

# LAB MANUAL

## STUDENT VERSION

*for*

# COMPUTER SYSTEM HARDWARE LAB

(FOURTH SEMESTER, COURSE CODE: 4137)



**Department Of Computer Engineering**

**GOVERNMENT POLYTECHNIC COLLEGE, PERUMBAVOOR**

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## VISION AND MISSION

### Government Polytechnic College, Perumbavoor

**Vision:** Excel as a centre of skill education moulding professionals who sincerely strive for the betterment of society

**Mission:**

- To impart state of the art knowledge and skill to the graduate and moulding them to be competent, committed and responsible for the well-being of society
- To apply technology in the traditional skills, thereby enhancing the living standard of the community

### Department of Computer Engineering

**Vision:** Excel as a center of skill education in Computer Engineering moulding professionals who sincerely strive for the betterment of themselves and the society.

**Mission:**

- To impart state of the art knowledge, skill and attitude to the graduates and contribute to their sustainable development
- To merge technologies in the field of computer engineering with occupational skills, thereby improving the quality of living

## PEO, PO AND PSOs OF THE PROGRAM

### PROGRAM OUTCOMES

**PO1: Basic and Discipline specific knowledge:** Apply knowledge of basic mathematics, science and engineering fundamentals and engineering specialization to solve the engineering problems.

**PO2: Problem analysis:** Identify and analyse well-defined engineering problems using codified standard methods.

**PO3: Design/ development of solutions:** Design solutions for well-defined technical problems and assist with the design of systems components or processes to meet specified needs.

**PO4: Engineering Tools, Experimentation and Testing:** Apply modern engineering tools and appropriate technique to conduct standard tests and measurements.

**PO5: Engineering practices for society, sustainability and environment:** Apply appropriate technology in context of society, sustainability, environment and ethical practices.

**PO6: Project Management:** Use engineering management principles individually, as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities.

**PO7: Life-long learning:** Ability to analyse individual needs and engage in updating in the context of technological changes.

### **PROGRAM SPECIFIC OUTCOMES (PSOS)**

**PSO1:** Apply concepts and knowledge in the field of software systems, hardware and networking with concern for the society.

**PSO2:** Generate ideas from the knowledge of engineering specialization leading to professional growth.

**PSO3:** Apply knowledge and understanding of engineering principles to initiate entrepreneurship ventures.

### **PROGRAM EDUCATIONAL OBJECTIVES (PEOS)**

**PEO1:** Secure successful careers in hardware and software design, development, testing, maintenance and marketing.

**PEO2:** Acquire knowledge and competency in the domain to develop innovative, cost effective and socially acceptable solutions to engineering problems in a multi-disciplinary work environment.

**PEO3:** Develop strong fundamental knowledge that prepares them for professional careers/ higher studies with attitude for lifelong learning.

**PEO4:** Instill the attitude to be sensitive to ethical, societal and environmental issues while pursuing their professional duties.

**PEO5:** Possess leadership qualities and be effective communicator to work efficiently with diverse teams, promote and practice appropriate ethical practices.

## GENERAL INSTRUCTIONS

Rough record and Fair record are needed to record the experiments conducted in the laboratory. Rough records are needed to be certified immediately on completion of the experiment. Fair records are due at the beginning of the next lab period. Fair records must be submitted as neat, legible, and complete.

### INSTRUCTIONS TO STUDENTS FOR WRITING THE FAIR RECORD

In the fair record, the index page should be filled properly by writing the corresponding experiment number, experiment name, date on which it was done and the page number.

*On the right side page of the record following has to be written:*

- 1. Title:** The title of the experiment should be written in the page in capital letters.
- 2.Exp No: And Date:** In the top margin, experiment number and date should be written.
- 3. Aim:** The purpose of the experiment should be written clearly.
- 4.Principle/Theory:** Simple algorithm should be written
- 5. Procedure:** Steps for doing the experiment.
- 6. Program:** Simple working of the algorithm should be written.
- 7. Results:** The results of the experiment must be summarized in writing and should be fulfilling the aim.

