

## Module 1 [Hardware and its components]

### Topic: The Visible Computer

- **Assignment Level Basic**

1. What is hardware?

ANS: The physical and visible components of system like mouse and keyboard

2. What is the purpose of Hardware?

Ans: perform major function like input & output and more

- **Assignment Level Intermediate**

1. list out two types of hardware

Ans: external & internal.

- **Assignment Level Advance**

1. What is core hardware

Ans: the minimum hardware required to run an application

2. Do a practical of identifying hardware

Ans: The physical and visible components of system like mouse and keyboard

### Topic: Category of components

- **Assignment Level Basic**

1. What are the category of components in hardware?

Ans: cpu, keyboard, mouse, scanner, printer, hard disk, joystick, speaker, memory, etc

2. Why category is needed?

Ans: identified area of functionality

- **Assignment Level Intermediate**

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

Ans: category is a group, often named or numbered to which items are assigned based on similarity or defined criteria while component is a constituting part of a large whole

### **Topic: Input Device**

- **Assignment Level Basic**

1. What is input device?

ANS: Input device sends information to a computer system like keyboard, mouse.

2. Why input device needed?

Ans: They allow users to add, edit or feed a new set of data or instructions to the computer.

- **Assignment Level Intermediate**

1. List out the input device.

- Ans: Mouse
- Keyboard
- Joystick
- Barcode Reader

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

ANS: Keyboard: enter letters and numbers as well specialized task like enter, delete etc

MOUSE: Scrolling

### **Topic: Output Device**

- **Assignment Level Basic**

1. What are output device?

Ans: Any hardware device used to send data from a computer to another device or user.

2. How does output device work?

ANS: A piece of hardware used to receive data from the computer and convert it into human perceptible form.

Example: o/p device is set of speakers. they take the data from the computer and turn it into an audio sound

- **Assignment Level Intermediate**

1. List out the output device.

- Printer
- Monitor
- Video card
- Sound card
- Loudspeaker
- projector

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

**Topic: Motherboard**

- **Assignment Level Basic**

1. What is motherboard?

ANS: Motherboard is the main printed circuit board in a computer. Motherboard is a computer central communications backbone connectivity point, through which all components and external peripherals connect.

2. Why it is called motherboard?

ANS: it's called motherboard bec it's the main circuit board.

- **Assignment Level Intermediate**

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

2. Describe types of motherboard.

ANS: extended ATX, MINI ATX, MICRO ATX, STARNDDED ATX

- **Assignments level Advance:**

1. Do a practical by identifying parts of motherboard.

ANS: windows +R keys on your keyboard to open RUN.

Type msinfo32 into the text box and click ok

Select system in the left panel. Information about your motherboard is listed next to the following three heading baseboard manufacture.

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

ANS:The chipset consists of two main components, the North and south bridge chip which are connected over thePCL bus

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

### **Topic: CPU**

- **Assignment Level Basic**

1. What is CPU.

Ans:CPU is the brain of a computer, it perform all the basic logical and arithmetic operations activities.

2. Write the full form of CPU.

Ans: Central Processing Unit

- **Assignment Level Intermediate**

1. What are the types of CPU?

Ans: Single core CPU

Dual core CPU

Quad core CPU

2. What do we need to keep the CPU Healthy?

Ans: you achieve a fast performance thanks to your cpu being more efficient when retrieving data

- **Assignment Level Advance**

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

Ans: read all relevant instruction before starting

Apply thermal paste onto the center of the CPU

Install CPU cooler

Double check your work

2. Do a practical to identify CPU and its Socket

ANS: look at the product specification the packaging or the CPU itself

### **Topic: Monitor**

- **Assignment Level Basic**

1. What is Monitor?

Ans: A machine that shows information and pictures on a screen like a TV.

- **Assignment Level Intermediate**

1. List out the types of monitor

Ans: LCD MONITOR

LED MONITOR

PLASMA MONITOR

OLED MONITOR

CRT MONITOR

.

2. Do a practical to identify monitor Technology.

ANS: LED, LCD, OLED

3. What are the Technologies used in monitor

ANS: Cathode ray tube.

Liquid crystal display

Organic light emitting diode

### • Assignment Level Advance

1. Describe how does the crt monitor works.

ANS:A CRT is vacuum tube containing one or more electron guns, which emit electrin beacm that are manipulated to display images on a phosphorescent screen.

### **Topic: system bus**

#### • Assignment Level Basic

1. What is system bus

ANS:A facet of computer architecture that transmits and share data throughout the computer and between devices.

