

Microprocessor

A microprocessor is a semiconductor chip, which is manufactured using the Large Scale integration (LSI) or Very Large Scale Integration (VLSI), which comprises Arithmetic Logic Unit, Control unit and Central Processing Unit (CPU) fabricated on a single chip.

(Core is a separate processing unit, the more cores there are, the more tasks (known as threads) can be served at the same time. This means that a PC with a higher core-count is going to be better for tasks where multithreading is important, such as web servers, web browsers and some video games.)

Dual Core:

A dual-core processor is a CPU with two processors or "execution cores" in the same integrated circuit. Each processor has its own cache and controller, which enables it to function as efficiently as a single processor. However, because the two processors are linked together, they can perform operations up to twice as fast as a single processor can.

Core 2 Duo :

The Intel Core 2 Duo (also known as Core2 Duo) processor is a 64 bit dual core processor. This means two processor cores work inside a Core 2 Duo in parallel. The Core 2 Duo, which was introduced on July 27 2006, is the direct successor of the Core Duo. Each core is based on the Pentium M micro architecture

I3:

I3 processors have 3.06 GHz and 2.93 GHz core speed which is very high as compared to the previous configurations of the

Intel **processors**. They have 4 processing threads that enables multithreading and multitasking. 4 megabyte additional cache memory is also provided inside the **processor**.

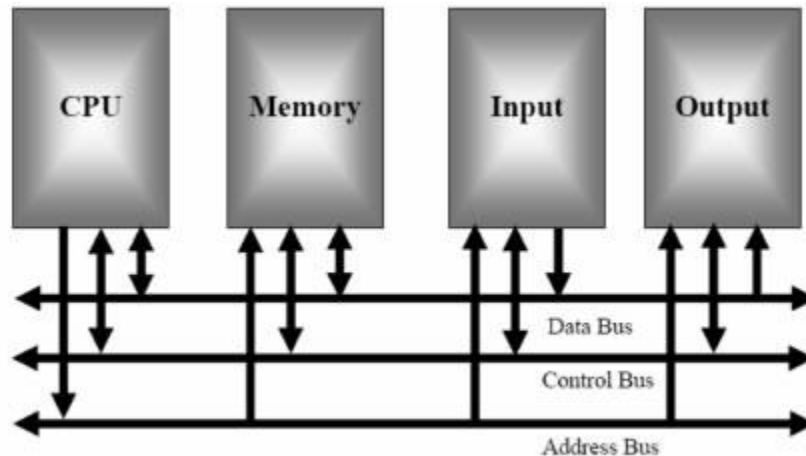
Terminologies

Register

A register is a very small amount of very fast memory that is built into the CPU (central processing unit) in order to speed up its operations by providing quick access to commonly used values. All data must be represented in a register before it can be processed. For example, if two numbers are to be multiplied, both numbers must be in registers, and the result is also placed in a register.

Bus

A collection of wires through which data is transmitted from one part of a computer to another. You can think of a bus as a highway on which data travels within a computer. When used in reference to personal computers, the term bus usually refers to internal bus. This is a bus that connects all the internal computer components to the CPU and main memory. All buses consist of two parts -- an address bus and a data bus. The data bus transfers actual data whereas the address bus transfers information about where the data should go. The control bus is used by the CPU to direct and monitor the actions of the other functional areas of the computer. It is used to transmit a variety of individual signals (read, write, interrupt, acknowledge, and so forth) necessary to control and coordinate the operations of the computer. The size of a bus, known as its width, is important because it determines how much data can be transmitted at one time. For example, a 16-bit bus can transmit 16 bits of data, whereas a 32-bit bus can transmit 32 bits



Clock speed

Also called clock rate, the speed at which a microprocessor executes instructions. Every computer contains an internal clock that regulates the rate at which instructions are executed and synchronizes all the various computer components. The CPU requires a fixed number of clock ticks (or clock cycles) to execute each instruction. The faster the clock, the more instructions the CPU can execute per second. Clock speeds are expressed in megahertz (MHz) or gigahertz ((GHz).

16 bit Microprocessor: It indicates the width of the registers. A 16-bit microprocessor can process data and memory addresses that are represented by 16 bits. Eg. 8086 processor

32 bit Microprocessor: It indicates the width of the registers. A 32-bit microprocessor can process data and memory addresses that are represented by 32 bits. Eg. Intel 80386 processor, Intel 80486

64 bit Microprocessor: It indicates the width of the registers; a special high-speed storage area within the CPU. A 32-bit microprocessor can process data and memory addresses that are represented by 32 bits. e.g. Pentium dual core, Core 2 duo.