*On the Left side page of the record following has to be recorded:*

- 1. Input:** Input of the program given
- 2. Output :** Output of the program
- 3. Design:** The design of the output (if necessary).

Exp No :

Date :   /   /

## **SAFETY PROCEDURES**

### **Problem Statement:**

The safety instructions are presented to the attention of the students as a mean of preventing accidents while performing experiments and activities in Software lab of the department .The purpose is to draw attention to the risks involved in lab activities to prevent human suffering and damage to equipment.

### **Safety in the laboratory:**

Working in the lab is not allowed without following electricity precautions displayed.

No individual work is allowed in the lab.

Laboratory in charge is responsible for the arrangements of your lab activities;

Listen carefully to his/her instructions and follow them.

### **To do and not to do:**

Inform the lab in charge about dangerous conditions and faults in the lab or nearby environment.

Do not do any action that may harm people or equipment in the lab.

Do not misuse any of the tools or instruments belong to the lab.

Strict discipline should be maintained in the laboratory.

Turn off cell phones before entering the lab.

At the end and beginning of laboratory, follow 5S procedures and leave the work table clean and tidy.

### **Electrical Safety:**

Consult Electrical Engineering section available in the campus for electrical safety queries.

The lab equipment is powered from electrical sockets installed on the tables.

Do not use equipment that is powered from a damaged socket.

Do not use equipment that is powered from flexible cable with damaged insulation or if it's plug is not assembled properly.

Do not repair or disassemble electrical equipment including replacement of fuses installed in the equipment.

Do not open the main fuse box, unless it is an emergency and you need to switch off main circuit breaker.

Be sure to turn off the power and remove the power plug from all equipment before working repairing or assembling.

Do not plug in or remove equipment while the power is on.

**Emergency Switches:**

The laboratory has circuit breakers, which is located in the main panel. Identify the place.

In an emergency condition, switch off circuit breakers immediately.

**Result:**

Familiarization of safety precautions performed

	Signature of Lab in Charge	Remarks
Readiness to do experiment		
Completion of Experiment		

## FAMILIARIZATION OF FRONT PANEL CONNECTORS AND SWITCHES AND FRONT SIDE AND REAR SIDE CONNECTORS

AIM:

To identify the front panel indicators and switches and rear side connector in a computer system.

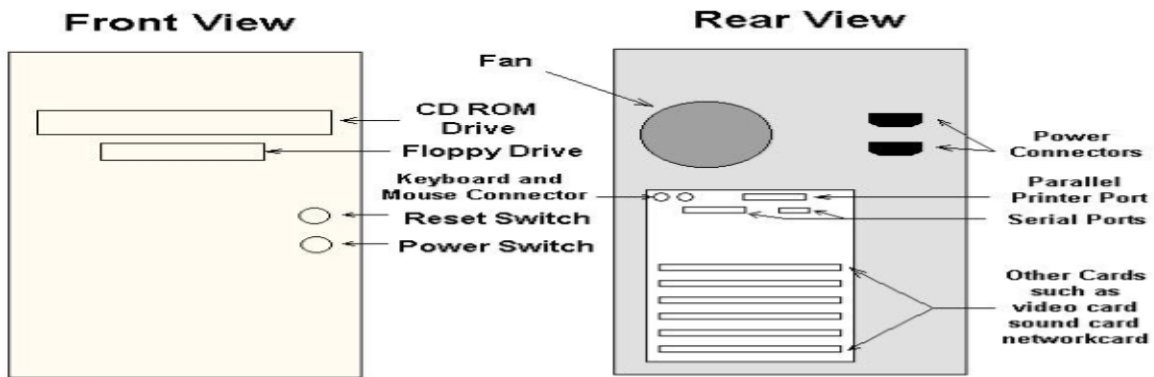
### COMPONENTS AND TOOLS

Computer with front, rear panel connection

PROCEDURE:

### TOWER CASE

A Typical Computer with Tower Case



### REAR SIDE CONNECTORS



PS/2 Port: accepts a PS/2 cable with a miniDIN connector, and is most often used to plug in a keyboard or mouse.

Serial Port: The serial port is used for peripherals such as mice, gaming controllers, modems, and older printers. It is sometimes called a COM port or an RS-232 port.

