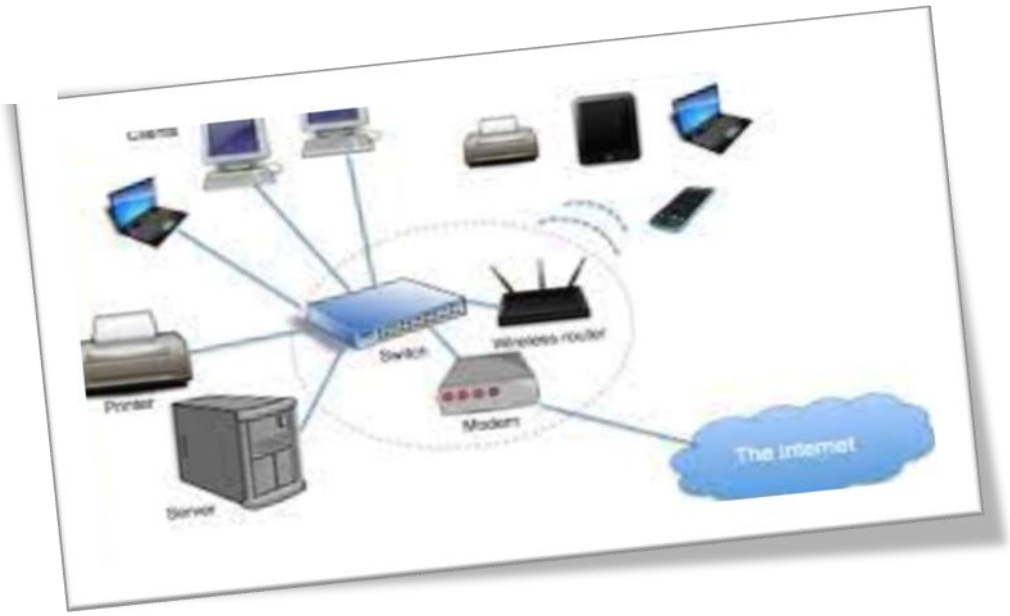
WEB DEVELOPMENT AND DATABASE ADMINISTRATION

Level-II

Based on March 2022, Curriculum Version 1



Module Title: - Administering Network Hardware and Peripheral

Module code: EIS WDDBA2 M02 0322

Nominal duration: 60 Hour

Prepared by: Ministry of Labor and Skill

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Addis Ababa, Ethiopia

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MINISTRY OF LABOR AND SKILLS

Table of Content

Acronym

GUI Graphic User Interface

DOS Disk Operating system

MLE Ministry of Labor and Skills

OHS Occupational Health and Safety

HCLA hardware compatibility list ()

MAN Metropolitan area network

TTLM Teaching, Training and Learning Materials

LAN Local Area Network

WAN Wide Area Network

VPNA virtual private network

HDD Hard Disk Drive

CDROM Compact Disk Read Only Memory

DVDROM Digital Versatile Memory

USB Universal Serial Bus

Acknowledgment

Ministry of Labor and Skills wish to extend thanks and appreciation to the many representatives of TVET instructors and respective industry experts who donated their time and expertise to the development of this Teaching, Training and Learning Materials (TTLM).

Introduction to the Module

Networking is the technology of interconnecting computing devices of all types so information can flow between them. This includes activities as simple as topology design to those as complex as the configuration of services and protocols to enable an entire intranet and the support of that environment.

Network administrators are generally mid-level support staff within an organization and do not Typically get involved directly with users. Network administrators focus upon network components within a company's LAN/WAN infrastructure ensuring integrity. Depending on the company and its size, the network administrator may also design and deploy networks.

This module is designed to meet the industry requirement under the Web Development and Database Administration occupational standard, particularly for the unit of competency Administering Network Hardware and Peripheral.

This module covers the units:

- Peripheral Requirements,
- Obtain peripherals
- Connect hardware peripherals
- Configure and Install peripherals to a network services
- Administer peripheral services
- Maintain peripherals and Fix common Problems
- Use and maximize Operating system
- Support input and Output device

Learning Objective of the Module

- Confirm Client Requirements
- Obtain required peripherals
- Connect hardware peripherals
- Install peripherals to a network
- Configure peripheral services
- Administer and support peripheral services
- Maintain peripherals and Fix common Problems
- Use and maximize Operating system
- Support input and Output device

Module Instruction

For effective use this modules trainees are expected to follow the following module instruction:

1. Read the information written in each unit
2. Accomplish the Self-checks at the end of each unit
3. Perform Operation Sheets which were provided at the end of units
4. Do the “LAP test” giver at the end of each unit and
5. Read the identified reference book for Examples and exercise

Unit One: Confirm requirements of client

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Identify and confirm client peripherals**.**
- Document client requirements and peripherals**.**
- Verify client requirements.
- Ensure warranty and support services.

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Identify and confirm client peripherals in accordance with organizational standards.
- Document the client requirements and peripherals in line with organizational standards and findings are reported to the appropriate person.
- Verify the client requirements with appropriate person in line with organizational standards and reporting procedures
- Ensure client support expectations are covered by vendor and support services.

1.1 Identifying and conforming Client peripheral with organizational standard

Computers are used to accomplish many tasks. A basic desktop computer desktop includes the computing unit plus a monitor, keyboard, and mouse. Add even more peripherals to the computer, and the computer will be able to do that many more tasks. People try to differentiate between computer peripherals and computer accessories but they are one and the same thing.

The word peripheral means electronic equipment or precisely a computer device connected with the help of a cable to the CPU of the computer or commonly called the cabinet.

Main Categories of Computer Peripherals are:

A. Input devices
B. Output devices
C. Input/output and storage devices

A. Input peripherals

Input devices are those devices with the help of which you can feed data into a computer. In other words, they are a means to provide instructions or feed data into the computer for working according to your requirement. Various input devices are: Keyboard, Mouse, Scanner, Webcam, Barcode reader, *M*icrophone and other pointing devices like trackball, joystick, Touch screen, etc.

B. Output peripherals

Output devices are those devices with which a computer presents the data or output to the user. Output can be in the form of formatted data or the results of a process, whether the process failed or executed successfully. Various output devices are: Monitor, Printers, plotters (not used now), Speakers, Sound Card, Network card, Graphics card, etc

C. Secondary Storage devices

A secondary storage device refers to any non-volatile storage device that is internal or external to the computer. It can be any storage device beyond the primary storage that enables permanent data storage.

Storage devices include Hard Disk, Compact Disk read only Memory, etc. All these devices are categorized according to their storage capacity.

HDDs are considered to be safer for storing data but you can never fully rely on an electronic device.

1.2 Documenting client requirements and peripherals

Client requirements and peripherals needed are documented in line with organizational standards and report findings to the appropriate person.Before finalising the purchase of the peripheral, you should fully document the client's requirements and pass on a copy to the relevant parties.

This document summarises what you have done and justifies your final recommendations and it gives you:

- A history of the tasks undertaken
- A guide to the research methods used
- Detail all options considered, used and rejected
- Support for payment for work undertaken
- Will aid in supporting any legal arguments arising from a conflict with the client.

1.3 Reporting findings to appropriate person

Client reporting is a crucial part of the agency-client relationship. But what is it exactly, why is it so important, and how can you save time all the while improving your client reporting? There are six reasons why Client Reporting is so important:

1. Client reporting enables you to regularly interact with your client
2. Client reports help you educate your client on what you do
3. Regular reporting keeps both you and your client accountable
4. Transparency is a lot easier through your client reports
5. Client reporting gives credit where credit is due.
6. Your work is all about results, and reports are your way of showing need to be pick up.

1.4 Verifying client requirements and reporting procedures.

Identifying the client means obtaining certain basic information about your client and any third party directing, instructing or who has the authority to direct or instruct your client such as a name and address. You must obtain this information whenever you are retained to provide legal services to a client unless an exemption applies.

Verifying the identity of a client means actually looking at an original identifying document from an independent source to ensure that your clients and any third parties are who they say they are. You are only required to verify the identity of your client and such third parties if you are involved in a funds transfer activity, that is, you engage in or instruct with respect to the

payment, receipt or transfer of funds**.** You are not required to identify and/or verify the identity of your client for third parties in all situations.

1.4.1 Methods of verification

Verification techniques can be classified into formal or informal, and static or dynamic. Four main verification methods are inspection, demonstration, testing, and analysis. Some of the popular verification techniques include desk checking, inspections, walkthroughs, and reviews.

1.5 Cover action taken to ensure client support expectation by vendor warranty

Action taken to ensure client support expectations are covered by vendor warranty and support services. Before acquiring hardware peripheral devices, it is vital to assess what kind of warranties, service and support, prospective suppliers will provide.

1.5.1 Warranty

A warranty is a statement provided by the seller or manufacturer of a product that it will work in the manner specified. Warranty means guarantee means promising or agreement to repair or replace it if necessary.Generally, For Example most computers have a 1 or 3 year warranty. This warranty may or may not cover the service, repair and replacement of computer parts. But these warranties apply to certain types of services.

1.5.2 Support services

Support service is activity or function required for successful completion of a process, program, or project. The Support Services team provides telephone, fax and email support.

Self check-1

Part I: Write TRUE If the Statement is Correct, FALSE If It Is Incorrect. / 1 pts/

1. Requirements specification may not be file according to organizational guidelines.
2. Reporting is not one of checking requirement analysis.
3. Each client needs their specification in an organization.
4. Interview is one method of collecting information from clients.

Part II: Choose the best answer for the following question./ 2 pts/

1._____ is a combination of a typewriter and numeric keypad?

A. Printer C. Webcam

B. Keyboard D. Mouse

2. An example of Output device _____.

A. Printer C. Microphone

B. Light pen D. Digital camera

3. Verifying client support is_____.

A. Obtaining certain basic information about your client

B. Any third party directing, instructing

C. Who has the authority to direct or instruct your client such as a name and address

D. All

4. Which of the following is **NOT** a computer peripheral?

A. Central processing unit C. Scanner

B. PrinterD. None

5. What are the three general types of peripheral devices?

A. Input, output and storage

B. Mouse, keyboard and monitor

C. Audio, video and print output

D. Internal, wired external and wireless external

Part III: Answer all the questions listed below.

1. What is the purpose of peripheral devices? /2 pts/

2. Why standard is important in verifying client requirements?/3 pts/

3. What is the purpose of peripheral devices? /2 pts/

4. What are the types of peripheral devices? Give five (5) examples for each type./2 pts/

Operation Sheet 1:1 Prepare requirement speciation List

Operation title: Preparing requirement speciation List

Purpose: To prepare requirement Speciation List

Instruction: Use the given information below to prepare a check list for laptop.

- **Tools and requirement:**
  1. Computers
  2. Paper
  3. Software
  4. Printer
  5. Drivers

- **Steps in doing the task**

1. Open Microsoft Office Word 2010.
2. Click on Insert ,then on Click on Table,
3. Click on Table Insert Table, the enter the No column **3** and row **19,** you want.
4. Design the as shown below, Finally, Enter the detain information given below.

Manufacturer	Cabinet type:	Dell, Compaq, HP or other good brands
Processor	Operating system:	Windows 10, 11
	Manufacturer:	Intel
	Type:	Intel Core i7 Processor
	Speed:	4.7GHZ
Communication and connectivity	Peripheral Connectors	VGA, HDMI ports, S-Video, RJ-11, RJ-45 ports, headphone/speaker out, mic
	Wired Network:	10/100/1000Gigabit Ethernet network interface adaptor
	Wireless Network:	Wi-Fi 6E, Bluetooth 5.2 or more wireless
Storage Drives	Hard Drive Capacity:	500GB
	Hard Drive Interface:	SATA or SSD
Memory	Memory Type:	DDR5 SDRAM Upgradable up to 32GB 4800MHZ Speed
	Installed memory:	16GB
	Upgradable:	Up to 32GB
DVD Drives	Optical Drive Type:	DVD-RW CD
Monitor	(Display) Screen type:	17.3” 2560 x 1440 pixels display
	Diagonal size:	17" or more
Video Card	Type:	NIVIDIA GeForce RTX 3080 Ti, GDDR6 memory type
	Video card memory:	16GB or more
Power adapter/Battery	AC Adapter and Battery:	99.9 Wh AC Adapter 6-cell or more

Table 1: Sample Lap Top specification

- **Quality Criteria:**
  - The Brand should be Dell and
  - It should support to additional features of good customer support.
- **Precautions:**
  - Install application should be compatibility to old programs.

Lap Test 1

1. Prepare Desktop computer sample specification by considering the above parameter.

Unit Two: Obtain required peripherals

This unit to provide you the necessary information regarding the following content coverage and topics:

- Obtaining a peripheral
- Hardware inventories
- Checking contents
- Storing peripherals

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Obtain under instruction from appropriate person.
- Peripherals are entered into equipment inventory according to organizational standards.
- Contents of delivered components and physical contents that match the packing list are validated and resolved discrepancies if necessary.
- Peripherals are stored according to vendor/manual guidelines.

2.1 Obtain Peripherals under instruction/specification

The first step in obtaining a peripheral device is to locate suppliers of that device. Then, there are factors you need to consider about the supplier and the devices on offer, such as support provide purchase price. This will help you to compare and choose the most appropriate supplier and the exact model of the device according to client requirements. Finally, you are ready to place an order for your organisation or client to purchase the device. Some of the methods obtaining peripherals are locating a supplier. There are many ways to find a supplier of peripheral equipment. Some ways include:

A. Searching the Internet

The Internet provides different methods for searching for suppliers. Using search engines such as Google or Yahoo can help you find a hardware supplier anywhere in the world. Suppliers will often have their own websites that can provide you with catalogues of available equipment.

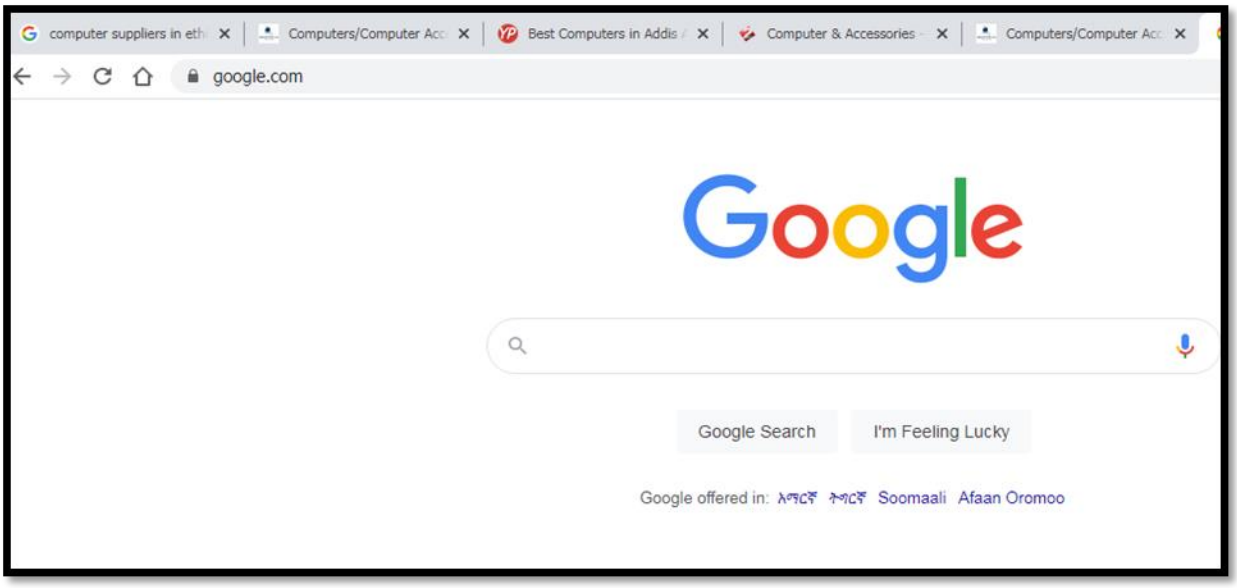


Fig 2.1: Google search

B. PC magazines

Computing magazines often contain a large section devoted to advertising current hardware suppliers.

C. Newspapers

Major newspapers have computer/IT sections or classified advertisements which can be a source for finding suppliers.

D. Brochures/advertising material

Many larger hardware suppliers use television, radio or leaflet deliveries to inform potential customers of their latest hardware.

E. Telephone directory

A telephone directory is useful if you need to find a supplier located within your local area. Contacting the manufacturer directly using manufacturer website to find out names of local suppliers.

2.1.2 Choosing a supplier

With so many choices of suppliers available, how do you find the right one? There are a few factors to consider:

- **How long has the supplier been operating?** It is a good idea to find a supplier who will still be around for the lifetime of the hardware.
- **Does the supplier offer suitable support and training?** If the client will be requiring a lot of additional assistance, training could be a major contributing factor for choosing a particular supplier.
- **Does the supplier offer competitive pricing?** Considering the support and stability, it is also important to weigh up these factors in relation to price. For a client with a strict budget, price may be a big issue when determining where to purchase hardware.
- **Is the supplier a preferred supplier for your organisation?** Some organisations have arrangements that equipment must be purchased from suppliers who are considered to be the preferred provider for the organisation. Organisations create these agreements because customer loyalty offers substantial discounts, extended warranties and additional support.

Fig. 2.2 Choosing Suppliers

Fig 2.3: Choosing Suppliers

2.1.3Selecting a peripheral

Once you have selected suitable suppliers you need to contact each supplier. Information you should find out from the supplier includes:

- Model and manufacturer names of peripherals (including system specifications, physical dimensions, support)
- Price of each model.
- Availability of each model.

You may find it helpful to keep a record of any details that you collect so you refer to this information quickly and easily.

2.1.4 Placing an order

Depending on the type of organisation you work for, placing an order for a hardware peripheral device could be done in a variety of ways. In a small organisation you may be responsible for ordering the device yourself. However, in a larger organisation there may be employees who are responsible for purchasing new equipment. You may need to fill out an order form that can be given to the purchasing department.

Before an order is submitted, it could also be necessary to obtain final approval from senior staff. A purchasing department might require written quotes from three suppliers, a recommendation and justification for the chosen supplier.

Make sure that you find out from your supervisor or manager what procedures you need to follow when placing an order within your organisation.

Sample order form

From _____
Date _____

Code	Quantity	Description	Price	Supplier: name and telephone

COST	
GST	
TOTAL	

Delivery point _____
Budget holder's signature _____

Table 2. 1Sample Order Form

2.2 Entering peripherals into equipment inventory

Inventory database is a centralized repository for all inventory data in an organization. Database for inventory management software allows balancing inventory costs and risks against the desired inventory performance metrics.

Most organizations keep some form of record of equipment they own this is called an inventory. Inventories may be paper based, or electronic, in the form of a spread sheet or database. The benefits of keeping an inventory of computer hardware tell you if you already own the required peripheral or not. If it is not being used, you can save purchasing a new peripheral.

Besides an inventories can tell you whether the organization has any peripherals of the type you are considering purchasing.

When peripherals and other hardware are entered into an inventory, the peripheral itself is often marked with a plant number or bar code. This ensures that the peripheral can be accurately matched with an entry in the inventory.

