Names_____ & _____
Date_____

Assignment #8 – ADC

Objectives

- Students will be able to use an internal ADC to measure a voltage.
- Students will be able to use the results from an internal ADC to output data.

Goal

Use potentiometers and flex sensors with a PIC's internal ADC to determine voltage and output the results.
Use an analog temperature sensor and the ADC to display the current temperature.

Materials

- Breadboard – wire w/ 5V power regulator, switch, and LED
- PIC18F45K22
- Computer w/ MPLAB XC 8
- PICkit 3
- Newhaven 2x16 Serial LCD
- Potentiometer
- SoftPot Membrane Potentometer (Flex sensor)
- If other materials are needed, write them below.
- MCP9700-E/TO Linear Active Thermistor IC
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Directions

- You will be working in pairs.
- You will be documenting your work in your lab notebook.
- Task 1:
  - Use an internal ADC on the PIC18F45K22 to measure voltage on the center pin of a potentiometer, and output the voltage in millivolts on a serial LCD.
  - Output requirements:
    - Output the voltage in millivolts.
    - The voltage must continually output on the LCD.
    - The screen must not flash.
    - On the display, include units.
- Task 2:
  - Create a digital thermometer using the provided IC, a PIC18F45K22, and a serial LCD.
  - Read documentation from the MCP9700.
  - Thermometer requirements:
    - Calibrate the thermometer as needed.
    - The thermometer must continually output temperature on the LCD.
    - The screen must not flash.
    - On the display, include units.

Grading:

- Task 1: _____ 10 points
- Task 2: (Functionality and accuracy) _____ 15 points
- Lab notebook: _____ _____ (*10 points*)