#### Module 1 [Hardware and its components]

* 1. What is hardware?

 A **computer's hardware consists of its physical parts, including its internal pieces and connected external devices**.

* 1. What is the purpose of Hardware?

Hardware refers to the external and internal devices and equipment that enable you to perform major functions such as input, output, storage, communication, processing, and more.

* 1. list out two types of hardware.

**The two types of hardware are mentioned below.**

Monitor.

Motherboard.

##### Assignment Level Advance

1. What is core hardware

 A core is a small CPU or processor built into a big CPU or CPU socket. It can independently perform or process all computational tasks. From this perspective, we can consider a core to be a smaller CPU or a smaller processor (see Figure 11.15) within a big processor

.

1. Do a practical of identifying hardware

1.Processing Components:

CPU

GPU

2.Memory Components:

RAM

1. Storage Components:

HDD or SSD

1. Motherboard Component:

Motherboard

1. Power Component:

PSU

1. Input Devices:

Keyboard

Mouse

1. Output Devices

Monitor

Printer

#### Topic: Category of components

##### Assignment Level Basic

1. What are the category of components in hardware?

There are five main hardware components in a computer system: Input, Processing, Storage, Output and Communication devices.

1. Why category is needed?

Categories provide a systematic way to organize and structure large amounts of information. By grouping similar items or concepts together within a category, it becomes easier to navigate and understand the information.

##### Assignment Level Intermediate

1. Do a practical to identify the components in which category they come.

1. Processing Components:
   * CPU
   * GPU
2. Memory Components:
   * RAM
3. Storage Components:
   * HDD or SSD
4. Motherboard Components:
   * Motherboard
5. Power Components:
   * PSU
6. Input Components:
   * Input Devices (keyboard, mouse, etc.)
7. Output Components:
   * Output Devices (monitor, printer, etc.)
8. Networking Components:
   * NIC
9. Multimedia Components:
   * Sound Card
10. Optical Components:
    * Optical Drive (CD/DVD drive)
11. Cooling Components:
    * Cooling System (fans, heat sinks, etc.)

#### Topic: Input Device

##### Assignment Level Basic

1. What is input device?

An input device is a hardware component or peripheral device that allows users to enter data or instructions into a computer or other digital device. It enables communication between the user and the computer system by accepting input from the user and sending it to the computer for processing.

1. Why input device needed?

Input devices allow users to enter data, commands, and instructions into a computer system. Users can input text, numbers, symbols, and other types of information using input devices such as keyboards, touchscreens, and mice. This input is essential for performing tasks, executing commands, and interacting with software applications.

##### Assignment Level Intermediate

1. List out the input device.
2. Keyboard
3. Mouse
4. Touchscreen
5. Trackpad
6. Joystick
7. Gamepad
8. Scanner
9. Barcode reader
10. Digital pen/stylus
11. Microphone
12. Webcam
13. MIDI controller (Musical Instrument Digital Interface)
14. Graphics tablet
15. Trackball
16. Touchpad
17. Optical character recognition (OCR) device
18. Biometric input devices (fingerprint scanner, facial recognition scanner, etc.)
19. Motion sensing devices (accelerometer, gyroscope, etc.)
20. Voice recognition devices (speech-to-text input devices)
21. Light pen
22. Infrared (IR) remote control
23. Digital camera
24. Smart card reader
25. Magnetic stripe reader
26. Game controllers (steering wheel, flight joystick, etc.)
27. Gesture recognition devices
28. Inertial measurement unit (IMU)
29. Eye-tracking devices

3.Do a practical to identify input device and describe how it works.

done

#### Topic: Output Device

##### Assignment Level Basic

1. What are output device?

An output device is any piece of computer hardware that converts information into a human-perceptible form or, historically, into a physical machine-readable form for use with other non-computerized equipment. It can be text, graphics, tactile, audio, or video.

1. how does output device work?

The computer processes the input and then sends a new signal to the output device . The output devices receive the signal and display the output

##### Assignment Level Intermediate

1. List out the output device.

 monitors, printers, speakers, headphones, projectors, GPS devices, optical mark readers, and braille readers.