For Example:

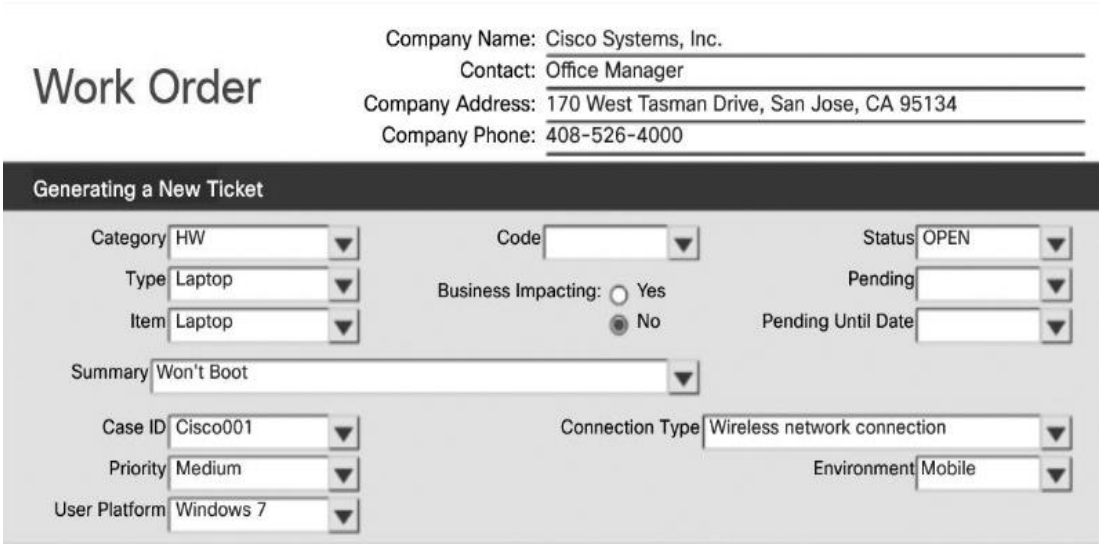


Fig 2.4: Equipment inventory Database

2.3Validating delivered component and physical content that match packaging list

Contents of delivered components and physical contents that match the packing list are validated and resolved discrepancies if necessary. When unpacking any peripheral device, an organised and methodical approach needs to be taken. Randomly ripping open boxes and packaging without carefully identifying each component can potentially cause many problems later on.

Prepare a suitable work area before you begin unpacking. This should include a large sturdy flat area with no carpet so that small components will not be lost.

Before commencing to open any packaging, find the manual for the device. Check instructions for any precautions or specific unpacking procedures. Most manuals will also contain a section that tells you a list of included components. It is useful to create a checklist based on the component list. You will then be able to use the checklist to mark off the components when they have been identified. For Example: A typical inkjet printer should include: printer, cartridge, power cable, USB cable, sample paper, feeding device, CD driver, etc

2.4 Storing peripherals using vendor/manual guidelines.

2.4.1 Storing Peripherals

Peripheral devices need to be located in a suitable environment — otherwise there may be potential problems. It is a good idea to refer to the manufacturer's manual to determine what guidelines should be followed.

A. When storing peripherals it is important to:

- **Keeping equipment in ideal working conditions:-**Each manufacturer will have their own recommendations on how to store their peripheral equipment. In order to guarantee that a peripheral will function correctly throughout its life it is important to follow guidelines that have been recommended by the manufacturer. Some common recommendations may include:
- **Keep equipment in the correct position**:-After unpacking, most devices will usually have a proper resting position. If a device is not kept in its natural position, there could be problems when trying to operate the device later on. For example, when a printer is stored in a vertical position, components such as the ink cartridges could leak or be dislodged.
- **Keep equipment away from weather, dust and other harmful material**: -When finding a storage location, consider what kind of elements the device may be subjected to. If, for example, you store a USB drive in a cabinet next to chalk, dust from the chalk could potentially damage the storage device's USB connection.
- **Do not expose equipment to extreme temperatures and high humidity**: - Sudden changes in temperature can cause condensation in many peripheral devices. For instance, if a video camera is taken from a cold place to a warm place, condensation may form on the lens and internal parts.
- **Avoid storing the device in direct sunlight**: - Exposure to direct sunlight could damage many of the external components of a device as well as subject the device to high temperatures.
- **Do not expose equipment to water or moisture**: - If water gets inside many peripheral devices there is a risk of electric shock.
- **OHS guidelines:-**When positioning peripherals in their permanent locations it is important to take into account many OHS considerations.

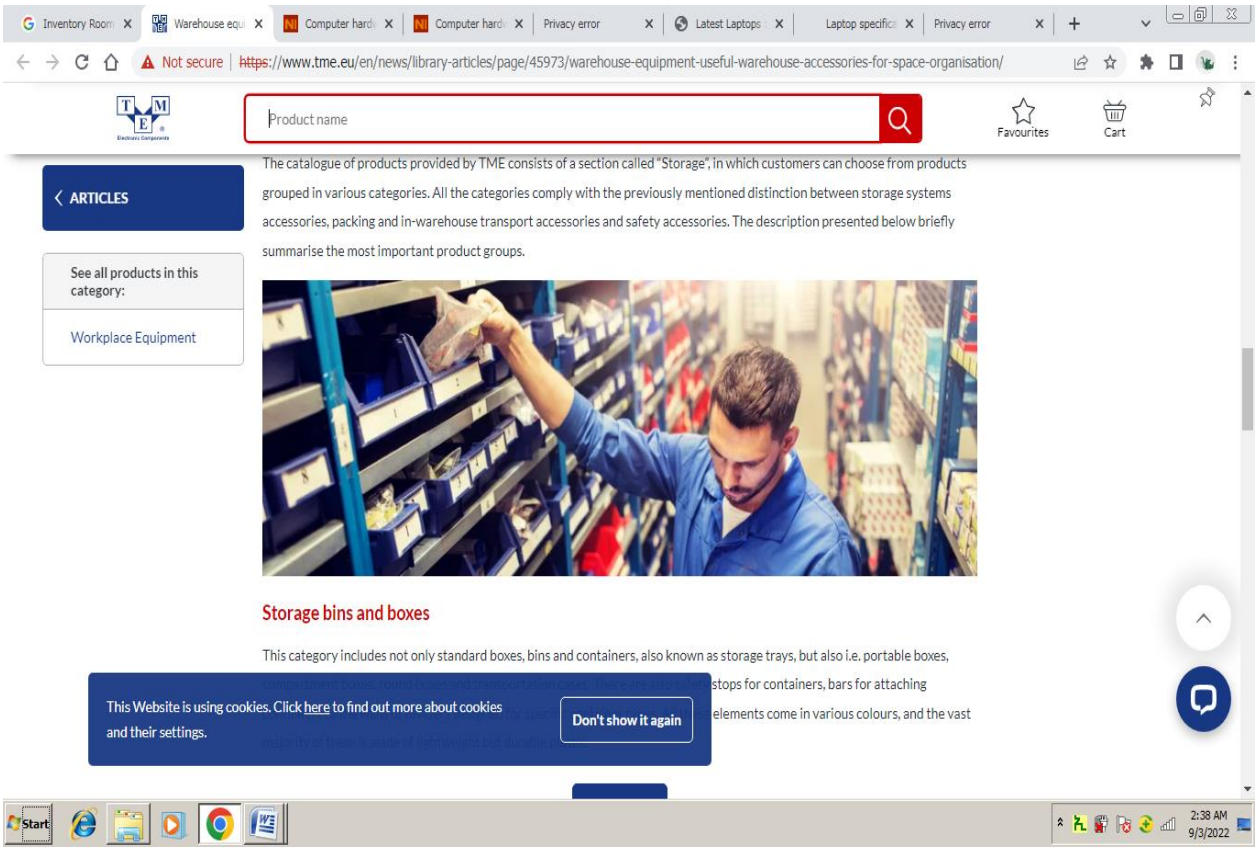


Fig 2.5: Storage Room Computer peripheral

Self check-2

Part I: Choose the best answer for the following question./ 2 pts/

1. The first step in obtaining a peripheral device is?

A.Locate suppliers

B. Placing an ordered

C. Selecting

D. All

2. Which of the following is not used for locating of supplier?

A. Searching in internet

B. News paper

C. Contacting the manufacturing directly

D. None

4. Which factor are not consider in consider choosing a supplier?

A. the beauty of product

B. Does the supplier offer suitable support and training

C. Contacting the manufacturing directly

D. None

5. Information you should find out from the supplier is for _____.

A. Selecting a peripheral

B. Written quotes from three suppliers

C. Model and manufacturer names of peripherals that will satisfy the majority of your clients requirements

D. All

Part II: Write TRUE If the Statement is correct, FALSE If It Is Incorrect./ 1pts/

_____1. Packaging without carefully may not affect device functionality.

_____ 2. Prepare a suitable work area before you begin unpacking.

_____ 3. To open a new packing device doesn't need any manuals.

_____ 4. A power cable is one sample cheek of a printer device.

Operation sheet 2.1: Search suppliers using search Engine

Operation title: Searching Suppliers using search Engine

Purpose: To Search Suppliers using search Engine

Instruction: Use the given steps below, search suppliers using search Engine.

- **Tools and requirement:**
  1. Computers
  2. Internet Service
  3. Software
  4. Printer

- **Steps in doing the task**

1. Open www.google.com using browser.

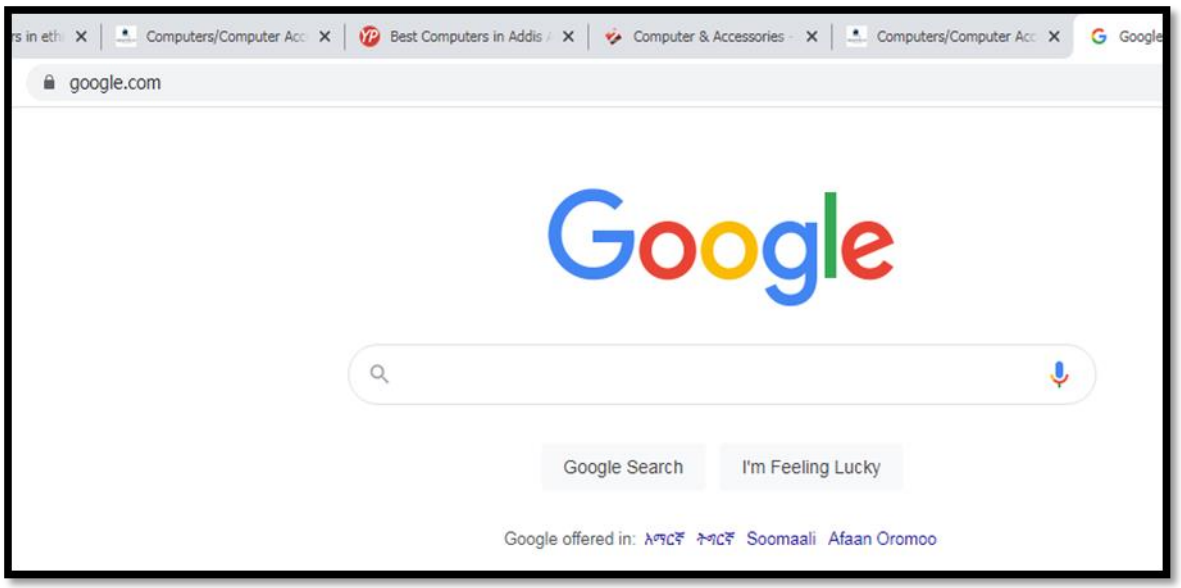


Fig 2.6: Google Interface

5. Write the information you want to search in the Google Search Box.**Example:**Peripheral suppliers in Ethiopia.

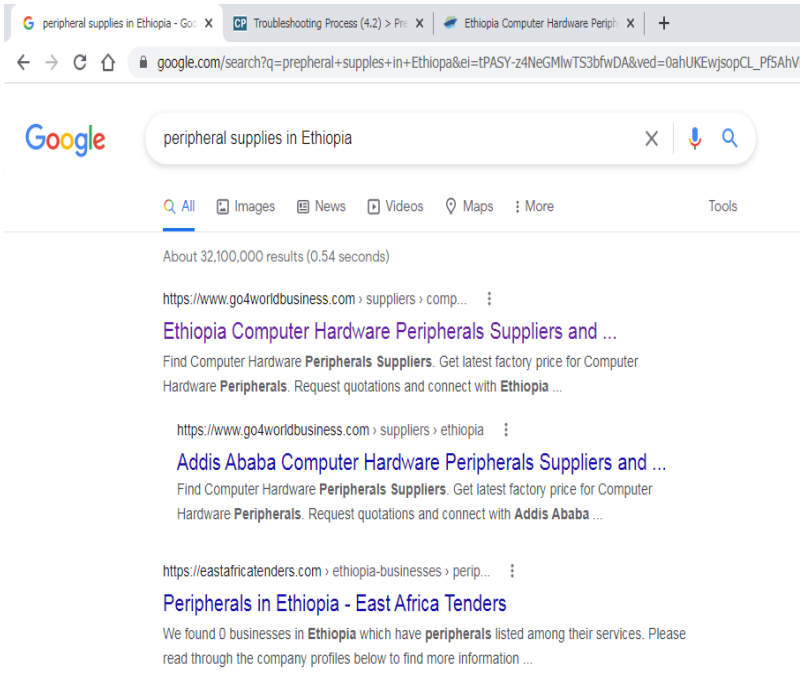


Fig 2.7: Google Search Result

6. Select one of the link you choose and click on it, then the page will be display.

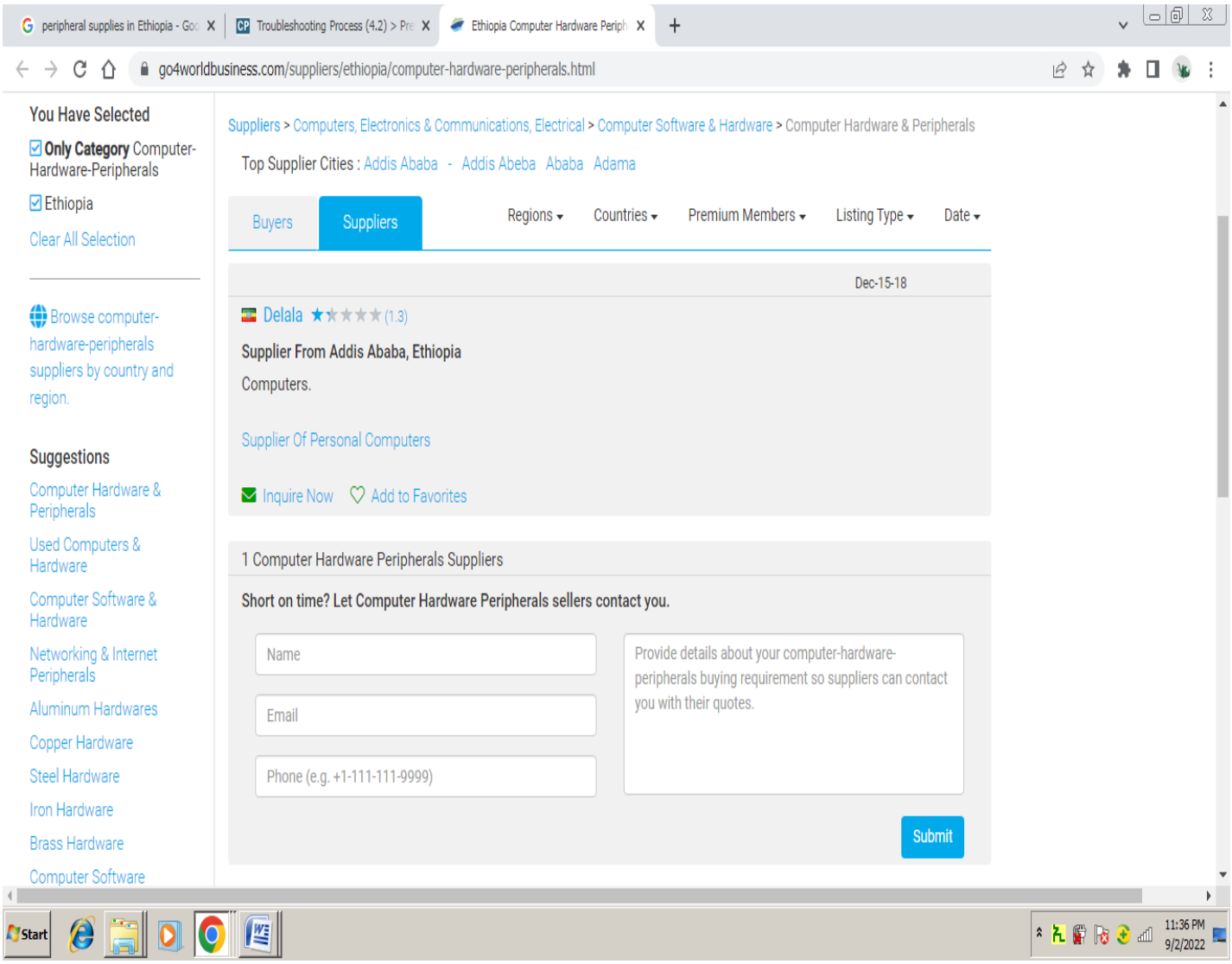


Fig 2.8: Submit Data for a Suppliers

7. Enter Full Name, Phone No, and Fill the Necessary information, then click on submit.
8. Finally Contact the Company, Process the order and obtain the peripheral device.

- **Quality Criteria:** You must Enter appropriate search key word.
- **Precautions:**
  - The internet must be Functional and set up must be prepared.
  - Keep your work area clean and well lit

Lap Test 2

Instruction: Do Lap Test below.

1. Using any search Engine Find best Computers sellers Companies in Addis Ababa, Ethiopia.

Unit Three: Connect Hardware Peripherals

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Verifying installation time frame
- Removing old Peripherals
- Connecting new peripherals by taking into account operating systems
- Configuring computers to accept new peripherals based on business requirement
- Testing and confirming compatibility issues and hardware peripherals to meet client satisfaction

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Timeframe for installation schedule based on the client requirement.
- Remove Old peripherals with minimal disruption to clients, taking into account environmental considerations and OHS standards.
- Connect new peripherals with minimum disruption to clients, taking into account operating system procedures.
- Configure the computer to accept the new peripherals based on business requirement
- Taste Hardware peripherals and confirmed to client satisfaction, pay particular attention to possible impact on other systems and make adjustments as required.

3.1 Verifying installation schedule

Timeframe for installation schedule is verified with the client requirement. When you install peripherals for clients it is important to ensure that it is done in a structured manner.

Good planning will go a long way to ensure that the installation goes as smoothly as possible and minimize disruption to the client.

3.1.1 Pre installation

Prior to installation you should do the following:

- Contact the client to arrange a suitable time for the installation and ensure that they make a backup of any critical data before your arrival.
- Give the client an approximate assessment as to how long the installation will take.

Preparing the site before commencing work is critical not only to the installation process but above all else for safety reasons.

- On arrival ensure that the installation can go ahead and will not disrupt the clients work.
- Clear your work area and ensure that you have adequate space and light to work with.
- Explain to the client the process so they understand what is going to take place this will help them understand the procedure.

3.2 Removing old peripherals with environmental consideration and OHS standards

Old peripherals are removed and new peripherals are connected with minimum disruption to clients, taking into account operating system procedures, environmental considerations and OHS standards.

The computer configured to accept the new peripherals based on business requirement. If you remove a current hardware device or upgrade drivers, it may be necessary to remove an old version of a driver.

3.2.1 Removing old Peripherals by Environmental consideration

The components that go into computers are exceptionally valuable to recycle, and are extremely toxic or dangerous to the environment if released or disposed of incorrectly.

Heavy metals used in batteries or circuits pollute groundwater and kill animals. Batteries are also readily flammable and are unsafe to go into mixed garbage. There is a large quantity of plastic used in most electronics, which will take decades to break down, and often this plastic is ABS. ABS is based on polystyrene, and as such it will break down into toxic particulate as it degrades.

Some of them are:

A. Disposal of packaging

To make sure you dispose of old computers and hardware safely follows these steps.

1. Backup your data. Before you do anything, backup your hard drive so you don't lose any data.
2. Wipe your hard drive. Clearing data off our computer is no easy process.
3. Donate, resell, or recycle. You can't just throw your computer away.

B. Disposal of redundant hardware

Used computer disposal means that there will be a need for the disposal of computer parts when equipment cannot be re-used. When disposing of an old PC, there is really only one way to securely erase the information on the hard drive: You must destroy the magnetic platter inside. Use a T7 screwdriver to remove as many screws as you can access. You'll probably be able to remove the main circuit board from the enclosure.