#### • Assignment Level Intermediate

1. List out the types of system bus.

ANS:Address bus

Data bus

Control bus

2. Describe the working of system bus.

Ans:a system bus work by sharing data and other information between various aspects of the computer hardware .example,if you plug a universal serial bus device or connector into your computer,the system bus recognizes that data and take it to the computer's central processing unit

3. Do a practical to identify the system bus

Ans:.

### **Topic: Chipset**

#### • Assignment Level Basic

1. What is chipset .

Ans:The chipset is a silicon backbone integrated into the motherboard that works with specific cpu generations.

- **Assignment Level Intermediate**

1. What are the types of chipset?

Ans: digital, analog, mixed

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

Ans: north bridge chip

3. Do a practical to identify the chipset

Ans: type "device manager" into the search bar in you start menu.

Click to expand "system Devices"

Look for any of the following brand names: intel or sis

The letter and number combo should be include in the chipset or motherboard listing

- **Assignment Level Advance**

1. Describe how does the Northbridge chipset work

**Topic: Memory**

- **Assignment Level Basic**

1. What is memory?

ANS: Memory is a pc component that store data while the computer run.

2. What are the types of memory?

ANS: long term, short term and working memory

- **Assignment Level Intermediate**

1. Describe memory in detail.

ANS: Memory is the process of taking in information from the world around us, processing it, storing it and later recalling that information sometimes many years later.

2. What are memory types?

ANS: Sensory memory

Short term memory

## Long term memory

### • Assignment Level Advance

1. Do a practical to identify memory types.

ANS: Sensory memory hold sensory information for very berif periods of time usually 1 second or less.

Short term memory:is not just memory that does not last long. It is a type of short lived storange that can only hold a few pieces of information.

Long term memory stores a wide range of memories and experiences.

2. Do a practical to install memories in system

- ANS:Gathering supplies.
- Shut down computer
- Unplug the power cable
- Hold the power button for five sec
- Open the case
- Ground yourself
- Remove existing memory module
- Install memory
- Close the computer case
- Plug the power cable

3. Do a practical to identify main memory frequencies.

ANS:Open up task Manager by right clicking on the windows taskbar and selecting Task manager.

Navigate to the performance tab it will open with the cpu view selected so you want to choose the memory view from the left navigation panel. After clicking on memory you can view ram speed and other details.

### **Topic: System Unit**

### • Assignment Level Basic



### 1. What is System Unit?

ANS: The System Unit is A Set of Electronic Components of computer that provides the proper its operating.

#### • Assignment Level Intermediate

### 1. How does system unit work?

ANS: The system unit holds the system devices that perform calculations as requested from the input device.

### 2. What are the components and system unity?

- ANS: Motherboard
- Hard Drive
- Ram
- Memory
- processors
- Cooling Fan
- Heat Sink
- Power Supply
- VGA

#### • Assignment Level Advance

### 1. Do a practical to identify system unit.

ANS: A rectangular box places on or underneath your desk. Inside this box are many electronic components that process data.

### 2. Do a practical to assemble and disassemble system unit.

- ANS:open the case
- Install the power supply
- Attach the components to motherboard
- Install motherboard
- Install internal drives
- Connect all internal cables.

- Install motherboard power connections
- Connect external cables to the computer
- Boot the computer for the first time

#### DISSEMBLING

- Unplugging
- Open the case
- Disconnect all the connectors
- Remove the fan
- Remove the power supply
- Remove HDD and optical Drive
- Remove ram modules
- Remove expansive card
- Remove motherboard

### Topic: BIOS

#### • Assignment Level Basic

1. What is bios?

ANS: BIOS is the program a computer microprocessor use to start the computer system after it is powered on.

#### • Assignment Level Intermediate

1. What is the full form of bios

ANS: BASIC INPUT OUTPUT SYSTEM

2. Describe working process of BIOS?

- ❖ ANS: power on self : this is the hardware of the computer before loading the os
- ❖ Boot start loader: this is located in the os
- ❖ Software drivers: this is located in the software and drivers that interface with the os once running.
- ❖ Complementary metal oxide semiconductor setup

#### • Assignment Level Advance

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

ANS:press and hold your power button for several seconds.

2. Do a practical of Hard resetting the BIOS.

ANS: removing the CMOS battery of the main board.

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

ANS: The BIOS chip is typically found near the CPU socket or memory slots.

