8085 microprocessor

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What is a Microprocessor?

The word comes from the combination micro and processor.

Processor means a device that processes whatever.

In this context processor means a device that processes numbers, specifically binary numbers, 0's and 1's.

To process means to manipulate. It is a general term that describes all manipulation. Again in this content, it means to perform certain operations on the numbers that depend on the microprocessor's design
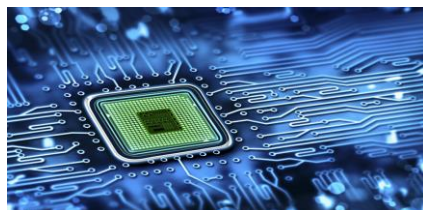
What about micro?

In the early 1970's the microchip was invented. All of the components that made up the processor were now placed on a single piece of silicon. The size became several thousand times smaller and the speed became several hundred times faster. The "Micro" Processor was born.

So, what is a microprocessor?

The microprocessor is a programmable device that takes in numbers

performs on them arithmetic or logical operations according to the program stored in memory and then produces other numbers as a result

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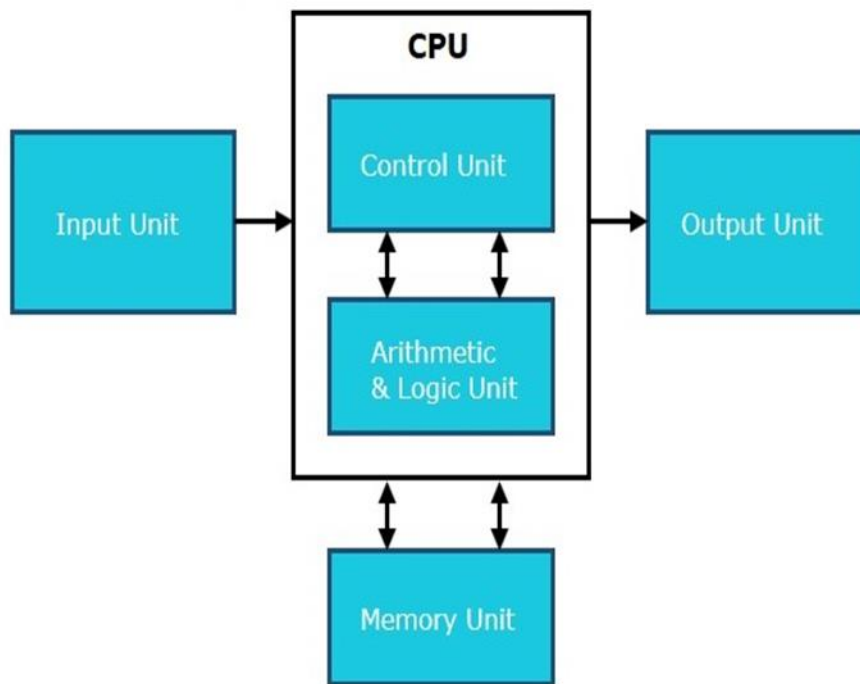
Programmable device: The microprocessor can perform different sets of operations on the data it receives depending on the sequence of instructions applied in the given program.

By changing the program, the microprocessor manipulates the data in different way

Instructions: Each microprocessor is designed to execute a specific group of operations. This group of operations is

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called an instruction set. This instruction set defines what the microprocessor can and cannot do.

Takes in: The data that the microprocessor manipulates must come from somewhere. It comes from what is called "input devices".

These are devices that bring data into the system from the outside world.

These represent devices such as a keyboard, a mouse, switches, and the like.

Numbers: The microprocessor has a very narrow view on life. It only understands binary numbers.

A binary digit is called a bit (which comes from **b**inary dig**it**).

The microprocessor recognizes and processes a group of bits together. This group of bits is called a "word".

Arithmetic and Logic Operations: Every microprocessor has arithmetic operations such as add and subtract as part of its instruction set

Stored in memory:

First, what is memory?

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When a program is entered into a computer, it is stored in memory. Then as the microprocessor starts to execute the instructions, it brings the instructions from memory one at a time

Memory is also used to hold the data.