3.2.3 Removing old Peripherals using OHS

The Occupational Safety and Health Standards were formulated in 1978 in compliance with the constitutional mandate to safeguard the worker's social and economic well-being as well as his physical safety and health.

Environmental and safety requirements is vital to meet relevant safety standards workers safety environment. By implementing OHS during removing old Hardware peripherals ,it is possible to minimize hazard. Some of them are:

A. Physical hazards

A physical hazard is defined as "A factor within the environment that can harm the body without necessarily touching it. Vibration and noise are examples of physical hazards". Physical hazards include but aren't limited to electricity, radiation, pressure, noise, heights and vibration amongst many others.

B. Chemical hazards

A chemical hazard is simply the risks involved with using a chemical. So in the workplace chemical hazards can be; Health hazards- where workers and other personnel are exposed to **hazardous chemicals** through inhalation, absorption through the skin, or ingestion and swallowing.

C. Ergonomics

Ergonomics (from the Greek word ergon meaning work, and nomoi meaning natural laws), is the science of refining the design of products to optimize them for human use. Computers and related Ergonomic hazards refer to unsafe workplace conditions that pose (cause) the risk of injury to the musculoskeletal system of the worker.

The type of things that cause to ergonomic hazards includes:

- Repetitive and forceful the same movements.
- poor lighting
- improperly adjusted workstations and chairs
- improper work methods
- Use of too much force, especially if you have to do it frequently.

D. Fire

Fire is the product from a chemical reaction between oxygen in the atmosphere and some sort of fuel (wood or gasoline, for example). "Thecombustion or burning, in which substances combine chemically with oxygen from the air and typically give out bright light, heat, and smoke."

3.3 Connecting new peripherals by taking into account operating system procedures.

3.2.1 Install and configure computer peripheral devices

The peripheral devices are those devices which are connected to the computer and it helps the computer function. These devices contain both the input devices, which are used to give command to the computer and the output devices, which help computer showing the result to the user.

The computer works with many peripheral devices so it's important to know that how much these devices can be installed in the computer and how can configure them. Following are the devices which are used by the computer and the ways they can be configured:

A. Hardware Minimum Requirements

Hardware requirements must meet the functionality why it is purchased and confirm that your device meets these requirements. For example if your laptop does not meet the minimum requirements, among other issues, you will not have access. Most critically, your laptop runs the risk of not supporting software that is required for your procedures.

B. How to Check Computer Configuration

For the best performance, business owners should keep up-to-date with their computer equipment; to determine whether or not you should upgrade a workstation, review the PC's configuration in Windows.

In communications or computer systems, a configuration of a system refers to the arrangement of each of its functional units, according to their nature, number and chief characteristics. Often, configuration pertains to the choice of hardware, software, firmware, and documentation.

3.4 Configuring computer to accept new peripherals.

3.4.1 Adding new peripherals

A. **Hardware compatibility List**

The Hardware Compatibility List is a list of products maintained by Microsoft that note devices that have been tested for compatibility with Windows OS. It will also note those products that have been tested to pass Microsoft standards of compatibility, reliability and security and will work with all PCs running Windows operating system.

A hardware compatibility list (HCL) is a list of computer hardware (typically including many types of peripheral devices) that is compatible with a particular operating system or device management software. In today's world, there is a vast amount of computer hardware in circulation and many operating systems too. A hardware compatibility list is a database of hardware models and their compatibility with a certain operating system.

B. **Operating system compatibility**

Compatibility modecreates the environment of an earlier operating system for applications that are not compatible with the current operating system.

Compatibility mode allows an older program written for an earlier version of Windows to possibly run in new Operating System.

C. **Install device drivers**

A driver is software that allows your computer to communicate with a particular type of hardware device that is attached to your computer. Windows can automatically check if there are drivers available for new devices that you connect to your computer.

You can have Windows automatically download recommended drivers and detailed information for your hardware and devices. This is a good way to make sure all your hardware and devices work properly.

A device driver essentially converts the more general input/output instructions of the operating system to messages that the device type can understand.

Example: device drivers for: - displays (graphic cards) - NIC/modem
- printers - sound

Note: When you buy an operating system, many device drivers are built into the product.

D. **Testing hardware peripherals**

Hardware peripherals are tested and confirmed to client satisfaction, pay particular attention to possible impact on other systems and make adjustments as required.

Confirming tested results to client satisfaction, possible impact on other systems and making adjustments.

Compatibility testing is a type of software testing used to ensure compatibility of the system/application/website built with various other objects such as other web browsers, hardware platforms, users (in case if it's very specific type of requirement, such as a user who speaks and can read only a particular language).

Let's look into compatibility testing types:

- **Hardware**: It checks software to be compatible with different hardware configurations.
- **Operating Systems**: It checks your software to be compatible with different Operating Systems like Windows, UNIX, etc.
- **Software**: It checks your developed software to be compatible with other software. For example, MS Word application should be compatible with other software like MS Outlook, MS Excel,etc.
- **Network:** Evaluation of performance of a system in a network with varying parameters such as Bandwidth, Operating speed, Capacity. It also checks application in different networks with all parameters mentioned earlier.

- **Browser**: It checks the compatibility of your website with different browsers like Firefox, Google Chrome, and Internet Explorer etc.
- **Devices**: It checks compatibility of your software with different devices like USB port Devices, Printers and Scanners, Other media devices and Blue tooth.
- **Mobile**: Checking your software is compatible with mobile platforms like android, iOS etc.
- **Versions of the software:** It is verifying your software application to be compatible with different versions of the software. For instance checking your Microsoft Word to be compatible with Windows 7, Windows 7 SP1, Windows 7 SP2, Windows 7 SP3.

3
Self check-3

Part I: Give Short Answer.

1. Define compatibility? / 2 pts/

2. List the conditions to be considered in pre installation of peripheral device activity?/5 pts/

3. Why do you mean by Ergonomic and its impact? / 3 pts/

Operation Sheet 3.1: Graphics card compatibility Test

Operation title: Checking the Graphics card functionality

Purpose: To checkthe Graphics cardis compatible the operating system.

Instruction: Follow the following instruction to check the compatibility of Graphics card.

- **Steps in doing the task**

Step 1: Open the **Run** box by hitting **Win + R** keys.

Step 2: Input **dxdiag** and click **OK**.

Step 3: Go to the **Display** tab and you can see much information about your graphics card.

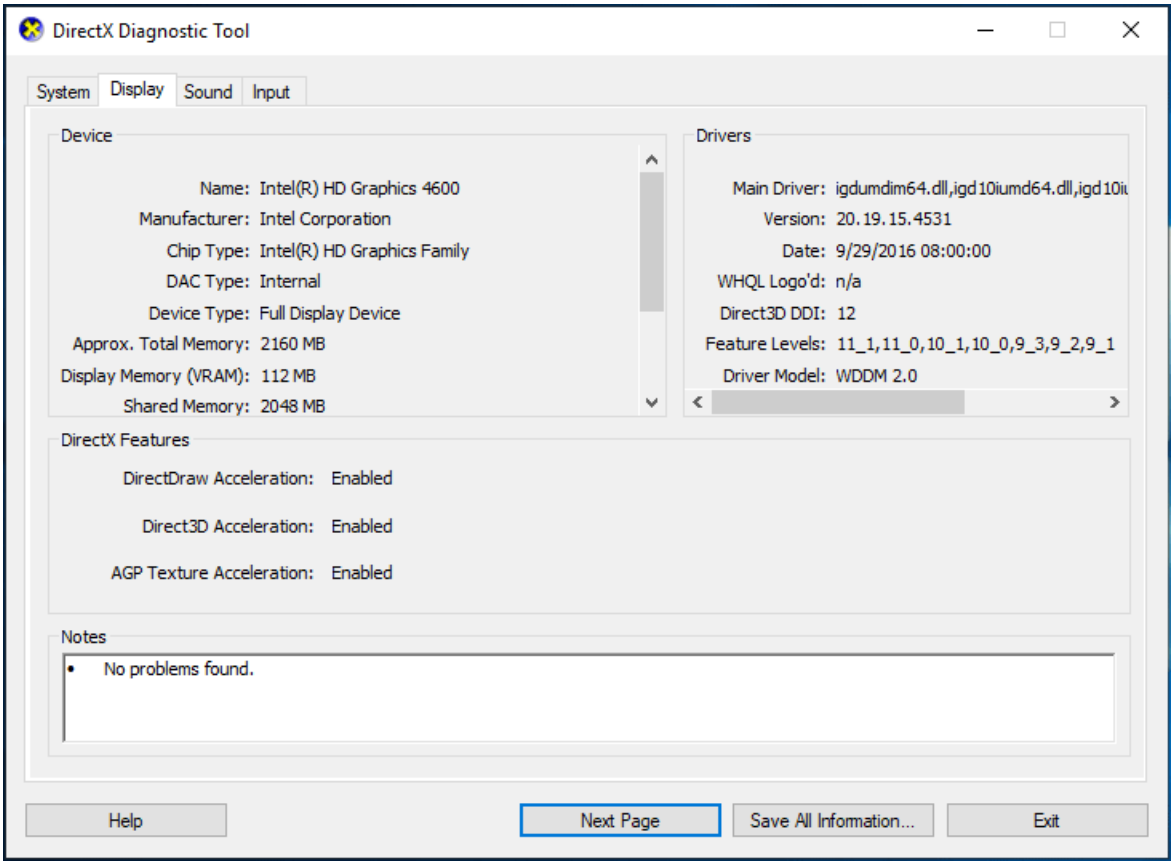


Fig 3.1: Submit Data for a Suppliers

Step 4: Go to the Internet and check if the specifications of your graphics card support DirectX9 or later.

- **Quality Criteria:** The brand and version should be updated.
- **Precautions:**
    - The Computer must be Functional and set up should be prepared.

- Keep your work area clean and well lit

Lap Test 3

Instruction: Do the Lap Test below accordingly.

1. Check the following drivers compatibility?

    - Audio drivers
    - Network drivers
    - USB drivers

Unit Four: Install peripherals to a network

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Planning location of peripherals to provide service to users
- Connecting peripherals to the network
- Connecting peripherals to computers using parallel, serial and other direct connection
- Testing Peripherals

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Locate peripherals to provide appropriate services to users
- Connect Peripherals to computers in the network
- Use parallel, serial or other direct connection methods appropriate for the job order.
- Test Peripherals for correct operation based on client's specifications.

4.1 Planning location of peripherals to provide service to users based on OHS standard.

Peripherals are devices physically connected to a computer or network that require 'driver' software to run them and to be configured to meet requirements of operating systems and network protocols.

Location of peripherals are planned to provide appropriate services to users and to take into consideration OHS standards.

What are the 5 occupational health and safety procedures?

- Be Aware.
- Maintain Correct Posture.
- Take Breaks Regularly.
- Use Equipment Properly.
- Locate Emergency Exits.
- Report Safety Concerns.
- Practice Effective Housekeeping.
- Make Use of Mechanical Aids.

4.1.1 Computer Network

A computer network is a connection of two or more computers and other peripheral devices to share resources each other. A system in which a number of independent computers are linked together to share resources and peripherals, such as hard disks and printers.

A. Advantages of Networks

- Sharing information/data. **Ex:** Email, documents, audio/video
- Sharing peripherals. **Ex:** printers, modems,
- Sharing software. **Ex:** word-processors, spreadsheets
- Centralizing administration/support.

B. Disadvantages of Networks

- Costly, in terms of extra equipments and technical skills
- Data security problems.
- Data could be at risk to unauthorized access or hackers.
- Spread of computer viruses due to sharing of some files or programs.

4.1.2 Types of Network

The type of network can be classified in to three based on geographical limitation:

A. LAN

- A local area network is a network built over a small area.
- Has geographical limitation/restriction.
- A LAN can range from simple to complex.

A. MAN

- A metropolitan area network (MAN) is a computer network that usually spans a city or a large campus.
- It is larger than local area network

B. WAN

- WAN is made up of a number of interconnected LANs.
- Wide area network has no geographical limit.
- The largest WAN is the Internet.

4.1.3 The type of network can be classified into two based on connection type:

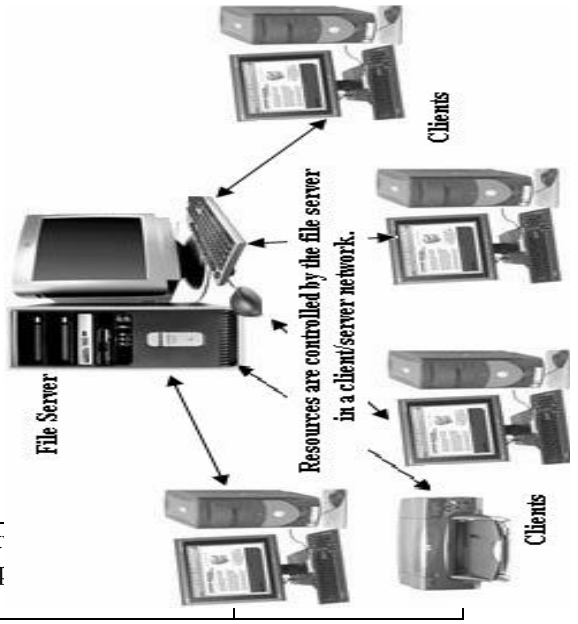
The connection can be done as **peer-to-peer** or **client/server**.

A. Peer to peer Connection type

A peer-to-peer network is a type of network in which every computer has equal importance on the network. Some of characteristics are:

- There is no centralized control over resources such as files or printers.
- It is a good networking solution when there are 10 or fewer users.
- Allows simple sharing of data and hardware, such as printers.
- Has Poor security for data and other resources.
- It is easy to install/set up.

B. Server-Based Networks (client/server)



- This type of network is designed to support a large number of users.

- In a server based network environment the server(s) perform several key operations such as :

Figure 4. 1 Server Based Network

  - Has good security for data and other resources
  - Data can be backed up centrally
  - Can support large number of users.
  - Requires high level of technical skill to setup and support
  - Costly, in terms of equipments and IT professionals
  - Requires at least one knowledgeable administrator

But the type of network you choose to implement will depend on the following factors:

- Size of the organization
- Level of security required
- Type of business
- Level of administrative support available
- Amount of network traffic
- Needs of the networks users
- Network budget

4.1.4 Types of Network topology

Network Topology refers to physical or logical layout (arrangement or shape) of the computers (devices) in the network. It is the locations of the computers and how the cable is run between them. Network topologies are categorized into the following basic types:

A. Bus
B. Ring
C. Star
D. Mesh

More complex networks topologies can be built as hybrids of two or more of the above basic topologies.

A. Bus Topology

Bus topology is a type of network which uses a common channel (a single communication line) to connect all devices together to share information and resources.

In a bus topology:

- Each computer (node) connects to a single segment trunk (a communication line), called backbone or main highway, which is referred to as the 'bus'.
- The signal travels from one end of the bus to the other.
- Terminator is required at the end of the backbone to absorb the bouncing signal.
- A media access method called CSMA/MA is used to handle the collision that occurs when two signals placed on the wire at the same time.

Fig 4.2 Bus Topology

Advantages of bus network:

- Failure of one of the station does not affect others.
- Easy to implement and extend.
- doesn't require much cabling
- work best with a limited number of computers

Disadvantages of bus network:

- Limits on cable length and number of computers.
- Difficult to find network faults.
- A cable (a backbone cable) brake/failure can disable the entire network.
- As the number of computers increase, the speed of the network slows down
- Terminator is required

A. Ring Topology

Ring topology is a type of network in which every computer connected to a single cable.

- **In ring topology:**

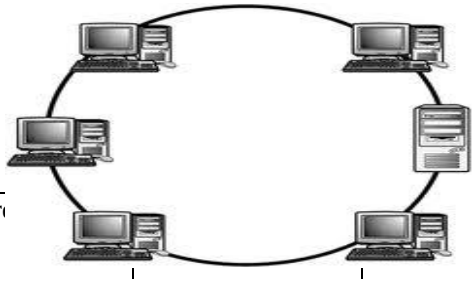


Fig 4.3 : Ring Topology

- All messages travel through a ring in the same direction (either "clockwise" or "counter clockwise").
- Each node handles its own applications and also shares resources over the entire network.

Fig 4.1.2 1 Ring Topology

- Each computer on the ring has equal access, but only one computer can send message at a time.
- The token travels along the ring until it reaches the destination address.

Advantages of ring topology:

- All nodes on the network have equal chanceof transmitting data.
- Use of cable is economical.
- Data can be sent over large distances (each computer can act as repeater)

- **Disadvantages:**
  - If one of the nodes/cable fails, the whole networks will fail.
  - Difficult to add and delete nodes to /from the ring.

B. Star Topology

A star topology is a type of network which uses a central point to share data files, programs and resources between clients.

- In star network:
  - The central point is called **switch** or **hub**.
  - Signals are transmitted from the sending computer through the hub/switch to all computers on the network.

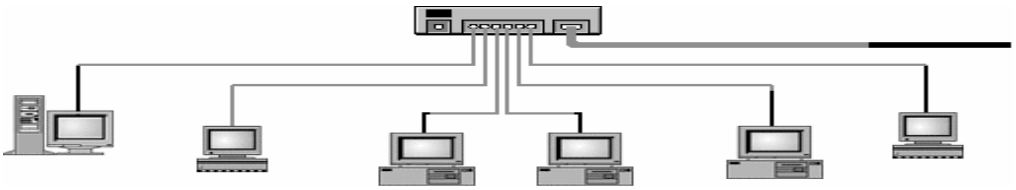


Fig 4.4: Star Topology

Advantage of star topology:

- Easy to add new workstations
- Has centralized control
- Failure of a single computer does not affect the whole network
- Fault of a single workstation can be identify easily

Disadvantage of star topology:

- If the central point fails, the whole network will stop.
- Use of cable is not economical.

C. Mesh topology

Mesh topology is a type of network in which every node has a connection to every other node in the network.

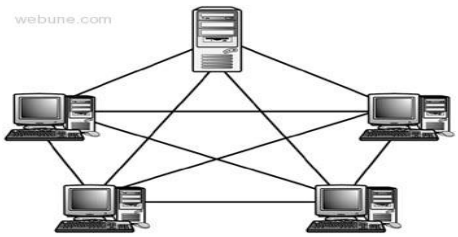


Fig 4.5: Mesh Topology

4.1.5 Network Transmission Media

Transmission Media is the physical path between the transmitter and the receiver in a data communication system.

There are 2 basic categories of Transmission Media:

A. Wire/Guided

B. Wireless/Unguided.

A. Wire/Guided Transmission Media: uses a "cabling" system that guides the data signals along a specific path. The data signals are bound by the "cabling" system. Guided Media is also known as Bound Media.

B. Wireless/Unguided Transmission Media: consists of a means for the data signals to travel but nothing to guide them along a specific path. The data signals are not bound to a cabling media and as such are often called Unbound Media.

Commonly there are three types of guided transmission cable:-

1. Twisted Pair Cable
2. Coaxial Cable
3. Optical fiber cable

1. Twisted pair cable

Twisted-pair cable consists of two insulated strands of copper wire twisted around each other. The oldest, least expensive and most commonly used transmission media.

Two types of twisted-pair cable:-

I. Unshielded twisted-pair (UTP)

II. Shielded twisted-pair (STP) cable.

I. Unshielded Twisted Pair (UTP):- is the most popular and is generally the best option for school networks. The quality of UTP may vary from telephone-grade wire to high-speed cable. The cable has four pairs of wire inside the jacket. Each pair is twisted with a different number of twists per inch to help eliminate interference from adjacent pairs and other electrical devices.

