NETWORKING & SYSTEM ADMINISTRATION LAB

Name:Yedhu Krishnan KJ

Roll No: 57

Batch: B

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Experiment No.: 2

Aim

Hardware components

Procedure

Computer Hardware

Computer hardware is a hardware part of a computer system.

In simple words, only those parts of the computer system which we can see or touch are called computer hardware.

Hardware is an important part of our computer system without which the computer is incomplete.

You cannot use a computer without hardware and without hardware, there cannot be a computer system or construction.

- Motherboard
- Central Processing Unit (CPU)
- Random Access Memory (RAM)
- Power Supply Unit (PSU)
- Video card
- Hard Disk Drive (HDD)
- Solid-State Drive (SSD)
- Optical disk drive (e.g., BD/DVD/CD drive)
- Card reader (SD/SDHC, CF, etc.)

1.Motherboard

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.

When choosing a motherboard, it's important to check what hardware ports the motherboard supplies. It's vital to check how many USB ports, and what grade (USB 2.0, 3.0, 3.1) they are, as well as what display ports are used (HDMI, DVI, RGB) and how many of each there are. The ports on the motherboard will also help you define what other hardware will be compatible with your computer, such as what type of RAM and graphics card you can use.

Although the motherboard is just one piece of circuitry, it is home to another one of the most important pieces of hardware: the processor.

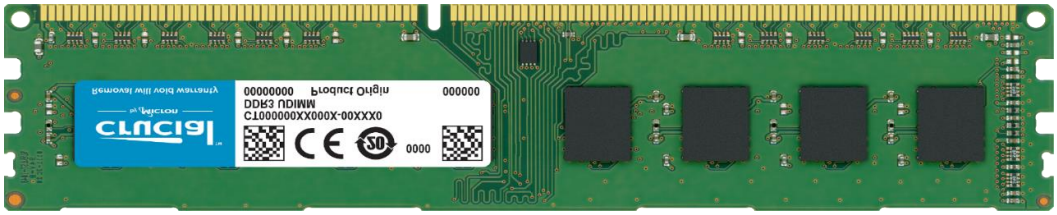
2. Power Supply Unit (PSU)

A power supply unit, commonly abbreviated as PSU, does more than just supply your computer with power. It is the point where power enters your system from an external power source and is then allocated by the motherboard to individual component hardware. Not all power supplies are made equally however, and without the right wattage PSU your system will fail to work.

A modern computer will generally need a PSU that's rated between 500W – 850W to effectively power all hardware, although the size of the PSU will depend entirely on the power consumption of the system.

3 RAM(RANDOM ACCESS MEMORY)

Random Access Memory, or RAM, is hardware found in the memory slots of the motherboard. The role of RAM is to temporarily store on-the-fly information created by programs and to do so in a way that makes this data immediately accessible. The tasks that require random memory could be; rendering images for graphic design, edited video or photographs, multi-tasking with multiple apps open (for example, running a game on one screen and chatting via Discord on the other).



4.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.

Not only this, but modern GPUs fulfil a broad computational workload beyond just rendering, making them an extension to the central processing unit.

5. Graphics card

Graphic cards are also called video cards or a video adapter. They are in all PCs. Graphic cards convert signals into video signals so the images can be displayed on the monitor. While many graphics cards are integrated into the CPU these days, enthusiasts will invest in standalone graphics cards with stronger and more powerful processing capabilities. This allows for heavy image editing, or better rendering and framerates in computer games.

Graphics cards are designed to offload rendering from the CPU. Graphics cards are powered by the motherboard and require a PCIX or PCIX 2.0 slot to install. Some cards require more power and thus will need a 6-8 pin connector that runs directly to the power supply. Graphics cards also include on board memory for efficient rendering. Typical sizes include 128-1024mb of memory. Today, high end graphics cards have multiple core processors that are largely parallel to increase texture fill and process more 3D objects in real time.

6. Sound card

A sound card, also referred to as an audio card facilitates the input and output of audio signals to and from a computer under the control of computer programs. Sound cards for computers were uncommon until 1988, which left the single internal PC speaker as the only way early PC software could produce sound and music.