1. Do a practical to identify the output device and describe its working process.

DONE

#### Topic: Motherboard

##### Assignment Level Basic

1. What is motherboard?

The motherboard is the backbone that ties the computer's components together at one spot and allows them to talk to each other. Without it, none of the computer pieces, such as the CPU, GPU, or hard drive, could interact.

1. Why it is called motherboard?

 It's called a motherboard because it's the main circuit board. Much like the term “mothership," the word motherboard signifies its essential nature. Additional circuit boards can be plugged into a motherboard, and these are known as “daughterboards.”

##### Assignment Level Intermediate

1. What it is called if we remove all components from the motherboard?

If all components are removed from the motherboard, leaving only the bare circuit board, it is commonly referred to as a "bare motherboard" or simply an "empty motherboard

1. Describe types of motherboard.
   * 1. Standard ATX motherboard. ...
     2. Micro ATX motherboard. ...
     3. eXtended ATX motherboard. ...
     4. Flex ATX motherboard. ...
     5. Low-Profile EXtended (LPX) motherboard. ...
     6. BTX motherboard. ...
     7. Pico BTX motherboard.

##### Assignments level Advance:

1. Do a practical by identifying parts of motherboard.

DONE

1. Do a practical by describing the data flow in motherboard

DONE

1. Do a practical by removing all removable parts from the motherboard.

DONE

#### Topic: CPU

##### Assignment Level Basic

1. What is CPU.

The Central Processing Unit (CPU) is the primary component of a computer that acts as its “control center.”

1. Write the full form of CPU.

CPU . CENTRAL PROCESSING UNIT

##### Assignment Level Intermediate

1. What are the types of CPU?
2. Single – Core CPU
3. Dual – Core CPU
4. Quad – Core CPU
5. Hexa – Core CPU
6. Octa – Core CPU
7. Deca – Core CPU
8. What do we need to keep the CPU Healthy?

1. Restart your computer at least once a week It’s easy to ignore this simple tip, yet it is essential. ..Hygiene your Programs ...

3. Defrag your hard drive ...

4. Investigate Startup programs ...

5. Install Antivirus Software .

##### Assignment Level Advance

1. Do a practical to remove processor and apply thermal paste in it and install it again.

DONE

1. Do a practical to Identify CPU and its Sockets.

DONE

#### Topic: Monitor

##### Assignment Level Basic

* 1. What is Monitor?

A monitor, also known as a display screen or computer screen, is an output device that visually presents information generated by a computer or other electronic devices. It provides a visual interface for users to interact with the computer system and view the output of their activities

##### Assignment Level Intermediate

1. List out the types of monitor.

LCD (Liquid Crystal Display)

LED (Light Emitting Diode)

OLED (Organic Light Emitting Diode)

CRT (Cathode Ray Tube)

Curved Monitors:

1. Do a practical to identify monitor Technology

DONE.

1. What are the Technologies used in monitor.

There are three major LCD technologies used in today’s PC monitors: **twisted nematic (TN), vertical alignment (VA) and in-plane switching (IPS)**.

##### Assignment Level Advance

* 1. Describe how does the crt monitor works.

A CRT (Cathode Ray Tube) monitor works by using a large, glass vacuum tube that contains several key components to produce images on the screen.

#### Topic: system bus

##### Assignment Level Basic

* 1. What is system bus

The system bus, also known as the front-side bus or system interface, is a communication pathway that allows different components within a computer system to exchange data and instructions. It is a critical part of the computer's architecture and facilitates communication between the CPU (Central Processing Unit), memory, and other hardware devices

##### Assignment Level Intermediate

1. List out the types of system bus

Front-Side Bus (FSB)

Back-Side Bus (BSB)

Memory Bus

PCI Express (PCIe)

1. Describe the working of system bus.

A system bus works by **sharing data** and other information between various aspects of the computer's hardware.

1. Do a practical to identify the system bus.

DONE

#### Topic: Chipset

##### Assignment Level Basic

* 1. What is chipset

A chipset is a set of integrated circuits (chips) that are designed to work together to provide various functions and support the communication between the CPU (Central Processing Unit)

##### Assignment Level Intermediate

1. What are the types of chipset?

Intel Chipsets:

AMD Chipsets:

1. Which chipset does have direct contact with the cpu.

The chipset that has direct contact with the CPU is called the Northbridge. The Northbridge is a component of the chipset that handles the high-speed communication between the CPU, memory, and graphics card (if it is integrated on the motherboard).

