PNS SCHOOL OF ENGINEERING & TECHNOLOGY

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LAB MANUAL ON

COMPUTER HARDWARE & MAINTENANCE

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

5TH SEMESTER

PREPARED BY

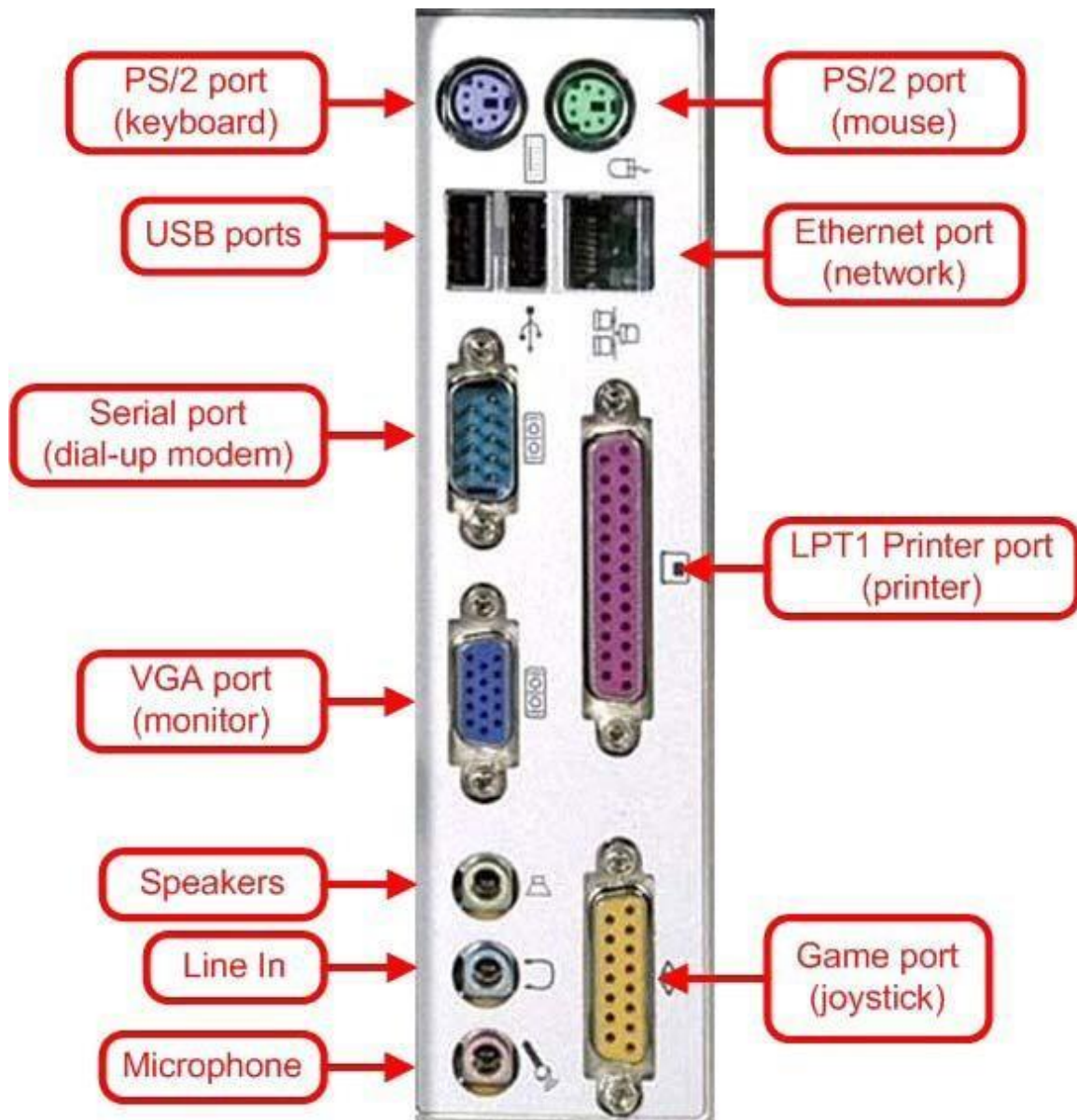**Er. PRIYABRATA SAHOO**

LECTURER IN COMPUTER SCIENCE & ENGINEERING

OBJECTIVE: - Identification of Hardware elements.

HARDWARE & SYSTEM SOFTWARE REQUIRED:-Personal computer which contains different types of ports,.

SOFTWARE REQUIRED:-Motherboard C D.

THEORY: - To learn about different ports and how to connect devices to them This diagram shows different ports available on the back panel of the PC

Parallel port (LPT parallel port):

As shown in the diagram parallel port with 25-pins can be used to connect a Parallel port printer. Previously dot matrix, ink jet, bubble jet printers etc were Connected to parallel port. Nowadays-parallel port is used to connect Dot-Matrix Printers.

Serial port:

As shown in the diagram serial ports with 9-pins protruding outwards can be used to connect modem but it can also be used for connecting mouse, provided serial port mouse is available.

VGA Port:

VGA port which has 15-pins is used to connect a monitor.

PS/2 Port:

Two 6-pin PS/2 ports are there, one is violet to which keyboard is connected and other is Light green to which mouse is connected

USB Port:

