

# Computer Hardware and Troubleshooting Lab Guide

( Understand, Repair, Upgrade and do troubleshooting your computer (PC's) yourselves )

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# Hardware Manual For Engineers

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|                 |                                                                           |
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| <b>Exp.No:1</b> | <b>STUDY AND IDENTIFICATION OF STANDARD DESKTOP<br/>PERSONAL COMPUTER</b> |
| <b>Date:</b>    |                                                                           |

### **Aim**

To study and identify standard desktop personal computer.

### **Monitor**

A monitor or a display is an electronic visual display for computers. The monitor comprises the display device, circuitry and an enclosure. The display device in modern monitors is typically a thin film transistor liquid crystal display (TFT-LCD) thin panel, while older monitors used a cathode ray tube (CRT) about as deep as the screen size.



Originally, computer monitors were used for data processing while television receivers were used for entertainment. From the 1980s onwards, computers (and their monitors) have been used for both data processing and entertainment, while televisions have implemented some computer functionality. The common aspect ratio of televisions, and then computer monitors, has also changed from 4:3 to 16:9.

### **Keyboard**

A keyboard typically has characters engraved or printed on the keys and each press of a key typically corresponds to a single written symbol. However, to produce some symbols requires pressing and holding several keys simultaneously or in sequence. While most keyboard keys

produce letters, numbers or signs (characters), other keys or simultaneous key presses can produce actions or execute computer commands



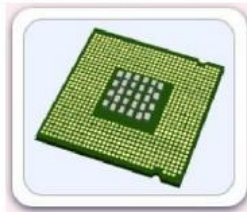
### **Mouse**

In computing, a **mouse** is a pointing device that detects two-dimensional motion relative to a surface. This motion is typically translated into the motion of a pointer on a display, which allows for fine control of a graphical user interface.



### **CPU (Central processing unit)**

A central processing unit (CPU) is the electronic circuitry within a computer that carries out the instructions of a computer program by performing the basic arithmetic, logical, control and input/output (I/O) operations specified by the instructions. The term has been used in the



computer industry at least since the early 1960s. Traditionally, the term "CPU" refers to a processor and its control unit (CU), distinguishing these core elements of a computer from external components such as main memory and I/O circuitry.

**Printer**

In computing, a **printer** is a peripheral which makes a persistent human readable representation of graphics or text on paper or similar physical media. The two most common printer mechanisms are black and white laser printers used for common documents, and color inkjet printers which can produce high quality photograph quality output.

**Webcam:**

A webcam is a video camera that feeds or streams its image in real time to or through a computer to computer network. When "captured" by the computer, the video stream may be saved, viewed or sent on to other networks via systems such as the internet, and email as an attachment.



When sent to a remote location, the video stream may be saved, viewed or on sent there. Unlike an IP camera(which connects using Ethernet or Wi-Fi), a webcam is generally connected by a USB cable, or similar cable, or built into computer hardware, such as laptops.

**Scanner:**

A scanner is a device that captures images from photographic prints, posters, magazine pages, and similar sources for computer editing and display. Scanners come in hand-held, feed-in, and

|                 |                                                                     |
|-----------------|---------------------------------------------------------------------|
| <b>Exp.No:2</b> | <b>UNDERSTANDING OF MOTHERBOARD AND IT'S INTERFACING COMPONENTS</b> |
| <b>Date:</b>    |                                                                     |

flatbed types and for scanning black-and-white only, or color. Very high resolution scanners are used for scanning for high-resolution printing, but lower resolution scanners are adequate for capturing images for computer display



**Result:**

Thus the standard desktop components have been studied and identified.

**Aim:**

To understand Motherboard and its interfacing components.

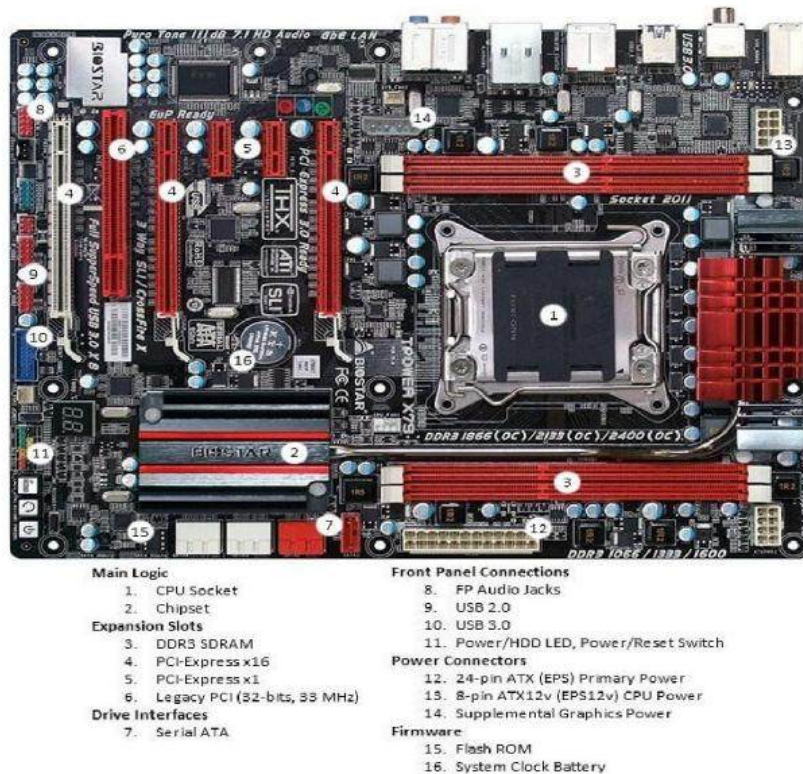
### Introduction to motherboards

The primary component of a computer is the **motherboard** (sometimes called the "*mainboard*"). The motherboard is the hub which is used to connect all of the computer's essential components. As its name suggests, the motherboard acts as a "parent" board, which takes the form of a large printed circuit with connectors for expansion cards, memory modules, the processor, etc.

### Motherboard Diagram

A large circuit board allows motherboard manufacturers to pack on as many features as possible, yielding a bevy of associated

| Form factor | Dimensions      | Slots       |
|-------------|-----------------|-------------|
| ATX         | 305 mm x 244 mm | AGP / 6 PCI |
| microATX    | 244 mm x 244 mm | AGP / 3 PCI |
| FlexATX     | 229 mm x 191 mm | AGP / 2 PCI |
| Mini ATX    | 284 mm x 208 mm | AGP / 4 PCI |
| Mini ITX    | 170 mm x 170 mm | 1 PCI       |
| Nano ITX    | 120 mm x 120 mm | 1 MiniPCI   |
| BTX         | 325 mm x 267 mm | 7           |
| microBTX    | 264 mm x 267 mm | 4           |
| PicoBTX     | 203 mm x 267 mm | 1           |



Main power comes to the above example through a 24-pin extended ATX (EPS) power connector (12), with the processor interface driven separately by an eight-pin CPU power (EPS12V/ATX12V) connector (13). Many motherboards that support multiple PCI Express x16 graphics card slots (4) have an additional power connector near those slots (14), but it usually doesn't need to be connected.

### The Motherboard

The **motherboard**, also called the logic board or mainboard, is a board with electrical circuits printed on it that holds many of the computer's essential components. The electrical circuits on the board allow the components to receive power and communicate with each other.

A desktop computer motherboard usually contains the **CPU** and the main memory, and you can attach **graphics** and **sound cards**, **memory**, and other **peripherals** to them with cards or cables. It's also very common for manufacturers to integrate some of these components directly onto the motherboard itself.

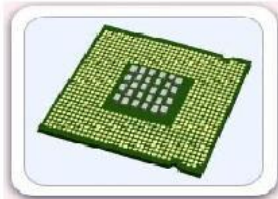
Integrated boards are usually less expensive and easier to manage since they come in a nice, tidy package. But they don't offer the best performance, you can't upgrade the components, and if something breaks on an integrated board, you have to replace the whole board.

### **The CPU**

The **CPU**, or Central Processing Unit, is the brain of the computer. CPUs do two major things: performing mathematical and logical operations (in other words, making the computer do stuff), and retrieving and carrying out instructions from the computer's memory.

In personal computers, the CPU is a small, square chip with many little metallic pins sticking out of it called a **microprocessor**, and is attached directly to the **motherboard**. Since they create a lot of heat, modern CPUs have a heat sink and small fan attached to keep them cool.

If something goes wrong with your CPU, it can be replaced but it's a good idea to let a professional do it. They can be expensive, and it's easy to accidentally bend the pins when trying to install it.



## RAM

**RAM**, or Random Access Memory, is a type of computer memory used for short-term data storage. It is usually an integrated circuit board installed in the **motherboard**.

How much RAM your computer has can affect its performance. Some tasks like playing games or editing videos will use a lot more RAM than others. If it seems like your computer is taking forever to complete tasks, you may need to add more RAM. Fortunately, it's very easy to upgrade RAM. You simply install more boards or replace the ones already installed. But, before you buy any, be sure to figure out exactly how much you need and how much can fit in your computer, and get a **trusted adult** to help you.



## The Graphics Card

A **graphics card**, or video card, processes and outputs images to the computer's monitor. Less expensive graphics cards are integrated directly into the **motherboard**, but more powerful cards come as a separate component that you can replace without having to change the entire motherboard.

The graphics card receives information from the **CPU** about what to display, decides how to use the **pixels** on the screen to display that image, and sends that information to the monitor. For 3-D images, the graphics card first creates everything out of straight lines, called a "wireframe," and then fills in all the lighting, texture and color. In a fast-paced game, it has to do this around sixty times per second.



Many people think that graphics cards are just used for playing computer games, but they are also useful for graphic designers, video editors, and 3-D animators, who usually need the best display possible.

If your graphics card is not integrated into the motherboard, it's very simple to replace. Before you buy a new one though, make sure you know what you need and what your system can support. Some monitors can't display the highest resolution that an expensive graphics card can produce, and some graphics cards use the computer's **memory** rather than their own to produce their display.

### **The Network Interface Card**

A network interface card lets you connect your computer to a network. It can be a local one, like a LAN, or the Internet if the computer connects to a modem.

The most common network interface cards are Ethernet cards that use a cable to connect the computer to a network hub like a router, but there are also wireless network cards that have antenna instead of a cable port. Many newer computers have a network card built in to the motherboard.

Each network card has a unique address that identifies the computer on the network, called a Media Access Control, or MAC, address. The address is usually assigned by the manufacturer and is part of the hardware.

### **The Sound Card**

A sound card processes and plays sound files. It can work with both the internal and external speakers to provide sound. Of course, the better the sound card and speakers are, the better the sound quality. In addition to speaker ports, a sound card will usually have a microphone port as well so you can record your own sounds.



## **Different Motherboard Components and Their Functions**

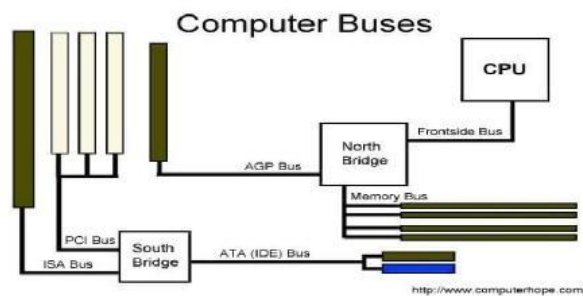
### **Back Panel Connectors & Ports**

Connectors and ports for connecting the computer to external devices such as display ports, audio ports, USB ports, Ethernet ports, PS/2 ports etc. See image below for a close-up view.



## Bus

When referring to a computer, the **bus** also known as the **address bus**, **data bus** or **local bus** is a data connection between two or more devices connected to the computer. For example, a bus enables a computer processor to communicate with the memory or a video card to communicate with the memory. The bus contains multiple wires (signal lines) that contain addressing information that describes the memory location of where the data is being sent or where it is being retrieved.



