**TERM-1 CompTIA A+ Assignment**

**Module 1**

**[Hardware and its components]**

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**THE VISIBLE COMPUTER**

1.what is hardware?

🡪 The entirety of the components that you can physically touch makes up computer hardware. This covers components like the motherboard, CPU, RAM, SSD, and memory in an electronic device. Hardware is everything that is physically manipulated and can be touched.

2.what is the purpose of Hardware?

🡪Hardware serves as the physical components required for a computer or other electrical device to operate. Together, these parts carry out operations, handle data, store information, show images, communicate with people or other systems, and complete tasks.

3.list out two types of hardware.

🡪Input devices: These comprise hardware like keyboards, mice, and microphones that let users enter commands or data into computers or other electronic devices.   
2. Output Devices: Monitors, printers, and headphones are a few examples of output devices that show or output data that has been processed by the computer or device for people to view, hear, or interact with.

4.what is core hardware?

🡪 The term "core hardware" describes the fundamental parts of a computer or other electronic device, such as the motherboard, CPU, RAM, storage units, and power supply, that are required for the device to operate.

**CATEGORY OF COMPONENTS**

1.what are the category of components in hardware?

🡪 Devices for input and output, motherboards and expansion cards, processing units, memory and storage, cooling systems, power supply units, connectivity components, etc.

2.why category is needed?

🡪 In order to facilitate simpler understanding, identification, and selection of components for certain reasons, categories for components are required to organize and categorize hardware based on its capabilities and responsibilities inside a computer or electronic device.

**INPUT DEVICE**

1.what is input device?

🡪 An input device is any hardware, such as keyboards, mouse, and microphones, that is used to enter commands or data into a computer.

2.why input device needed?

🡪 Input devices are necessary to enable people to enter commands, instructions, or data into computers and communicate with them.

3.List out the input device.

🡪1.keyboard

2.Mouse

3.Touchscreen

4.Trackpad

5.Scanner

6.Joystick

7.microphone

**OUTPUT DEVICE**

1.what are output device?

🡪 Hardware components known as output devices are used to show or output processed data from a computer device so that people can view and interact with it.   
For example, speakers, headphones, printers, and monitors

2.how does output device work?

🡪 After processing data from a computer or other device, output devices display it in a way that consumers may understand, such as a visual image on a monitor, printed papers from a printer, or audio from speakers.

3.List out the output device.

🡪1.Monitor

2.Printer

3.Speaker

4.Headphones

5.Projector

6.Plotte

**MOTHERBOARD**

1.what is motherboard?

🡪A motherboard is the main circuit board inside a computer that connect all the components together.

2.why it is called motherboard?

🡪the fact that it is the central board in a computer connecting all components like a mother connect her children.

3.what is it called if we remove all components from the motherboard?

🡪if we remove all the components from the motherboard it is called “BOARD” or “BAREBONE MOTHERBOARD”.

4.Describe types of mother board.

🡪1.ATX

2.Micro-ATX

3.Mini-ITX

4.Flex-ATX

5.Mini-ATX

**CPU**

1.what is CPU.

🡪CPU means Central Processing Unit which is the primary component of a computer responsible for executing instructions and performing calculations.

2. write the full from of CPU.

🡪 ”CENTRAL PROCESSING UNIT”

3.what are the typ of CPU?

🡪1.Mid Tower

2.Full Tower

3.Mini Tower

4.Open Frame Case

5.Small Frome Factor

4.what do we need to keep the CPU Healthy?

🡪To keep the CPU healthy ensure proper cooling avoid overclocking beyond safe limits use a reliable power supply and keep the system free from dust.

**MONITOR**

1.what is monitor?

🡪 A monitor is a screen that displays images from a computer.

2.List out the types of monitor.

🡪1.LCD

2.LED

3.OLED

4.Curved Monitor

5.4K Monitor

6.Gaming Monito

3.What are the Technology used in monitor.

🡪Monitor use various technologies such as LCD, LED, OLED, TN, IPS, VA, QLED, and Micro LED.

4. Describe how does the crt monitor works.

🡪A CRT monitor works by shooting electrons from a cathode onto a phosphor-coated screen, creating images through controlled electron beams that scan across the screen line by line

**SYSTEM BUS**

1.what is system bus?

🡪The system bus is a communication pathway that connects the CPU to other CPU to other major components of a computer.

2. List out types of system bus.

🡪Types of system buses include the address bus, data bus, and control bus.

3.Describe the working of system bus.

🡪The system bus enable communication between the CPU, memory, and peripherals by transmitting addresses, data, and control signals.

**CHIPSET**

1.what is chipset?

🡪A chipset is a set of integrated circuits that manage data flow between the cpu, memory, and peripherals in a computer system.

2.Types of chipset?

🡪there are TWO types of chipset

1}Northbridge

2}Southbridge

3.Which chipset does have direct contact with the cpu?

🡪The Northbridge chipset has direct contact with the CPU.

4.Describe how does the Northbridge chipset work?