Connecting a USB device to a computer is simple — you find the USB connector on the back of your machine and plug the USB connector into it.
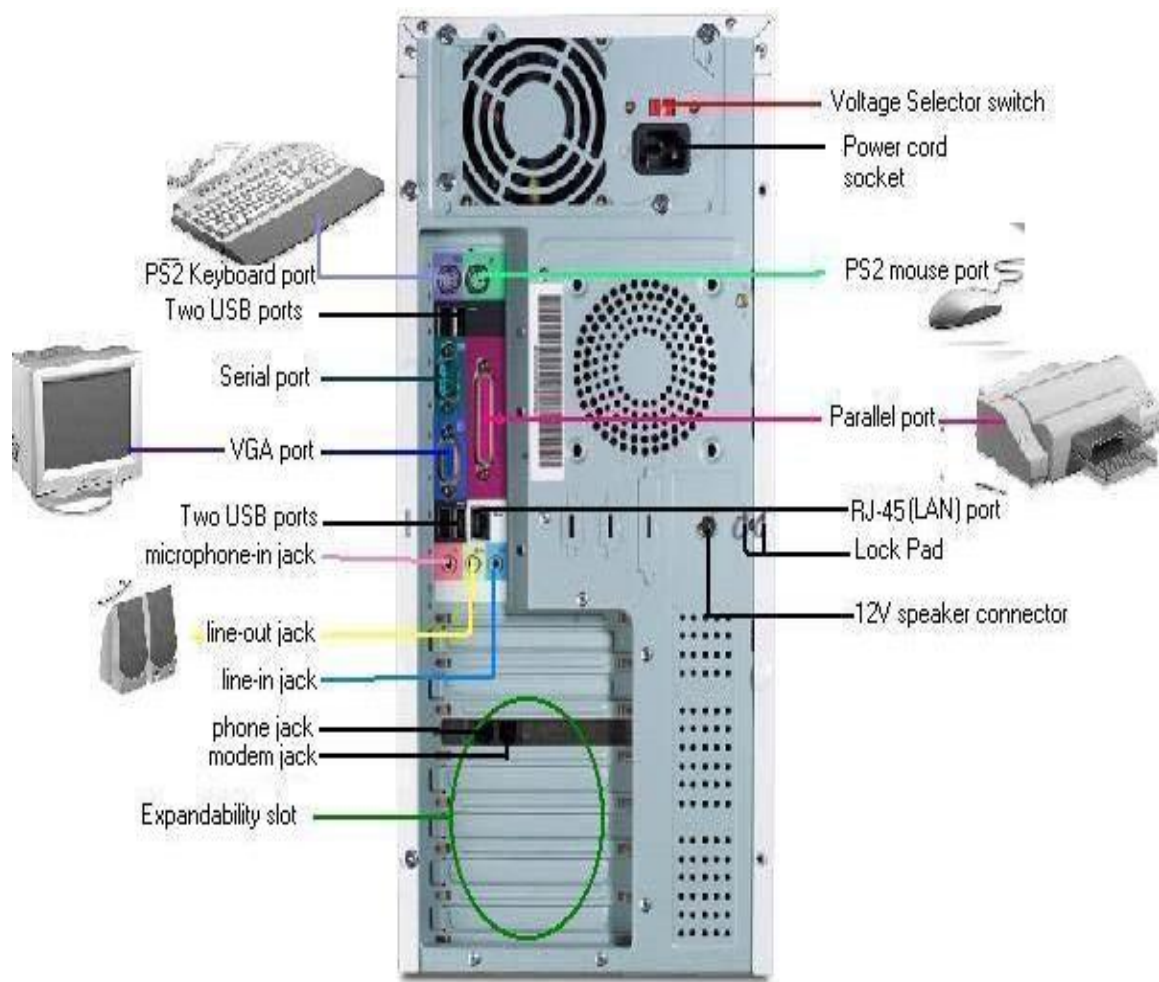USB pots are used to connect to Inkjet printers, Web Cams, Scanners etc.

Ethernet Port:

Ethernet port is used to connect a computer on network through RJ-45 connector
.
Game Port:

Game Port is used to connect joystick, which is usually used in video games
Three more ports are available for multimedia connections. Green port is used connect speakers, blue port is used to connect headphones and light Orange is used to connect microphone.

OBSERVATIONS:-The given below figure shows the interface between peripherals with theirs ports.

Voltage Selector switch

Power cord socket

PS2 Keyboard port

PS2 mouse port

Two USB ports

Serial port

Parallel port

VGA port

Two USB ports

RJ-45 (LAN) port

microphone-in jack

Lock Pad

12V speaker connector

line-out jack

line-in jack

phone jack

modem jack

Expandability slot

OBJECTIVE: - Identification of symptoms for failure:
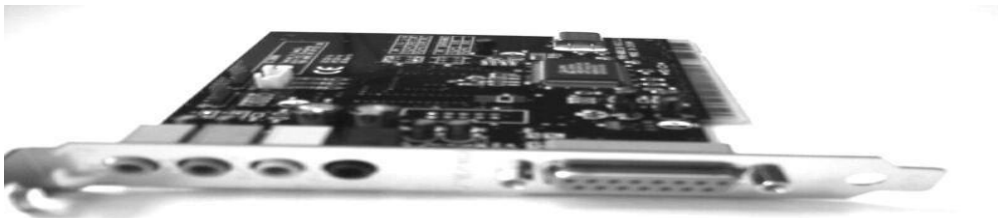
    a. Beep codes and error codes.

    b. Different symptoms of motherboard.

    c. Beep, error and symptoms failure of FDDI.

    d. Keyboard interface.

    e. Beep, error and symptoms of failure of keyboard.

HARDWARE & SYSTEM SOFTWARE REQUIRED:-Personal computer which contains different types of ports,.

SOFTWARE REQUIRED:-No software required.

THEORY:-   A sound card or audio board, which allows computers to output audio signals Through speakers and or headphones.
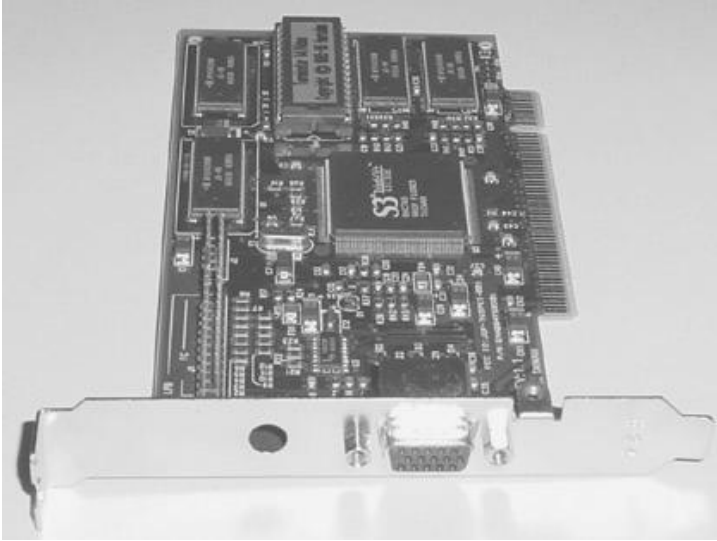
Sound Card

Video card

The video card is responsible for creating all that you see on your computer Monitor

VGA Card

Network card

This piece of hardware allows your computer to be connected to a network of Other computers (known as a LAN or Local Area Network).

Procedure to install a sound card

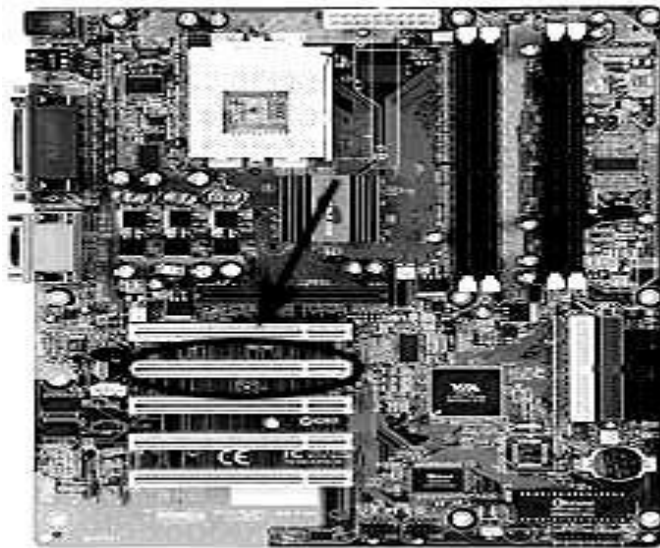In this example we are going to install a sound card.

NOTE: It is best not to install all your PCI hardware if you are building from scratch. Only install your video card and sound card right now. Once you have your operating system installed, turn off the computer and install the other components. This saves you from possible problems

when loading up for the first time.

1. Remove any unnecessary temporary metal plates. Only remove the metal plates from the slots you are going to use. If you do not remove these, you cannot install any PCI components. Most either unscrew or pop out.

2. <u>Locate PCI Slots on Motherboard</u>**.** Your PCI Slots should look similar to the ones in the image below.

