

Computer applications for health science
Title of The Fifth lecture: computer hardware

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What is computer hardware?

computer hardware is the physical components that a computer system requires to function. It encompasses everything with a circuit board that operates within a PC or laptop; including the motherboard, graphics card, CPU (Central Processing Unit), ventilation fans, webcam, power supply, and so on.

What is a 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.



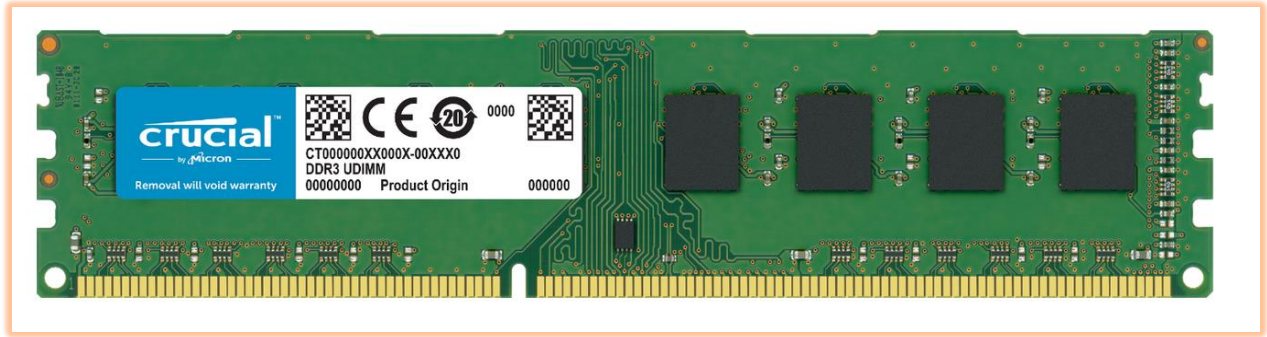
What is a CPU (Central Processing/Processor Unit)?

The CPU (Central Processing Unit or processor) is responsible for processing all information from programs run by your computer. The 'clock speed', or the speed at which the processor processes information, is measured in gigahertz (GHz). This means that a processor advertising a high GHz rating will likely perform faster than a similarly specified processor of the same brand and age.



What is RAM?

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.



What is a Hard Drive?

The hard drive is a storage device responsible for storing permanent and temporary data. This data comes in many different forms, but is essentially anything saved or installed to a computer: for example, computer programs, family photos, operating system, word-processing documents, and so on.



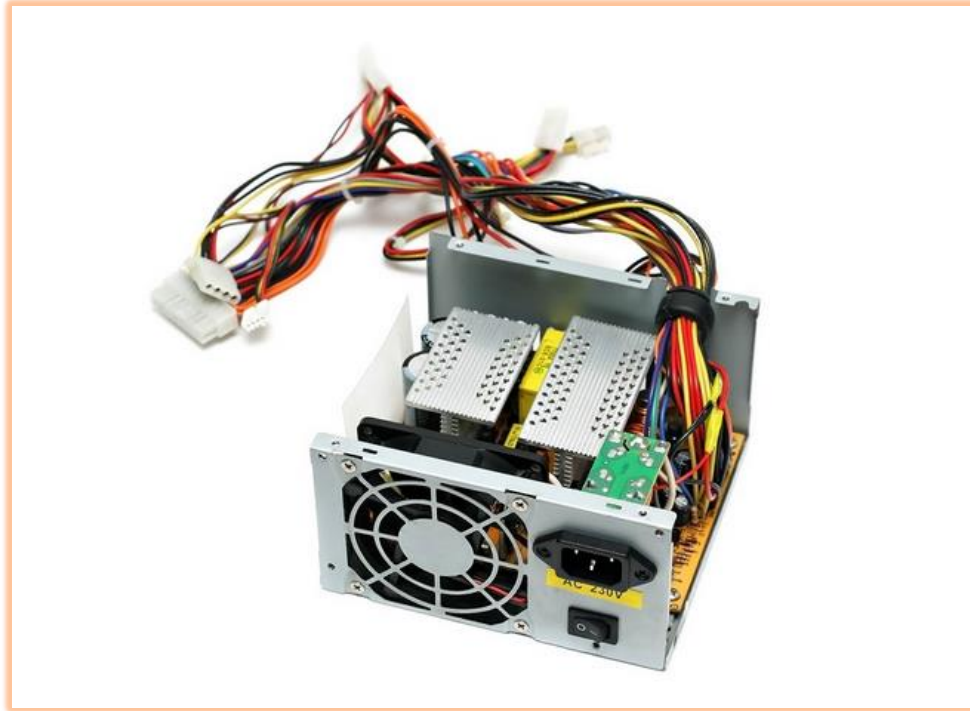
What is a Graphics Processing Unit (GPU)?

