Overview -

- Introduction to the microprocessor-
- Introduction to tri-state device- register, ALU, counter etc.
- Basic concepts of programmable device – Bus organization, system components.
- Block diagram of µP 8085- data bus, address bus, timing and control section, registers.

1. Introduction to the microprocessor

A microprocessor is a
- multipurpose,
- programmable,
- clock- driven,
- register-based electronic device
- that reads binary instructions from a storage device called memory,
- accepts binary data as input and
- processes data according to those instructions, and
- provides results as output.

**Note** - A microprocessor is basically a computer processor that is mounted on a single IC (Integrated Circuit). It means that all the functions of the processor are included on a single chip.
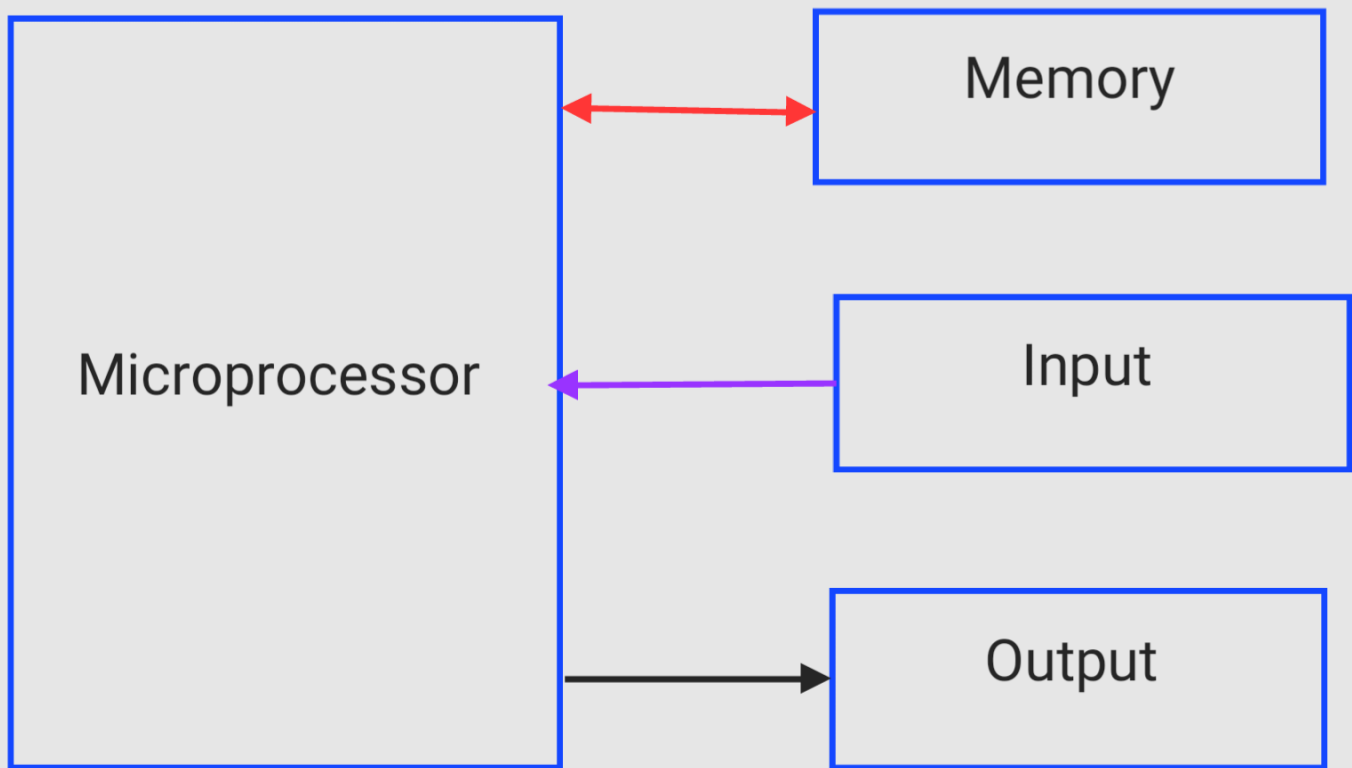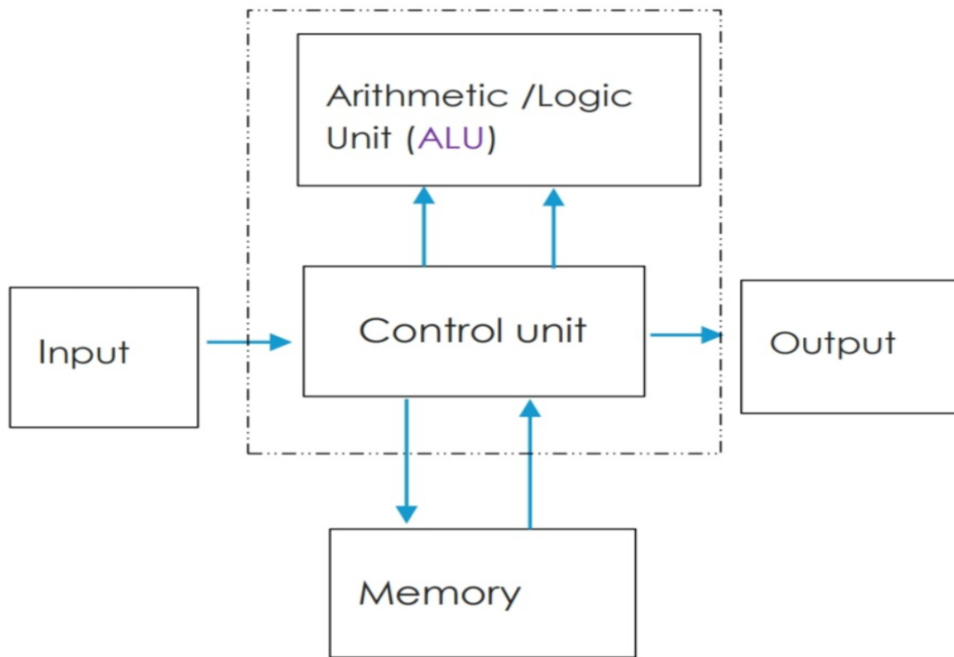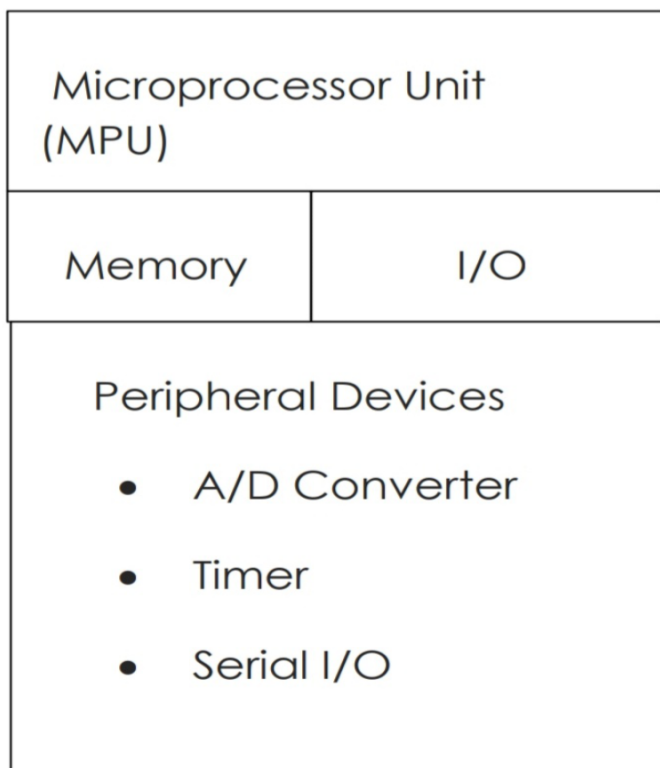
Figure 1.1 Microprocessor: A programmable machine

- Microprocessor is a <u>programmable</u> device that <u>takes in numbers</u>, performs on them <u>ALU operations</u> according to the program stored in <u>memory</u> and produces other <u>numbers</u> as a <u>result</u>.

Microprocessor as CPU

```
                    Arithmetic /Logic
                    Unit (ALU)


Input    →    →    Control unit    →  →   Output


                    Memory
```

Microcontroller

```
    Microprocessor Unit
    (MPU)

    Memory          I/O

    Peripheral Devices

        •   A/D Converter

        •   Timer

        •   Serial I/O
```

Brief description of Microprocessors, Microcomputer and Microcontroller

1. Microcomputer- A computer with a microprocessor as its CPU , includes memory and I/O devices.

2. Microprocessor- A silicon chip which includes ALU, register circuits and control circuits.

3. Microcontroller- A silicon chip which includes microprocessor, memory, I/O devices.

Intel® Core™ i7 processor