3. <u>Line up component with PCI slot and install</u>**.** Simply line up the component with the slot and gently press down on both sides until it slides in place.

4. <u>Insert screw</u>**.** There is only one screw needed to secure each PCI component
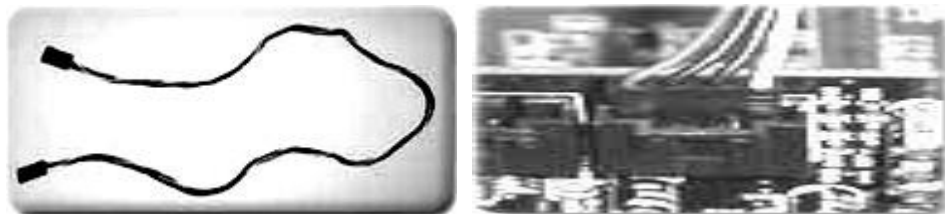
in place.

5. Give it CD Sound. Remember that audio cable from the CD-ROM drive?
Now we will connect the other end of it.

If you want to hear audio when play a cd in your CD-ROM, you need to connect
the CD-ROM to the Sound Card (or motherboard if your sound card is integrated
in) using the audio cable as seen below. Refer to your sound card owners manual
for correct placement.

If you did not purchase a sound card and you have one integrated into your
motherboard, refer to your motherboard owner's manual for correct placement

6. Repeat for any other components. Every component is different but as long
as its PCI compatible, it is installed the same way (except for the audio cable. It
is installed only on sound cards and motherboards.)

OBSERVATIONS:-All the cards are embedded properly and giving the expected output.

OBJECTIVE: - Study of different Anti-Virus software for example Norton, AVG, Quick heel etc.
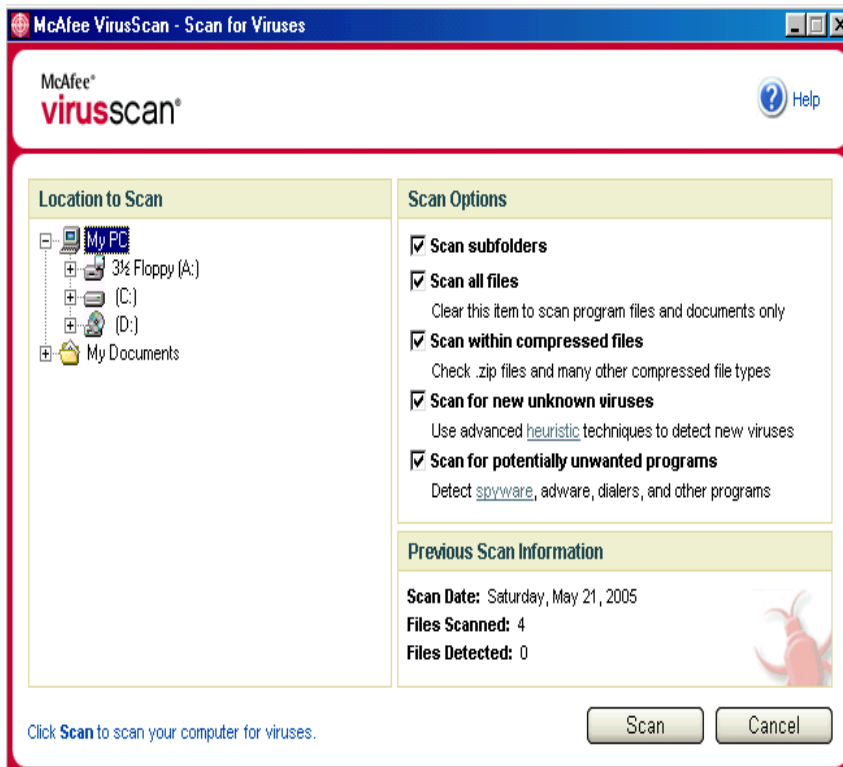
HARDWARE & SYSTEM SOFTWARE REQUIRED:-Personal computer which contains different types of ports,.

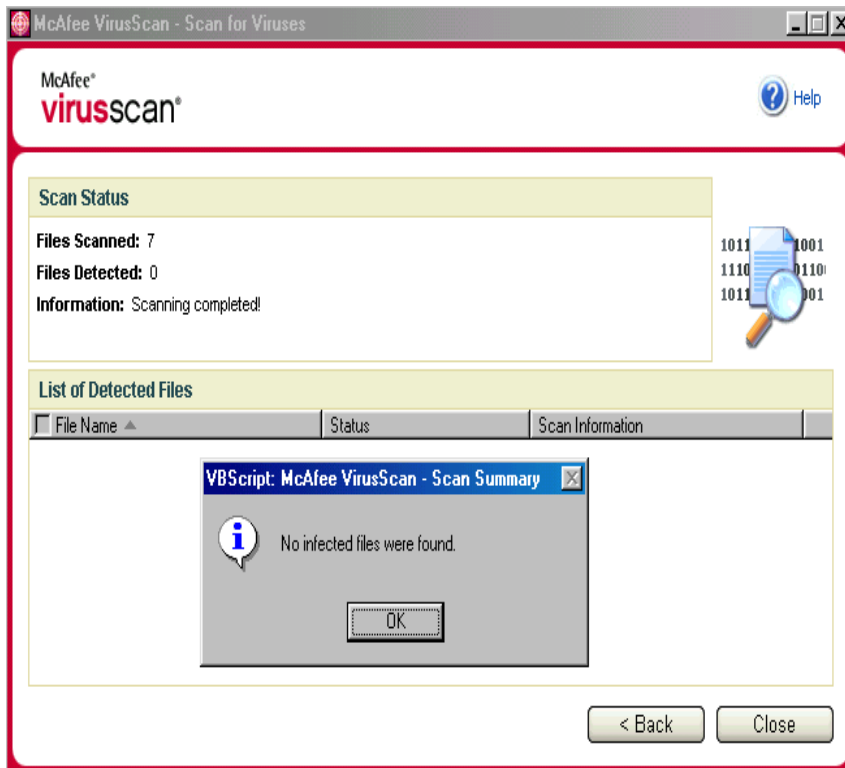**SOFTWARE REQUIRED:-** *McAfee antivirus.*

THEORY: -

Scan for Viruses

1. Click on *start button* and go to *programs or* click on desktop *icon of McAfee antivirus or* click on the McAfee *antivirus icon on status bar*.

2. Click on the options available for your use. Ex: 1) If you want to scan floppy, click on floppy option. 2) If you want to scan C drive, select and click on it.

3.It scans and reports if any infected files are present with several options

4. They are 1) Clean the virus. 2) If it cannot clean it will ask for "Quarantine or delete" the file.

5. This is the time when you have to download the patches form the vendor's site and install. And now again scan the system to clean the virus, which could not get cleaned in the previous attempt.

6. If this is not helpful to clean the virus. It is better to report to the Vendor.

OBSERVATIONS:-The antivirus software has scan the system and reports the presence/absence of the virus in the system.

<div align="center">**EXPERIMENT NO:-4**</div>

OBJECTIVE: - To Assembling a Computer.