VGA Port: A Video Graphics Array (VGA) connector is a three-row 15-pin DE-15 connector. The 15-pin VGA connector was provided on many video cards, computer monitors, laptop computers, projectors, and high definition television sets.

USB Port: USB stands for Universal Serial Bus which allow USB devices to be connected to each other with and transfer digital data over USB cables.

Audio Jacks: An audio port on a *computer* is any receptacle or *jack* to which an *audio* device such as speakers, headphones or a microphone can be connected

Parallel Port: This interface is found on the back of older PCs and is used for connecting external devices such as printers or a scanner. It uses a 25-pin connector (DB-25).

Ethernet Port: An Ethernet port is an opening on computer network equipment that Ethernet cables plug into. An Ethernet port accepts a cable that has an RJ-45 connector.

## RESULT

Thus the front panel indicators and switches and rear side connectors in a pc are identified.

	Signature of Lab in Charge	Remarks
Readiness to do experiment		
Completion of Experiment		

Exp No : 03

Date : D D / M M / Y Y

**FAMILIARIZE THE COMPUTER SYSTEM LAYOUT MARKING POSITIONS OF SMPS, MOTHERBOARD, HDD, CD/DVD AND ADD ON CARDS**

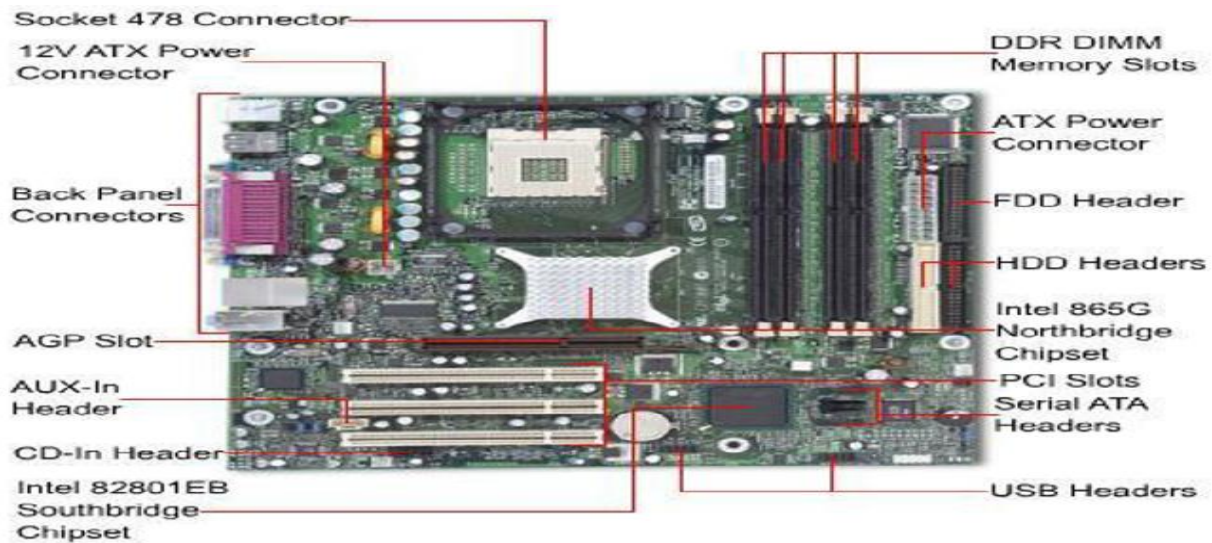
AIM:

To familiarize a computer system layout and mark the positions of Processor, Memory, SMPS, Motherboard, HDD, CD / DVD drive and add on cards To implement Data Constraints.