1. Do a practical to identify the chipset

DONE

##### Assignment Level Advance

* 1. Describe how does the Northbridge chipset work

The Northbridge is a key component of the computer chipset that facilitates high-speed communication between the CPU (Central Processing Unit), memory, and graphics card (if integrated on the motherboard).

#### Topic:Memory

##### Assignment Level Basic

1. What is memory?

Memory, in the context of computers, refers to the electronic storage space used for storing data and instructions that the computer needs to access quickly. It is an essential component of a computer system and is responsible for holding temporary and permanent data that the CPU (Central Processing Unit) can read from and write to.

1. What are the types of memory?

Random Access Memory (RAM): Common types of RAM include DDR4, DDR3, and DDR2.

Read-Only Memory (ROM)

Flash Memory

Cache Memory

Graphics Memory (VRAM)

##### Assignment Level Intermediate

1. Describe memory in detail.

Memory in a computer system refers to the electronic storage space that is used to store data and instructions that the computer needs to access quickly. It plays a crucial role in the overall functioning and performance of a computer. Memory can be categorized into two main types: primary memory (main memory) and secondary memory (storage devices).

1. What are memory types.

Random Access Memory (RAM): Common types of RAM include DDR4, DDR3, and DDR2.

Read-Only Memory (ROM)

Flash Memory

Cache Memory

Graphics Memory (VRAM)

##### Assignment Level Advance

1. Do a practical to identify memory types

DONE

1. Do a practical to install memories in system

DONE

1. Do a practical to identify main memory frequencies.

DONE

#### Topic: System Unit

##### Assignment Level Basic

* 1. What is System Unit?

The system unit is the main component or enclosure of a desktop computer that houses the internal hardware components required for the computer to function. It is also referred to as the computer case, tower, or chassis. The system unit typically consists of a metal or plastic case that protects and organizes the internal components of the computer.

##### Assignment Level Intermediate

1. How does system unit work?

Power Supply

Motherboard

Cooling System

Data Transfer and Communication

Front Panel Interfaces

1. What are the components and system unity?

Motherboard: The motherboard is the main circuit board of the computer system.

Central Processing Unit (CPU): The CPU, also known as the processor, is the brain of the computer. It performs the majority of the calculations and executes instructions. The CPU interprets and processes data, performs arithmetic and logical operations, and controls the overall operation of the computer system

Random Access Memory (RAM): RAM is the primary memory of the computer system..

Power Supply Unit (PSU): The PSU supplies power to the components within the system unit.

Cooling System: The system unit includes a cooling system to regulate the temperature of the internal components.

Front Panel Connectors: The front panel of the system unit contains various connectors and interfaces for easy access.

##### Assignment Level Advance

1. Do a practical to identify system unit.

DONE

1. Do a practical to assemble and disassemble system unit.

DONE

#### Topic: BIOS

##### Assignment Level Basic

* 1. What is bios.

Bios is an acronym that stands for Basic Input/Output System. It refers to a firmware or software component that is built into a computer's motherboard. The BIOS is responsible for initializing and controlling the hardware components of a computer system when it is first powered on.

##### Assignment Level Intermediate

* 1. What is the full form of bios

The full form of BIOS is "Basic Input/Output System."

2.Describe working process of BIOS.

Power-On: When the computer is turned on, the first action taken is to initialize the BIOS. Power-On Self-Test (POST): The BIOS performs a series of tests known as the Power-On Self-Test. These tests check the hardware components to ensure they are functioning correctly.

##### Assignment Level Advance

1. Do a practical to reset bios when system is on

DONE

1. Do a practical of Hard resetting the BIOS.

DONE

1. Do a practical of identifying BIOS chip from the motherboard

DONE

#### Topic: CMOS

##### Assignment Level Basic

1.What is CMOS?

CMOS stands for Complementary Metal-Oxide-Semiconductor. It refers to a type of semiconductor technology used in the manufacturing of integrated circuits. In the context of computers, CMOS commonly refers to the CMOS battery and CMOS memory present on the computer's motherboard.

