NETWORKING & SYSTEM ADMINISTRATION LAB

Experiment No.: 2

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Aim

Hardware components of computer

Procedure

Hardware Components:

A Computer is an electronic device that has two essential parts including hardware and software to perform various operations. That means without hardware parts in a computer, software is of no work and vice versa. So, we need both hardware and software to run a Computer and can perform multiple operations. Software is nothing but a piece of code or set of instructions written in a chip to run a hardware device on the Computer.

1.Motherboard

The motherboard is the main printed circuit board of a computer. It houses the CPU and operates as a hub that all other hardware runs through. It allocates power to the other components, co-ordinates them, and enables communication between them.

Parts:

1. Back Panel Connectors & Ports

Connectors and ports for connecting the computer to external devices such as display ports, audio ports, USB ports, Ethernet ports, PS/2 ports etc.

2. PCI Slots

PCI: Peripheral Component

Interconnect Slot for older expansion cards such as sound cards, network cards, connector cards.

3. Northbridge

Also known as Memory Controller Hub (MCH). Chipset that allows the CPU to communicate with the RAM and graphics card. Beginning from Intel Sandy Bridge in 2011, this motherboard component is no longer present as it has been integrated within the CPU itself.

4. CPU Socket

Insert CPU here

5. ATX 12V Power Connector

Connects to the 4-pin power cable of a power supply unit which supplies power to the CPU

6. IDE Connector

Connects to older hard drive disks and optical drives for data transfer.

7.CMOS Battery

Supplies power to store BIOS settings and keep the real-time clock running.

8.SATA Connectors

Connects to modern hard disk drives, solid state drives and optical drives for data transfer.
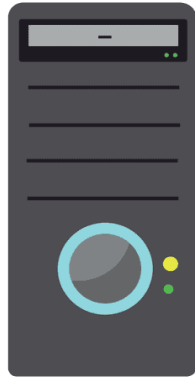
9.mSATA Connector

Connects to a mSATA solid state drive. In most cases, this SSD is used as cache to speed up hard disk drives, but it's possible to re-purpose it as a regular hard drive.

10. Fan Headers

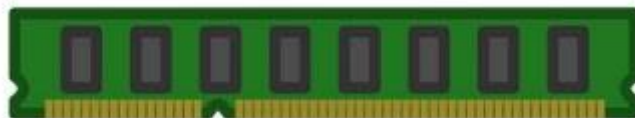Supplies power to the CPU heat sink fan and computer case fans.

2.Central Processing Unit (CPU)

The central processing unit, or CPU for short, is responsible for processing all information from programs run by your computer. Each CPU has a clock speed, which is the number of instructions it can process in any given second, measured in gigahertz. The quality of a computer's CPU has a major effect on overall system performance.

3.Random Access Memory (RAM)

Random Access Memory (RAM) is the physical hardware inside a computer that temporarily stores data. It is normally found in the memory slots of the motherboard. Its role is to serve as the computer's "working memory" for the information created by programs.

4.Hard Disk Drive (HDD)

The hard disk drive is the main data storage device of a computer. This is where the operating system, software titles, and the majority of files are stored. Unlike RAM, hard drives are non-volatile, which means that they maintain their stored data even when powered off.

5.Video Card

The video card (also known as a graphics card) is an expansion card that enables the computer to send output images to a video display device such as a monitor. The video card typically installs via a slot on the motherboard.

6.Monitor

The monitor is a hardware device that displays the video and graphics information generated by the computer via the video card. Monitors can also be called video display units, video display terminals, or simply as screens.

7.Keyboard

The keyboard is a typewriter-style device that enables users to interact with their computer. Users input text, characters, and other commands by pressing special buttons known as keys. Although the keyboard is normally considered to be an external hardware component, it is an essential part of most computer systems.

8.Mouse

The computer mouse is a hand-held pointing device used to manipulate objects on a computer screen. The standard modern mouse is able to direct a cursor using optical sensors. Most mouses also have two buttons (left-click and right-click), used for selection and accessing menus, and a scrolling wheel.
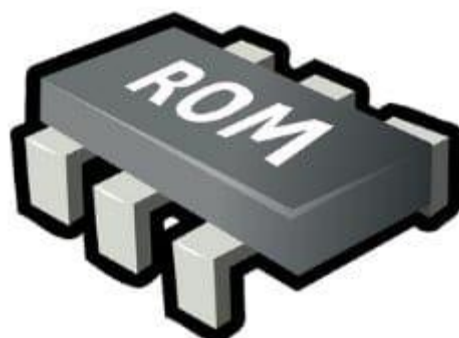
9.Printer

Printers are output devices that generate hard copies of electronic data stored on the computer, usually in the form of text or images on paper. The most common types of modern printer use inkjet or laser technology, and connect to the computer either via the computer's USB port, or via WI-FI.

10.Read-only_memory(ROM)

The ROM is also made of electronic microchips and is able to retain its content when power switches off. ROM is used for holding program instructions that can't be changed throughout the life of the computer because the content of ROM is impossible or very difficult to remove. For instance, ROM is used mainly for storing a boot program which is the instructions that the computer follows to perform self-diagnosis when it's switched on. This tells the computer how it will load the OS from secondary storage.

11.Solid-State Drive (SSD)

Solid-state drives are designed to be housed inside the computer as an alternative to traditional hard disk drives. Although they look almost identical to traditional hard disk drives from the outside, they have no moving parts. This means that they use less power, access data faster, and are generally more reliable.

12.Projector

Projectors are external hardware devices that enable a roomful of people to experience visuals generated by a single computer. They can "project" still or moving images onto a blank wall, screen, or another surface. Modern digital projectors are often used for watching movies, to enhance presentations, or as a teaching aid. They connect to a computer via the HDMI port.

13.Graphics Processing Unit (GPU)

Especially important for 3D rendering, the GPU does exactly what its name suggests and processes huge batches of graphic data. You will find that your computer's graphics card has at least one GPU. As opposed to the basic on-board graphic capabilities that PC motherboards supply, dedicated graphics cards interface with the motherboard via an expansion slot to work almost exclusively on graphic rendering. This also means you can upgrade your graphics card if you want to get a bit more performance from your PC.

14. Scanner

Computer scanners are devices that convert images into digital or computerized information.The first scanners were large and expensive, but today they're affordable and compact enough to fit on a desktop.

A scanner allows you to copy anything from a picture to a receipt as well as images from magazines, newspapers, and books as long as it's black and white.Scanners can be used for many purposes such as archiving family photos or creating an electronic form of your child's artwork.