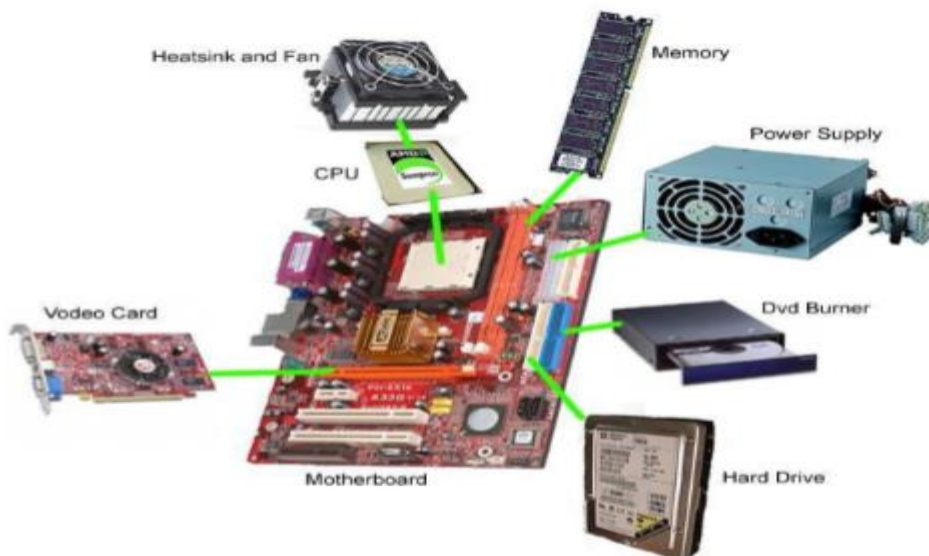
COMPONENTS AND TOOLS

SMPS, Motherboard, HDD, CD / DVD drive, processor, PATA/SATA Cables, different types of RAM, and add on cards.

PROCEDURE:



Mother board name : Intel 865  
Chipset (North bridge) : Intel 865  
South bridge : Intel 8280  
NIC chip : Reatek RTL 8100  
Graphic chip : Winbon W8362  
Audio chip : Realtek alc653



**Motherboard:** Motherboard is a printed circuit board into which all parts of the computer system are attached and gets power from.

**CPU:** A central processing unit is the electronic circuitry within a computer that carries out the instructions of a computer program by performing the basic arithmetic, logic, controlling, and input/output operations specified by the instructions.

**SMPS:** Switched Mode Power Supply is designed for obtaining the regulated DC output voltage from an unregulated DC or AC voltage.

**Harddrive:** hard disk is an electromechanical data storage device that uses magnetic storage to store and retrieve digital information using one or more rigid rapidly rotating disks (platters) coated with magnetic material.

**Memory:** Computer memory is the storage space in the computer, where data is to be processed and instructions required for processing are stored.

**Heatsink:** A heat sink is a passive heat exchanger that transfers the heat generated by an electronic or a mechanical device allowing regulation of the device's temperature at optimal levels

**Expansion Cards:** is a printed circuit board that can be inserted into an electrical connector, or expansion slot, on a computer motherboard, backplane or riser card to add functionality to a computer system via the expansion bus.

**DVD drive:** disc drive uses laser light or electromagnetic waves for reading or writing data to or from optical discs.

## RESULT

Thus the computer system layout in SMPS, Motherboard, HDD, CD, DVD and add on cards of the pc's are identified.

	Signature of Lab in Charge	Remarks
Readiness to do experiment		
Completion of Experiment		

Exp No :

Date :   /   /

## **CONFIGURE BIOS SETUP PROGRAM**

AIM:

To configure BIOS setup program

### PROCEDURE

1. Power on the computer.
2. To enter the BIOS Setup utility, press the F2 key while the system is performing the power-on self-test (POST)
3. When BIOS is started, the main BIOS Setup utility top-level screen appears. This screen provides seven menu options across the top of the screen.
4. Use the left and right arrow keys to select the different menu options
5. To select an option on a top-level screen, use the up and down arrow keys to scroll up and down the options presented.
6. Only options that can be modified are highlighted when you press the up and down arrow keys.
7. If a field can be modified, as you select the option, user instructions for modifying the option appear in the right column of the screen.
8. Press and release the right arrow key until the Exit menu screen appears.
9. Follow the instructions on the Exit menu screen to save or discard your changes and exit the BIOS Setup utility.

