

Hardware Networking

Module 1 (Hardware and its components)

Topic: The Visible computer

- 1) The physical parts of the computer system.
- 2) The perform major functions such as input, output, storage, communication, processing, and more.
- 3) External and internal.
- 4) Small cpu or processor built into a big cpu or cpu socket.

Topic: category of components

- 1) Components hardware
 - Motherboard
 - Cabinet

- Keyboard
- Mouse
- Smgs
- Hard disk
- Ram
- Processor

2) The input, output, processing, storage, and communication devices.

Topic:Input device

- 1) A physical piece of hardware that connects to a primary device.
ex.keyboard
- 2) Input devices are computer operators to have control of the computer and send data such as text, images, or sound to the computer.
- 3) Keyboard
 - Mouse

- Joystick
- Track ball
- Scanner
- Microphone

Topic:Output device

- 1) Output device allows data to be transmitted by the computer in a human friendly way.
- 2) Any hardware device used to send data from a computer to another device or user.
- 3) Monitor, Printer, Speaker, Headphone.

Topic:Motherboard

- 1) A motherboard is the main printed circuit board(PCB) in a computer.
- 2) It's called a motherboard because it's the main circuit board.

3) Yes

4) AT motherboard

- ATX motherboard
- Micro ATX motherboard
- ITX motherboard
- BTX motherboard

Topic: CPU

1) The primary component of a computer that acts as its control center.

2) The central processing unit. (CPU)

3) Five types of cabinet

- Full tower cabinet.
- Mid tower cabinet.
- Mini tower cabinet.
- Slim tower cabinet.
- SFF cabinet.

4) 10 ways to keep the CPU healthy.

- Restart your computer at least once a week
- Hygiene your Programs
- Defrag your hard drive
- Investigate Startup programs
- Install Antivirus Software
- Use an Anti-Surge Protection Extension
- Back-Up Your Files
- Prevent Overheating
- Clean your Fans
- Stay Alert

Topic:Monitor

- 1) The primary use of a monitor is to display images, text, video, and graphics information generated by the computer via a computer's video card.
- 2) 8 types of monitor
 - RGB

- CRT
- Plasma
- LCD
- LED
- OLED
- AMOLED
- QLED

3) Cathode-ray tube.

- Liquid-crystal display.
- Organic light-emitting diode.

4) CRTs Are Lit Using Electron Beams

- The CRT in a TV is a glass vacuum tube.
- These phosphor dots glow when struck by an electron beam, resulting in the images we see on screen.

Topic: System bus

- 1) System bus is used to connect the main components of the computer.

2) 3 type of system bus

- Control bus
- Address bus
- Data bus

3) A system bus is a facet of computer architecture that transmits and shares data throughout the computer and between devices.

- It's the primary way for a computer to process information because it connects the main processor to all other internal hardware components of a computer.

Topic:Chipset

1) An electronic chipset manages the flow of data between components on a motherboard.

2) Two types of chipset

- Northbridge

- Southbridge
- 3) Northbridge directly connects with cpu.
- 4) North Bridge is a bridge that manages communication between the Central Processing Unit (CPU) and parts of the motherboard.

Topic:Memory

- 1) Memory (RAM) is a PC component that stores data while the computer runs.
- 2) The 5 types of memory
 - Cache memory
 - RAM
 - Dynamic memory
 - Static memory
 - Read-only memory

- 3) It is used to store data information and instructions. It is a data storage unit or a data storage device where data is to be processed and instructions required for processing are stored. It can store both the input and output.

Topic: System Unit

- 1) The system unit is generally used to differentiate between the computer itself and its peripheral devices, such as the keyboard, mouse and monitor.
- 2) The computer system unit is to hold all the other components together and protect the sensitive electronic parts from the outside elements.
- 3) Components of system unit
 - random access memory (RAM)

- compact disk read-only memory (CD-ROM)
- hard disk
- Motherboard
- Fan
- processor or central processing unit (CPU)
- power supply
- floppy disk drive.

Topic: Bios

- 1) The program a computer's microprocessor uses to start the computer system after it is powered on.
- 2) Basic input/output system.
- 3) It also manages data flow between the computer's operating system (OS) and attached devices, such as the hard

disk, video adapter, keyboard, mouse and printer.

Topic:CMOS

- 1) Cmos is a small amount of memory on a computer motherboard that stores the Basic Input/Output System (BIOS) settings.
- 2) CMOS is Complementary Metal-Oxide-Semiconductor.
- 3) In CMOS logic gates a collection of n-type MOSFETs is arranged in a pull-down network between the output and the low voltage power supply rail (V_{ss} or quite often ground).
- 4) Incorrect or slow system date and time in the BIOS.

Topic:Boot process

- 1) Booting a computer refers to the process of powering on the computer and starting the operating system
- 2) The first step in the boot process is called the POST, or power on self test.
- 3) User Authentication is the final stage in the boot process.
- 4) Firmware initialization, execution of a boot loader, loading and startup of a Linux kernel image, and execution of various startup scripts and daemons.
- 5) Once you select the operating system to boot into, GRUB will load the selected kernel.
- 6) Six steps of the booting process.
 - BIOS and Setup Program
 - The Power- On-Self-Test (POST)
 - The Operating system Loads

- System Configuration
- System Utility Loads and
- Users Authentication.

Topic:Smpps

- 1) Switch mode power supply
- 2) Process Of SMPS is to send Power to all parts of the computer without a monitor.
- 3) 3 sata connectors are there in normal SMPS.
- 4) 20 pins have an ATX power connector.

Topic:RAM

- 1) The hardware in a computing device where the operating system (OS), application programs and data in current

use are kept so they can be quickly reached by the device's processor.

