



# INDIAN SCHOOL AL WADI AL KABIR

<b>Class: IX</b>	<b>DEPARTMENT OF COMPUTER SCIENCE</b>	<b>Date of submission:</b>
<b>Topic:</b>	<b>Functional Components of Computer and IPO cycle</b>	<b>Handout1</b>

## Data and Information

**Data:** It is the term used for raw facts and figures. For example, 134, + 9, 'Raju', 'C' are data.

**Information:** Data represented in useful and meaningful form is information. In simple words we can say that data is the raw material that is processed to give meaningful, ordered or structured information. For example Raju is 9 years old.

## Functional Components of a Computer

The computer is the combination of hardware and software. Hardware are the physical components of a computer like motherboard, memory devices, monitor, keyboard etc. while software is the set of programs or instructions. Both hardware and software together make the computer system function.

Every task given to a computer follows an Input- Process- Output Cycle (IPO cycle). It needs certain input, processes that input and produces the desired output. The input unit takes the input, the central processing unit does the processing of data and the output unit produces the output. The memory unit holds the data and instructions during the processing.

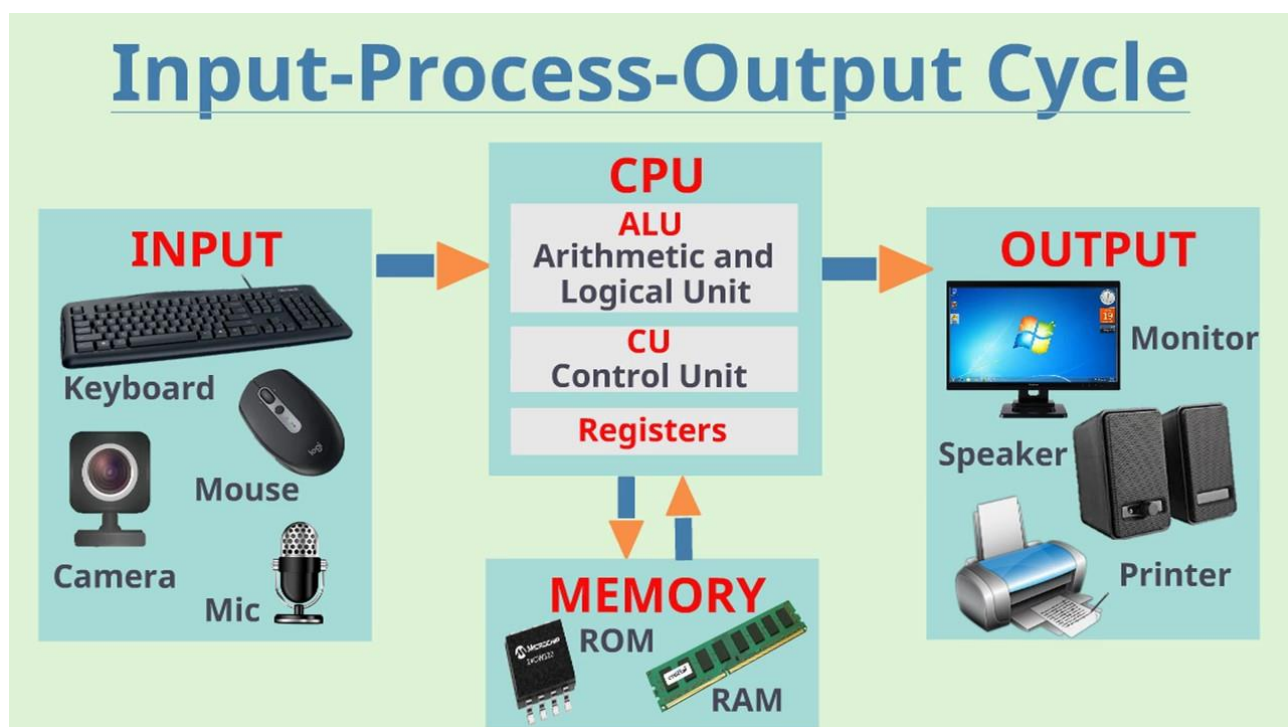
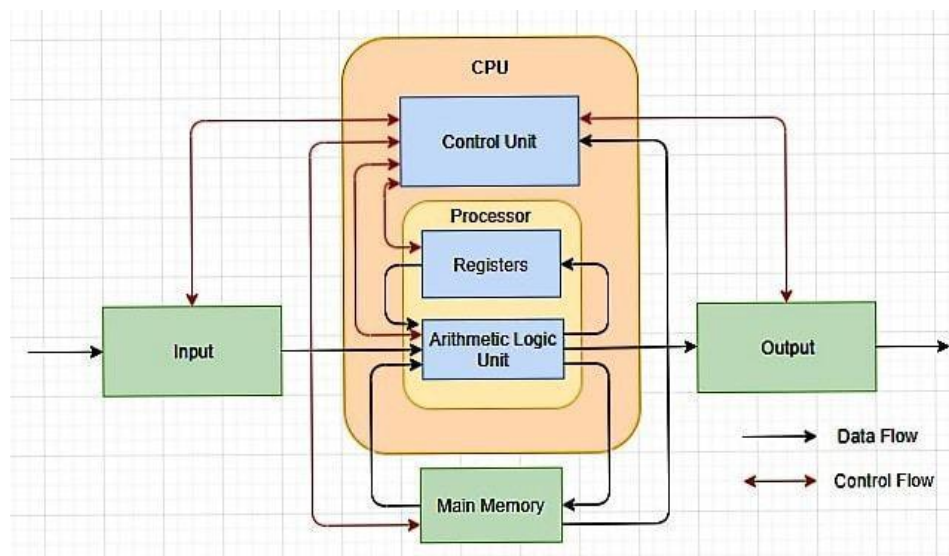


