CSE 3442: Embedded Systems 1
Lab 4: Analog to Digital Conversion (ADC)

Objective:

The purpose of this lab assignment is to learn and work with the PIC's internal ADC.

Problem Statement:

Part 1:

Use a 10 kΩ potentiometer as an external analog input circuit and connect it to the PIC microchip through pin E2 of port E. Your program should read the voltage value across the potentiometer through the ADC continuously then display this value in two decimal digits on the LCD (e.g., 2.3V, or 1.8V).

Part 2:

In this part you will use the circuit you implemented in part 1 as well as using an extra analog input circuit which is represented by the 5 kΩ potentiometer built into the QwikFlash board (labeled POT1.)

Every two seconds, your program should read the voltages from both potentiometers and display their voltages on the LCD (the voltage read from the external potentiometer is displayed in the first line while the voltage read from POT1 is displayed in the second one).

Also compare the two voltages and according to the result of comparisons set the three LED's D4, D5, and D6 of the QwikFlash board in the following order (D4, D5, and D6 are connected to RA3, RA2, and RA1 respectively.)

LED D4	LED D5	LED D6	
ON	OFF	OFF	$V_{10\ k\Omega\ POT} > V_{POT1}$
OFF	**ON**	OFF	$V_{10\ k\Omega\ POT} = V_{POT1}$
OFF	OFF	**ON**	$V_{10\ k\Omega\ POT} < V_{POT1}$

Hint: for the EXACT 2-second time interval you could check out the delay functions in the C libraries (what you used in the LCD lab).