

ESM Lab Grading Report

Course Number: 1

Module: 2: Lab 1 on Thermistors

Lab Report Date **09/24/2021**

Student Name(s) **Harshwardhan Singh and Swapnil Ghonge**

Reference: Lab videos from Canvas provided by Prof. Jay Mendelson

(A) Functional demonstration of your circuit to our TA. In this exercise, you schedule an appointment with your TA to show that your hardware functions as designed. For the thermistor lab, this will involve the following steps:

1. Show that all hardware is in place, and that your PSoC software can read the temperature of the thermistors.
2. Alter the temperature of the thermistor manually. This is done by blowing hot air over it for 2-3 seconds, holding it with your fingers for 15 seconds, or touching it with an object much colder than room temperature. Show that the thermistor reading on your LCD changes accordingly.

If you are an on-campus student, then show your circuit to one of our TA's during office hours.

If you are a distance learning student, make an online appointment with your TA to demonstrate your work via Zoom meeting or other Web-based meeting tool. You can use the camera on your laptop PC or suitable plug-in webcam (Logitech etc.) to demonstrate a working circuit.

(B) Place photos here of your hardware setup, including PSoC board, connections to Oscilloscope or nScope, wiring, LCD Display, components. Label all components.

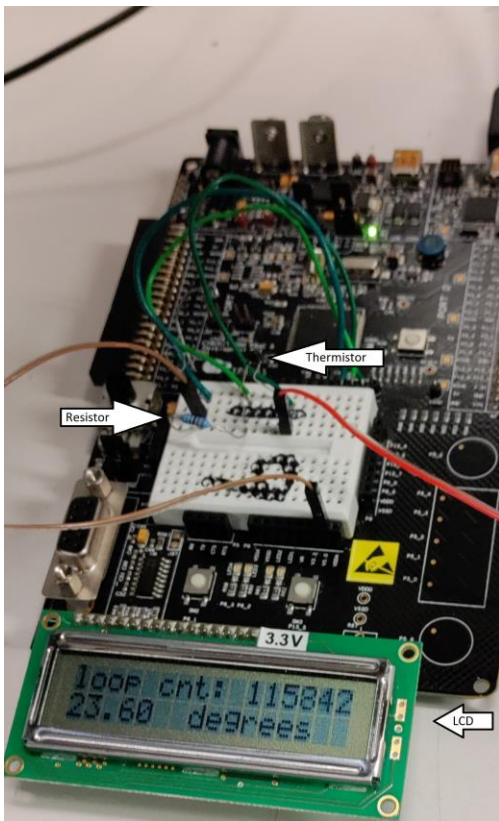


Figure 1: Hardware Setup



Figure 2: Cold Temperature measurement (19.80 degrees C)

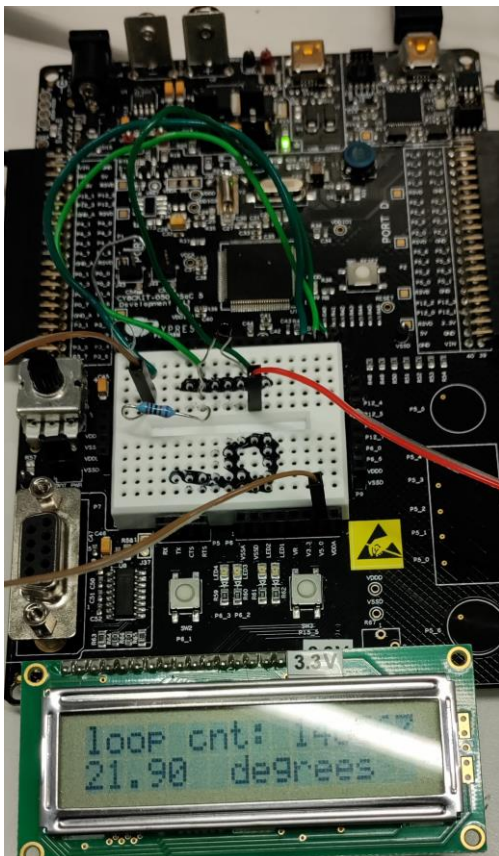


Figure 3: Room Temperature measurement (21.90 degrees C)

