Lab 7 for CSE121, Spring'23

Due Date: 06/02/23

This lab is to program the ultrasonic range.

https://lastminuteengineers.com/arduino-sr04-ultrasonic-sensor-tutorial/
https://media.digikey.com/pdf/Data%20Sheets/Adafruit%20PDFs/4007_Web.pdf

Lab 7.1: Read distance (20 points)

Use the SR04 to measure the distance, AND also use the temperature sensor to "adjust" the speed of sound based on the current temperature. Assume that the temperature is always between 0 and 50C.

The temperature (C) and distance (cm) should be shown in the monitor printed once per second. E.g:

Distance: 3.5 cm at 23C
Distance: 4.5 cm at 23C

The distance to measure by the TAs would be from 10 to 20cm. You can calibrate the sensor, but there should be less than a 2 cm error. The distance is computed from the PCB board (not the sensor itself) to a flat surface

NOTE: To get accurate results, you may need to generate multiple pulses, you may also want to look for counters in the hal/cpu_hal.h that has more precision.

What/How to submit

Same instructions as lab1. Upload the zip with the code and report.pdf to Canvas.