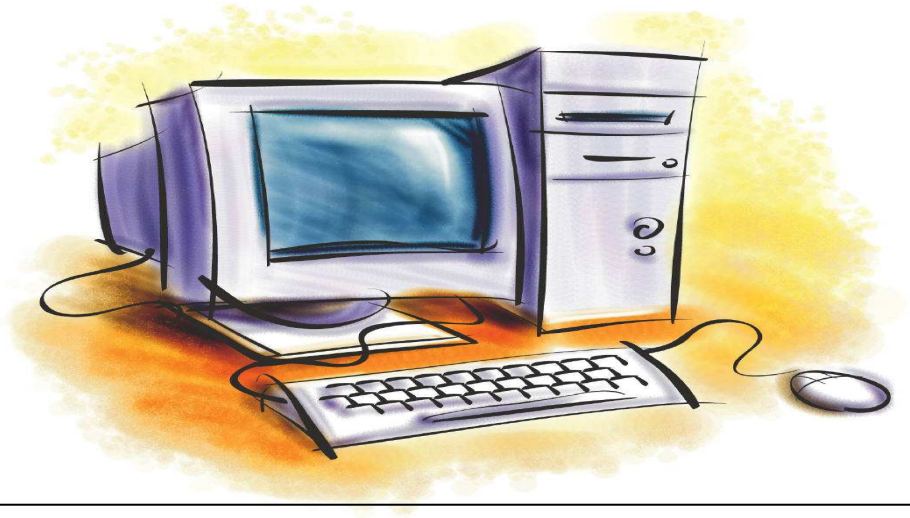
UNESCO-NIGERIA TECHNICAL &
VOCATIONAL EDUCATION
REVITALISATION PROJECT-PHASE II

NATIONAL DIPLOMA IN COMPUTER TECHNOLOGY



Computer System Troubleshooting1

COURSE CODE: COM 216

YEAR 2,SEMESTER 1,
Practical book
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Week1

This Week Learning Outcome To Understand:

- The Parallel Port

Troubleshooting the Parallel Port

Although the typical parallel port is a rather simple I/O device, it presents some special challenges for the technician. Older PCs provided their parallel ports in the form of 8-bit expansion boards—when a port failed, it was a simple matter to replace the board outright.

Troubleshooting The Parallel Port 1005

Today, however, virtually all PCs provide at least one parallel port directly on the motherboard— the feature usually supported by an "I/O Controller" component of the motherboard's main chipset. When a problem is detected with a motherboard parallel port, a technician often has three choices:

- Replace the chipset IC that supports the parallel port(s). This requires access to surface- mount soldering tools and replacement ICs, and can be quite economical in volume. But this is a totally impractical solution for end-user troubleshooting.
- Set the motherboard jumpers (if possible) to disable the defective parallel port and install an expansion "multi-I/O" board to take the place of the defective port. This assumes there is an available expansion slot. This uses an expansion slot, but offers a cheap, fast fix for a defective parallel port. Remember to disable all other unused ports of the multi-I/O board.
- Replace the motherboard outright. This simple tactic requires little overhead equipment, but can be rather expensive—a general solution of last resort if you can confirm the parallel port to be defective.

Tips To Fix Parallel Ports

Parallel ports are generally not complex devices, but some common issues show up regularly.

Before you check out the symptoms later in this chapter, take a look at some of these points:

- *Check the cable* You'd be surprised how many LPT problems are caused by loose, cheap, or damaged printer cables. Be sure that the cable is 6' or less in length, see that it is secure at both ends, and try a different cable (or try the cable in place of a known good one).
- *Beware of the port mode* Remember that modern parallel ports can operate in several different modes such as "compatibility," "ECP," or "EPP." Not all devices work properly with ECP or EPP modes. If you have trouble with a printer or other

parallel-port device, try setting the parallel port to “compatibility mode” in the CMOS setup.

- *Beware of hardware conflicts* LPT ports use IRQ7 and IRQ5. For systems with a second LPT port (LPT2), it is common for IRQ5 to conflict with IRQ5, which is almost always used by sound boards. It might be necessary to reconfigure the sound board to use another IRQ or remove the sound board entirely. Many printer companies, such as HP, are in the process of rewriting printer drivers to stay clear of these reserved non-printable characters, but some drivers still use these characters and will cause conflicts that cannot be resolved. The only way to correct this problem is to use one LPT port for the parallel-port drive and another LPT port for the printer. You should contact the printer manufacturer to see if they have updated drivers that will not interfere with the parallel-port device.
- *Problems with printer-monitoring software* Another form of driver conflicts happens with printer-monitoring software. Some companies, such as HP, have status drivers that monitor the printer’s status. If these printers are connected to the pass-through port of a parallel-port drive, the printer-monitoring drivers should be disabled. These drivers can also cause data corruption and system problems. Disabling status communications does not affect the printing.

Symptoms

Symptom . You hear a beep code or see a POST error, indicating

- *Careful for printer-driver conflicts* This problem often arises with parallel-port devices, such as Iomega Zip drives or SyQuest SyJet drives. The drive software sends special reserved non-printable characters to the parallel port—this signals the drive to know the next data being placed on the parallel-port cable is for that drive (not the printer). Color printers and multiple-font printers can also be using some of these special characters for their printer setups. This can cause conflicts between the two drivers and make each unit (the printer and the parallel-port drive) look defective to the system.

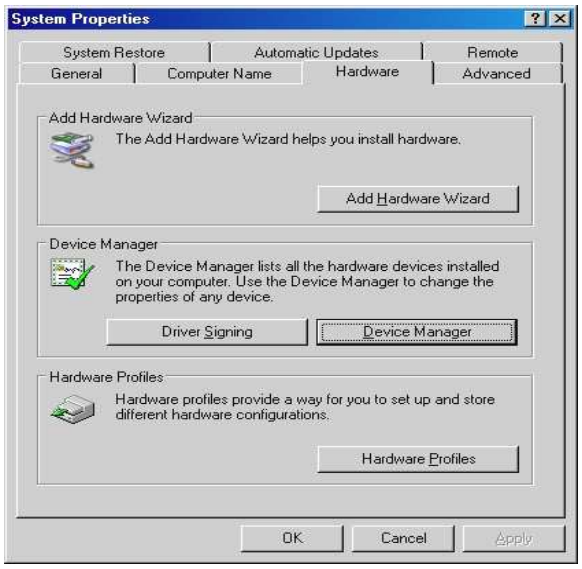
1006 Parallel-Port (Centronics) Troubleshooting

If a diagnostic cannot identify the presence of a physical parallel port (a loopback plug might need to be attached), chances are that the port is defective.

Default Port Settings On Any Computers

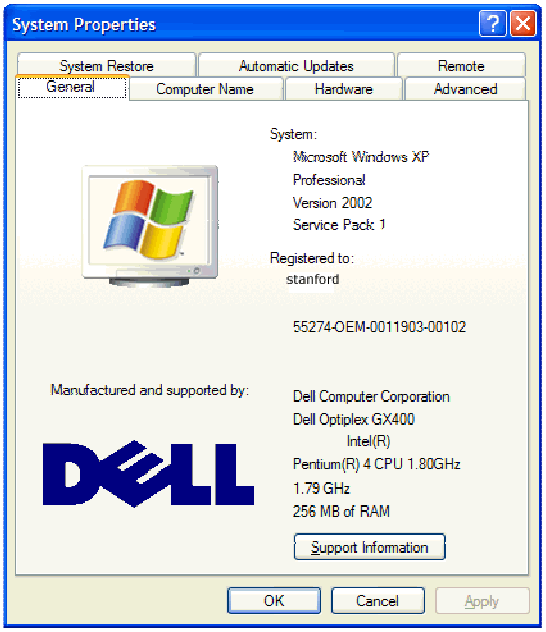
To verify that the ports are configured correctly in a computer, we can use the Device manager in the Windows and view the properties as shown in the following figures.

1. Right Click on the My Computer icon on the desktop and select Properties
   It opens a window as shown in this figure.



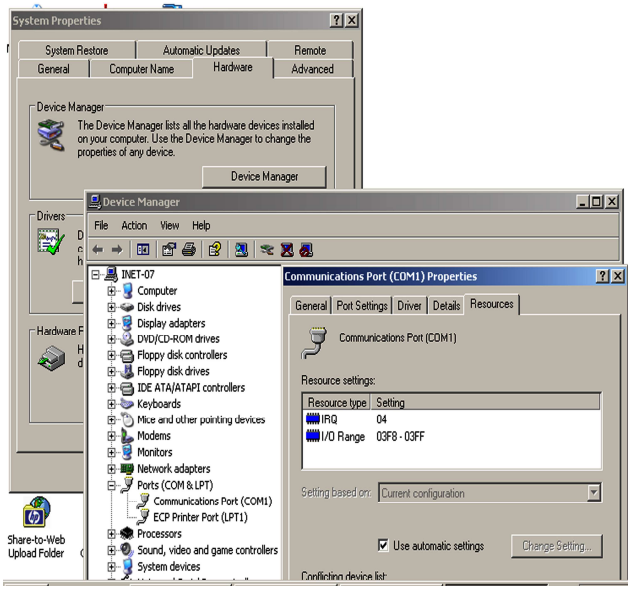
2. Click on Hardware.

Click on the Device Manager.



3. Window opens up showing all the devices connected to the computer.

4. Click on the + beside the ports to see the list of ports.



5. Click on the COM port and then click on the properties.

6. The Properties dialog box gives all the details of the COM port.

Clicking on the Resources displays the Interrupt (IRQ) settings and the Address settings for this COM port.#

Default Port Settings On Any Computer

Port	IRQ	I/O Address (Hex)	Type
COM1	IRQ 4	03F8 – 03FF	Serial
COM2	IRQ 3	02F8 – 02FF	Serial
COM3	IRQ 4	03E8 – 03EF	Serial
COM4	IRQ 3	02E8 – 02EF	Serial
LPT1	IRQ 7	0378 – 037F	Parallel
LPT2	IRQ 5	0278 – 027F	Parallel

Week 2

This Week Learning Outcome To Understand:

- Diagnostic Software

Software Diagnostic

Failure to Start GUI

In some cases, Windows 9x or 2000 could simply fail to load the graphical user interface. This problem might occur due to a missing or corrupted display driver. To determine if this is the cause, restart the computer and boot in Safe mode. A standard VGA driver will be loaded, bypassing potentially problematic third-party, 32-bit video drivers. If the system will boot in Safe mode, use the Device Manager to locate and/or reinstall the nonfunctioning video adapter. If the display driver is not the problem, turn your attention to other potentially corrupt drivers. Devices with corrupt drivers will be indicated in the Device Manager by a warning icon.

Another, more serious cause of a failure to load the GUI is a missing or corrupted GUI file. That is, during startup, Windows could simply be unable to load a file responsible for producing the interface, such as GDI.EXE or the Windows kernel. If you are using Windows 2000, restart the computer with the boot disks and try to repair the problem using the emergency repair process.

If the problem persists or if you are using Windows 9x, reinstall the operating system. To do this, boot from the Windows startup disk(s) and install the OS in the same location as the nonworking OS. Setup will overwrite the Windows system files while leaving other files and applications intact. Note that you will lose all OS-related configurations such as screen colors and Windows network settings.

Safe Mode

As discussed in Chapter 9, both Windows 9x and Windows 2000 can run in Safe mode. This is an excellent diagnostic tool, and you can use it by selecting Safe Mode from the Windows Startup menu (Windows 9x) or advanced startup options (Windows 2000). However, if Windows detects a potentially fatal driver error on startup, it might boot in Safe mode automatically. This action is typically accompanied by a message indicating the source of the problem. Use the Device Manager to find nonfunctioning hardware and to replace bad drivers. If you are using Windows 9x and suspect a problem with a 16-bit driver, use the System Configuration utility to bypass suspect 16-bit drivers, then restart the

computer.

Windows Protection Errors

Windows protection errors occur during startup, before the GUI is loaded, when a 32-bit virtual driver fails to load. The failed driver will typically be indicated along with the error message. Restart the computer in Safe mode. If the OS loads properly, use the Device Manager to reinstall corrupted or missing drivers. If you are using Windows 9x and cannot determine which driver is at fault, restart the computer using step-by-step confirmation. This choice will allow you select which drivers to process and will allow you to view the success or failure of each. Once you have determined the source, replace the driver.

If the OS will not load in Safe mode, there could be an error with the standard VGA driver or other Safe mode device driver. You will need to replace the driver by copying it from the installation disk into the WINDOWS\SYSTEM folder. If you are using Windows 9x, you can do this using the EXTRACT command from the boot disk. If you are using Windows 2000, boot from the startup disks and select the Repair option.

A Device Referenced in SYSTEM.INI or Registry Could Not Be Found

During Windows 9x startup, you could receive a message stating "A device referenced in SYSTEM.INI or registry could not be found" or "The Windows registry or System.ini file refers to this device file, but the device file no longer exists." These messages indicate that a file or device is listed in the SYSTEM.INI file or registry but Windows could not find it. For example, the SYSTEM.INI file could refer to a driver called DRIVER.DRV. If Windows cannot find DRIVER.DRV, one of these messages will be generated. The most common cause of this problem is that an application or device has been removed from the system, but references to it have been left in either the SYSTEM.INI file or the registry.

These errors are typically nonfatal, meaning that the computer will continue to boot after the error. When the error occurs, note the referenced file or device. If this file is required for a device or application in Windows 9x, use SYSEDIT or Notepad to open SYSTEM.INI. Determine where the referenced file should be located. Next, check for the presence of that file in the proper location. If it doesn't exist, reinstall or copy it. If it does exist, it might be corrupted and will have to be replaced. When you are finished, restart the computer.

If the problem persists or if the referenced file is not needed, open the SYSTEM.INI file and place a semicolon (;) in front of the line referencing the problem file. This symbol instructs Windows to skip over that line during startup. If the problem still persists or if you are using Windows 2000, you might need to look at registry entries. Before you open the

registry and remove or change entries, make a backup copy of the registry that you can restore if more serious problems occur. Use the Registry Editor to search for and remove the referenced entries.

One of the most common causes of this referencing error is deleting an application rather than uninstalling it. When you uninstall an application, its files are removed from the computer, its references are removed from the registry and SYSTEM.INI files, and its listing in the Programs menu is removed. If you simply delete an application's files, these references remain in the system. You should always remove applications using the manufacturer's uninstall utility or the Windows Uninstall utility, located in the Add/Remove Programs dialog box.

Corrupted Swap File

Recall that Windows 9x and 2000 can use space on the hard drive to store temporary data that will not fit in regular RAM. This space is the swap file, and it can become corrupted just like any other file on the hard drive. When there is a swap file problem, you will typically be notified by a "Swapfile Corrupt" error message. However, swap file problems can also manifest themselves as other problems, such as a system that frequently "hangs," or locks up.

Fortunately, corrupt swap file problems are easy to resolve. If Windows is configured to use a swap file but one doesn't exist, Windows will automatically generate it at startup. To force Windows 2000 to generate a new swap file, simply reboot the system. In Windows 9x, boot the computer using a boot disk (so that Windows doesn't load), locate the existing swap file, and delete it. This file is called WIN386.SWP in Windows 9x.Once the file is deleted, restart the computer. Note that corrupted files sometimes indicate a failing hard drive. Run Scandisk to locate and eliminate other disk-related problems.

It might seem like a trick, but it really is this simple: All you have to do to resolve a swap file error in Windows 9x or Windows 2000 is delete the existing swap file and restart the computer. Don't dismiss "Delete the swap file" as the correct answer on the exam simply because it sounds too easy.

Your knowledge of the information presenting in the preceding subsections should allow you to provide solutions to the following Scenario & Solution questions

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Week 3

This Week Learning Outcome To Understand:

- **Startup Failure**

Introduction

Troubleshooting Boot-Time Error Messages

The BIOS performs a power-on self-test (**POST**) when it starts up the system, to check out the PC and make sure that everything is working properly. Assuming that the BIOS is able to boot the system far enough to gain access to the video subsystem, it will display information about the PC as it boots. It will also use the video system to communicate error messages to the user. In fact, most boot problems are displayed via video error messages.

An error message can be produced by various different parts of the system, depending on how far into the boot process the system gets before it is produced. Most error messages are produced by the system BIOS, as it is responsible for most of the functions of starting the boot. However, other error messages depend on the operating-system.

There are many thousands of individual error messages; some are more common than others because there are only a few different BIOS companies that are used by the majority of PCs today. However, since the exact wording of an error message can be changed by the manufacturer of each system or motherboard, there are a lot of variations.

In most cases, the messages are pretty similar to each other; Similar error messages, those that really mean the same thing but just use different wording, have their descriptions and diagnoses grouped together to make things simpler.

Some examples of error messages are:

BIOS ROM checksum error - system halted
Cache memory bad, do not enable cache! CMOS battery (has) failed
CMOS checksum error CMOS display type mismatch
Disk boot failure
Disk boot failure, insert system disk and press Enter
DMA #1 error
FDD controller failure
Keyboard error
No boot sector on fixed disk - press F1 to retry boot
Timer error

Some of the common error messages and their descriptions are listed in the table below:

Error Message	Explanation	Diagnosis	Troubleshooting steps
BIOS ROM Checksum Errors	The read-only memory (ROM) containing the BIOS program is protected by a checksum value as a double-check that the ROM code is correct. This checksum is compared against the values in the ROM each time the PC is booted and if there is a mismatch, this code is generated.	The BIOS ROM chip on the motherboard is probably faulty. It could also be another component on the motherboard.	Troubleshoot the motherboard.
CMOS display type mismatch	The system has detected that the type of **video card** you have in the PC is not the same as the one you told the system you had.	The BIOS setting that controls the display type for the PC is set incorrectly. Very rarely, there could be some other bizarre explanation for this problem.	• Double-check and correct the video display type BIOS setting. It should be set to "VGA" or "VGA/EGA" for virtually all newer PCs. • Troubleshoot the video card if the BIOS setting is correct and this problem persists. • Troubleshoot the motherboard.
No boot device	The system has attempted to find a drive to boot the **operating system**, but has failed (the error message itself may not always be very clear that this is what has happened, especially the infamous "NO ROM BASIC - SYSTEM HALTED"; see here for more on that error.) The system cannot start up because there is no operating system for it to load. The boot process will halt here. Some systems may give you the option to retry the boot or to enter setup at this point, as a convenience. Otherwise, you must reboot the PC.	All of the bootable drives in the system are not functioning. Normally this means that the **floppy disk** drive is either absent or not functioning, or has no disk in it, and the **hard disk** is either not connected or has no bootable active partition on it.	• If this is a new system with a hard disk that has never been formatted before, you need to boot from a floppy first, and partition and format the hard disk. Try that. • If you were trying to boot from the floppy disk drive, troubleshoot the floppy disk drive. • If you were trying to boot from the hard drive, troubleshoot the hard disk drive.
DMA Errors	The system has detected an error associated with the direct memory access (DMA) controller(s) on the system motherboard.	This is most likely a motherboard problem, but it might be caused by a bad **expansion card** as well. If the DMA controller number	• Troubleshoot as a generic expansion card issue. • Troubleshoot the motherboard

Error Message	Explanation	Diagnosis	Troubleshooting steps
		is supplied as part of the error message, that might help narrow down the DMA channel where the problem was detected, if applicable. DMA controller #1 handles DMA channels 0 to 3, and controller #2 handles channels 5 to 7 (channel 4 is the cascade between the two controllers).	
Invalid media type	The system tried to use a disk or other media that is of the incorrect type.	This is one of those poorly-phrased messages; what it almost always means is that you tried to use a hard disk volume after partitioning it but before formatting it. For example, if you are setting up a new system and you partition the hard disk, then boot from a floppy and type "DIR C:", you will usually get this message. The system looks for the media type descriptor on the hard disk and doesn't find what it expects, and produces this message.	• Assuming that this is a new hard disk you are setting up, just format the disk and you are all set. • If an existing disk produces this error, then it means that something has seriously corrupted the disk. Troubleshoot this here.
Error with hard disk controller	The system has detected a failure related to the IDE hard disk controller. The controller is a separate I/O card that plugs into the motherboard on older systems. Newer PCs have the controller built into the motherboard.	This is usually a problem related to the hard disk controller, of course, but it could also be the hard disk(s) themselves.	• Troubleshoot the hard disk controller. • Troubleshoot the hard disk drive.
Keyboard failure	The system has detected what appears to be a failure with the keyboard	Usually this is a problem with the keyboard, such as it being disconnected from the PC, having a key stuck down on it, and so forth. Could also be the keyboard controller.	• Troubleshoot the keyboard. • Troubleshoot the keyboard controller. • Troubleshoot as a motherboard failure
Error with hard disk	The system has detected a failure related to the IDE hard disk controller.	This is usually a problem related to the hard disk	• Troubleshoot the hard disk controller.