### RESULT

The bios setup program configuration is completed

	Signature of Lab in Charge	Remarks
Readiness to do experiment		
Completion of Experiment		

Exp No : 

05
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Date : 

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## **HARD DISK INSTALLATION**

### AIM

To (A) Install Hard Disk (B) Configure CMOS Setup. (C) Partition and Format Hard Disk. (D) Practice with scan disk, disk cleanup, disk Defragment, Virus Detecting and Rectifying Software

### COMPONENTS AND TOOLS

Hard disk, Computer running windows7, Avast antivirus

### PROCEDURE

#### 4(A).INSTALL HARD DISK:

##### Steps:

1. Unplug your computer and switch off the power supply.
2. Locate the hard drive bay on the front of the computer. Put the hard drive in the hard drive bay and line up the screw. Secure the hard drive into the hard drive bay with screws.
3. Find the cables that came with your hard drive. Match the connectors on the back of the hard drive to the cables and attach them.
4. Find the corresponding connectors on the motherboard and plug them in.
5. Set the drive jumper to the master setting if you are installing an IDE drive. Look on the hard drive or in the manual that came with your hard drive for the jumper settings. Use a pair of needle nose pliers to adjust the jumper to the proper setting.
6. Put the side panel back on the computer and secure it with the screws.
7. Plug the computer back in and flip the power supply switch back to "On."

#### 4(C).CONFIGURE CMOS SETUP:

##### Steps

1. Go into your BIOS. Press F2 at startup.
2. Check whether hard disk is automatically detected

#### 4(D).PARTITION AND FORMAT HARDDISK:

Create and format a hard disk partition:

You must be logged on as an administrator to perform these steps.

To create a partition or on a hard disk, there must be either unallocated (empty) space on the hard disk or free space within an extended partition on the hard disk. If there is no unallocated space, you can create some by shrinking an existing partition, deleting a partition, or by using a third-party partitioning program.

To create and format a partition (volume):

1. Open Computer Management by clicking the Start button-> clicking Control Panel,-> clicking System and Security-> clicking Administrative Tools ->double-clicking Computer Management -> In the Navigation pane, under Storage ->click Disk Management.
2. Right-click an unallocated region on the hard disk, and then click New Simple Volume
3. In the New Simple Volume Wizard, click Next
4. Type the size of the volume in megabytes (MB) or accept the maximum default size, and then click Next.
5. On the Assign Drive Letter Or Path page, specify a drive letter or path and then click Next.
6. Use the Format Partition page to determine whether and how the volume should be formatted. Choose Format This Volume With The Following Settings, and then configure the following.
7. File System Sets the file system type as FAT, FAT32, or NTFS. NTFS is selected by default in most cases. FAT or FAT32, can be later converted to NTFS by using the Convert utility. NTFS partitions cannot be converted to FAT or FAT32.
8. Allocation Unit Size Sets the cluster size for the file system. This is the basic unit in which disk space is allocated.

9. Volume Label Sets a text label for the partition. This label is the partition's volume name and by default is set to New Volume.
10. Perform A Quick Format Tells Windows 7 to format without checking the partition for errors. Normal formatting enables Disk Management to mark bad sectors on the disk and lock them out.
11. Enable File And Folder Compression Turns on compression for the disk.
12. Click Next, confirm the options, and then click Finish

4(E). Practice with scan disk, disk cleanup, disk De-fragment, Virus Detecting and Rectifying Software.

#### Running Scandisk:

1. Open My Computer > Right click on the drive > select Properties
2. Select tools tab and click check now checking starts immediately. After it is completed, the results will be displayed

#### Running Defragment

1. Select the disk to defragment. Right click on the disk and in the properties select defragment under tools tab
2. To determine if the disk needs to be defragmented or not, click Analyze disk
3. Once Windows is finished analyzing the disk, check the percentage of fragmentation on the disk in the Last Run column. If the number is above 10%, the disk need not be defragmented.
4. Click Defragment disk. If prompted for an administrator password or confirmation, type the password or provide confirmation

#### Running Disk Cleanup:

1. Open Disk Cleanup by clicking the Start button , clicking All Programs, clicking Accessories, clicking System Tools, and then clicking Disk Cleanup.
2. Disk Cleanup will calculate the free space on the computer, which may take a few minutes. After the calculation is complete,
3. Downloaded Program Files  Temporary Internet Files  Recycle Bin  Temporary Files 8. Click OK.
4. A dialog box that asks Are you sure you want to permanently delete these files?
5. Click Delete Files.
6. Disk Cleanup will delete the files and close automatically

