

## T02 – Parts of a Computer



This is the CPU, also called the processor. It is the “brain” of your computer. It compares data to a set of instructions and decides what to do with it. It then decodes the data and sends it on to the right place. This sounds like a long process but most modern processors can do this **billions** of times a second! Processing information takes a lot of energy but most of this is changed into heat energy. The processor can very quickly

become very hot. Because of this it will always have a large heat sink and a fan attached to it. There is also normally thermal paste between them.

The CPU fan is always on when the computer is on. It is controlled by a sensor which automatically speeds it up and slows it down as the temperature of the processor changes. In combination with a case fan, it can keep modern processors adequately cool. It is important that it is removed and cleaned occasionally though, as dust and debris pulled into the computer by the fan can collect here, making it less effective.

There is usually a layer of thermal paste between the heatsink and the processor to eliminate the air gap, allowing heat to be transferred from the processor to the heatsink more efficiently.



This is the computer’s RAM. It stands for Random Access Memory. This is where an application’s



instructions are loaded when it is running. The CPU will ask the RAM for the instructions and the data. It will then decode the data and perform any calculations before storing the results back in the RAM. The results will then move on to the output device identified by the processor.

Having enough RAM is critical to having a speedy computer. Upgrading is cheap and easy and will allow more apps to be open at the same time, storing their instructions in the RAM.

RAM is a lot faster than a hard drive, which is why the CPU doesn’t store data to be processed on the hard drive .

This is a traditional **hard disk**. It contains a stack of silver discs called “platters”. The platters are made up of a ferrous material, which means that they can be magnetised. Information is stored on them by adding magnetic “dots” to the surface of a disk. The dots represent a 1, a space where a dot *could* be represents a 0. The dots are written by a magnetic head which comes close to, but doesn’t touch, the platter. If the head does touch the platter this is called a “head clash” and usually results in data loss. This means that hard disks can be fragile.

Hard disks can also be slow because the head needs to physically move to the location of the information when we open a file. This delay is called “seek time” and can slow a computer down, especially when a hard disk contains a lot of data.



This is a more modern type of hard disk. It is called a solid-state drive or SSD. This drive has no moving parts, only memory chips inside. Having no moving parts means it can survive drops and knocks better than a traditional hard disk.

The lack of moving parts also means that the drive needs less power so it is ideal for laptops, notebooks and netbooks which run from battery power.

All of the information is instantly accessible so there is no seek time with an SSD, only a read and write time. This makes them more than 20 times faster than a traditional hard drive. Currently they are around 5 times the price for the same amount of storage but they offer a huge increase in performance when installed.



## Rear Ports on a typical computer

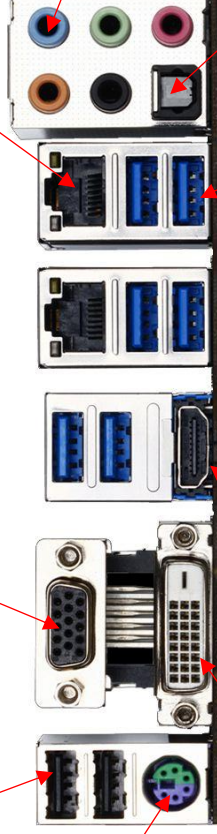
**USB 2.0** – This is the most commonly used connection on PCs. USB stands for Universal Serial Bus. Devices such as memory sticks, printers, USB keyboards and mice, cameras and mobile phones will connect via a USB port.

**PS2 port** - This stands for Personal System 2. It is an older technology for connecting keyboards and mice to a computer. A lot of modern computers no longer have this port. Sometimes there are 2, one purple and one green. Purple is for keyboard and green for mouse.

**VGA** – Stands for Video Graphics Array. This is the port which outputs the signal for the PC Monitor. It is a 15 pin socket and is usually blue in colour. The signal from a VGA port is analogue so it is suitable for older CRT monitors, though some modern monitors do support it.

**Ethernet Port** - also known as RJ-45 ports. This is where network cables will connect. These ports carry the data back and forward to a network. Each port is bi-directional, meaning it can send *and* receive data, so only 1 cable is necessary. Often not used if the PC has WiFi, but network communications will almost always be faster if a cable is used.

**3.5mm Audio jacks** – The 5 coloured ports can be set up in different ways. For stereo sound: Pink – microphone in, green – stereo speakers, blue – audio line in. For surround sound setups each of the 5 colours will be 1 of 5 channels – Front left, Front centre, front right, rear left and rear right.



**DVI** – Digital Visual Interface. This port can send an analogue or digital video signal to an appropriate monitor. It allows video only. DVI gives a better quality image than VGA, as VGA takes a digital signal, converts to analogue to transmit and then the receiving device converts it back to digital. DVI doesn't need to do this.

**HDMI** – High Definition Multimedia Interface. This is the most recent way to connect devices to a monitor or TV. The port has digital video and audio signals which give a high definition image when connected to an appropriate screen. The signal also carries resolution information so the screen switches automatically.

**USB 3.0** – This port does the same job as USB 2.0, but the data is transmitted at higher speeds. This means reading and writing large files to USB 3.0 memory devices or optical drives is much faster. The ports can be identified by the blue colour internally.

**S/PDIF** sometimes also called TOSLINK. Stands for Sony/Philips Digital Interface. This is a digital audio output that can be connected to an external amplifier. It uses red light to transmit the sound signal and requires a fibre optic cable to carry the signal.