Error Message	Explanation	Diagnosis	Troubleshooting steps
controller	The controller is a separate I/O card that plugs into the motherboard on older systems. Newer PCs have the controller built into the motherboard.	controller, of course, but it could also be the hard disk(s) themselves.	• Troubleshoot the hard disk drive.
Operating system not found on boot device or boot sector bad (either hard or floppy disk)	The system found a boot device--either a **floppy disk** or a hard disk--and tried to boot it, but could not start the operating system because the operating system files are not on the booted volume.	The most common cause of this problem is trying to boot a non-bootable floppy or **hard disk**, that is, a disk that has not been made bootable using the "FORMAT /S" or "SYS" commands. If this occurs on a disk that was already prepared to be bootable, it means that the operating system startup files have become corrupted.	• If trying to boot from a floppy disk, replace with a bootable disk and try booting again. See here for more on boot disks. • If trying to set up a new hard disk, first set up the hard disk so it is bootable. • If this type of error is encountered in an existing system, there is a good chance that the disk has become corrupted somehow. Troubleshoot this here.
Non-system disk or disk error; replace and press/strike any key when ready	The system found a boot device--either a floppy disk or a hard disk--and tried to boot it, but could not start the operating system because the operating system files are not on the booted volume.	The most common cause of this problem is trying to boot a non-bootable floppy or hard disk, that is, a disk that has not been made bootable using the "FORMAT /S" or "SYS" commands. If this occurs on a disk that was already prepared to be bootable, it means that the operating system startup files have become corrupted.	• If trying to boot from a floppy disk, replace with a bootable disk and try booting again. See here for more on boot disks. • If trying to set up a new hard disk, first set up the hard disk so it is bootable. • If this type of error is encountered in an existing system, there is a good chance that the disk has become corrupted somehow

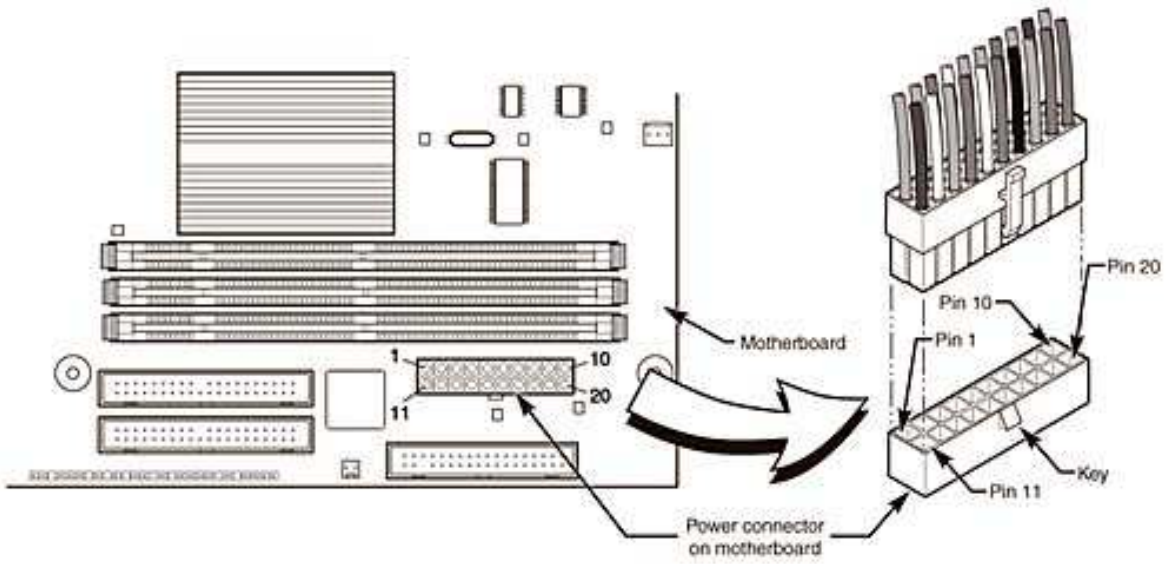
Week4
Objective: Understand Bootup (Fault Power Supply)

Checking the Power Supply

If the wall outlet, and the power cord are good, as well as the connection at the motherboard is secure. Then you may have to face the fact that the power supply itself is bad. If you have a Multimeter you can test the power supply output before purchasing a new one. Simply follow these steps.

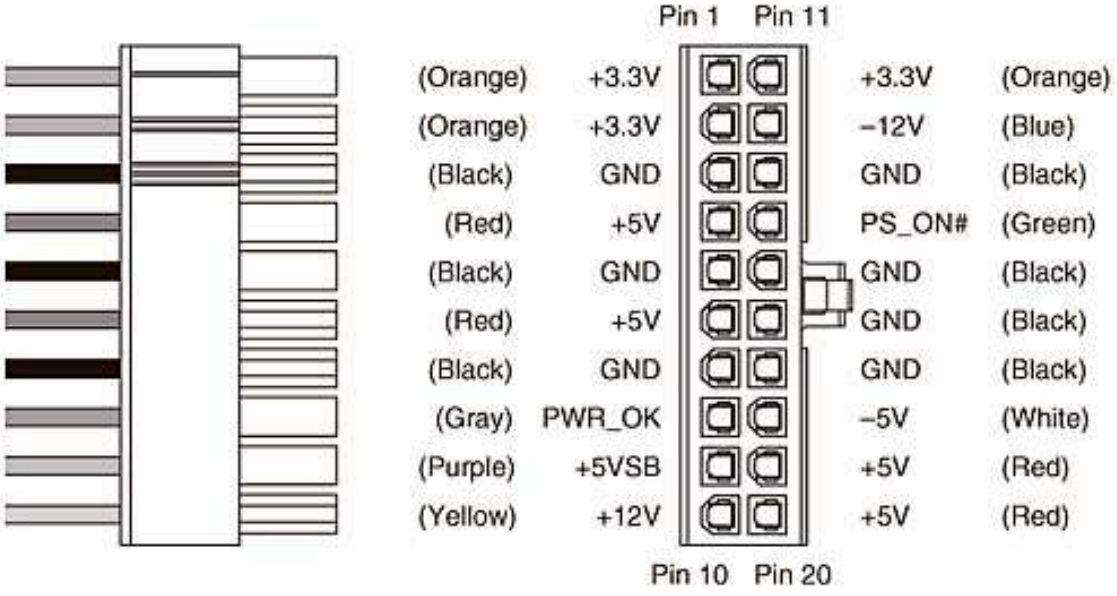
- Turn off the PC, but do not unplug it, open the system unit. Set the multimeter to read DC volts in the next range higher than 12 volts. Locate a power connector similar to the hard drive, or floppy drive connector that is unused and turn on the PC. You can also unplug a drive connector and use it as well. Turn on the PC and insert the BLACK probe into power connector on one of the BLACK wires. Touch the RED probe to the YELLOW wire on the power connector.

Figures below illustrate the procedure for checking the power supply in a typical ATX power supply.



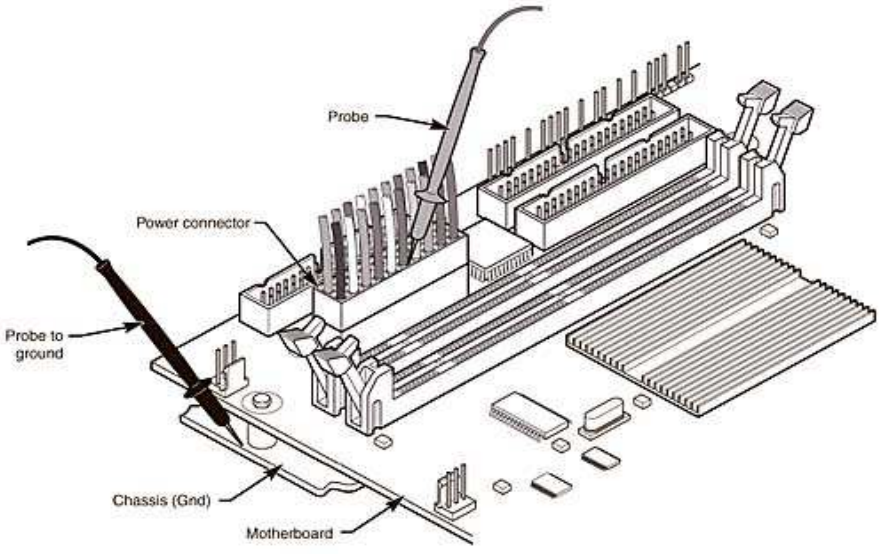
- The multimeter reading should be +12 volts. Now touch the RED probe to the RED wire and the reading should be +5 volts. If no readings or different readings occurred, you, will have to replace the power supply. If the readings were correct, you should check the connector at the motherboard.

- Refer to the power supply connector/voltage details shown in the figure below and check the corresponding voltages.



ATX/NLX Main Power Connector

Check the power going to the Motherboard connections by inserting the multimeter probes into the connectors as shown in the figure below.



- DO
  NOT remove the power supply from the system unit case when performing these tests Be sure to remove any and all electrical static build-up from your clothes and body BEFORE touching any parts inside the system unit.

Week5
This Week Learning Outcome
To Understand:

➢ Startup Diagnostic(Hardware)

Software Diagnostic tests for hardware

There are several diagnostic and maintenance tools provided in most of the operating systems. Some of the most important diagnostic tools are:

1. Disk Error checking. Or Scan Disk
2. Disk Clean up.
3. Disk Defragmenter

1. Disk Error-Checking

Check Disk (Chkdsk.exe) is a utility which verifies the logical integrity of a file system. In the event of the utility encountering logical inconsistencies in file system data, it will perform the necessary actions to repair the file system data.
The equivalent utility in earlier versions of Windows was referred to as ScanDisk.
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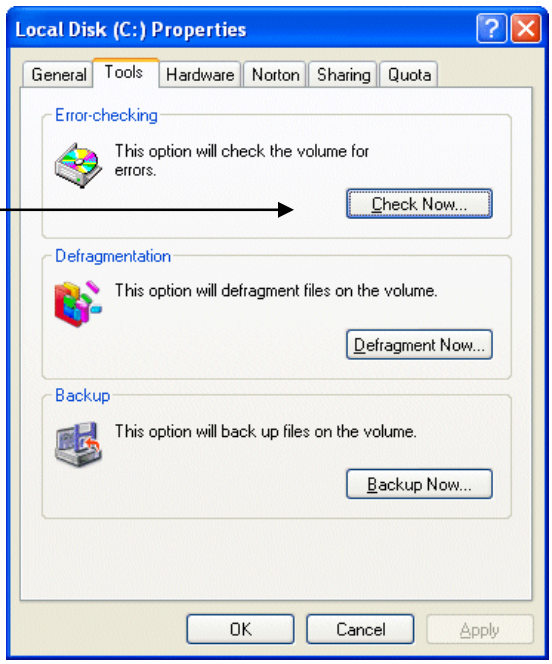

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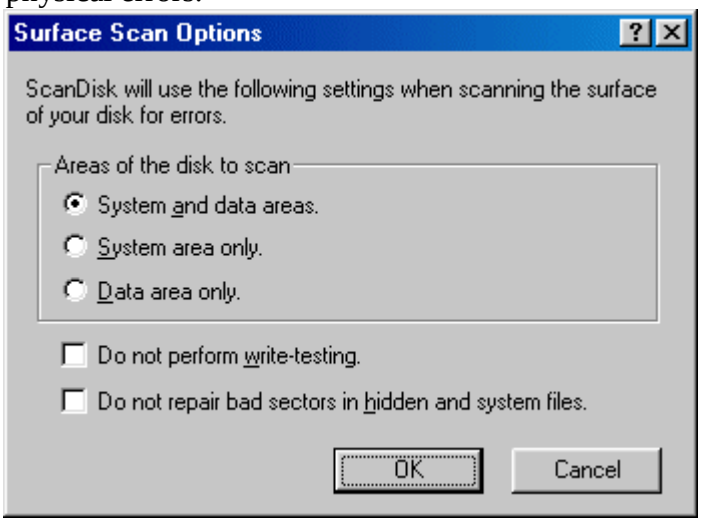
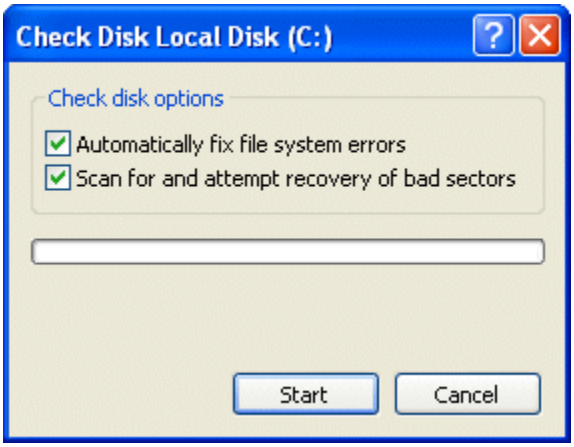
This provides options for performing either a standard or thorough test of the specified disk volume. The former checks files and folders for errors, while the latter additionally scans the disk for physical errors.



Select the required option for the areas of the disk to be scanned. ScanDisk usually cannot repair errors in the system area of a disk. If such errors exist, your disk probably needs to be replaced.
Specify whether or not you want ScanDisk to verify that sectors can be read from and written to, and/or have the utility repair hidden and system files on your disk.

b) A dialogue box showing the **Check disk options** is displayed.

Select the options as appropriate and click **Start**.



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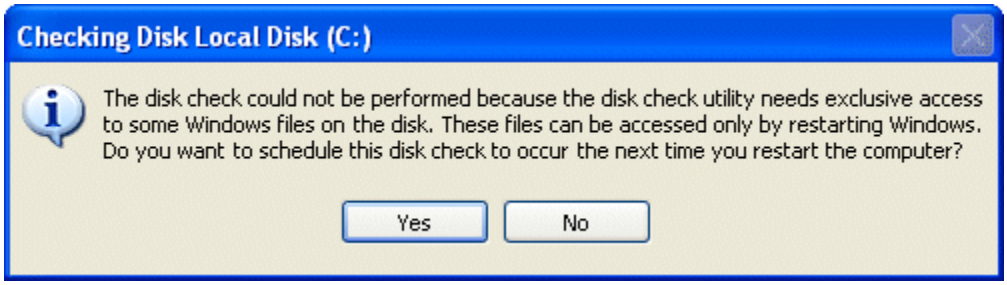

d) Click **Yes** to so schedule the disk check.

The next time you start your system, the **chkdsk.exe** utility will be run prior to Windows being loaded, examining all the metadata on the volume in five separate stages:

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When the utility finishes, Windows will continue to load as per a normal system start-up.

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The Disk Cleanup tool helps you free up space on your hard disk by searching your disk for files that you can safely delete. You can choose to delete some or all of:

- temporary Internet files
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The following provides step-by-step instructions on how to use the Disk Cleanup tool under Windows XP.

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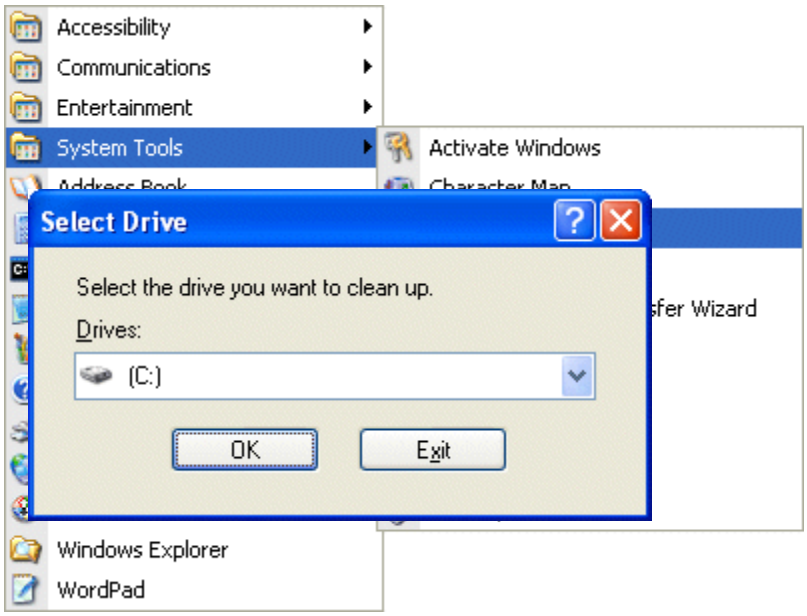
   Select the required drive and click **OK**.



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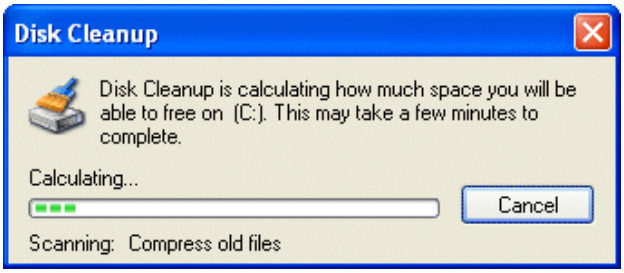

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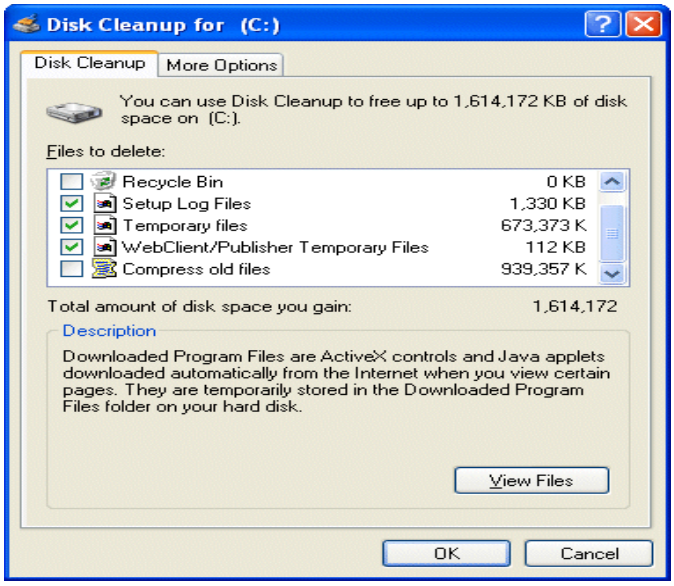

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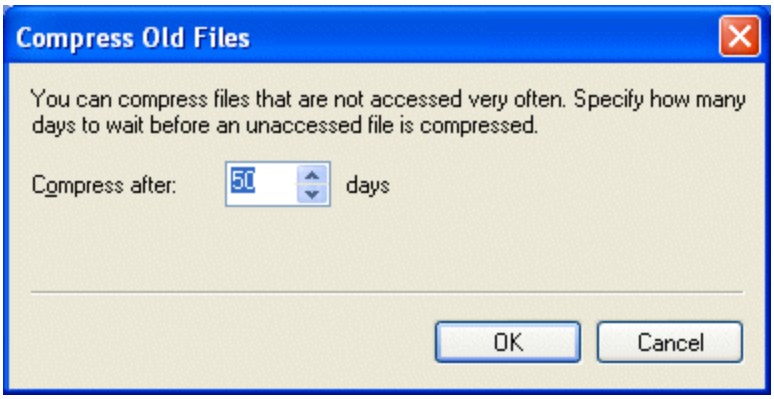

7. Check the boxes associated with the items you want to delete and click **OK**.

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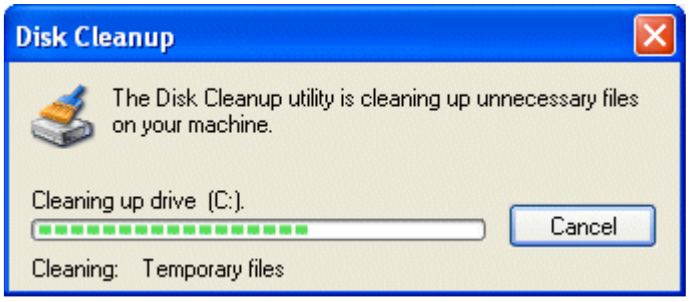

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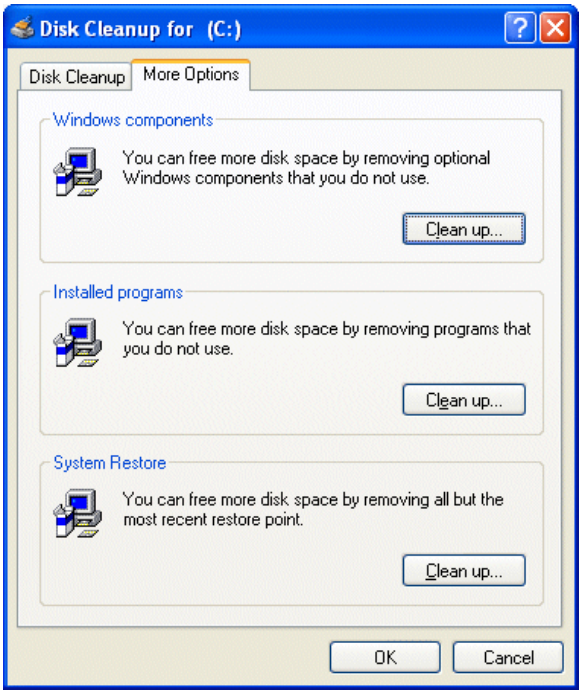

3. Disk Defragmenter

In older file system architectures, if a file could not be stored contiguously, it could not be saved to the disk. Newer architectures intentionally divide files into multiple pieces so as to make more efficient use of disk storage space.

