Lab Number and Title: *Lab 8 - Motor Shield*

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Purpose of Lab

In this lab, we learned to operate a motor shield after having connected it our Arduino Board. We were given a small motor which connects to the motor shield and then for the second part of the lab we were also given and connected a switch to turn on/off the motor. In the first part of the lab, we were required to turn the motor on in a specific pattern. In the second part of the lab, we were asked to make the motor run or not run depending on whether or not the switch was pressed.

Description of Solution(s)

For the first part of the lab, all we had was make the motors run in one direction for 3 seconds, turn it off for 2 seconds, run it again in the opposite direction for 3 seconds and then stop indefinitely. For our solution, we first created a runMotors function and first initialized ports B and D to be output. We then looked at the skeleton file provided and noticed it had the basic layout on how to turn on the motors and make it spin one way then the other. So, we used the same code by making it turn one way, calling a one second delay function three times, stopping the motor, delaying for 2 seconds, then turning the motors the other way for 3 seconds then stopping them.

For the second part of the lab, we simply made a loop that would input the switch bit and used a skip if cleared compare. If set, it means the switch was not pressed so we jumped to a notpressed label, turned off the motor, then jumped back to the loop to check the switch again. If it wasn’t set (switch pressed) we would turn the motor on then loop back again to check all over again.

Test Results

For testing the program, we simply uploaded to program to the board and shield, and checked whether or not it was running for the correct amount of time or not. We didn’t have many bugs in our code so we didn’t spend much time on that. We did however, struggle in the beginning with knowing how to begin our functions. But after a little bit of looking around at the skeleton code and notes from class, we figured it out.

Answers to Questions

*If the lab has questions on it, answer them here. Use one paragraph for each answer (the HTML <p> tag).*

N/A

Discussion

This lab wasn’t particularly difficult, but a bit tricky. We learned how to use the motor enable line and also calls to the pulse width modulation. We also learned how to set up a 1-bit input port with the switch so that the input value defaults to a 1 when the switch is not pressed. After knowing what each of these features do, we had no problem with figuring out the code.

Contribution to Team Work

This was a team lab; however, we didn’t do much individually. We both worked on the coding by giving pointers to each other when either one of us got stuck and couldn’t figure out what to do next, and at this point the other person would take over writing a couple lines of code. The setting up of the hardware was also done by the both of us and took only a minute to plug everything in correctly.

References

*Document any sources you used in completing the lab, outside of the normal course material (website, textbook, manuals). Perhaps you found an algorithm on the web or some other insight somewhere else?*

N/A