

Computer Maintenance & Windows Tune-up

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Introduction

Many people don't realize it, but just like your car, or mower, or snow blower, your computer runs better and is more reliable if you perform a few routine maintenance tasks. The good news is, most of these tasks are pretty easy to learn and easy to do.

In this document, we'll not only go through the tasks you should perform, but also talk about why they need to be done, to give you a better understanding of how important these tasks are to the health of your computer system. We'll also cover the topic of Troubleshooting, since it often goes hand in hand with maintenance, and as a bonus, discuss a few simple upgrades you can perform yourself, including adding memory, a new hard drive, or a CD/DVD-ROM drive.

Before You Perform Any Maintenance On Your Computer

As a wise precaution, before you perform any type of maintenance or upgrade to your computer, you should make sure the following tasks have been completed:

- Backup your important data and documents (i.e. copy them to a floppy, CD or portable hard drive), and/or set a Windows Restore point. We'll discuss this in the first section.
- Review all of the documentation that came with your computer. Yes, sometimes it seems like you're reading Greek, but most new user manuals are written with inexperienced computer users in mind.
- If you are working inside your computer, make diagrams of how parts fit together or how jumpers are set before you change them.
- Protect the inside of your computer from Electrostatic Discharge
 - ✓ Wear an electrostatic wrist band (get these at Radio Shack)
 - ✓ Keep your power supply plugged into a grounded outlet
 - ✓ Handle all computer circuit cards by the edge, avoiding the solder points and bare metal components.
- Don't move your computer while it is running. Although it won't hurt the computer circuitry, your hard drive is always spinning, and moving it while it's turned on can cause a hard drive crash.



Computer Maintenance, Troubleshooting, and Upgrading Resources

The Internet has a wealth of Web sites that offer help with your computer. Here are a few sites that you might find helpful. For an updated list, you can visit the PC Maintenance page on our Web site: (www.shf.org) by going to the Resources link and clicking the PC Maintenance link.

www.pctechguide.com – Learn how your computer works
www.webopedia.com – Look up computer terms
pcmech.pair.com – How-To articles and reviews
www.virtualdr.com – Get online help and ask questions
www.techguy.org – Online help forum
www.computerhope.com – Online articles, help, how-to's
www.bleepingcomputer.com – computer help and spyware removal information
www.iamnotageek.com - focuses on spyware removal and startup items
www.experts-exchange.com - free if you sign-up, also has a pay-for service
www.suggestafix.com - free, forums with questions and answers
www.annoyances.org - great site with lots of answers to common problems with Windows
www.blackviper.com - for advanced users, helps you turn off unnecessary Windows processes
www.dougknox.com - Lots of tips and ticks for tweaking and troubleshooting Windows XP and ME
www.jsiinc.com - A large forum of tips and tricks
www.tweakxp.com - More great tips on tweaking Windows XP
www.microsoft.com/windowsxp/expertzone - Microsoft's own expert community for Windows XP
support.microsoft.com – The official Microsoft support page.
Windowsupdate.microsoft.com – The official Microsoft Windows update page.

You are also encouraged to use the **SHF Message Board** and leave any questions you might have. You can access the board by going to the main SHF Web site at <http://www.shf.org> and choosing the SHF Message Board link.

