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|  | **Intro To Robotics LAB 8 Report** | | **04/11/2024** |
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**Lab Objective:**

The objective of this lab is to travel up and down a corridor that has 4 doors on the left and right. The robot needs to be able to detect whether a door is open or closed. If a door is open the robot should record a 1 and if the door is closed the robot should record a 0. The robot should then record this 16-bit number and convert it to a decimal number and output it continuously. This lab teaches us how to make use of the servo motor and ultrasonic sensor.

**Lab Figures/Tables (Testing Data):**

{While a simple picture of your RSLK should be included if you changed something, it is not sufficient. Dr. Conrad knows what an RSLK and breadboard look like. You should also, more importantly, include **data tables from testing** and or **diagrams/schematics** within your report. If you claim to have spent hours working on the lab assignment, then your lab report document should reflect that. If you show us nothing, then we will assume you did nothing.}

Each component the robot uses was tested separately which includes the drive straight, and pinging functions. The robot stores the binary number as an array and then returns the decimal number that is printed out to the serial monitor. Several trials were done to test the binary output of the serial monitor.

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| **Expected Result** | **Actual Result** |
| 1100 0011 1100 0011 | 1100 0011 1100 0010 |
| ’” ” | 1100 0011 1100 0011 |
| 1111 0000 0000 1111 | 1111 0000 0000 1111 |

We then confirmed the use of our binary to decimal conversion function and confirmed that it worked. The major complication we encountered was the robot not being able to drive straight within the 12-inch wall and would often drive out of the enclosure. This was mitigated by further optimizing the drive forward function.

**Commentary and Conclusion:**

Overall, the robot was able to output the correct decimal value and take measurements correctly. The only major issue we had was with our drive straight function. The way we were able to somewhat fix this issue was to adjust how much we were correcting the robot’s wheel speed by. Going forward we need to fine tune our drive straight function for the final lab this semester. Overall, the other functions did work as expected and we just need to fix up the drive forward function.