Since files are constantly being written, deleted, and resized, fragmentation is a natural and ongoing occurrence. However, it is also one that has significant performance implications. When a file is spread out over several locations, it takes longer to read and write. In fact, the effects of fragmentation can be more widespread than that, causing long boot times, random crashes and system freeze-ups.

Defragmentation

The process of removing wasted space between fragments on a hard disk by reorganizing and rewriting files is called Defragmentation.

Defragmentation is a time-consuming process, the more so the greater the extent of fragmentation. It is therefore important to terminate any programs, including those running in the background like firewalls and anti-virus programs - before starting the defragmentation process. Failure to do so will mean that it is constantly interrupted, adversely impacting the time the process takes possibly to the extent of it failing to complete.

The following describes how to subsequently defragment your hard drive under Windows XP.

Note that we cannot defragment a hard disk that is completely full, and that the less free space there is, the longer defragmentation will take. This is because the defragmentation utility need some room in which to temporarily store fragments as it reassemble files.

If the hard disk is relatively full, it is therefore good practice to run **Disk Cleanup** before attempting to defragment a drive.

1. Launch the Defragmenter Tool, either through

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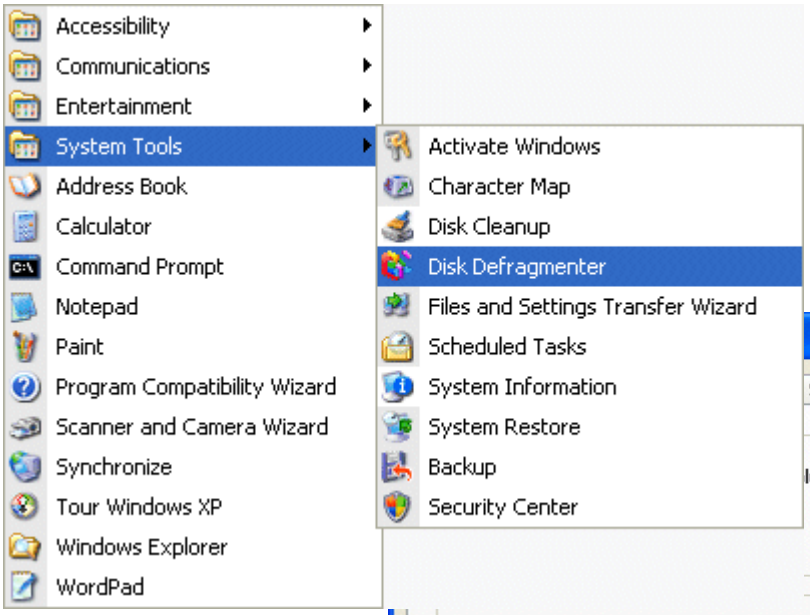

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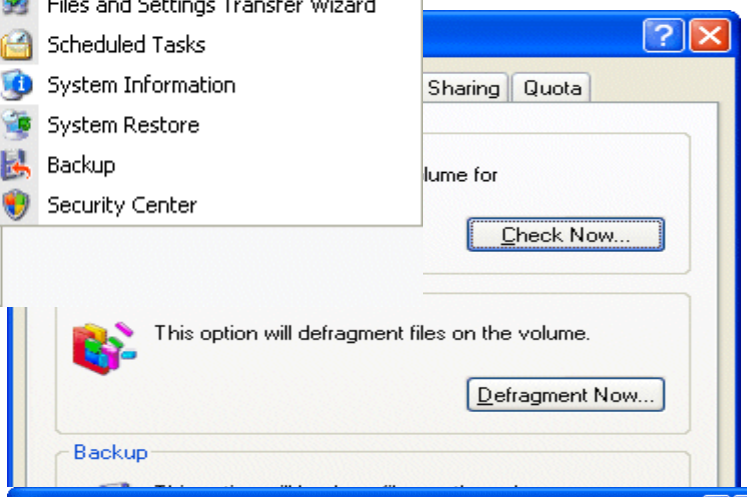

and selecting to **Tools** tab.

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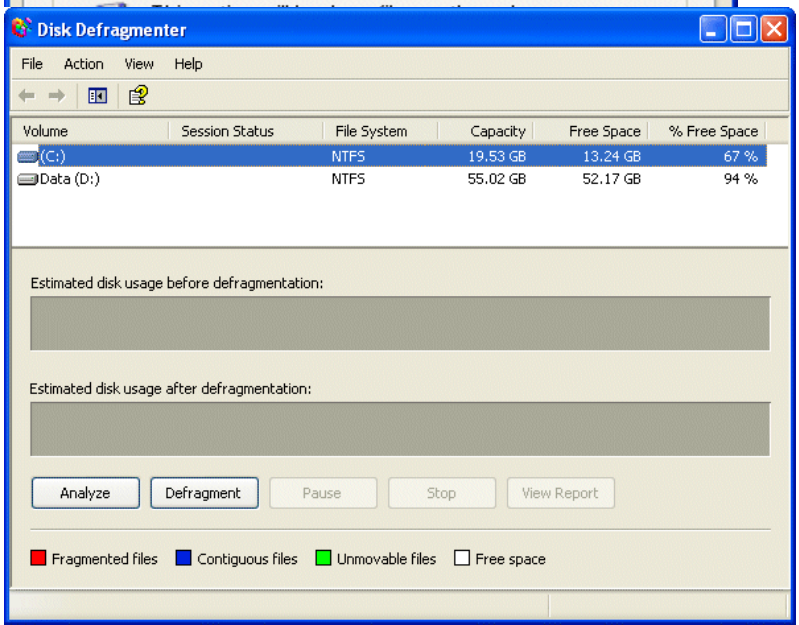

capacity and amount of free space for each.

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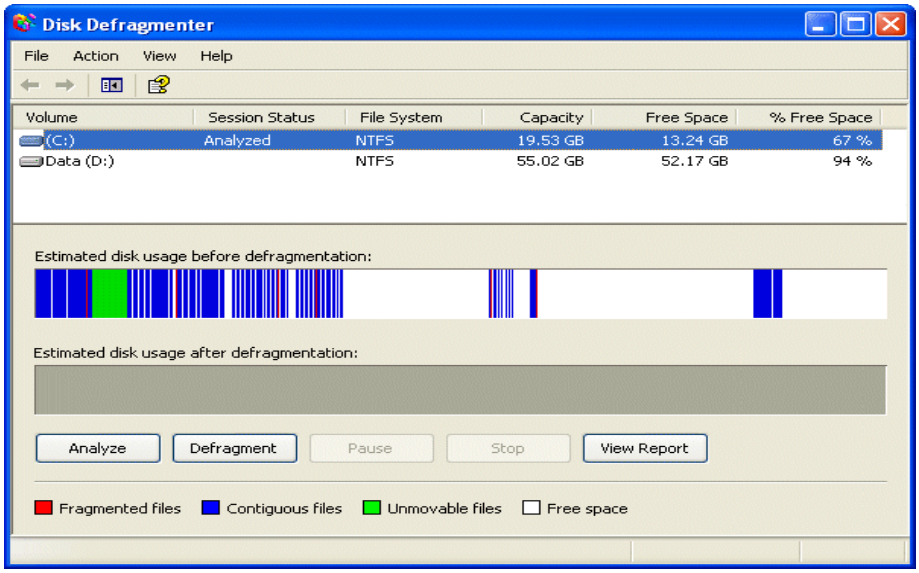

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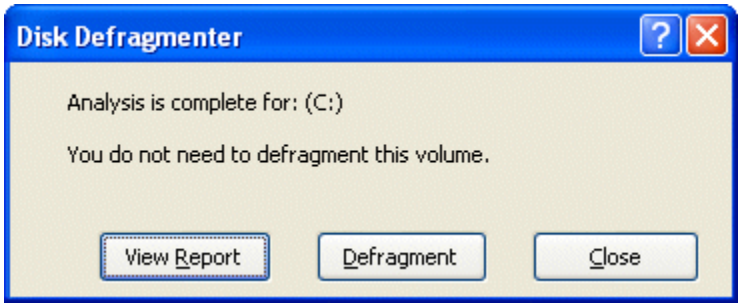

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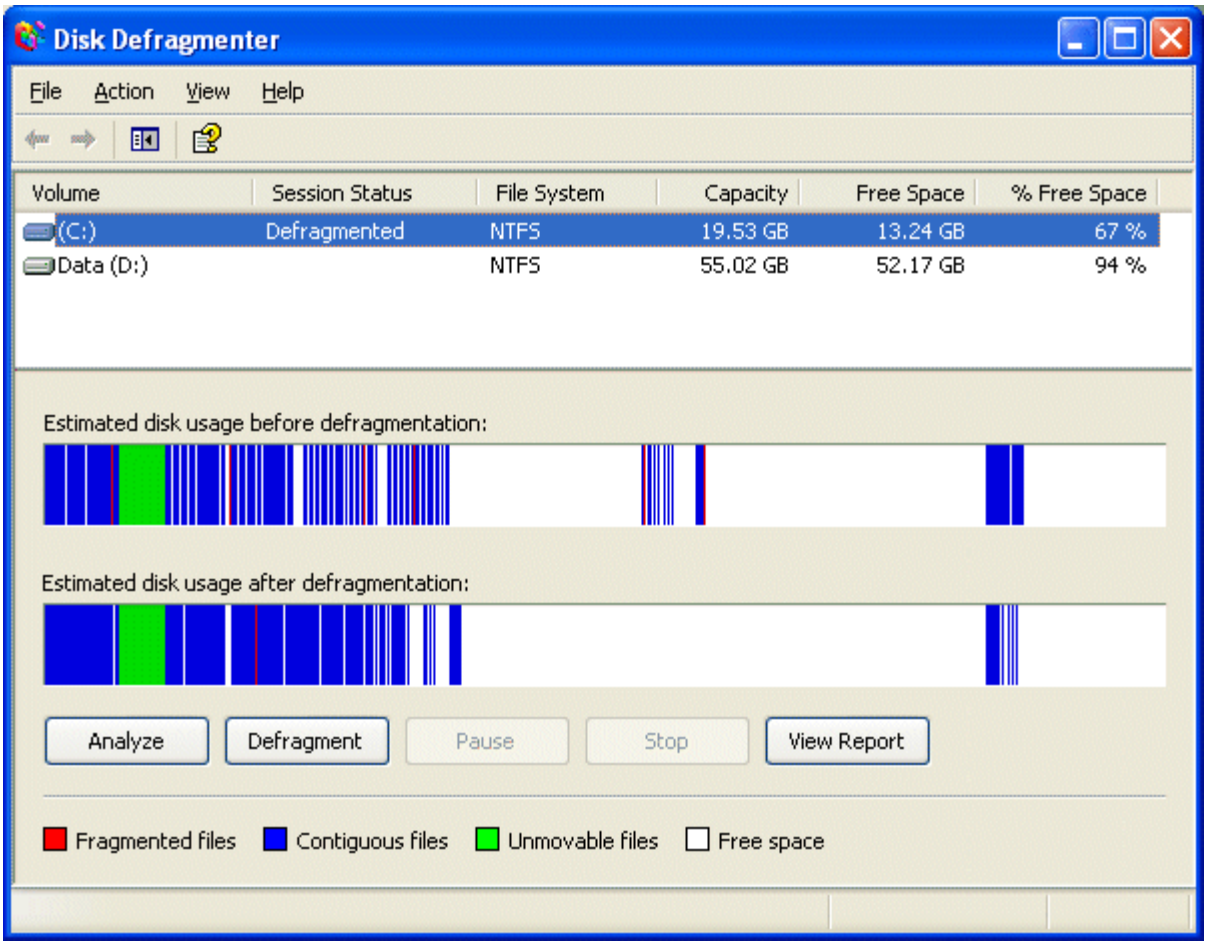

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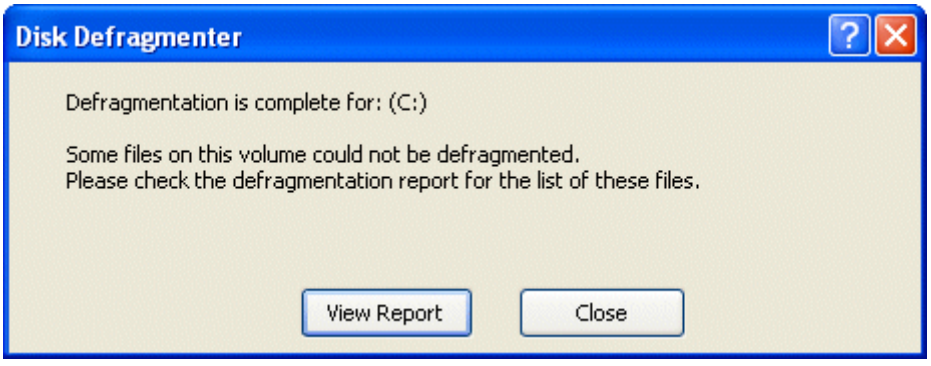
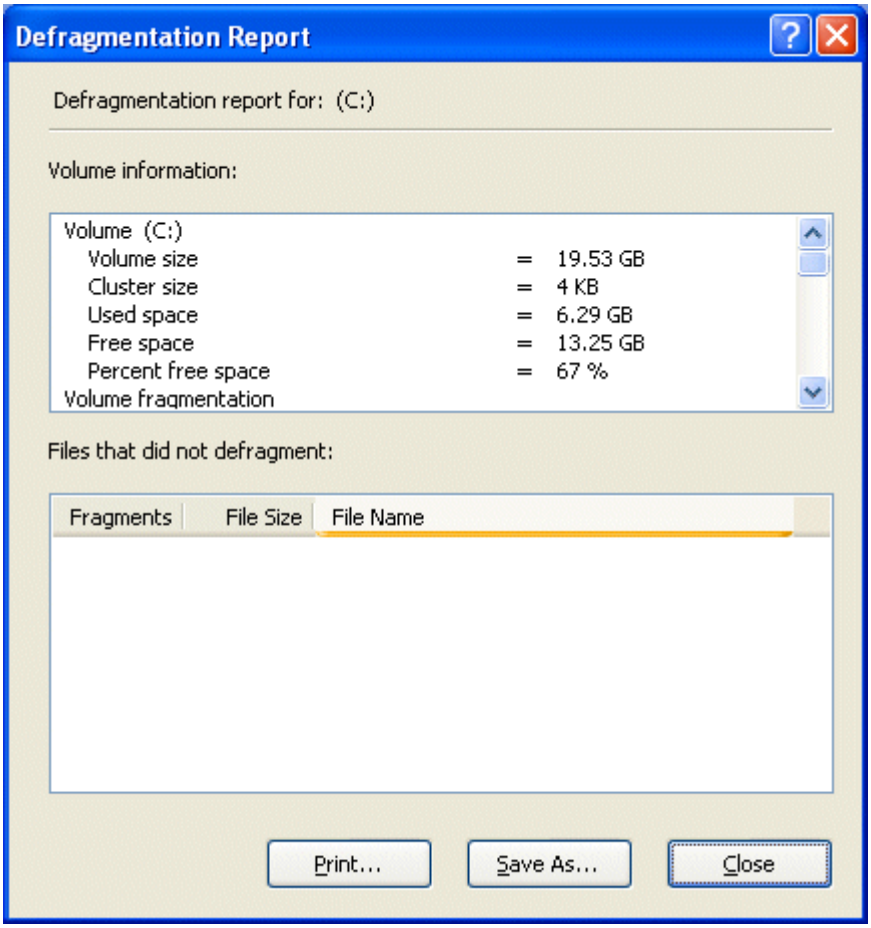


Figure below shows a typical defragmentation report.