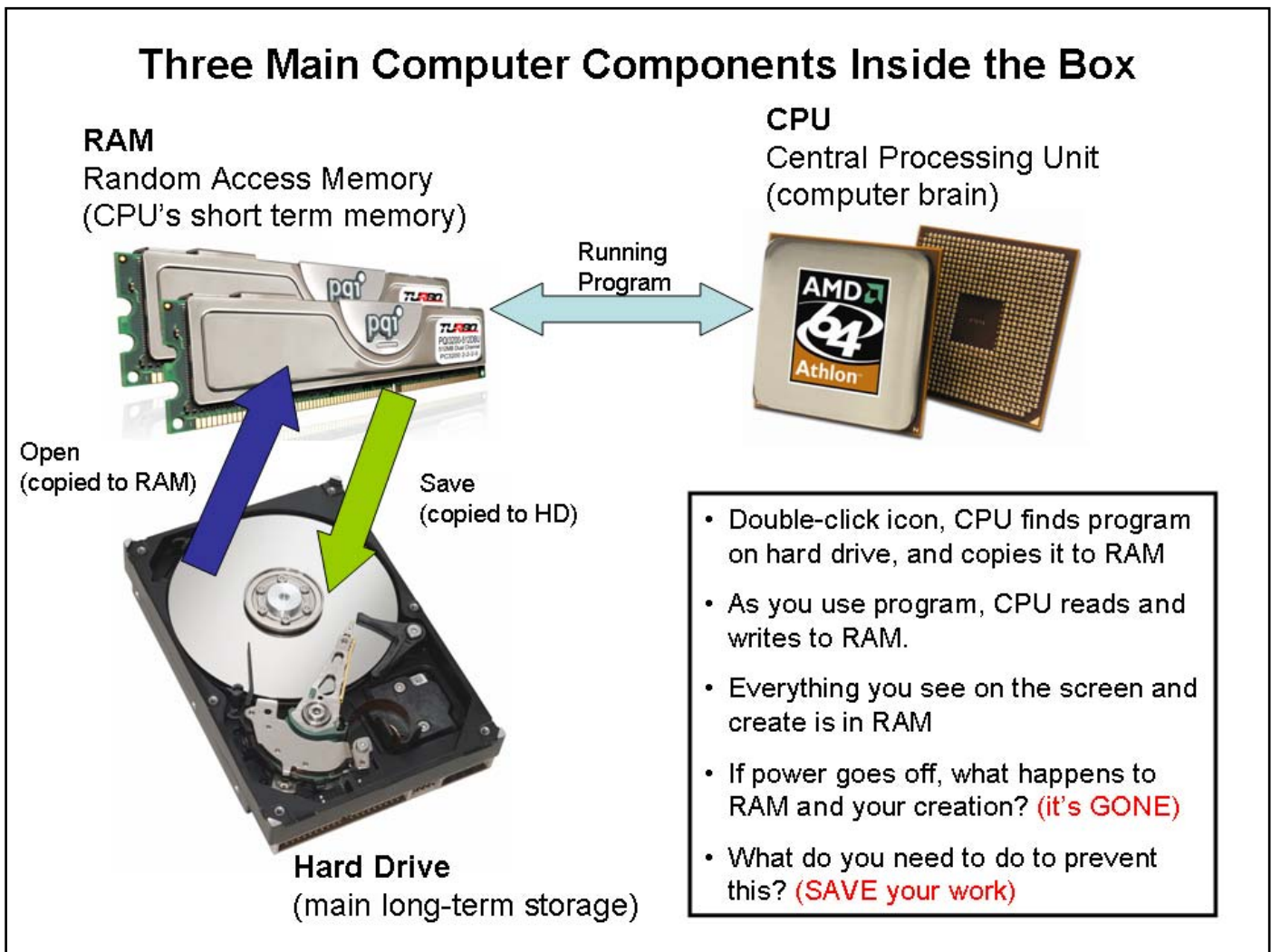
To help you understand “Why” you need to perform certain maintenance tasks, let’s learn a little bit about how your computer works.

How Your Computer Works

To help you understand “why” you should perform certain routine maintenance tasks, let’s first talk a bit about how your computer actually works. Although there are many different components inside your computer, there are 3 that have special importance:

- **CPU** (Central Processing Unit) – A computer chip that’s the brain of your computer, which performs all the program instructions and carries out calculations.
- **RAM** (Random Access Memory) – Computer chips that act as a temporary place for the CPU to hold data and instructions while it’s “thinking” about them.
- **Hard Drive** – A device about the size of a paperback book that acts as the main storage area for your computer. The hard drive is where all your documents and the computers programs are stored.

