CLEAN UP YOUR HARD DRIVE

Windows XP and Vista have built in utilities that allow easy cleaning of the computer's hard drive(s). This is something that should be done periodically.

A couple of things happen to hard drives over time. The first is that they become "fragmented" and the second is that they develop bad sectors on the disk's magnetic platters. I'm going to explain these in the reverse order in which they should be checked.

Fragmentation is a naturally occurring phenomenon that occurs when you go back and add something to a file you already produced.

Hard drives are made up of sectors, cylinders and platters. For example, if you type and Save a "letter to Aunt Jane," the disk operating system may decide to store this file in sectors 17, 18 & 19 on cylinder 8 on platter 2. Note that these sectors are next to each other.

Now, since aunt Jane is not your favorite relative, you decide to go back to your "letter to Aunt Jane" and add a paragraph advising her not to visit because you are going to be out of the country for the next two years.

When you Open "letter to Aunt Jane," the computer knows to go to sectors 17, 18 & 19 and retrieve the letter so that you can add the new paragraph. Since you have made the letter longer, when you go to Save the longer letter, the computer may find that sectors 17, 18 & 19 are full and the next closest sector, sector 20, is being used by another file. Therefore, the computer may decide to store the addition in sector 43 on cylinder 15 on platter 4. The computer (the File Allocation Table) keeps track of all this so when you go back to the letter, it knows where to look. This is of no concern to you.

However, this "fragmentation" makes retrieving this letter slower because the hard drive has to first go the sectors 17, 18 & 19 and then go to sector 43. This means that the hard drive heads have to move a lot.

After a while, the computer can become quite fragmented, slowing down how it handles individual files. The way to overcome this fragmentation is to use the built in utility called "Defragment."

The easiest way to find the Defragment utility in XP or Vista is to click on My Computer, right click on the drive you wish to "defrag", left click on Properties, left click on Tools and left click on "Defragment Now." A window will appear and one of the selections will be Analyze. Click on this and allow the utility to determine if you need to defragment the drive. (Note that the utility will allow you to defrag any of the drives you have in or connected to the computer.)
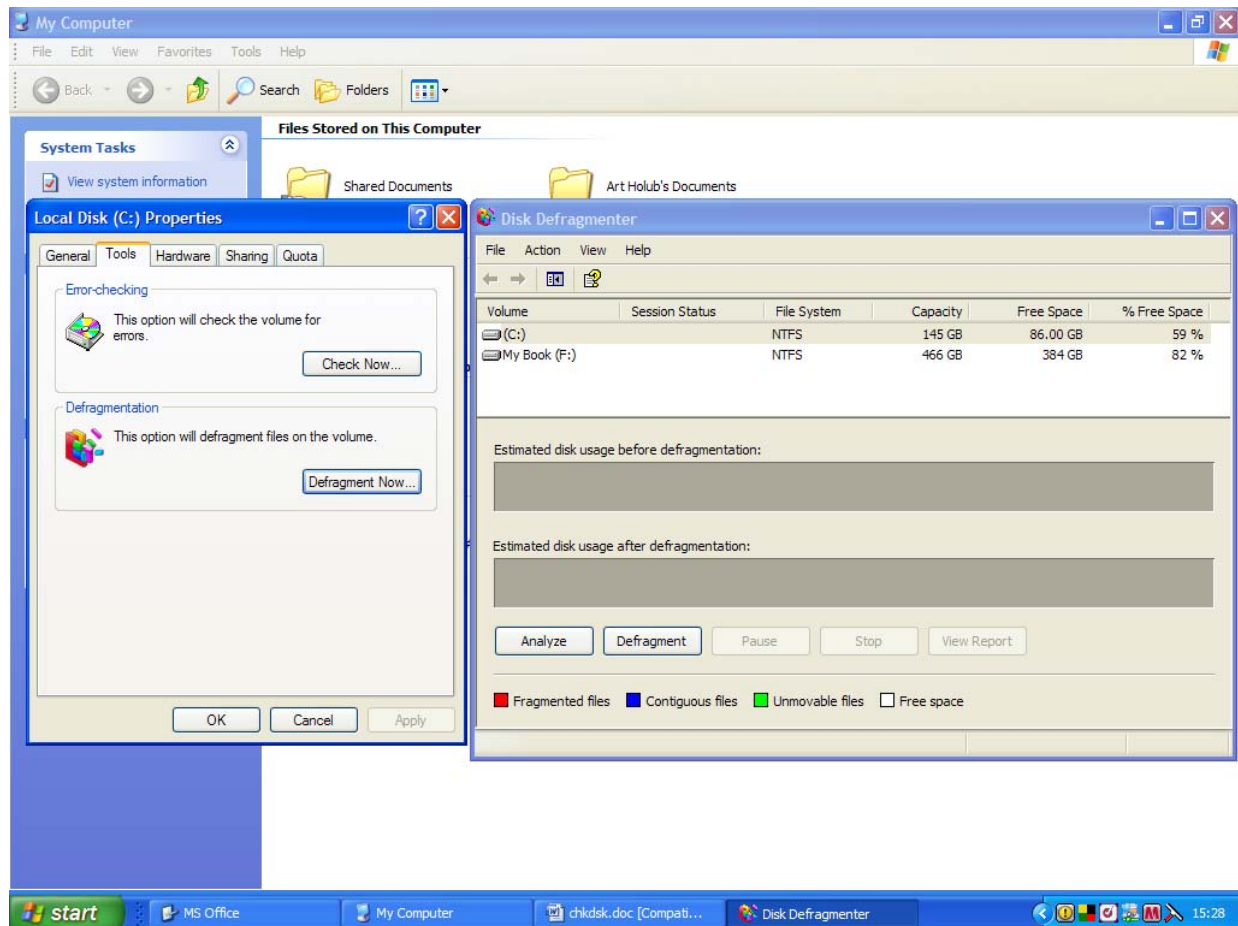
If you and Analyze decide that you need to defrag, click on the Defrag button and then go to lunch, dinner or bed. Defragmenting may take well over an hour. Let it run. When it is finished the fragmented files are put back into contiguous sectors so the heads don't have to move around much to find the files.

