Microprocessors and Microcontrollers

CSE 315

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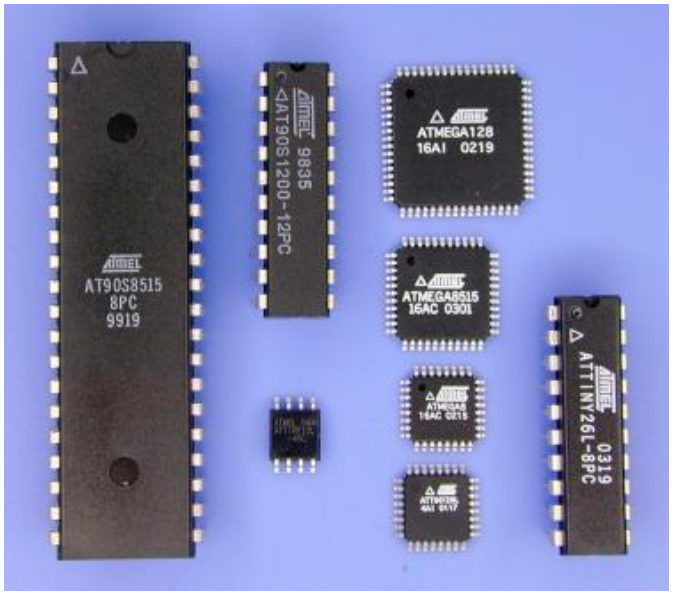
What is a Microcontroller?

- What is a microcontroller?
  - microprocessor
  - Read-write memory
  - Flash memory
  - EEPROM
  - Input/Output Control
  - Peripheral Devices (AD/DA)



What is a Microcontroller?

- Microcontroller is just like a Computer we use everyday, but only in a smaller scale
- Contains most of the basic features of a Computer System in a single IC
- Can take input
- Can provide output
- Can perform mathematical calculations and logical operations
- And can do much more things

Microcontroller and PC

	PC	uC
CPU Clock	3 GHz	20 MHz
RAM	512 MB	1 kB
Hard disk	80 GB	16kB
Processor	32/ 64 bit	8 bit
OS	Windows	Not required
Input	KB, Mouse	Keypad
Output	Monitor, printer	LCD module

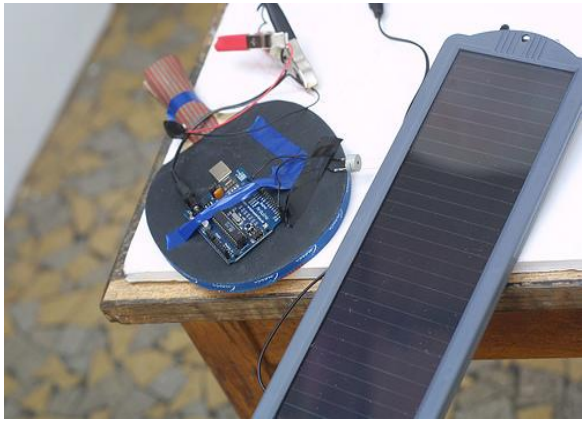
Why use a uC

- Emphasis is on cost
- Emphasis on power consumption
- Easy to use- small package
- Enough on-chip-resources
- Efficient for high level languages
- Dedicated application

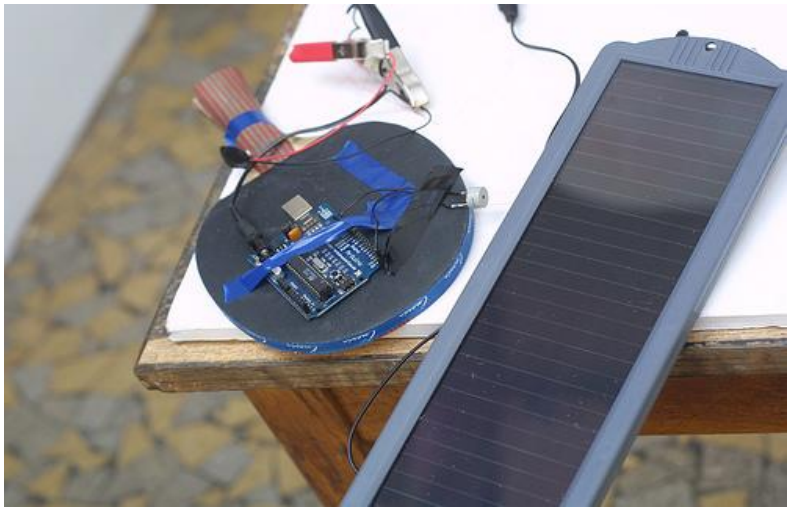
Uses of uC

- Control systems & Appliances
- Robotics
- Consumer electronics
- Measuring devices
- Lock Devices
- Hobbyist projects!
  - Musical instruments
  - Home automation

Uses of uC



Other Examples



Different Families of Microcontroller

- 8051
- AVR
- PIC