Lab Worksheet

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

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

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**Lab Section**: 1

**Lab Partner Name**: Ruiyu son, Nathan Armstrong, Benjmain Vogel

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. What are the similarities between the init function from lab 7 and lab 8?
   2. Where will the servo motor go after each command to a position?
   3. What GPTM registers are required to use the servo motor?
3. Task Board: What are several tasks you identified in your planning (for you and lab partner)?
   1. Identify which register step up PWM mode and then set the correct bits in the register to configure it.
   2. Change the data from lab 7 to be correct with lab 8 (PB5 from PB3 and timer1 from timer)
   3. Writing the main function to go to the correct positions in the correct order
   4. Inputting the equation from our Project P2 to the servo\_move(int degrees) function so it took the right amount of seconds based on the equation so it goes to the right position.
4. **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 saw the init from lab 7 would be close to this weeks lab because we would still be using an alternate function of the GPIO just with a different pin and we were still using timers just a different timer, so we copied over our code and then reconfigured the init function to be the right GPIO pin and alternate function and timers. After talking with the TAs we found out that it would stay at the position it was given which was different from our assumption that it would go back to the original position. We looked over our notes and from the lecture slide to see that we needed the MATCH register and prescale match and not the prescale ones.
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. I didn’t make an updates to my prelab 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. For our debug demo our code was saying that it couldn’t find the register so we added \_R for the complie error and we didn’t have a |= so it was causing our data to not be good.
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?
   * + We set out to understand how to move the servo to different position and complete all parts of the lab.
2. What actually happened?
   * + We finished the lab (getting through all the parts) by rewriting our lab 7 code and then taking our function from our Project 2 document for our servo\_move function and then wrote a main function to meet the criteria for the functional demo
3. Why did it happen?
   * + This happened because we understood the similarities between this lab and last lab. Split up reconfiguring so it went by quicker. Came to a conclusion on the servo\_move() function fairly quickly which mad writing the main function quick.
4. What are we going to do next time (to improve)?
   * + Probably something similar to this lab because we worked really effectively which allowed us to finish the lab during lab time.