🡪The Northbridge chipset manages communication between the CPU, Memory, and high-speed components like the graphics card in a computer system.

**MEMORY**

1.what is memory?

🡪Memory is where a computer storages data and instructions for processing.

2.what are the types of memory?

🡪RAM

ROM

CHACH MEMORY

VIRTUAL MEMORY

SECONDARY STORAGE

**SYSTEM UNIT**

1.what is system unit?

🡪The system unit is the main body of a computer that contains its essential components, as the CPU, memory and storage, responding data and executing tasks.

2.how does system unit work

🡪The system unit works by coordinating internal components like CPU, Memory, and storage to process data and execute tasks, while also managing input and output devices for communication with the user.

3.what are the components and system unity?

🡪Components of the system unit are the CPU, Memory, storage, Motherboard, Power supply, and expansion cards. They collaborate to process data and execute tasks in a computer system.

**BIOS**

1.What Is bios?

🡪BIOS is firmware that boots up your computer and manage its basic functions.

2.What is the full from of bios?

🡪”BASIC INPUT/OUTPUT SYSTEM”

3.Describr working process of BIOS.

🡪BIOS start up your computer, checks hardware, loads the OS, and enables communication between software and hardware.

**CMOS**

1.What is CMOS?

🡪CMOS is a type of semiconductor technology used for memory storage, including BIOS setting on the motherboard.

2.What is the full form of CMOS?

🡪”COMPLEMENTARY METAL-OXIDE-SEMICONDUCTOR”

3. Describe the working process of CMOS.

🡪CMOS stores BIOS setting and other essential system information on the motherboard. It retains this data even when the computer is powered off, thanks to a small battery.

4. How do we know that cmos is not working.🡪If CMOS is not working you may encounter issues like incorrect system time or BIOS settings resetting to default every time you start your computer.

**BOOT PROCESS**

1.what is boot process?

🡪the boot process is the sequence of events that occurs when a computer is turned on where the systems firmware initializes hardware components, loads the operating system into memory and prepares the system for user interaction.

2.what is the first process of boot?

🡪The first process of booting is the Power On Self Test [POST]

3.What Is the final stage in the boot process?

🡪The final stage in the boot process is the execution of the operating system kernel.

4.Describe the boot process in Linux?

🡪Linux boot process; BIOS\UEFI starts bootloader loads kernel, kernel initializes hardware and starts into process leading to a fully operational system.

**SMPS**

1.What is SMPS?

🡪SMPS stands for Switched mode power supply used in electronics to efficiently convert electrical power.

2. What is the process of SMPS?

🡪The process of SMPS involves converting AC voltage from a power source to DC voltage using a high-frequency switching circuit.

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

🡪usually 2-3 cables, supporting 4 drive each.

4.How many pins does atx power connector have?

🡪The ATX power connecter usually has either 20 or 24 pins.

**RAM**

1. What is RAM?

🡪RAM stands for Random Access Memory, which is a type of computer memory that allows data to be stored and stored and accessed randomly, enabling quick read and write operations.

2. What is the full form of RAM

🡪”RANDOM ACCESS MEMORY”

3. What are the types of ram?

🡪DRAM

DDR

DDR2

DDR3

DDR4

DDR5

**DEVICE AND CABLE**

1. What are the types of devices?

🡪 INPUT DEVICE

OUTPUT DEVICE

STORAGE DEVICE

PROCESSING DEVICE

2. What are the types of cable?🡪 USB

HDMI

VGA

AUDIO

POWER

3. What cables are used to connect printer?

🡪The cable commonly used to connect a printer to a computer is a USB cable.

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

🡪The cable founded by Apple for data transfer was the ABS cable.

**EXPANSION CARD AND SLOTS**

1. Why expansion card needed?

🡪Expansion card are needed to enhance a computers functionality by adding new features or upgrading existing

2. Why expansion slots needed?

🡪Expansion slots are needed on motherboard for adding extra hardware like graphics cards or network adaptors.

3. What are the types of expansion card?

🡪GRAPHICS

SOUND

NETWORK

STORAGE EXPANSION CARD

4. What are the types of expansion cards?

🡪Types of expansion cards include graphics card, network card, storage card, and specialized card for additional connectivity or functionality like USB or FireWire expansion cards.

**I/O PORTS**

1. What is I/O ports?

🡪I/O port is a connecting point on a computer used for communication with external devices.

2. List out the I/O ports available

🡪

1. HDMI
2. VGA
3. AUDIO
4. PS/2
5. FIREWIRE

3. . What is I/O ports?

🡪I/O ports are connecting points on a computer used for communication with external device facilitating data transfer and interaction between the computer and peripherals.

4. List out the I/O ports available.

🡪 1. HDMI

2. VGA

3. AUDIO

4. PS/2

5. FIREWIRE

6. USB

**BIOS & CMOS**

1. What is BIOS?

🡪Basic Input/Output System, firmware on motherboard for hardware initialize and botting the OS.

2. What is CMOS?

🡪Complementary Metal-Oxide-Semiconductor, used in BIOS settings storage on motherboards.