Each wire in the bus carries a single bit of information, which means the more wires a bus has the more information it can address. For example, a computer with a 32-bit address bus can address 4GB of memory, and a computer with a 36-bit bus can address 64GB of memory.

A bus is capable of being a parallel or serial bus and today all computers utilize two bus types, an **internal bus** or local bus and an **external bus**, also called the **expansion bus**. An internal

bus enables a communication between internal components such as a computer video card and memory and an external bus is capable of communicating with external components such as a USB or SCSI device.

### **Memory slot**

A **memory slot**, **memory socket**, or **RAM slot** is what allows computer memory (RAM) to be inserted into the computer. Depending on the motherboard, there may be 2 to 4 **memory slots** (sometimes more on high-end motherboards) and are what determine the type of RAM used with the computer. The most common types of RAM are SDRAM and DDR for desktop computers and SODIMM for laptop computers, each having various types and speeds.

In the picture below, is an example of what memory slots may look like inside a desktop computer. In this picture, there are three open available slots for three memory sticks. When buying a new computer or motherboard, pay close attention to the types of RAM the memory slots, so you are familiar with what type of RAM to buy for your computer. It is also important to note how many available memory slots are available in your computer.

### **Computer Memory Slots**



<http://www.computerhope.com>

It is not uncommon for some computers to have all memory slots occupied, which means if you wanted to upgrade your computer memory some or all of the memory currently installed would need to be removed first.

### **Sockets**

### **Intel LGA 2011**

Supporting Intel's Ivy Bridge-E (4900 and 4800-series) and Sandy Bridge-E (3900 and 3800-series) Core i7 processors with up to six physical cores, LGA 2011 directs 40 PCIe lanes directly from the CPU to several slots. Because this 40-lane controller was on the CPU, the newer Ivy Bridge processor was able to add PCIe 3.0 mode to a platform that had originally been PCIe 2.0-only.



Current LGA 2011 platforms should be considered “end of life” since Intel has released its “v3” replacement. Value-seeking buyers might select this product based on the 4800-series CPU's 40-lane controller, which is reduced to 28-lanes on the replacement-platform's 5800-series processor. Similarly, DDR3 is more widely-available and at a lower current price compared to DDR4. Buyers should keep the end-of-life status in mind when considering potential upgrades.

### **Result:**

Thus motherboard and its interfacing components have been studied

|                 |                                                                      |
|-----------------|----------------------------------------------------------------------|
| <b>Exp.No:3</b> | <b>INSTALL AND CONFIGURE COMPUTER DRIVERS AND SYSTEM COMPONENTS.</b> |
| <b>Date:</b>    |                                                                      |

**Aim:**

To install and configure computer drivers and system components

**Drivers**

A driver is software that allows your computer to communicate with hardware devices. Without drivers, the devices you connect to your computer—for example, a mouse or external hard drive—won't work properly. Windows can automatically check if there are drivers available for new devices that you connect to your computer.

For hardware that you've connected to your computer in the past, updated drivers might become available at a later date; but those drivers aren't installed automatically. To install these optional updates, go to Windows Update in Control Panel, check for updates, and then view and install driver updates that are available for your computer.

**Procedure:**

**IMPORTANT:** It is strongly recommended that you install the files in the following order:

**1. Audio Driver**

- Enables sound for the notebook speakers.
- Resolves the  "PCI Device" or "Audio" error that may appear in Device Manager.

**2. Bluetooth Driver**

- Enables the computer to connect to Bluetooth enabled equipment.
- Resolve the  "BCM2046 Bluetooth Device" or "UGX" error that may appear in Device Manager if the driver is uninstalled.

**3. Chipset Driver**

- Enables the motherboard to communicate with other hardware devices.

- Resolves the ⚠️ "SM Bus controller" error that may appear in Device Manager.

#### **4. Memory Stick**

- Enable use of Sony memory cards (e.g. SD (secure digital) cards).
- Resolves the ⚠️ "Base System Device" error that may appear in Device Manager.

#### **5. Memory Card Reader/Writer**

- Enable the use of external memory cards such as SD and MMC (secure digital/ multimedia cards).

#### **6. Modem**

- Enables the computer to use a dial-up connection.
- Resolves the ⚠️ "Modem Device" or "High Definition Audio Bus" error that may appear in Device Manager.

#### **7. Network**

- Enables the computer to connect to a network.
- Resolves the ⚠️ "Ethernet Controller" error that may appear in Device Manager.

#### **8. Video**

- Enables the computer to show an improved display / resolution quality.
- Resolves the ⚠️ "Video Controller" error that may appear in Device Manager.

#### **9. Wireless LAN**

- Enables connection with a wireless network and other wireless devices.
- Resolves the ⚠️ "Network Controller" error that may appear in Device Manager.

### **To install Network driver**

#### **To install drivers for your network adapter by using Device Manager**

1. Locate the media that contains the driver for your network adapter.
2. On the **A network adapter was not found** page, click **Open Device Manager to install drivers**.
3. In Device Manager, click the **Action** menu, and then click **Add legacy hardware**.
4. In the Add Hardware Wizard, click **Next**, and then follow the instructions in the wizard.

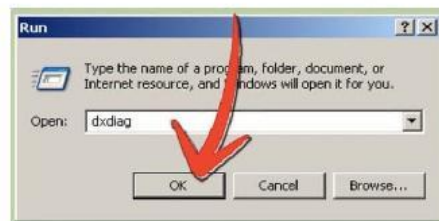
5. When the Add Hardware Wizard finishes, on the **A network adapter was not found** page, click **Test network adapter** to continue installing Windows SBS 2008.
- Open Windows Explorer to install a driver that is in an executable (.exe) file, and then follow the instructions in the procedure.

#### To install drivers for your network adapter by using Windows Explorer

6. On the **A network adapter was not found** page, click **Browse** to open Windows Explorer.
7. Navigate to the executable file that contains the driver, and then double-click the file to install the driver.

#### To install Audio driver

**Step 1:** Type "dxdiag" into the run (win + R) dialog box



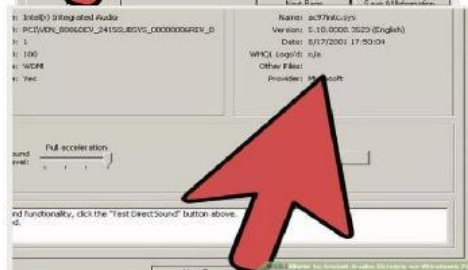
**Step 2:** Click on the tab labeled "Sound."



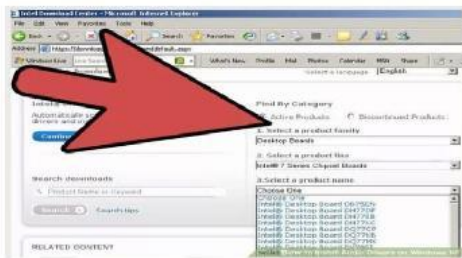
**Step 3:** Write down the name of your computer's sound card displayed next to "Name" under the section labeled "Devices."



**Step 4:** Write down the name of the sound card's manufacturer displayed next to "Provider" below the "Drivers" section.



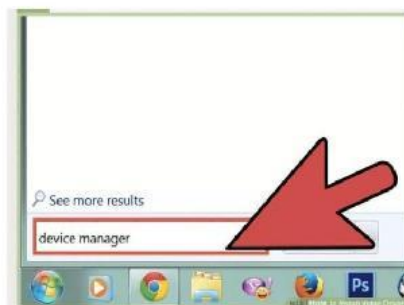
**Step 5:** Follow the installation instructions provided on the manufacturer's website to install the audio drivers



## To install Video driver

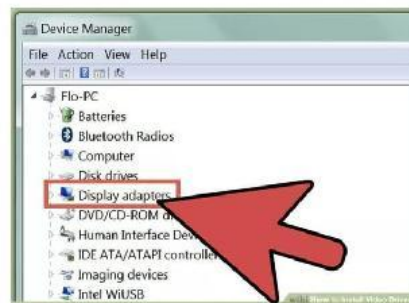
**Step 1:** Browse to the Device Manager.

- In Windows 7 or Vista, click Start and type "Device Manager" in the search box.

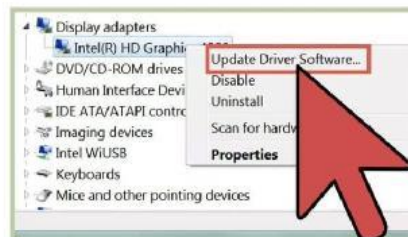


- In Windows XP, right-click on the My Computer icon on your desktop and choose "Device Manager" from the popup window.

**Step 2:** Click on the plus sign beside "Display adapters" and then right-click on the video card driver displayed.



**Step 3:** Choose "Update Driver Software" from the popup window.



**Result:**

Thus the installation of audio and video drivers has been performed.

|                 |                                                                         |
|-----------------|-------------------------------------------------------------------------|
| <b>Exp.No:4</b> | <b>Disk formatting, partitioning and Disk operating system commands</b> |
| <b>Date:</b>    |                                                                         |

**Aim:**

To Format, partition and study disk operating system commands

**Procedure:**

**Creating a new partition in Windows 7**

In order to re-allocate empty space on your hard disk by creating more partitions or volumes, the hard disk must contain unallocated space that is not part of an existing partition. Shrink the volume on an existing drive to create unallocated space, and then create and format a hard disk partition.

1. To open the Disk Management tool, click **Start** In the Search field, type Partition. Then click **Create and format hard disk partitions**

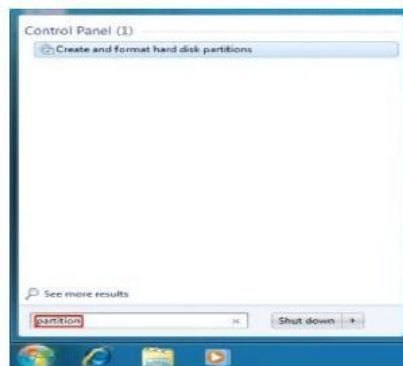
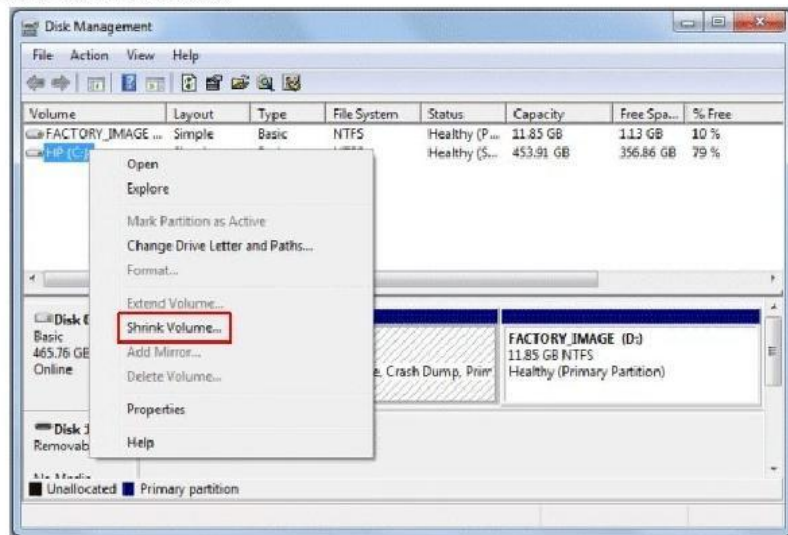


Figure: Search results for partition

The Disk Management tool opens and displays information about the data storage devices on the computer.