2) Random Access Memory (RAM)

3) There are two main types of RAM

- Dynamic RAM (DRAM)
- Static RAM (SRAM).

Topic: Device and cable

1) Types of devices

- Input devices
- Output devices
- Processing devices
- Memory devices

2) Types of cable

- HDMI cable
- VGA cable
- Ethernet cable
- PS/2 cable

- Audio cable
 - USB cable
- 3) USB cables are used to connect printers.
 - 4) Lightning to USB cable, the first cable founded by Apple for data transfer.

Topic:Expansion card and slots

- 1) The primary purpose of an expansion card is to provide or expand on features not offered by the motherboard.
- 2) Computers have expansion slots to give the user the ability to add new devices to their computer.
- 3) The types of expansion card
 - Interface card (ATA,Bluetooth,EIDE)
 - Firewire
 - IDE (integrated development environment)

- Parallel
- RAID (redundant array of independent disks)
- SCSI (small computer system interface)
- USB (universal serial bus).

4) The types of expansion slots

- PCI
- AGP
- PCIe
- AMR
- CNR
- ISA
- VESA

Topic:I/O ports

1) I/O port is a socket on a computer that a cable is plugged into.

2) List of I/O ports

- Serial port
- Parallel port
- Universal serial bus (USB) port
- Ethernet port

Topic:BIOS & CMOS

- 1) BIOS is defined as a program fixed and embedded on a device's microprocessor that helps to initialize hardware operations and manage the data flow to and from the operating system (OS) at the time of bootup.
- 2) CMOS is a small amount of memory on a computer motherboard that stores the Basic Input/Output System (BIOS) settings.
- 3) BIOS is theoretically always the intermediary between the

microprocessor and I/O device control information and data flow.

- 4) I/O is a function for exchanging data and signals between external devices and a microcontroller.

Topic:Laptop & storage

- 1) A laptop is a personal computer that can be easily moved and used in a variety of locations.
- 2) Laptop is used widely nowadays for its mobility these days.
- 3) Laptops combine all of the input and output capabilities and components of a desktop computer, including its display screen, keyboard, speakers, data storage, disc drives, and pointing devices (a touchpad or a trackpad), with a processor and operating system into a smaller device.

4) Storage is where data is permanently kept on your computer.

5) The types of storage

- Solid-state drives (SSDs) are the most common storage drives today.
- SSDs are smaller and faster than hard disk drives (HDDs).
- SSDs are noiseless and allow PCs to be thinner and more lightweight.
- Hard disk drives (HDDs) are more common in older devices.
- If you primarily use your PC for web browsing and light work, you may not need as much storage space.
- If you work with large videos or files, you may want more storage.

If you use OneDrive or another cloud storage service for photos and files, you may need less storage on your device.

Topic:Printer

- 1) A printer is a device that accepts text and graphic output from a computer and transfers the information to the paper.
- 2) The printer is a hardware device that is used to get a hard copy of a document or a file.
- 3) The printer's laser beams your print onto a metal drum. The drum uses static electricity to attract powdered toner to the drums cylinder. The drum rolls the toner onto the paper in the form of your print. The toner is melted & pressed onto the paper by heat from a fuser as it passes through its rollers.
- 4) Types of printer
 - Laser printer
 - Solid Ink printer
 - LED printer

- Business Inkjet printer
- Home Inkjet printer
- Multifunction printer
- Dot Matrix printer
- 3D printer

Topic:Storage Devices

- 1) A hardware device which can be used to store digital data and applications which may be in the form of images, video, audio, etc.
- 2) A storage device for a computer enables its user to store and safely access the data and applications on a computer device.
- 3) Types of storage device
 - RAM
 - ROM
 - Hard disk

- Floppy disk
- SD card
- Magnetic disk
- Pen drive
- SSD

4) Computers bring the software installed on a hard disk to RAM to process it and to be used by the user. Once the computer is turned off, the data is deleted.

Topic:ATA

- 1) Advanced Technology Attachment.
- 2) ATA is a standard physical interface that connects the storage devices like hard-drive, CD-ROM, and other drives to the motherboard.

Topic:SATA

- 1) Serial Advanced Technology Attachment.
- 2) SATA is a command and transport protocol that defines how data is transferred between a computer's motherboard and mass storage devices, such as hard disk drives (HDDs), optical drives and solid-state drives (SSDs).
- 3) SATA cables are used to connect devices in computer cable assemblies, such as storage devices.

Topic:SCSI

- 1) Small Computer System Interface.
- 2) SCSI in a desktop PC is that you can add a scanner and several other drives

(for example, CD-Rs, DVD-RAM, Zip drives), as well as hard drives, to one SCSI cable chain.

3) The rpm of scsi is up to 10,000.

Topic:Laptop

1) A laptop is a personal computer that can be easily moved and used in a variety of locations.

2) Types of laptop

- Chromebook
- Macbook
- Macbook Air
- Surface laptop
- Ultrabook
- XPS
- Gaming
- Ideapad
- Netbook

3) Names of laptop

- Lenovo
- Dell
- Acer
- Asus
- Apple
- Samsung
- Microsoft
- HP
- I ball
- Giga byte
- Compaq

4) Parts of laptop

- CPU
- Motherboard
- Hard drive
- Battery
- RAM
- Monitor
- Speaker

- Optical drive
- Video card

Topic:Printer

- 1) A printer is a device that accepts text and graphic output from a computer and transfers the information to paper.
- 2) Output device.
- 3) Types of printer
 - Laser printer
 - Solid Ink printer
 - LED printer
 - Business Inkjet printer
 - Home Inkjet printer
 - Multifunction printer
 - Dot Matrix printer
 - 3D printer
- 4) An inkjet printer is a computer peripheral that produces hard copies of

a text document or photo by spraying droplets of ink onto paper.