### **Topic: CMOS**

#### • Assignment Level Basic

1. What is CMOS?

ANS:CMOS is an integrated circuit built on a printed circuit board

#### • Assignment Level Intermediate

1. What is the full form of CMOS?

ANS: Complementary Metal Oxide Semiconductor.

2. Describe the working process of CMOS.

ANS: CMOS work through interplay between two transistors an N channel MOSFET and p channel MOSFET

#### • Assignment Level Advance

1. Do a practical of identifying cmos.

ANS: It look like a small silver disc and is usually positioned next to the main PCLe slot.

2. Do a practical of installing cmos.

ANS: Gently push the new coin cell down into the battery holder.

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

ANS:If your laptop has difficult booting up ,if drives disappear and if your laptop date and time are incorrect.

## **Topic: Boot process**

- **Assignment Level Basic**

1. What is Boot Process?

ANS: booting is the process of loading an operating system.

- **Assignment Level Intermediate**

1. What is the first process of boot?

ANS: Switching the power ON

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

ANS: Full control of hardware and machine is granted the os so that it can look all the operation

3. Describe the boot process in Linux?

ANS: firmware intialiation, execution of a boot loader, loading and startup of a Linux kernel image and execution of various startup scripts and daemons

- **Assignment Level Advance**

1. Describe about working with the grub boot loader.

ANS: Its functions are to take over from bios at boot time load itself load the Linux kernel into memory and then turn execution to kernel.

3. Describe working process of boot loader.

ANS: The first is to load the main memory which is essential for the processor to work in the second step the boot loader loads the kernel of the operating system.

## **Topic: SMPS**

- **Assignment Level Basic**

1. What is SMPS?

ANS: switched mode power supply

2. What is the process of SMPS?

ANS: SMPS is an electronic circuit that converts power using switching devices that are turned on and off at high frequencies and storage components to inductors or capacitors to supply power when the switching device is in its non conduction state.

- **Assignment Level Intermediate**

1. Do a practical to install SMPS.

ANS: open the case

Align the psu in the case so that the four mounting holes align properly

Fasten the power supply

Set the voltage switch

Plug the power supply into the mother board

Connect power to the devices

Replace the computer cover or return the panel to the case

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

ANS: six

- **Assignment Level Advance**

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

2. How many pins does atx power connector have?

ANS: 24

## **Topic: RAM**

- **Assignment Level Basic**

1. What is RAM?

ANS: Random access memory is a form of electronic computer memory that can be read and changed in any order typically used to store working data and machine code

2. What is the full form of RAM?

ANS: Random access memory

- **Assignment Level Intermediate**

1. What are the types of ram?

ANS:DRAM:Dynamic ram

SRAM :static ram

2. Do a practical to identify RAM.

- ANS:click start
- Find my pc
- Device specification
- Find out how much ram you have

- **Assignment Level Advance**

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

ANS:gathering supplies

Shut down computer

Hold the power button for five sec

Open computer case

Ground yourself

Remove existing memory module

Install memory

2. **Topic: Device and cable**

- **Assignment Level Basic**

1. What are the types of devices?

ANS: input devices, processing devices, output devices, storage devices.

2. What are the types of cable?

ANS:coaxial cables,twisted pairs,optical fiber,patch cables,data cables.

- **Assignment Level Intermediate**

1. What cables are used to connect printer?

ANS:USB CABLE

2. What was the first cable founded by Apple for data transfer?

ANS:Firewire

- **Assignment Level Advance**

1. Do a practical to identify the sata cables.

ANS:count the pin

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

ANS: pulling,blowing and pushing into ducts ,direct burial and aerial installation

**Topic: Expansion card and slots**

- **Assignment Level Basic**

1. Why expansion card needed?

ANS: to provide additional functionality to the system or to upgrade an existing function such as sound or video.

2. Why expansion slots needed?

ANS: Expand the capabilities of your computer and can be used to add new functionality to your system

- **Assignment Level Intermediate**

1. What are the types of expansion card?

- ❖ ANS:Network card

- ❖ Modem card

- ❖ USB card

- ❖ VIDEO card

- ❖ Serial and parallel card

- ❖ Sound card
- ❖ Storage card

- **Assignment Level Advance**

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

ANS: look at its colour, shape and number of pins

2. Do a practical to install the Graphics card.

- ANS: place the card in the slot
- Secure the new graphics card to the slot with the screws that were removed earlier.
- Connect the power supply and startup the card
- Close the pc case
- Reconnect the power supply and startup the pc