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,



What is a 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 .



Different Types of Computers

What is Computer?

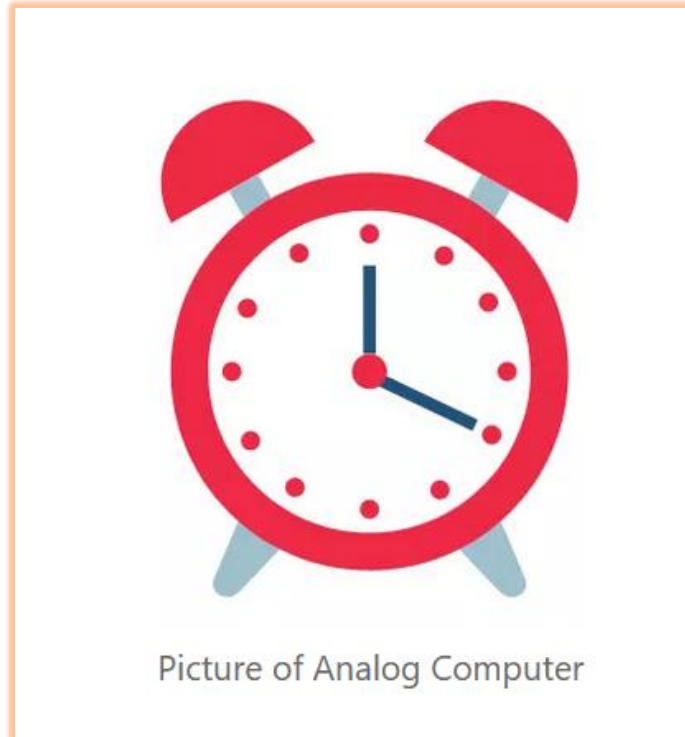
- A computer is an electronic & Programming Machine. Nowadays all human beings and organizations depend on computers.
- Computers are a helping hand when it comes to completing our day-to-day tasks.

But each individual has different needs and has to perform different tasks.

There are mainly three (3) Types of computer systems.

- Analog Computer
- Digital Computer
- Hybrid Computer

1.) Analog Computer



- Computers that are used to measure quantities such as voltage, current, temperature are called analog computers.
- When data given to be analyzed is continuous in nature analog computers are used to process that data.

They are used to analyze or measure quantities like voltage, current, temperature, etc. and convert them into digital form.

Advantages of Analog Computer

- Analog computers are mostly used in the electrical or mechanical field.
- Analog computers give or display the results of work in numbers or quantities.

- Analog computers give real-time results for a job. Eg - measuring weight.

Example of Analog Computer

There are many examples of analog computers are given below.

- Voltmeter
- Odometer
- Speedometer
- Thermometer
- Analogue Clock

2. Digital Computer



- By the name, it can be guessed that the input to be processed is in digital (numbers, alphabets, symbols) form.

Digital computers compute in the binary form (0's and 1's), and therefore they are quite fast with calculations.

Digital computers tend to be more precise too and have a static memory to store a lot of data, unlike analog ones.

Advantages of Digital Computer

- You can store large amounts of digital data in a digital computer.
- Digital computers do your work very quickly and with accuracy.
- In a digital computer, you can do many things at once, because digital computers are multitasking.

Example of Digital Computers

There are many examples of digital computers are given below.

- Laptop
- Desktops
- Mobile
- Tab
- Notebook

3.) Hybrid Computer



Advantages of Hybrid Computer

- A hybrid computer is capable of performing all functions of analog and digital computers.
- This computer is capable of doing even bigger tasks.
- A hybrid computer gives the result of any equation in real-time.
- Hybrid computers are used for on-line data processing.

Example of Hybrid Computer

There are many examples of Hybrid computers are given below.

- ATM Machine
- Gas Pump Station
- CT Scan Machine
- Auto Gasoline Pump: measures the petrol amount as well as calculate the value.