INTRODUCTION TO COMPUTER HARDWARE

1. Mother Board : The motherboard is at the center of what makes a PC work. It houses the CPU and is a hub that all other hardware runs through. The motherboard acts as a brain; allocating power where it's needed, communicating with and coordinating across all other components – making it one of the most important pieces of hardware in a computer.

A motherboard (also called mainboard, main circuit board,or mobo) is the main printed circuit board (PCB) in general-purpose computers and other expandable systems. It holds and allows communication between many of the crucial electronic components of a system, such as the central processing unit (CPU) and memory, and provides connectors for other peripherals. Unlike a backplane, a motherboard usually contains significant sub-systems, such as the central processor, the chipset's input/output and memory controllers, interface connectors, and other components integrated for general use.

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2. RAM Modules : In computing, a memory module or RAM (random-access memory) stick is a printed circuit board on which memory integrated circuits are mounted. Memory modules permit easy installation and replacement in electronic systems, especially computers such as

personal computers, workstations, and servers. The first memory modules were proprietary designs that were specific to a model of computer from a specific manufacturer. Later, memory modules were standardized by organizations such as JEDEC and could be used in any system designed to use them.

Types of memory module include:

Trans Flash Memory Module

SIMM, a single in-line memory module

DIMM, dual in-line memory module

Rambus memory modules are a subset of DIMMs, but are normally referred to as RIMMs

SO-DIMM, small outline DIMM, a smaller version of the DIMM, used in laptops

3. Daughter Cards : A daughter card or daughterboard is a type of circuit board that gets added to an existing one. Its name is appropriate for its use, since it is connected to a "motherboard" or "main board." The motherboard is the primary circuit board for a device. It is usually in the device as it is shipped from the factory **.**Some daughter card designs are made so that engineers can add functionality to a device without requiring a lot more room inside its housing. These kinds of items are often called riser boards or risers. Some might also call them "mezzanine boards.".With the rise of connective USB ports and other technology, it has become less necessary to upgrade devices with daughter cards or daughter boards.

4. Bus Slots : Alternatively known as a bus slot or expansion port, an expansion slot is a connection or port inside a computer on the motherboard or riser card. It provides an installation point for a hardware expansion card to be connected. For example, if you wanted to install a new video card in the computer, you'd purchase a video expansion card and install that card into the compatible expansion slot.

Below is a listing of expansion slots commonly found in a computer and the devices associated with those slots.

AGP - Video card.

AMR - Modem, sound card.

CNR - Modem, network card, sound card.

EISA - SCSI, network card, video card.

ISA - Network card, sound card, video card.

PCI - Network card, SCSI, sound card, video card.

PCI Express - Video card, modem, sound card, network card.

VESA - Video card.

5. SMPS :A switched-mode power supply (switching-mode power supply, switch-mode power supply, switched power supply, SMPS, or switcher) is an electronic power supply that incorporates a switching regulator to convert electrical power efficiently.Like other power supplies, an SMPS transfers power from a DC or AC source (often mains power, see AC adapter) to DC loads, such as a personal computer, while converting voltage and current characteristics. Unlike a linear power supply, the pass transistor of a switching-mode supply continually switches between low-dissipation, full-on and full-off states, and spends very little time in the high dissipation transitions, which minimizes wasted energy.Switched-mode power supplies can also be substantially smaller and lighter than a linear supply because the transformer can be much smaller. This is because it operates on the switching frequency which ranges from several hundred kHz to several MHz in contrast to the 50-60Hz which is typical for the mains AC frequency.

6. Internal Storage Devices : Internal is a term used to describe a device that is installed in the computer. For example, a video card is an internal device and a printer is an external device. When referring to a drive, an internal drive (e.g., internal hard drive) is any drive inside the computer. Internal storage is a description of any storage device that's internal (inside the case) and is not a removable storage or external storage. For example, the hard drive inside your computer is an example of internal storage. When referring to a network, internal is used to describe data that is only accessible to those who have the privilege. For example, a company may have an internal website or intranet that is only accessible to its employees and not its customers.

7. Interfacing Ports : A port is a physical docking point using which an external device can be connected to the computer. It can also be programmatic docking point through which information flows from a program to the computer or over the Internet.

Let us now discuss a few important types of ports −

Serial Port:

Used for external modems and older computer mouse

Two versions: 9 pin, 25 pin model

Data travels at 115 kilobits per second

Parallel Port:

Used for scanners and printers

Also called printer port

25 pin model

IEEE 1284-compliant Centronics port

PS/2 Port:

Used for old computer keyboard and mouse

Also called mouse port

Most of the old computers provide two PS/2 port, each for the mouse and keyboard

IEEE 1284-compliant Centronics port

Universal Serial Bus (or USB) Port:

It can connect all kinds of external USB devices such as external hard disk, printer, scanner, mouse, keyboard, etc.

It was introduced in 1997.

Most of the computers provide two USB ports as minimum.

USB compliant devices can get power from a USB port.

VGA Port:

Connects monitor to a computer's video card.

It has 15 holes.

Similar to the serial port connector. However, serial port connector has pins, VGA port has holes.

Firewire Port:

Transfers large amount of data at very fast speed.

Connects camcorders and video equipment to the computer.

Data travels at 400 to 800 megabits per seconds.

Invented by Apple.

It has three variants: 4-Pin FireWire 400 connector, 6-Pin FireWire 400 connector, and 9-Pin FireWire 800 connector.

Modem Port:

Connects a PC's modem to the telephone network.