HARDWARE & SYSTEM SOFTWARE REQUIRED:-Personal computer which contains different types of ports,

SOFTWARE REQUIRED:-No software required.

THEORY:- To enter into CMOS setup continue pressing Delete (Del) button while system is booting.

AMIBIOS setup main menu

AMIBIOS setup main menu
AMIBIOS HIFLES SETUP UTILITY – version 1.21© 1998 America1 Mega trends, Inc. All rights reserved
Standard CMO Setup
Advanced CMO Setup
Advanced Chipset Setup
Power Management
SetupPCI/Plug And Play Setup
Peripheral SetupCPU Configuration
SetupHardware Monitor
SetupAuto-Detect Hard Disks
Change User Password
Change Supervisor Password
Auto Configuration With Optional Settings
Auto Configuration With Fail Safe Settings
Save Settings And Exit
Exit Without Saving

Standard CMOS Setup for changing time, date, hard disk type , etc
Esc:Exit : Sel F2/F3: Color f10 : Save & Exit

By choosing Advanced CMOS setup from the main menu you reach to this screen below.

\

```
┌──────────────────────────────────────────────────────────────────────────┐
│                                                                            │
│  AMIBIOS Setup –Advanced CMOS Setup© 1998 America1 Mega trends,            │
│  Inc. All rights reserved                                                  │
├────────────────────────────────┬───────────────────┬──────────────────────┤
```

Quick Boot	Enabled	Available options
Ist Boot	Floppy	⟶ Disabled
2nd Boot Device	Ide 0	Enabled
3rd Boot Device	CDROM	
Try Other Boot Device	Yes	
Initial Display Mode	BIOS	
Display Mode At Add-On Rom Init	Force BIOS	
Floppy Access Control	Read/Write	Esc: Exit: Sel F2/F3
Hard Disk Access Control	Read/write	
S.M.A.R.T For Hard Disks	Enabled	Color
Boot Up Nim-Lock	ON	
Floppy Drive Swap	Disabled	Pgup/PgDn:Modify
Floppy Drive Seek	Enabled	F1:Help
Ps/2 Mouse Support	Enabled	
Primary Display	VGA/EGA	
Password Check	Setup	
Boot To Os/2 > 64 Mb	No	
Cpu Serial Number	Disabled	
L1 Cache	Writeback	

Quick boot: Set this option to enabled

1st Boot Device: This option sets the type of device for the first boot drives that
the AMIBIOS attempts to boot from.

2nd Boot Device: This option sets the type of device for the second boot drives
that the AMIBIOS attempts to boot from.

3rd Boot Device: This option sets the type of device for the third boot drives
that the AMIBIOS attempts to boot from

OBSERVATIONS:--The various features available in CMOS have been identified.

<h1 style="text-align:center">EXPERIMENT NO:-5</h1>

OBJECTIVE: - Formatting disk drives.

HARDWARE & SYSTEM SOFTWARE REQUIRED:-Personal computer which contains different types of ports,

SOFTWARE REQUIRED:-windows xp,/windows 98,windows vistas software.

THEORY:-

<u>Hard Disk Partitions</u>

<u>This procedure explains how to setup a **new hard disk**.</u>

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

Start the partition and format procedure by booting your PC using a Windows boot disk. Make sure you set the BIOS so that the boot sequence is set to detect the floppy disk first.

 If your system has no problems booting you will be presented with a Windows boot disk menu. This gives you the option to start the system with or without CD-ROM support.

At this stage you do not need the CD-ROM support, so choose the option to boot without CD-ROM support. You should end up in the MS DOS prompt A: (A drive).

From A: command prompt type **fdisk.** You will be presented with following message:

Your computer has a disk larger than 512 MB. This version of Windows
includes improved support for large disks, resulting in more efficient
use of disk space on large drives, and allowing disks over 2 GB to be
formatted as a single drive.

IMPORTANT: If you enable large disk support and create any new drives on this
disk, you will not be able to access the new drive(s) using other operating
systems, including some versions of Windows 95 and Windows NT, as well as
earlier versions of Windows and MS-DOS. In addition, disk utilities that
were not designed explicitly for the FAT32 file system will not be able
to work with this disk. If you need to access this disk with other operating
systems or older disk utilities, do not enable large drive support.

Do you wish to enable large disk support (Y/N) . . . . ? [Y]

Choose "Y" to enable large disk support.

You will now be presented with the FDISK main menu as shown below.

Microsoft Windows 98
Fixed Disk Setup Program
(C) Copyright Microsoft Corp. 1983 - 1998

FDISK Options

Current Fixed disk drive: 1

Choose one of the following:

1. Create DOS partition or Logical DOS Drive

2. Set active partition
3. Delete partition or Logical DOS Drive
4. Display partition information
5. Change current fixed disk drive

Enter choice: [1]

Press Esc to exit FDISK

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

```
               Create DOS Partition or Logical DOS Drive

Current fixed disk drive:  1

Choose one of the following:

1.   Create Primary DOS Partition

2.  Create Extended DOS Partition

3.  Create Logical DOS Drive(s) in the Extended DOS Partition



Enter choice: [ 1 ]
```

Choose option 1 - Create primary DOS Partition. FDISK verifies the integrity
of your drive and will ask you if want to use the maximum available size of
your hard disk to create the primary partition and set it active. To keep things
simple we will create one large partition. Choose "Y" to use maximum available
space. When the partition has been created successfully you will be notified by
the system. Your drive is now known as C: (C drive). Press "Esc" to return to
the menu. Press "Esc" again to exit FDISK. You need to restart your system for
the changes to take affect. Leave boot disk in the drive.

When the system reboots, choose start without CD-ROM from the boot disk
menu. While booting from floppy disk you might get error message like "Invalid
media type reading drive C" this is OK for this stage as the hard disk is not
formatted.

If you want to create extended DOS partitions, specify the size of the partitions
in the bytes for primary partition. And remaining space can be utilized to create
logical drives in the extended partition. Like D, E, F etc.

You will get a message saying "WARNING, ALL DATA ON NONREMOVABLE
DISK DRIVE C: WILL BE LOST. Proceed with Format (Y/n).

Don't worry about the message, as you do not have any data in the new hard
disk. Choose "Y". The format will proceed and would show you a progress
indicator. The time it takes to format a hard disk depends on the size and speed
of the drive. This could be around 5-30 minutes. Once the format is complete
you need to reset your system. You are now ready to install an operating system

OBSERVATIONS:--The system has formatted and partitioned successfully.
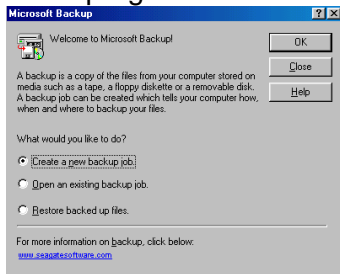
EXPERIMENT NO:-6

