

THE COMPUTER CORNER

No. 135. Physical Maintenance

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When is the last time you did preventive maintenance? As much as a year ago? Never? How about spending a little time to give your computer a break. Clean it up to make sure it continues giving you good service. You can do it even if you are a beginner. You will need a vacuum cleaner with a hose (a Shop Vac is perfect, but your household vacuum will do the job, too), a soft-bristle brush (a basting brush from the kitchen will do nicely, and you can replace it later), and a can of compressed air.

Unplug all the cables and move the box down to your workbench. If it is a mini-tower, pop the cover on the left side of the machine (your left as you face the front side of the machine). Lay the machine on the covered side (the right side as you face the machine). Make sure your lighting is good, and examine the inside of the case. You will see a myriad of cables. Move them gently to the side as you examine each component. Identify the motherboard, the memory stick(s), the power cables that plug into the motherboard, the little twisted cables that fit on motherboard header pins for the speaker, power switch, power LED, hard drive LED, and so on. The connectors at the end of twisted cables usually have a printed label on the black plastic of the connector, and the motherboard usually has a (hard to see!) label by each set of pins that the connectors attach to. Right now! Make a sketch of the motherboard and, especially, those connectors and pins. If you inadvertently disconnect anything, that sketch will save you from grief. If you are lucky enough to have a manual for the motherboard, examine it for a nicely made map of all these connectors.

Continue to examine. Identify the PCI slots, the AGP (video) slot if you have one. Note what is plugged in where, and write it down or sketch it. You cannot record too much, though you certainly can write down too little! Document, document, document. Find the floppy connector on the motherboard, and the CD-ROM and hard drive connectors. Follow them up to the device they control. When you have a pretty good idea of what goes where, it is time to clean.

Turn on the vacuum and carefully put it inside the case. Use the paintbrush to dislodge any dust bunnies, and keep the vacuum hose end close to suck up the dirt you free up. Pay particular attention to the interior slots in the power supply case, to the spaces between memory sticks, and to the fan on top of the CPU heat sink. If you have a can of compressed air, blow between the slots of that heat sink to get the dust out. Also give a blast or two of air in the slots of the power supply. Keep the vacuum going all the while, to suck up the dirt. Now, set the machine on its bottom, and use the brush to clean up the inside bottom of the case. Suck it up, suck it up, and suck it up. Turn the case around so you can see the power supply fan blades on the back. Blow them clean from the back. This will likely blow dust into the case through the interior slots in the power supply, so go back inside and vacuum it all again. See if you can use the brush to dislodge dust from the fan blades of the power supply from the outside, keeping the vacuum hose nearby to suck the dirt up. Blow air into the corners of the inside of the case to release dust bunnies you may have missed. Suck everything up. When you are satisfied that the dirt is gone, it is time to renew contacts.

The easiest and safest way to renew the electrical contacts in a computer is to partially disconnect them, then reseat them. This renews the contacts at the molecular level, as the metal contacts slide over each other. Start with the floppy cable. At the motherboard end, slightly raise the floppy connector on the mating pins, then push it right back down until it is completely seated. Do the same with the CD-ROM connector, then the hard drive connector. Now do the other ends of each cable, where the cable connects to the device. No need to completely remove the connectors. Just partially raise them, then

reseat them. This can significantly reduce the resistance of the metal-to-metal contacts (34 of them for a floppy, 40 for a CD-ROM or hard drive). Now do the same for the power cable going to each device (one yellow, one red and two black wires, each). If you wish, you can completely remove these and then plug them back in. You cannot plug them in incorrectly, since they will only go in one way.

Now apply the same procedure for the power supply connector on the motherboard. Use care here – modern systems have a little latch on this connector that you must depress to get it loose. Plug it back in, and make sure the latch is latched (you will likely hear an audible click when it seats properly). Use care not to flex the motherboard much. Motherboards can crack, in which case, they may well be rendered useless.

Now, move on to any PCI or AGP cards. PCI cards typically plug into those whitish slots on your motherboard, while AGP (video) cards plug into a dark-colored slot. Remove the retaining screws from any cards plugged in and remove them (one at a time). Blow any dust out of the slot, then plug the card back in and replace the retaining screw. Use care not to touch any of the gold contacts on the card bottom. Oils in the fingerprints you leave will increase the resistance of the contact with its slot. Follow the same procedure for the memory stick(s). Be sure to keep fingers off those gold contacts!

Now, renew the metal-to-metal contacts at the end of those twisted wires for the speaker, hard drive LED, power on and the like. Raise them just a tiny bit, then reseal them. If your computer could talk, you would hear it say “ooooh, that feels good!”

Now, give a blast or two of air to the top surface of the hard drive, floppy drive and CD-ROM. Dust bunnies like to hang out up there. Next, pay some attention to the front panel. Blast out any dust or dirt there, typically lurking in slots or vents. Sometimes, there is a big vent at the bottom of the front panel. Tip the computer up on its back to get to that one. A blast into the floppy drive door is a good idea, too.

All done? Typically your workbench will be covered with dust and debris, including some bits of paper. Hopefully there will be no paper clips or other such metallic flotsam and jetsam. Did you find a tiny spring with two ½-inch arms? That’s from the shutter door of a floppy disk. Good thing you got it out!

Save your notes and sketches! Put back the side panel and mount the computer in its proper place. Plug in all the cables, but before you power up, take a moment to clean your keyboard and mouse. Q-tips are great for both. Moisten the Q-tips with Sparkle (my favorite) or Windex to clean the dirt off of keys and in between. If you have a mouse with a ball, remove it and clean the two black shafts and white roller that the ball contacts. Wash the ball with dish soap and water, and dry it with a towel.

Power up! Maintenance is done! Happy computing!

PS: The day after writing this article, one of my machines would not start. A tiny dust bunny had partially gotten between the gold contacts on a memory stick and the slot on the motherboard, effectively shorting things out. I removed the stick, gave the slot a shot of air, replaced the stick, and the problem was solved. Then I did thorough maintenance as described in this article, though it had not been a long time since I had done it last. Yes, I do take my own advice!

PPS: If you get a new computer and don’t have a use for the old one, give it to me. I rebuild and distribute them (all free) to ARES/RACES groups in Wisconsin, for use in emergency communications. I can use 500 MHz or faster machines. Send me an email and I may be able to make arrangements to get it picked up. Not to worry about the data on the hard drive – I completely remove it using a technique that prevents recovery. On top of that, the drive is then repartitioned and reformatted, and a new operating system is added, thus overwriting any data that might be present. I will even take machines from which the hard drive has been removed, or machines that do not work.

PPPS: A tip. How do you end Windows? Click Start, then Shutdown, and then OK? A faster way, and one that works even if you cannot see the screen (as when your monitor just died or your video card just went bonkers): Press the Windows button (the one with the Windows Logo on it), then the letter U (either upper or lowercase – it doesn’t matter), then press the Enter button. Done!