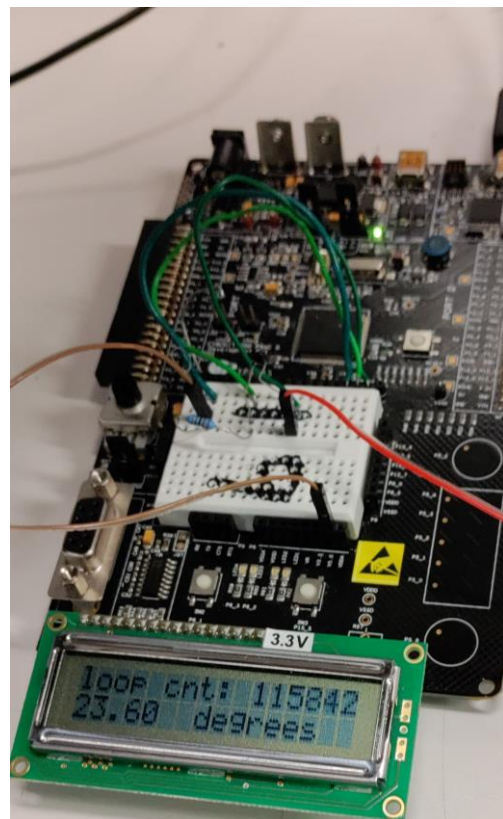


Figure 4: Hot Temperature measurement (23.60 degrees C)

(C) Place complete PSoC schematic here. This schematic must include internal components from the PSoC board (amplifier, MUX, etc.), as well as external components (thermistor, resistor, display).

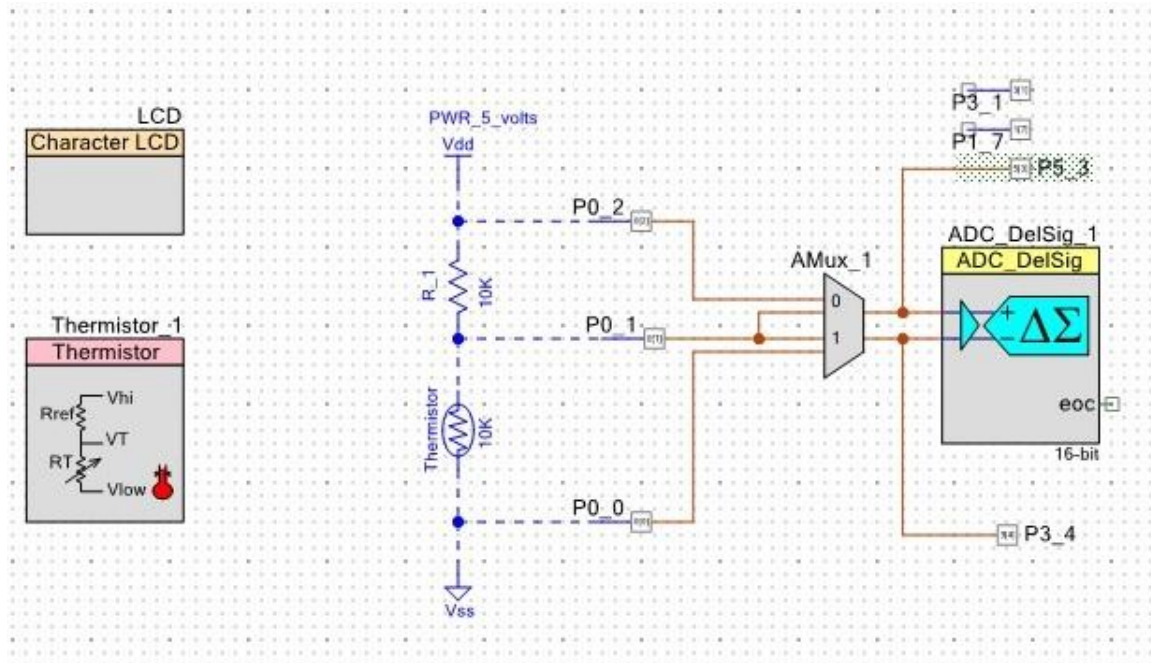


Figure 5: Circuit Schematic

(D) Place your complete PSoC software here. This schematic must include calls to all internal functions, appropriate comments, and functional code that you included. We will not grade you on the exact syntax and structure, as there are numerous ways to structure the code and still provide the temperature measurement function. Instead, we will grade you on the completeness of the code relative to using the appropriate PSoC functions to gather the necessary data.

