Chapter 13 - Input and Output Systems

- Different methods necessary to manage input and output
- Communication with hardware through ports
- Bus used when devices share connections
- Daisy chaining
- Control units
- Input and output instructions

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- Polling provides simple method to control hardware
- Disadvantage: Very inefficient
- Solution: Interrupts
- Devices generates interrupts using interrupt lines
- CPU examines state of interrupt line after every instruction and transfers control to interrupt handler

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- Addresses of interrupt handlers stored in vector table
- Different types: Hardware, exceptions and software
- Programmed I/O very slow
- Solution: DMA
- Large amounts of data transferred without requiring CPU

Chapter 13 - Interface

- Different hardware devices
- Uniform interface for different types
- Characteristics: Block or character, sequential or direct access, synchronous or asynchronous, sharing
- Typical operations: read and write (block) vs put and get (character)
- Blocking I/O

- Scheduling: Determines order of operations
- Buffer memory: Size and speed of transfer
- Cache: Stores copies of data; access time is faster
- Spooling: Printers
- Error handling
- Data structures