The microprocessor reads (brings in) the data from memory when it needs it and writes (stores) the results into memory when it is done.

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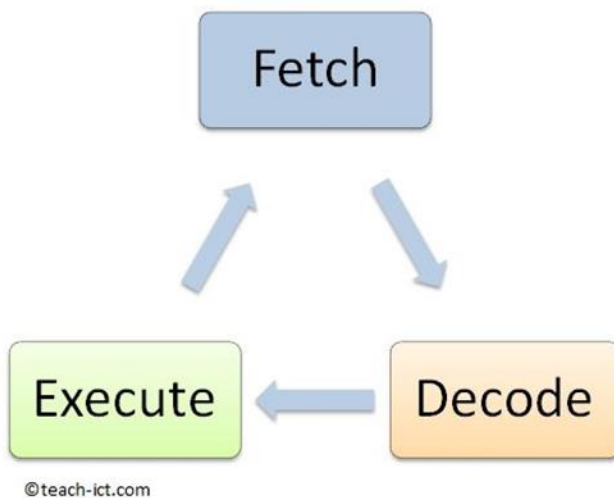
To execute a program, the microprocessor "reads" each instruction from memory, "interprets" it, then "executes" it.

To use the right names for the cycles:

The microprocessor **fetches** each instruction,

Decodes it Then **executes** it.

This sequence is continued until all instructions are performed.

The 8085 Machine Language:

The 8085 (from Intel) is an 8-bit microprocessor.

The 8085 uses a total of 246 bit patterns to form its instruction set.

These 246 patterns represent only 74 instructions. The reason for the difference is that some (actually most) instructions have multiple different formats.

Assembly Language

Entering the instructions using hexadecimal is quite easier than entering the binary combinations. However, it still is difficult to understand what a program written in hexadecimal does.

So, each company defines a symbolic code for the instructions.

–These codes are called "mnemonics".

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The mnemonic for each instruction is usually a group of letters that suggest the operation performed
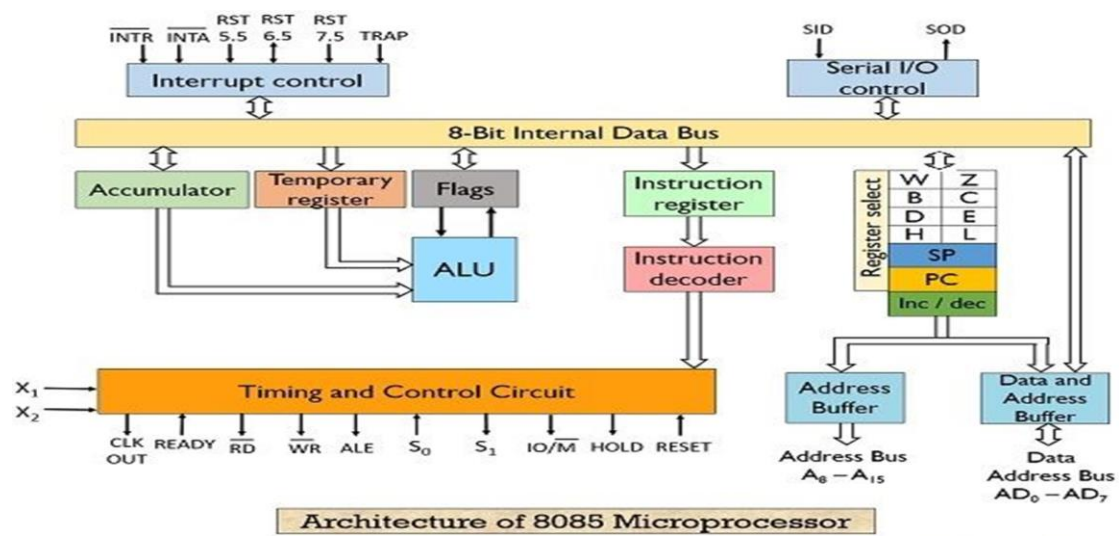
Each instruction has two parts.

The first part is the task or operation to be performed. This part is called the "opcode" (operation code).

The second part is the data to be operated on Called the ". operand"

8085 Architecture

Architecture of 8085 Microprocessor