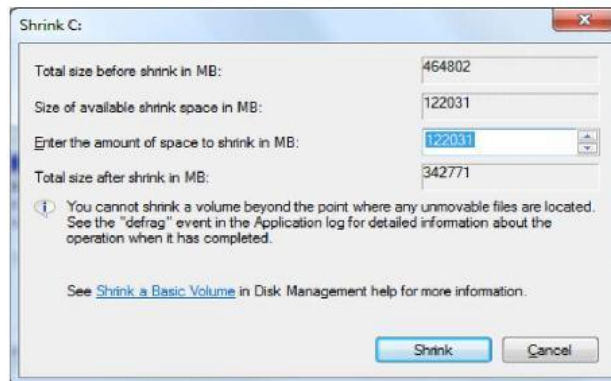
2. To create unallocated space on the drive, right-click the drive you want to partition. For most applications, select the C: drive.

Then click **Shrink Volume...**



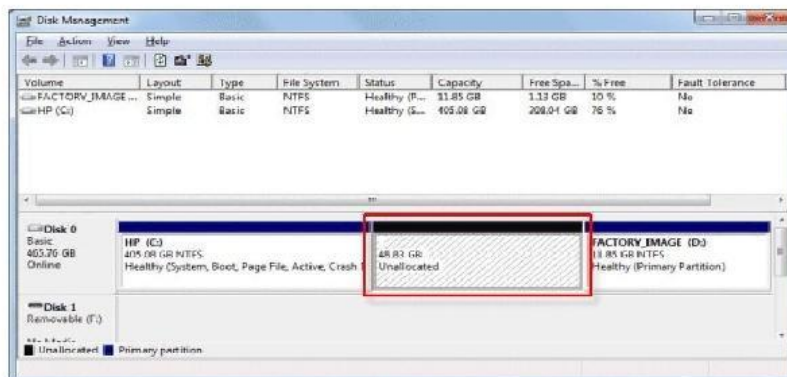
**Figure : Shrink Volume...**

3. Do not make any adjustments to the settings in the Shrink window. Click **Shrink**.



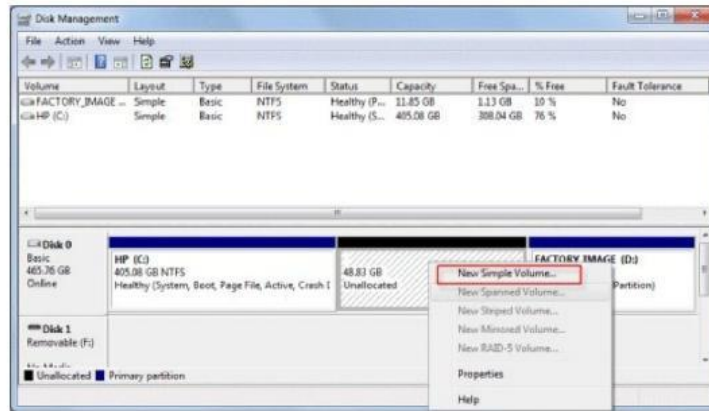
**Figure: Shrink C:window**

When the Shrink is complete, the new partition displays in the Disk Management utility as unallocated space.



**Figure : Disk Management window with unallocated space encircled in red**

4. Right-click the new partition. In the menu that displays, click **New Simple Volume...**



**Figure : New Simple Volume...**

5. The New Simple Volume Wizard displays. To continue, click **Next**.
6. The Specify Volume Size window displays. Type in the volume size, or click **Next** to accept the default setting.



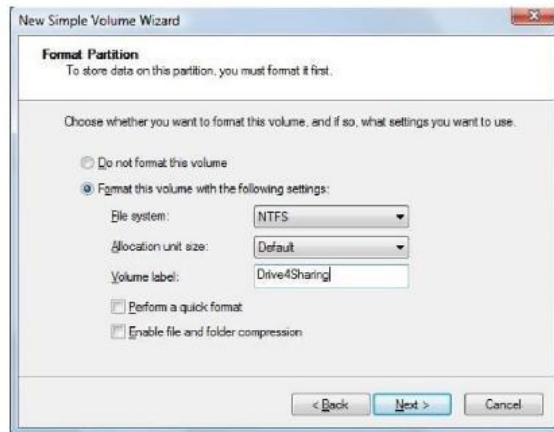
**Figure: Specify Volume Size window**

7. The Assign Drive Letter or Path window displays. Select a drive letter and click **Next**.



**Figure : Assign Drive Letter or Path window**

8. The Format Partition window displays. To name the drive, type a name in the **Volume label** box. Then click **Next**.  
NOTE: **Do not select** Perform a quick format **or** Enable file and folder compression.



**Figure : Format Partition window**

9. The settings window displays. Click **Finish**.



**Figure : Completing the New Simple Volume Wizard**

10. The Disk Management utility displays, showing the formatting progress.

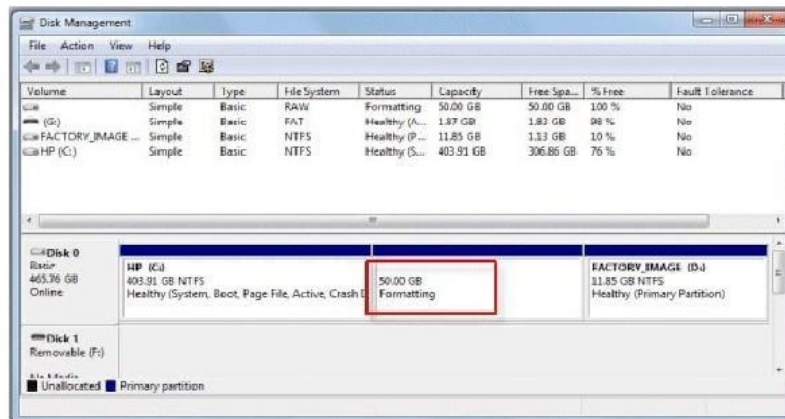


Figure: Formatting

11. When the format is complete, the new drive shows in the Disk Management utility. If the AutoPlay window displays, click the X in the upper-right corner to close it.

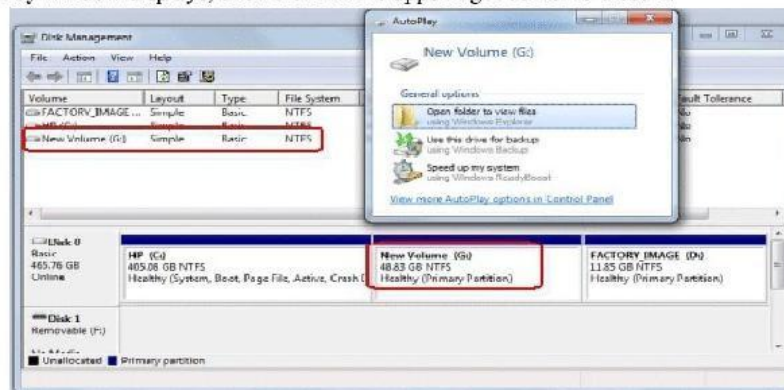


Figure: New volume

### Changing a drive letter in Windows 7

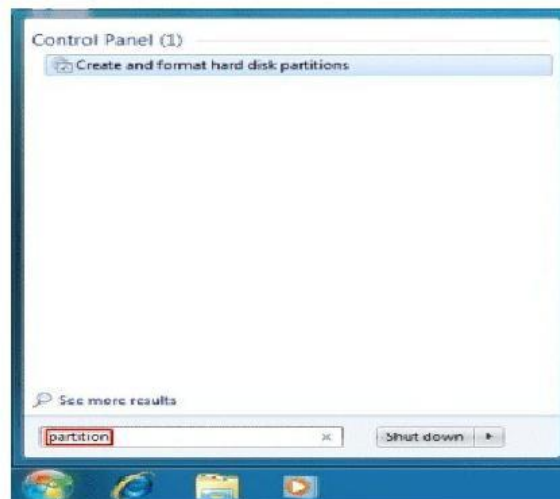
The letters C through Z can be assigned to each drive on your computer. The system partition is usually labeled with the letter C, while the letters A and B are reserved for floppy disk drives or removable drives. If the computer does not have floppy disk drives, you can assign A and B to volumes.

#### COMPLETE THE FOLLOWING STEPS TO CHANGE A DRIVE LETTER.

1. To open the Disk Management tool, click **Start**



In the Search field, type partition. Then click **Create and format hard disk partitions**.



**Figure : Search results for Partition**

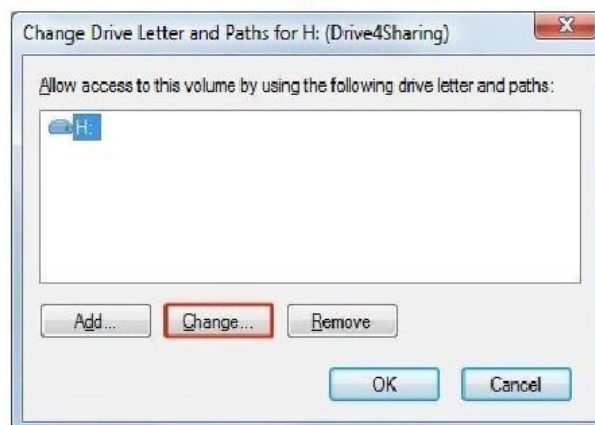
The Disk Management tool opens and displays information about the data storage devices on the computer.

Right-click the partition or drive you want to rename and then click **Change Drive Letter and Paths**.



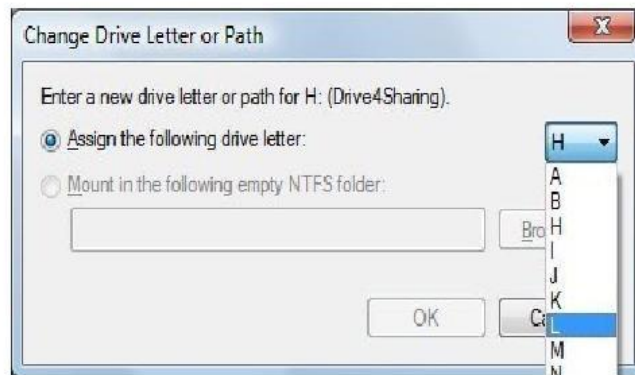
**Figure : Change Drive Letter and Paths...**

2. In the Change Drive Letter window, click **Change**.



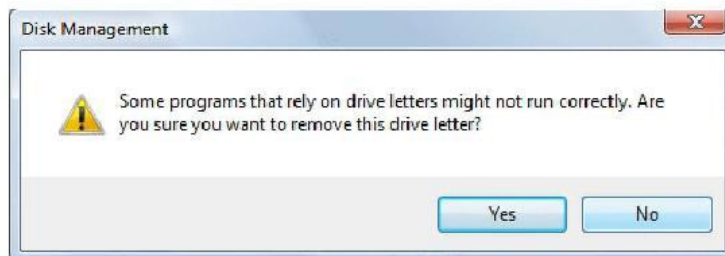
**Figure : Change Drive Letter window with Change highlighted**

3. In the menu, select the new drive letter. Then click **OK**.



**Figure : Change Drive Letter window**

4. The Disk Management caution message is displayed. Click **Yes** to continue.



**Figure : Disk Management caution message**

## **MS-DOS COMMANDS**

To change the default drive, simply type the letter of the choice. The new default will be listed in subsequent DOS prompts.

Example:

- C> A:[enter]
- Changes the default drive from C to A.
- A> C: [enter]
- Changes the default drive from A to C.

[enter] means that you must press the Enter Key before the format command will *execute*. [Enter] is required after any DOS command, it is assumed in all commands found below.

### **CHDIR (CD)**

#### **Change Directory Command**

Once you have located the directory you want, you may move from directory to directory using the CD command (change directory)

Example:

- C> cd furniture
- Moves you to the directory called 'FURNITURE'
- C> cd \furniture\chairs
- Moves you to the directory called 'CHAIRS' under the directory called 'FURNITURE'.
- C> cd ..
- Moves you up one level in the path.
- C> cd \
- Takes you back to the root directory (c: in this case).

### **COPY Command**

The COPY command can be used both to copy files from disk to disk and to create a second copy of a file on a single disk. (There are many more uses of the COPY command,

but only the basic operation is discussed here.)