#### **Virus Detecting and Rectifying Software:**

1. Click Start.
2. Click All Programs >avast antivirus
3. Click Scan

## RESULT

Thus Installation of Hard Disk, configure CMOS-Setup, partition and format Hard Disk and Identify Master /Slave / IDE Devices are done successfully. Scan disks, disk cleanup, disk Defragment, Virus Detecting and Rectifying Software to the pc's are executed successfully

	Signature of Lab in Charge	Remarks
Readiness to do experiment		
Completion of Experiment		

Exp No : 

06
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Date : 

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## **INSTALL AND CONFIGURE A DVD WRITER AND RECORDING DVD**

### **AIM**

To Install and Configure a DVD Writer and recording a Blank DVD in a computer system

### **COMPONENTS AND TOOLS:**

Computer running Windows 7 , DVD, Blank DVD, Nero DVD burning software

### **PROCEDURE:**

To install an external DVD: Plug it to the USB port

To install an internal DVD

1. Look for a DVD with the letters RW on the box.  Disconnect the power cord from the back of the
2. Open the case of the computer.
3. Locate the DVD drive. Most have two connections and can only be snapped in place one way. One connection is for data and one for power.
4. Slide the DVD drive into an empty compartment or bay. Connect the DVD drive to the data cable. Look the DVD to the power connector.
5. Re-assemble the cover and plug the computer back in.

To record a blank DVD

1. Insert the blank DVD in the DVD writer.
2. Double click the Nero icon in the desktop.
3. Then selection the needed options
4. Click the burn button.
5. Then the files are recorded into the blank disk.

**RESULT:**

Thus Installation and Configuration of DVD Writer and recording DVD are done successfully.

	Signature of Lab in Charge	Remarks
Readiness to do experiment		
Completion of Experiment		

Exp No : 

07
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Date : 

D	D	/	M	M	/	Y	Y
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## **INSTALL AND CONFIGURE PRINTER**

### AIM

Printer Installation and Servicing: Install and configure Laser printer and troubleshoot the printer.

### COMPONENTS AND TOOLS:

Computer with windows 7 OS, Laser printer, Driver software

### PROCEDURE

#### **To Install and configure Laser printer:**

1. Connect the power cable to printer. Connect data cable of the printer to computer
2. Go to Start > Device and Printers and click “add printer”
3. Select local printer and click next
4. On the Choose a printer port page, make sure that an existing port button is chosen and the recommended printer port are selected, and then click Next
5. Select the Manufacture and model and click next button. if the model is not in the list, click “have disk” button and in browse window locate the driver
6. if there is an existing driver replace select it and click next
7. Type printer name and click next
8. Computer will install driver
9. If windows ask to share the printer click “do not share printer” and click next. Otherwise select share this printer and provide “share name”, comment etc
10. In order to set this printer as default select the check box and click finish
11. Then, follow the instructions on the computer screen.  After installation restart the system and check the printer

#### **Troubleshoot the laser jet printers**

##### General Trouble shooting methods

1. If the computer printer does not turn on, make sure power is on at the outlet, then check that all cable connections are secure. Check the electrical cord, check the cover is closed properly.

2. If the printer turns on but does not print, or print is distorted, check software configurations. Then turn the printer off, wait a few seconds to clear the memory and turn it back on. If necessary, reboot the computer.
3. You also can run a self-test following instructions in the computer printer owner's manual. If the test fails to identify the problem, contact a service center.
4. If the print on the page is smeared or streaked, clean the corona wire of a laser printer. If the wire is broken you'll need to have it replaced by a professional.
5. Print a test page. If that prints and the application you are using doesn't, you probably will need to contact the application's vendor for support.
6. Try reinstalling the printer driver
7. Paper Jam: Open the doors and remove any paper, being careful not to tear it and lose pieces inside. Paper may also be lodged under the toner cartridge so you may have to pull it out. If you  believe you have removed the paper but the display still says Paper Jam, power the printer off  for 1 minute and turn it back on. If the jam is severe, contact the printer vendor for their expertise to rectify the problem

Check and connect the data cable connectivity

1. See whether the cables are inserted fully into the printer port and computer port.
2. Check for any bent pins in the printer connector. If bent pins present straighten it.
3. Check the type of the cable to be used USB cables should not be longer than 15 feet.
4. Check the continuity of the cable using multi meter.