Defragmentation Report
Defragmentation report for: (C:)
Volume information:
Volume (C:)
Volume size = 19.53 GB
Cluster size = 4 KB
Used space = 6.29 GB
Free space = 13.25 GB
Percent free space = 67 %
Volume fragmentation
Files that did not defragment:
Fragments
File Size
File Name
Print...
Save As...
Close

Week5
This Week Learning Outcome
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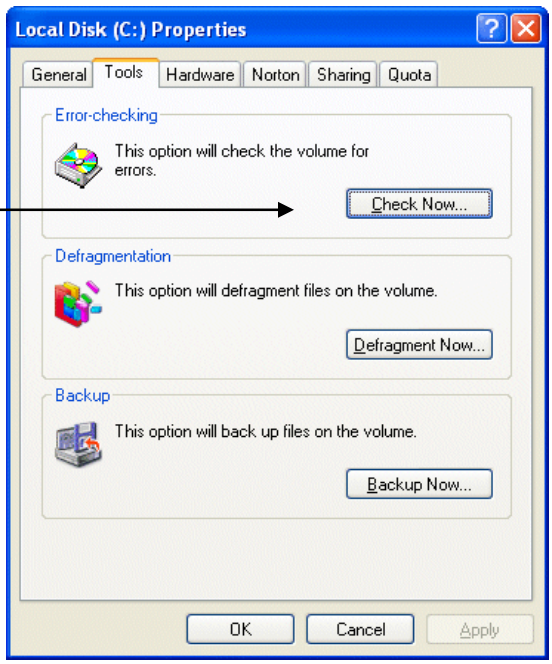

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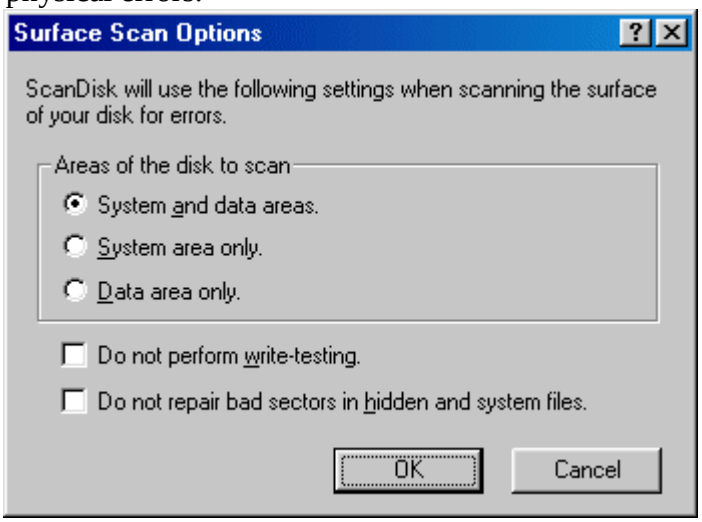

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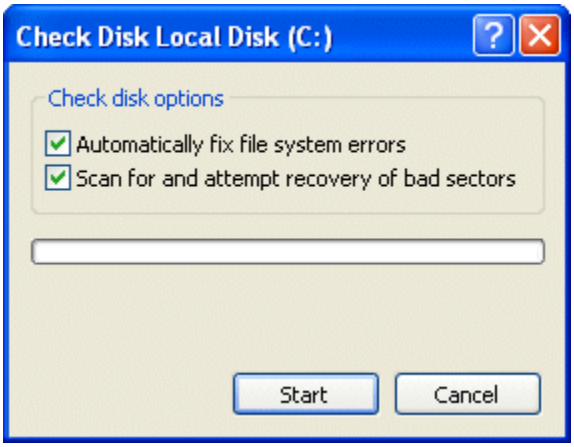

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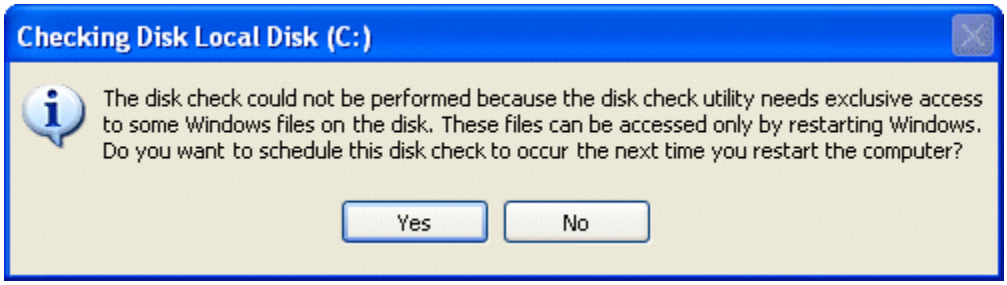

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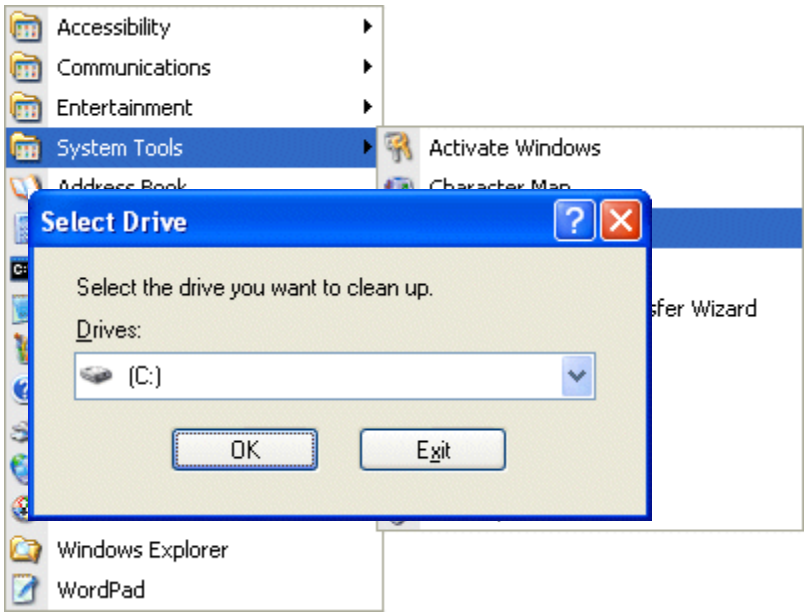

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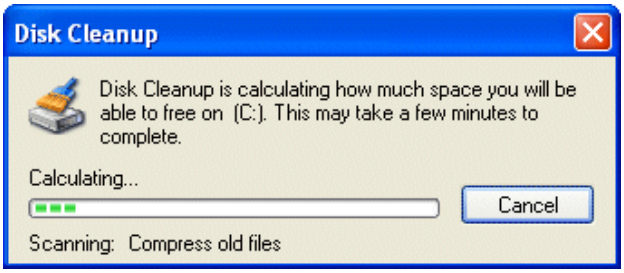

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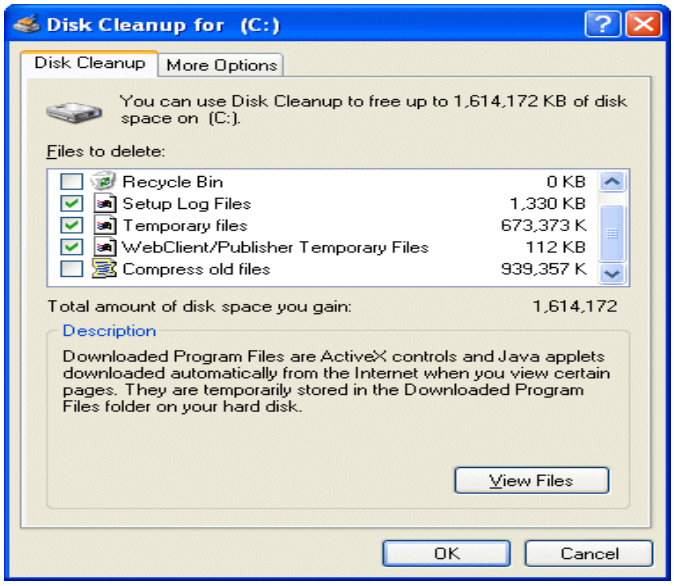

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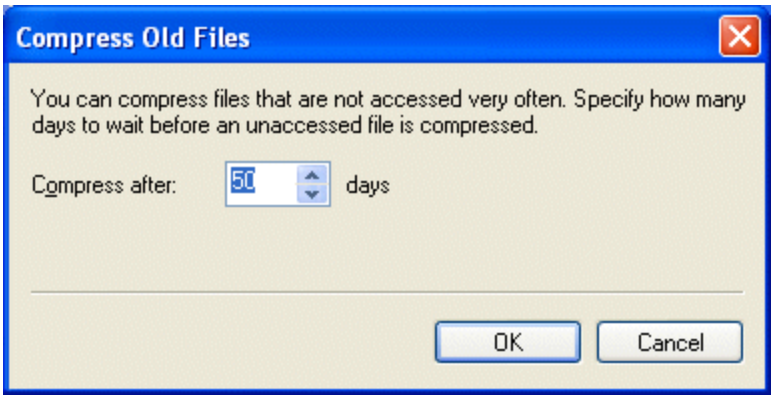

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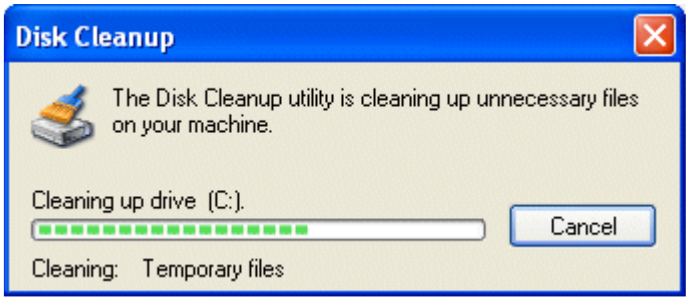

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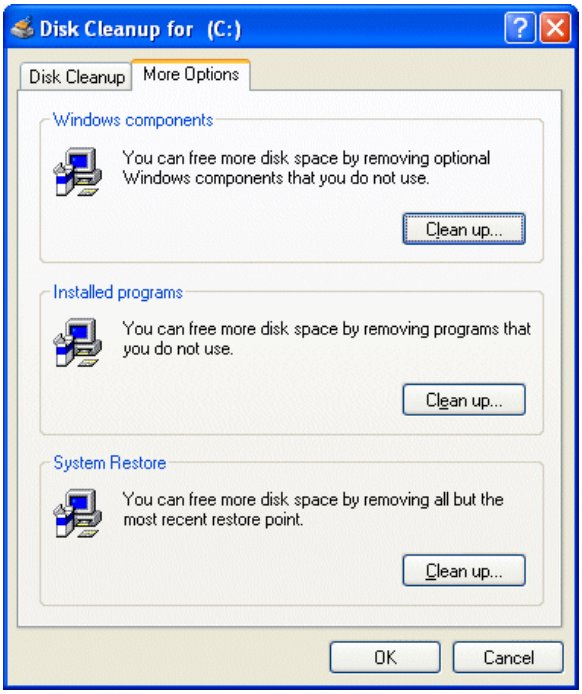

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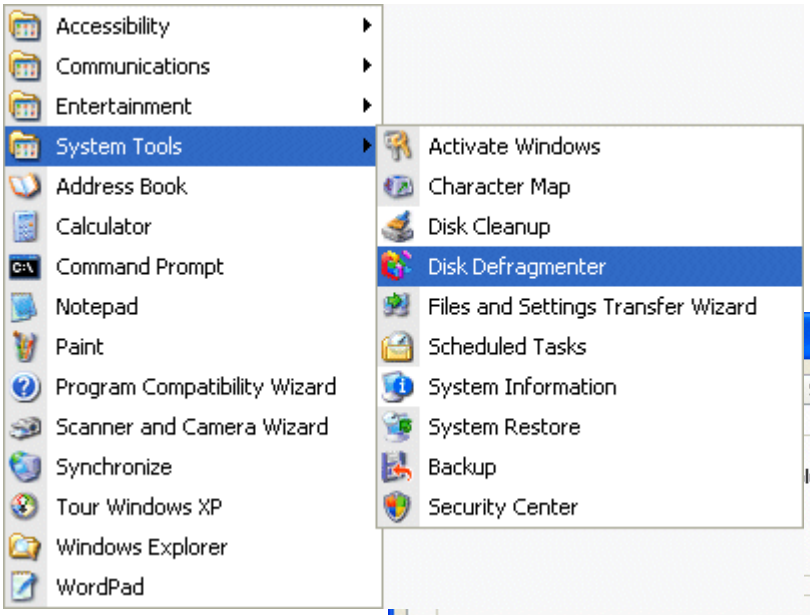

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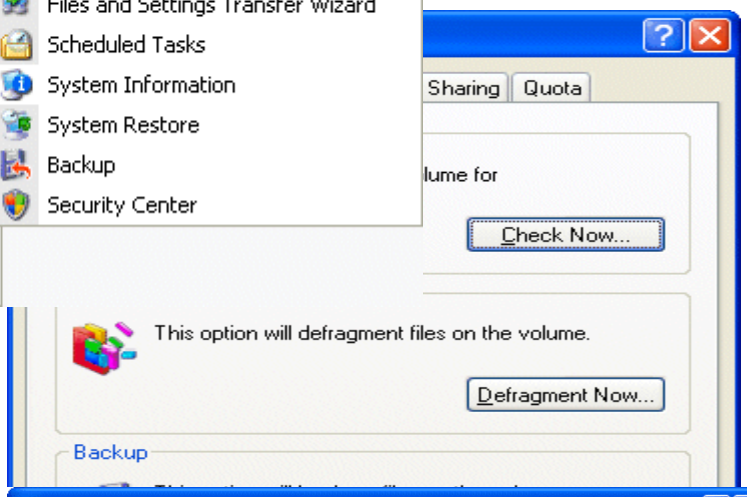

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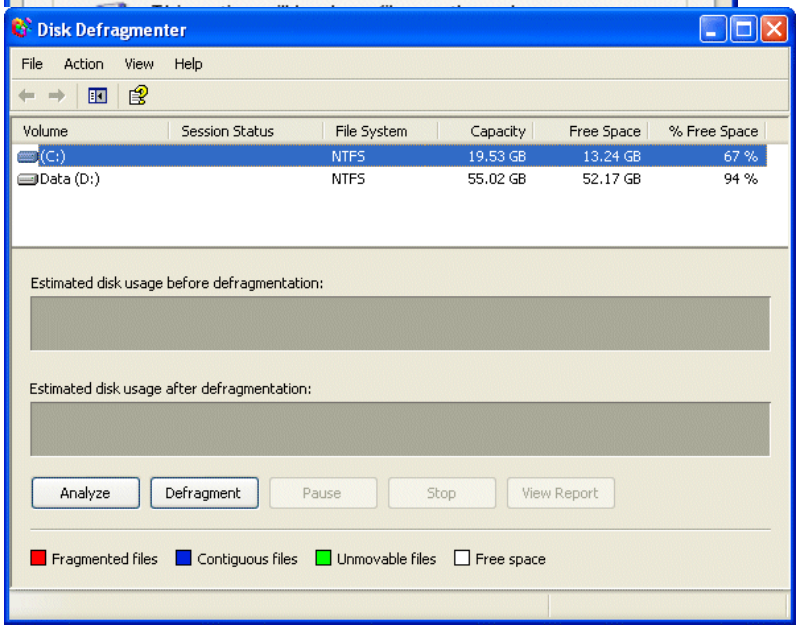

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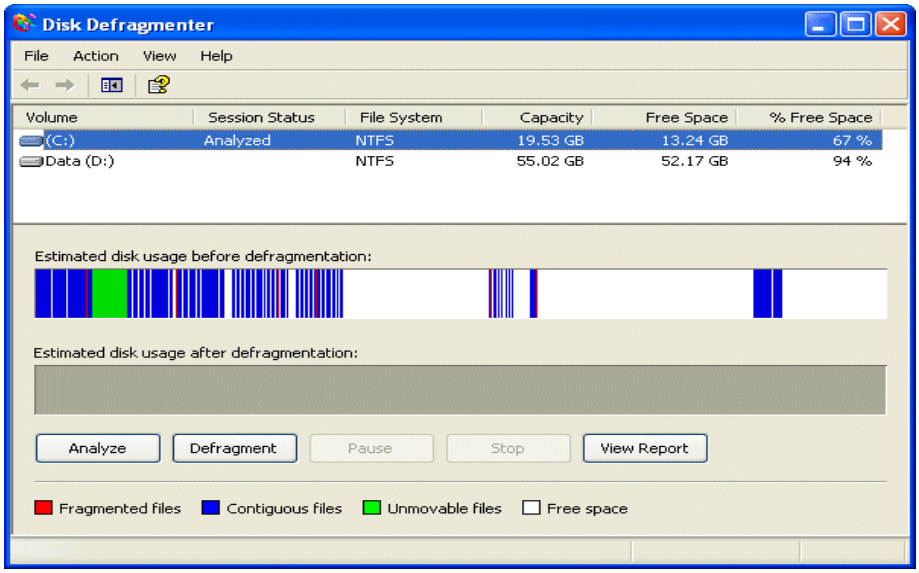

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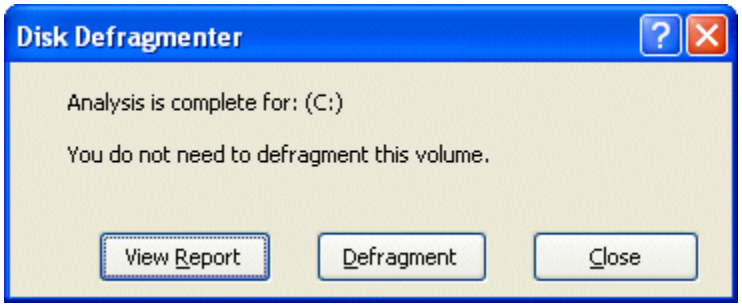

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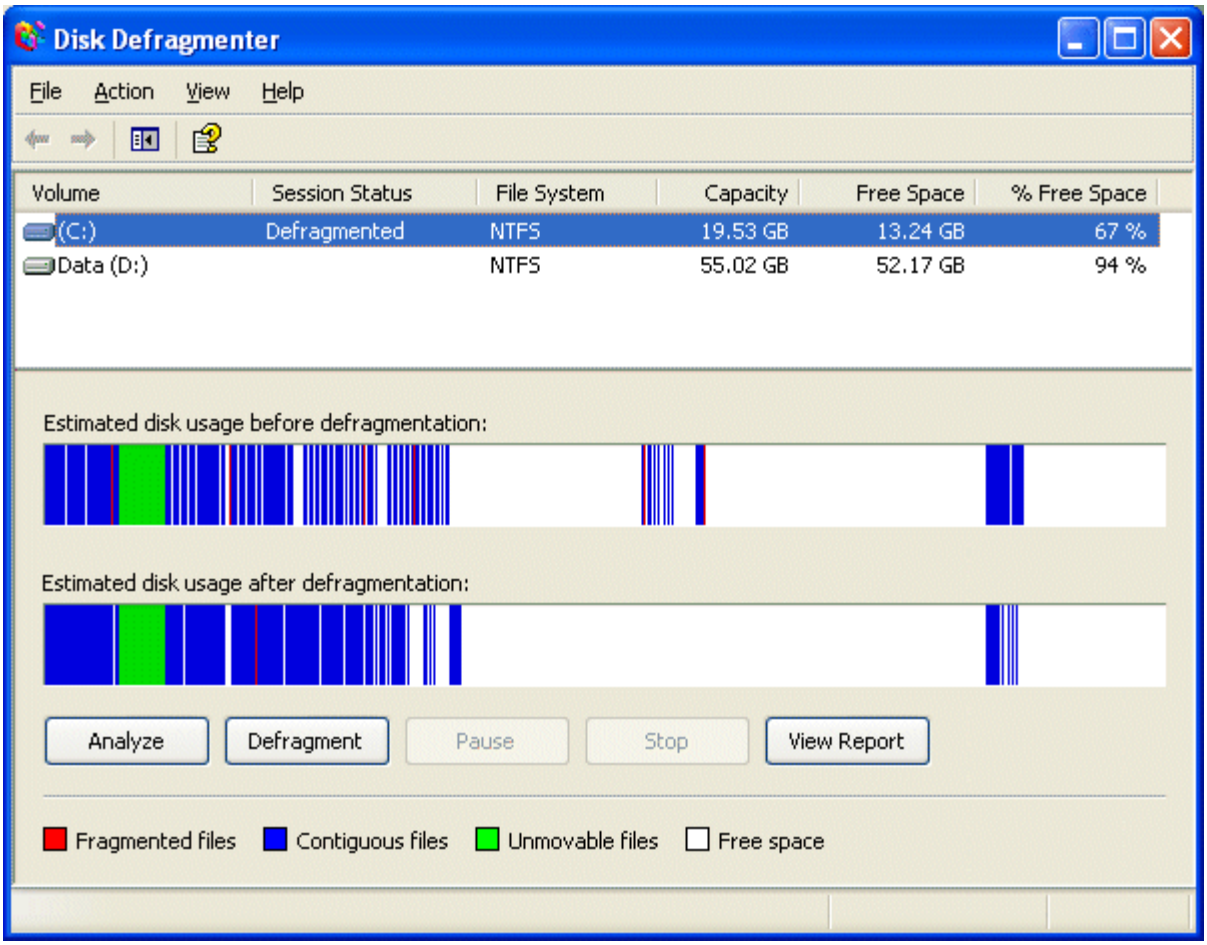


A visual representation of the now defragmented drive is shown above.

