is a peripheral?

.....
.....
.....

Task 2

Complete the table below

	Name of peripheral	Input or Output?
		
		
		



Task 3

Name the storage hardware below



.....



.....



.....



.....



Task 4

Fill in the gaps with the words listed below. Each word should be used once.

**processed | storage | output | peripherals | touch | input |
USB memory stick**

Hardware can be defined as the part of the computer system that we can

.....

Hardware like the keyboard is responsible for data. This data is

then

Once the data is processed it could be received by the hardware

like the monitor.

Finally, the data that can be stored on devices like the hard drive or a

..... This is known as hardware.

All these pieces of input, output and storage hardware are known as



Internal Components

Name the internal hardware below



a) _____



b) _____



c) _____

What is the function of the CPU/processor?

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What is the function of RAM?

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.....

What is the function of the hard disk?

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.....
.....



Von Neumann Vs Embedded Systems

There are two types of computer you need to know, they are:

- a) _____

- b) _____

Who was Von Neumann?

Give three examples of computers that use the Von Neumann design

- a) _____

- b) _____

- c) _____

What are the three things you can do to software on a computer that uses the Von Neumann design?

- a) _____

- b) _____

- c) _____



What is an embedded system?

What are the four characteristics of embedded systems?

a)

b)

c)

d)