##### Assignment Level Intermediate

1. What is the full form of CMOS?

The full form of CMOS is "Complementary Metal-Oxide-Semiconductor."

1. Describe the working process of CMOS.

Power Supply: The CMOS circuitry receives power from a dedicated CMOS battery located on the computer's motherboard Configuration Storage: CMOS memory is used to store configuration settings and parameters. Initialization: When the computer is powered on, the CMOS is initialized by the BIOS (Basic Input/Output System). The BIOS reads the stored configuration settings from the CMOS memory to properly configure the system during the boot-up process.

##### Assignment Level Advance

1. Do a practical of identifying cmos.

DONE

1. Do a practical of installing cmos

DONE

1. . How do we know that cmos is not working

No power or boot failure

BIOS errors or incorrect settings

Incorrect time and date

Inability to save BIOS settings

#### Topic: Boot process

##### Assignment Level Basic

1.What is Boot Process?

Booting is basically**the process of starting the computer.** When the CPU is first switched on it has nothing inside the Memory. In order to start the Computer, load the Operating System into the Main Memory and then Computer is ready to take commands from the User

##### Assignment Level Intermediate

1. What is the first process of boot?

1. The Startup It is the first step that involves switching the power ON. ...

2. BIOS: Power On Self Test It is an initial test performed by the BIOS. ...

3. Loading of OS In this step, the operating system is loaded into the main memory. ...

4. System Configuration ...

5. Loading System Utilities ...

1. What is the final stage in the boot process?

Once the previous steps are complete and the operating system is safely loaded into RAM, the boot process relinquishes control to the OS. The OS then proceeds to execute any pre-configured startup routines to define user configuration or application execution. At the end of the **handoff**, the computer is ready for use.

1. Describe the boot process in Linux?
2. Power-on and firmware initialization
3. Bootloader activation
4. Kernel loading
5. Initial RAM disk
6. Root file system mounting
7. Init process
8. Service initialization
9. User environment

##### Assignment Level Advance

1. Describe about working with the grub bootloader.

The **GRUB Linux Bootloader** is the most widely used bootloader for Linux. Every aspiring Linux user would benefit from learning about Ubuntu GRUB. In this tutorial, you will learn what GRUB is, how the booting process works, and dive into several helpful Ubuntu GRUB configurations.

1. Describe working process of boot loader.

**Data of an operating system must be loaded into the working memory during device start-up**. This is made possible by a so-called bootloader, also known as a boot program or bootstrap loader. For this purpose, immediately after a device starts, a bootloader is generally launched by a bootable medium like a hard drive, a CD/DVD, or a USB stick.

#### Topic: SMPS

##### Assignment Level Basic

1. What is SMPS?

SMPS stands for Switched-Mode Power Supply. It is a type of power supply that efficiently converts electrical power from one form to another by using high-frequency switching techniques. SMPS is widely used in electronic devices, computers, telecommunications equipment, and many other applications.

1. What is the process of SMPS?
2. Rectification
3. Filtering
4. Power Conversion
5. Pulse Width Modulation (PWM)
6. Output Regulation
7. Output Filtering
8. rotection and Safety Features

##### Assignment Level Intermediate

1. DO a practical to install SMPS.

DONE

1. How many sata connectors are there in normal smps?

Most standard ATX power supplies, commonly used in desktop computers, typically have multiple SATA power connectors. A typical SMPS may have anywhere from two to eight or more SATA power connectors, depending on the capacity and intended usage of the PSU

##### Assignment Level Advance

1. Do a practical to troubleshoot a smps without plugging it to the system.

DONE

1. How many pins does atx power connector have?

The ATX power connector used in computer power supplies typically has 20+4 pins. This connector is known as the ATX 24-pin connector. It is the main power connector that provides power to the motherboard and other components in the system.

#### Topic: RAM

##### Assignment Level Basic

1. What is RAM?

RAM stands for Random Access Memory. It is a type of computer memory that is used to temporarily store data that the computer needs to access quickly. RAM is a crucial component in a computer system and plays a vital role in determining its performance.