7. Network Interface Cards (NICs)

Network Interface Cards can be a network card, network adapter, LAN Adapter or NIC (network interface card). They are a piece of computer hardware designed to allow computers to communicate over a computer network. It is used for fault communication via cable. Data is transmitted over a cable network. The NIC connects computers and other devices such as printers. Many modern motherboards have NICs built in by default.

8. Printers

A printer is an external hardware output device that takes the electronic data stored on a computer or other device and generates a hard copy. For example, if you created a report on your computer, you could print several copies to hand out at a staff meeting. Printers are one of the most popular computer peripherals and are commonly used to print text and photos. The picture is an example of an inkjet computer printer, the Lexmark Z605.

9. Scanner

A scanner is an electrical device that reads and converts documents such as photos and pages of text into a digital signal. This changes the documents in a form that can be viewed and or modified on a computer system by using software applications. There are numerous kinds of scanners available in the market that have different resolutions.

Most scanners have a flat scanning surface as they are flatbed devices, which are mainly used for scanning magazines, photographs, and numerous documents. Furthermore, because most flatbed scanners have a cover that lifts up, they can scan books and other heavy things. A sheet-fed scanner is another type of scanner that is only able to accept paper documents. Although sheet-fed scanners have no capability of scanning books, some of their models include a feature of an automatic document feeder (ADF) that allows various pages to be scanned in sequence.

The scanner interacts with computer software applications to execute tasks. The data from the scanner is imported into these apps. Most of the scanners contain basic scanning software that makes users capable of configuring, initiating, and importing scans. Scanners are also able to import scanned images directly through various software

10. Optical Disc Drive

Optical drives retrieve and/or store data on optical discs like CDs, DVDs, and BDs (Blu-ray discs), any of which hold much more information than previously available portable media options like the floppy disk.

The optical drive normally goes by other names like a disc drive, ODD (abbreviation), CD drive, DVD drive, or BD drive.

Some popular optical disc drive makers include LG, ASUS, Memorex, and NEC. In fact, one of these companies probably manufactured your computer or other device's optical drive, even though you never see their name anywhere on the drive itself.

11.MOUSE

A computer mouse is a handheld hardware input device that controls a cursor in a GUI (graphical user interface) for pointing, moving and selecting text, icons, files, and folders on your computer. In addition to these functions, a mouse can also be used to drag-and-drop objects and give you access to the right-click menu.

For desktop computers, the mouse is placed on a flat surface (e.g., mouse pad or desk) in front of your computer. The picture is an example of a Logitech desktop computer mouse with two primary buttons and a wheel.

12. Central processing unit (CPU)

The central processing unit (CPU) or processor, is the unit which performs most of the processing inside a computer. It processes all instructions received by software running on the PC and by other hardware components, and acts as a powerful calculator.

The CPU is placed into a specific square-shaped socket found on all motherboards by inserting its metallic connectors or pins found on the underside. Each socket is built with a specific pin layout to support only a specific type of processor.

Since modern CPUs produce a lot of heat and are prone to overheating, they must be kept cool with appropriate fans or ventilation systems, and covered with heat sinks and thermal paste.

To control instructions and data flow to and from other parts of the computer, the CPU relies heavily on a chipset, which is a group of microchips located on the motherboard.

This term is also known as a central processor, microprocessor or chip.

13. CARD READER

Alternatively known as a media card reader, a card reader is a hardware device for reading and writing data on a memory card such as a multimedia card. Some card readers only have one card slot, and some have multiple card slots for different cards and media. In the picture below, you can see an example of a USB media card reader from Kingston. This card reader has a slot for miniSD, MicroSD, SD/MMC, MMCmicro, CF/MD, M2, and MS/DUO cards. Media card readers mostly find use for those who want to download information from expanded storage on a smartphone, or memory from a digital camera.

14. VIDEO CARD

Alternatively known as a display adapter, graphics card, video adapter, video board, or video controller, a video card is an expansion card that connects to a computer motherboard. It is used to create a picture on a display; without a video card, you would not be able to see this page. More plainly, it's a piece of hardware inside your computer that processes images and video, some of the tasks normally handled by the CPU. Video cards are used by gamers in place of integrated graphics due to their extra processing power and video ram.