OBJECTIVE: - Creation of Logical Disk Drives
.
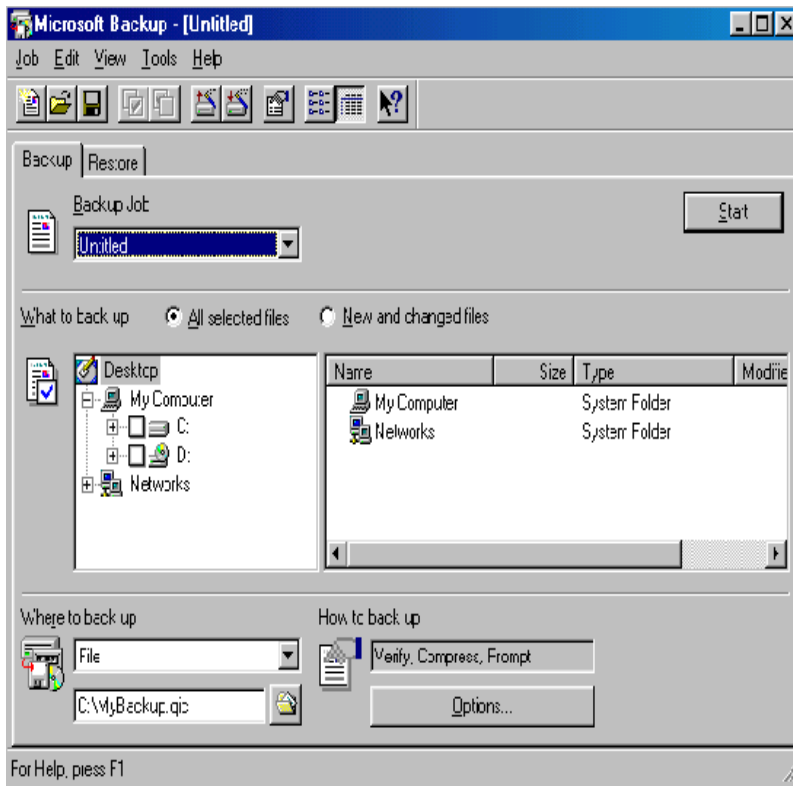**HARDWARE & SYSTEM SOFTWARE REQUIRED:-**Personal computer which contains different types of ports,.

SOFTWARE REQUIRED:-No software required.

THEORY: -
Go to programs ⟶ Accessories ⟶ System tools ⟶ Backup

Click Close then you get the screen which is shown below

<u>Creating a Backup Job</u>

1. On the **Job** menu, click **New**

The Backup window appears with no files selected and all settings set to Default

.2. Click All selected files or New and changed files.

3. Select the check boxes associated with the drives, folders, and files you want to back up.

You must make file selections before running your backup job.

4. Choose a backup destination in Where to back up.

5. Click **Options** to set your options.

6. Click a tab to view different option groups. Different options are available in the following tabs:
General tab
Password tab
Type tab
Exclude tab
Report tab
Advanced tab
7. On the **Job** menu, click **Save**.
8. To run this backup job now, click **Start**
Archival utilities
WinZip® is a tool to make working with Zip files and other types of archive files easier
Archives are files that contain other files, and Zip files are the most common archive format. Typically, the files in an archive are compressed. WinZip uses the term "Add" to mean "compress files and add them to an archive". "Extract" means "decompress files in an archive, creating separate files on a disk". Some people use the verbs "zip" or "pack" instead of Add, and "unzip" or "unpack" instead of "extract".
How to Zip a File:
Select any file and right click as shown below and click on add to zip file.
36 PC Haedware Lab Manual
2. Click on Add
Experiment:10 37
3.You will get a screen as shown below and icon of the corresponding Zipped file also appears on the desktop.
Extracting Zipped File
1. Double click on the icon on the file, which you want to extract. You will get the screen shown below.
38 PC Haedware Lab Manual
2. Select the file and right click on it and select extract as shown below.
Experiment:10 39
3. Specify the path where you want to save the file and click on extract.

This finishes your unzipping process.

EXPERIMENT NO:-7

OBJECTIVE: Installation of device drivers.

HARDWARE & SYSTEM SOFTWARE REQUIRED:-Personal computer which contains different types of ports,

SOFTWARE REQUIRED:-windows xp,/windows 98,windows vistas software.MS office 2003/2004.

THEORY:-To learn how to install system and application software. First let us learn how to install a system software i.e. Windows 98.

Windows 98 Installation

This is what you will need before installing windows 98.
1. Windows 98 CD.
2. Computer with CD-ROM Access.

Configuring your BIOS for the Install:

To find out how to access the BIOS please refer to your motherboard manual or the manufacturer of your computer. (The system bios can usually be entered on boot, usually by pressing the F1, F2, F8, F10 or DEL key. Make sure you save the settings before exiting. If you are unsure or don't want to enter the BIOS then just test the computer by putting the CD-ROM in the drive and rebooting the computer. This is the recommended way to install windows 98.

Starting the Setup:
1. Insert CD and restart PC.

2. Once the Windows 98 Setup Menu comes up choose option 2 (Boot from CD-ROM)

3. Then the Windows 98 Startup Menu will come up. Select Option 1. (Start Windows 98 Setup from CD-ROM).

4. Now your computer will install some drivers so please wait a few Moments.

5. Now a blue setup screen will come up. Press enter.

6. Setup then wants to do some system tests. Just press enter.

7. Scandisk will now run, please wait.

8. After ScanDisk completes Windows will copy a few important files for setup.

9. Now the graphical Windows 98 Setup Screen will come up.

10. Click continues and wait for the setup wizard to complete.

11. Now it will ask you in which directory to install Windows to. The default directory is just fine so click next.

12. Setup will now prepare the directory, please wait.

13. Setup will now check for installed components and disk space, please wait.

14. Setup will now prompt you what type of install. Choose typical if you have a desktop computer or portable if it is a laptop.

15. Windows will prompt you to install components, just choose continue.

16. If a network card is detected a network information screen will appear. Type in the required information and click next.

17. Select your country settings, United States should be chosen by default.

18. Now finally the main part of Setup is here. Setup will start copying files. This will take a pretty long time, be patient.

19. Once setup is done copying files Windows will restart automatically.

20. The Windows 98 Startup Menu will appear. Select option 1 (Boot from Hard Disk)

21. The Windows 98 booting screen will appear!

22. Now Windows will prompt you for user information, enter it and click continue.

23. Now the License Agreement. Read and if you agree click on "I accept the Agreement" and click next. If you select ""I don't accept the Agreement"
then setup
will end.

24. Now input your product key computer. Click next to continue.

25. Next click on Finish.

26. Setup will now finalize the hardware and install settings.

27. Setup will now install plug and play devices.

28. Your computer will restart automatically.

29. The Windows 98 Startup Menu will appear. Select option 1 (Boot from

Hard Disk)

30. Windows will start booting for the second time.

31. Setup will continue installing hardware.

32. Now setup will prompt you to enter in your time, date, and time zone. Once selected click on apply and then ok.

33. Windows will continue to setup Windows items.

34. The computer will restart automatically once again.

35. The Windows 98 Startup Menu will appear. Select option 1 (Boot from Hard Disk)

36. Windows will boot for the third time.

37. Windows will update system settings.

38. Now finally you have reached the Windows Desktop!

39. You also may need to install your hardware drivers. If everything is working properly then you shouldn't worry about them.
Enjoy your new freshly installed Windows

Now let us learn installing application software i.e MS-Office installation

MS OFFICE 2003 INSTALLATION

In order to install Microsoft Office 2003, simply begin by putting the Office CD in the CD or DVD drive. The XP operating system will begin the loading process and the software will ask if you want to install Office. Click Yes as usual. And then assent to the license agreement. You will then be asked for the 25 digit security code which we have made available to you. Type this in **exactly** as it has been given to you (Figure 1).

