

THE COMPUTER CORNER

No. 185: Fixing a Laptop

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I thought it might be interesting for you to see the processes I use when diagnosing problems with a computer. It happened to be a laptop, but the same processes are used with any computer.

A friend gave me a Dell laptop to diagnose. He complained that Internet Explorer would start and immediately close, so his email was unavailable. Several other programs were acting strangely and making it impossible to accomplish his work, including flickering of the screen. Fortunately, he had backed up all his data onto an outboard 500 Gb hard drive that he had purchased expressly for backups. So, no matter what, he was not going to lose his pictures, documents and other created data. My immediate guess was that he either had a virus, or that he had erased one or more system files that were critical to the proper operation of the Operating System (Windows XP Professional). But the approach seemed simple enough to me. Since all his personally created data was already backed up, how about simply installing a fresh copy of the OS? That sounded fine to him, so I was given permission to go ahead.

The first thing I did was to completely wipe the hard drive. The software I use changes the very first bit on the drive to 1, then to 0. Then it does the next bit, and the next, until all 60 Gb (480 gigabits) have been done. Then, it does it again a second time. Then, it does it a third time. When finished, the hard drive is exactly the way it was when it left the hard drive factory, except for any ensuing wear. All viruses and all software are gone and unrecoverable. Of course, it will not boot at that point.

Next, I used other software to partition the hard drive. That adds a boot sector, and the familiar C: drive. But at that point it still will not boot. An Operating System must be installed for that.

Next, I started the process of installing Windows XP Professional. All was going nicely, albeit unusually slowly, until about a third of the way through the process when the machine rebooted itself. It automatically resumed installation of the OS (kudos to Microsoft for anticipating failures during the installation process and making provisions to pick up where it had left off), but it was still unusually slow. Then it did it again. Suspecting the CD-ROM drive might be bad, I shut off the computer and replaced the drive, but it was still very slow when I started it up again. Installation completed but I was not happy with this unusually slow performance.

I used software to check the integrity and life expectancy of the hard drive. It was fine. Next, I used software to check the memory – the RAM sticks found in every computer. The memory was fine. What could it be? Then, while handling the laptop I noticed that it was really hot on the bottom. Most unusually hot! When I let it cool for a few hours and restarted it, it was still very slow. My conclusion was that something had caused the machine to overheat, and the heat had damaged the CPU (Central Processing Unit, the main chip in the computer), and possibly other chips on the motherboard, beyond repair. I considered it to be toast.

Amazingly, I had a laptop of the same make and model on the shelf. It had no hard drive or memory so I could not rebuild it for ARES/RACES use. I popped in the hard drive and memory from the toasted machine and it booted in a normal, speedy way. I added drivers for all the hardware, and over 165 updates from the Microsoft Update site. It worked perfectly. A day later, after optimizing the Registry and a complete defrag, it was ready to go.

I could have messed around with replacing the CPU. However, two other major chips in that laptop are cooled, via heat pipes, with air passing over the main heatsink, including the video

chip. One or both of those might have been damaged, as well. It was much easier to just populate the carcass I had on the shelf with memory and the hard drive from the damaged unit to make a useful laptop. It worked. Indeed, later, when I disassemble the toasted computer to recycle it, I found that dust bunnies had completely plugged the fins of the heatsink, preventing fan-blown air from reaching the CPU and allowing the CPU's temperature to climb). I was amazed that the CPU was able to boot at all!

There is a message here. Whether you have a laptop or a desktop (or both), be sure you periodically clean the heatsink and fan. Detailed directions for doing so have been given in past articles. Use a vacuum cleaner and canned air, and a soft paintbrush if necessary. Cleanliness is next to Godliness. It is also absolutely essential for the health of your computer.

Happy computing!

"Man will never reach the moon regardless of all future scientific advances." Dr. Lee DeForest, "Father of Radio & Grandfather of Television."