- It is the most commonly used cable types in LANs.
- It is made up of four twisted pairs enclosed in a plastic jacket.
- Depending on the bandwidth offered there are seven types of UTP cables such as Cat-1,Cat-2,cat-3,cat-4,cat-5,cat-6 and cat-7
- The Most commonly used UTP cables are category-5 cables and its bandwidth is 1000Mbps.

Fig 4.6: Unshielded Twisted Pair

II. Shielded Twisted Pair (STP) cable

- Uses a woven copper braid jacket and higher quality protective jacket. Also uses foil wrap b/n and around the wire pairs
- Much less susceptible to interference and supports higher transmission rates than UTP
- shielding makes it somewhat harder to install
- same 100 meters limit as UTP

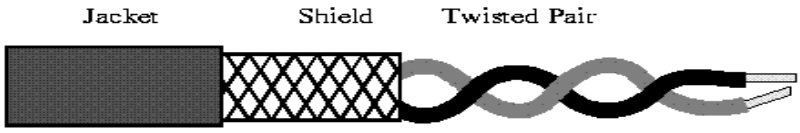
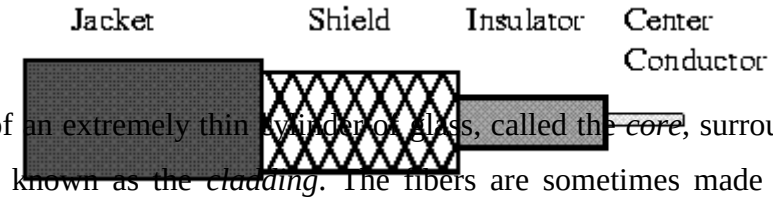


Fig 4.7: Shielded Twisted Pair (STP) cable

2. Coaxial Cable

Coaxial Cable consists of 2 conductors. The inner conductor is held inside an insulator with the other conductor woven around it providing a shield. An insulating protective coating called a jacket covers the outer conductor.

The outer shield protects the inner conductor from outside electrical signals. The distance between the outer conductor (shield) and inner conductor plus the type of material used for insulating the inner conductor determine the cable properties or impedance. Typical impedances for coaxial cables are 75 ohms for Cable TV, 50 ohms for Ethernet Thinnet and Thicknet. The excellent control of the impedance characteristics of the cable allow higher data rates to be transferred than Twisted Pair cable.



3.Optical Fiber

An optical fiber consists of an extremely thin cylinder of glass, called the *core*, surrounded by a concentric layer of glass, known as the *cladding*. The fibers are sometimes made of plastic. Plastic is easier to install, but cannot carry the light pulses for as long a distance as glass.

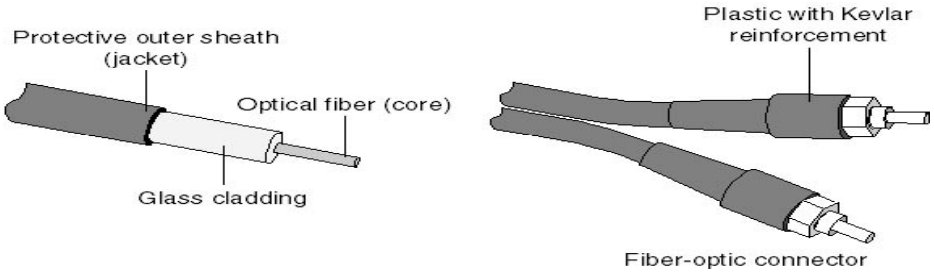


Fig 4.8: Optical Fiber

4.1.6 LAN cables and connectors

An Ethernet cable is a network cable used for high-speed wired network connections between two devices. This network cable is made of four-pair cable, which is consists of twisted pair conductors. It is used for data transmission at both ends of the cable, which is called RJ45 connector.

The Ethernet cables are categorized as Cat 5, Cat 5e, Cat 6, and UTP cable. Cat 5 cable can support a 10/100 Mbps Ethernet network while Cat 5e and Cat 6 cable to support Ethernet network running at 10/100/1000 Mbps. There are three types of Ethernet cables are available:

- Straight-through cable
- Crossover cable
- Rolled cable

A. What is straight Through Cable?

Straight-through cable is a type of CAT5 with RJ-45 connectors at each end, and each has the same pin out. It is in accordance with either the T568A or T568B standards. It uses the same color code throughout the LAN for consistency. This type of twisted-pair cable is used in LAN to connect a computer or a network hub

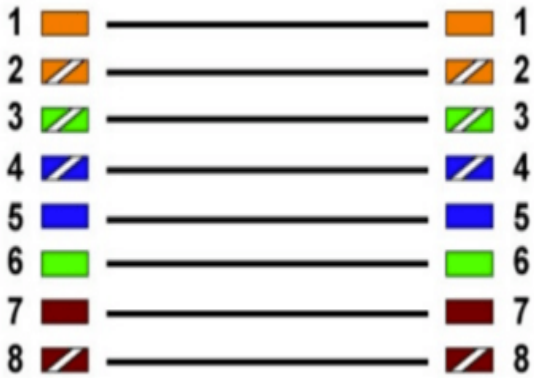


Fig 4.8: Straight through Cable

such as a router. It is one of the most common types of network cable.

B. What Is Crossover Cable?

A Crossover cable is a type of CAT 5 where one end isT568A configuration and the other end as T568BConfiguration. In this type of cable connection, Pin 1 is crossed with Pin 3, and Pin 2 is crossed with Pin 6.

Crossover cable is used to connect two or more computing devices. It is widely used to connect two devices of the same type: e.g., two computers or two switches to each other.

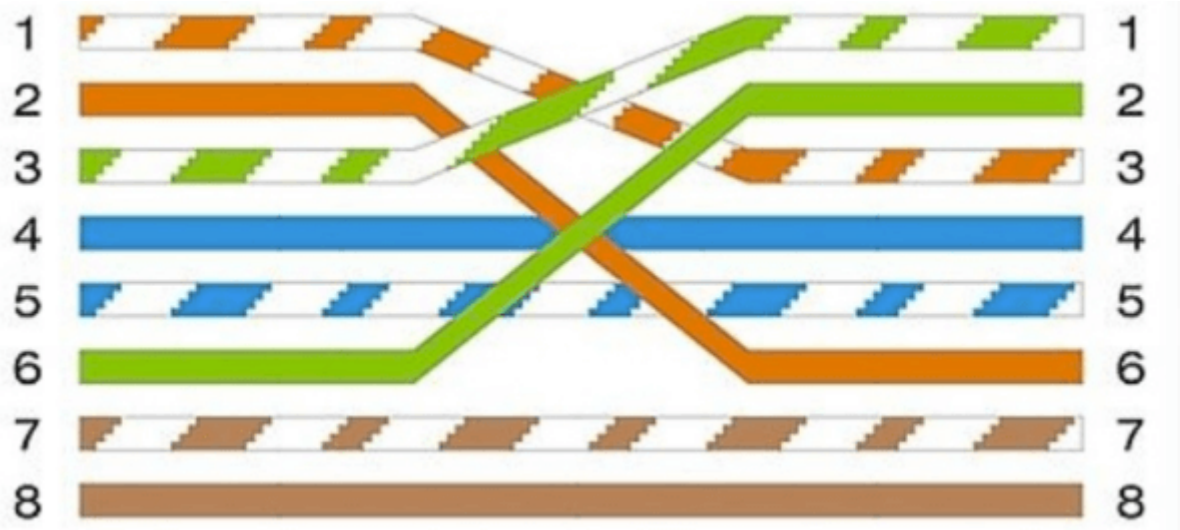


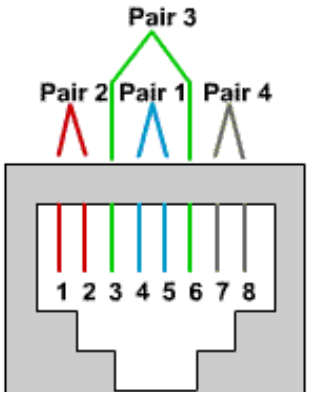
Fig 4.9: Crossover Cable

C. Making Ethernet 10Base-T cables:
   - Straight-thru cable: PC-to-HUB.
   - Crossover cable: PC-to-PC.

D. Making console cables:

Rollover cable: Serial port-to-console port of Cisco equipment's

10Base-T: T568-B



10Base-T: T568-A

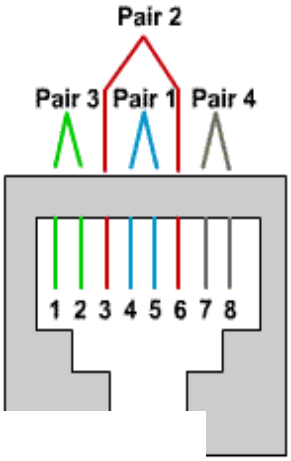


Fig 4.12 10Base-T: T568-B

Fig 4.11: 10Base-T: T568-A

4.2 Connecting peripherals to the network

Peripherals are devices physically connected to a computer or network that require 'driver' software to run them and to be configured to meet requirements of operating systems and network protocols. Single user peripherals can include: printers, scanners, speakers, external DVDs, CDs, game pads and joysticks, graphics tablets and pens, modems, UPS (uninterrupted power supply), removable hard disks and webcams, while printers, network attached storage devices, and LCD projectors are often accessed over networks.

4.2.1 Large and small LANs, WANs and VPNs

A virtual private network (VPN) is programming that creates a safe and encrypted connection over a less secure network, such as the public internet. A VPN works by using the shared public infrastructure while maintaining privacy through security procedures and tunneling protocols.

A local-area network (LAN) is a computer network that spans a relatively small area. Most often, a LAN is confined to a single room, building or group of buildings; however, one LAN can be connected to other LANs over any distance via telephone lines and radio waves.

Many WANs are built for one particular organization and are private. Others, built by Internet service providers, provide connections from an organization's LAN to the Internet. WANs are often built using leased lines.

4.2.2 The internet

A global computer network providing a variety of information and communication facilities, consisting of interconnected networks using standardized communication protocols.

The information used to get packets to their destinations is contained in routing tables kept by each router connected to the Internet. Routers are packet switches. A router is usually connected between networks to route packets between them. Each router knows about its sub-networks and which IP addresses they use.

The Internet is a global wide area network that connects computer systems across the world. It includes several high-bandwidth data lines that comprise the Internet "backbone." When you connect to the Internet using a public Wi-Fi signal, the Wi-Fi router is still connected to an ISP that provides Internet access.

4.3 Connecting peripherals to computers using parallel, serial and other direct connection methods

Peripheral devices can be connected to your computer via USB port, serial port, parallel port, specialized network card, or Ethernet network

Peripherals are connected to computers in the network using parallel, serial or other direct connection methods appropriate for the job order.

4.3.1 Parallel

Parallel and serial networking connections are alternative methods of moving data between computers, or from a computer to a peripheral device.

Parallel connections are still used for large computer installations and specialized tasks.It is more like a superhighway, where there may be eight or more path in each direction moving traffic.

4.3.2 Serial Connection

A serial connection is a single-lane road, with all data moving back and forth along a single channel for each direction Parallel Advantages of Serial.

Serial connections are easier for computers to maintain and simpler to work with, as a single serial connection will contain data for only one networking or peripheral purpose.

4.3.3 Direct connection

From simple direct connections between computers to complete home and even IT networks, you will learn how to select equipment and configure the systems.

4.4 Testing Peripherals based on client's specifications.

4.4.1 Definition of Peripheral Testing

Software testing company provides a range of different types of product testing services. Peripheral testing does not involve the presence of the specified algorithm of performance or some specific methodologies and techniques. Software testing has a number of peculiarities and tricks. Equipment for testing computer peripherals is disclosed having a computer, with keyboard and display, for coupling to such peripherals by way of a peripheral connector, the computer being provided with software defining test and exercising routines for operating a peripheral device in a controlled and monitorable manner.

Peripherals are tested for correct operation based on client's specifications i.e. testing Your Computer Network:

- Check the physical connections. Check that the Link light — the little red or green light next to the RJ-45 port — is lit on every computer.
- Verify that you can log on.
- Check the network configuration.
- This command will spit out numerous lines of information.
- Verify that the computers can ping each other.

Self check-4

Part I : Choose the best answer for the following question./ 2 pts/

1. The core elements of a computer are _____.

A. Central processing unit C. Motherboard

B. Power supply D. All

2.Which is more secured?

A. Sever based C. All

B. peers to peer D. None

3. Which one is the fastest medium?

A. Fiber C. Coaxial

B. UTP D. All

4. _____is an example of peripheral device.

A. Input C. Process

B. Output D. All

5. _____ is the best type of topology.

A. Star C. Ring

B. Star Bus D. Mesh

Part II: Write True If the Statement is correct, False If It Is Incorrect./ 1pts/

1. I/O ports are design for connecting external device to internal computer.

2. Some of your peripherals will need special software.

3. Parallel port uses a 27-pin connector.

4.Aperipheral device connects to a computer system to add functionality.

Operation sheet-4.1: Crimp Ethernet Cable using RJ-45 connecter

Operation title: Crimping Ethernet Cable using RJ-45 connecter

Purpose: To create a network cable in order to connect two or more computers.

Instruction: Using instruction below and prepare straight through cable using a RJ-45 connecter.

- **Tools and requirement:**
    1. Computers
    2. Maintenance Tool kit
    3. Network toolkit
    4. Software
    5. Printer
    6. RJ-45 connecter
- **Steps in doing the task**

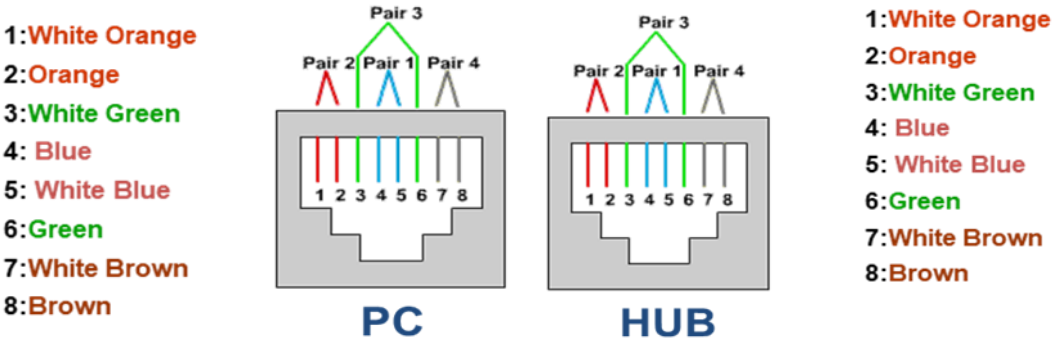
Step 1: Prepare, a Cat5e or Cat 6 cable i.e. Unshielded Twisted Pair (UTP.).

Step 2: Putting the Wires in the Connectors i.e. next, this will need at least 2 RJ45 wire connectors, one for each side of the cable.

Note: After the wires have been spread apart organizes them into the correct color order of the desired cable. Use T-568B standard for a straight-through, which means that the color order for the wires is going to be the exact same on both sides.

After the colors have been organized, if they don't all reach the same length, use wire cutters directly on the end, to make each wire the same length.

10Base-T: Straight-Through cable



Step 4: Crimping the Connector

Fig 4.12:Crimp with RJ 45

Step 5: Testing the Cable.

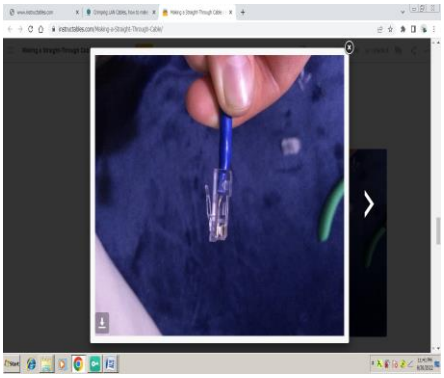


Fig 4.13:Testing Cable

Step 7.Connect each of the other computers to the router using an RJ-45 cable for each connection:

- **Quality Criteria:** The Straight through cable must be functional in networked computers.
- **Precautions:**
    - The LAN set up must be available.
    - Keep your work area clean and well lit
    - Apply OHS

Lap Test-4

Instruction: Do the given Lap Test below.

1. Prepare :

   A. Straight through cable using RJ-45 connecter.
   B. Cross over cable using a RJ-45 connecter.

2. Test both cable using Network cable Tester.

Unit Five: Configure peripheral services

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Manage local area network-connected peripherals
- Meaningful name for peripherals and control queues
- Configure Security and access to use of peripherals
- Configure Workstation to allow applications

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Install the required software to manage local and network.
- Set Requirement for software peripherals according to business requirement.
- Use Meaningful names for peripherals and control queues.
- Set Security and Control access to allow appropriate users to make use of peripherals.
- Configure Workstation to allow applications to work with peripherals.

5.1 Install required software to Configure/manage local area network

5.1.1Network Peripherals

A network peripheral refers to equipment which typically enables computers to communicate each others. A local peripherals is a peripheral that can be connected to the stand alone (a single) computer**.** Examples of Network peripherals include: - routers, Switches, Access points, Network interface cards and other hardware devices.

B. Hub

Hubs are simple network devices, and they are simply low cost. Most hubs are referred to as either active or passive.

C. Switch

On the surface, a switch looks much like a hub. Despite their similar appearance, switches are far more efficient than hubs and are far more desirable for today's network environments.

D. Repeater

A repeater amplifies the signal it receives on one port before it transmits it on other ports. Because the repeater does not check on the contents of the data it receives or retransmits, frames that are corrupted by noise and other factors can also be repeated. The development of the hub replaced the repeater for all practical purposes, because it performs the same functions, and can include additional features.

E. Routers

A router is a special computer which has the ability to perform such tasks as routing and forwarding information with use of software and hardware. A router is used to provide connectivity across wide area network (WAN) links and route information between two LAN segments.

F. **Gateways**

The term gateway is applied to any device, system, or software application that can perform the function of translating data from one format to another. Actually, the term gateway refers more to a network role than a network device.

F. Modems

Modems perform a simple function: They translate digital signals from a computer into analog signals that can travel across conventional phone lines .It is a contraction of the terms modulator and demodulator.

G. Network Interface Cards (NICs)

NICs are the mechanisms by which computers connect to a network. NICs come in all shapes and sizes, and they come in prices to suit all budgets.

- Known as network card, network adapter, and LAN adapter, etc.

H. Transceivers

The term transceiver does not necessarily describe a separate network device but rather an integrated technology embedded in devices. I.e. transceiver = transmitter and a receiver device that receives data, converts it, and then sends it to another location.

I. Firewall

A hardware or software system that is used to separate one computer or network from another one. The most common type is used to protect a computer or an entire network from unauthorized access from the Internet.

5.2 Using meaningful name for peripherals and control queues

A peripheral device is typically a device that is external to a computer and connected either wirelessly or via a cable, although some are internal to the digital system. A way of introducing students to peripheral devices is to start with a desktop computer with no other devices connected. Progressively add devices as the different user needs are introduced.

As you install and configure a printer you should keep to the network standards of the organisation, which should include naming conventions for peripherals and other devices.

Each organisation will have its own standards, but it is important that users can identify peripherals easily. There have been cases of users waiting by one printer for their report while it is being printed three floors away.

Naming conventions usually reflect the function of a peripheral, and in the case of a large office or global enterprise, the location. For example, the following may be used for a peripheral name of 15 characters:

Characters	**1–4**	**5–7**	**8–10**	**11–15**
Attributes reflected	City or town	Type of peripheral	Workplace location	Uniqueness of device, usually number sequence

Table 5.1 Peripheral Naming Concept

5.3 Configuring security and access to make use of peripherals.

5.3.1 Basics of Peer to peer Network

In a peer-to-peer network, computers on the network are equal, with each workstation providing access to resources and data. This is a simple type of network where computers are able to communicate with one another and share what is on or attached to their computer with other users.

The Windows networking functions allow you to implement networking capabilities in your application without making allowances for a particular network provider or physical network implementation. This is because the Windows networking functions are network independent.

