Embedded Systems International

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: 9

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.

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A. PRELAB PLANNING NOTES

1. What are the three questions from your lab planning work?
    - Why does the cybot require such specific degree measurements?
    - How would you know if you were off by a certain amount of degrees?
    - And there are still many functions that i'm still curious about

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

    - We definitely knew that the robot had to move and as we worked through what should happen there were several questions that came up like how exactly we were supposed to rotate the robot. As we examined the lab document we also knew that it was supposed to be able to have the robot move (and be able to recover from) around objects.

B. LAB NOTES

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

1. Results related to the 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)

- We actually demoed our code earlier than expected due to all the questions we had initially. This led to faster answers than anticipated, which in turn also helped us refine our code to a greater extent. Although initially we ran into a plethora of problems including infinite loops of the robot turning around in a circular fashion (forever).
- I rewrote some of the sketch to better represent the robot including additional ports and connections
- When we were debugging, we were stuck on why the robot wouldn't move properly due to weird degree angles. We figured out (or the TA helped us figure out) that storing the distance within the sum would allow us to return the move function. We also realized that we had the wheels in the function oi_setWheels() wrong and was turning the opposite direction which made for an infinite loop (which kept the robot rotating).

C. 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 maneuver a robot around objects without crashing into them.

2. What actually happened?

    - What actually happened was a lot of confusion on why the robot wouldn't turn the proper amount of degrees and on why the robot was acting strange with the gui. Lots of errors occurred but eventually we found the proper solution.

3. Why did it happen?

    - We're still not completely sure, but we assume that the robot just requires very specific degree angles to be able to function properly.

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

    - Next time we will look at the lab and analyze it before the lab even starts to be able to better understand the content before we dive right into it; this way those weird mistakes won't happen again.