You will then be asked what type of installation you wish to perform. Please choose "Complete Installation" as indicated in Figure 2. The Complete Installation assures you that you have all the file converters necessary to read these documentsAfter you have chosen the Complete Installation, click next. You will get a review screen which should look like Figure 3. After you click the Install box the software should begin to install from the CD.
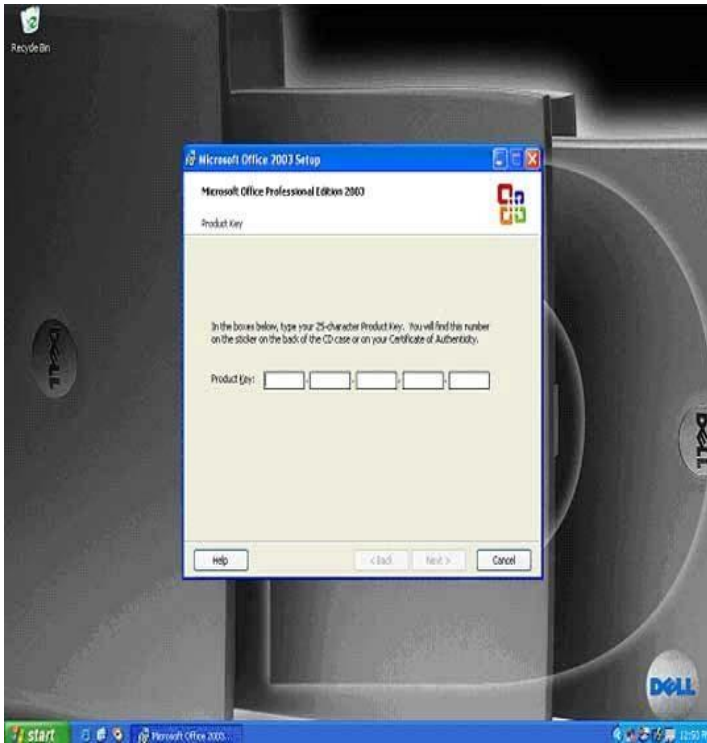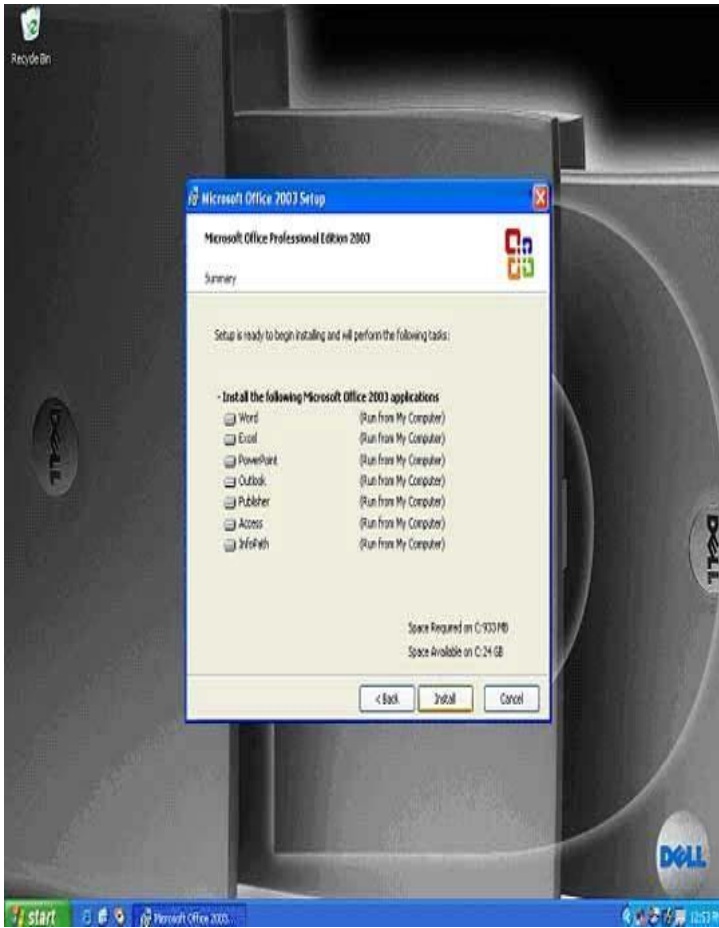
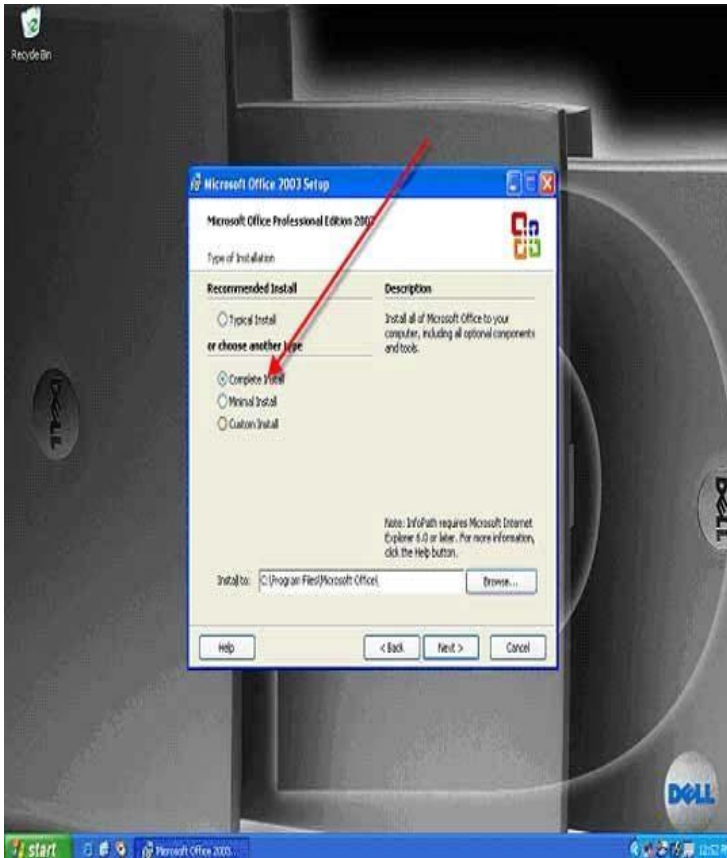**Figure 1 - Enter the MS Office security code**

Figure 3 - MS Office software review prior to installation

After MS Office installs, you will get a screen which will allow you to Check
the web for updates and Delete installation files (Figure 4). You will certainly
want to Check the web for updates (so check this box) and you may want to
Delete the installation files to save disk space (this is up to you). Click the
appropriate boxes and click on the Finish box. You will be directed to the
Microsoft Office Update website.

