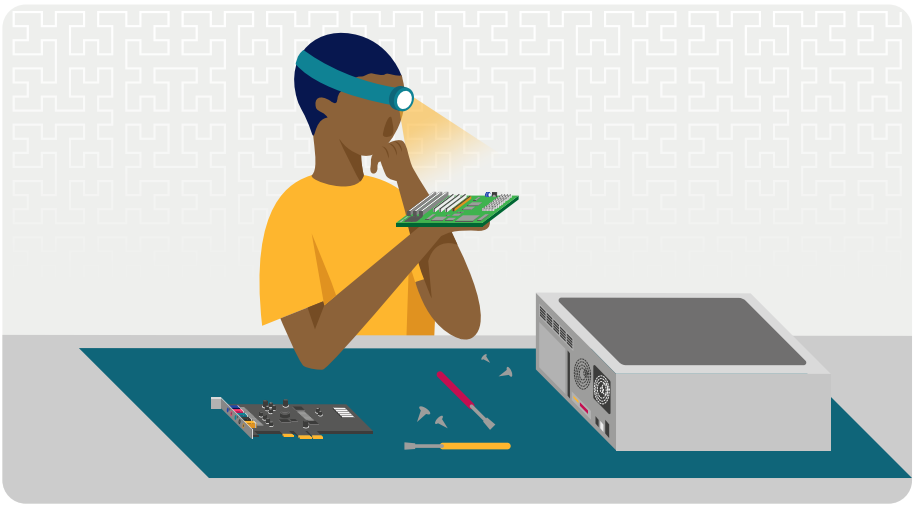
isaac computer science

Additional hardware



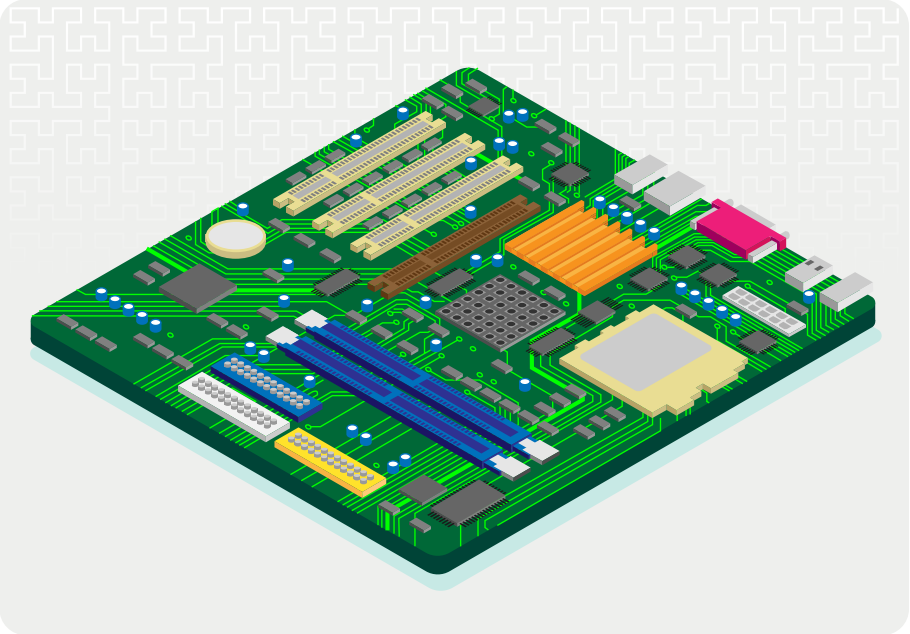
As well as input and output devices, you also need to be aware of some of the hardware that exists inside the computer. These **internal** components process the data and enable communication between themselves and other peripherals.

Other than the components covered in this section, you will also need to know the function and purpose of various other internal components such as main memory and the CPU.