1. What is the full form of RAM?

The full form of RAM is "Random Access Memory."

##### Assignment Level Intermediate

1. What are the types of ram?
2. DRAM (Dynamic Random Access Memory)
3. SRAM (Static Random Access Memory)
4. SDRAM (Synchronous Dynamic Random Access Memory)
5. DDR SDRAM (Double Data Rate Synchronous Dynamic Random Access Memory)
6. DDR2, DDR3, DDR4, DDR5
7. Do a practical to identify RAM.

DONE

##### Assignment Level Advance

* 1. Do a Practical to identify ram and install it in a proper system.

DONE

#### Topic: Device and cable

##### Assignment Level Basic

1. What are the types of devices?
2. Input Devices
3. Output Devices
4. Storage Devices
5. Communication Devices
6. Processing Units
7. Display Devices
8. Audio Devices
9. What are the types of cable?
10. Coaxial Cable
11. Ethernet Cable
12. HDMI Cable
13. USB Cable
14. VGA Cable
15. Power Cables

##### Assignment Level Intermediate

1. What cables are used to connect printer?
2. USB Cable
3. Ethernet Cable
4. Wi-Fi or Wireless Connection
5. What was the first cable founded by Apple for data transfer?

The first cable introduced by Apple for data transfer was the Apple Desktop Bus (ADB) cable. The ADB cable was a proprietary connector and communication protocol developed by Apple in the mid-1980s. It was primarily used to connect input devices, such as keyboards and mice, to Apple computers and peripherals.

##### Assignment Level Advance

1. Do a practical to identify the sata cables.

DONE

1. Do a practical to identify and install the cables in the system.

DONE

#### Topic: Expansion card and slots

##### Assignment Level Basic

1. Why expansion card needed?

Expansion cards are needed in a computer system to enhance or extend its capabilities by adding new functionality.

1. Why expansion slots needed?

An expansion slot refers to any of the slots on a motherboard that can hold an expansion card to **expand the computer's functionality**, like a video card, network card, or sound card. What Are Expansion Slots Used For? The expansion card is plugged directly into the expansion port so that the motherboard has direct access to the hardware.

##### Assignment Level Intermediate

1. What are the types of expansion card?
2. Graphics Card (GPU)
3. Sound Card
4. Network Interface Card (NIC)
5. USB Expansion Card
6. FireWire
7. What are the types of expansion cards?
8. Graphics Card (GPU)
9. Sound Card
10. Network Interface Card (NIC)
11. USB Expansion Card
12. FireWire

##### Assignment Level Advance

1. Do a practical to identify the types of expansion slots

DONE

1. Do a practical to install the Graphics card.

DONE

1. Do a practical to install LAN card

DONE

#### Topic: I/O Ports

##### Assignment Level Intermediate

1. What is I/O ports?

I/O ports **allow for connections to hardware**. This hardware could be internal or external. The ports are associated with copper circuits and memory ranges that allow the communication of data between the CPU, RAM, and the ports themselves. Common I/O ports include USB and FireWire.

1. List out the I/O ports available
   * + 1. USB Ports
       2. Audio Ports
       3. HDMI Port
       4. DisplayPort
       5. Ethernet Port
       6. VGA Port
       7. PS/2 Port
       8. FireWire Port
2. Do a practical to identify the I/O ports.

DONE

#### Topic: BIOS & CMOS

##### Assignment Level Basic

1. What is BIOS?

Bios is an acronym that stands for Basic Input/Output System. It refers to a firmware or software component that is built into a computer's motherboard. The BIOS is responsible for initializing and controlling the hardware components of a computer system when it is first powered on.

1. What is CMOS?

CMOS stands for Complementary Metal-Oxide-Semiconductor. It refers to a type of semiconductor technology used in the manufacturing of integrated circuits. In the context of computers, CMOS commonly refers to the CMOS battery and CMOS memory present on the computer's motherboard.

##### Assignment Level Intermediate

1. What is the role of BIOS in i/o?

The role of the BIOS (Basic Input/Output System) in I/O (Input/Output) is to provide the necessary firmware and software support for managing and controlling the input and output devices connected to a computer system.