Figure 4 - MS Office installation last step
You certainly want to Check the web for MS Office updates now because you have the CD. Microsoft Office updates often require a CD and the CDs are only available through the Library and Computer Services. So save yourself the hassle and check for updates now.
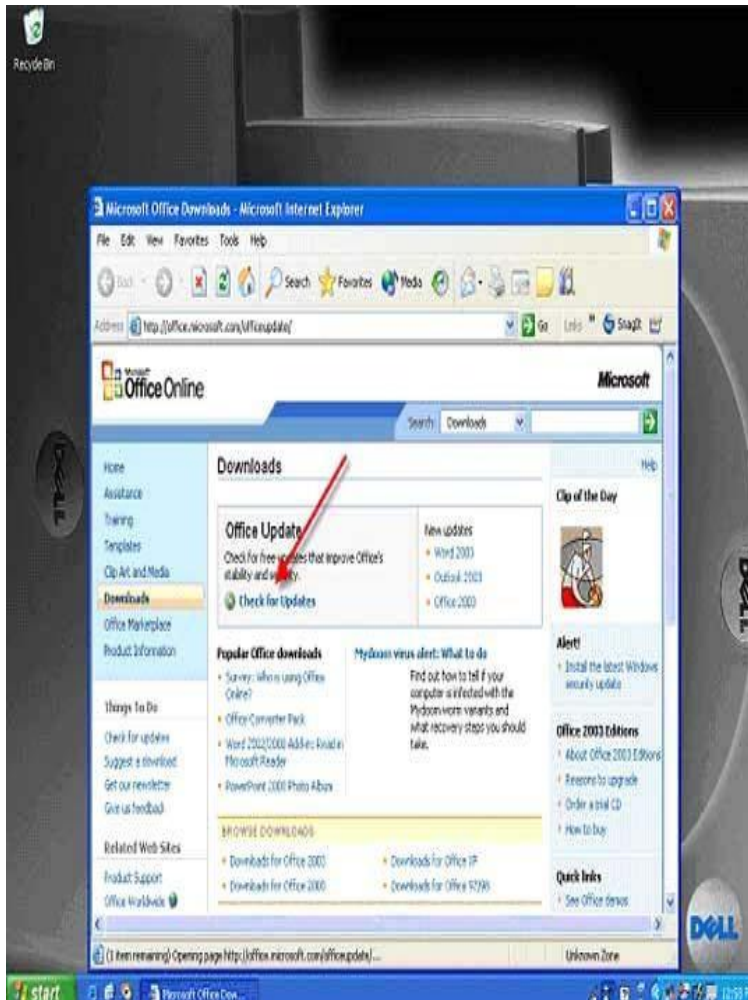
Figure 5 - The MS Office update website
The Microsoft Office update website currently looks like Figure 5.

Because you have not previously checked for Office updates, you will be asked to install the Office updated installation engine (Figure 6). Click Yes and install this on your computer (when you go back to the Office Update site, you will not be asked about nor do you need to reinstall this update engine). The update engine is a small piece of software which works with this website and will check Office on your computer to determine what components need updating.

The update list (Figure 7) will depend on exactly what release of Office 2003 you have installed and what updates are available subsequent to that release. Some of these updates need to be installed independently of the others. Often then can be bundled together so you can download a number of updates together and install them together. Click the updates you wish to install (we recommend installing all the security related updates and all the updates that are appropriate for your computer. If you don't have a tablet PC and there are updates specifically for this type of computer, you don't have to install them.) You can't go wrong by installing all the updates for MS Office. After you have checked the boxes of the updates you wish to install, click the Start Installation box. The updates will
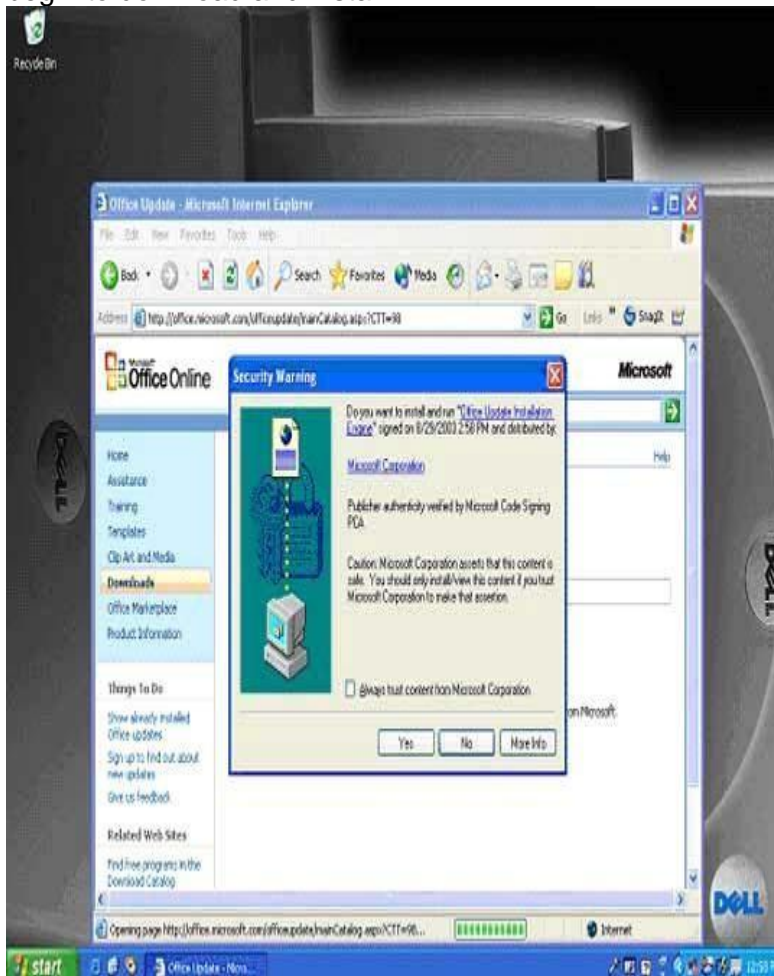
begin to download and install.

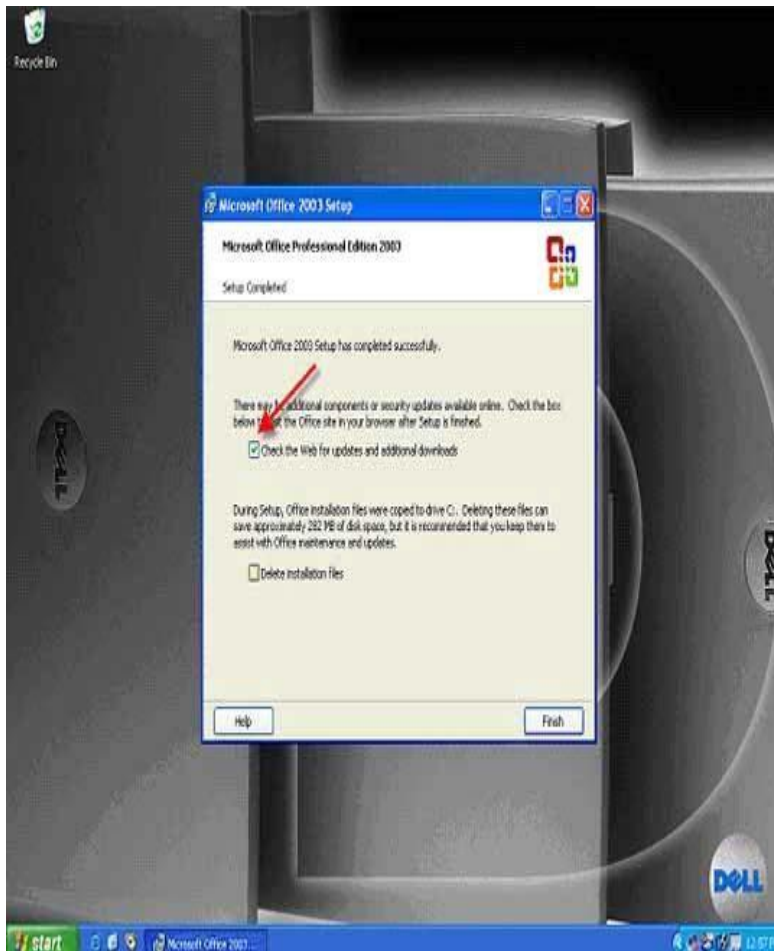**Figure 7 - The Office update installation engine.**