Example:

- C> copy c:kermit.exe a:
- Copies the file 'KERMIT.EXE' from the C drive to the A drive and gives it the same name.
- C> copy a:brazil1.dat b:\south\brazil2.dat
- Creates a copy of 'BRAZIL1.DAT' from drive A on drive B, putting it in the 'SOUTH' subdirectory and renaming it 'BRAZIL2.DAT'.

The key to use this command correctly is to remember that the first file specified after the COPY command is the *source* file, the second is the *target*:ehp1 file. The *source* is the file to be copied. The *target* will be the location and name of the new file. If the file name and extension are omitted after the target's drive specification, the new file will have exactly the same name as the source file.

Example:

- C> copy a:myfile.txt b:
- C> copy c:command.com b:com.com
- C> copy b:golly.geea:whao.boy
- C> copy command.\* a:
- C> copy a:mymap.dwg c:\maps

Note: it is always good practice to use the complete file specifications for both source and target files, be very sure of yourself before you accept defaults or employ wild-card characters.

Otherwise you may end up with some interesting results. Incomplete or incorrect source names may result in errors, such as the command: copy edlin a:myomy.bat. Try it and see what happens.

### **DIR (Directory) Command**

The DIRECTORY command lists the names and sizes of all files located on a particular disk.

Example:

- C> dir a:
- Shows directory of drive A
- C> dir b:
- Shows directory of drive B
- C> dir \agis
- Shows files in a subdirectory on drive C (default)
- C> dir
- Shows directory of drive C
- C> dir /w
- Shows directory in wide format, as opposed to a vertical listing.

All the files are listed at the screen, you can stop the display by typing CTRL-BREAK. If you ask for a directory on the A or B drives, be sure there is a diskette in the drive and that the diskette has been formatted. If the drive is empty, or if the diskette is unformatted, the DOS will respond with an *error message*.

### **DIR Options**

Two little characters, '\*' and '?', will make your life with computers much easier. Their use is illustrated below.

Example:

- C> dir a:\*.ex
- Lists all files on the A drive with an extension of 'EXE'.
- C> dir b:kermit.\*
- Lists all files on the B drive with a filename of 'KERMIT'.

The asterisk is a wild-card character which allows the user to enter only a limited part of a file specification to find a file. It is useful when you wish to locate a group of files with the same filename or the same extension. On other occasions you may have forgotten part of a file

specification. You can use '\*' in place of the parts of the specification you have forgotten. Similarly, '?' permits wild-card searches keyed to single characters.

Example:

- C> dir a:labe?.com
- Lists all five-letter files with the first four letters 'LABE' and an extension of 'COM'.
- C> dir b:format.c??
- Lists all files with a filename of 'FORMAT' and an extension beginning with 'C'.

Wild-card characters can be used in combination.

Example:

- C> dir a:labe?.\*
- Lists all five-letter files with the first four letters 'LABE' and any extension.
- C> dir c:\*.ex?
- Lists all files with an extension beginning with 'EX'.

Experiment with '\*' and '?' to improve your ability to find files quickly. These wild-card characters can also be used with several other DOS commands.

#### ERASE Command

The ERASE command deletes specified files.

Example:

- C> erase a:myfile.txt
- Erases the file MYFILE.TXT from the diskette in the A drive. If no drive specification is entered, the system looks to delete the specified file from drive C (in this case).

#### File-Naming Conventions

Careful file naming can save time. Always choose names which provide a clue to the file's contents. If you are working with a series of related files, use a number somewhere in the name to indicate which version you have created. This applies only to the filename parameter; most of

the file extension parameters you will be using are predetermined (or *reserved* by DOS for certain types of file).

Example:

- WORLD.DAT
- An ATLAS\*GRAPHICS file containing data for a world map. The DAT extension is required by ATLAS\*GRAPHICS.
- BRAZIL.BNB
- A boundary file of Brazil in binary form.
- BRIT1.DAT
- BRIT2.DAT
- BRIT3.DAT
- Three versions of a data file for a map of Britain.

#### **FORMAT Command**

You must format new disks before using them on the IBM computers. The format command checks a diskette for flaws and creates a *directory* where all the names of the diskette's files will be stored.

Example:

- C> format a:
- Formats the diskette in the A drive.
- C> format b:

After entering this command, follow the instructions on the screen. When the FORMAT operation is complete, the system will ask if you wish to FORMAT more diskettes. If you are working with only one diskette, answer **N** (No) and carry on with your work. If you wish to FORMAT several diskettes, answer **Y** (Yes) until you have finished formatting all your diskettes.

#### **MKDIR (MD) Make Directory Command**

This command creates a new directory.

Example:

- C> mkdir mine
- Creates a directory called 'MINE'

### **Rebooting the computer (Ctrl-Alt-Del)**

In some cases, when all attempts to recover from a barrage of error messages fails, as a last resort you can reboot the computer. To do this, you press, all at once, the control, alternate and delete.

### **RENAME (REN) Command**

The RENAME command permits users to change the name of a file without making a copy of it.

Example:

- C> ren a:goofy.txtpluto.txt
- Changes the name of 'GOOFY.TXT' on the A drive to 'PLUTO.TXT'.

This command is very simple to use, just remember two points: the file name and extension must be complete for the source file and no drive specification is given for the target. Renaming can only occur on a single disk drive (otherwise COPY must be used).

### **RMDIR (RD) Remove Directory Command**

This command removes a directory. It is only possible to execute this command if the directory you wish to remove is empty.

Example:

- C> rd mine
- Removes directory called 'MINE'.

### **Stop Execution (Ctrl-Break)**

If you wish to stop the computer in the midst of executing the current command, you may use the key sequence Ctrl-Break. Ctrl-Break does not always work with non-DOS commands. Some software packages block its action in certain situations, but it is worth trying before you re-boot.

### External Command

1. **Attrib**: this command is used for protecting the files from accidental changes or modification. It can also be used for making a hidden file, archive files, read only files; Syntax: Attrib +R/-R/+H/-H/+A/-A <file name> +FR protects the file by making it read only, -R removes the read only protection; eg: Attrib +r <file name>
2. **Scandisk/ Chkdisk**: this command checks the status of the disk; it shows a graphical display, information about the userfile.
3. **Tree**: this command graphically displays the path of each directory and sub directory in given drive; Syntax: C:\> tree<
4. **More**: it displays one screen of data at a time and is used with another command when one screen is full; if you press any key on the next screen is displayed: Syntax C:\> type abc.doc | more.
5. **Edit**: the command loads the MSDOS editor, where we can edit files, create new files, open existing files; Syntax: C:\> edit < file name>
6. **Label**: a label is a name given to a disk which refers to collection of files and directories on disk; Syntax: C:\> label A.
7. **Sort**: this command is used for sorting data and displaying the result on the screen: Syntax: C:\> dir/sort/r (reverse order)
8. **Format**: this command prepares a disk by arranging random magnetic impulses in to a series of track and sectors so that it is addressable by a DOS version; Syntax : C:\> format A:/s
9. **Sys**: this command transfers MSDOS System files to specified areas to make the disk bootable; Syntax: C:\> SysA:<
- 10 **Pipes (|)** it connects two files i.e., the standard output of one filter command becomes standard input of another filter; eg Dir/Sort/ more ||

**Result:**

The system has been formatted and partitioned and also the dos-commands have been executed.

|                 |                                                                 |
|-----------------|-----------------------------------------------------------------|
| <b>Exp.No:5</b> | <b>INSTALL, UPGRADE AND CONFIGURE WINDOWS OPERATING SYSTEMS</b> |
| <b>Date:</b>    |                                                                 |

**Aim:**

To install, upgrade and configure Windows operating systems.

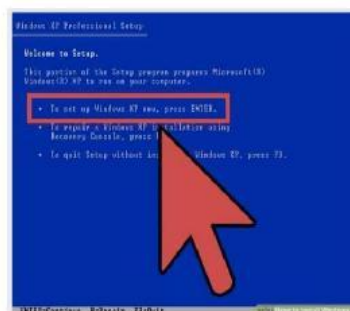
#### Installation Procedure:

Windows XP Professional CD is bootable. In order to boot from the CD you need to set the boot sequence. Look for the boot sequence under your BIOS setup and make sure that the first boot device is set to CD-ROM Drive

#### Step 1 - Load the installer

Once your Boot Order is set, insert the Windows XP CD into your drive. Your computer will boot and you will be presented with the message: *Press any key to boot from CD*. Press any key on your keyboard to start the Setup program.

- Setup will load files necessary to begin the installation, which may take a few moments. Once the loading is complete, you will be taken to the Welcome screen.
- Press ENTER to begin installation



#### Step 2 - Accept the License Agreement

This document tells you what you can and can't do with Windows, and your rights as the consumer. After reading, press F8 indicating you agree to the terms.



### Step 3 - Select the partition you want to install

You will see a list of available partitions on your installed hard drives. If you are installing Windows XP on a new hard drive, you should see only one entry labeled "Unpartitioned space." If you have a previous version of Windows or Linux installed on your computer, you will potentially have multiple partitions.

- Installing Windows XP will erase all of the data on the partition that you choose. Select a partition that is empty or that contains data that you do not care to lose.
- You can delete your partitions with the "D" key. This will return them to "Unpartitioned space". Any data on the partition will be lost when it is deleted.



### Step 4 - Create a new partition

Select the Unpartitioned space and press "C". This will open a new screen where you can set the partition's size from the available space. Enter the size in megabytes (MB) for the new partition and then press ENTER.

- By default, the partition will be set to the maximum amount of available space. Unless you plan on creating multiple partitions, you can usually leave this at its default.
- Windows XP requires at least 1.5 gigabytes (1536 MB) for its installation files, but you will want more than this for programs, documents, downloads, and other files. 5 gigabytes (5120 MB) is a good baseline amount for Windows XP, with more if you plan on installing a lot of programs.



- You can create multiple partitions on a single drive. This can allow you to separate your programs from your movies and music, or to install another operating system. Windows XP can only be installed on one discrete partition.

#### Step 5 - Select your new partition

Once you've created your installation partition, you will be returned to the partition selection screen. Select your new partition, usually labeled "C: Partition 1 [Raw]" and press ENTER.



#### Step 6 - Select "Format the Partition using the NTFS File System" and press ENTER

NTFS is the preferred method, supporting a larger amount of disk space per partition than FAT, and including security features at the file system level. NTFS also includes system level compression. There are almost no situations anymore where choosing FAT would be preferable.

- If your partition size is larger than 32 GB, you will not be given the option to choose FAT.
- It is highly recommended to avoid Quick
- Format, as this skips an important process that checks the hard drive for errors or bad sectors. This scan is what consumes the majority of the time taken when performing a full format. If there are errors on a disk at the physical level, it's best to catch them now rather than later.



### Step 7 - Wait for the format to complete

The system will now format the partition. The length of time this process requires depends on the speed and size of the drive. In general, the larger the partition, the longer the process will take.



### Step 8 - Wait for the Setup files to copy

Windows will now start copying files from the installation disc and prompt you to reboot the computer when the process is completed. Press ENTER when prompted to reboot, otherwise it will do so automatically after 15 seconds.



### Step 9 - Allow the computer to boot normally

You will see the message asking you to press a key to boot from CD. Ignore it and allow the computer to continue booting from the hard drive. You will see the Windows logo as the Setup program loads.

### Step 10 - Wait for the installation to proceed

After the Windows logo goes away, you will see a list of steps remaining on the left side of the screen, and tips for using windows on the right. The time remaining for the installation will be displayed below the list of steps remaining. It is normal for the screen to flicker, turn on and off, or resize during this process.

### Step 11 - Choose your language and region settings

During the installation process a dialog window will appear, asking you to choose your Regional settings. Select appropriate settings native to your area. Click the Next button when that is completed.

- Enter your full name if you want. This will be set as the “owner” of Windows, and will be attached to certain things, such as Document creation.



### Step 12 - Enter your Product Key

You will not be able to complete the installation process without a valid Product Key. Click "Next" to continue.

