Lab Worksheet

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**Lab Partner Name (if you worked together and are submitting the same document or mostly the same answers): Drake Dodson**

**Lab Section**: S9

This lab worksheet is a final deliverable after a lab is completed, referred to as the postlab. A postlab will not be assigned for every lab. You have two deliverables for every lab, the prelab and demonstrations. The postlab is a third deliverable for some labs.

1. **Prelab assignment BEFORE LAB**: Posted with the lab manual, typically involves a system sketch, submitted in Canvas before the start of your lab section, may be worked on, reviewed and/or used by lab partners in class on Tuesday during lab planning
2. **Demonstrations IN LAB**: Demonstrated/discussed with a TA in lab (or later) and evaluated using a rubric in Canvas (functional demo of a lab milestone, debug demo using debugging tools to explain something about the internal workings of your system, Q&A demo showing ability to formulate and respond to questions)
3. **Postlab assignment AFTER LAB**: Submitted in Canvas after demonstrations, may be reviewed by lab partners in class, consists of three items (prelab planning notes, lab notes, and lab retrospective)

Deliverable #1 has its own Canvas assignment submission. (10 points)

Deliverable #2 has an evaluation rubric used as a checklist and scored by TAs in Canvas. (40 points)

Deliverable #3 has its own Canvas assignment submission. (30 points)

This worksheet will help you develop the items needed for deliverable #3.

1. **PRELAB PLANNING NOTES**
2. What are three questions you want to explore from your lab planning work?

- How the IR sensor communicates with the cybot?

- Why does the IR sensor not turn the raw value immediately into a proper distance?

- Would the PING sensor be more accurate with the data we’re working with?

1. What are several tasks you identified in your planning (for you and lab partner)?

- Inititialize the adc

- Properly implement a raw input value that sends information back to the cybot

- Display the distance and raw value on the display

1. **LAB NOTES**

During lab, keep notes about the following so that you can submit information with this deliverable.

1. Results related to up to three planning questions (might be answers, might be more questions, write brief summaries, don’t include code files)
2. Any additions, refinements, or corrections to the prelab system sketch based on what you learned (include an updated sketch, or briefly describe at least one update you made)
3. Description of your debug demo (what did you demo and why, what did you find, a paragraph is fine, may want to include a screenshot)

- The IR sensor used an infered beam to shoot in the direction of wherever the sensor is pointing , then once the beam reaches the object it bounces off and reflects back to the cybot. The cybot then takes in the data (as raw data), which then just uses that a specific sensor data or a variable.

- I added additional information to the IR sensor and specific software information to explain how the IR sensor works

- We originally couldn’t figure out why it wasn’t displaying our information properly. We carefully stepped through our code several times to catch that one of our loops had two different bitwise operations and was stuck in an infinite loop.

1. **LAB RETROSPECTIVE**

Take 10-15 minutes and answer these questions as you think about your lab experience. You don’t need to describe everything, try to pick something notable.

1. What did we set out to do?

- We set out to properly display raw IR sensor data and display/calculated the distance using an equation

1. What actually happened?

- We struggled to figure out why our equation wouldn’t work properly. We eventually realized that we had flipped the x and y axis of our data and was using it in reverse which left us always at 2cm away at certain points when moving the object at different distances.

1. Why did it happen?

- We accedentally flipped the x and y axis as previously stated

1. What are we going to do next time (to improve)?

- We will double/triple check our work to better understand where our mistakes could have been made.