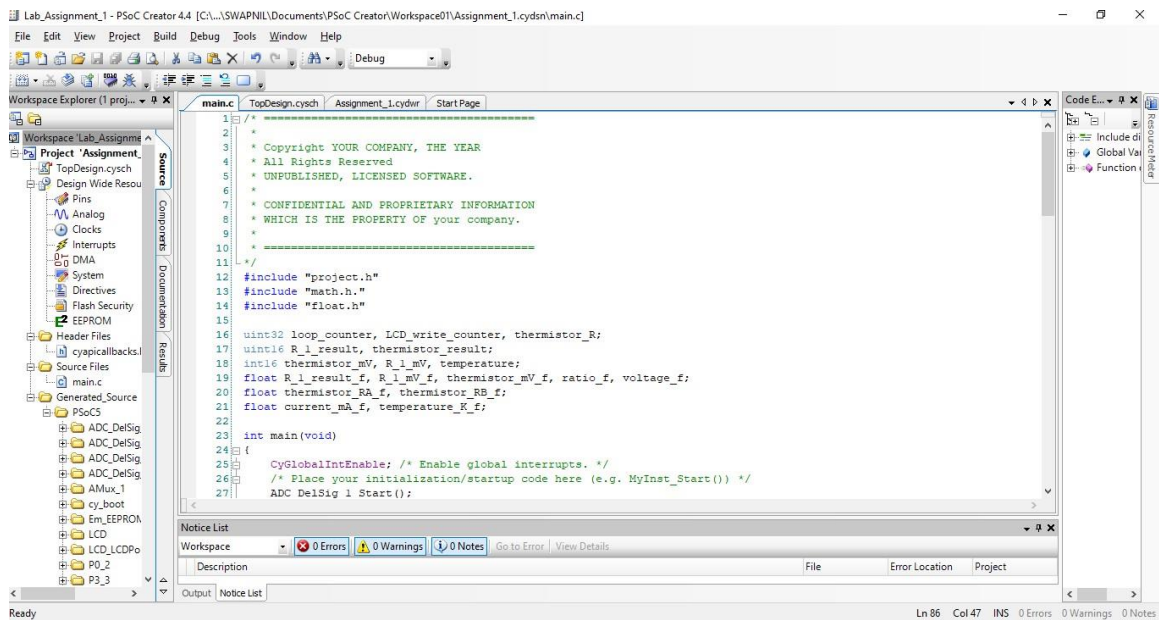
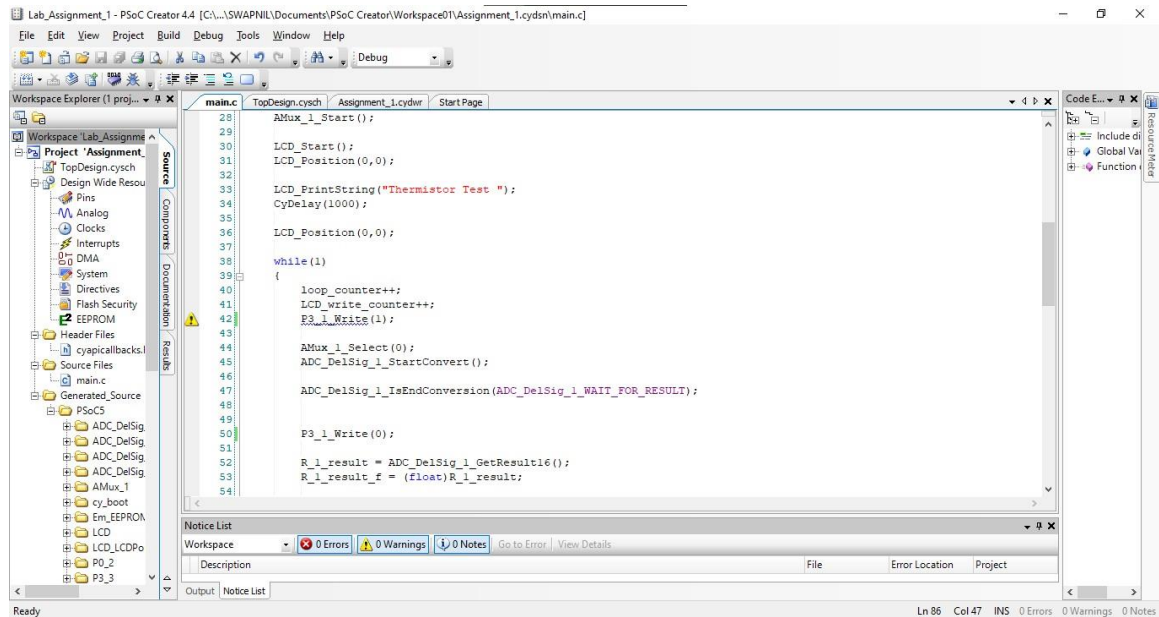