## RESULT

Installation, Configuration and trouble shooting of printer done successfully

	Signature of Lab in Charge	Remarks
Readiness to do experiment		
Completion of Experiment		

Exp No : 

08
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Date : 

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## **INSTALL AND CONFIGURE SCANNER**

### **AIM**

To Install and configure Scanner, Web cam, and bio-metric device with system in a computer system.

### **COMPONENTS AND TOOLS**

Computer with windows 7 OS, scanner, web camera, bio metric device, Device driver software for the above mentioned items.

### **PROCEDURE**

#### **Plug and Play installation:**

1. Plug the web camera or scanner into the computer.
2. If the camera is Plug and Play, the Scanner and Camera Wizard starts.
3. Double-click Add Device.
4. Follow the instructions on the screen.

#### **To Install and configure Scanner:**

1. click Start, click Control Panel, and then click Scanners and Cameras.
2. It displays already installed scanner. Select “add device” and click next in the next
3. Select the manufacture and model if it available. Otherwise select “Have disk”

#### **Bio-metric device:**

##### **Procedure:**

1. Plug the fingerprint reader into your computer and install it with the driver install.
2. Check in Device Manager if the fingerprint reader is installed with Digital Persona driver.
3. Install Fingerprint SDK software. Restart your computer
4. Run the Demo program located in the bin folder where the SDK was installed.
5. Place your finger on the reader and see it in action.

## RESULT

The Installations and configuration of Scanner, Web cam and bio-metric device to the pc are done successfully.

	Signature of Lab in Charge	Remarks
Readiness to do experiment		
Completion of Experiment		

Exp No : 

09
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Date : 

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## **ASSEMBLE A SYSTEM**

### **AIM**

To assemble a system

### **COMPONENTS / TOOLS**

Motherboard, processor ,heat sink, cpu, cooling fan, RAM, HDD, CD/DVD drive, SMPS, connecting cables, Computer case, screws driver set.

### **PROCEDURE:**

#### **Prepare the Mainboard**

1. Mount the CPU in the socket of the Mainboard
2. Connect the CPU cooler to the Main board
3. Attach the RAM (memory) modules in the corresponding slots.
4. Open the case and mount the power supply .Make sure to connect all the connections to the drives and the motherboard.
5. Attach the Mainboard back plate to the case and check the Mainboard mounting positions. The motherboard's instructions should tell the position of the motherboard
6. Suitably position the Mainboard in the case.
7. Mount the Hard disk and connect it to the power supply and the motherboard
8. Connect the SATA connectors to the drives and the USB connectors and the case switches to the motherboard. The case and motherboard's instructions should tell where to connect the cables.
9. Connect the 20 or 24 pin ATX connector and the 4-pin power supply control connector to the motherboard
10. Mount the DVD-ROM drive. After connecting the ATA cable to the device, hook it up to the power supply.
11. Installing all add on cards
12. Finally, Close the cabinet case

#### **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
  - a. All system, fans should start spinning.
  - b. A single beep is heard after about 5-10 sec.
  - c. Amber light on monitor should go green.
  - d. Computer starts to boot with a memory check.
  - e. Check front LED'S to see they are plugged correctly.

## RESULT

Assembling of PC and check the working condition of the system is done successfully

	Signature of Lab in Charge	Remarks
Readiness to do experiment		
Completion of Experiment		

Exp No : 

10
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Date : 

D	D	/	M	M	/	Y	Y
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## **DUAL OS INSTALLATION**

### **AIM**

To Install and Configure a Dual OS in a computer system.