- Some versions of Windows will not ask for the Product Key until installation is complete.

### Step 13 - Set your computer's name

This will be the name that represents the computer on a network. Windows sets a default name, but you can change it if you would like. You can also set a password for the Administrator account. This is optional, but recommended for public computers.



### Step 14 - Select your time zone

Ensure that the date/time are correct. Click "Next" to continue.



Almost all users installing Windows XP on a home or personal computer can leave "Typical Settings" selected for Network Setup. If you are installing Windows XP in a corporate or academic environment, check with the system administrator, though Typical Settings will most likely work.

- 
- Windows XP Professional Setup
- Networking Settings**  
During network setup, software allows you to connect to other computers, networks, and the Internet.
- Choose whether to use typical or custom settings.
- ☒ **Typical settings**  
Creates network connections using the Client for Microsoft Networks, File and Printer Sharing for Microsoft Networks, TCP/IP Protocol Suite, and the TCP/IP Internet protocol with automatic address.
- ☐ **Custom settings**  
Allows you to manually configure networking components.
- Back Next >

This will only take a few minutes, and the computer will reboot when it is finished installing. Once the computer reboots, you will be taken to the Windows XP desktop. At this point, installation is complete, though there are a few things left to do before Windows is completely usable



### Step 17 - Reboot and start using Windows



## UPGRADE

**Step 18 -** Back up your files! The most common mistake is human error, so make sure your files are copied to a DVD, external hard drive or flash drive.

### **Step 19: Download and run the free Windows 7 Upgrade Advisor**

this utility can help find any problems that might clash with the installation.



### **Step 20: Insert the Windows 7 disc into your CD/DVD tray**

The Setup should launch automatically; if not, simply go to your start menu, click on My Computer, double-click your CD/DVD drive, and select the Setup.exe.

**Step 21:** On the Install Windows page, select Install now.



**Step 22:** When asked which type of installation you want, select Upgrade. The installer will take care of the rest! NOTE: You may receive a compatibility report; this is a standard procedure and does not mean there is a system error and the world as you know it has come to an end...well, maybe, but Windows 7 will install just fine.

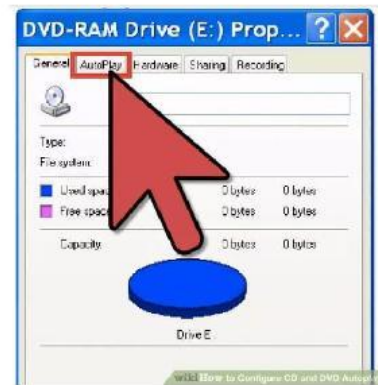


## Configure CD and DVD Autoplay in Windows XP

**Step 23:** Open up "My Computer"

**Step 24:** Right click a CD or DVD drive, drag down to "Properties" and click "Properties".

**Step 25:** In the Properties menu click the "AutoPlay" tab.



**Step 26:** Choose "Select an action to perform" select what action you want to perform and then apply ok.



**Result:**

Thus installing, upgrading and configuring Windows XP operating systems have been studied.

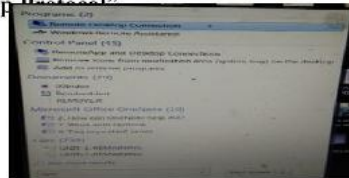
|                   |                                  |
|-------------------|----------------------------------|
| <b>Exp.no: 6a</b> | <b>REMOTE DESKTOP CONNECTION</b> |
| <b>Date:</b>      |                                  |

**Aim:**

To establish remote desktop connection

## Procedure

1. In start menu search for “Remote Desktop **Protocol**”



2. Enter the **IP address** of the computer that you desire to connect to. [Click here for instructions on how to find out the IP address](#)



- If this is a connection that you will be making often, continue to step 3, otherwise skip to step 6

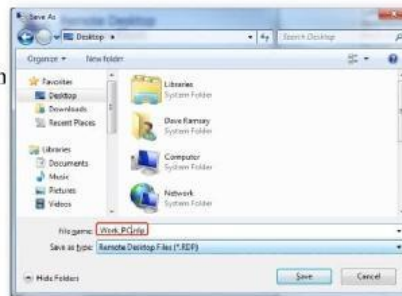
3. Click on “Options”



4. Click “Save As”



5. On the left hand side of the pop-up window, select the path where you want to save the session and save the file with an .rdp extension



6. Click “Connect”

If you run in to issues connecting to a machine, make sure that the computer is allowed remote desktop connections and that you are an allowed user.



#### Result:

Thus the remote desktop connection has been established.

|                   |                     |
|-------------------|---------------------|
| <b>Exp.no: 6b</b> | <b>FILE SHARING</b> |
| <b>Date:</b>      |                     |

**Aim:**

To do file sharing

**Procedure:**

1. Click Start, and then click My Computer on the desktop



2. On the Tools menu, click Folder options.



- Click the View tab, and then select the Use Simple File Sharing (Recommended) check box to turn on Simple File Sharing. (Clear this check box to turn off this feature.)



- Right-click the folder, and then click Sharing and Security.



- Click to select the Share this folder on the network check box, click to select the Allow network users to change my files check box, and then click OK.



### Result:

Thus file sharing has been performed.

|                 |                                                                                                          |
|-----------------|----------------------------------------------------------------------------------------------------------|
| <b>Exp.No:7</b> | <b>IDENTIFY, INSTALL AND MANAGE NETWORK CONNECTIONS<br/>CONFIGURING IP ADDRESS AND DOMAIN NAMESYSTEM</b> |
| <b>Date:</b>    |                                                                                                          |

### **Aim**

To identify, Install and manage network connections Configuring IP address and Domain name system.

### **Procedure:**

If you are setting up this network in real life environment like cyber café or any small office consider the following approach before taking any final decision on workgroup network

- a. Determine your requirements
- b. Choose between wired and wireless media
- c. Map your physical network
- d. Map your logical network
- e. Create a utilization plan

I assume that you have gone through these steps and come up with a plan to use 4 computers with star topology for this network.

Computers            4 with any descriptive Name

Operating system    Windows XP professional and vista

Topology             Star

Printer                One

Modem

One Workgroup

Name SOFTWARE

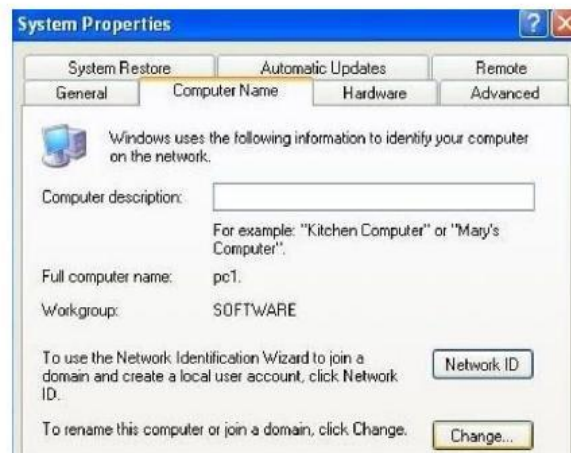
Install XP professional on three systems and Vista on one system.

During the installation process computer and workgroup name are automatically generated. You could use these names but it would be better to have a good and descriptive name.

To change computer and workgroup name Right-click on My Computer and select Properties, or open the System applet from Control Panel.



Select the Computer Name tab ==> click Change to open the Computer Name Changes dialog box.



Follow this guideline while choosing name for computer and workgroup

- Computer name should be unique in a workgroup.
- Workgroup name should be same for all computer.
- Workgroup name may be up to 15 characters long and may contain any alphanumeric (a- z and 0-9) characters, as well as special characters except for ; : " < > \* + = \ | ?.
- Computer name can be up to 15 characters long and have the same naming restrictions as workgroup. In addition, the computer name cannot be the same as the workgroup name.

Enter a new computer name in the Computer Name field and new workgroup name in Workgroup field and click OK.



You will be prompted to restart your computer to complete the name change. Click yes to restart your computer.

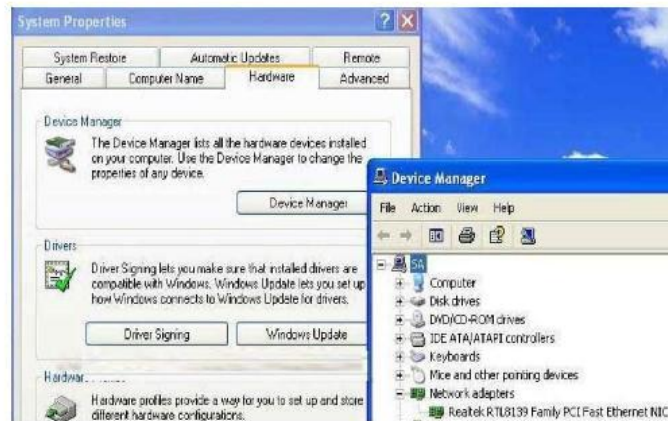


We have completed our first necessary step. Now it's time to configure LAN card.  
Configure LAN card

#### **First check LAN card driver**

Right Click on My Computer ==> properties ==> Hardware ==> Device manager ==>  
Network Adaptor ==> Check here (also check under the other devices tag)

**Situation:- Showing**



**Description:-** Installed and working properly

**Situation:-** Showing with Yellow sign



**Description:-** LAN card driver is corrupted

**Solution:-** Install LAN card driver.

**Situation:-** Showing with Red Cross

**Description:-** Either cable is unplugged or LAN card is disabled

**Solution:-** My network places ==> properties ==> local area connection ==> right click ==>

Enable (Follow only if LAN card is disable )

Check whether network cable is plugged or not

**Situation:-**Not Showing



**Description:-** LAN card is not detected yet (Check for physical

installation) **Solution:-** Open the cabinet and check for physical detection

Check Bios ==> On board LAN Option should be enable

**Checking LAN card in Network place**

How to show my network place on Desktop?

Right click on the free space of desktop ==>Customize desktop ==>check mark on My network places ==> Apply ==> Ok

My network place ==> properties ==>local area connection

**Situation:-** Showing



**Description:-** Installed and working properly

**Situation:-**Showing with Red Cross



**Description:-**cable is unplugged

**Solution:-**Check whether network cable is plugged or not

**Situation:-**Showing with Yellow sign



**Description:-**LAN is working on Automatic private IP.

**Solution:-** assign manually IP address

**Situation:-**Showing with disable

**Description:-**LAN is disabled

**Solution:-**My network places ==> Local area connection ==> Right click ==> Enable (Follow only if LAN card is disable Situation:-Showing with firewall



**Description:-**LAN is firewall protected

**Solution:-**There is no need to on firewall unless you are connecting with internet.  
To turn off firewall

My network place ==> properties ==>local area connection ==> properties ==>Advanced  
==>SettingsGeneral==> Off





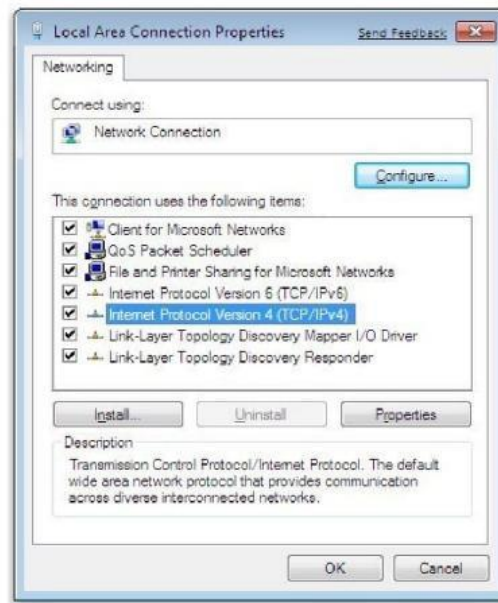
Next step is to check 4 necessary configuration in LAN card properties

- LAN cards drives
- Client for Microsoft network
- File and printer sharing services
- Internet protocols (TCP/IP)



### Configuring ip address

1. Open Network Connections by clicking the Start button and then clicking Control Panel. In the search box, type adapter, and then, under Network and Sharing Center, click View network connections.
2. Right-click the connection that you want to change, and then click Properties. If you're prompted for an administrator password or confirmation, type the password or provide confirmation.
3. Click the Networking tab. Under This connection uses the following items, click either Internet Protocol Version 4 (TCP/IPv4) or Internet Protocol Version 6 (TCP/IPv6), and then click Properties.



