Lab 6

Reyna, Ricardo

Section 75C9

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* Prelab Questions:

1. If you were working on another microcontroller and you wanted to add an 8-bit LCD to it, what is the minimum amount of signals required from the microcontroller to get it working?

*A write enable, RS which uses a A0, and 8 data lines where the seventh bit is used for the busy flag.*

2. In this lab our reference range is ideally from 0V to 5V. If the range was form 0v to 2.0625V (a possible internal reference) and 12-bit unsigned mode was used, what is the resolution and what is the digital value for a voltage of 0.37V.

*When encoding the 12-bits we get 4096, we get 0.0005035400390625 of voltage sensitivity if we divide 0v to 2.0625 equally which is also the max resolution. 0.37V is represented as 0x2E4.*

3. Assume you wanted a voltage reference range from 1V to 3V, with a signed 12-bit ADC. What are the voltages if the ADC output is 0xA42 and 0xD37?

*-1.3V and 1.8V.*

4. What is the difference in conversion ranges between 12-bit unsigned and signed conversion modes? List both ranges.

*When unsigned we only get positive voltages and there's an offset to the 0, signed range allows for negatives.*

* Problems Encountered:

The voltmeter isn't as accurate as I wanted it to be. Having the voltmeter read continuously, and going to the previous function after entering "pot mode".

* Future Work/Applications:

We can use the lcd to output characters, and we can use the ADC to connect other analog peripherals to the board.