5.3.2 Configuring peripherals to access and use security

A. User Privileges

Windows 10 allows providing security to files and folders; this feature is available because of the NTFS (New Technology File System).

There are different levels of security, such as read, modify, full control etc.

Full control permissions include:

- Read
- Write
- execute
- delete
- change permissions

Where as modify includes 4 permissions that is, read, write, execute and delete.

B. Sharing Network resources

Sharing allows an object to be accessed from network. By default in windows 10, there are some hidden shares, these shares end with a $ symbol. To view these default shares open computer management (right click on my computer and choose manage) and select shared folders and then shares. Most devices support access control lists. Example: printers, sharing data using folders, and manage devices, etc

5.4 Configuring workstation to allow applications work with peripherals.

5.4.1 Configuring workstation

- Perform appropriate steps to set up a basic workstation includes:
  - Plug in cables
  - Power on computer
  - Follow initial operating system setup wizard
  - Install security software,
  - Configure peripherals (if applicable)
  - Install and Uninstall unneeded software (if applicable)
  - Configure and verify Internet connection
  - Run software and security updates
  - Other user accounts (if applicable)
  - Basic cable management
  - Software version identification and compatibility
  - Configure keyboard, mouse, display, sound, etc.

5.4.2 IP Networking Basics

IP Addresses

Each device on an IP network requires 3 different pieces of information in order to correctly communicate with other devices on the network: an IP address, a subnet mask, and a broadcast address. You will usually see each of these numbers written as four "octets" (e.g. 198.41.12.151, 255.255.255.0, and 198.41.12.255).

Every IP address is really made up of two pieces: a "network" portion, which tells routers what group of devices a packet should go to (e.g., any, a campus, etc.) and a "host" portion which tells routers what specific device among that group the packet should go to.

By examining the destination address in an IP packet that must be forwarded, and by using information that has either been statically configured or dynamically gathered from other routers, any router can determine the optimal path for forwarding packets from one group to another.

Each group of devices on an IP internet needs to have a unique network portion, and each device within that group also needs a unique host portion. In the case of the Internet, this uniqueness is made possible by indirectly getting all network portion assignments through a central clearinghouse called the Network Information Center or "NIC." The NIC assigns blocks of addresses to Internet Service Providers (ISPs), who then assign these addresses to their customers.

If your network is, or will be, connected to the Internet, you will need to get a unique network address from your ISP or network administrator.

How much of any given address is the network part and how much is the host part is determined by the "class" of the network. In each case, the part of the address not used for the network portion is left as the host portion.

Class	Network Portion	Hosts Allowed
A	from 1.0 to 127.0	approx. 16 million
B	from 128.0 to 191.255	65,536
C	from 192.0 to 223.255.255	255

Table 5.1: IP Address Classes

You can always tell what class an address is by looking at the first octet and comparing it to the chart above. For instance, the address at the top of this appendix has 198 as the first octet, so it is Class C.

Subnet Masks

A subnet mask tells a router how much of an address it should treat as the network portion. The masks for traditional Class A, B and C networks.

Class	Subnet Mask
A	255.0.0.0
B	255.255.0.0

C	255.255.255.0

Table 5.2: Standard IP Subnets

Self check-5

1. List some of the Networking device and define them?/ at least 4/ /5 pts/

2. List the privileges when configuring Folders network security? / 5 pts/

Operation sheet-5.1: Setup a peer-to-peer network in windows 10

Operation title: Peer-To-Peer Networking in Windows 10
Purpose: To Connect two or more computers in local area network.

Instruction: Using the information given below and equipments configure Local area Network.

- **Tools and requirement:**

1. Computers
2. Maintenance Tool kit
3. Network toolkit
4. Software
5. Printer

- **Steps in doing the task**

1. On your desktop, right-click on the **This PC** to reveal the context menu and select **Properties**. This should open a control panel window.
2. Locate and click on Advance **Change Settings** in the window that opens. This will open a **System Properties**
3. Under the **Computer Name** tab, click on the **Change** button.

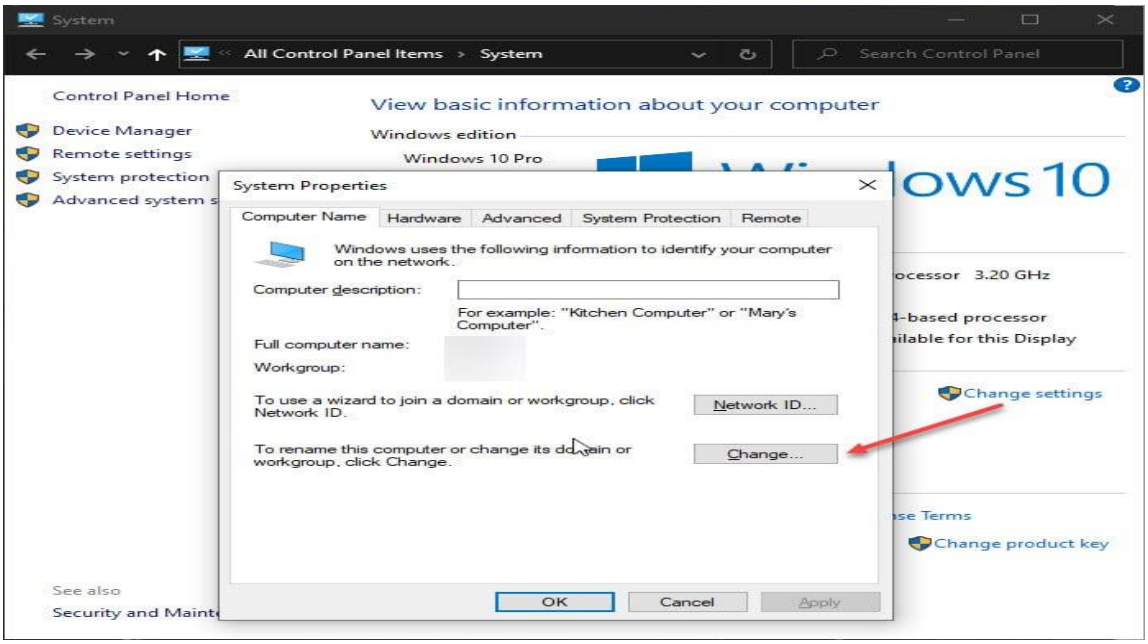


Fig.5.2: Computer Name

4. Click on the radio button next to how you wish to connect to the P2P network.
   If the network you wish to connect to has a domain, enter the name next to the **Domain** radio button.
   If you wish to connect through a local Workgroup, enter the name of the **Workgroup** after selecting the radio button for the same.

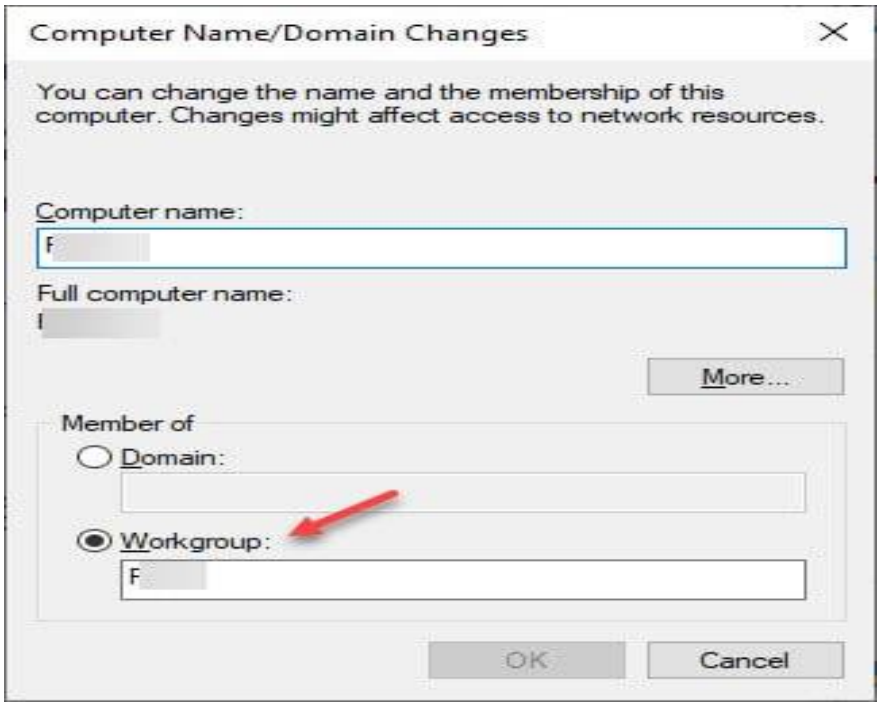


Fig. 5.3 Computer properties

5. Click on **OK**. You will see a prompt for restarting your PC.
6. **Restart** your PC.
7. After your PC has rebooted, open **File Explorer**. You can use the keyboard shortcut **Win + E**.
8. From the left quick access menu, click on **Network**.
9. You should see the other computers on your Network in the top row. If you do not see your computers, you will instead be presented with a yellow bar saying **Network computers are not visible**. Click on this bar to change the settings.
10. Select **Turn on network discovery and file sharing**.
11. **Refresh** the explorer by pressing F5, or from the right-click context menu.

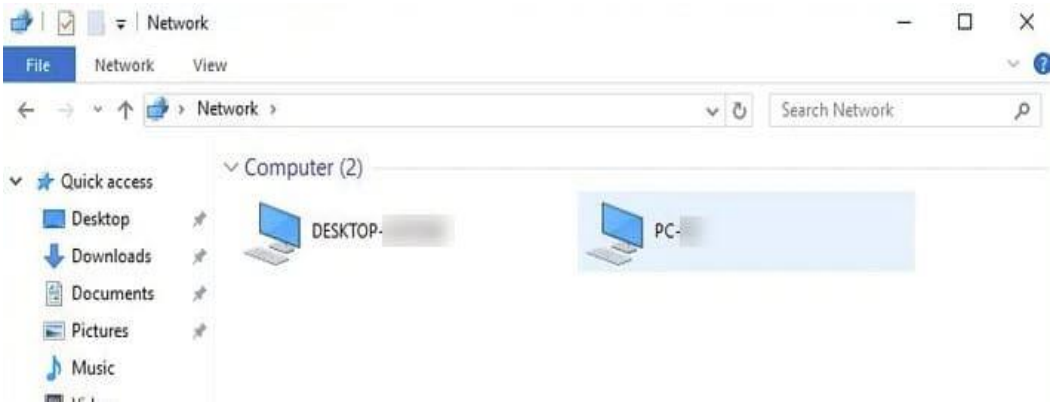


Fig. 5.4: View Network Computers

4. Double click on any PC to access the files on your PC.
5. **Enter the credentials** of the PC that you wish to gain access to and click on **OK**.
6. You will be able to see the folders that you shared in step 3.

Quality Criteria: LAN must be Functional.

Precautions:

- All network set up must be prepared./ i.e. Minimum Two computers, with Switch, and Network Tester/
- Keep your work area clean and well lit
- Check for no damaged parts.
- Do not force components in connecting devices in ports

Operation sheet 5.2: Procedure for set up Workstation devices.

Operation title: Configuring Windows 10 Workstation Computers

Purpose: To Make the networked devices functional.

Instruction: using the given steps below enable network setting of Windows 10 by opening Control Panel.

- **Tools and requirement:**
    1. Computers
    2. Maintenance Tool kit
    3. Network toolkit
    4. Software
    5. Printer
- **Steps in doing the task**

1. Open Control Panel.
2. Click on Network and Internet.
3. Click on Network and Sharing Center.
4. Click the Change advanced sharing settings option from the left pane.

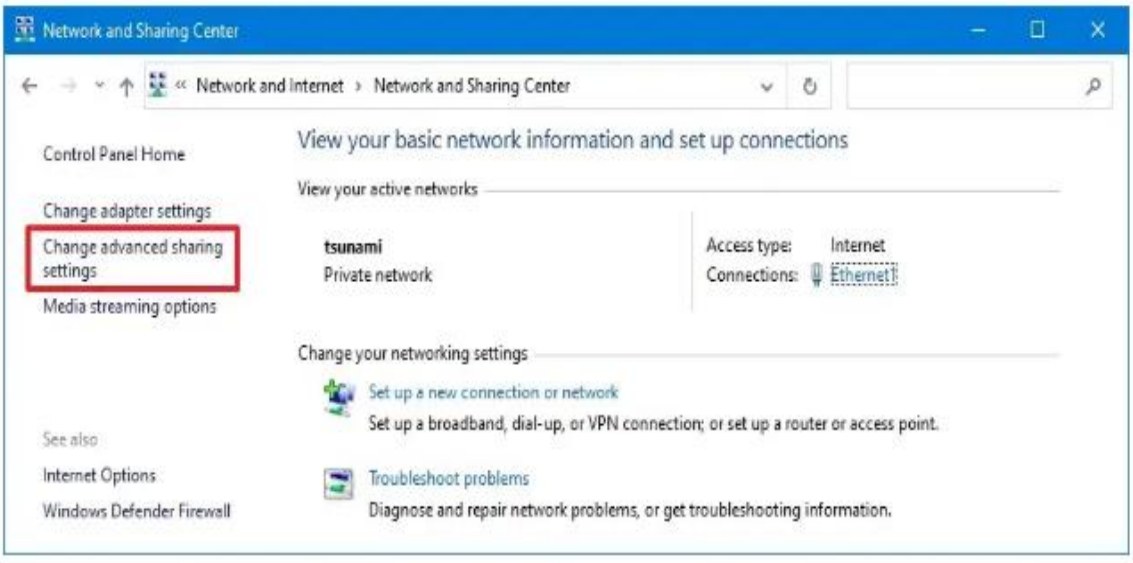


Fig. 5.5Properties of Network Discovery

5. Expand the Private network profile.
6. Under the “Network discovery” section, select the Turn on network discovery option.

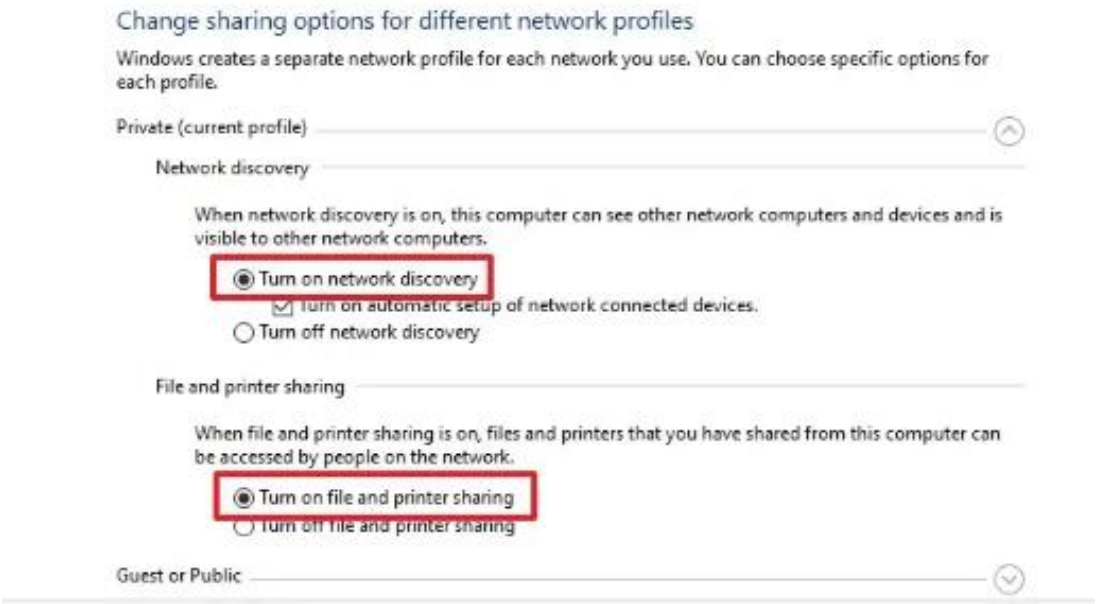


Fig. 5.6 Properties of Network Discovery

7. Under the “File and printer sharing” section, select the “Turn on file and printer sharing” option.
8. Click the Save changes button. After you complete the steps, you should now be able to find other computers in the local network.

- **Quality Criteria:** LAN must be Functional.
- **Precautions:**
    - All network set up must be prepared.
    - Keep your work area clean and well lit

Operation Sheet-5.3: Setting a Static IP Address on Windows 10

Operation Title: How to assign static IP address using Control Panel

Purpose: To Configure IP address on Windows 10 and to make network devices functional.

Instruction: Use these steps to assign a static IP configuration using Control Panel:

- **Tools and requirement:**
  1. Computers
  2. Maintenance Tool kit
  3. Network toolkit
  4. Software
  5. Printer
  6. cables
- **Steps in doing the task:**

1. Open Control Panel.
2. Click on Network and Internet.
3. Click on Network and Sharing Center.
4. Click the Change adapter settings option on the left navigation pane.

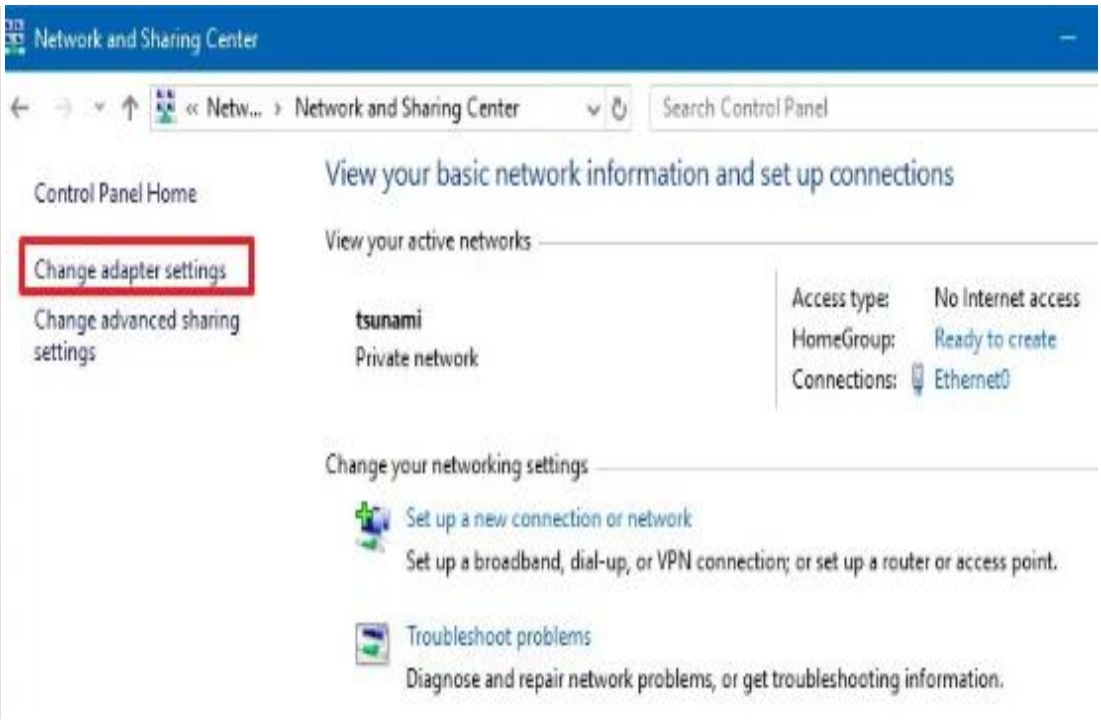
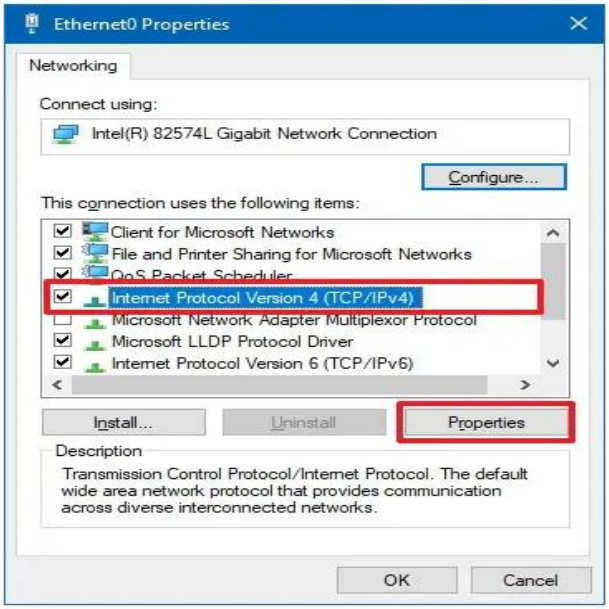


Fig. 5.7 Properties of Network Adaptor

Control Panel Network and Sharing Center

5. Right-click the network adapter and select the Properties option.
6. Select the Internet Protocol Version 4 (TCP/IPv4) option.
7. Click the Properties button.