**Figure: The Network Connection Properties dialog box**

4. To specify IPv4 IP address settings, do one of the following:
  - To get IP settings automatically using DHCP, click Obtain an IP address automatically, and then click OK.
  - To specify an IP address, click Use the following IP address, and then, in the IP address, Subnet mask, and Default gateway boxes, type the IP address settings.
5. To specify IPv6 IP address settings, do one of the following:
  - To get IP settings automatically using DHCP, click Obtain an IPv6 address automatically, and then click OK.
  - To specify an IP address, click Use the following IPv6 address, and then, in the IPv6 address, Subnet prefix length, and Default gateway boxes, type the IP address settings.
6. To specify DNS server address settings, do one of the following:

- To get a DNS server address automatically using DHCP, click Obtain DNS server address automatically, and then click OK.
- To specify a DNS server address, click Use the following DNS server addresses, and then, in the Preferred DNS server and Alternate DNS server boxes, type the addresses of the primary and secondary DNS servers.



**The Internet Protocol Version 4 (TCP/IPv4) Properties dialog box**

7. To change advanced DNS, WINS, and IP settings, click Advanced.

Domain Name System (DNS) is used in Transmission Control Protocol/Internet Protocol (TCP/ IP) networks, such as the Internet, to locate computers and services through user-friendly names. When a user enters a DNS name in an application, DNS can resolve the name to other information associated with the name, such as an IP address. If your network is homogeneous (all hosts use the same operating system), and it uses a name resolution method other than DNS, you can continue to use that method without needing DNS. If your network is

heterogeneous (the hosts use different operating systems), or it connects to the Internet, you will want to deploy DNS as the Internet consists of protocols that require DNS

### Setting up DNS

Setting up a DNS server typically involves configuring the DNS server with DNS zones to administer the DNS domain names in your network, adding DNS resource records for the hosts in your network to your DNS zones, and delegating administration for these zones by creating a delegation from the parent DNS server previously authoritative for a domain name to the child DNS server that is accepting responsibility for a domain name. Lastly, a DNS server administrator should maintain the integrity of DNS zone data by securing the DNS servers in the network. You can also set up a DNS server from the command line.

#### To configure a DNS server

1. Open DNS.
2. If needed, add and connect to the applicable server in the console.
3. In the console tree, click the applicable DNS server.
  - o DNS/*Applicable DNS server*
4. On the **Action** menu, click **Configure a DNS server**.
5. Follow the instructions in the Configure a DNS Server Wizard.

#### To add a resource record to a zone

1. Open DNS.
2. In the console tree, right-click the applicable zone and click **Other New Records**.
3. In **Select a resource record type** list box, select the type of resource record you want to add.
4. Click **Create Record**.
5. In **New Resource Record**, enter the information needed to complete the resource record.
6. After you specify all of the necessary information for the resource record, click **OK** to add the new record to the zone.

#### To create a zone delegation

1. Open DNS.
2. In the console tree, right-click the applicable subdomain, and then click **New Delegation**.
3. Follow the instructions provided in the New Delegation Wizard to finish creating the new delegated domain.

**To secure a DNS server**

1. Open DNS.
2. In the console tree, right-click the applicable DNS server, and then click **Properties**.
3. On the **Interfaces** tab, ensure that the DNS server is listening to the correct interfaces.
4. On the **Advanced** tab, select the **Secure cache against pollution** checkbox.
5. If this DNS server will not perform recursive resolution, then select the **Disable recursion** checkbox.

**Result:**

Thus the identification, installation and managing network connections and configuration of IP address and Domain name system has been implemented and verified.

|                 |                                                                        |
|-----------------|------------------------------------------------------------------------|
| <b>Exp.No:8</b> | <b>INSTALL, UPGRADE AND CONFIGURE LINUX OPERATING SYSTEMS (UBUNTU)</b> |
| <b>Date:</b>    |                                                                        |

**Aim:**

To install upgrade and configure LINUX OS. (UBUNTU)

**Installation Procedure:**

UBUNTU CD is bootable. In order to boot from the CD you need to set the boot sequence. Look for the boot sequence under your BIOS setup and make sure that the first boot device is set to CD-ROM Drive

**Step 1:** Boot the ubuntu cd-rom and select the language for installation



**Step 2:** select installation type in the welcome screen select “install ubuntu”



### Step 3: Preparing to install Ubuntu screen



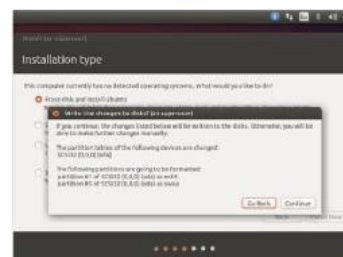
### Step 4: choose installation type

Choose Erase disk and install Ubuntu (i.e. it will format the entire drive and install the OS) to go with the default partitioning and continue to next step else go to step 6



### Step 5: confirm the auto partitioning

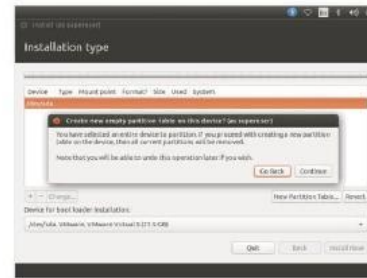
note: 2 new partitions will be created  
partition #1 as ext4 : this is used as a  
file system partition #2 as swap: this  
is used as a virtual memory



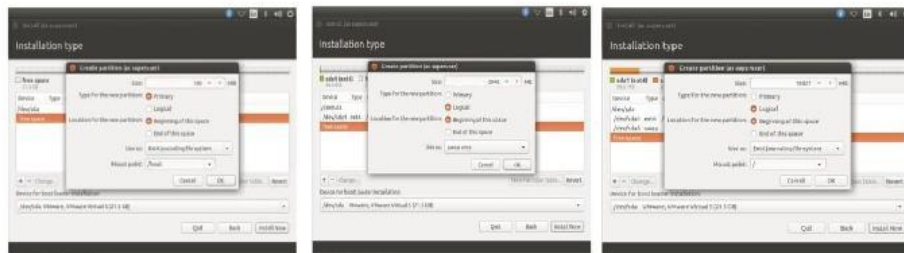
### Step 6 : Custom partitioning



## Step 7 : Create new empty partition table



## Step 8: partition scheme



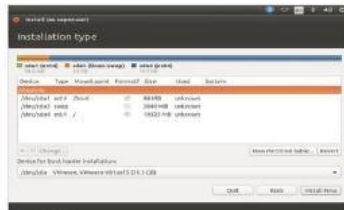
Partition scheme will be like below:

/boot – 100MB

swap – 2048MB

/ – Remaining (19GB)

**Step 9:** Review your partitions and click on install now and Confirm the partition scheme



**Step 10:** In the next couple of screens, the in system specific details

- Select your location
- Select your keyboard layout

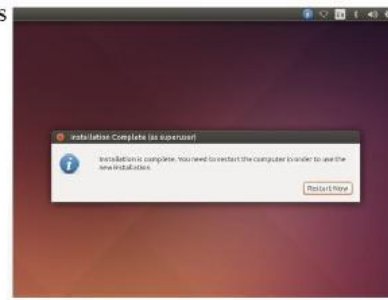
**Step 11:** Enter User login details



**Step 12:** The installation process starts by first copying all the files to the disk partitions created and then the installation and configuration of services takes place

Wait for the installer to finish the installation process

**Step 13:** Reboot the system and login



**Step 14:** boot the upgrade ubuntu cd rom and select the upgrade option when the installer detects previously installed version of ubuntu



**Result:**

Thus the LINUX operating system has been installed and upgraded.

|                 |                                                                      |
|-----------------|----------------------------------------------------------------------|
| <b>Exp.No:9</b> | <b>INSTALLATION OF ANTIVIRUS AND CONFIGURE THE ANTIVIRUS (AVAST)</b> |
| <b>Date:</b>    |                                                                      |

**Aim:**

To install and configure antivirus

**Procedure:**

**Step 1:**Get the installer file for the antivirus from home website

**Step 2:** Run the setup.exe file for the same



**Step 3:** license agreement and continue the installation



**Step 4:** wait for the installer to finish



### Step 5: Select your level of protection



### Step 6: Custom settings



#### Step 7: file scanning



#### Result:

Thus the antivirus has been installed and configured to provide security.

|            |                                                     |
|------------|-----------------------------------------------------|
| Exp.No: 10 | <b>INSTALLATION OF PRINTER AND SCANNER SOFTWARE</b> |
| Date:      |                                                     |

#### Aim:

To install printer and scanner software.

#### Procedure:

### Setting up or installing a computer printer

A computer printer does not work until you install the included drivers and software. If you have lost the CD for your printer, you can download the drivers for your printer and use the drivers to install your printer. A listing of printer manufacturers and links to their associated drivers pages are on our printer driver page.



<http://www.computerhope.com>

### Connecting the printer to the computer

#### USB cable and port



<http://www.computerhope.com>

Connect the printer to the computer either using a USB cable, parallel port cable, or SCSI cable and then connect the power plug to a power outlet. Today, most all home computer printers are using a USB cable similar to the example picture.

**Tip:** If this is a network printer, connect the printer to a wireless network or the RJ-45 connection.

### Setup printer and install software

Every printer should come with the software used to install a printer in Windows or your operating system.

1. After everything has been plugged in turn the computer on.
2. Insert the CD that came with the printer. If the CD does not automatically start, Open My Computer, double-click on the CD drive, and then click the Setup or Install file. If you have downloaded the drivers, run the downloaded setup file.
3. Follow the installation wizard and once completed your software is installed.
4. Test the printer to make sure it is working.

### **Installing a printer only using the drivers**

If you only want the printer to be installed and none of the extra software programs you can only install the printer driver by following the steps below.

**Tip:** A listing of printer drivers and software is on our printer driver page.

**Note:** If you have installed the printer doing the above steps these steps should not be necessary unless you encountered errors.

1. With the printer connected and on open the Control Panel.
2. In the Control Panel double-click the Printers or Printers and Fax icon.
3. In the Printers window, click the Add a printer icon.
4. After completing the above steps, you should see the Windows Printer Wizard. Click **Next** to start the wizard.
5. Next, you have the choice of installing a Local or Network printer. If the printer is connected to your computer choose Local printer attached to this computer and click **Next**.
6. When prompted for the location of the printer drivers, browse to the directory of your drivers or point it to the printer CD.

### **Testing the printer**

After the printer is installed, you can use Windows to print a self-test page to help verify the printer is working.

Microsoft Windows users

1. Click Start, Settings, and open Control Panel.
2. Double-click the Printers or Printers and Fax icon.

3. Right-click on the Printer you want to test and click Properties. If you do not see your printer, your printer is not installed.
4. In the Printers Properties window, click the Print Test Page button.
5. If the printer can print a test page, your printer is installed and setup properly. However, if you are unable to print in other programs the program you are attempting to print from has issues.

### **Installing Scanner**

To install a scanner follow the steps below:

- **Parallel Port Scanner**

1. Shutdown system.
2. Hook parallel connector to printer port of your computer. If you have a SCSI scanner, or USB simply hook into one of those ports.
3. Unlock scanner head. This is usually done underneath scanner or on sides by power switch.
4. Plug in power for scanner boot system up Windows will recognize new device and hardware manager will appear.