6. Click **View Report**

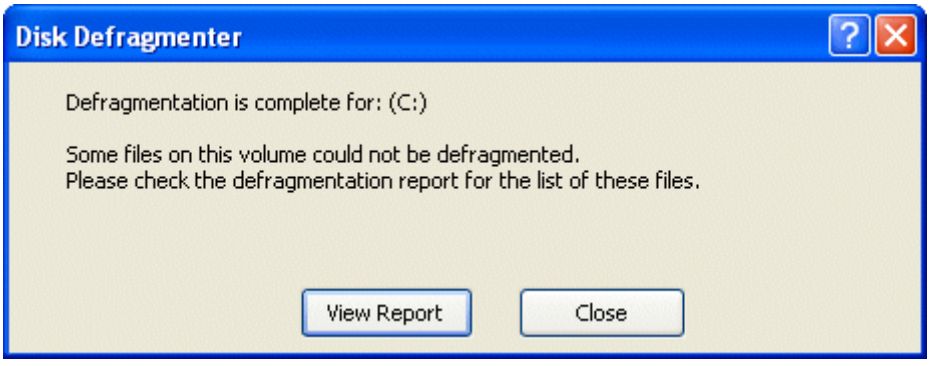
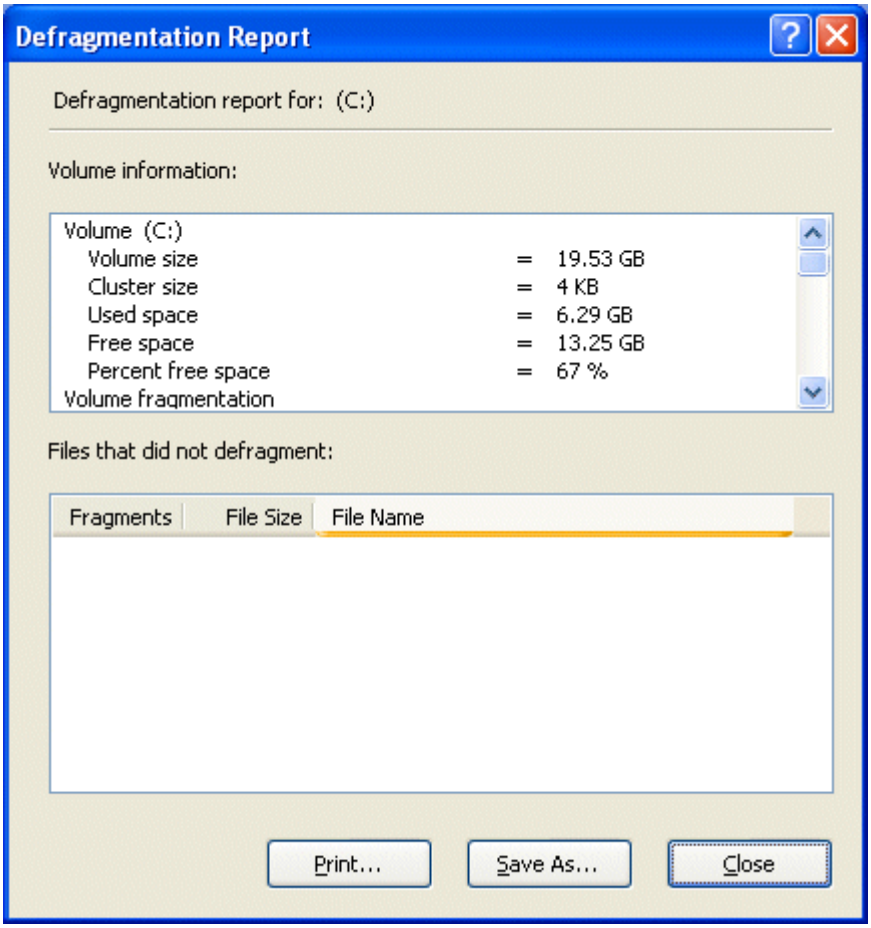


Figure below shows a typical defragmentation report.


Defragmentation Report
Defragmentation report for: (C:)
Volume information:
Volume (C:)
Volume size = 19.53 GB
Cluster size = 4 KB
Used space = 6.29 GB
Free space = 13.25 GB
Percent free space = 67 %
Volume fragmentation
Files that did not defragment:
Fragments
File Size
File Name
Print...
Save As...
Close

Week6
This Week Learning Outcome
To Understand and Recognize:
➢ Memory Failure

Memory failure – Symptoms and Troubleshooting
When the PC is booted up, it does not show that it is detected all of the memory in the machine. Several megabytes, usually an amount equal to the size of a memory module or half a memory module, are missing.

Causes of Memory failure:

Memory failure is generally caused by the following:

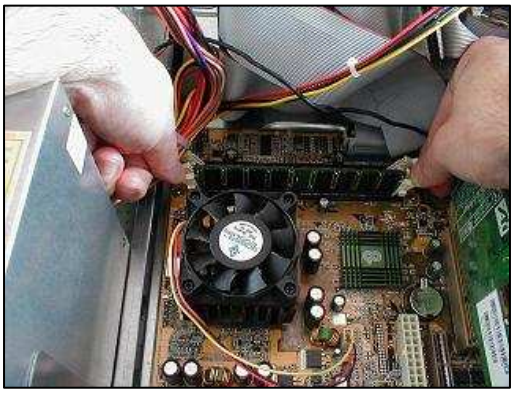
1. Using the wrong type of memory,
2. Incorrect installation, or incorrect configuration.
3. Putting the modules into the wrong sockets,
4. Forgetting to change jumpers that may be present,
5. Using unsupported technology or unsupported module sizes
6. Hardware failure of the memory itself

Remedial procedure
Some of the steps involved in the remedy of the Memory failure are given below:

1) Check for possible general problems associated with new systems. One of these could be causing the memory to appear to be bad when it is not.
2) Make sure to carefully check the memory modules, which sometimes appear to be inserted correctly when they are not. Make sure they are all sticking up at the correct height from the motherboard. Ensure that the modules have been pushed all the way into their sockets and that the spring clips have snapped into position properly to hold them.
3) Check for loose connections within the PC.
4) One of the most common causes of unrecognized memory is using an unsupported module size. Ensure that the size of memory modules you have selected is supported. Some motherboards will not support certain sizes of modules; in particular, 2 MB, 8 MB and 32 MB modules are composite and will not work in some machines. Consult your motherboard manual.
5) Make sure that you have used the correct sockets. Motherboards have multiple sockets and putting modules in the incorrect ones will often cause problems. For example, most Pentium motherboards have four SIMM sockets, which make up two banks. If you put the SIMMs in the middle two sockets then you have accidentally put memory into half of the first bank and half of the second bank,

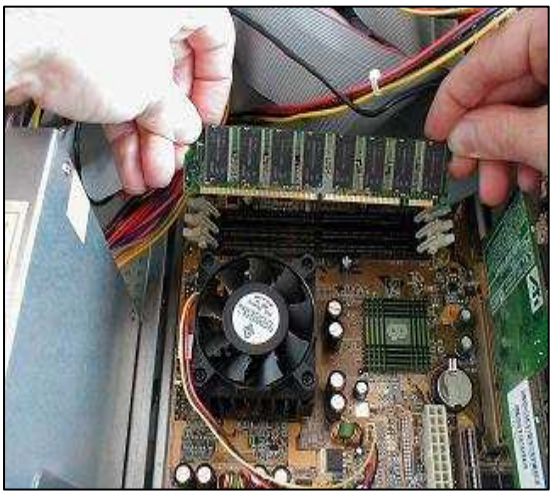
and the PC will not boot. Putting the memory into the full second bank instead of the first won't work on many motherboards either (but it will on some).

6) Check the technology of the memory you are using. Use the type of memory suitable for the motherboard. Using unsuitable memory in some machines can cause the memory not to be recognized.
7) If you have an older motherboard, especially in a 486 or earlier system, there is a chance that your motherboard requires jumpers to be set when adding memory to the PC. If this is the case then failing to change the jumpers may result in either the memory not being detected.
8) There could be a motherboard problem. If double-checking all the settings and replacing the memory does not fix the problem, there may be a bad motherboard or a problem with how it is configured.
9) There could be something wrong with the memory modules themselves. Note that bad memory will often pass the BIOS memory test at boot time. If you can, try the modules in another PC that uses the same kind of memory. If you have performed all the checks listed in the points above, and the memory does not work in another PC, the memory itself may very well be bad. Try to replace the memory and see if the problem goes away. The figures below illustrate the procedure for removing and inserting a memory module.
    a) Release the clips holding the memory module

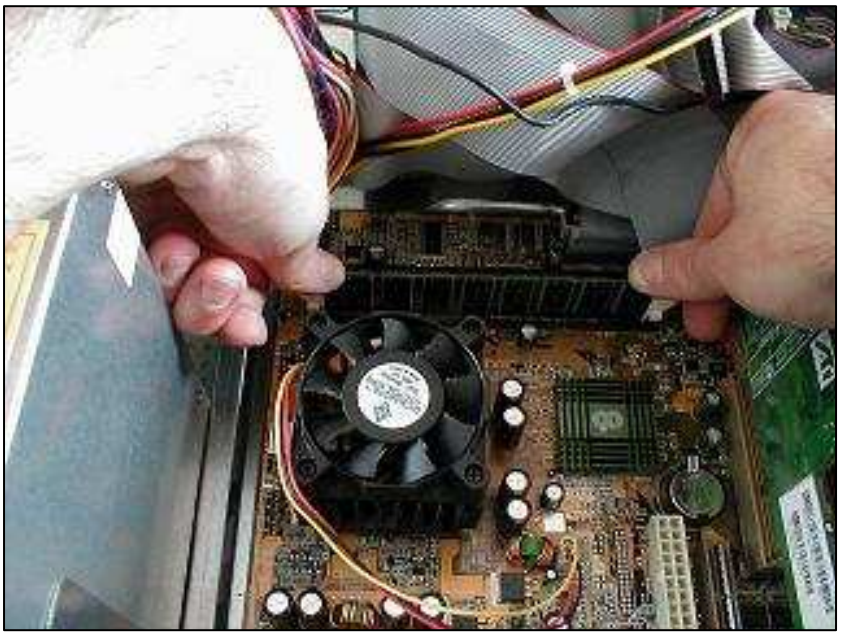


    b) Check the type of memory from its label.

    c) Replace the memory module by gently



pushing it on both the ends and securing the clip.



Week7
This Week Learning Outcome
To Understand:

- **Hard drive failure**

Hard Drive Failure – Symptoms and Troubleshooting

Broadly speaking a hard disk can fail in four ways that will lead to a potential loss of data:

1. Firmware Corruption / Damage to the firmware zone
2. Electronic Failure
3. Mechanical Failure
4. Logical Failure

Combinations of these four types of failure are also possible. Whether the data on the hard disk is recoverable or not depends on exactly what has happened to the disk and how bad the damage is**.** All hard disks also develop **bad sectors** which can lead to data loss and drive inaccessibility.

1. Firmware Corruption / Damage to the firmware zone

Hard disk firmware is the information that is used by the computer that allows it to correctly interact with the hard disk. If the firmware of a hard disk becomes corrupted or unreadable the computer is often unable to correctly interact with the hard disk. Frequently the data on the disk is fully recoverable once the drive has been repaired and reprogrammed.

2. Electronic Failure

Electronic failure usually relates to problems on the controller board of the actual hard disk. The computer may suffer a power spike or electrical surge that knocks out the controller board on the hard disk making it undetectable to the BIOS. Usually, the data on the hard disk has not suffered any damage and a 100% data recovery is possible.

3. Mechanical Failure

Usually worse than electronic failure, mechanical failure can quite often (especially if not acted on early) lead to a partial and sometimes total loss of data. Mechanical failure comes in a variety of guises such as read / write head failure and motor problems. One of the most common mechanical failures is a head crash. Varying in severity, a head crash occurs when the read-write heads of the hard disk come into contact, momentarily or continuously, with the platters of the hard disk.

Head crashes can be caused by a range of reasons including physical shock, movement of the computer, static electricity, power surges and mechanical read-write head failure.

Mechanical failure can usually be spotted by a regular clicking or crunching noise. It's not necessarily a head crash, the most important things to do if you suspect mechanical problems is to switch off the drive immediately as further use will make matters worse.

4. Logical Errors

Often the easiest and the most difficult problems to deal with, logical errors can range from simple things such as an invalid entry in a file allocation table to truly horrific problems such as the corruption and loss of the file system on a severely fragmented drive.

Logical errors are different to the electrical and mechanical problems above as there is usually nothing 'physically' wrong with the disk, just the information on it.

Remedial Procedure

Some of the steps involved in the remedy of the Hard drive failure are given below:

1) The first thing to check for is whether or not the hard disk can be seen by the hard disk controller; usually on a true hard disk failure, the disk will not be detectable by the controller (but this is not always the case). Assuming you have an IDE hard disk, enter the BIOS setup program and use the IDE detection facility of the BIOS to see if the disk's parameters can be detected. If the disk cannot be auto detected using the auto detect feature in the BIOS program implies immediately some sort of hardware problem.
2) If you can see the hard disk when you auto detect, the problem is more likely to be software than hardware. Remember that you cannot usually boot a brand new hard disk until it has been partitioned and formatted.
3) See if the disk will boot up. If it will not boot, then boot from a floppy boot disk and then use the FDISK command (or other partitioning software) to see if you can see the disk.
4) If the drive will boot up, then you should be getting a more specific error message of some sort, or a more specific failure mode that you can use for troubleshooting.
5) If the drive is detected in the BIOS setup but cannot be booted or accessed when booting from a floppy disk, then there is a good chance that the disk itself may be bad. If possible, try connecting the hard disk to another system and see if the problem is present there as well.
6) If the hard disk is dead and needs to be replaced follow the procedure given below:

a) Remove the screws that hold the drive in the bay.

b) Remove the defective hard disk

c) Remove the IDE cable

d) Select a good hard disk, connect the IDE cable and replace the hard disk.

e) Secure the hard disk on the drive bay slot by tightening the screws.

Scandisk:

This is a maintenance procedure built into the Windows operating system that checks the hard drive to determine if there is physical damage or damage to the file system.

If the computer reports that it has corrupted, damaged, or missing files and the programs no longer operate properly, then this is the first step to try and fix the problem. Also, if the computer seems to be running slower than usual, sometimes this procedure will provide a fix. It is a good idea to perform this operation often.

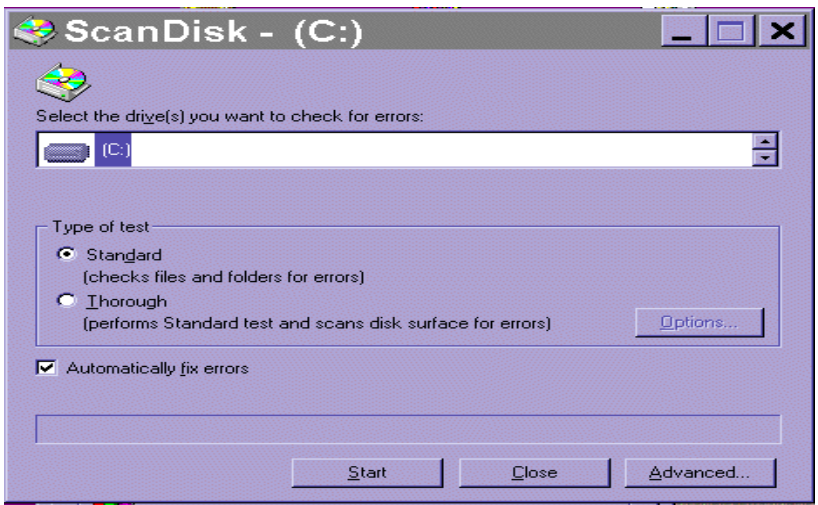
Scandisk procedure

1. Temporarily deactivate any screen saver. Click on START then SETTINGS then CONTROL PANEL then DISPLAY then SCREEN SAVER. Set the Screen Saver to NONE and click OK.

2. Click on START then PROGRAMS then ACCESSORIES then SYSTEM TOOLS then SCANDISK.

NOTE - Depending on what version of Windows you are running the above labels may be slightly different, but not so different that you will not be able to find it.

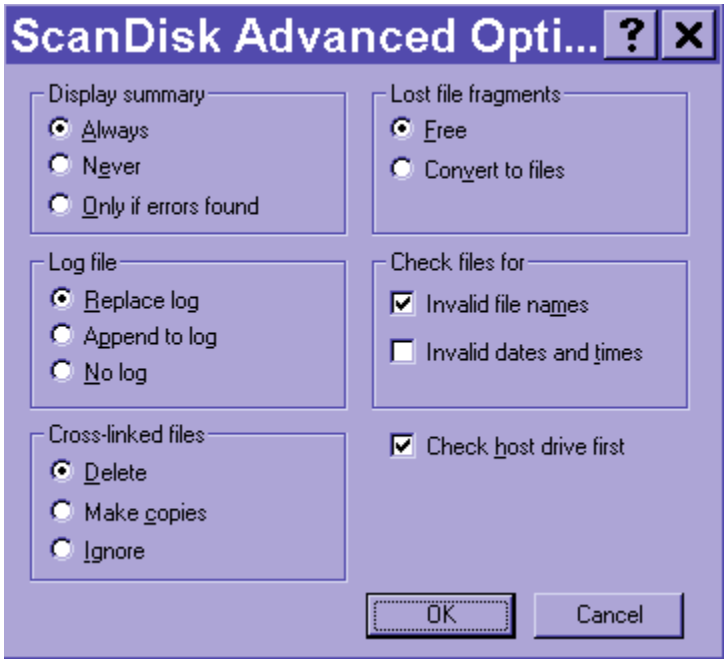
The following window will open on your screen.



3. Be sure to select "C:" from the drop down box if it is not already chosen. Then click on the radio button for **Standard** under **Type of test**. Next check the box (click on it) labelled **Automatically fix errors**.

The **Thorough** test option should not be selected unless you suspect the physical hard drive has been damaged. I suggest always running the **Standard** scandisk option first. Then If you still have problems rerun it with the **Thorough** option selected. Also, if you do not select **Automatically fix errors** the computer will stop and wait for you to answer some rather confusing questions.

4. Click on the button labelled **Advanced...** to launch the following sub-window.



5. Be sure to click on all of the radio buttons and check boxes EXACTLY as shown. Then press the **OK** button. This will return you to the former screen where you can press **START**.

The Scandisk process usually does not take long unless there are serious problems with the hard drive. Do not be concerned if the procedure restarts itself.

6. When the entire procedure is completed, you can reactivate the screen saver and then start working with applications. It is not necessary to restart the computer.

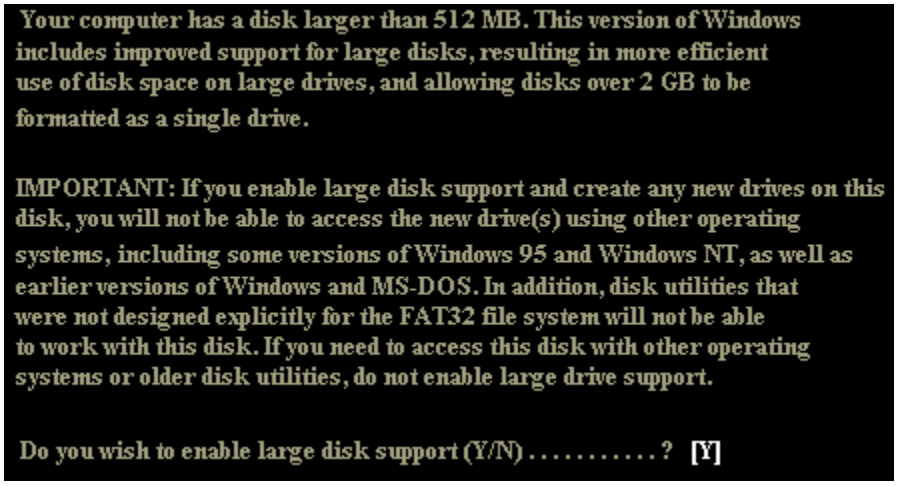
Reformatting a Hard disk

This procedure explains how to setup a **new hard disk**.

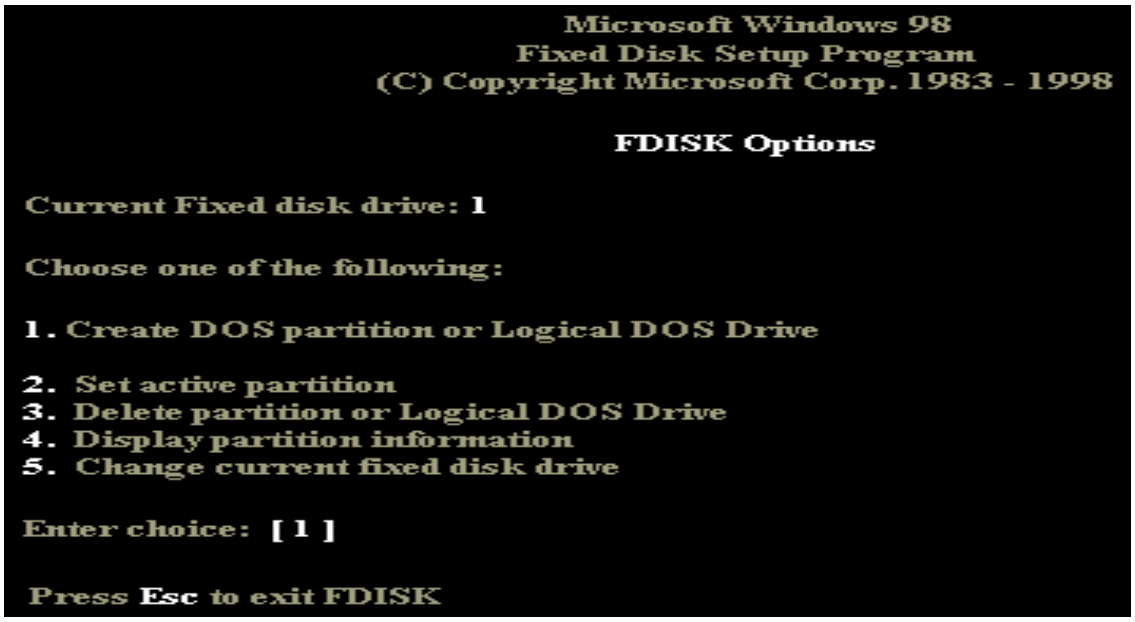
Warning - if you are setting up a hard disk which contains data, the following procedure would completely erase your hard disk and the data would be unrecoverable.