1. What is the role of i/o in CMOS?

I/O (Input/Output) does not directly have a role in CMOS (Complementary Metal-Oxide-Semiconductor) itself. CMOS refers to a type of semiconductor technology used to construct integrated circuits, including the CMOS chips that form the basis of the BIOS (Basic Input/Output System) on a computer motherboard.

##### Assignment Level Advance

1. Do a practical to reset BIOS

DONE

1. Do a practical to remove cmos.

DONE

#### Topic: Laptop & storage

##### Assignment Level Basic

1. What is laptop?

A laptop, also known as a notebook computer, is a portable personal computer designed for mobile use. It is smaller, lighter, and more compact than a desktop computer, allowing users to carry it with them and use it in various locations.

1. Why laptop is used widely now a days?

Laptops offer the convenience of being portable, allowing users to carry their computing power with them wherever they go. This flexibility is particularly beneficial for students, professionals, and individuals who need to work or access information on the go or in different locations.

##### Assignment Level Intermediate

1. Describe the working process of laptop?
2. Power On
3. Boot Process
4. Operating System Loading
5. User Login
6. Application Execution
7. Input and Output
8. Shutdown or Sleep
9. What is storage?

Storage refers to the process of saving and retaining data or information in a computer system or other electronic devices for later retrieval and use. It is an essential component of a computer system that allows for the persistent storage of files, documents, applications, and other digital content.

1. List out the types of storage?
2. Hard Disk Drives (HDD)
3. Solid-State Drives (SSD)
4. Hybrid Drives
5. USB Flash Drives
6. Memory Cards
7. Cloud Storage

##### Assignment Level Advance

1. Do a practical to identify types of storage.

DONE

1. Do a practical to disassemble and assemble the storage.

DONE

1. Do a practical to install the storage devices.

DONE

#### Topic: Printer

##### Assignment Level Basic

1. What is printer?

A printer is a peripheral device that produces a hard copy (printed output) of electronic documents or images stored in a computer or other digital devices. It takes digital data and converts it into a physical, printed form on paper or other media.

1. Why is printer needed?

Printers allow you to produce physical copies of digital documents, such as reports, letters, contracts, and presentations. Having printed documents can be convenient for sharing, distributing, and archiving information.

##### Assignment Level Intermediate

1. Describe the working process of printer.
2. Data Processing
3. Print Settings
4. Paper Feeding
5. Print Head Movement
6. Ink or Toner Application
7. Fixation
8. Output Delivery:
9. What are the types of printer.
10. Inkjet Printers
11. Laser Printers
12. Dot Matrix Printers
13. 3D Printers
14. Thermal Printers
15. Photo Printers
16. Mobile Printers

##### Assignment Level Advance

1. Do a practical to install the printer

DONE

1. Do a practical to Troubleshoot the improper printing.

DONE

#### Topic: Storage devices

##### Assignment Level Basic

1. What is storage device?

A storage device is a hardware component or device used to store and retrieve digital information, such as data, files, documents, and media. It provides a means to store data in a persistent manner, allowing users to access and retrieve the stored information at a later time.

1. Why we need storage device

Storage devices provide a means to store and preserve digital data. Whether it's documents, photos, videos, music, or software files, storage devices allow us to keep our valuable data safe and accessible. Storage devices facilitate the transfer and sharing of files between devices and individuals. Portable storage devices like USB flash drives or external hard drives allow for convenient data transfer between computers, eliminating the need for network connectivity or internet access.

##### Assignment Level Intermediate

1. List out the types of storage devices.
2. Hard Disk Drives (HDD)
3. Solid-State Drives (SSD)
4. Hybrid Drives
5. USB Flash Drives
6. Memory Cards
7. Cloud Storage
8. Describe the working process of storage devices.
9. Data Writing
10. Data Reading
11. Data Access and Transfer
12. Error Correction and Management
13. File System Management
    1. Do a practical to Remove storage devices and reinstall it and make a gpt disk.

DONE

#### Topic: ATA

##### Assignment Level Intermediate

* 1. What is ATA?

ATA stands for "Advanced Technology Attachment." It is a standard interface used for connecting storage devices, such as hard disk drives (HDDs) and optical drives, to a computer's motherboard or host controller.