GCSE

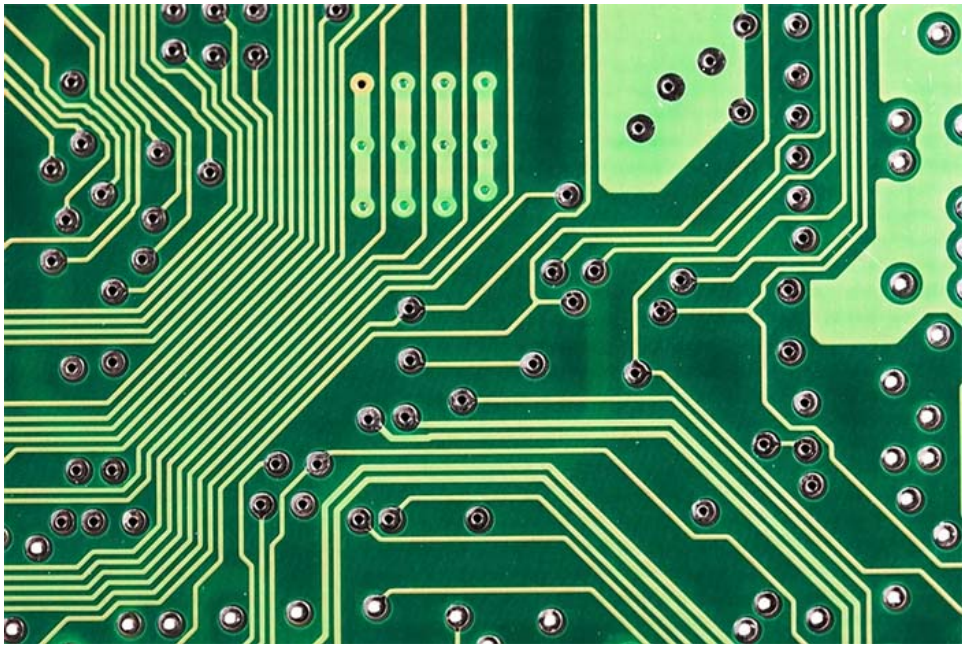
Motherboard

A **motherboard** (otherwise known as a mainboard) is the main printed circuit board (PCB) inside a computer; it connects all the components of the computer together. Similar to a human nervous system, which transmits signals to and from different parts of the body, a **motherboard** transmits signals between a computer's components.



The **motherboard** has specific connectors for internal components such as the CPU, RAM, and expansion cards (PCBs that offer additional functionality such as sound, graphics, and networking capability).

The board itself has no processing power, but creates an infrastructure for the components to work together as efficiently as possible. When looking at a **motherboard**, you will notice lines that connect the different components on the board. These tracks are used to transport signals to other parts of the computer. Some of these tracks carry data; these are called **buses**.



The motherboard also has connections for external peripherals such as monitors, speakers, routers, and any device making a

connection through the USB ports.

GCSE

Graphics processing unit (GPU)

A graphics processing unit (GPU) is a processor designed specifically to **render** graphics. Rendering is the process of converting image data into the graphics that you see on the screen. In the early days of computers, the CPU was responsible for this job. Now that graphics have become more advanced and require more computation, specialist processors have been designed to process graphics more efficiently and to take the burden off the CPU.

A CPU is generally faster at performing individual calculations, but a GPU can perform multiple calculations at a time, which makes it suitable for processing the 3D graphics used in modern games and simulations.

Graphics card
Pixabay

Because of the ability of GPUs to process multiple calculations at the same time, their capabilities are also being utilised by data scientists for tasks relating to machine learning and artificial intelligence.

Is a graphics card the same thing as a GPU?

Click a button to show the answer

What is your level of confidence that your own answer is correct?

Low Medium High

GCSE **Sound cards**

Sound card
Pixabay

A **sound card** is a component needed to output audio signals to devices such as headphones or speakers and to receive an audio input from devices such as microphones.

Most modern personal computers include sound cards on the **motherboard** by default. Should a higher quality of sound be needed, such as in professional music production, you can upgrade the sound capabilities of your machine by purchasing a sound card separately, which plugs into your motherboard.