

ECE 103 Lab-A2 – Worksheet

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STOP! Read the Lab-A2 Guide FIRST!

Exercise P1

- a) The original code updates the temperature reading at a fairly slow rate. Modify the code so that it updates more quickly (e.g., once every 5 seconds).
- b) Question: Does the reported temperature seem reasonable for the room? What happens if you close your fist around the sensor or breathe onto it? Write you answers in the box below.

Does the reported temperature seem to be reasonable is it is. When I close my fist around the sensor the temperature go up and the humid level also go up. When I breath on the sensor the temperature barely change but the humid level is going up as i breath on the sensor.

- c) Demo your working circuit to the instructor or TA.

Exercise P2

- a) In the table below, fill in the measured distance as reported by the sensor versus the actual distance. Since most people do not carry rulers or measuring tapes with them, you can use a sheet of U.S. letter sized paper that is 11 inches in height as a standard reference.

(Note: $\%RelError = \frac{\text{absolute error}}{\text{actual value}} \times 100 = \frac{\text{measured}-\text{actual}}{\text{actual value}} \times 100$)

Reference	Actual Distance	Reported Distance (cm)	% Relative Error
2×	22" (≈ 56 cm)	58.42	4.32
1×	11" (≈ 28 cm)	30.48	8.86
½ ×	5.5" (≈ 14 cm)	20.32	45.14
¼ ×	2.75" (≈ 7 cm)	7.62	0.62

- b) In the box below, comment on the accuracy of the sensor. Does the relative error change much as a function of the distance? Does the shape or hardness of the reflecting surface make any difference?

The change are really small there isn't much of a difference. I see that neither shape or hardness of the reflecting surface make any difference but what the material do. I try to test the sensor on my body and it lost when it go pass 7 inches.

- c) Demo your working circuit to the instructor or TA.

Exercise P3

1. Unzip the “esp32_LCD_Various_Sketches.zip” file to see several more examples of controlling the LCD module. Try out a few of them.
2. After looking at all of the sketches, choose one and modify it to do something interesting. What you choose is up to you (maybe additional hardware that shows its results on the LCD, or maybe changes to the sketch that produce a visually fun display).
3. Demo your working circuit to the instructor or TA.

Note: There is a bonus lab lesson (IR remote) that you can do for fun. There is no exercise for it.