3. Do a practical to install LAN card

ANS: After restarting and powering down your computer unplug the cord and open the case of your computer. Locate the old network card and remove it from the slot. Then insert the new card into an empty slot and secure it with a screw it clip

**Topic: I/O Ports**

- **Assignment Level Intermediate**

1. What is I/O ports?

ANS: An I/O port is a socket on a computer that a cable is plugged into

2. List out the I/O ports available

- ANS: Serial
- PS-2 port
- Parallel and universal serial bus
- Bluetooth port



- firmware

3. Do a practical to identify the I/O ports.

Ans: internal Port: it connects the system motherboard to internal devices like hard disk and cd etc

external port: it connects the system motherboard to external devies like mouse ,USB

## **Topic: BIOS & CMOS**

### **• Assignment Level Basic**

1. What is BIOS?

ANS: BIOS is the program a computer microprocessor use to start the computer system after it is powered on.

2. What is CMOS?

ANS: CMOS is an integrated circuit built on a printed circuit board

### **• Assignment Level Intermediate**

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

ANS:The Bios is the intermediate between the cpu and I\O device control information and data flow.

2. What is the role of I/O in CMOS?

ANS: Maintain time and store some setting of computer hardware in a volatile memory.

### **• Assignment Level Advance**

1. Do a practical to reset BIOS

ANS; press and hold your power button for several seconds.

2. Do a practical to remove cmos.

ANS: rmove this battery and putting it backing will cause these feature to resort to default.

## **Topic: Laptop & storage**

### **• Assignment Level Basic**

1. What is laptop?

ANS: A personal computer that can be moved and used in a variety of locations

2. Why is a laptop used widely nowadays?

ANS: portability, convenience, improved performance, battery life, and ergonomics

### **• Assignment Level Intermediate**

1. Describe the working process of a laptop?

ANS: Laptops combine all of the input and output components, and capabilities of the desktop including its desktop display screen, keyboard, speakers, data storage, disc drives

2. What is storage?

ANS: The keeping of things until they are needed the place where they are kept

3. List out the types of storage

4. ANS: Hard disk

5. Solid-state drive

6. Floppy disk

7. RAM

8. DVD

9. ROM

10. SD card

11. Magnetic storage

12. USB flash drive

### **• Assignment Level Advance**

1. Do a practical to identify types of storage.

ANS:optical devices such as CD or DVD be a static storage device

Dynamic storage devices are used data storage

Ex:HDD and SSD

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

ANS:

3. Do a practical to install the storage devices.

### **Topic: Printer**

#### ● **Assignment Level Basic**

1. What is printer?

ANS:a printer is a device that accepts text and graphic output from a computer and transfers that information to paper.

2. Why is printer needed?

ANS:provide a physical representation of a brandor product that can be held, touched and shared.

#### ● **Assignment Level Intermediate**

3. Describe the working process of printer.

ANS:A printer works by sending electronic signals from that computer o the printer's control board. The control boad then interprets this signal into instruction for the print head or toner cartridge. The prints head or toner cartridge prints the document or image onto paper.

4 What are the types of printer?

- ANS: laser printers
- Led printer
- Dot matrix printers
- 3d printers
- Solid ink printera

- **Assignment Level Advance**

4. Do a pra

5. ctical to install the printer

- ✓ ANS:open the windows start menu
- ✓ Then click to setting
- ✓ Then click on devices
- ✓ Next select printer &scanner
- ✓ Then click add a printer
- ✓ Click the printer that I want isnot listed
- ✓ Add local printer or network printer with manual seeting and click next
- ✓ Creat a new port select standard tcp\ip from the drop down box
- ✓ Type in your printer ip address
- ✓ Select the devie type
- ✓ Set up optional preferences
- ✓ Printe a test page

3. Do a practical to Troubleshoot the improper printing.

ANS:

**Topic: Storage devices**

- **Assignment Level**

1. What is storage device?

ANS:a piece of computer equipment on which information can be stored.

2. Why we need storage device

ANS:Allows you to store and retrieve digital information on your computer.

- **Assignment Level Intermediate**

1. List out the types of storage devices.

ANS: Hard disk

Solid -state drive

Floppy disk

Ram

DVD

Rom

Sd card

Magnetic storage

USB flash drive

2. Describe the working process of storage devices.

ANS: Hold data for a short period of time while the computer is running and power is going to the devices

- **Assignment Level Advance**

1. Do a practical to Remove storage devices and reinstall it and make a gpt disk.

ANS:

**Topic: ATA**

- **Assignment Level Intermediate**

1. What is ATA?

ANS:ATA is a standard interface used to connect storage devices, like hard disk drives to computers.

