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Homework 6

**Design**

For our analog input, we connected a photodiode to our first MSP430 board. That board then transmitted a digital signal to our second board using SPI mode. Finally, the second board produced a frequency based on that value. We set three distinct ranges based on the data received, playing three tones A4, B4, and C4 (purely because the received value was somewhere around 0xA#, 0xB#, 0xC# usually. It will play A4 for everything under 0xB0, B4 for 0xB0 to under 0xC0, and C4 for everything 0xC0 and above.

**Implementation**

To convert the analog signal coming in from the photodiode, we used the ADC converter. The output pin P1.6 on the photodiode MSP430 board was connected to the input pin P1.7 of the speaker board. Both shared a common ground. Again, we used SPI mode as our method to communicate between the boards. To play sound, Timer A was used on the speaker board to produce a frequency base on the received bytes of data from the photodiode board. Below is a rough picture of our schematic.

**Schematic**

