CS 61C I/O

Fall 2020 Discussion 11: November 9, 2020

1 Pre-Check

This section is designed as a conceptual check for you to determine if you conceptually understand and have any misconceptions about this topic. Please answer true/false to the following questions, and include an explanation:

1.1 Polling and interrupts are only relevant concepts for low level programming.

1.2 Memory-mapped IO only works with polling.

2 Polling & Interrupts

2.1 Fill out this table that compares polling and interrupts.

Operation	Definition	Pro/Good for	Con
Polling			
Interrupts			

3 Memory Mapped I/O

3.1 For this question, the following addresses correspond to registers in some I/O devices and not regular user memory.

- `0xFFFF0000`—Receiver Control: LSB is the ready bit (in the context of polling), there may be other bits set that we don't need right now.
- `0xFFFF0004`—Receiver Data: Received data stored at lowest byte.
- `0xFFFF0008`—Transmitter Control: LSB is the ready bit (in the context of polling), there may be other bit set that we don't need right now.
- `0xFFFF000C`—Transmitter Data: Transmitted data stored at lowest byte.

Recall that receiver will only have data for us when the corresponding ready bit is 1, and that we can only write data to the transmitter when its ready bit is 1. Write RISC-V code that reads byte from the receiver (busy-waiting if necessary) and writes that byte to the transmitter (busy-waiting if necessary).