Before a new hard disk can be used it needs to be setup. This involves partitioning and formatting the hard disk. Windows 98 or ME boot disk contains the required software to perform this procedure. FDISK.EXE and FORMAT.COM are the files required in your bootable floppy disk.

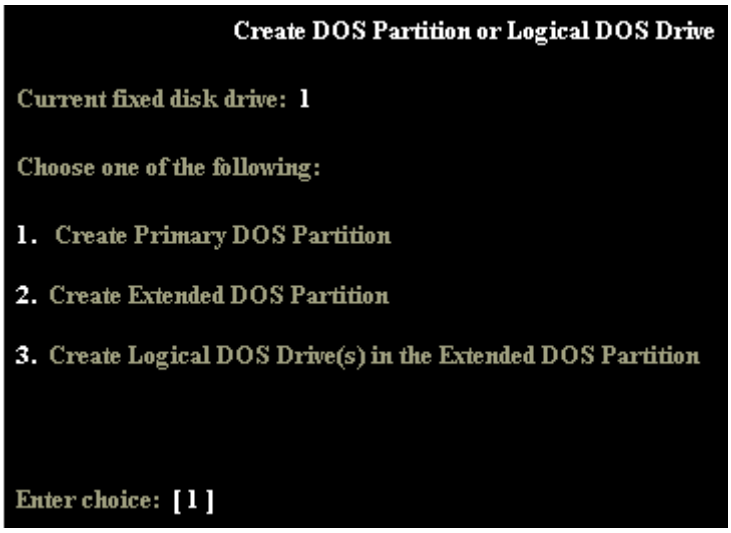
1. Start the partition and format procedure by booting your PC using a Windows boot disk.
2. Make sure you set the BIOS so that the boot sequence is set to detect the floppy disk first. If your system has no problems booting you will be presented with a Windows boot disk menu. This gives you the option to start the system with or without CD-ROM support. Choose the option to boot without CD-ROM support. You should end up in the MS DOS prompt A: (A drive).
3. From A: command prompt type **fdisk.** You will be presented with following message:



4. Choose "Y" to enable large disk support.You will now be presented with the FDISK main menu as shown below.



5. From the menu, choose option 1 - Create DOS partition or Logical DOS drive. Another menu will present the following options.



6. Choose option 1 - Create primary DOS Partition. FDISK verifies the integrity of your drive and will ask you if want to use the maximum available size of your hard disk to create the primary partition and set it active. To keep things simple we will create one large partition.
7. Choose "Y" to use maximum available space. When the partition has been created successfully you will be notified by the system. Your drive is now known as C: (C

drive). Press "Esc" to return to the menu. Press "Esc" again to exit FDISK. You need to restart your system for the changes to take affect. Leave boot disk in the drive.

8. When the system reboots, choose start without CD-ROM from the boot disk menu. While booting from floppy disk you might get error message like "Invalid media type reading drive C" this is OK for this stage as the hard disk is not formatted.
9. From A: command prompt type **format c:**
10. You will get a message saying "WARNING, ALL DATA ON NON-REMOVABLE DISK DRIVE C: WILL BE LOST. Proceed with Format (Y/N)?".
11. Since you do not have any data in the new hard disk. Choose "Y". The format will proceed showing a progress indicator. The time it takes to format a hard disk depends on the size and speed of the drive. This could be around 5-30 minutes. Restart system after format is complete.
12. Install an operating system.

Week8
This Week Learning Outcome To Understand:

➢ The Cause of Floppy Drive Failure

Floppy Drive Failure – Symptoms and Troubleshooting

These are some symptoms that may be caused by the floppy drive

Symptom	Remedy
Indicator light never goes on	• Check that the power connector is properly and securely connected. • Check that the interface cable to properly and securely connected to both the drive and the motherboard.
Indicator light never goes off	• The interface cable may be reversed. Check the connection to the drive and to the motherboard.
Drive type mismatch during boot	• Check for proper configuration in CMOS. • The floppy drive may need to be replaced.
"Invalid media" or "Track 00 bad" error when formatting	• The floppy disk may be defective. • The drive may not be properly configured in CMOS. • You may be using the wrong floppy disk density for your drive.
The same directory is displayed for different diskettes	• Refresh the view. • Reinsert the disk, making sure it goes in all the way. • Check that the interface cable to properly and securely connected to both the drive and the motherboard. • The floppy drive may need to be replaced.
"Drive not ready" error	• There is no disk in the floppy drive. • Reinsert the disk, making sure it goes in all the way. • The floppy drive may need to be replaced.

"General failure" error	• The disk in the drive is not formatted. • You may be using the wrong floppy disk density for your drive. • The drive is out of alignment.
"Sector not found" error	• The drive is out of alignment.

Using Scandisk Utility for a Floppy Disk

To use scandisk:

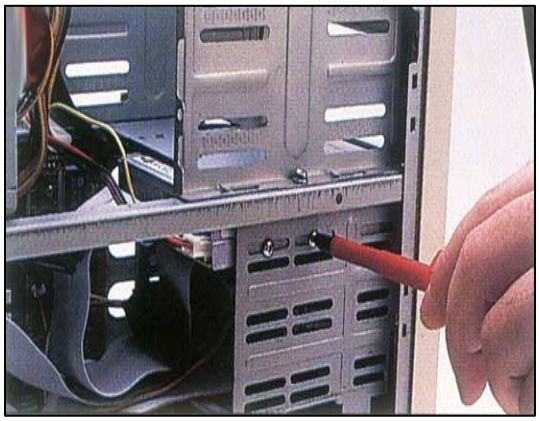
1. Insert disk to be scanned into the drive (A).
2. Click on "My Computer."
3. Use the *rightmost* mouse button to click on "A drive," (if disk is a floppy, otherwise choose the drive as appropriate).
4. (Left) click on "Properties."
5. Click on the "Tools" tab.
6. Click the error checking button "check now."
7. Select both the "Automatically fix file system errors" and "Scan for and attempt recovery of bad sectors" boxes.
8. Click "Start."

Scandisk will check the floppy or other disk for errors, and fix them if possible.

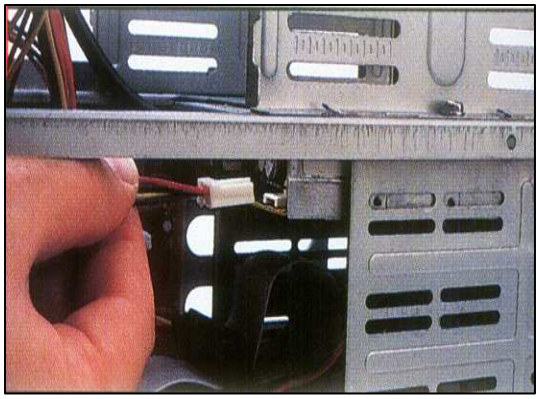
Replacing a Floppy Disk Drive

Procedure Steps:

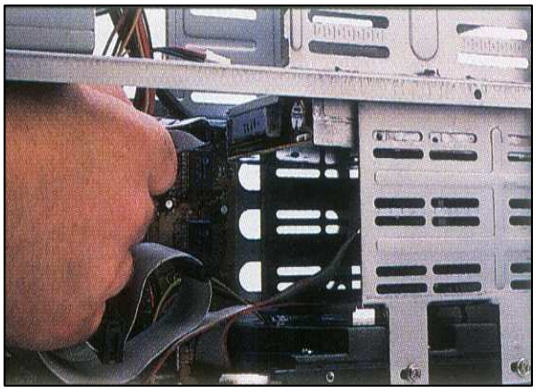
1. Remove the side cover of the PC and remove the screws holding the drive in the bay as shown in figure.



2. Disconnect the power supply connector**.**

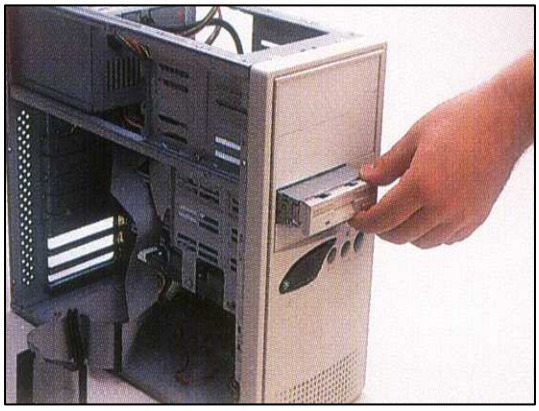


3. Disconnect the ribbon cable as shown in the figure.

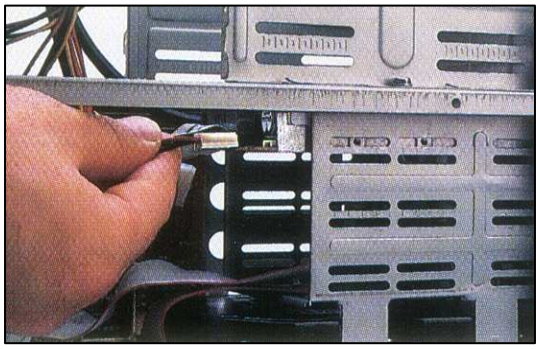


4. Remove the defective drive from the bay.

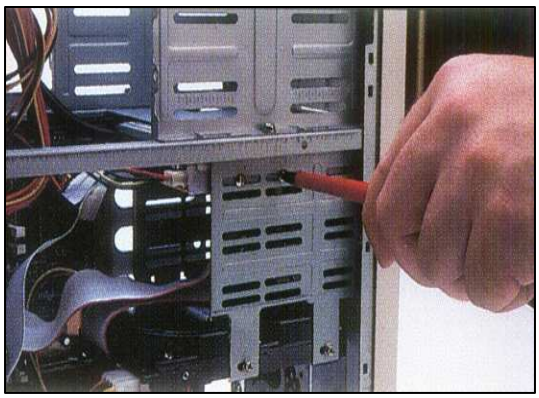
5. Replace the new drive on to the bay slot as shown in figure,



6. Reconnect the Power supply cable and the ribbon cable to the floppy drive unit as shown ib figure.



7. Secure the screws in the drive bay as shown in figure.

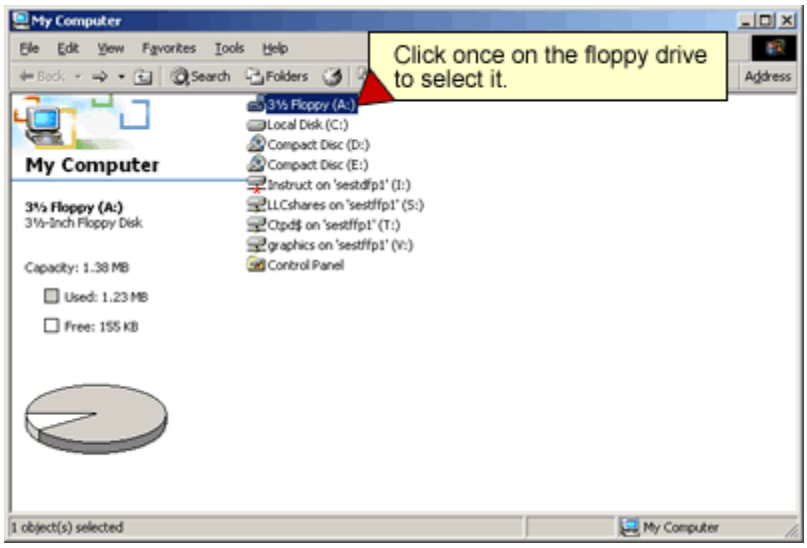


Reformatting a Floppy Disk

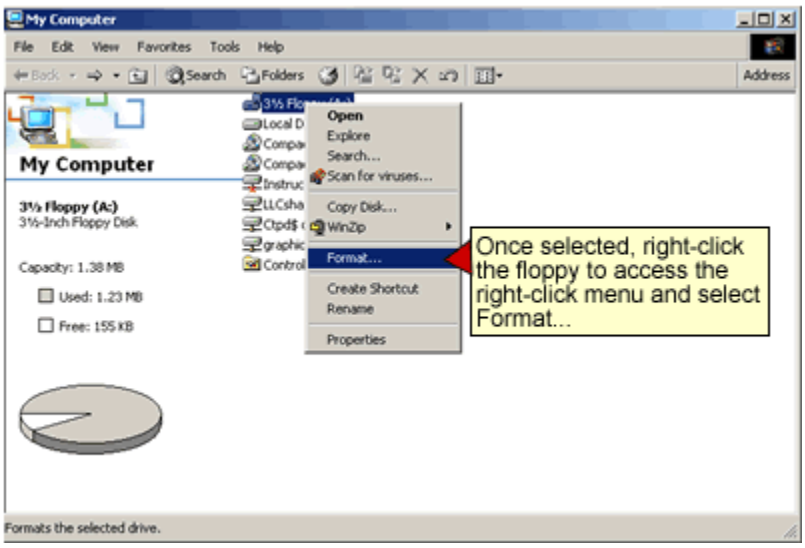
How to Format a Floppy

1. On the desktop, double-click on **My Computer**.

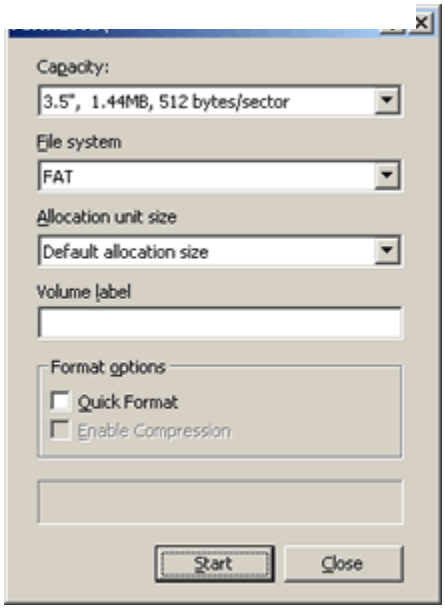
2. Click once on the floppy drive to select it.



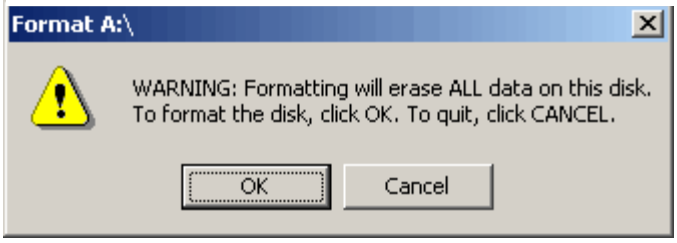
3. Once selected, right-click the floppy to access the right-click menu and select **Format...**



4. The format dialog box (as shown in the figure on the right) will appear. Leave settings at default and click the **Start** button.

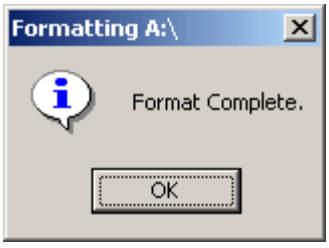


5. A warning dialog box (as shown in the figure below) will appear. Click **OK** to format the disk and erase all data on disk or Click **Cancel** if you don't want to format the disk.



6. The bar at the bottom of the dialog box shows the progress of the formatting. Figure on the right shows the bar indicating the progress of formatting.

7. Once completed a dialog box will appear saying Format Complete. Click **OK**.



Week9
This Week Learning Outcome
To Understand:

➢ **CD ROM Symptoms and Troubleshooting**

CD ROM Failure – Symptoms and Troubleshooting

These are some symptoms that may be caused by the CD ROM drive.

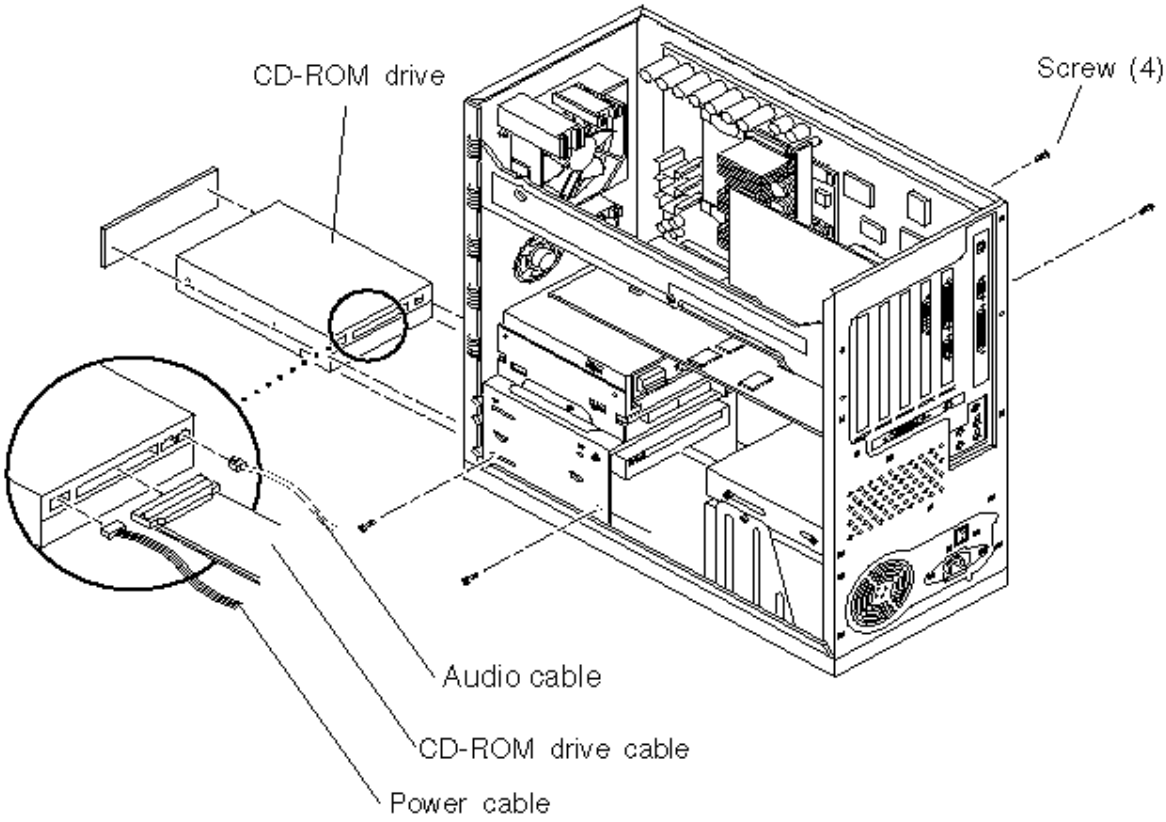
Symptom	Remedy
CD ROM drive can not be accessed and the light does not go on	• Check that the power and controller cables are securely attached to the drive. • Verify that pin #1 of the controller cable is matched to pin #1 on the drive and on the motherboard. • The operating system may not be configured to use or "see" the drive. • If it never worked, verify that the jumpers on the drive are set correctly.
CD ROM drive can not be accessed but the light does go on	• The CD may be damaged or unreadable. • Try removing and reinserting the disk. • Try cleaning the CD. • Verify that pin #1 of the controller cable is matched to pin #1 on the drive and on the motherboard. • If it never worked, verify that the jumpers on the drive are set correctly.
The drive drawer does not open	• Press the button once and wait at least a minute. • In Windows, go to "My Computer", right click on the CD-ROM drive and choose "Eject" from the menu. • With the computer unplugged, you can open most CD-ROM drawers with a unwound paper clip. Poke it, as

	straight as possible, into the hole and push with moderate force (the paper clip may bend a little) to force the drawer open a half inch. Now pull the drawer the rest of the way open. • If the problem persists, check that the power connector and controller cable are securely connected to the drive. • A CD may be jammed or broken inside the drive. Access may require the removal of the drive's outer case. If this is necessary, it is very likely that the drive will have to be replaced.
Spinning sound is heard and then stopping repeatedly	• The CD may be damaged or unreadable. • Try removing and reinserting the disk. • Try cleaning the CD. • Verify that pin #1 of the controller cable is matched to pin #1 on the drive and on the motherboard. • If it never worked, verify that the jumpers on the drive are set correctly.
The drive seems to transfer data too slowly	• Is the drive on the same controller cable as the primary hard drive? If so, performance will be slowed because only one device can communicate at a time. Move it to the second IDE controller.