3. What is the role of BIOS in I/O?

🡪BIOS initialize and controls hardware during startup for I/O operations.

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

🡪CMOS does not directly handle I/O operations instead it primarily stores BIOS settings on a motherboard.

**LAPTOP & STORAGE**

1. What is laptop?

🡪A laptop is a portable computer for mobile use. Also known as a notebook computer.

2. Why laptop is used widely now a days?

🡪Laptop are widely used nowadays due to their portability, versatility, and convenience, allowing user to work, study or entertain themselves from anywhere with ease.

3. Describe the working process of laptop?

🡪Laptop receive user input process tasks internally and display results on screen power by a battery and connected wirelessly or through ports for data transfer.

4. What is storage?

🡪Storage is where data is kept for future use whether its like hard ware or SSD or like could storage or USB drives.it provides a means to store and retrieve information as needed.

5. List out the types of storage.

1. HDD
2. SSD
3. EXTERNAL HARD DRIVE
4. USB FLASH DRIVE
5. SD CARD
6. MICRO CARD

7. NAS

**PRINTER**

1. What is printer?

🡪A printer is a peripheral device that products text or graphics on paper or other physical media from electronic data.

2. Why is printer needed?

🡪Printer are essential for generating hard copies of documents, Image, and other digital content.

3. Describe the working process of printer.

🡪A printer processes digital data, formats it, transfers ink or toner onto paper and outputs a physical copy of the digital content.

4. What are the types of printer.

🡪

1. INKJET PRINTER
2. LASER PRINTER
3. THERMAL PRINTER
4. DO MATRIX PRINTER

**STORAGE DEVICE**

1. What is storage device?

🡪A storage device is hardware that storages digital information like hard drive and USBs.

2. Why we need storage device

🡪We need storage device to store and retrieve digital information as documents, photos, videos, and applications persistently on computer and other for future use and reference.

3. List out the types of storage devices.

🡪

1. HDD
2. SSD
3. USB Flash Drive
4. SD Card
5. CD/DVD
6. NAS

4. Describe the working process of storage devices.

🡪Storage device store data by encoding it into a forma that can be written onto physical media. when data needs to be accessed, the device retrieves and decoms it for use by the computer or other device

**ATA**

1. What is ATA?

🡪ATA stands for “Advance Technology Attachment”, a standard interface for connecting storage device to computer

2. Describe working of ATA.

🡪ATA facilitates the connection and data transfer between storage device like hard disk or solid-sata drive and a computers motherboard enabling data storage and retrieval.

**SATA**

1.What is SATA?

🡪SATA enables the computer’s operating system and applications to storage and retrieve data efficiently.

2. Describe the working of SATA.

🡪SATA facilitates data transfer between storage device and a computer’s motherboard through a standardized interface allowing efficient storage and retrieval of data by the computer’s operating system and applications.

3. Where does SATA is used.🡪SATA is used to connect storage devices like hard disk drives and solod-sata drive to a computer’s motherboard, enabling data storage and retrieval.

**SCSI**

1. What is SCSI?

🡪SCSI stands for small computer system interface used to connect and transfer data between computer and peripheral devices like hard drive, tape drive, scanner, and printer.

2. WHY SCSI needed?

🡪SCSI is needed for faster data transfer rates and the ability to connect multiple devices to a single SCSI bus, making it suitable for high-performance computing environments and servers where efficient data transfer and device connectivity are essential.

3. What is the rpm of SCSI?

🡪 SCSI drives typically rotation speed ranging from 7,200 to 15,000 RPM.

**Laptop**

1. What is laptop?

🡪A laptop is a portable computer designed for personal or professional use. It typically includes a screen, keyboard, touchpad or trackpad, and internal components such as a processor, memory, and storage

2. What are the types of laptop?

🡪Ultraportable

Gaming

Convertible/2-in-1

Business

Workstation

Chromebook

Budget

3. Diffrent names of laptop.

🡪1. Notebook

2. Ultrabook

3. Chromebook

4. Netbook

5. MacBook

6. Gaming laptop

7. Business laptop

8. Workstation laptop

9. Portable computer

4. What are the parts of laptop?🡪1. Display

2. Keyboard

3. Touchpad

4. Battery

5. Processor

6. Memory

7. Storage

8. Motherboard

9.GPU

10. Cooling System

11. Ports

12. Operating System

13. Speakers

**PRINTER**

1. WHAT IS PRINTER?

🡪A printer is a device that produces text or graphics on paper or other physical media from electronic data.

2. IS IT A INPUT DEVICE OR OUTPUT DEVICE?

🡪 OUTPUT DEVICE

3. Describe the types of printer.

🡪 1. Inkjet Printers

2. Laser Printers

3. Photo Printers

4. Thermal Printers

5. 3D Printers

4. Describe inkjet printer

🡪 An inkjet printer is a type of printer that sprays liquid ink onto paper to create text and images. It's commonly used for home and office printing due to its versatility and relatively low cost.