



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

Coimbatore-35

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INSTITUTIONS

DEPARTMENT OF BIOMEDICAL ENGINEERING

19BMB303 & Fundamentals of Microprocessors and Microcontrollers

UNIT III - MICROCONTROLLER

III Year/ VI Sem

**Dr. K. Manoharan,
ASP / BME / SNSCT**



MICROCONTROLLER

- Differences between microprocessor and microcontroller
- 8051 Architecture
- Special Function Registers (SFRs)
- Instruction set
- Addressing modes
- Assembly language programming
- I/O Ports
- Timers / counters
- Interrupts and serial communication



Examples of Embedded Systems



- Keyboard
- Printer
- video game player
- MP3 music players
- Embedded memories to keep configuration information
- Mobile phone units
- Domestic (home) appliances
- Data switches
- Automotive controls



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Differences Between Microprocessor and Microcontroller

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Differences between microprocessor and microcontroller

Microprocessor

- CPU is stand-alone, RAM, ROM, I/O, timer are separate
- Designer can decide on the amount of ROM, RAM and I/O ports.
- Expansive
- Adaptability
- General-purpose

Microcontroller

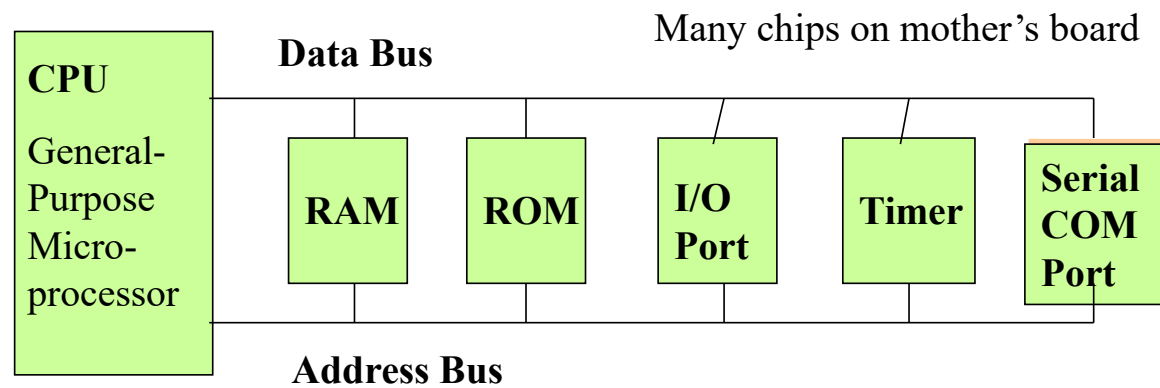
- CPU, RAM, ROM, I/O and timer are all on a single chip
- Fix amount of on-chip ROM, RAM, I/O ports
- For applications in which cost, power and space are critical
- single-purpose



Microprocessors:

General-purpose microprocessor

- CPU for Computers
- No RAM, ROM, I/O on CPU chip itself
- Example : Intel's x86, Motorola's 680x0

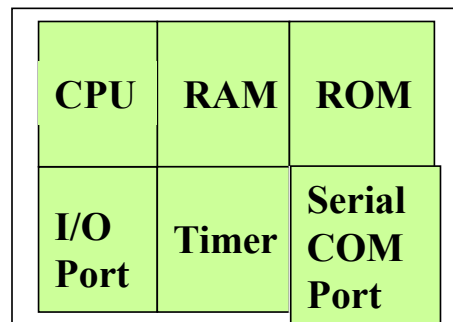


General-Purpose Microprocessor System



Microcontroller :

- A smaller computer
- On-chip RAM, ROM, I/O ports...
- Example : Motorola's 6811, Intel's 8051, Zilog's Z8 and PIC 16X



← A single chip

Microcontroller