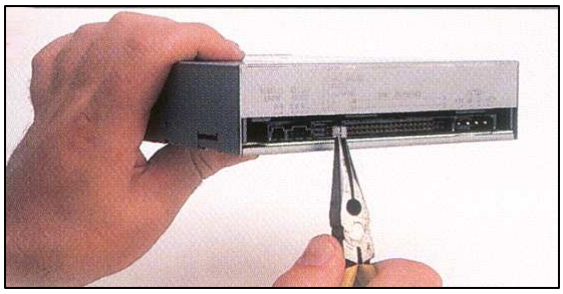
Replacing a CD ROM Drive

Incase the CD ROM drive needs replacement, The procedure for replacing a CD ROM drive is as follows:

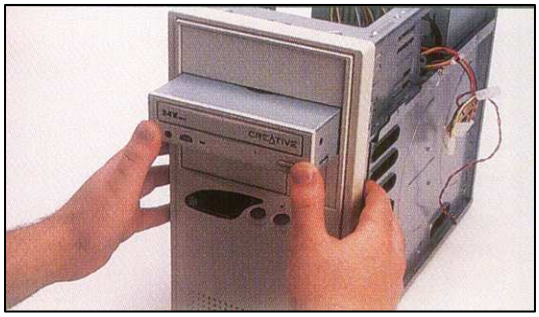
1. Remove the side covers of the PC and remove the defective CD ROM drive as shown in the figure.



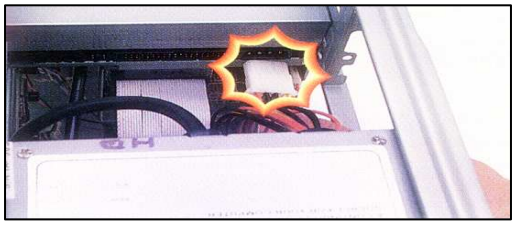
2. Adjust the jumpers on the back of the CD ROM (if necessary) as shown in the figure.



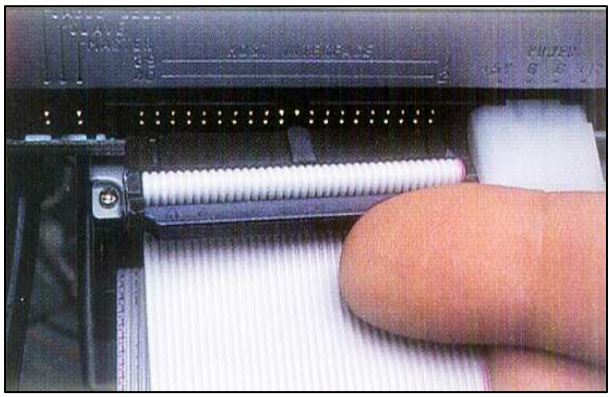
3. Replace the new CD ROM drive by sliding it in to the bay as shown in the figure.



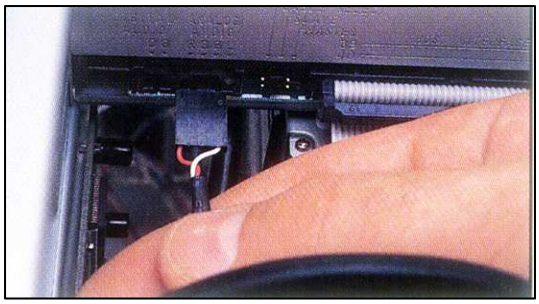
4. Connect the power supply cable to the CD Rom drive as shown in the figure.



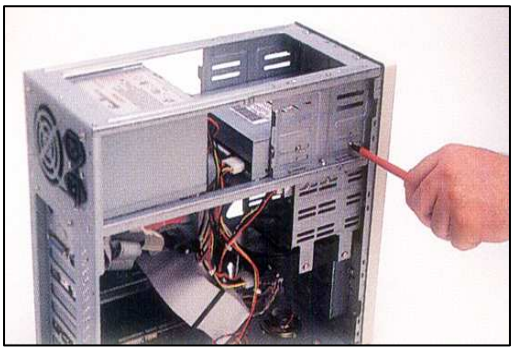
5. Connect the ribbon cable as shown in the figure.



6. Connect the audio cable (if necessary) to the drive as shown in the figure. Connect the other end of this audio cable to the sound card.



7. Secure the drive in to the drive bay as shown in the figure and replace the computer cover.



8. Power up the computer.

Week10
This Week Learning Outcome
To Understand:

- **Keyboard Failure**

Keyboard failure – Symptoms and Troubleshooting

The keyboard is a fairly standardized component and not prone to many problems. Repair is not really practical, replacement is typically the best option. Some of the symptoms and troubleshooting procedures are outlined below:

Symptom	Remedy
The key repeats too fast (or slow) When one letter is typed , it types several	• The character repeat rate or delay is set too fast. Go to the Windows control panel and click on "Keyboard" to change the settings.
The PC beeps or gives a "Keyboard Error" message	• Turn off the PC and check that the keyboard connector is securely plugged into the back of the PC. • Make sure the keyboard is not plugged into the mouse port. • If you are using a USB keyboard, make sure USB is enabled in BIOS and in Windows. • Check that none of the keys are stuck or being held down.
The keys are sticking	• Turn the keyboard upside down and shake it vigorously to dislodge any dust or debris. • Try removing the key by using a paper clip as a lever to pop it off. Check for debris or other cause of sticking, clean with a cotton swab. • With the key off, make sure any spring or mechanical parts are properly positioned to support the key.

Keyboard Cleaning

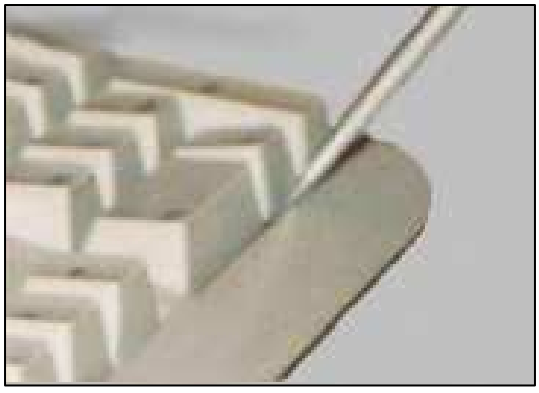
1. Switch off the computer and unplug the keyboard.
2. There is a removable cover on the bottom of the keyboard. open all the screws and remove the cover of keyboard.
3. Take an air blower of vacuum cleaner and blow the air on it. this will remove all the dust from the keyboard.

4. Now take one of the cotton buds and put a couple of drops of the cleaning fluid on it, use the cotton bud to clean the sides of the keys as seen in figure.

5. After cleaning the sides of the keys take your lint free cloth and dampen it with your cleaning fluid (don't put the liquid directly on the keyboard), give the surface of the keyboard a good wipe over using the cloth to trace the contours of the keys as shown in figure.

When you have finished give the keyboard a wipe over with the dry cloth/duster, you should now have a nice clean keyboard, to clean it more thoroughly follow the guide below.

6. Carefully pry each key loose with a small screwdriver as shown in the figure and place all these keys in to a container. open wider keys properly which may have guide wires like space bar, enter, caps lock and shift keys. Now clean every key with a dishwasher or rubbing alcohol with a soft cloth.



7. Now clean the rubber components and the plastic cover of keyboard.
8. Dry completely all the keys, rubber and plastic covers.
9. Properly fit all the keys to the right place. you can take the help of the paper map. cover them and tighten the screws.

Replacing a Keyboard

- If the keyboard uses a PS/2 connector or the older large 5 pin connector turn off the PC first. If the keyboard has a USB connector, it may be safely connected while the PC is powered on.

- If the keyboard connector does not match the connector type on the PC, adapters are available for connecting the same.

- PCs with PS/2 connections will usually have two ports. One port is for the mouse and the other is for the keyboard. Look for a small icon near the ports to identify which is which. You may also inspect the motherboard for a label that identifies the port. If all else fails, take a guess and start the PC, if it beeps, won't start or otherwise behaves strangely, then turn it off and interchange the wires.

Week11
This Week Learning Outcome To Understand:

➢ Mouse Failure – Symptoms and Troubleshooting

The Mouse is a device which is most frequently used in a computer and prone to certain routine problems. Most of the times repair may not be really practical, replacement is typically the best option.

Some of the symptoms and troubleshooting procedures are outlined below:

Symptom	Remedy
Cursor does not move left or right.	• Check the cable connection, • Dirt clogged between the sensor and the wheel, Clean the mouse. • Defect in the circuit board
The PC beeps or gives a "Mouse Error" message	• Turn off the PC and check that the Mouse connector is securely plugged into the back of the PC. • Make sure the mouse is not plugged into the keyboard port. • If you are using a USB mouse, make sure USB is enabled in BIOS and in Windows.
Left or right button inoperative	• Switch must have failed, Check the micro switch • Accumulation of dust/dirt, Clean the mouse. • Defect in the circuit board
Button has no spring or click.	• Switch has worn or broken internal spring, button plastics jammed.

Mouse Cleaning

The procedure for cleaning a mouse is outlined below:

1. Switch off the computer and unplug the mouse.
2. Remove the cover and take the ball out as shown in the figure.

3. Use soft tissue to clean the mouse ball.

7. Now look at the bottom of the mouse, there are three rollers within the mouse casing. we have to clean dust and hairs from these rollers. Rubbing spirit also gives good results.

8. After cleaning of dust and dirt from the rollers and the ball. put the ball back in the mouse and replace the cover turning clockwise to lock it in the right place.

9. Turn on the computer now. your mouse should be as good as a new one.

10. If you have an optical mouse then just clean the sensors of the bottom of mouse. just polish the sensor with a soft cloth and remember to keep mouse pad clean.

Replacing The Mouse

1. Exit Windows and turn off computer.
2. Unplug the power cord and modem and network cables.
3. Disconnect the old mouse.
4. If you are installing a USB mouse, connect the mouse to a USB port on the back of your computer as shown in the figure.

- OR -

If you are installing a Personal System/2 ® (PS/2) mouse, connect the mouse to the PS/2 mouse port on the back of your computer as shown in the figure..

6. Connect the power cord and modem and network cables.
7. Turn on your computer.
8. If you are replacing your keyboard or mouse with an identical device, you can often change the keyboard or mouse without reinstalling the old device driver. If the new hardware does not work, reinstall the device driver.

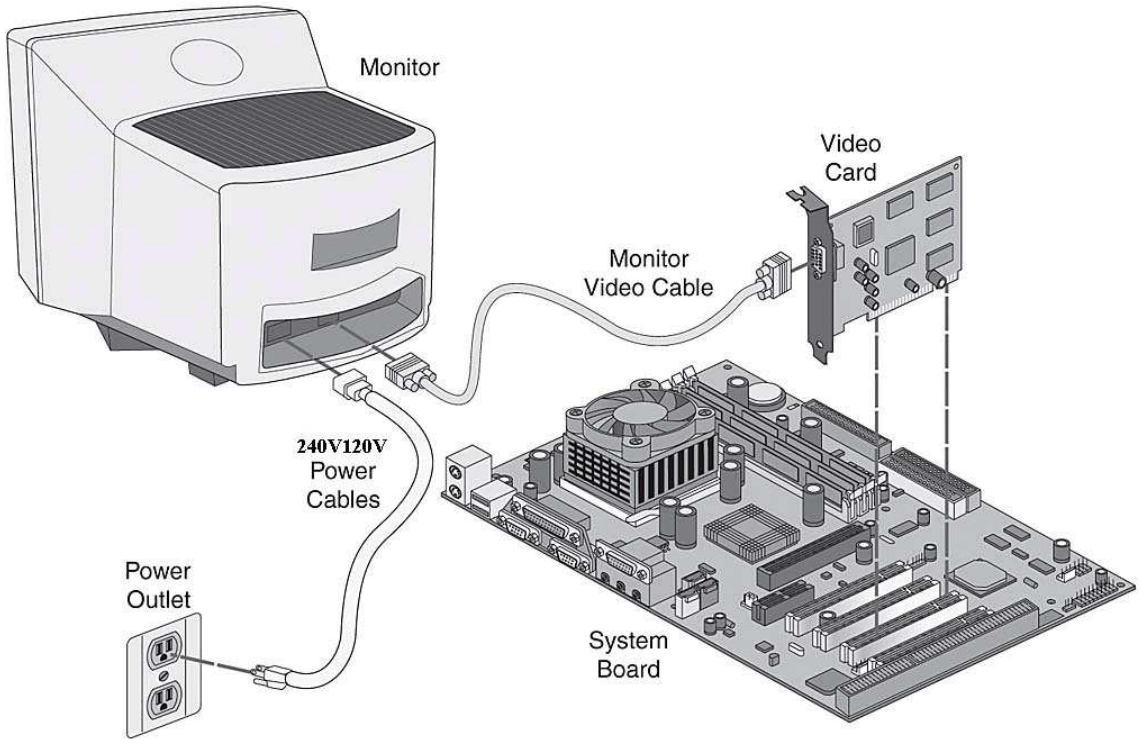
Week12
This Week Learning Outcome
To Understand:

- **Display System Failure**

Display System Failure– Symptoms and Troubleshooting

There are numerous problems that can cause the monitor to not produce a picture at all. Usually they are electrical problems within the monitor, some of which can be repaired.

The figure below illustrates components associated with the video display. As the figure indicates, in the case of hardware problems, the components involved include the video adapter card, the monitor, and, to a lesser degree, the system board.



If the monitor appears to be totally dead, then make sure that the monitor is plugged in and turned on, and see if it has power.

Check for a power-on indicator on the front of the monitor, and check to see if the monitor warms up.

Select the appropriate general failure troubleshooting procedure outlined below, based on whether or not the monitor appears to have power.

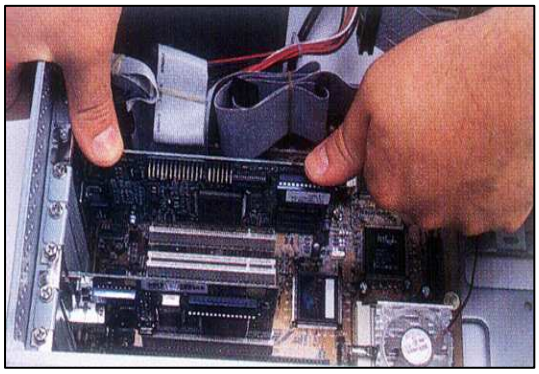
Symptom	Remedy
The monitor appears not to be working at all. There are no indications that the monitor has any power	• Make sure that the electrical outlet is working, by trying another appliance in the socket and seeing if it works. If the socket does not work, you will need to consult an electrician to have it fixed. • Check any power protection devices that the monitor might be plugged into, to ensure that they are working. Troubleshoot any problems here. • Make sure the power cable is connected securely and is undamaged. Try replacing the cable with another one. • If the monitor has a switch to select between 110 volt and 220 volt operation, make sure it is set to the correct value. This switch will normally be on the outside of the monitor at the back, near where the power cord connects.
The display makes a squealing or other loud noise	• The fan on the graphics card may need to be cleaned or it may be failing. The fan on most cards is not replaceable.
The screen is black and completely blank	• Check that the monitor is turned on. Most have a light to indicate power and another to indicate that it is receiving a signa;l from the PC. • Check that the video cable's connectors are securely and properly fastened to the graphics card and on some models to the monitor. • Check that no pins are bent or miossing from the connector. • Unplug the PC and make sure the graphics card is securely and properly installed into it's slot.
The display doesn't fit properly on my monitor OR The text or resolution	• The resolution is not set correctly in Windows. Go into the display settings in the Control Panel, and change the resolution settings. • The monitor may have controls that allow you to adjust the size and position of the display. Use the monitor's controls to move or resize the display. • You may need to install a different or updated driver

Symptom	Remedy
is the wrong size	for your graphics card and/or monitor.
The display seems to flicker	• Reset the display's refresh rate in the Windows Control Panel. Do not use a refresh rate that is not supported by your monitor or damage may result.
The colors don't look right	• The color depth is not set correctly in Windows. Go into the display settings in the Control Panel, and change the resolution settings. • You may need to install a different or updated driver for your graphics card and/or monitor.
The display is completely unreadable	• The color depth and/or resolution is not set correctly in Windows. Go into the display settings in the Control Panel, and change the resolution settings. • You may need to install a different or updated driver for your graphics card and/or monitor

Replacing a Graphics Card

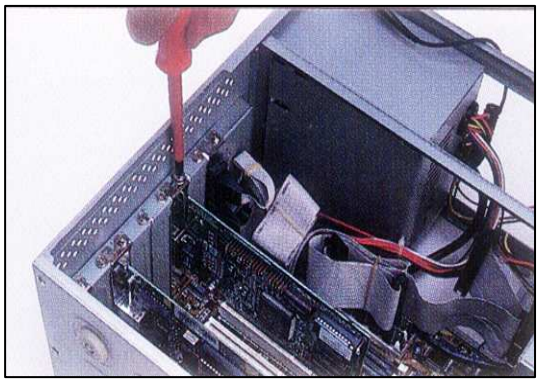
Once the graphics card is suspected to be defective, it is always better to replace the card with an identical one. The procedure for replacing a graphics card is given below :

1. Unplug the PC
2. Remove the cover
3. Identify the slot where the graphics card is mounted. In most cases it will the the larger (AGP) slot closest to the CPU.
4. Replace the graphics card as shown in the figure. Align the card over the slot with the video connection facing toward the outside of the PC
5. Set the card into the slot and press down firmly. Make sure the mounting bracket is properly aligned with any slot that might be present. It may be necessary to gently rock the card from end to end to secure it in the slot. The gold contacts at the bottom of the card should nearly or



completely disappear into the slot. The card should be level and straight.

6. Secure the graphics adapter mounting bracket to the case with a screw as shown in the figure.
7. Replace the cover
8. Connect the video connector from your monitor to the connector on the graphics card
9. Plug in the PC



Follow the manufacturer's instructions for installing the software. Windows will detect the graphics adapter and start the hardware wizard; simply follow the prompts.

After everything is working, you can go back into the Windows Control Panel and reset the resolution and refresh as recommended by the manufacturer of the monitor.

Week13
This Week Learning Outcome
To Understand:

➢ How To Wick Window Display Properties

Display Adaptor (Windows Display Properties)

How To Troubleshoot the Video Adapter Driver in Safe Mode in Windows XP

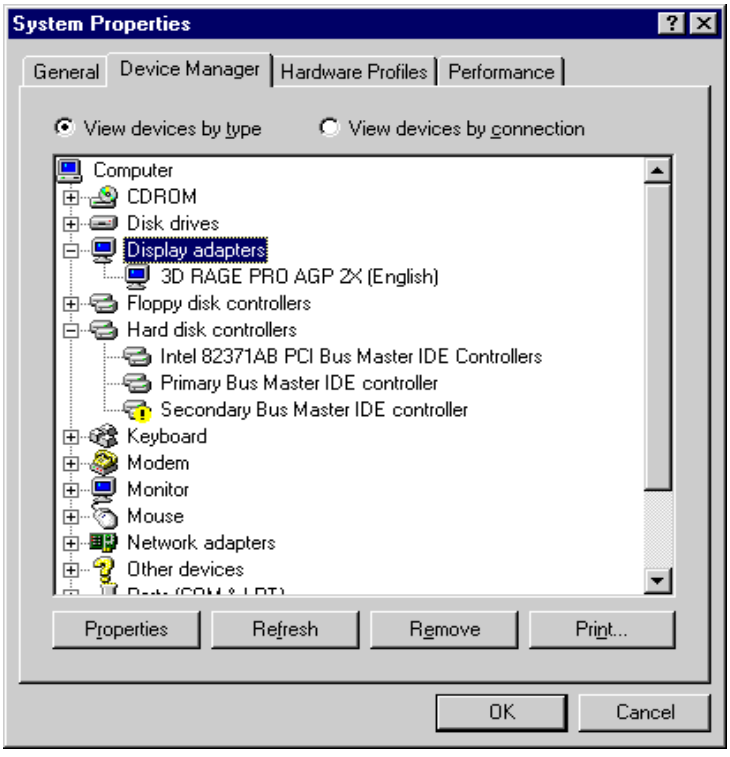
This article shows you methods of troubleshooting Safe-Mode video problems. In Safe mode, the computer does not start the video adapter driver that is used during normal operations, so you need to use Device Manager to discover, update, roll back, or uninstall the video driver instead of accessing the Display properties.