Control Panel's network adapter properties

Fig. 5.8Properties of Network for IP

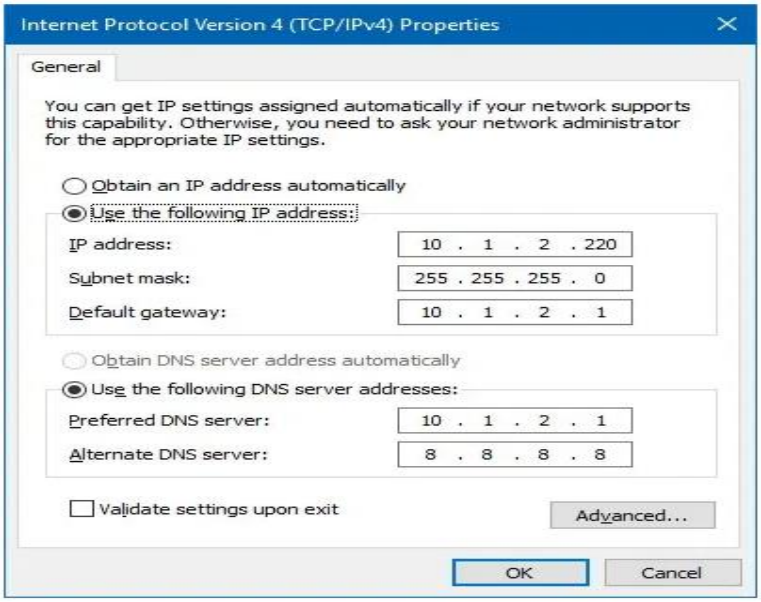


Fig. 5.9 Interface of Properties of Network card

8. Select the Use the following IP address option.
9. Assign the static IP address – for example, **10.1.2.220**, and **10.1.2.222** respectively.
10. Specify a Subnet mask. Typically, on a home network, the subnet mask is 255.255.255.0.

11. Specify a Default gateway. (Usually, your router's IP address. For example, **10.1.2.1**.)
12. Under the "Use the following DNS server addresses set Preferred DNS server" section, set the Preferred DNS server address, usually your router's IP address or server IP address providing DNS resolutions (for example, 10.1.2.1).
13. (Optional) Specify an Alternative DNS server, which the computer will use if it cannot reach the preferred DNS server.
14. Click the OK button.

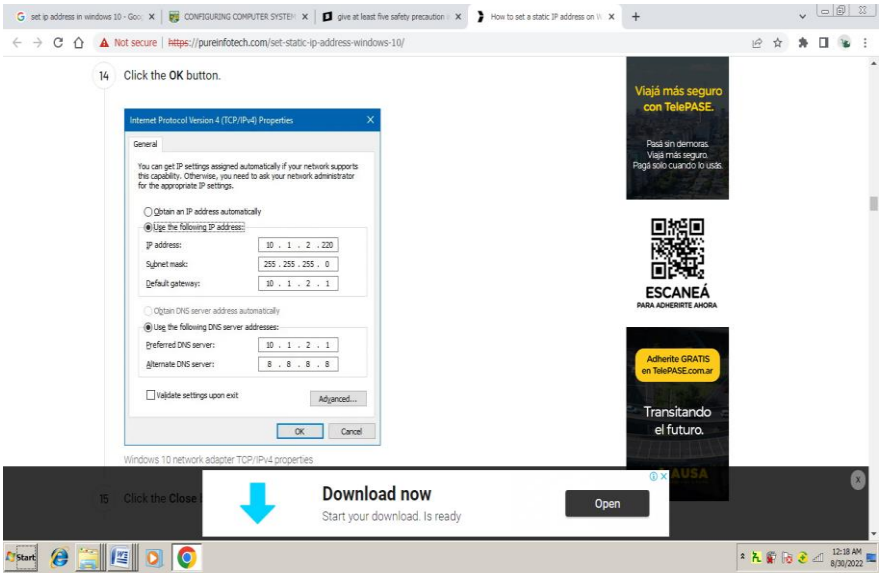


Fig. 5.10 Assign IP

15. Click the Close button again.Once you complete the steps, you can open your web browser and load a website to see if the configuration works.

- **Quality Criteria:** LAN must be Functional.
- **Precautions:**
  - All network set up must be properly set up.
  - Keep your work area clean and well lit
  - Check for damaged parts
  - Do not force components into computer ports.

Operation sheet 5.4: View the Connected Computers on Windows 10

- **Operation title:** Viewing the Connected Computers on Windows 10
- **Purpose:** To find computers in the network on Windows 10
- **Instruction:** Using the given steps below find other computers connected to a local network on Windows 10.
- **Tools and requirement:**
  1. Computer
  2. Maintenance Tool kit
  3. Network toolkit
  4. Software
  5. Printer
  6. Cables
- **Steps in doing the task**

1. Open File Explorer on Windows 10.
2. Click on Network from the left pane.
3. See computers available in the local network.

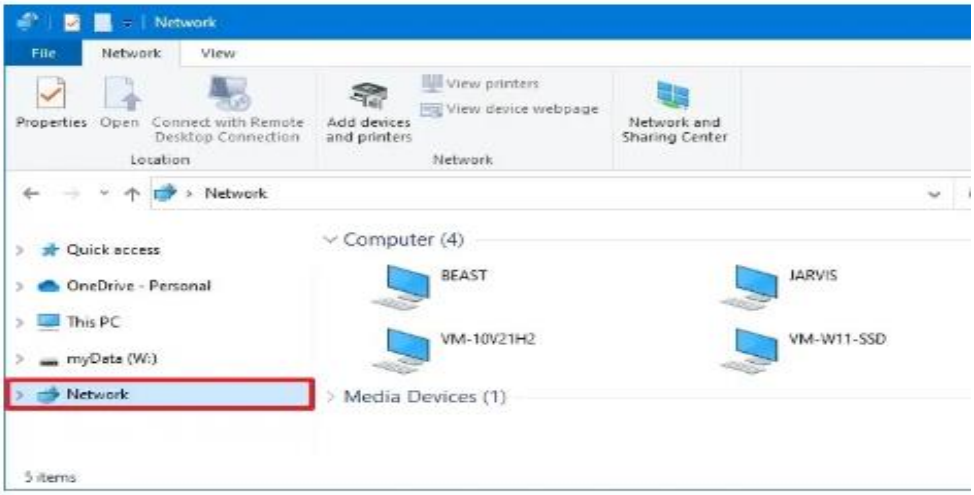


Fig. 5.11 View Network Computers

4. Double-click the device to access its shared resources, such as shared folders or shared printers.

Note:

Once you complete the steps, you will be able to access the device. However, you will only be able to access the shared resources as long as the remote device has the same account andpassword. If it doesn't, you'll need to authenticate using an administrator account username and password available on the remote computer to access it.

Operation Sheet-5.7: Share Files to the Other PC on Windows 10

Operation Title: How to Share Files to the Other PC

Purpose: To Share Files to the Other PC on Windows 10

Instruction: Use these steps to Share Files to the Other PC.

- **Tools and requirement:**
    1. Computer
    2. Maintenance Tool kit
    3. Network toolkit
    4. Software
    5. Printer
    6. Cables
- **Steps in doing the task:**

1. Go to the location where that folder or file is saved, which you want to share.
2. Right-click on that folder and hover over to **'Give access to'** to reveal additional settings. Click on **Specific people**.
3. From the drop-down menu, select **'Everyone'** and click on **Add**.

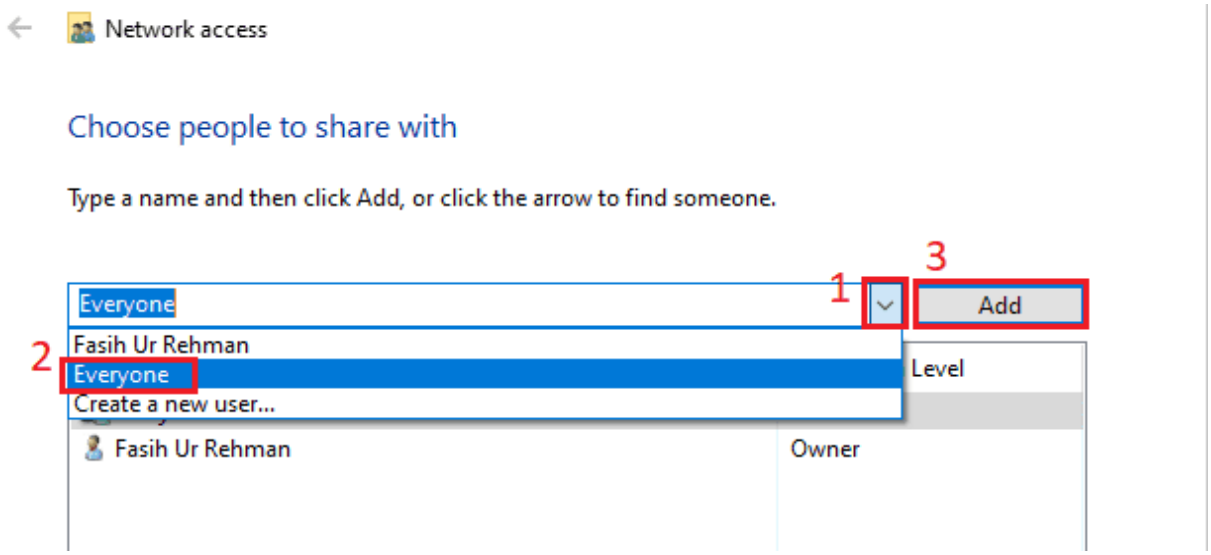


Fig. 5.13 Share Folder

4. In the **Permission level** column, click on the arrow and select the **Read/Write** option for the **Everyone** group.

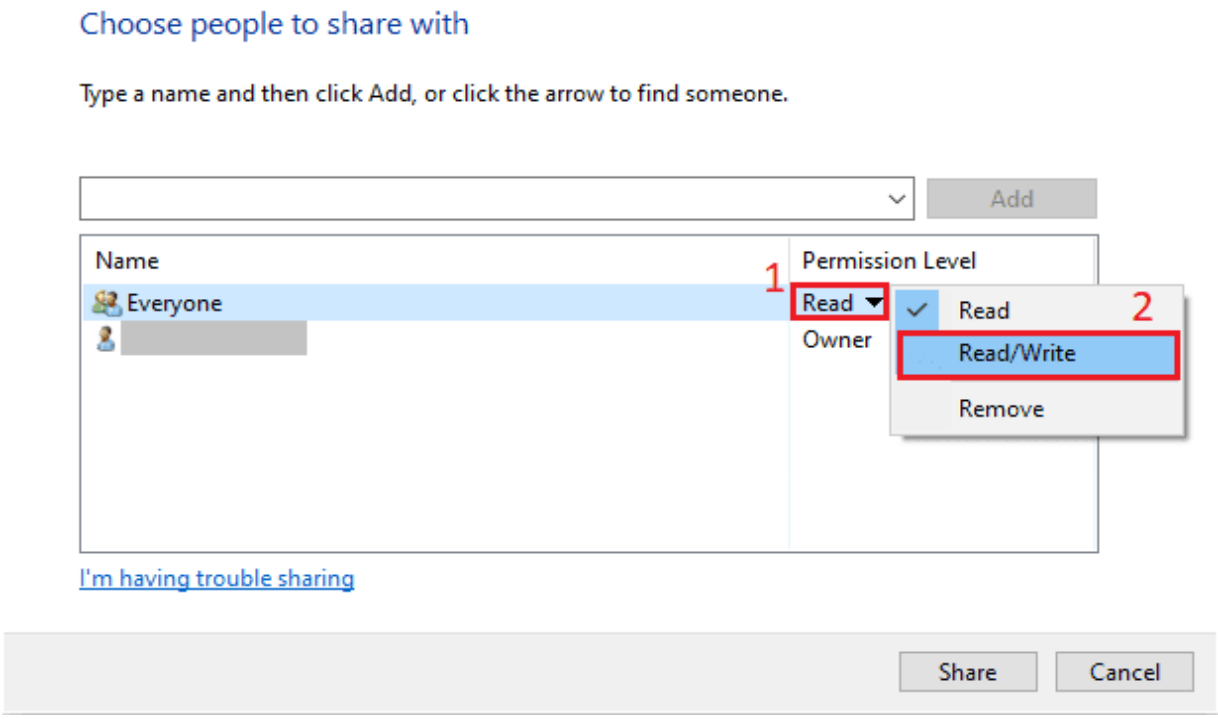


Fig. 5.14Set properties for share Folder

5. Then click on **Share**.

Now, your folder will be shared, and by using another PC with which you have fully established the P2P network will be able to access the shared folder.

Operation Sheet-5.8: Access Files from Other PC on Windows 10

Operation Title: How to access the Shared Files from the Other PC
Purpose: To access Files to the Other PC on Windows 10
Instruction: Use these steps and access Shared Files from the Other PC:

Tools and requirement:

1. Computers
2. Network toolkit
3. Software
4. Printer

- **Steps in doing the task:**

1. Go to another PC, i.e. already created a peer-to-peer network.
2. After that, click on **This PC**.
3. Go to **Networks** in the left quick access menu.
4. You'll have two PCs listed. One will be the current PC you are using and the second one will be the one in which you have done all the settings before.
5. Select the first PC and from there you can find the folders or files which were shared from the first PC.

- **Quality Criteria:** LAN must be Functional.
- **Precautions:**
    - All network set up must be prepared.
    - Keep your work area clean and well lit
    - Check for damaged parts
    - Do not force components into computer ports

Operation Sheet-5.9: Adding a Printer Manually on Windows

Operation Title: How to Add a Printer Manually on Windows

Purpose: To Add a Printer Manually on Windows

Instruction: Follow the steps below to add a network printer in Windows 10.

- **Tools and requirement:**
  1. Computers
  2. Network toolkit
  3. Software
  4. Printer
  5. Drivers
  6. Cables
- **Steps in doing the task:**

1. Open the Windows Start menu. This is the button in the bottom left corner of your screen that is shaped like the **Windows logo.**
2. Then click to Settings. This is the **gear-shaped icon** just above the power button in the Start menu.
3. Then click on **Devices.**

Fig. 5.15Start Button

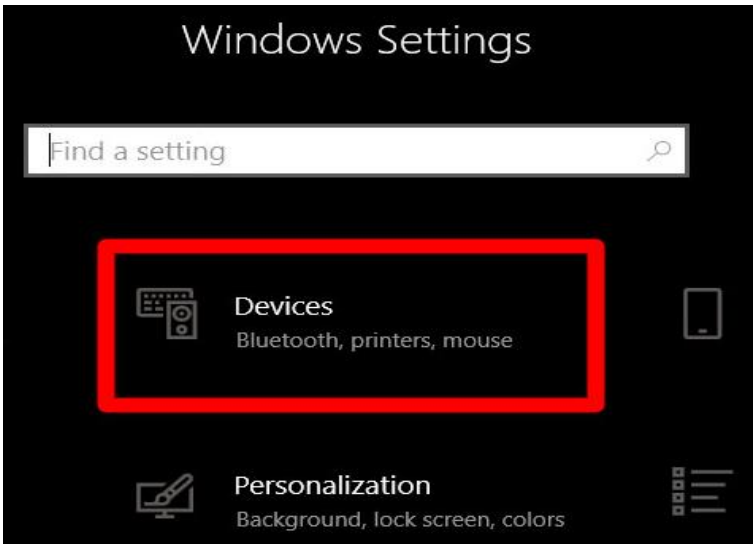


Fig. 5.16Windows Setting

4. Next, select **Printers & Scanners.** You can find this in the left sidebar.
5. Then click Add a Printer.

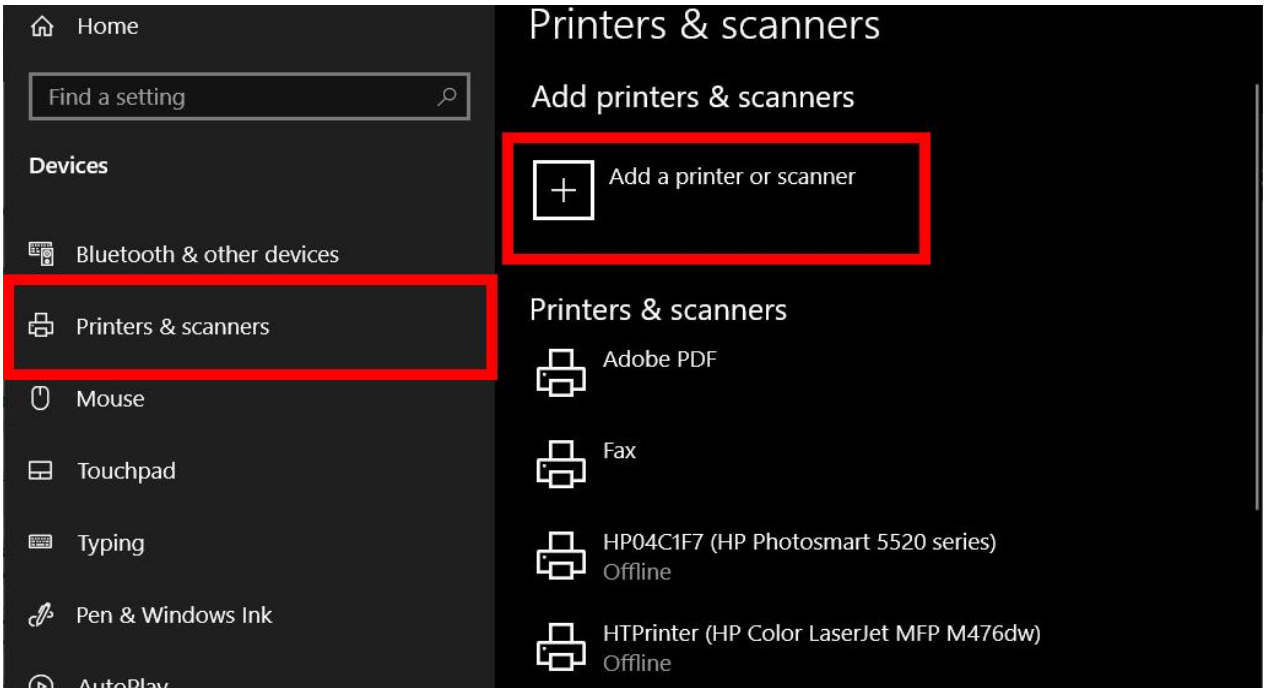


Fig. 5.17Add printer interface

Note: Once Windows detects your printer, all you have to do is follow the on-screen instructions for setting it up. If this is the case, you can stop at this point. However, if Windows does not auto-detect your printer, proceed to the next step.

Click “The printer that I want isn’t listed.” Once you select this, the “Add Printer” screen will pop up.