Fig below shows the basic structure of the computer.



### Input Unit

The input unit consists of input devices that are attached to the computer. These devices take input and convert it into binary language that the computer understands. Some of the common input devices are keyboard, mouse, joystick, scanner etc. Some of the other input units are



### Central Processing Unit (CPU)

Once the information is entered into the computer by the input device, the processor processes it. The CPU is called the brain of the computer because it is the control centre of the computer. As the CPU is located on a small chip, it is also called the microprocessor. It first fetches instructions from memory and then interprets them so as to know what is to be done. If required, data is fetched from memory or input device. Thereafter CPU executes or performs the required computation and then either stores the output or displays on the output device. The CPU has three main components which are responsible for different functions - Arithmetic Logic Unit (ALU) , Control Unit (CU) and Memory registers.

### **Arithmetic and Logic Unit (ALU)**

The ALU, as its name suggests performs mathematical calculations and takes logical decisions. Arithmetic calculations include addition, subtraction, multiplication and division. Logical decisions involve comparison of two data items to see which one is larger or smaller or equal.

### **Control Unit**

The Control unit coordinates and controls the data flow in and out of CPU and also controls all the operations of ALU, memory registers and also input/output units. It is also responsible for carrying out all the instructions stored in the program. It decodes the fetched instruction, interprets (understands) it and sends control signals to input/output devices until the required operation is done properly by ALU and memory.

### **Memory**

Memory attached to the CPU is used for storage of data and instructions and is called internal memory. During processing, it is the internal memory that holds the data. The internal memory is divided into many storage locations, each of which can store data or instructions. Each memory location is of the same size and has an address. With the help of the address, the computer can find any data easily without having to search the entire memory. The internal memory is also called the *Primary memory* or Main memory. When the task is performed, the CU makes the space available for storing data and instructions, thereafter the memory is cleared and the memory space is then available for the next task. The time of access of data is independent of its location in memory, therefore this memory is also called Random Access memory (RAM). Primary memory is volatile in nature. That means when the power is switched off, the data stored in this memory is permanently erased. That is why secondary memory is needed to store data and information permanently for later use. Some of the examples of secondary storage devices are hard disk, compact disks, pen drives etc.

### **Output Unit**

The output unit consists of output devices that are attached with the computer. It converts the binary data coming from CPU to human understandable form. The common output devices are monitor, printer, plotter etc.