NOTE: It is not necessary to start the computer in Safe mode to perform the tasks that are listed in this article.

Locate the Video Adapter in Normal Mode

To locate the video adapter that is used in Normal mode:

1. Click **Start**, point to **Settings**, and then click **Control Panel**.
2. Double-click **System**, click **Hardware**, and then click **Device Manager**.
3. Click the PLUS SIGN to expand Display Adapters as shown below.



Run the Display Troubleshooter

To run the Display Troubleshooter:

1. Follow steps 1 through 3 to find the video adapter adapter.
2. Double-click the video adapter driver.
3. On the **General** tab, click **Troubleshoot**.

Update, Roll Back, or Uninstall the Video Adapter Driver

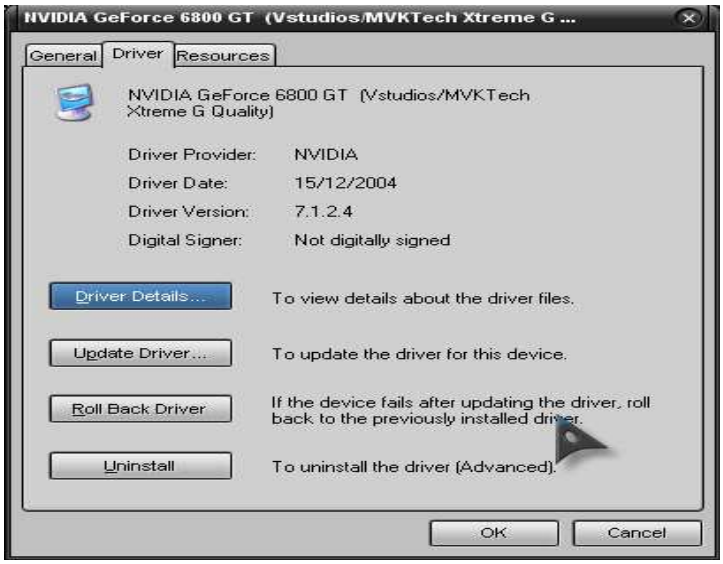
To view driver details, and to update, roll back, or uninstall the video adapter driver:

1. Follow steps 1 through 3 to find the video adapter adapter.
2. Double-click the video adapter driver.
3. On the **Driver** tab, click the appropriate button based on the action that you want to perform:

Driver Details Update Driver Roll Back Driver Uninstall

Troubleshooting

When you start the computer in Safe mode, your video adapter resolution and colors may temporarily change in such a way that the windows and icons on your screen become very large, which may make it difficult for some windows to fit. This behavior is dependent on the type of video adapter that you are using.



The VgaSave service should not be stopped while the computer is in Safe mode because it is a component that allows Windows to display the screen.

Week14
This Week Learning Outcome To Understanding:

➢ **Sound Failure Symptoms**

Sound Failure Symptoms

Some of the problems associated with the sound in computers are as follows:

- No sound from the computer's speakers or headphones.
- A sound seems to be played, but not heard.
- A sound is played, but then stops suddenly.
- The sound skips or misses in some areas.
- The sound is distorted or scratchy.
- The computer stops responding (hangs) when a sound is played.
- The computer restarts when a sound is played.
- An error message is received when you try to play sound. For example, you may receive any one of the following error messages:
    - MIDI output error detected.
    - No wave device that can play files in the current format is installed.
    - The CD Audio device is in use by another application.
    - WAV sound playback error detected.
    - Your audio hardware cannot play files like the current file.

Troubleshooting Procedure:

1. If you added hardware or software to your computer immediately before the issue started, remove the added hardware or software. Be sure to turn off the computer before removing hardware. As with any problem that arises with computers, reversing a process that started a problem may correct the problem.
2. Check the following points:

- Are the speakers turned on and have power?
- Try unplugging the speaker power adapter and keep it disconnected for 30 seconds or so, then plug it back in.

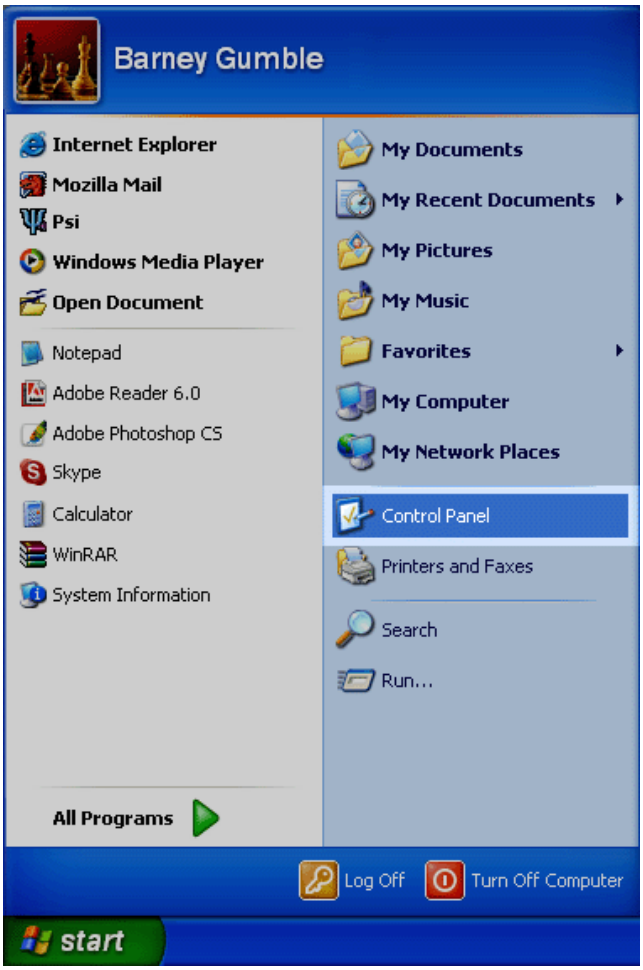
- Try plugging a known working item (such as a lamp) to check the wall outlet for power.

3. Check to insure that the Mixer Control volumes are set to 3/4 volume and are not muted. Analog or digital can be set in the Mixer Controls, depending on the type of sound card and speakers used.
4. Make sure that all connections to all speakers are fully seated. Usually, these plugs click twice before the fully seat.
5. Try plugging in a known working set of head phones to ensure that the sound card is functioning.
6. Try plugging in the speakers to a known working portable CD player that will accept the same connection. This will determine if the speakers are working.
7. Go to: **Start**>> **Control Panel**>> **Administrative Tools**>> **Component Services**>> **Services**. Make sure audio is enabled.
8. Go to: **Start**>> **Control Panel>> Sounds and Audio Device Properties**. Be sure that the "**Mute**" checkbox is unchecked.

Volume Control settings

The procedure for setting up the audio controls is outlined below:

Click on the **Start** button and continue to the **Control Panel** section of the Start menu



Control Panel Window will appear

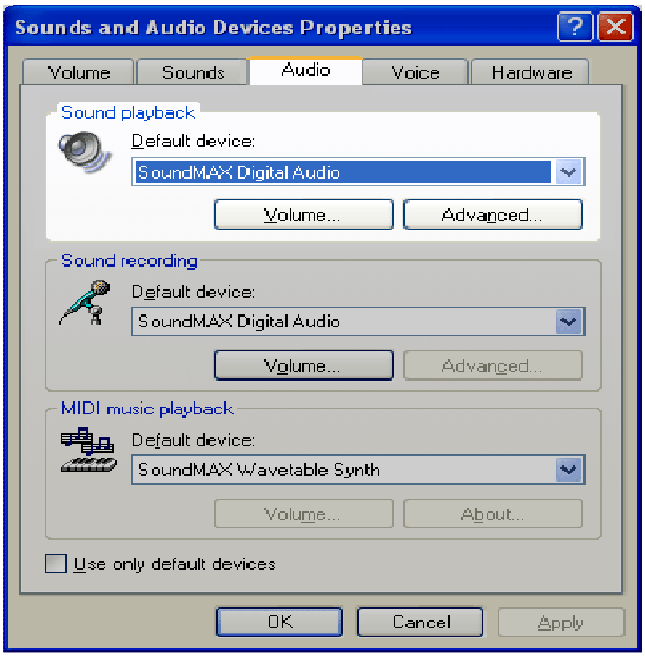
In the Control Panel window find **Sounds, Speech, and Audio Devices** section, click on it

The **Sounds, Speech, and Audio Devices** window will appear
In the Sounds, Speech, and Audio Devices window find the **Sounds and Audio Devices** section, click on it

How to Change Playback Options

The **Sounds and Audio Devices** panel will appear

Find the **Audio** section tab (top line of buttons), click on it



The **Audio Settings** section will open

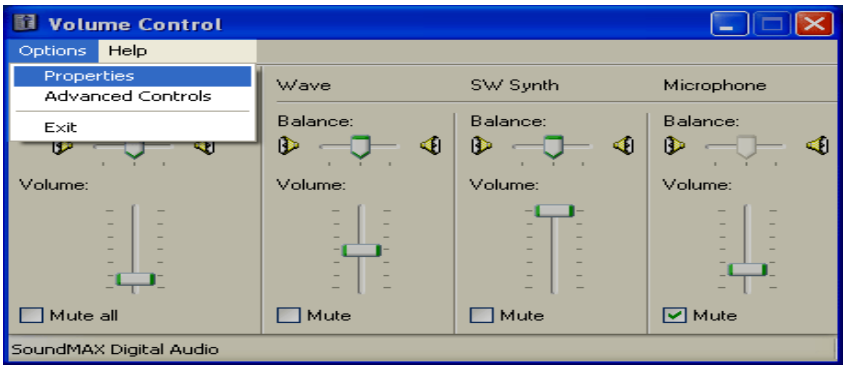
In the **Sound Playback** section from the drop down menu, select the device

Click on the **Volume** button below the drop down menu

The **Volume Control** panel will appear

Find the **Options** menu button, click on it

Click on the **Properties** section

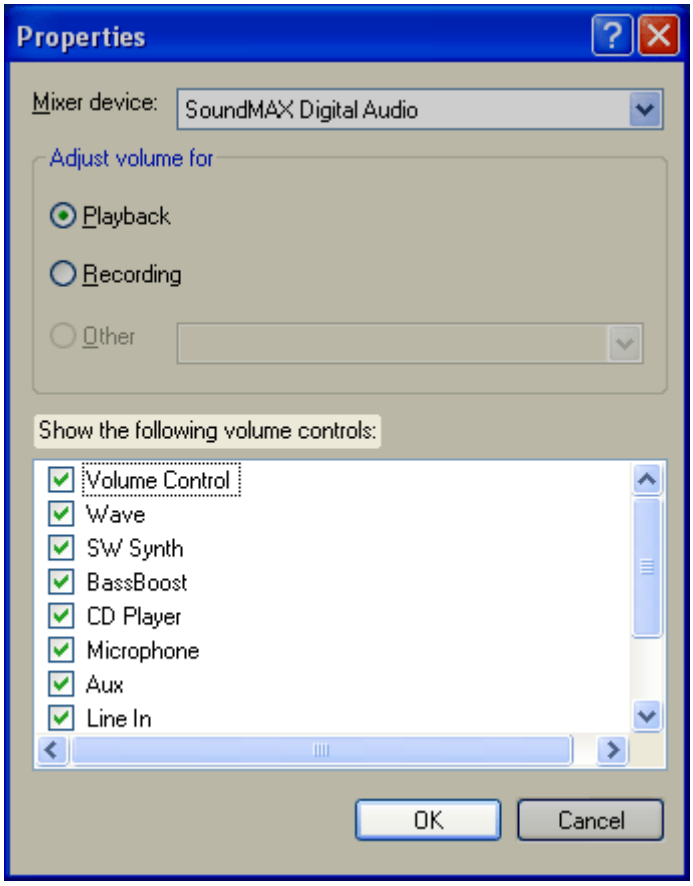


The **Properties** panel will appear

Find the **Show the following volume controls:** section

Check in all the unchecked boxes

Click the **OK** button


Properties
Mixer device:
SoundMAX Digital Audio
Adjust volume for
Playback
Recording
Other
Show the following volume controls:
Volume Control
Wave
SW Synth
BassBoost
CD Player
Microphone
Aux
Line In
OK
Cancel

Week15
This Week Learning Outcome
To Understand:

- **Device conflicts in Device manager**

Device conflicts in Device manager

A hardware conflict occurs when two devices try to use the same hardware resource, such as an IRQ or memory address. The symptoms of a conflict is either a particular device not working, or the system hanging or crashing every time we try to use a specific device. Nearly all devices made since 1996 are *Plug-&-Play* (PnP), meaning that they adjust these settings automatically to avoid conflicts. The more PnP devices you have, the less likely you are to experience a conflict. (For non-PnP devices, resources are assigned by setting jumpers or switches on the device itself, or by using special drivers or software.) So, what remains is trying to resolve conflicts between non-PnP (Legacy) devices; here is a general attack strategy for this type of problem:

Troubleshooting Information

Open the Device Manager, select **System** from the top of the list, and click **Properties**. Windows tries to list all your resources, and which ones are being used by which devices.

A typical Device Manager is shown below:

The procedure for resolving the device conflicts in a device manager is given below:

- If there is a problem with a device, it is listed in the hardware tree. Also, the problem device has a symbol that indicates the type of problem:

    - A black exclamation point (!) on a yellow field indicates the device is in a problem state. Note that a device that is in a problem state can be functioning.

    - A problem code explaining the problem is displayed for the device.

    - A red "X" indicates a disabled device. A disabled device is a device that is physically present in the computer and is consuming resources, but does not have a protected-mode driver loaded.

    - A blue "i" on a white field on a device resource in Computer properties indicates that the **Use automatic settings** feature is not selected for the device and that the resource was manually selected. Note that this does not indicate a problem or disabled state.

    - A green question mark "?" in Device Manager means that a compatible driver for this device is installed, indicating the possibility that all of the functionality may not be available. Note that this applies only to Windows Millennium Edition (Me).

    NOTE: Some sound cards and video adapters do not report all of the resources that they use to Windows. This can cause Device Manager to show only one device in conflict, or no conflicts at all. This can be verified by disabling the sound card, or by using the standard VGA video driver to see if the conflict is resolved. Note that this is a known problem with S3 video adapters and 16-bit Sound Blaster sound cards, or those sound cards that are using Sound Blaster emulation for Sound Blaster compatibility.

- When you double click a specific device in Device Manager, you see a property sheet. The property sheet has a General tab.

    NOTE: Some devices may have other tabs besides the General tab. Not all property sheets have the same tabs; some devices may have a Resources tab, Driver tab, and Settings tab, or some combination of

these.

At the top of the property sheet, there is a description of the device. When you click the Resources tab, the window in the middle of the tab indicates which resource types are available for the selected device. The list box at the bottom contains a **Conflicting device list**. This list indicates a conflict with an error code.

- Note the **Use automatic settings** check box. If Windows successfully detects a device, this check box is selected, and the device should function correctly. However, if the resource settings are based on Basic Configuration <n> (where <n> is any number from 0 to 9), it may be necessary to change the configuration by selecting a different basic configuration from the list. If the particular configuration you want for the device is not listed as a basic configuration, it may be possible to click the **Change Setting** button to manually adjust the resource values.

For example, to edit the Input/Output Range setting:

1. Click the **Use automatic settings** check box to clear it.
2. Click **Change Setting**.
3. Click the appropriate I/O range for the device.

NOTE: To disable a device in **Device Manager**, right-click the device, and then click **Disable**.

Replacing A Sound Card

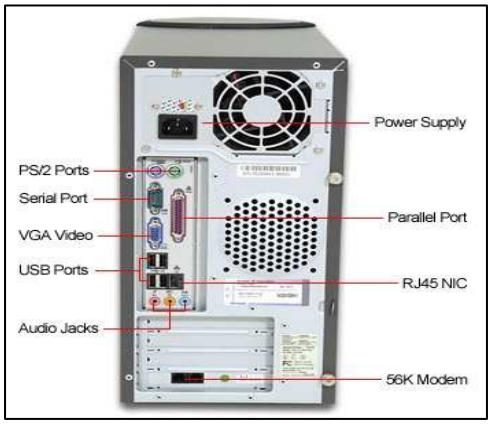
If the sound card is found to be defective in a computer. It has to be replaced with an new card. The procedure for replacing a sound card is given below:

Step 1: Open Computer Case

Open the cover of the computer following the manufacturer's instructions. A sample is shown in the picture below

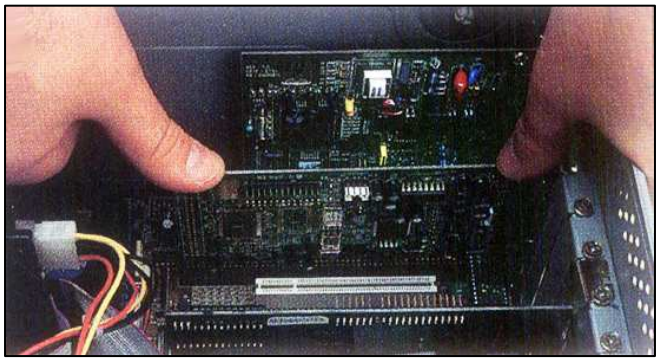
Step 2: Locate Sound Card

Look at the back of the computer where all the cords get plugged in.
Locate the panel where your speakers or head phones plug in
This panel is on the sound card that we will be removing



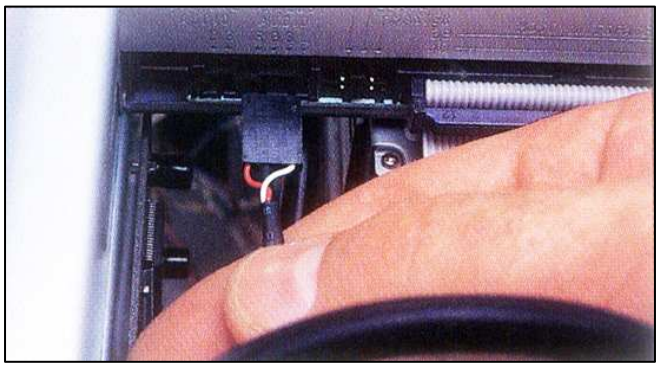
Step 3: Remove and Replace

With case open reach in an grab the top ends of the card whose back panel was located previously. Pull out the card
Unpack your replacement soundcard and insert it into the same slot as the previous card



Push down firmly until the soundcard is firmly seated.

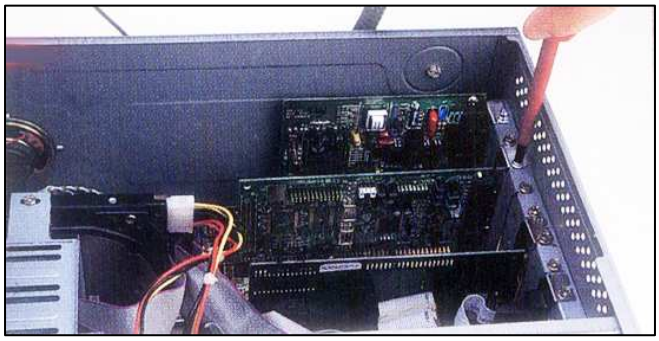
Step 4: Connect the Audio Cable to the



Card.

Step 5: Secure the card

Replace the computer cover and plug all connecting cords back in.



Step 5: Install Drivers and Test

Turn the computer on and wait for it to boot up. Insert the compact disk or floppy disk supplied by the vendor of the soundcard and follow the instructions on the computer screen. When the installation of the soundcard driver is complete, test you soundcard by playing your favorite C D or M P 3 file.