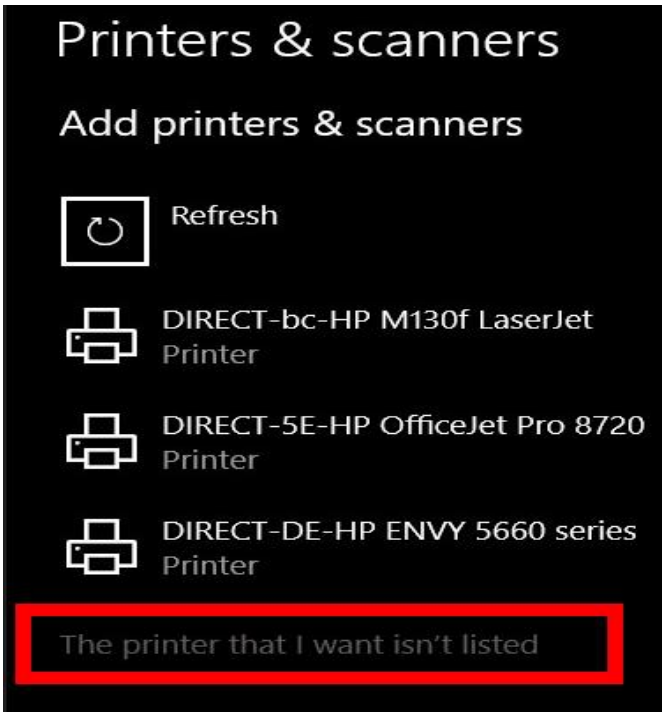


Fig. 5.18Search printer

6. Choose “Add a local printer or network printer with manual settings,” and click next.

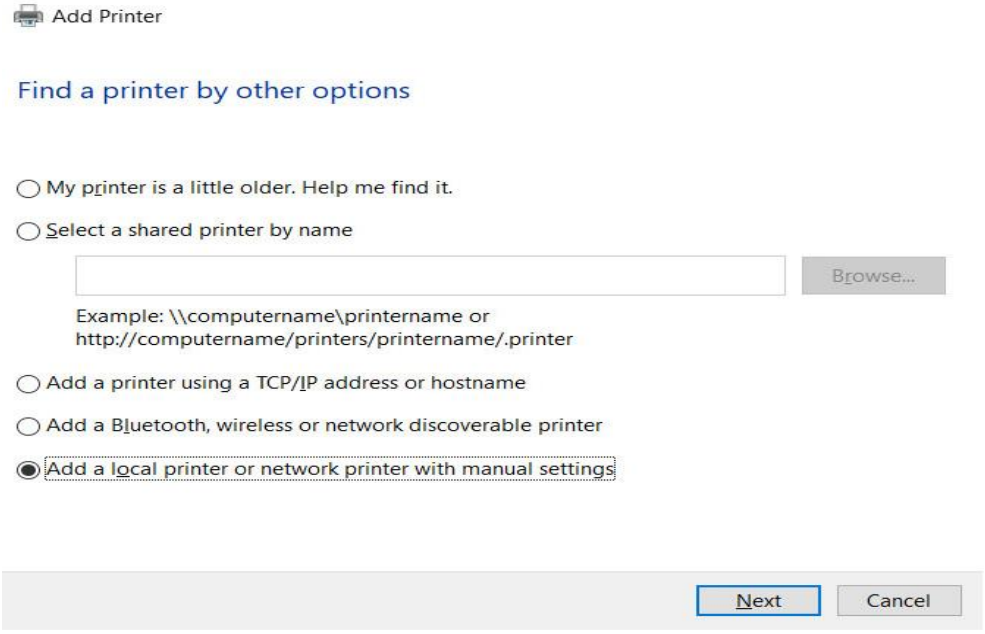


Fig. 5.19Add printer with Network

Click on “Create a New Port” and select Standard TCP/IP from the drop-down box.

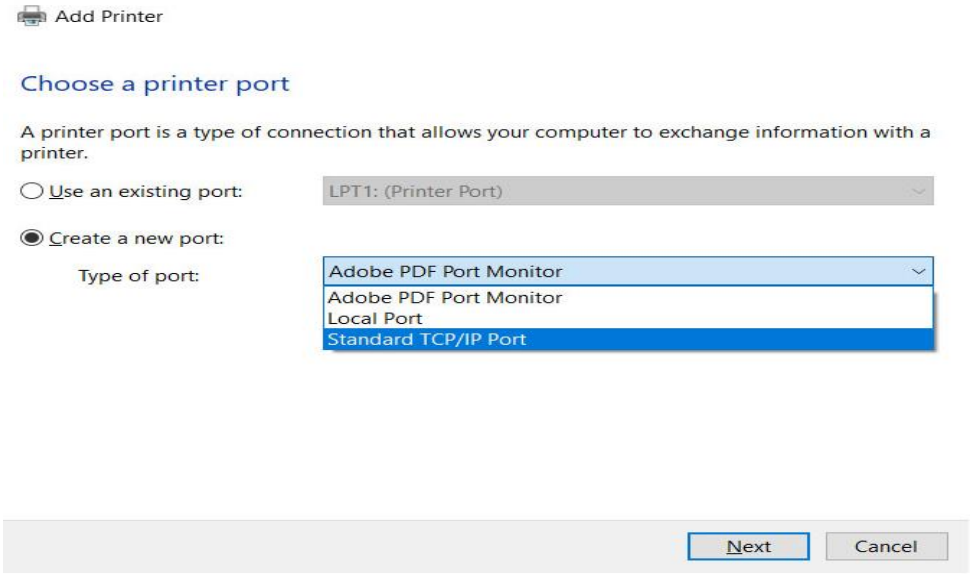


Fig. 5.20 Select printer source

7.
8. Type in your printer’s IP address or URL (e.g. printer-one.school.edu) and click next. At this point, your computer will try to detect the TCP/IP port. This might take some time.
9. Select the appropriate device type. Use one of the following methods to identify/install the appropriate printer driver:

Note:

- In the drop-down menu for Standard Device Type, select the device type that corresponds with your printer brand. For example, if you have a Canon printer, choose either Canon Network Printer or Canon Network Printing Device. Windows will then detect the driver model. You will notice that once it detects the driver, your printer will be added to the list of devices in the Printer & Scanners menu.
- Install the print driver. Click on the box that says Have Disk. You will be instructed to install the driver from the manufacturer’s installation disk (or a download of the driver) and copy it from where the driver is located.

10. Set up optional preferences. Type a printer name if you want to. Otherwise, click Next. In the next window, you could also set up set up printer sharing if you like (generally you should not do this). Once done, click on Next.
11. Print a test page. You will get a message that you have successfully set up the printer. From here, you can print a test page or click on Finish.

- **Quality Criteria:** LAN must be Functional.
- **Precautions:**
    - All network set up must be prepared.
    - Keep your work area clean and well lit
    - Check for damaged parts
    - Do not force components into computer ports

Operation Sheet-5.10: Sharing Network Printer on Windows 10

Operation Title: How to Share Network Printer to the Other PC

Purpose: To Share Files and folders to the Other PC on Windows 10

Instruction: Use these steps to Share Files to the Other PC**.**

- **Tools and requirement:**
  1. Computers
  2. Network toolkit
  3. Software
  4. Printer
  5. Drivers
  6. Cables
- **Steps in doing the task:**

3. Open the Settings app and go to Settings > Devices > Printers and scanners, and click on the printer you want to share.

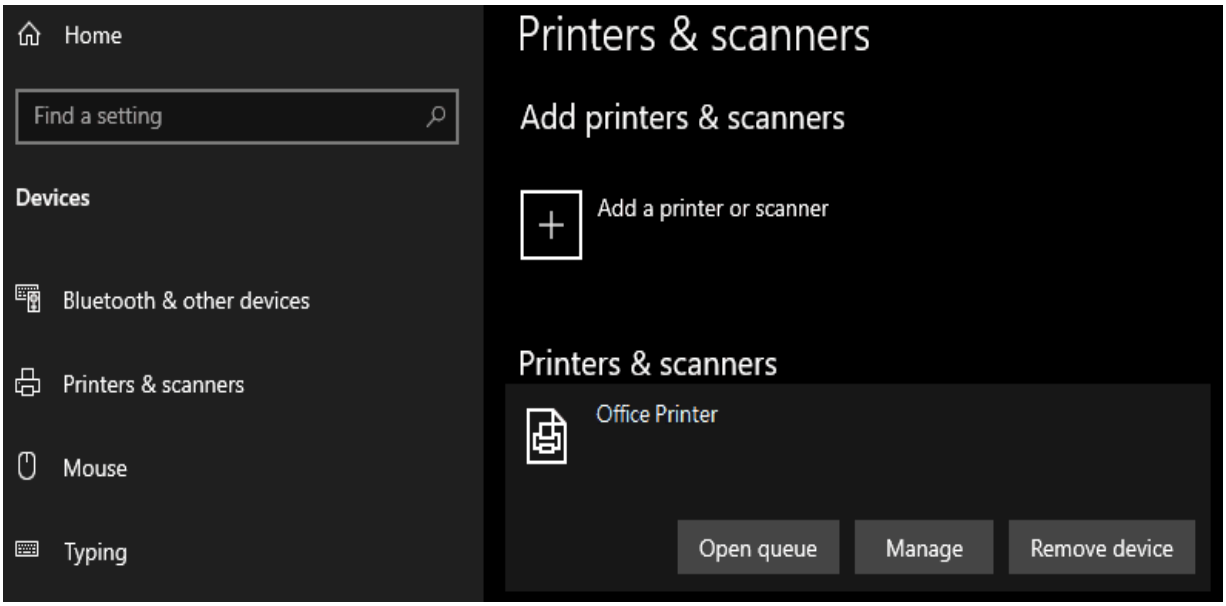


Fig. 5.21 Search printer Name

Select the printer to share.

Once you've selected the printer to share, click Manage and then Printer properties. In the printer properties move to the sharing tab and tick the box to "Share this printer".

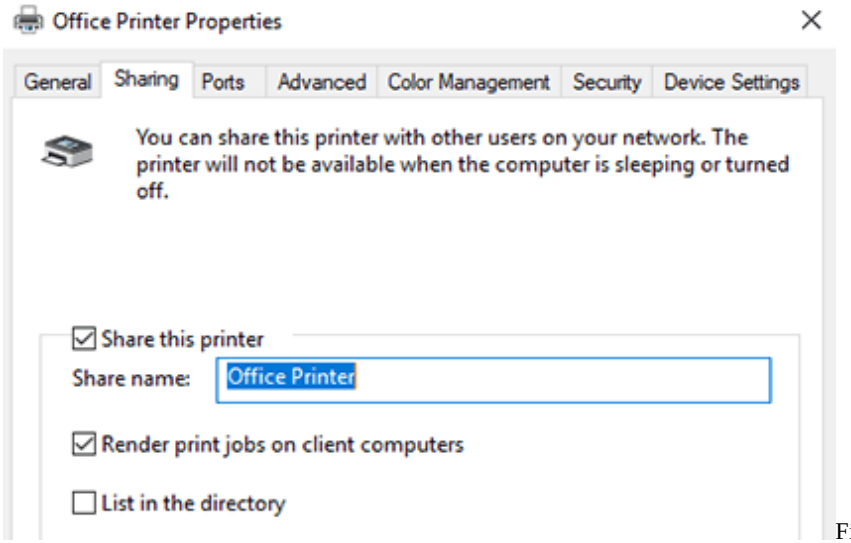


Fig. 5.22 Share printer

Enable sharing the printer.

Once you've saved the updated settings, the printer will be available for discovery on the network.

- **Quality Criteria:** LAN must be Functional.
- **Precautions:**
    - All network set up must be prepared.
    - Keep your work area clean and well lit
    - Check for damaged parts
    - Do not force components into computer ports

Lap Test-5

Instruction: Use the given information below do the Lap Test.

1. Configure a small local area network using a switch between two or more computers by using the following information:

   A.IP address range: 192.168.1[60-80] and

   B. Computer Name: **'PC1'** and**'PC2'** respectively.

   C. ON some network defaults network discovery setting.

2. Install printer with Name 'Admin_Staff', make default printer and print test page by considering Model name you have.

3. Share the printer and access the shared printer using LAN.

4. Using Command prompt check the connectivity between the networked computers.

Unit Six: Administer and support peripheral services

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Assign Priority to control queues
- Configure settings on network.
- Demonstrate methods to use peripherals services.

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Prioritize control queues based on organizational requirement.
- Configure network and create maintenance schedules, usage logs, and cost center.
- Use Usage statistics Methods for user demonstrated for using.
- ServicePeripheral using application or workstation.

6.1 Assigning Priority to control queues

The priority of printers is normally controlled by the operating system. To understand priorities, you first need to know the terms that operating systems use to distinguish between physical and logical printers (the latter refers to the software name). Some operating systems also use the concept of a queue. Software such as Windows uses the term print device when referring to the physical printer. The term printer is then used as the logical name that will be used to connect to a physical printer.

Very often, the same name may be used to describe a printer and a print device, since it is a one-to-one chain. However, it is possible to have multiple printer names refer to the same print device. This facility allows you to allocate priorities. You set up a single print device, but allocate two or more printers to it. Each printer then has a different priority. You then use the security and sharing features of each printer to only allow appropriate users or groups to access each one.

For example, if you have three printers called: Laser High, Laser Normal and Laser Low.

You set appropriate priorities to each printer that uses the same print device. For example, you can allow:

- Executives to access Laser High
- Managers to access Laser Normal, and
- Everyone can access Laser Low.

If an executive sends a print job to their printer it will take priority over any lower priority jobs in the queue.

6.2 Configuring settings on network

Network configuration is the process of setting a network's controls, flow and operation to support the network communication of an organization and/or network owner. This broad term incorporates multiple configuration and setup processes on network hardware, software and other supporting devices and components.

6.2.1 Creating Maintainace Schedule

Setting up a maintenance schedule might be one of the best long-term investments you can make in your supply chain department. Besides all the money saved on corrective maintenance, your maintenance team will have to face fewer moments of crisis.

The steps to create a PM program are outlined below.

Step 1: Prioritize Assets by Maintenance Needs

Step 2: Collect Historical Data about Each Asset

Step 3: Make Projections about Assets Maintenance Needs

Step 4: Put Together the Initial Preventive Maintenance Plan

Bottom of Form

Step 5: Verify Progress and Adjust as Needed

Step 6: Expand Your Preventive Maintenance Program

6.2.2Usage logs

Usage Log means the computer files containing the record of all Software usage.

6.2.3Cost centre usage statistics

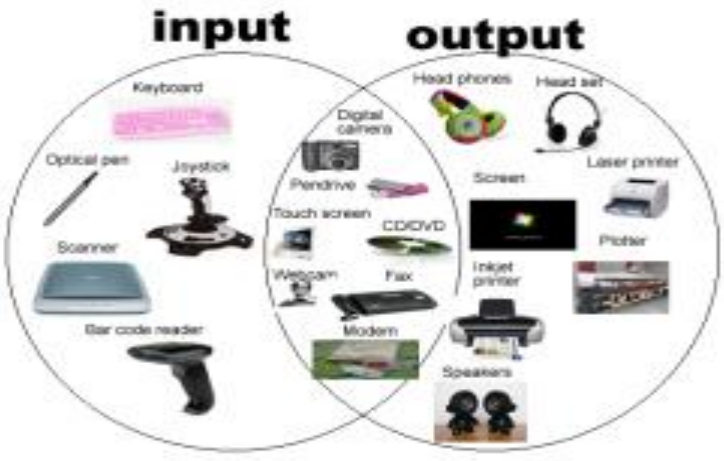
Use the transactions and for create change and display cost centre master data. A cost centre is created at the request of the party responsible for the cost centre. The cost centre is used **to** collect costs and is distinguished by area of responsibility or accounting method.

6.3 Demonstrating peripherals services methods to user.

There are also devices that function as both input and output devices, such as: external hard drives. Media card readers.

What are some examples of computer peripheral devices?

- Keyboard
- mouse
- Touch screen.
- Pen tablet
- Joystick
- MIDI keyboard.Fig. 6.1 Input/Out Put Device
- Scanner.
- Digital camera.



Self Check-6

Part I: Filling the appropriate answer for the following question in the space provided. / 2 pts/

1. The priority of printers is normally controlled by the _____.
2. Operating systems also use the concept of a _____.
3. Printer can _____,_____ and _____

Part II: Choose the best answer for the following question. / 2 pts/

1. Network configuration is a _____.
   A. Process of setting a network's controls
   B. Adding peripheral device
   C. Controlling of operating
   D. All
2. Multiple configuration of networking is _____.
   A. Network hardware
   B. Software
   C. Supporting devices and components.
   D. All
3. IT department to record their maintenance schedules may not include _____.
   A. Parts for maintenance
   B. Frequency of maintenance
   C.Automatic or manual schedule
   D. None
4. One of the following is care of computer equipment usually falls under three categories?
   A. Frequency of maintenance
   B. Internal components and software
   C. Network hardware
   D. Supporting devices and components

Unit Seven: Maintain peripherals and fix common problems

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Establishing regular maintenance schedule
- Replace consumables and components
- Peripherals and malfunction Fixing
- Monitoring peripheral usage and traffic
- Determine and rectifying failure of peripherals

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Establish a regular maintenance schedule and follow instruction as recommended by manufacturer.
- Require and replace consumables components.
- Fix Peripheral mishaps (unfortunate accident) and malfunctions based on procedure.
- Recommend additional peripherals if needed for Peripheral usage traffic is monitor
- Services and rectify Failures of peripheral devices .

7.1 Establishing and following regular maintenance schedule

Many organizations with a preventative maintenance program will have maintenance tasks organized on a schedule. The goal of a schedule is to ensure that regular maintenance occurs. Given the time pressures of working as an IT Support person, a schedule will assist you in organizing your workload to ensure that the best possible service is provided to the client.

Device manuals normally specify maintenance schedules. Some maintenance is time-based and other forms are usage-based, such as with printer toner, the need to replace which is shown by a warning light on the printer, or in the case of a large network printer with management software, an automatic email may be sent to the administrator

7.1.1 Workplace maintenance schedule improve:

- Each preventative maintenance task that should be completed
- How often the task should be repeated
- An estimate of the time required to complete the task.

These tasks can then be allocated time in your schedule at the required intervals.

7.1.2 Developing a preventative maintenance schedule

In developing a preventative maintenance schedule, it is important that as an IT Support person you are aware of the main aims of preventative maintenance. They are:

- To meet the needs of the business
- To extend the working life of equipment
- To reduce the amount of emergency downtime caused by faults that can be prevented
- To be practical
- To make the IT system more cost effective.

7.2 Replacing consumables components

Purchase and replacement of consumable parts (components, such as batteries and printer cartridges that have delectable life) is your responsibility. If consumable component at your request, you will

be charged for the service to replace/ Repair Components. Some of the most common repair and replacing Computer Components are:

- Power Supply.
- Video Card.
- Motherboard/CPU/RAM.
- Hard Drives.
- CD and DVD.
- Sound Card.
- Modems and Networks.
- ink and toner for printers, photocopiers and fax machines
- spare replacement parts for various items
- cables of various kinds
- cleaning materials

7.3 Fixing peripherals mishaps (unfortunate accident) and malfunction

7.3.1 Speed up a slow computer by troubleshoot basic computer problems are:

1. Run fewer programs at the same time. Don't have too many programs running at the same time.
2. Restart your computer.
3. Remove viruses and malware.
4. Free up hard disk space.
5. Verify windows system files.
6. Uninstall unnecessary programs.
7. Adjust windows visual effects.
8. Run a disk scan.

7.3.2 Peripheral Failure and Solutions

The first step is to always check the hardware. The cables may be damaged or not, switches you're using between your PC and the peripheral may not have power or not.

#1: Problems with a port

If attached peripherals suddenly stop working, check the Device Manager to see if the port itself is to blame. A red exclamation mark (!) means there's an error with the port.

