

Embedded Computing

Embedded System Software Design

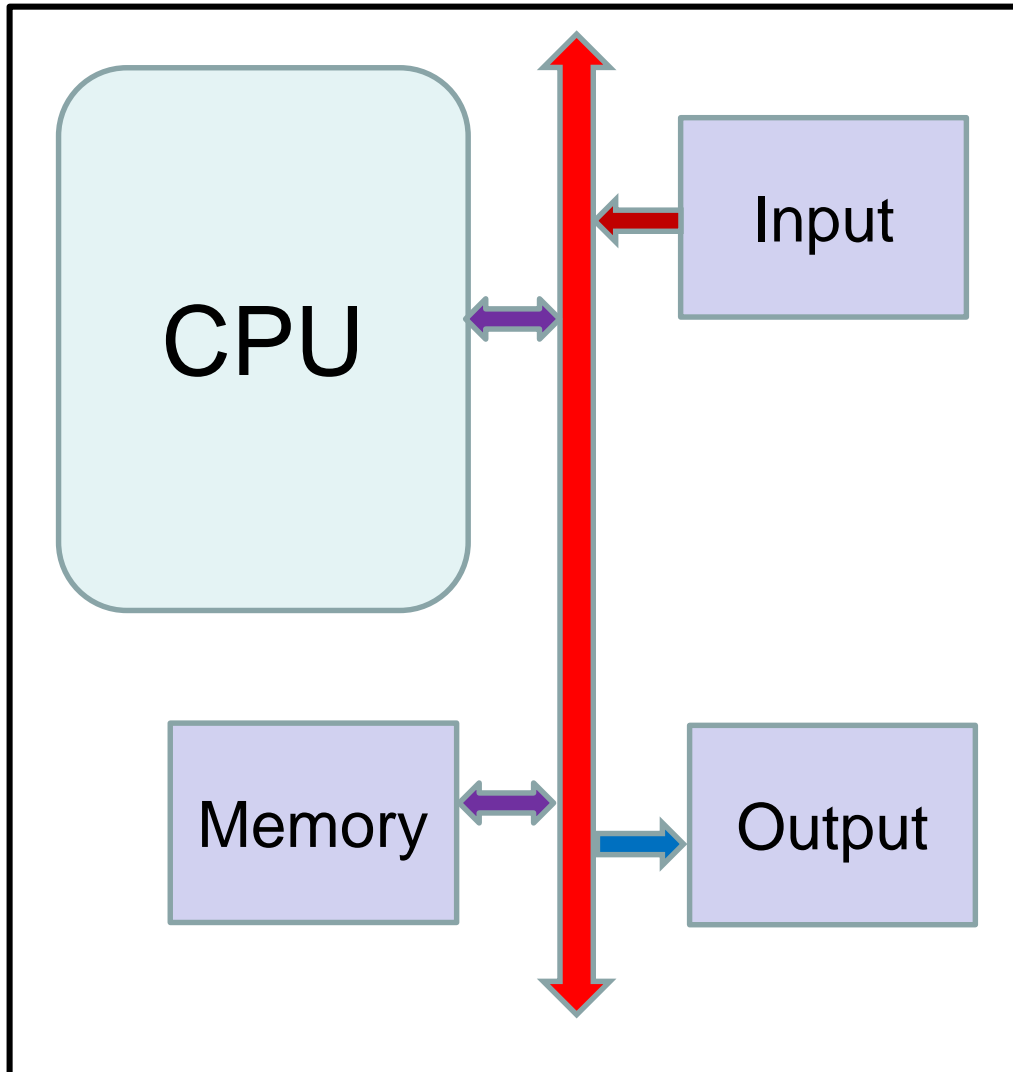
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Definition

- What is embedded computing system?
- Challenges in embedded system design
 - Hardware design
 - Software design
 - Power/temperature management

Embedded System



- Functions
- Performance
- Cost
- Power
- Design deadline

Computing Resource

- Microprocessor
 - Cost
 - Performance
 - Cache
- Application-specific integrated circuit (ASIC)
- Field Programmable Gate Array (FPGA)

Software Design

- Evaluation boards
- Host/target design
 - Cross compiler
 - Cross debugger
- Software debugger
 - In-circuit emulators
 - Breakpoint

Embedded Computing Systems

- Microprocessor
- Communication Architecture
 - Buses
 - Network
- Memory devices
- I/O devices
- Accelerators

Communication protocols

- The protocol determines how devices communicate.
- How to minimize communication latency?
 - Burst mode
 - Direct Memory Access

I/O Devices

- Programming I/O
- Memory mapped I/O
- Busy waiting
- Interrupt I/O

Summary

- Embedded Computing Systems
- Computing Resources
- Communication Resources

See you next class!