

Practical No. 1

Aim: Introduction to Computer Anatomy—Exploring Memory, Ports, Motherboard, and Add-on Cards.

Theory:

Motherboard: The motherboard acts as the backbone of the computer, hosting all the crucial components. It's essentially a large circuit board that connects the CPU (Central Processing Unit), RAM (Random Access Memory), storage devices like hard drives, and all the ports and expansion slots. The motherboard ensures that all these parts communicate effectively, making it possible for your computer to operate.

CPU/Processor: The CPU, often referred to as the brain of the computer, is where most calculations take place. Located on the motherboard, this small yet powerful component processes instructions from software and hardware. The CPU is typically a small, square chip protected by a heat sink to prevent overheating. Its speed, measured in gigahertz (GHz), indicates how many billions of instructions it can process per second. The faster the CPU, the quicker the computer can run programs and respond to user commands.

RAM (Random Access Memory): RAM is the computer's short-term memory, used to store data temporarily while tasks are being executed. Unlike the hard drive, RAM is volatile, meaning it loses all stored information when the computer is turned off. The amount of RAM—measured in gigabytes (GB)—determines how many tasks your computer can handle at once without slowing down. Upgrading your RAM can significantly improve your computer's multitasking capabilities.

Hard Drive: The hard drive is your computer's long-term storage. It keeps all your files, programs, and the operating system even when the computer is off. When you start a program or open a file, the computer loads the needed data from the hard drive into the RAM. The speed of your hard drive affects how fast your computer boots up and loads software.

Expansion Cards: Expansion cards allow you to enhance your computer's capabilities beyond what is built into the motherboard. Common types of expansion cards include:

Video Card: Manages the graphics displayed on your monitor. While many motherboards include basic graphics functions, adding a dedicated video card can significantly improve visual performance, especially for gaming and video editing.

Sound Card: Handles audio processing, improving the quality of sound output to speakers or headphones. Though most motherboards feature built-in sound capabilities, a separate sound card can offer superior audio quality for audiophiles and professional editors.

Network Card: Provides networking capabilities, allowing your computer to connect to the Internet and other computers. This card can support either wired Ethernet connections or wireless Wi-Fi connectivity.

Bluetooth Card/Adapter: Enables wireless communication with other Bluetooth devices like keyboards, mice, and printers. If your motherboard does not have built-in Bluetooth, you can add this functionality through an expansion card or an external USB dongle.