Lab Worksheet

**Lab Number (circle this week’s lab)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

**Name**: Chimzim Ogbondah

**Lab Section**: 1

**Lab Partner Name**: Ruiyu Sun

This lab worksheet is the final deliverable for a lab. You will usually have three deliverables for a lab:

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 and used by lab partners in class on Tuesday during lab planning
2. **Demonstrations IN LAB**: Demonstrated/discussed with a TA in lab and recorded using a demo evaluation sheet to be printed and signed in lab (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 before the start of your next lab section, may be reviewed by lab partners in class on Tuesday during lab retrospective, consists of three items (prelab planning boards, lab notes, and lab retrospective)

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

Deliverable #2 has an evaluation sheet that is printed in lab, used as a checklist, and submitted to your TA. The TA will enter points in Canvas based on the demo evaluation sheet. (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 BOARDS**
2. Question Board: What are the three priority questions from your lab planning work?
   1. How the debugger works in C?
   2. How the given functions work with the iRobot?
   3. What are built in tools I can use in the C language to help finish the lab?
3. Task Board: What are several tasks you identified in your planning (for you and lab partner)?

* We would both work through the lab to understand how the debugger works and what the three different tabs do when debugging
* Reading through the given functions to print to the LCD display and understanding how it works
* Creating a solution to part 3 of lab

1. **LAB NOTES**

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

1. Results related to the three priority questions (might be answers, might be more questions, write brief summaries, don’t include code files)
   1. We worked through the lcd\_puts() part of the lab to understand how the debugger tabs work. My lab partner and I understood how the variables tab worked and then we asked questions to our TA to ensure we knew what and how the last two tabs worked. Also while looking at this function we were able to see how it prints to the LCD, and although not a lot of it made sense we looked at the machine language to get a general idea of how the robot would be interacting. Finally my lab partner and I brainstormed and asked questions (some trial and error) to see what functions we could use to manipulate our ideas to work. For example we used strlen() so we knew we were at the last character printed so we then knew when to add spaces again.
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)
   1. No updates were made to my prelab sketch. I talked with some friends and watched the video on canvas to ensure I was drawing and adding the correct components to my sketch.
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)
   1. I did the demo on lcd\_puts() because it showed the gradual processes of incrementing the variable I, then showing like what was being added. Like what characters were being put to the screen for the “Hello World!” this was very helpful for the variables tab because you see what is actually happening in our program. For expressions and variables, I talked with the TA to be certain on it. He told me that the registers tab would be the physical memory being used, and expressions shows the memory for the different variable, and then he also said it can be used to show the bit wise operations.
4. **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?

* My lab partner and I set out in this lab to work the lab worksheet and try and finish the lab during the time given. We specifically set out to understand every part of the lab so that way we could finish.

1. What actually happened?

* We worked through Parts 1 and 2 completely. During those steps we understood the difference between what was going on in the lcd\_puts() (looped through the given spring printing one at a time) and lcd\_printf() (which printed the string out all at once) functions. We then navigated through the debugger tabs understanding the variables tab, and then asking the TA for questions so we understood what was happening in the other two tabs. We then started the part 3 of the lab which was the rotating banner part. We both came up with ideas on how we could attack the problem. From there we began to implement our solution, testing at different steps to see what was working and what wasn’t working. From there we would go back to the drawing board to fix any bugs we had come across.

1. Why did it happen?

* I believe we got to where we did in the lab because when it came time for the rotating banner we first talked through our ideas and then put it on pencil and paper to try and explain to the other our idea before then trying to calibratable make a solution.

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

* Read through the entire lab before coming to lab so when we do need to collaborate, we don’t have to waste time to come with ideas and then “vote” on a solution.