

# Basics of Internal Computer Hardware



PYTHONISTA PLANET

## **Motherboard**

It is the mainframe of the computer through which all other components interface. The base of the motherboard is made up of non conducting material such as plastic.

Thin layers of Cu and Al printed on the sheet form the circuits between various components. It also contains some sockets, slots, etc.

## **Processor**

A CPU is a specific type of microprocessor. It is located on the motherboard. Motherboard has a socket for this, which is specific for a certain type of processor. A CPU gets very hot often and therefore needs its own cooling system in the form of a fan.

A CPU has a number of components. The first is the arithmetic logic unit (ALU) which performs the arithmetic and logical operations. Second one is the control unit (CU), which controls various components of a computer. Third one is the cache, which serves as a high speed memory.

## **ROM (Read Only Memory)**

ROM is a storage medium mostly used for firmware updates. Data stored in ROM may only be read. It keeps its contents regardless of whether it has power or not (unlike RAM).

## **BIOS (Basic Input/Output System)**

It is a type of firmware (permanent software programmed into a ROM) used to perform hardware initialization during the booting process and provide run-time services for OS and programs. It helps to load a boot loader or an OS.

Originally, BIOS firmware was stored in a ROM chip on the PC motherboard. In modern systems, the BIOS contents are stored on flash memory. BIOS is a kind of a program.

## **RAM (Random Access Memory)**

RAM is a storage device that can be read and changed in any order, typically used to store working data and machine code.

The data stored in RAM are temporary, i.e., when the power is off, the data are deleted (volatile memory). RAM is the place where the OS application programs and data in current use are kept.

## **Northbridge**

The northbridge is one of the two chips that typically handles communication among the CPU, RAM, video cards, and the southbridge. Northbridge is directly connected to the CPU. It handles all high speed communications.

## **Southbridge**

It is the other chip that handles all the input/output (I/O) functions of a computer such as USB, audio, serial, system BIOS, ISA bus, interrupt controller, and the IDE channels.

## **Chipset**

It is a set of electronic components in an integrated circuit that manages the data flow between the processor, memory and peripherals. The northbridge and southbridge together constitute the chipset on a PC.

## **Front Side Bus (FSB)**

The connection between the processor and northbridge is called front side bus (FSB).

## **Video Card (Graphics Card)**

A video card or graphics card is an expansion card which generates a feed of output images to a display. The video card is connected to the motherboard via PCI (Peripheral Component Interconnect), AGP (Accelerated Graphics Port), or others.

## **Expansion Card**

It is a printed circuit board that can be inserted into an expansion slot to add functionality to the system. Its primary purpose is to expand on features not offered by the motherboard.

For example, the original IBM PC didn't have on-board graphics or harddrive capability. In that case, a graphics card and a hard disk controller card are provided.



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