

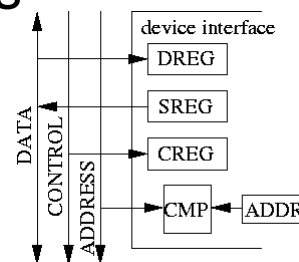
08 Communication

08.01 BUS and I/O

- Device interface
- Address mapping

Peripherals

- Interface:
 - DREG
 - SREG
 - CREG
 - Address comparator
 - Address decoder
- Communication:
 - Data transfer among registers
 - If data/status registers are associated with unique addresses and connected to the data BUS, communication entails only read and write instructions
 - Device-specific interfaces are implemented by the device drivers that uses low-level read and write instructions to provide high-level functionalities



Address space

- Memory-mapped devices:
 - No dedicated read/write instructions
 - Memory read/write instructions are used to access the registers of a peripheral device
 - There is a unique address space to map both memory and I/O devices
 - Memory and I/O operations are distinguished only from their addresses
- I/O-mapped devices:
 - Dedicated I/O read/write instructions
 - Since different OpCodes are used to encode memory and I/O operations, addresses can be replicated: the register of a device can have the same address of a memory location