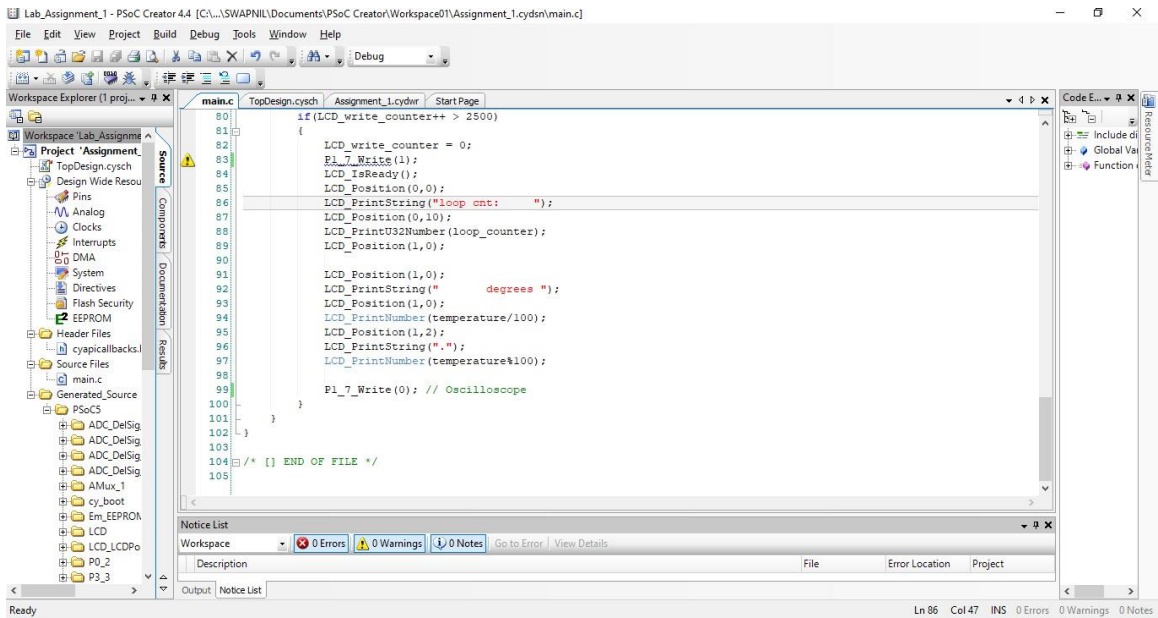
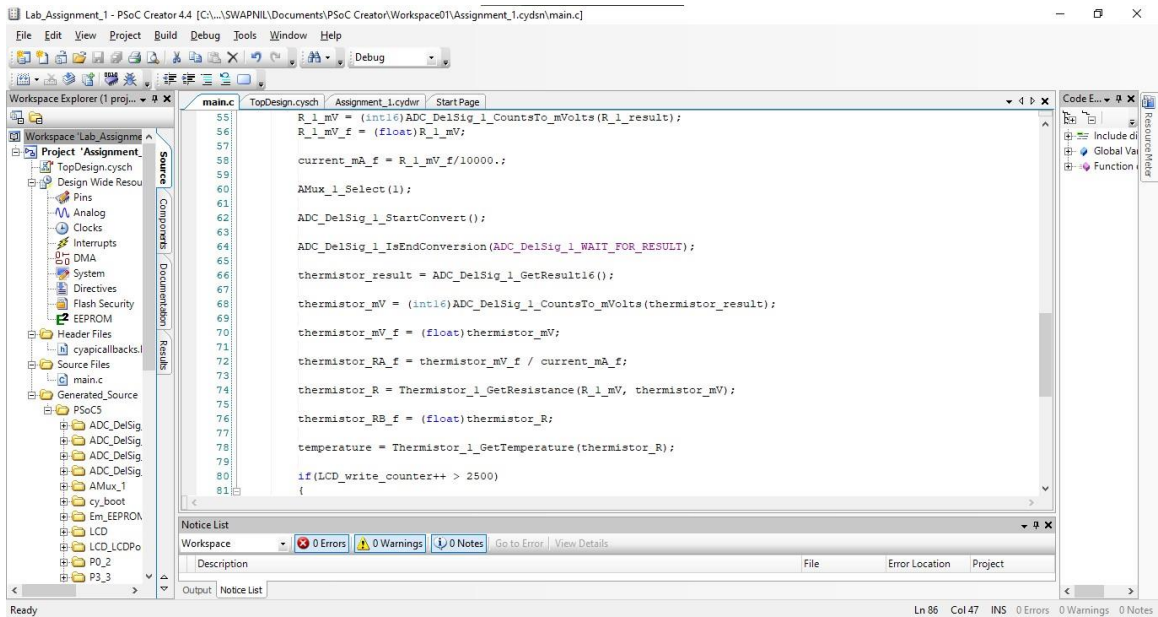