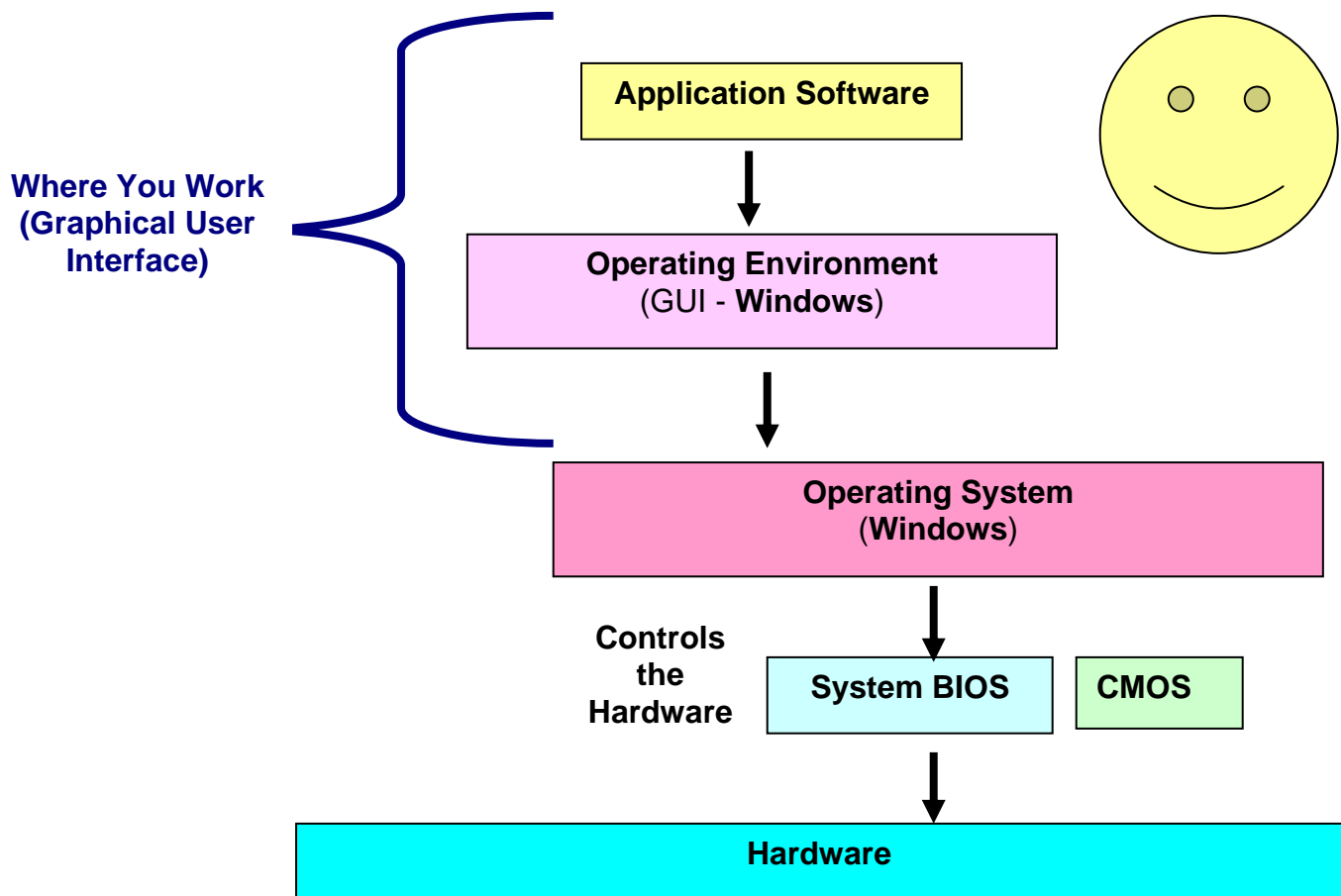
This diagram below shows the important interaction between these three computer parts. Ultimately, many of your **computer maintenance tasks focus on keeping these three components running at there best**, which in turn, leads you to a **faster running computer**.



