# PERFORMING A HARDWARE CHECK ON A PC – ENT 286 CLASS

When trouble-shooting a PC, I recommend a theoretical approach that deals with problem identification in this manner:

1) Assure yourself that the system BIOS settings are correct for that particular PC
2) **Assure yourself that the system hardware is functioning properly**
3) Assure yourself that the operating system is installed and configured correctly
4) Assure yourself that any installed applications are in good order and not conflicting with the operating system or other applications
5) Assure yourself that the attached peripherals are not causing software or hardware conflicts
6) Assure yourself that there are not any virus, spyware or malware issues that may mimic hardware or software problems
7) Assure yourself that user error is not the problem.

Many times, the PC's hardware will malfunction. Once you have determined that the BIOS settings are proper and correct, an inspection of the internal workings of the PC is in order.

Start by ensuring that ALL components are seated in their sockets properly. This includes the CPU and any memory sticks (SIMMs, DIMMs, etc.). If something is not seated properly, or a cable is not properly connected, obviously the device will malfunction. Even power supply connections to the system board and screw mountings to the case should be checked for proper installation. You would be surprised at the number of systems I have seen where motherboard standoffs were omitted or improperly installed, which then caused a system malfunction. Even an improperly-connected hard drive cable (one that is not keyed) could cause a PC to fail when the system powers up.

Hard drives normally will make a small amount of noise. However, grinding and loud clacking noises are bad signs. The same is true for floppy drives and CD-ROM drives. If a motorized device is making noises that do not sound "normal," the time has come to perform a component replacement.

Smells are good indicators of malfunctions. An ozone-like or burned odor coming from a PC indicates, at the very least, that something has overheated. Excessive heat is fatal to many installed components, especially CPUs and memory sticks. Even hard drives will overheat if the lubrication in the motor evaporates or leaks from the seals. If you smell any unusual odors or feel anything that seems excessively hot, narrow your search to those components.

One helpful strategy is to remove everything from the PC that is non-essential, such as modems, network cards or sound cards. If one of those components has shorted out (especially modems and network cards), that short could shut down the entire PC. Get the PC to a state where something works properly, and then add components back into the system one at a time. At some point, you will determine the failed component: when the shorted device is reinstalled, the system will stop working.

Have a set of "known-good" parts that you can use to substitute into a PC during your testing work. A 4GB hard drive is small by today's standards, but it is perfect for use in testing a system. The same is true for older sound cards, memory sticks and so forth. Have one set at your workbench, and another set for when you travel to customer locations.

Obtain any system documentation for the PC whenever possible; use the Internet to obtain documentation if the manuals are unavailable from the user. Contact the manufacturer's 800-number support line if the unit is less than 5 years old.

Check with the instructor if you have any questions on this subject.