### **COMPONENTS/TOOLS**

Computer, Windows 7 and Xubuntu installation discs, Procedure

### **INSTALL WINDOWS**

1. Before inserting the CD, enter bios (by pressing F2) and select the primary boot device CD-ROM Insert the Windows 7 Installation Disc and start the computer.
2. When arriving at the "Welcome to Setup" screen, Press ENTER to begin the installation process.
3. For select Language for windows. Select 'English' and click Next. Also there will be a 'INSTALL NOW' button. Click on it and proceed to next step.
4. Accept the license agreement by checking the check box. And click Next button
5. Click Custom option now.
6. Create drives as required and select the drive to install Windows 7 and click next
7. Provide user name
8. Provide the Product key. And click next
9. The computer will restart and will boot with the new OS

### **INSTALL XUBUNDU**

1. Before inserting the CD, enter bios (by pressing F2) and select the primary boot device CD-ROM Insert the Windows 7 Installation Disc and start the computer.
2. Prepare the partition
3. choose Something Else
4. .One of the NTFS partition consists of Windows installation. This should be untouched if you want to keep your Windows installation safe

5. If there is no “free space”, you need to delete a NTFS or existing ext4 partition and create some free space. This will delete all the data in that partition
6. Click on the desired partition and press the – to delete the partition
7. create minimum a Root, a Swap and a Home partition
8. Create a root partition first. Choose the free space available and click on +.
9. Here, choose the size of root directory, choose ext4file system, and mount point as / (i.e. root):
- 10.Next step is to create swap partition. It is advised by many that Swap should be double of your system’s RAM size. You can choose the swap size accordingly.
- 11.The next step is to create Home. Try to allocate the maximum size to Home because this is where you’ll be downloading and keeping the files
- 12.Once you have created Root, Swap and Home partitions, click on Install Now button
- 13.select options like keyboard layout, login credentials etc.

## RESULT

The Dual OS installation was done successfully

	Signature of Lab in Charge	Remarks
Readiness to do experiment		
Completion of Experiment		

Exp No : 

11
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Date : 

D	D	/	M	M	/	Y	Y
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## ASSEMBLING A LAPTOP

### AIM

To configure Assembling and Disassembling of Laptop to identify the parts

### COMPONENTS/TOOLS

Laptop, mini Phillips screwdriver, anti-static wrist strap, magnifying glass.

### PROCEDURE:

There are several types of small screws that are used throughout the laptop. Place these in small envelopes and write the component name on the envelope. Be organized and keep track of all the screws.

1. Unlock and remove the battery
2. There are six spring-loaded latches securing the keyboard on the top. In order to open up the latch push on it with a small flathead screwdriver. When you push on the latch, it will move inside the case and the keyboard will lift up a little bit preventing the latch from moving back in the locked position. Do the same with all six latches.
3. Lift up the keyboard. Turn it upside down and place on the palm rest.
4. Before you remove the keyboard completely, it's necessary to unlock the connector and release the cable. Slide the cable retainer about 1-2 millimeters to the shown direction. This will unlock the connector
5. Pull the cable.
6. Remove the keyboard from the laptop.
7. Remove two screws securing the service cover on the bottom.
8. Under the cover you can access the hard drive, both RAM modules, Wi-Fi card and CMOS battery.
9. Remove one screw securing the optical drive.

10. Slide the optical drive to the left and pull it out of the case.
11. Remove all screws from the bottom.
12. Remove screws securing the top cover (palm rest) assembly. Disconnect the power button cable, touchpad cable and both speaker cables.
13. Unlock and disconnect the power button and touchpad cables the same way you disconnected the keyboard cable
14. Unplug both speaker cables
15. Start separating the top cover assembly from the bottom case
16. Remove the top cover assembly
17. On the other side of the top cover you can access: – Both speakers. – Power button board. – Touchpad.
18. Remove three screws securing the fan
19. Remove the fan from the case and disconnect the cable
20. There are two screw covers located in the lower left and right corners of the screen bezel. Remove both covers with a sharp object. Remove both screws.

Assemble the parts in the reverse order

## RESULT

Thus the Assembling and Disassembling of Laptop to identify the parts are done successfully.

	Signature of Lab in Charge	Remarks
Readiness to do experiment		
Completion of Experiment		