How Software and Hardware Work Together As You Use Your Computer

This diagram shows you how **Microsoft Windows** (your computer's operating system or system software) has two jobs:

1. Windows **controls your computer hardware** and lets everything work. This part of Windows is called the **Operating System**.
2. Windows provides you, the user, with an attractive, interactive environment called a **GUI** (Graphical User Interface). We also call this the **Operating Environment**.



In controlling the hardware, Windows utilizes special programs stored on the motherboard called the **System BIOS** (Basic Input Output System). Windows also reads information about what hardware components your computer has, and certain settings about that hardware from an area on the motherboard called the **CMOS** (complementary metal oxide semiconductor).

Virtual Memory – Your CPU, RAM, and Hard Drive Working Together

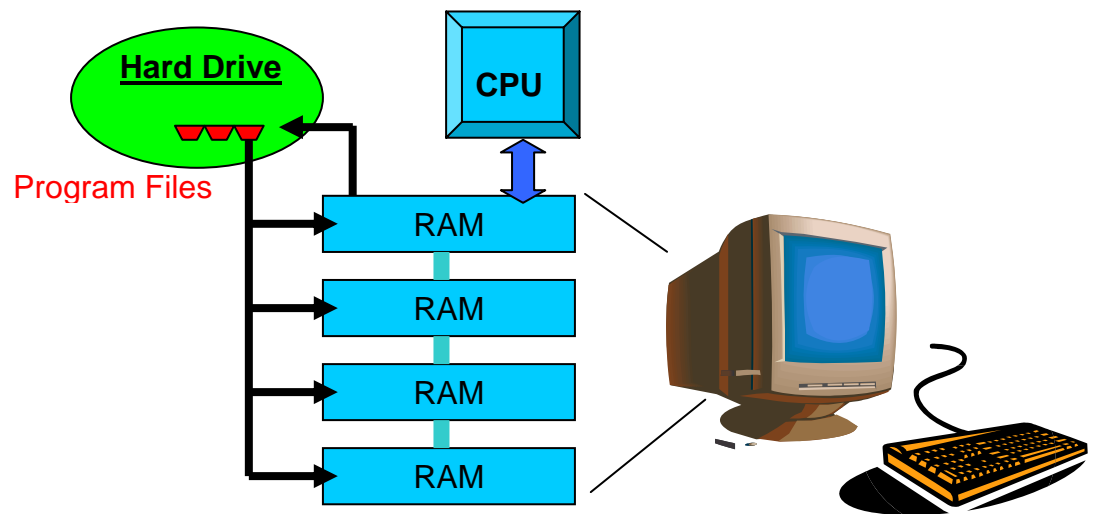
Everything we've discussed to this point happens in the background as you use your computer, without you even knowing it's going on. You can't directly see what's happening, but you can **feel** the effects of your hardware working in the form of your computer's performance and speed.

The interaction of three of your computers components are especially important to performance: Your **CPU**, **RAM**, and **hard drive**.

As we've mentioned, when you start a program on your computer, all of the instructions and data for that program are loaded into RAM (your computer memory), so that the CPU can carry out those instructions.

This means that everything you see on the screen is up in the computers memory.

As you use the program, everything you create is also up in memory.



For Example:

- When you double-click to start your word processor, that program is loaded into the computers memory.
- As you type a letter, everything you type is put into the computer memory.

Question to you:

- What happens to all of your work if your computer loses power?
- To make sure your work is not lost, what should you do?

An Important Point:

- When you "save" your work, it is copied from the computer memory to your storage device (hard drive, floppy, CD, etc.).