NETWORKING & SYSTEM ADMINISTRATION LAB

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Aim

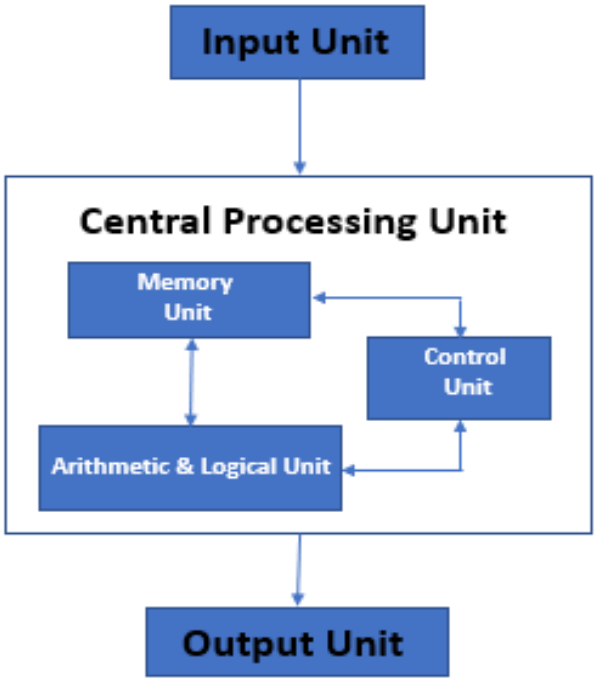
Identify major components of a computer system such as, motherboard, RAM modules, daughter cards, bus slots, SMPS, internal storage devices, interfacing ports.

Procedure

Components of Computers can be defined as the various vital elements of the computer system that makes the device fully functional and to run without any procedural troubles. It is typically referred to the basic hardware units that complete the structural architecture of the computer system. It is important to notice that the device does not work normally even if any one of the components is missed or not working as per the fundamental computer architecture. Every computer should have these essential components placed inside them, in order to be qualified for the instrument to be called as a computer system.

The main components of a Computer System's Architecture and their functional flow are as below,

- Input unit
- Processing unit
- Output unit



Now, let's move on to some major components of a computer system.

1. Motherboard

Alternatively referred to as the mb, mainboard, mboard, mobo, mobd, backplane board, base board, main circuit board, planar board, system board, or a logic board on Apple computers. The motherboard is a printed circuit board and foundation of a computer that is the biggest board in a computer chassis. It allocates power and allows communication to and between the CPU, RAM, and all other computer hardware components.

There are multiple types of motherboards, designed to fit different types and sizes of computers. Each type of motherboard is designed to work with specific types of processors and memory, so they don't work with every processor and type of memory. However, hard drives are mostly universal and work with the majority of motherboards, regardless of the type or brand. Some of the motherboard components are listed below,

- Expansion slots
- Inductor
- Capacitor
- CPU socket
- North Bridge
- South Bridge
- BIOS
- Bus, etc.

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.[1] Memory modules permit easy installation and replacement in electronic systems, especially computers such as personal computers, workstations, and servers. Types of memory module include:

- TransFlash 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

Distinguishing characteristics of computer memory modules include voltage, capacity, speed (i.e., bit rate), and form factor.

3. Daughter cards

A daughtercard 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. A daughtercard may be added later. Some daughtercard designs are made so that engineers can add functionality to a device without requiring a lot more room inside its housing. Daughtercards are different from some other types of additional circuit boards that tech enthusiasts call "expansion cards."

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.

Many of the expansion card slots above are obsolete. You're most likely only going to encounter AGP, PCI, and PCI Express when working with computers today.

5. SMPS

The full form of SMPS is Switched Mode Power Supply also known as Switching Mode Power Supply. SMPS is an electronic power supply system that makes use of a switching regulator to transfer electrical power effectively. It is a PSU (power supply unit) and it adjusts output voltage and current between different electrical configurations by switching the basics of typically lossless storage such as capacitors and inductors.

In the SMPS device, the switching regulators are used which switches on and off the load current to maintain and regulate the voltage output. Suitable power generation for a system is the mean voltage between off and on. Unlike the linear power supply, the SMPS carry transistor switches among low dissipation, full-on and full-off phase, and spend much less time in high dissipation cycles, which decreases depleted strength

6. Internal storage devices

There are two types of storage device used as secondary storage in computers: HDD and SSD. While HDDs are the more traditional of the two, SSDs are fast overtaking HDD as the preferred tech for secondary storage.

A hard disk drive is comprised of a stack of spinning metal disks known as platters. Each spinning disk has trillions of tiny fragments that can be magnetized in order to represent bits (1s and 0s in binary code). An actuator arm with a read/write head scans the spinning platters and magnetizes fragments in order to write digital information onto the HDD, or detects magnetic charges to read information from it.

In an SSD, semiconductors store information by changing the electrical current of circuits contained within the drive. This means that unlike HDDs, SSDs don't require moving parts to operate. Because of this, SSDs not only work faster and smoother than HDDs (HDDs take longer to gather information due to the mechanical nature of their platters and heads), they also generally last longer than HDDs (with so many intricate moving parts, HDDs are vulnerable to damage and wear).

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. A port has the following characteristics −

- External devices are connected to a computer using cables and ports.
- Ports are slots on the motherboard into which a cable of external device is plugged in.
- Examples of external devices attached via ports are the mouse, keyboard, monitor, microphone, speakers, etc.

Few important types of ports are,

- Serial port
- Parallel port
- USB port
- Ethernet port, etc.