Delete a device from the Device Manager and then reboot your computer. Once your PC is up and running again, installs the device driver.

#2: Problems with the port connectors

Especially with PS/2 ports, one or two of those holes could be clogged with dust, causing a loss in connection with the pins. The same thing could happen when the pins on the peripheral connector are damaged.

A USB port can get damaged, too, resulting in no power or connection. A solution would be to use another USB port.

#3: USB standards don't match

Newer USB devices may not run on old USB ports. Most of them would need a 3.0 cable for high-speed processing. If the USB port and device are incompatible, attached peripherals will not work.

#4: Error with wireless keyboard or mouse

Wireless peripherals often rely on the IR or RF controller to work and communicate with a computer. If it doesn't work the first time you use it, you could be using an old operating system. Most wireless PC peripherals need a newer OS Service Pack. So, if you're still using Windows 95 OS or older, an upgrade will fix the problem.

#5: PS/2 keyboard and mouse not working

See that the device is plugged in the correct port. If the port and cable are color-coded, the keyboard cable should go into the purple-colored port and the mouse into the green-colored port.

Color coding can vary. Try to switch them up and see if doing so helps fix the problem. Follow the same process if the PS/2 connectors are identical in color and you need to identify which one is designated for the keyboard and the mouse.

If the cables are on the right parts and the peripherals still don't work, try to use other devices. The keyboard or mouse may need replacement.

#6: Blocked keys or sensors

Dirt blocking the keys or sensors prevents PC peripherals from responding to commands. Regardless of how much you click on a mouse or press a key, nothing will happen if contact is not established.

#7: Input devices stop working after updates

Following an operating system or software update, one or two of your attached PC referrals may no longer work. There are several ways to restore a device's functionality.

#8: Switch USB ports

Doing so will force your computer to recognize a device. A computer system usually recognizes a device based on their location or the specific USB port where the device was attached before any updates were made. If the system thinks nothing has changed, it will not reload drivers, resulting in peripherals not working. Thus, the need to switch USB ports.

#9: Start in safe mode

In some cases, a driver in the cache will not load properly after an update. The result is a broken mouse and keyboard … or so it might appear. With a bit of a system purge in safe mode, the boot will reload drivers and load them properly.

#10: Reset the PRAM

During a firmware update, the PRAM settings of your computer, which include peripheral devices, video settings, startup disk, and audio volumes, may be reconfigured. Reset the PRAM to fix the problem.

Reboot the system and then press and hold down the option-command-P-R keys at the same time. Wait for your computer to reset and chime a couple of times at reboot before you release the keys.

#11: Power cycle the entire system

Faulty settings may occur after an update. Remove a peripheral device from your computer and leave it off for a few minutes. For better results, shut down your computer as well and power cycle it. After 5 to 10 minutes, turn the computer back on and then plug the attached peripherals back in.

#12:Check driver compatibility

Conflicts between drivers could cause problems with different devices. Communication with your operating system will be effected and will result in devices not working properly. Open Device Manager and check that drivers for peripherals and the printers are updated.

7.4 Monitoring peripheral usage and traffic

They can also provide warnings about network slowdowns, overloaded servers and other signs of trouble so you can address problems before they affect staff and patrons. Better understanding of long-term trends. Network monitoring tools also create graphs and reports about network performance over time.

Network traffic monitoring is the process of reviewing, analyzing and managing network traffic for any abnormality or process that can affect network performance, availability and/or security.

It is a network management process that uses various tools and techniques to study computer network-based communication/data/packet traffic.

7.4 Recommending additional needed peripherals

To build an IT network you will need a range of equipment including the following:

- Cables and connectors.
- A router.
- A wireless access point (optional).
- A hardware firewall.
- An internet connection. This is likely to be a fast fiber connection or dedicated leased line.

7.5 Determining and rectifying failure of peripherals

Troubleshooting is a form of problem solving, often applied to repair failed products and determining the most likely cause is a process of problem. If take an example Hard disk , the most common causes of hard drive failure is overheating. So, Heat is the primary cause of hard drive failures is hardware physical damage to your computer:

Are you experiencing problems with your computer network? Are these error messages appearing?:

- Unable to clear the DNS cache
- Unable to renew your IP address
- An operation was performed on something that is not a socket
- Unable to clear the ARP cache

Self check-7

Part I: Give Short Answer.

1.List the most common network problem issues and how to solve? / 10 pts/

2. List the most common replacing network peripheral devices / at least 5/ /10 pts/

3. Mention some of the most common Peripheral Failure and Solutions? / 10 pts/

Operation Sheet-7.1: Fixing common computer network Problems

Operation Title: How to fix common computer network problem

Purpose: To fix common computer network problem in LAN set up

Instruction: Follow the steps below to fixing common computer network related problems

Tools and requirement:

1. Computers
2. Maintenance Tool kit
3. Network toolkit
4. Software
5. Printer

- **Steps in doing the task:**

1. Check to make sure your computer is on and is connected to a network.
2. Be aware that Windows has a built in function to repair a network connection. This function can give valuable information in the form of an error message if you know what you are looking for. Some common error messages given are:
    - Unable to clear the DNS cache
    - Unable to renew your IP address
    - Unable to clear the ARP cache
3. **Deal with a message that states "Unable to clear the DNS cache**." When you get the message “Unable to clear the DNS cache”, this usually means that the DNS client service has been disabled. Follow these steps as an administrator to re-enable it:
    a. Open the Services MMC plugin, located under Administrative Tools in the Control Panel;
    b. Find the “DNS Client” service in the list presented and enter its properties by double-clicking it;
    c. Change the Startup Type from Disabled to Manual or Automatic then click apply;
    d. Either reboot or click “Start” to start the service;

e. Verify by attempting to repair the connection again.

4. **Fix a problem related to an IP address**. If the repair process reports that it has been 'Unable to obtain an IP address', it is probable that more information can be obtained through the command line. Open a Command Prompt by going to Start > Programs > Accessories > Command Prompt, then type 'ipconfig /renew' to attempt to obtain an IP address from the command line.
5. **Follow up the error messages that will likely appear**. There is a high likelihood of an error message similar to the one below occurring, the remainder of the guide will focus on this error.
    a. “An operation was performed on something that is not a socket"
6. **Fix the error message "An operation was performed on something that is not a socket**.": This is a Winsock corruption generally due to spyware. The fixes are:
    a. A simple fix can be done with Windows XP SP2 or Windows Vista (Start > Run >cmd>netshwinsock reset), then reboot your computer. If you do not have SP2, you can download a small program to reinstall Winsock: winsockfix.exe.

- **Quality Criteria:** LAN must be Functional.
- **Precautions:**
    - All network set up must be prepared.
    - Keep your work area clean and well lit
    - Check for damaged parts
    - Do not force components into computer ports

Lap Test-7

1. Write the step of how to fix common network problem? And Do the above each step and see result each step?

Unit Eight: Use and maximize operating system

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Configuring Operating system
- Installing, upgrading and uninstalling Application software
- graphical user interface and the command line interface
- Operating system and third-party utilities
- Customizing Graphical user interface

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Configure Operating system to suit the working environment
- Install Application software, upgraded and uninstall.
- To perform basic tasks using graphical user interface and the command
- Use Operating system and third-party utilities software.
- Customize Graphical user interface based on clients.

8.1 Configuring an Operating System

An operating system (OS) is the program that, after being initially loaded into the computer by a boot program, manages all of the other application programs in a computer. The application programs make use of the operating system by making requests for services through a defined application program interface (API). In addition, users can interact directly with the operating system through a user interface, such as a command-line interface (CLI) or a graphical UI (GUI).

8.1.1 Use of an operating system

An operating system brings powerful benefits to computer software and software development. Without an operating system, every application would need to include its own UI, as well as the comprehensive code needed to handle all low-level functionality of the underlying computer, such as disk storage, network interfaces and so on. Considering the vast array of underlying hardware available, this would vastly bloat the size of every application and make software development impractical.

As long as each application accesses the same resources and services in the same way, that system software -- the operating system -- can service almost any number of applications. This vastly reduces the amount of time and coding required to develop and debug an application, while ensuring that users can control, configure and manage the system hardware through a common and well-understood interface.

8.2 Installing, upgrading and uninstalling application software

Adding different functionalities of operating system means installing server roles by using configure your server wizard and manage your server roles by using manage your server.

8.2.1 Installing

Installing means loading of a programs (or connecting hardware) on to the computers.Itis the act of putting the program/hardware onto a computer system so that it can be executed.

8.2.2 Upgrading

The term upgrade refers to the replacement of a product with a newer version of the sameproduct.Adding additional features on the existing system to improve its performance.

8.2.3 Uninstalling

The term uninstalling means Removing (an application or file) that were installed/added from a computer. You can uninstall an application by selecting Add/Remove Programs from the Control Panel and then selecting the application you want to remove.

8.3 Using graphical user interface and command line interface

8.3.1 Graphical User Interface based operating systems

A GUI (Graphic User Interface) is a graphical representation in which the users can interact with software or devices through graphical icons. Example: Windows

In the GUI the screen displays graphical objects which are designed for the user to interact with the system using a pointing device.

8.3.2 Command line interface (Disk Operating system)

DOS (Disk Operating System) is a command line based operating system.In DOS, all tasks are done by typing commands at a command prompt.

The point where you type your command is shown by a blinking horizontal line, called the cursor. Even though there are many DOS commands, you will be able to manage well if you know some of them and their functions. Most of these important commands are related to file management.

8.4 Utilizing operating system and third-party utilities

Utility software is computer software that performs a specific task related to the management of computer functions, resources, or files, as password protection, memory management, virus protection, and file compression. A third-party energy supplier is a sort of Go-between Company. They buy energy from large utility companies and then sell that energy again to consumers at different rates.

Some examples of commonly used utility software include: - **Disk Defragmenters**

- Registry Cleaners/disk clean up

8.4.1 Main functions of utility software

- Utility software enhances the operation of the Operating System.
- It helps to analyze, configure, optimize and maintain the computer

8.5.Customizable graphical user interface

The graphical user interface is a form of user interface that allows users to interact with electronic devices through graphical icons and visual indicators such as secondary notation, instead of text-based user interfaces, typed command labels or text navigation.

A program which aids the process of adding an extra layer to an existing program or system in order to make it look different to the user: for example adding a new interface to an existing operating system so that it looks like another operating system.

Self check-8

Part I: Choose the best answer for the following question./ 2 pts /

1. _____ is a graphical representation in which the users can interact with software or devices through graphical icons.

A. Software
C. Software configuration
B. Graphical user interface
D. Network administration

2. CLI stands for_____.

A. Command Line Interface
C. Central processing
B. Command Line director
D. All

3. A third party utility is _____.

A. Software configuration
C. A sort of Go-between Company
B. Graphical user interface
D. All

4. A system software is _____.

A. Allows a user to interact with a computer program using a pointing device

B. Operating system and utility programs that control a computer system and allow you to use your computer.

C. Central processing

D. All

4. _____ a program which aids the process of adding an extra layer to an existing program or system in order to make it look different to the user.

A. Hardware of a computer

B. Software of a computer

C. Customizable graphical user interface

D. All

Operation Sheet-8.1: How to Customize the Windows 10 Desktop Icons

Operation Title: Customizing Desktop Icons on Windows 10
Purpose: To customize Desk Top Icons on Windows screen
Instruction: Use these steps to Customize Desktop Icons on Windows 10

- **Tools and requirement:**

1. Computers
2. Software
3. Printer

- **Steps in doing the task:**

1. Head to the **Start menu** search bar, type in 'settings,' and select the best match.
2. From the Settings menu, select **Personalization > Themes**.
3. From under the **Related Settings**, select **Desktop icon** settings.

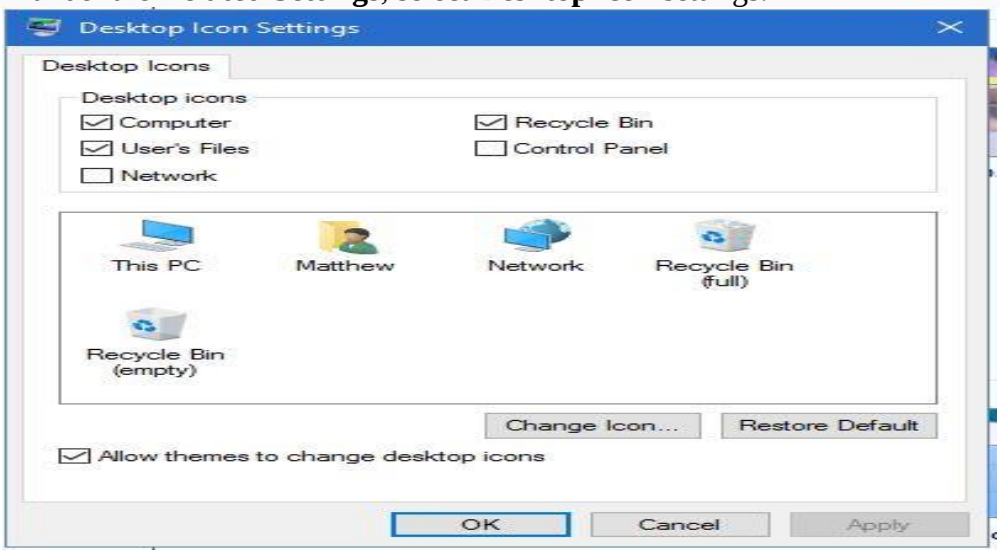


Fig.8.1 View Network computers

- Select an icon there andChange Icon to open a smaller window with a variety of alternative icons to choose from. Select an Icon from there and click *OK* to close window. Then press the *Apply* button to switch the desktop icon to the one selected. **Quality Criteria:** LAN must be Functional.
- **Precautions:**
    - All network set up must be prepared.
    - Keep your work area clean and well lit
    - Check for damaged parts
    - Do not force components into computer ports

Lap Test-8

1. Customize Desk Top Icons and change the icon picture?

Unit Nine: Support input and output devices

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Functionality of Input and output devices
- Drivers and checking functionality
- Ensuring Drivers are working properly

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Set up Input and output and checked functionality based on requirement.
- Install Drivers and check the functionality based vendor manuals.
- Ensure Drivers are working to be properly

9.1 Setting up and checking functionality of Input and output devices

Input devices only allow for input of data to a computer and output devices only receive the output of data from another device. Most devices are only input devices or output devices, as they can only accept data input from a user or output data generated by a compute

Input and output devices that provide computers with additional functionality are also called peripheral or auxiliary devices.

9.2 Installing appropriate drivers.

A driver, or device driver, is a software program that enables a specific hardware device to work with a computer's operating system. For some devices, such as printers, the operating system may automatically find and install the correct drivers when the device is connected. Installing drivers and checking functionality based vendor manuals.

Almost all computer and hardware manufacturers include a group of drivers for different hardware devices and often for each of the supported versions of Windows. We need to install or update the following drivers so our devices to work or perform optimally. Some of them are:

- LAN Ethernet Drivers
- Graphics Card Drivers
- Sound Card Drivers
- Drivers for External plug-in Devices

9.3 Ensuring drivers are working properly

Drivers are ensured to enable a device properly working. Without drivers, the hardware you connect to your computer for example, a video card , sound card or a printer won't work properly.

Setting up and connecting your computer system input and output devices is very easy. All recently manufactured computers use color code which makes even easier to setup. The color of the port matches with the color of the device connector. Also, usually there is an icon of the device beside the device port. Refer to the picture on the left to see how the color coding work and how to connect all the computer devices.

Self check-9

Part I: Give short answer.

1. Define the term driver? / 2 pts/

2. Why we install the drivers for hardware peripherals? /3 pts/

3. List some examples of hardware component that need drivers? /5 pts/

4. How to determine the functionality of input and output device? / 5pts/

Operation Sheet 9:1 Check Input /Output device drivers Functionality

Operation title: Checking Input /Output device drivers Functionality

Purpose: To Check Input /Output device drivers Functionality

Instruction: use the given information below Check Input /Output device drivers functionality using Device Manager

Tools and requirement:

6. Computers
7. Maintenance Tool kit
8. Network toolkit
9. Software
10. Printer

- **Steps in doing the task**

1. Click on search Box, type Device Manager, and
2. Point to device Manager and Click on it, then

Fig. 8.2 Search Device

3. In the Device driver setting you can get detail description about installed device driversinside device manager.ie

- Inside device manager; you will get multiple device drivers available, if drivers installed properly you will not get the yellow mark on the top of each unsuitable installed device driver. In each device you will get disk drives, audio inputs and outputs, network adapters, system device, processors, human interface device, monitors, imaging device, memory technology device and many more drivers depends on your Windows 10 device.

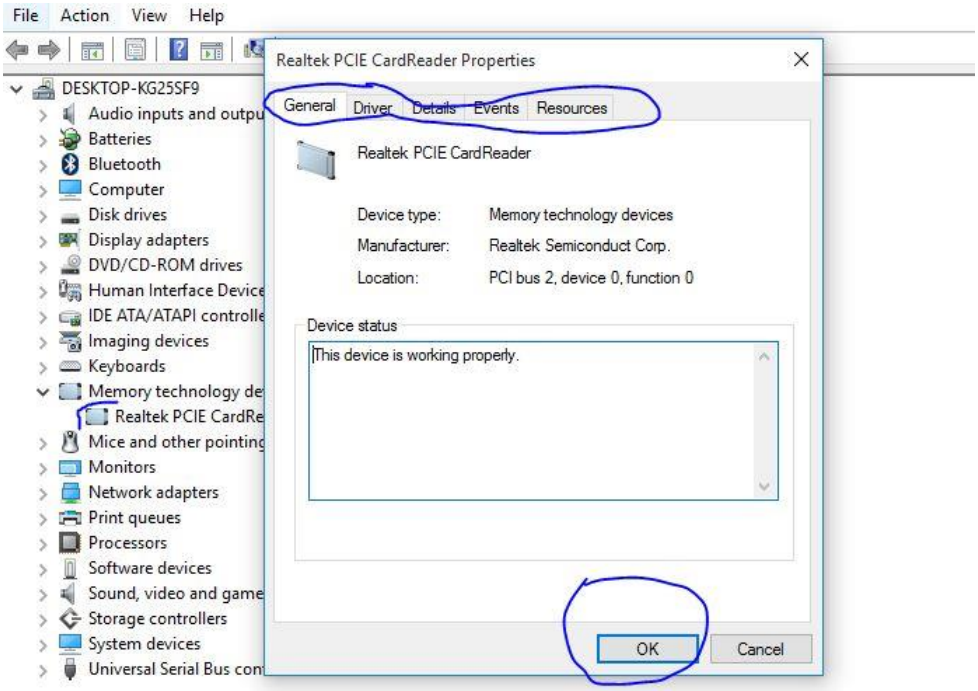


Fig. 8.3 Driver proerties

- You can update, uninstall drivers from your Windows 10 device manager from driver setting, in which also can get the actual driver version, device type, manufacturer, location, status, update, rollback, uninstall, disable and resources. in which we can check our device driver installation details and version updates.

OR

- Open your computer and go to start menu **search for device manager**.
- Now you will get result for **device manager**, click to open device manager page
- You can see the list of drivers which is used with your **computer device** to run all the features and functionality.

- **Quality Criteria:** LAN must be Functional.
- **Precautions:**
    - All network set up must be prepared.
    - Check for damaged parts
    - Do not force components into computer ports

Lap Test 9

Instruction: Do the Lap Test.

1. Check the following drivers properly working or not?

   - Audio drivers
   - Network drivers
   - Graphics Adaptor
   - USB drivers

2. If the above drivers have problems, solve it

Reference

- https://codescracker.com/computer-fundamental/characteristics-of-computer.htm
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- Richard Palmer. Maintenance Planning and Scheduling Handbook, 2nd Edition (McGraw-Hill Handbooks).
- The A+ e-books and IT Essential Presentation and different URLs resources.

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