Lab 2: Familiarization with hardware components of a computer system

Objectives

1. To be familiar with different internal and external hardware components of computer
2. To be able to recognise important hardware components
3. To understand the overview of working process of computer system

Requirements

1. Hardware parts of a computer

Theory:

Computer system is the integration of different parts of the computer that behave as a single unit to perform the different functions of a computer. This includes both hardware as well as software components of the computer

In this practical, we will be reviewing the overall hardware components of a computer system

The main hardware components are given and explained below:

1. Input devices:
    1. Keyboard
    2. Mouse
    3. Joystick
2. Output devices:
    1. Monitor
    2. Printer
    3. Speaker
3. Central processing unit
    1. Motherboard
    2. Hard disk
    3. CMOS battery
    4. Processor
    5. RAM
        i. SRAM
        ii. DRAM
    6. ROM

The above mentioned parts are explained below:

Input devices

They are the devices used by the cuser to give input data & instructions to the computer.

i) Keyboard

It is used to input characters and symbols by pressing keys that send their code value as signals to the computer system.

ii) Mouse

A pointing device that detects two-dimensional motion relative to a surface. It typically translates the motion of the user's hand into signals that the computer can process, allowing the user to control the GUI.

iii) Joystick

A peripheral device primarily used for gaming, allowing users to control movement and actions in video games or simulations by tilting or moving the joystick in various directions.

Output devices

These devices display or otherwise convey the results of processing from the computer to the user.

i) Monitor
A visual display unit that presents information processed by the computer's graphics card. Monitors come in various sizes and resolutions, and they display text, images, and videos.

ii) Printer
An output device that produces a physical representation of electronic documents or images, typically on paper. Printers can be inkjet, laser, or dot matrix, among other types.

iii) Speaker
An audio output device that converts electronic signals into audible sound. Speakers allow users to listen to music, sound effects, or spoken audio produced by the computer.

Central processing unit (CPU)

The central processing unit is the primary component responsible for executing instructions and performing calculations within a computer system.

i) Motherboard
The main circuit board of a computer, which houses the processor, memory, and other essential components. It provides the electrical connections between the CPU and other hardware components.

ii) Hard disk
A storage device that stores data persistently on magnetic surfaces. Hard disks are used to store the operating system, applications, and user files in a computer system.

iii) CMOS battery
A small battery on the motherboard that powers the complementary metal-oxide-semiconductor (CMOS) memory, which stores the system's BIOS settings.

iv) Processor
The central processing unit (CPU) is responsible for executing instructions and performing calculations within a computer system. It interprets and executes instructions fetched from memory. It is responsible for most functionalities of the computer.

v) RAM (Random Access Memory)
Temporary storage that holds data and instructions currently in use by the CPU. RAM is volatile memory, meaning it loses its contents when the computer is powered off.

a) SRAM (Static RAM)
Faster and more expensive type of RAM that uses flip-flops to store each bit. SRAM is used in cache memory due to its high speed.

b) DRAM (Dynamic RAM)
Slower and less expensive type of RAM that stores each bit as a charge in a capacitor. DRAM requires periodic refreshing to maintain its contents.

vi) ROM (Read Only Memory)
It stands for 'Read Only Memory'. It is a non volatile memory that stores the information required for the most rudimentary functioning of the computer such as the bootloader and other information from the manufacturer. It's types are PROM, EPROM and EEPROM.

The pictures of these components are given below:

Input devices

Figure 1: Keyboard

Figure 2: Mouse

Figure 3: Joystick

Output devices

Figure 4: Monitor

Figure 5: Printer

Figure 6: Speaker

Central processing unit

Figure 7: CPU

Figure 8: Processor

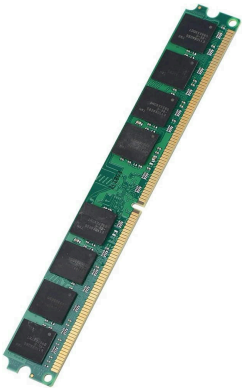

Figure 9: RAM

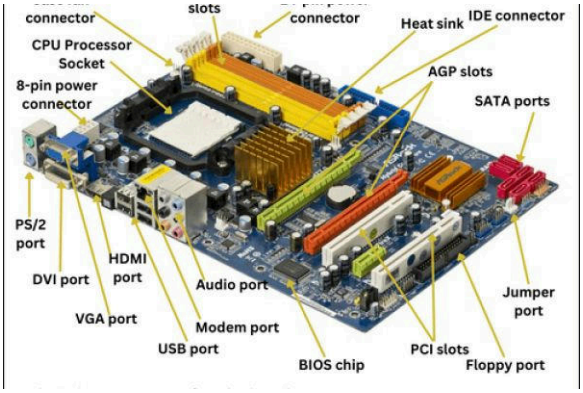

Figure 10: Motherboard

Figure 11: Hard disk

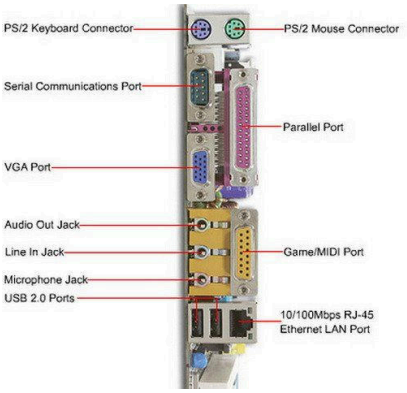

Figure 12: Other ports

Conclusion

We have reviewed the different hardware components of a computer system. We have learned about the input devices, output devices, and central processing unit components of a computer.