Embedded System Architecture
Important Architectural Issues

- Capabilities of processors.
- Properties of sensors.
- Properties of actuators.
- Demands made by plants.
- Control system characteristics.
- A/D and D/A conversion and digital signal processors (DSP’s)
In selecting a processor, you have two basic choices - a microprocessor or a microcontroller. Microprocessors are the types of devices you find in desktop computers. They are designed to go fast, they have large instruction sets, eat lots of power and have very limited input/output capabilities. In general, we don’t find them very interesting for embedded systems. Microcontrollers come in thousands of varieties and you typically choose based on the specific needs of an application. They have:

- Small instruction sets.
- Are usually low power and limited computation speed.
- Have rich I/O capabilities.
- May have built in A/D, D/A and DSP capabilities.
Criteria for Selection a Microcontroller

- Price
- Programming environment
- Instruction set capabilities
- Execution speed
- Amount of memory and power-off storage
- Lines of digital I/O
- Lines of analog I/O
- Physical size
- Power requirements
- Product Line