However, before defragging the hard drive, it is preferable to first check the hard drive for errors. This Microsoft utility also is found under My Computer, right click on the drive, left click on Properties, left click on Tools and left click on Error Checking. This will bring up another screen that asks if you want to "automatically fix file system errors," and "scan for and attempt recovery of bad sectors." Place check marks before each and then start the scan.

On older versions of Windows there was a utility called Scan Disk that operated in a similar manner as the Error Checking utility (Chkdsk). Scan Disk no longer is in Windows XP and above.
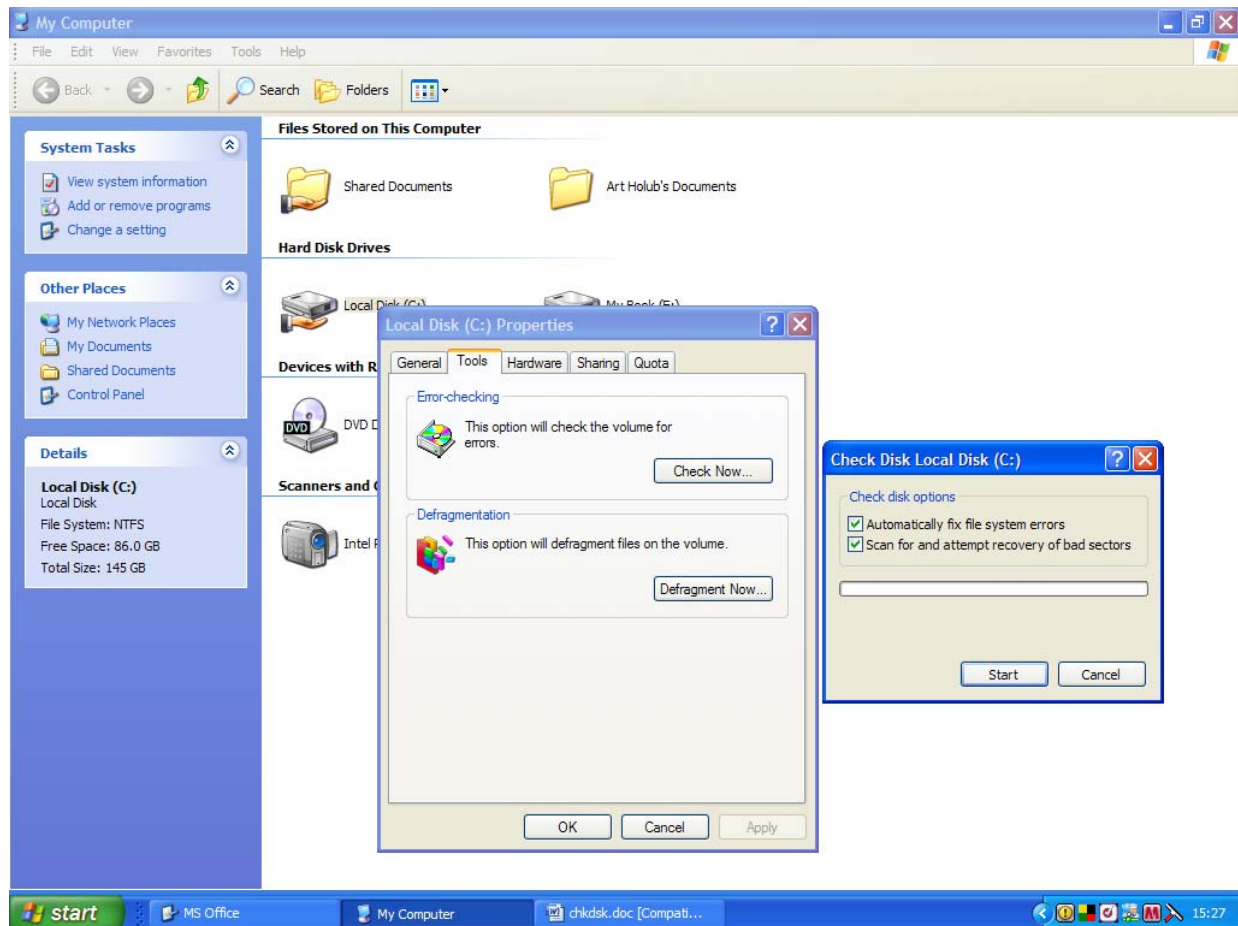
When you click on Start to start the scan, a small screen will come up telling you that the scan will not start until the computer is restarted. Restart. Restarting then will bring up a blue screen that shows the progress of the scan. The scan has five parts and takes some time to run. After completing the scan, in my case this took about an hour, the computer then will start Windows as normal.

Bad sectors come about when the surfaces of the platters have surface errors. Possibly a head has dropped on the platter or there was a manufacturing scratch or imperfection that just has shown up. Error Checking will tell the disk operating system to just mark these sectors as bad and not use them. Also, some times, files are "left hanging" when the computer is not shut down properly and this confuses the operating system. The Error Checking will attempt to correct these files, though in most cases, they simply are deleted.

Run Error Checking before Defragging so that the hard drive is "clean" before files are moved around during defragging.

Again, don't become paranoid about this. Run both utilities every so often. When you finish, you may or may not notice any difference in speed because current hard drives are so fast anyway.

Good luck and remember, keep the neurons happy, synapses snapping and enjoy computing.