- **SCSI Scanner**

1. If you have a SCSI scanner you may already be familiar with ID settings, terminator plugs, and anything else that goes along with the chain. First I want to cover installing the SCSI Adapter Card.
2. Make sure and refer to your adapters documentation for jumper settings. You will want to set the jumpers if any before we install the adapter.
3. Turn Off PC and unplug from outlet
4. Remove case cover
5. Unscrew a slot on case for adapter card
6. Connect any necessary internal cables. (drives)

7. Align card with Bus slot and seat evenly. Be careful of any catching the cards ports on anything.
8. Tighten down card snug
9. Close case
10. Hook up power

**NOTE:** You may need to load drivers for your device. See: "Installing A Device or Software" below.

- **USB Scanner**

1. This one is very simple. You will simply plug in with computer running and install a driver for it.
  2. Exit all programs running.
  3. With only windows running plug in your scanner into the USB port
  4. Give windows a few seconds
  5. you should be brought to a hardware wizard
  6. Now you are ready to load a driver for it
- Note: To install software driver for the device, See: "Installing a Device or Software" below.

### **Installing A Device or Software**

Now there are many ways to install a device or software for the device. The most common method is through the control panel. I will show you the manual install under Windows and the Plug and Play way.

#### **Plug and Play-**

With windows detecting your new device you have installed you will be prompted for location of the device driver.

In windows you can choose to search for driver or review a driver list windows has set up. The best way to go about this is to have your manufacturers CD/Floppy disk ready and in a drive. Choose "Search for a better driver".

The next dialog box will give you a list of a floppy, CD-ROM, and so on. Choose the installation media type you are using and click "next".

Now when if you're unsure of the location of the software on the disk is usually in a INF. file type. Also look in any corresponding folders for example win95 or win 98 and even drivers. Refer to your software documentation if you can't find it. Windows will also tell you if there is information about your device in the next dialog box.

Now that you chosen the drive simply hit "ok" or "next".

If you found the right driver you will see a dialog box with the new information in it. Hit "next" or "ok"

Windows will build a database of needed drivers from the one you selected and you will need to reboot.

**Result:**

Thus the installation of printer and scanner have been installed successfully

|           |                                        |
|-----------|----------------------------------------|
| Exp.No:11 | DISASSEMBLY AND REASSEMBLY OF HARDWARE |
| Date:     |                                        |

**Aim:**

To Disassemble and reassemble hardware.

**Procedure:****Steps for Assembling.**

1. Setting the cabinet ready.
2. Preparing to fit the components.
3. Fitting the mother board.
4. Fitting the RAM, processor and cooler.
5. Installing PCI cards.
6. Fitting the hard disk and floppy drive.
7. Installing the CD ROM drives.
8. Connecting the ribbon cables.
9. Powering the drives and mother board.

10. Connecting the cables for the case front panel.
11. Final check.

**Getting the Cabinet ready:-**

1. Check how to open the cabinet and determine where to fix the components.
2. Determine if the case has the appropriate risers installed.

**Preparing to fit the Components:**

1. Network adapter drive.
2. Floppy disk drive.
3. Ribbon cables.
4. Hard disk.
5. CD-ROM Drive.
6. RAM
7. CPU
8. Heat sink / cooler / fan.
9. Mother board.
10. Screws.

**Fitting the Mother board.**

1. Line up the patch on the motherboard ( ps/l, USB, etc ) with the appropriate holes in the block panel I/O shield of the case.
2. Check the points where you and to install
3. Install them and make the mother board sit on them and fix screws if required.

**Mother board parts:**

1. ACR slot.
2. PCI Slot.
3. AGP Slot.
4. ATX Connectors.
5. CPU Fan.
6. Chipset North Bridge.
7. CPU socket.
8. Floppy.
9. System memory.
10. Chipset south bridge.
11. Panel connector.
12. Power supply.
13. IDE connectors.

**ATX Connectors:**

1. PS, Mouse.
2. Key board.
3. USB.
4. Parallel ( Prints )
5. Serial COM1.
6. Serial COM 2.
7. Sound.

**Fitting the processor:**

1. Raise the small lever at the side of the socket.
2. Notice that there is a pin missing at one corner, determine the direction to fit in the processor.
3. You should not force the CPU. When inserting it. All pins should slide smoothly into the socket.
4. Lock the lever back down.
5. Install the heat sink over it (Different type for each processor). Heat sink / CPU fan.

**Fitting the RAM:**

1. The RAM must be suitable for motherboard.
2. There are currently 2 types of RAM available.
  - a) SD RAM.
  - b) DDR RAM.
3. The mother board's chipset determines which type of RAM may be used.

**Installing the PCI Cards:**

1. Most of the cards are inbuilt these days.
2. NIC, Sound Cards etc. are fitted into PCI slots.

**Fitting the hard disk and Floppy disk:**

1. Place the floppy and hard disks in their slots.
2. Leave some space above HDD to prevent heat building.
3. Check the jumper configuration.
4. Fix the screws.

**Installing the CD-ROM Drives:**

1. CD-ROM drive is similar to installing a hard disk.
2. 1<sup>st</sup> check that the jumper configuration is correct.
3. Fix the screw.

**Connecting the Ribbon Cables:-**

1. Attach the long end of the cable to the IDE connector on the motherboard first.
2. The red stripe on the IDE cable should be facing the CD Power.

#### **Powering the driver and motherboard:**

Connecting the cables for the case front panel

1. SD, SPK or SPEAK: The loud speakers o/p. it has 4pins.
2. RS, RE, RS or RESET: Connect the two pin Reset cable here.
3. PWR, PW, PWSW, PS or power SW: Power switch, the pc's on (switch, The plug is 2 pin)
4. PWLED, PWRLED or Power LED: The light emitting diode on the front Panel of the case illuminates when the computer is switched on. It's a 2- Pin cable.
5. HD, HDD, and LED: These two pins connect to the cable for the hard disk Activity LED.

#### **Final Check:-**

Mother board jumper configurations are the settings for the processor operator.

1. Drive jumper settings, master/ slave correct?
2. Are the processor, RAM modules and plug in cards finally seated in there sockets?
3. Did you plug all the cables in? Do they all fit really?
4. Have you tightened all the screws in plug- in cards or fitted the clips?
5. Are the drive secure?
6. Have you connected the power cables to all driver?

**Powering up for the first time:**

1. Ensure that no wires are touching the CPU heat sink fan.
2. Plug your monitor, mouse and keyboard.
3. Plug in power card and switch the power supply.
4. If everything is connected as it should be
  - All system, fans should start spinning.
  - U should hear a single beep and after about 5-10 sec.
  - Amber light on monitor should go green.
  - You will see computer start to boot with a memory check.
  - Now check front LED'S to see if u plugged them incorrectly.
  - Check all other buttons.
  - Power afford change any wrong settings.

**Result:**

Thus the hardware has been disassembled and reassembled successfully.

|                  |                                              |
|------------------|----------------------------------------------|
| <b>Exp.no:12</b> | <b>TROUBLE SHOOTING AND MANAGING SYSTEMS</b> |
| <b>Date:</b>     |                                              |

**Aim:**

To troubleshoot and manage system power problems or no power.

**Procedure:**

1. Check power outlet or power plug.
2. Check power cable by checking it with multimeter or interchange with monitor cable.
3. Check smps switch that it is off or not.
4. Check all smps connections that they are inserted properly or not or remove unnecessary connections.
5. If system starts for sometime and then off then check cpu heat sink and fan are inserted properly, removing power connector from hard disk, floppy drive , cdrom, check motherboard capacitors.
6. Check front panel connectors such as power button are inserted properly on motherboard or not.
7. Check ram by inserting another ram.
8. Check smps by replacing it with another working smps.
9. Check cmos battery or insert another battery.
10. Check motherboard.

**Display problems**

1. First of all check that whether monitor or cpu is faulty by starting the system and click on numlock key. If it is on and off continuously by clicking then problem is in monitor data cable, display card, monitor color settings, cmos battery weak or dust in ram. If it is not changes than problem is in cpu.
2. For problem in cpu first of all check ram by removing dust from ram, insert into another slot or replace with another working ram or cleaning the ram slots from isopropyle, thinner or petrol.
3. Check cmos battery voltage (3.35v dc), clear the cmos settings or replace with another cmosbattery.
4. Check smps by replacing with another working smps.

5. Check all the smps connections, cables connections, check whether all cards are inserted properly in slots or remove all unnecessary connections leaving only smps connections and then attach all cards and cables one by one.
6. Remove motherboard from cabinet and then check display by attaching only smps, motherboard, cpu, ram, keyboard and power cable outside and starts the system by shorting the power button on m/b by screwdriver. if display comes then check it for 5-6 times and then inserted into cabinet before checking that anything in cabinet is shorting the m/b or keep the foam sheet or paper on cabinet.
7. Check cpu by replacing with another working and compatible cpu or refreshing the cpu by removing cpu, ram, cmos battery from m/b and the on the system for 10-15 minutes, then attach all these and then starts the system.
8. Shorting all the capacitors on m/b from screwdriver.
9. Replacing the bios chip which is compatible or same.
10. Check the motherboard.

#### **Hanging problems**

1. First of all check cpu fan and heat sink that whether they are connected properly.
2. Check ram by inserting into another slot.
3. Check smps that whether they are not providing required voltages.
4. Remove all unnecessary cards and then check that may be any card is faulty .also replace the hard disk cables.
5. check operating system that any file is corrupted or not, any software that creating problems by removing the unnecessary software, delete all temporary files and files that are not needed, defragmenting the hard disk or removing icons from the startup by typing msconfig at run and then click on startup and uncheck all unnecessary applications or start the system in safe mode and then remove all the drivers and then restarts the system.
6. Check for viruses.
7. Format the partition and reinstall the operating system.
8. Check hard disk for bad sectors.

9. If system hangs after inserting the cdrom or floppy disk then check whether cdrom or floppy disk is faulty or cd drive and floppy drive has problem.
10. Check motherboard capacitors.

#### **Hard disk problems**

1. If hard disk is not detected then check hard disk cables, attach hard disk cable on different hard disk ports, check master slave condition or attach one device on one cable. Interchange hard disk and cdrom cables.
2. Go to cmos setup screen and then detect the hard disk manually by clicking on hard disk auto detection or go to standard cmos setup screen and click

Enter on all four options such as primary master, secondary master etc.

1. Make the drive master if it is slave.
2. Check power connector by attaching another power connector or check logic card by attaching another compatible working logic card.
3. If mbr is corrupt or we can't create any partitions then give the command "a:\>fdisk/ mbr" to repair the mbr or restore the mbr from utility softwares.
4. Check hard disk for bad sectors by slow formatting the partition or with part utility software and then block the bad sectors.
5. if operating system is not installed then check hard disk for bad sectors, check whether partition is active and primary or not, or whether partition file system is compatible with o/s or not. Then check the ram.
6. If "tic tic tic" sound comes from hard disk then hard disk media has problem.

#### **Cdrom/cd-writer/combo/dvd-writer problems**

1. If cdrom is not detected then check cables, ports, master slave condition, manually detect in cmos setup, check logic card, and check power connectors.
2. If cd is not read then clean the lens from cotton, lens cleaner cd or change the cd drive head lens with another compatible lens head.
3. If tray is not in and out properly then clean the cd drive dust, tray corners with grease, change tray belt.

4. If picture is not clear or picture is running very slow then increase the cd rays by adjusting the small screw near the cd lens.
5. If cd is not write but read in cd-writer then uninstall and reinstall the compatible cd writing software such as lg Nero with lg cdwriter.
6. If DVD video disk is not played in dvd drive then install the DVD playing software such as power DVD, win DVD.
7. If video is not clear then install the latest directx software such as directx 9.0c.

#### **Sound related problems**

If there is no sound then check speaker is on, speaker volume is high, lead is connected on proper port in a pc, and volume is not low from volume properties and from software in a pc.