##### Assignment Level intermediate:

* 1. Describe working of ATA.
     1. Connection
     2. Initialization
     3. Mode Selection
     4. Data Transfer
     5. Error Correction and Data Integrity

##### Assignment level Advanced:

* 1. Do a practical to identify and install ATA cables.

DONE

#### Topic: SATA

##### Assignment Level Basic

1.What is SATA?

SATA stands for "Serial Advanced Technology Attachment." It is a standard interface used for connecting storage devices, such as hard disk drives (HDDs) and solid-state drives (SSDs), to a computer's motherboard or host controller. SATA replaced the older parallel ATA (PATA) interface and offers several advantages, including faster data transfer rates and improved cable management.

##### Assignment Level Advance

1. Describe the working of SATA.
   * + Connection
     + Initialization
     + Mode Selection
     + Data Transfer
     + Error Correction and Data Integrity
2. Do a practical to identify sata.

DONE

1. Do a practical to install SATA.

DONE

1. Where does SATA is used.
2. Personal Computers
3. Servers
4. External Hard Drive
5. Network Attached Storage (NAS)

#### Topic: SCSI

##### Assignment Basic

1. What is SCSI?

SCSI stands for "Small Computer System Interface." It is a set of standards and protocols that define the interface and communication between computers and peripheral devices, primarily storage devices such as hard disk drives, tape drives, and optical drives. SCSI was initially developed in the 1980s and has undergone several revisions and improvements since then.

1. WHy SCSI needed?

SCSI was designed to provide high-speed data transfer between computers and peripheral devices, particularly storage devices. The parallel interface of SCSI allowed for simultaneous transmission of multiple data bits, enabling faster data transfer rates compared to other interfaces available at the time.

##### Assignment level Intermediate:

1. What is the rpm of SCSI?

SCSI is an interface standard that defines the communication protocol between computers and peripheral devices, including storage devices. SCSI can be used with different types of storage devices, such as HDDs or SSDs, and the rotational speed of the storage device is determined by the specific model and technology used.

1. Do a Practical to install scsi.

DONE

#### Topic: Laptop

##### Assignment Level Basic:

1. What is laptop?

A laptop, also known as a notebook computer, is a portable personal computer designed for mobile use. It is a compact and self-contained device that integrates all the major components of a desktop computer into a single unit.

1. What are the types of laptop?
2. Ultraportable Laptops
3. Traditional Laptops
4. Gaming Laptops
5. Business Laptops
6. Diffrent names of laptop.
7. Notebook
8. Ultrabook
9. Netbook
10. Chromebook

##### Assignment level Intermediate:

1. What are the parts of laptop?

CPU

RAM

STORAGE

DISPLAY

KEYBORD

BATTERY

1. Do a practical of identifying parts of the laptop.

DONE

##### Assignment level Advance.

1. Do a practical to disassemble the laptop.

DONE

1. Do a practical to change the RAM in the laptop

DONE

#### TOPIC: PRINTER

##### ASSIGNMENT LEVEL BASIC:

1. WHAT IS PRINTER?

A printer is a device that produces hard copies of digital documents or images on paper or other printable materials. It is an output peripheral that is commonly used in homes, offices, and other settings to create physical copies of digital files. Printers work by transferring ink or toner onto paper in a specific pattern to replicate the content of the digital file.

1. IS IT A INPUT DEVICE OR OUTPUT DEVICE?

A printer is generally considered an output device. It receives digital information from a computer or another device and produces a physical copy of that information, such as text documents, images, or graphics, on paper or other printable media. Therefore, the printer outputs information in a tangible form, making it an output device.

##### Assignment level intermediate:

1. Describe the types of printer.
   * 1. Inkjet Printers
     2. Laser Printers
     3. Dot Matrix Printers
     4. 3D Printers
     5. Thermal Printers
     6. Photo Printers
     7. Mobile Printers
2. Describe inkjet printer.

An inkjet printer is a type of printer that uses small nozzles to spray tiny droplets of ink onto paper or other printable media to create text, images, or graphics.

##### Assignment level Advanced:

1. Do a practical of network installation of the printer.

DONE

1. do a practical to troubleshoot the printer of no cartridge error

DONE