128 bit Microprocessor: It indicates the width of the registers. A 128-bit microprocessor can process data and memory addresses that are represented by 128 bits. e.g. Intel core i7

Difference between RISC & CISC architecture

RISC (Reduced Instruction Set Computing):

1. RISC system has reduced number of instructions. 2. Performs only basic functions. 3. All HLL support is done in software. 4. All operations are register to register.

CISC (Complex Instruction Set Computing):

1. A large and varied instruction set. 2. Performs basic as well as complex functions. 3. All HLL support is done in Hardware. 4. Memory to memory addressing mode

EPIC (Explicitly Parallel Instruction Computing):

It is a 64-bit microprocessor instruction set, jointly defined and designed by Hewlett Packard and Intel, that provides up to 128 general and floating point unit registers and uses speculative loading, predication, and explicit parallelism to accomplish its computing tasks. By comparison, current 32-bit CISC and RISC microprocessor architectures depend on 32-bit registers, branch prediction, memory latency, and implicit parallelism, which are considered a less efficient approach in micro architecture design.

UPS:

An **uninterruptible power supply** or **uninterruptible power source (UPS)** is an electrical apparatus that provides emergency power to a load when the input power source or mains power fails. A UPS differs from an auxiliary or emergency power system or standby generator in that it will provide near-instantaneous protection from input power interruptions, by supplying energy stored in batteries, supercapacitors, or flywheels. The on-battery run-time of

most uninterruptible power sources is relatively short (only a few minutes) but sufficient to start a standby power source or properly shut down the protected equipment. It is a type of continual power system.

A UPS is typically used to protect hardware such as computers, data centers, telecommunication equipment or other electrical equipment where an unexpected power disruption could cause injuries, fatalities, serious business disruption or data loss. UPS units range in size from units designed to protect a single computer without a video monitor (around 200 volt-ampere rating) to large units powering entire data centers or buildings. The world's largest UPS, the 46-megawatt Battery Electric Storage System (BESS), in Fairbanks, Alaska, powers the entire city and nearby rural communities during outages.

Graphic Card :

A **video card** (also called a **graphics card**, **display card**, **graphics adapter**, or **display adapter**) is an expansion card which generates a feed of output images to a display device (such as a computer monitor). Frequently, these are advertised as discrete or dedicated graphics cards, emphasizing the distinction between these and integrated graphics. At the core of both is the graphics processing unit (GPU), which is the main part that does the actual computations, but should not be confused with the video card as a whole, although "GPU" is often used as a metonymic shorthand to refer to video cards.

Most video cards are not limited to simple display output. Their integrated graphics processor can perform additional processing, removing this task from the central processor of the computer.^[1] For example, Nvidia and AMD (previously ATI) produced cards render the graphics pipeline OpenGL and DirectX on the hardware level.^[2] In the later 2010s, there has also been a tendency to use the computing capabilities of the graphics processor to solve non-graphic tasks, which can be done through the use of OpenCL and CUDA. Video cards can also be used for AI training.^{[3][2]}

Usually, the graphics card is made in the form of a printed circuit board (expansion board) and inserted into an expansion slot, universal or specialized (AGP, PCI Express).^[4] Some have been made using dedicated enclosures, which are connected to the computer via a docking station or a cable. These are known as eGPUs.

Network Card :

A **Network interface card** (also known as a **NIC**, **network card**, or **network interface controller**) is an electronic device that connects a computer to a computer network, usually a LAN. It is considered a piece of computer hardware. Most modern computers support an internal network interface controller embedded in the motherboard directly rather than provided as an external component.

Network cards let a computer exchange data with a network. To achieve the connection, network cards use a suitable protocol, for example CSMA/CD. Network cards usually implement the first two layers of the OSI model, that is the physical layer, and the data link layer. There are older network protocols such as ARCNET, introduced in 1977, LocalTalk or Token Ring, but today, most network cards use Ethernet.

Sound Card :

A **sound card** (also known as an **audio card**) is an internal expansion card that provides input and output of audio signals to and from a computer under control of computer programs. The term *sound card* is also applied to external audio interfaces used for professional audio applications.

Sound functionality can also be integrated onto the motherboard, using components similar to those found on plug-in cards. The integrated

sound system is often still referred to as a *sound card*. Sound processing hardware is also present on modern video cards with HDMI to output sound along with the video using that connector; previously they used a S/PDIF connection to the motherboard or sound card.

Typical uses of sound cards or sound card functionality include providing the audio component for multimedia applications such as music composition, editing video or audio, presentation, education and entertainment (games) and video projection. Sound cards are also used for computer-based communication such as voice over IP and teleconferencing.