1. Check from device manager that sound driver is properly installed or remove and reinstall the proper driver.
2. Data cable of sound card may be connected wrong side.
3. Remove and reinstall the sound playing software.
4. Insert the sound card in another slot and remove the driver from safe mode and reinstall the proper driver.
5. Check whether onboard sound is disabled from the cmos settings or from m/b with the help of jumpers.
6. If we use sound card and there is also onboard sound then disabled the onboard sound from cmos for proper working.
7. Format and reinstall the operating system and then install the actual driver.
8. If sound not comes in audio cd but comes in mp3 songs then attach the audio cable on m/ b with cdrom.
9. Insert another working sound card and then install its drivers.
10. If sound comes before 2-3 days but not now, then in win xp, 2003 restore the system to an earlier state with system restore utility.

#### **Mouse problems**

1. If serial mouse is not detected then remove its driver from device manager in safe mode and restart the system otherwise remove the lmouse.vxd key entry from registry. Check mouse on other system. If port is not onboard then check its cable connections on m/b that they are connected wrong side or change the cable. If it is 1 by 1 cable, attach 4 by 5 cable or vice-versa. Check if serial port is disabled from the cmos setup. If ps2 mouse is not detected then remove and reinstall its driver, check if ps2 port is not disabled from the cmos, check ps2 port cable connection or replace the cable. if USB mouse is not detected then install its driver in win98, interchange USB ports, check if USB port is not disabled from the cmos otherwise check the USB port cable connection .if all these not works then check the pins on mouse cable or attach another compatible cable.
2. If mouse not rotates properly then clean the dust from cotton buds in rollers.
3. If wireless mouse not detected then check sensor connections battery and reinstall the drivers.

### **Keyboard problems**

If k/b is not detected then check its connections, check converter if attached, replace the cable with same compatible cable. Also check onboard k/b controller by inserting k/b in another system. If USB k/b is not detected then check whether USB k/b legacy support is disabled from the cmos and also check its drivers from device manager. If some keys are not working properly then remove the dust from keys or open the k/b and clean the keys or replace with other working key. In mechanical k/b de-solder the bad key and soldered the other working key. If wireless k/b is not detected then check the sensor connections battery or uninstall and reinstall the drivers again.

### **Modem problems**

If internet is not connected then check modem settings such as diagnose the modem, uncheck wait for dial tone before dialing, check tone or pulse dial, check dialing properties, remove & recreate the dial up connection again, check whether username or password and phone no. is correct check phone line connected to the modem port, check modem by giving mobile phone no. in dial up connection and then click on connect. Otherwise remove the drivers from safe mode and reinstall the drivers & make its settings again. Otherwise attach the modem in different slot. Check whether username and password is correct by giving bsnl or sify

registration username & password to check. Also check whether phone line has dial tone or not by attach the line to the phone and check dial tone.

If mobile phone modem is not connecting then uninstall and reinstall its driver and software, check cable, check username & password, check mobile phone settings such as baud rate, check whether internet service is active from phone . Also check serial and usb ports where cable is connected such as com1 in serial cable or whether ports are disabled from the cmos. Otherwise call the call centre.

If broadband internet connection has problem then check all its cable connections, check username & password, recreate dial up connection, check whether phone line has some disturbance.

#### **LAN problems**

Remove and reinstall the driver again, check ip address subnet mask, workgroup name, services & protocols, log on to the computer from computer network name, check the cable connectors or cables. Otherwise change the card slot and reinstall the driver after removing old drivers from safe mode.

#### **Memory problems**

1. If system gives continuous long beep on starting the system then check for rams.
2. If blue screen or fatal error is displayed on screen then first format the partition and install the o/s else clean the ram slots or change the ram .this also applies if windows protection error is displayed on the screen.
3. If o/s is not installed properly and it gives unknown errors while installing then change the ram.

#### **CMOS password breaks or default the CMOS settings methods**

1. Remove the battery, power cable from smps & then on the system without battery after 4-5 minutes. Then insert and save the settings after settings come to default.
2. Short the clear cmos pins on m/b from jumpers or screwdriver after turn off the system.
3. Press "f and j" key together and then turn on the system to make default the CMOS settings.
4. Remove the setup password from cmos software.

5. remove the setup password from debug command in win98:-

```
c:\>debug  
-o 70 2e  
-o 71 ff  
-o q
```

### **Post messages**

1. 1xx = system m/b failure
2. 101 = interrupt failure
3. 103 = timer interrupt failure
4. 109 = dma test error
5. 161 = cmos battery fail
6. 164 = memory size error(run cmos setup & configure the memory bus speed & memory size)
7. 2xx = (any number starts with two). Problem with memory. One or more partition of ram is bad.
8. 201 = memory test failed. One or more partition of ram is bad.
9. 3xx = this is the problem of keyboard.
10. 301 = keyboard error (any key is pressed during the post on booting). You will see anyerror message or any beep continuously.
11. 4xx = this is a problem of monochrome display problem
12. 5xx = color video problem.
13. 6xx = floppy disk system problem.
14. 601 = floppy disk error (floppy adapter or floppy drive failed).
15. 17xx = hard disk problem (the hard disk information may not be set correctly or the disk adapter can't communicate with the HDD).
16. 1780 = IDE one drive failure or primary drive failure. (IDE one drive controller is not functioning). The hard disk is not configured properly or the controller is not installed correctly

### **Post Audio Messages**

1. No beep or nothing happen: - power supply bad or not connected.
2. Continuous beep:- power supply bad or any key of keyboard pressed.
3. One long & one short beep: - system board failure.
4. One long beep & two short beep: - display card not connected or loose or failed.
5. One short beep with blank screen: - display card problem. Display card not set properly or damage.
6. One short beep with no beep: - floppy drive adapter is failure.
7. Two short beep:- ps2 configuration errors
8. Long beep continuously: - RAM problem. RAM is faulty. RAM is failed or loose.

## **GENERAL ERRORS**

### **1. Partition made but no partition gets detected:-**

- (i). May be partition hides.
- (ii) Partition creates through dos bootable floppy but system boot with win 98floppy.
- (iii) Partition creates with win98 bootable floppy but boots with dos bootable floppy.
- (iv) Logical partition ntfs or non-dos or hpfs and cdfs.

### **2. Wrong display driver loaded:-**

- (i) Windows protection error.
- (ii) Windows corrupt.
- (iii) System does not booting in normal mode.

### **3. While installing windows system hangs:-**

- (i) CD is damaged or corrupt.
- (ii) RAM problem.
- (iii) Bad sectors in the hard disk.
- (iv) Partition problems.
- (v) CPU fan problem or CPU heated.

### **4. System hangs after c:\>prompt:-**

- (i) RAM problem.
- (ii) MBR is corrupt.
- (iii) FAT problem.
- (iv) Bad sectors in the hard disk.
- (v) Virus in the system.
- (vi) Boot record is modified or corrupted.

**5. System working after one hour gives the beep:-**

- (i) CPU overheated.
- (ii) Motherboard heat up or motherboard damage.

**6. HARD DISK protection error:-**

- (i) In the CMOS setup hard disk protection error is enabled.

**□error reading fixed disk drive (error shows after FDISK):-**

- (i) May be data cable is not connected properly or replace the data cable.
- (ii) MBR problem or MBR is corrupt
- (iii) Run at prompt a:\>fdisk /mbr.
- (iv) Run disk manager and use the zero fill formatting to remove the problem.

**7. I/O error (error shows):-**

**Reason:** (i) IO.SYS file corrupt or missing.

(ii) CONFIG.SYS corrupt or missing.

**Solution:** (i) transfer the system files. A:\. SYS C:

**8. No room present or available (message shows):-**

- (i) System transferred by dos but partition made by windows.

**9. Partition made but system is not booting:-**

- (i) Partition is not active.
- (ii) Booting files are corrupted.
- (iii) In cmos first boot device set to cdrom and others are disabled.

- (iv) Operating system is corrupt.

**10. Fat16 partition is made from windows but the system transferred from dos & system does not boot:-**

**Reason:-** (i) cluster size changed for dos.

(ii) Boot record is changed.

**Solution:-** (i) create the partition through dos and transferred the system files.

**11. Primary hard disk fail or secondary hard disk fails (message shows):-**

- (i) Check the data cable.
- (ii) Check the jumper setting.
- (iii) Check the power supply connector.
- (iv) Check the cmos setting.

**12. A sector not found:-**

- (I) Use any utility to recovering the files.
- (ii) Use SCANDISK as utility.
- (iii) Use "low level format through dm".

**13. No fixed disk present (message shows):-**

- (i) Connect the power supply connect or properly.
- (ii) If data cable damaged then use another cable.
- (iii) Use the auto detect option in cmos to detect the HDD.
- (iv) Check the logic card of hard disk.
- (v) Check the different ports of m/b that these may be disabled in cmos.

**14. Drive was formatted accidentally:-**

- (i) Use an unformatted utility.
- (ii) Use the data recovery third party utility for recover data.

**15. Drive is active but computer is not booting from HDD:-**

- (i) Drive failure problem.

- (ii) Boot sector failure.
- (iii) MBR corrupt.
- (iv) DOS or WINDOWS system files are corrupt.

**16. Data head error (message shows) (in this error hdd or fdd can't read data):-**

- (i) Run the CHKDSK at C :>; check file structure & bad sectors & HDD problems.
- (ii) Using NDD or other HDD repair utilities to repair HDD & FDD.

**17. Hard disk configuration error (message shows):-**

- (i) Incorrect configuration setting in cmos setup.
- (ii) Detect the hard disk from cmos setup.
- (iii) Use "low level format" & "zero fill format" to repair the HDD.

**18. Hard disk controller failure:-**

- (i) Check in the cmos that the HDD controller option is enable or disable.
- (ii) Check the hard disk that is spinning or not.

**19. Invalid drive specification (message shows):-**

**Reasons:-**

- (i) invalid drive selected.
- (ii) Invalid media type reading drive abort, retry, fail.
- (iii) The partition made but the selected partition not is formatted.

**Solution:-**Format the partition and select the drive.

**20. Command interpreter is missing (shows like c>):- Reason:-** COMMAND.COM file is missing or corrupt.

**Solution:-** transfer the system files or copy the COMMAND.COM with floppy to hdd.

**21. Floppy disk error or floppy disk fail (message shows):-**

- (i) In the cmos there is wrong floppy setting.
- (ii) Power connector or data cable is not connected or loose or reverse connected.
- (iii) Data cable is faulty. Floppy drive is fault

(iv) Floppy disk port is disabled in CMOS.

**22. Display comes but when loading the windows or desktop no display onscreen:-**

Go to safe mode and go to **display properties ->settings** and set the colors to 16 and click on apply & restarts the system or remove the display driver from add/remove programs or remove from device manager and restarts the system.

**23. When loading win98 system hangs after when we click continue on first setup screen and the progress bar goes to 100%:-**

Remove floppy disk from floppy drive or disabled the floppy drive from cmos setup.

**24. If sound not comes from headphone:-**

- (i) Check headphone cable that it is connected at proper port in sound card.
- (ii) Double click sound icon in taskbar near date and then click on options and click check on microphone/headphone and click apply.
- (iii) Check headphone on another system.

**25. If colors are not proper on monitor or magnetic field build up due to keep speakers or any magnetic media near monitor:-**

- (i) Click on menu options on monitor where color settings are adjust and click on degauss to remove the magnetic field.

**26. File copying error after copying a few files with long filenames to the floppy disk.**

**Cause:** - root directory fills up due to use of multiple directory entries by each long filename. **Solution:** - create a folder on the floppy disk and copy files with long filenames into the folder.

**27. Can't access full capacity of hard disk over 8.4 GB:- Cause:** - BIOS is out of date.

**Solution:** - upgrade flash bios.

**28. Can't use drive capacity above 528 MB:- Cause:** - LBA mode

not enabled in BIOS. **Solution:** - Enable LBA mode.

**Result:**

Thus the troubleshooting and management of common problems in windows OS have been studied and verified successfully.



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