

# Hardware on the Inside

Computers are made of many electronic **components** or parts. These components each have a special job and they all work together to make your computer operate. Some components are hidden inside the computer where you can't see them. Others can be seen partly from the outside.



## Power Supply

Every computer needs a **power supply** to take electricity from your house and convert it into a current that works for your computer. The electrical cord that comes out of your computer comes out of the power supply. When it is plugged into the wall, electricity travels from the electrical wires in your house into the computer's power supply. When your computer is turned on, the power supply allows the converted electricity to travel to other components inside the computer.

## Circuit Boards

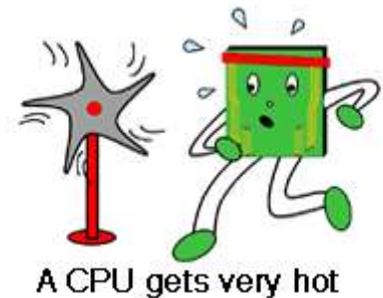
The **motherboard** gets its name because it is like a mother to all of the other circuit boards. Found at the bottom of a desktop case or the side of a tower case, the motherboard is the largest circuit board and has many



smaller boards plugged into it. It holds all of the most important parts of the computer.

On the motherboard, you will find several **expansion cards**. Each of these cards has a special purpose. The **sound card** contains special circuits for operating the computer's sound. The **video card** handles graphics that are displayed on the monitor. There are also expansion cards for other computer components including the drives and ports.

The brain of a computer is the **CPU** or **Central Processing Unit**. Like a brain, it controls information and tells other parts what to do. The type of CPU in a computer also determines how fast that computer can operate. A CPU generates lots of heat, so there is usually a small fan nearby to cool it down.



## Memory

Memory is an important part of any computer. Every computer contains two distinct kinds of memory, the hard drive and the RAM. The hard drive is for long term storage. Any program installed to the computer or document saved to the computer is written on the hard drive. These things are saved magnetically so that they can persist even when the computer is turned off or loses power. A larger hard drive will allow you to install more programs or store more data on your computer. RAM, on the other hand, is more like short term memory. Any program the computer is currently running is copied into RAM temporarily. RAM memory works electronically instead of magnetically so anything in RAM is lost when the computer is turned off or loses power. Adding more RAM will help a computer run more quickly and do more things at once.

It's easy to get RAM and Hard Disk space confused. Here's a chart which may help you think about the difference between RAM and Hard Disk storage space.

RAM	HARD DISK (Hard Drive)
Smaller Amount (typically 256 MB -1 GB)	Much larger amount (typically 250 – 640 GB)
Temporary storage of files & programs	Permanent storage of files & programs
A little like your real desk – has only your current work on it (which could be ruined by a spill of coke or coffee!)	Like a file cabinet – has long-term storage of work (it’s safe from spills!)
Contents disappear when you turn off power to the computer	Contents remain when you turn off the power to the computer (they don’t disappear unless you purposely delete them)
Contents disappear when the computer crashes	Contents remain when the computer crashes
Consists of chips (microprocessors)	Consists of hard disks (platters)
Contents are stored <b>electronically</b> in bits on the chip in electronic offs and ons (0’s and 1’s). so RAM needs electrical power to hold the contents	Contents are stored <b>magnetically</b> , also in bits which are off on one (o or 1), so the Hard Disk does not need poser to hold the contents.
When you want to use a program, a temporary copy is put into RAM and that’s the copy you use	Holds the original copy of the program permanently
The files you are modifying, plus all the changes you make, are kept here in RAM until you do a “save”.	When working on a file, the original file is left untouched here in the Hard Drive until you do a “save.” The “save” copies the new version of the file that’s in RAM onto the Hard Disk (and usually replaces the original file)

## Ports

**Ports** are the places on the outside of the computer case where you plug in hardware. On the inside of the case, they are connected to expansion cards. The keyboard, mouse, monitor, and printer all plug into ports. There are also extra ports to plug in extra hardware like joysticks, gamepads, scanners, digital cameras and the like. The ports are controlled by their expansion cards which are plugged into the motherboard and are connected to other components by cables.