- **Assignment Level intermediate:**

1. Describe working of ATA.

ANS:A legacy standard for connecting internal floppy disk, computer host bus hard disk and optical disk drives to older computer system.

- **Assignment level Advanced:**

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

- ANS: Power down the computer
- Open the computer case
- Install the hard drives to the drive cage
- Connect the serial ATA cable
- Attach the other end of the serial ata cable to the hard drives
- Connect the serial ata power adapter
- Attach the serial ata power connector to the connector on the hard drive.
- Replace the computer panel or cover
- Insert the AC power cord

## **Topic: SATA**

### • Assignment Level Basic

1.What is SATA?

ANS:AN industry standard bus interface for connecting a ,computer host bus hard disk and optical disk drvies to storage devices such as hard disk or ssd it called sata

### • Assignment Level Advance

1. Describe the working of SATA.

ANS: defines how data is transferred between a computer motherboard and mass storage devices.

2. Do a practical to identify sata.

ANS: data is the smaller of the two typically 7 pin whereas power is large typically 1 pin

3. Do a practical to install SATA.

ANS: connect one end of the sata cable to the drive, and the other end to an available sata port on your motherboard

4. Where SATA does is used.

ANS: in computer case

### **Topic: SCSI**

- **Assignment Basic**

1. What is SCSI?

ANS: small computer system interface is a set standards for physically connecting and transferring data between computer and peripheral devices

2. Why SCSI needed?

ANS: used to connect and communicate between computer and peripheral devices

- **Assignment level Intermediate:**

1. What is the rpm of SCSI?

ANS: SCSI drives come in 10,000 or 15,000 rotations per min

2. Do a Practical to install SCSI.

ANS: connect one end of the interface cable one of the scanner

SCSI connector until the locks on both sides snap

in. connect the other end of the cable to the SCSI port of your computer or another SCSI device. Plug in the power cords of your computer, scanner and other external SCSI devices

### **Topic: Laptop**

- **Assignment Level Basic:**

✚ What is laptop?

ANS: A personal computer that can be moved and used in a variety of locations

✚ What are the types of laptop?

❖ ANS: MacBook

- ❖ Netbook
- ❖ Tablet
- ❖ Ultrabook
- ❖ ultraportable

✚ Different names of laptop.

- ANS: microcomputer
- Minicomputer
- Notebook computer
- palmtop

• **Assignment level Intermediate:**

1. What are the parts of laptop?

✚ ANS: display

✚ Keyboard

✚ RAM

✚ Hard disk

✚ Speaker

✚ Optical bettery

✚ Hinges

✚ Cooling fan

✚ Battery

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

ANS: : windows +R keys on your keyboard to open RUN.

Type msinfo32 into the text box and click ok

Select system in the left panel. Information about your motherboard is listed next to the following three heading baseboard manufacture.

• **Assignment level Advance.**

1. Do a practical to disassemble the laptop.



2. ANS: Turn off the computer
3. Remove back panel
4. Remove component
5. Remove laptop screen
6. Remove screws
7. Pry case apart

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

ANS: Discharge

Flow off

Open the housing

Remove old RAM module

Close the laptop again

## **TOPIC: PRINTER**

### • **ASSIGNMENT LEVEL BASIC:**

1. WHAT IS PRINTER?

ANS: a printer is a device that accepts text and graphic output from a computer and transfers that information to paper.

2. IS IT AN INPUT DEVICE OR OUTPUT DEVICE?

ANS: output device

### • **Assignment level intermediate:**

1. Describe the types of printer.

- ANS: laser printers
- Led printer
- Dot matrix printers
- 3d printers
- Solid ink printer

2. Describe inkjet printer.

ANS: a computer peripheral that produces hard copies of a text document or photo by spraying droplets of ink onto paper.

• **Assignment level Advanced:**

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

- ✓ ANS: ANS: open the windows start menu
- ✓ Then click to setting
- ✓ Then click on devices
- ✓ Next select printer & scanner
- ✓ Then click add a printer
- ✓ Click the printer that I want is not listed
- ✓ Add local printer or network printer with manual setting and click next
- ✓ Create a new port select standard tcp\ip from the drop down box
- ✓ Type in your printer ip address
- ✓ Select the device type
- ✓ Set up optional preferences
- ✓ Print a test page

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

ans: remove the cartridge from the printer, clean the cartridge contacts with a cloth and reinstall the cartridges.