

Microprocessor

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Single Chip

R, ALU
T & Ckt

Microcontroller

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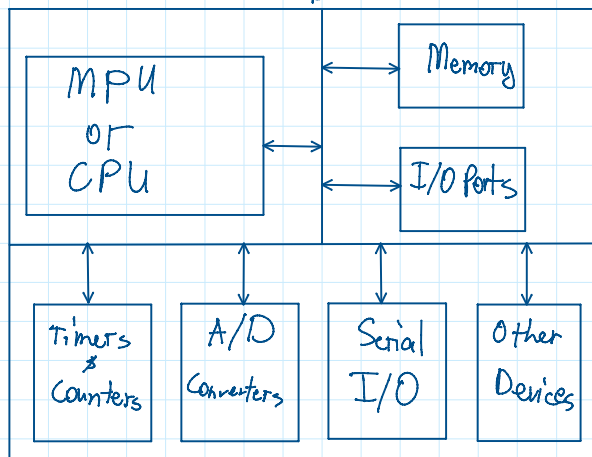
Integrated Electronic Computing device that includes 3 major components

- Microprocessor
- Memory
- I/O ports

Support Devices

- * Timers
- * A/D converters
- * Serial I/O
- * Other Devices

Schematic Diagram of Microcontroller



BUS

1) Address Bus

2) Data Bus

3) Control Bus

Computer

Microprocessor

vs

Arduino, ESP32, PLC

Microcontroller

- * CPU is standalone, RAM, ROM, I/O, and other devices
- * Designer can decide on the amount of memory & I/O Ports

- * CPU, RAM, ROM, I/O & other devices are on a single chip
- * fixed amount of ROM, RAM, I/O ports

* Expensive

* Versatile

* High Processing Power

* High Power Consumption

* Instruction sets focus on processing-intensive operations.

* Typically 32/64 bit

* Size of system is large.

* RAM: ranging from 512 MB to 32 GB

* ROM: 128 GB to 2 TB

* Depending on the specialization and application

* Single Purpose (control oriented)

* Low Processing Power

* Low Power Consumption

* Instruction sets focus on control & bit level operation

* Typically 8/16 bit

* Size of system is small

* RAM: 2 KB to 256 KB

* ROM: 32 KB to 2 MB