Anton Bertram

Professor S. Haut

English 620

04.05.2019

The components of a pc and their function

As a computer science student you have to understand how the software and the hardware of a pc work together. In order to get a deeper insight we explain how the different parts of a pc work and what their functions are. This assignment is about the motherboard, the storage and the cooler.

The different parts of a computer are communicating over the motherboard. It “provides connectivity between the hardware components of a computer, like the processor (CPU), memory (RAM), hard drive, and video card”1. They cannot work with every processor or memory because everyone is designed for a special type or brand. Most hard drives are not affected by the motherboard thus you can use nearly anyone without considering the type or brand. The modern motherboard include sockets or slots in which one or more microprocessors can be installed, memory slots, a clock generator which produces the system clock signal to synchronize the various components, power connectors which receive electrical power from the power supply and distribute it to the different connected parts of the computer and connectors for hard drives.

The storage, not to confuse with memory (RAM), is a hard disk drive where the data is recorded. In contrast to the memory the storage does not forget what was stored in it after you shut your pc down. “Stuff written to disk stays there permanently until it’s erased, or until the storage medium fails.”2 Computers need non-volatile storage so you do not have to re-do everything you have done when you restart a pc. There are two kinds of storage. The hard drive (HDD) and the solid state drive (SSD). It “can be used to store applications, documents, data and all the other stuff you need to get your work done (and your computer needs to operate)”2. The only reason hard drives are still in use is because they are cheap. SSDs are more performant but you get less space for more money. They “use a special type of memory circuitry called non-volatile RAM (NVRAM) to store data, so everything stays in place even when the computer is turned off.”2. Unlike the hard drive a solid state drive does not use mechanical platter to store something but it uses memory chips instead. Even though they are way faster then the HDD SDDs are still much slower than RAM. Nevertheless a way to improve the performance of a computer is to upgrade your storage to a better one. “Even with plenty of RAM installed, computers need to write information and read it from the storage system – the hard drive or the SSD.”2. There are different speeds and sizes for hard drives. Most operate at 5400 RPM. RPM means that “their central axes turn at 5400 revolutions per minute”2. But you can also get a 7200 RPM drive or a 10 000 RPM drive. And with new technologies we are able to create bigger and faster hard drives. For example instead of air they fill the drive with helium. That causes a reduction of disk platter friction. Or they improve disk density by using heat or microwaves. But SSDs have chips instead of spinning disks so they are still faster and need less power, less space and produce less heat and that is the reason why they are more expensive than hard drives.

A cooler does exactly that what it says. It is “designed to draw heat away from the system CPU and other components in the enclosure” 3 and cool them down. Its purpose is to improve the systems stability and efficiency. Since it is not silent a cooler increases the noise level of your computer. Only two different types of coolers are mainly used in modern pc systems. One is the air CPU cooler. “The CPU cooler may consist of a heat sink (a component designed to lower the temperature of an electronic device by dissipation heat into the surrounding air) or combination of a heat sink and a fan.” 3 Systems which are designed to improve airflow are often used with air cooling. Then there is also the liquid CPU cooling, called liquid cooling. “A liquid cooling system (LCS) circulates liquid through small pipes in a heat sink attached to the processor in your system. As the liquid passes through the heat sink, heat from the hot processor is transferred to the cooler liquid. The warmed liquid is then cycled to a radiator on the side or rear of the casing where it is released into the ambient air outside of the unit. The cooled liquid then travels back through the system to the CPU to continue the process.”4 Liquid cooling systems are more efficient and make less noise than air cooling systems but it can be very complicated to install them and they are quite expensive.

to affect (affected):

The word affect is often confused with the word effect even though they have quite a difference in meaning. The effect is mostly used as a noun meaning the result or impact of something. To affect is a verb meaning to influence something.

to circulate (circulates):

When something circulates it goes around or through something.

non-volatile:

Non-volatile is an adjective mostly used in combination with computer memories. Data does not get deleted even if there is no power.

“Only two different types of coolers are mainly used in modern pc systems.”

The emphasis is placed on the action and there is no action subject and that is why the sentence is written in passive voice.

1 <https://www.computerhope.com/jargon/m/mothboar.htm>

<https://study.com/academy/lesson/what-is-a-motherboard-definition-function-diagram.html>

2 <https://www.backblaze.com/blog/whats-diff-ram-vs-storage/>

4 <https://www.webopedia.com/TERM/L/LCS.html>

3 <https://www.webopedia.com/TERM/C/cpu-cooler.html>