Figure 6: Code





- E) Place screenshots from your oscilloscope or nScope showing critical loop times or signal outputs. For the thermistor lab, you can show loops that write to the LED, perform ADC conversion, and read the variable that records the temperature reading of the thermistor.

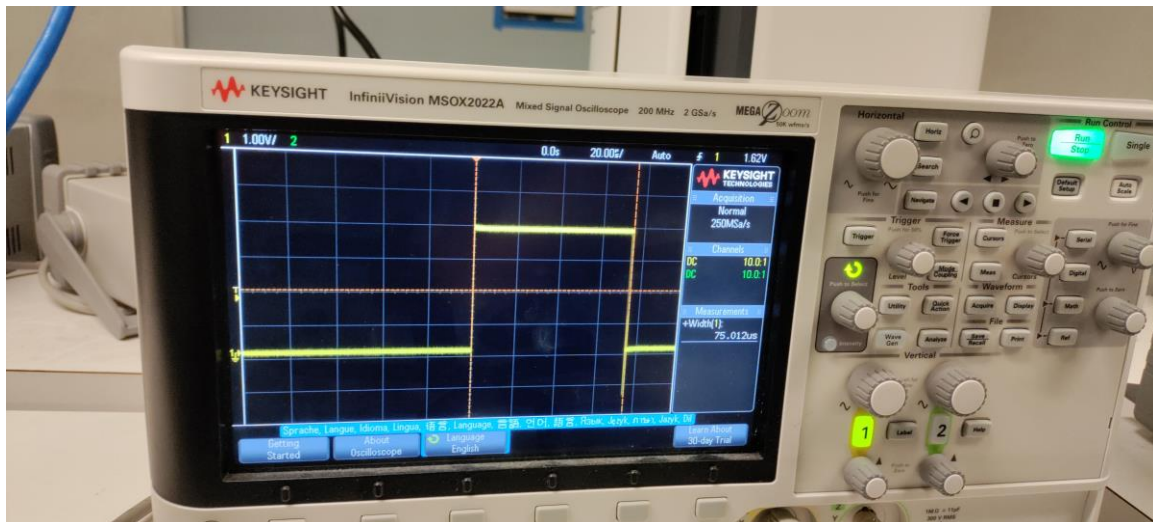


Figure 7: ADC Conversion

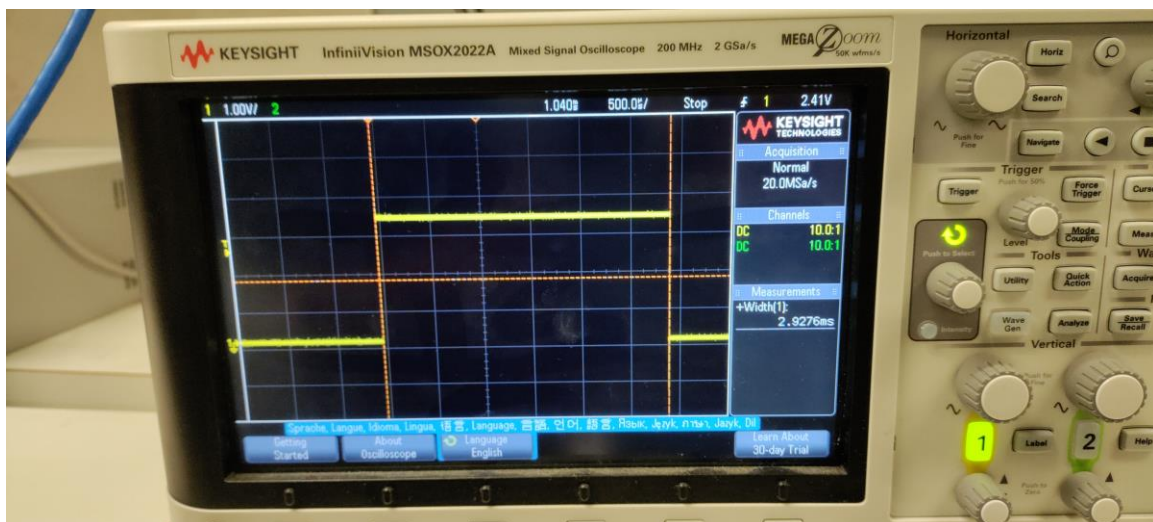


Figure 8: Signals of LCD