Figure 8 - Choose the updates you wish to install

After you have installed the updates successfully, the MS Office update site will provide you with a screen which tells you which updates have been successfully installed (Figure 8).
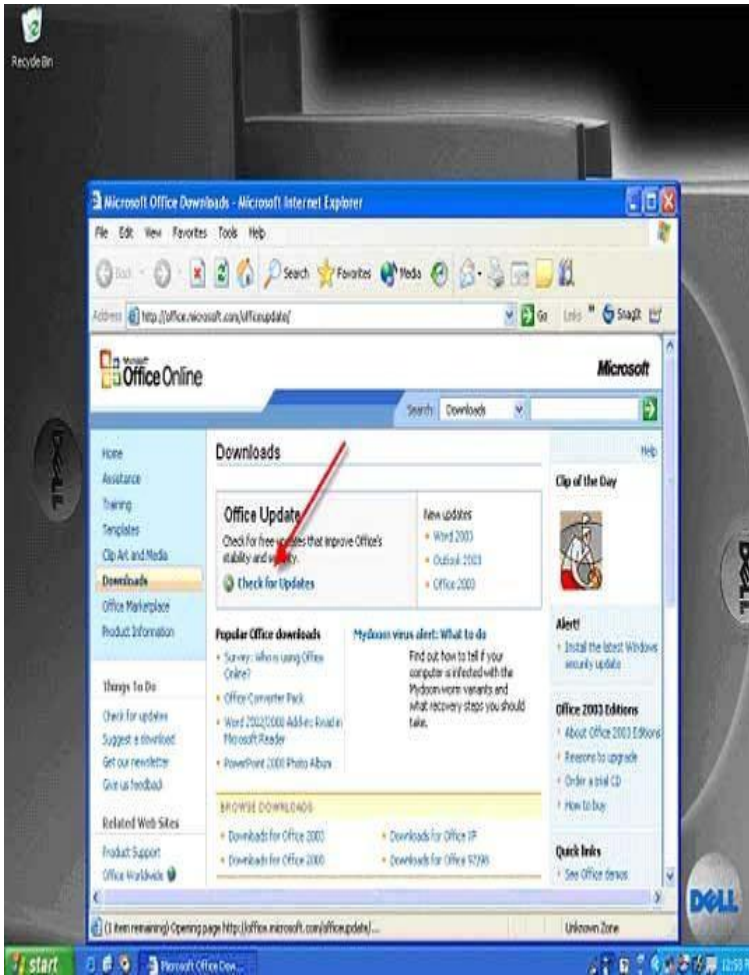
Figure 9 - Successful MS Office update installation

This finishes the process of installing MS Office

OBSERVATIONS:-- A windows 98 operating system and ms office 2003 have successfully installed in the system.
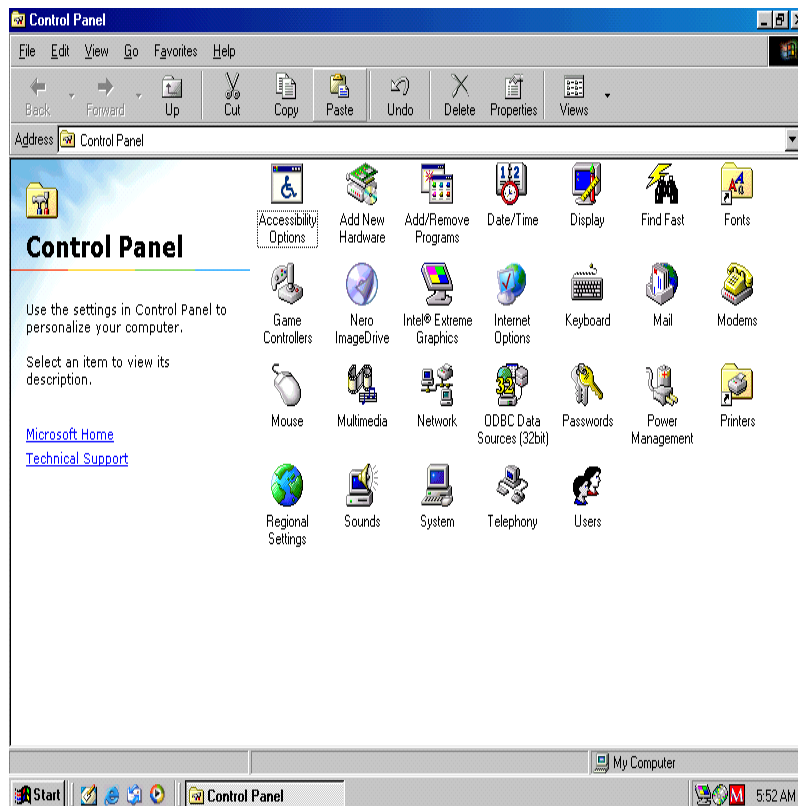
EXPERIMENT NO:-8

OBJECTIVE: - Understanding control panel settings.

HARDWARE & SYSTEM SOFTWARE REQUIRED:-Personal computer which contains different types of ports,.

SOFTWARE REQUIRED:-No software required.

THEORY: - To access a control panel go through the following steps below

Go to settings ⟶ select control panel

Figure below shows the options available in control panel.

Accessibility Options: You find keyboard, sound, display, mouse, and general settings available. Using this you can change the behavior of keyboard, mouse, sound, display and mouse.

Add New Hardware:
With this feature you can add new hardware to your computer.

Add / Remove Software:

With this feature you can add new software and remove existing ones.

Network:
With this feature you can add and remove Network Interface Card settings i.e

TCP/IP number, Domain name etc.

Printer:
With this feature you can add new printer software.

System:
This is one of the most important features in the control panel. This contains information about the whole computer. Software, Hardware etc. You can also find if all the hardware devises are fit properly through the Device Manager option.

OBSERVATIONS:-The various features available in the control panel settings has been identified.

EXPERIMENT NO:-9

OBJECTIVE: - Working with antivirus software (To learn how to use antivirus software and remove virus)