Robotics Report Format – Second Challenge

General

Indicate who was in the group. All group members must sign the report to indicate that they have participated in the project and in the writing of the report. Anyone who does not sign the report will receive no credit for the report portion of the grade.

Include a picture of your robot in your final report.

Overall report should be about 4-5 pages; however, use whatever space your want.

Use third person passive to report. Avoid the first and second person, unless it is unavoidable.

NOTE: it's always avoidable.

The report should contain the following sections.

Introduction

Describe your concept for your robot.

Design

Describe your final design.

What was your robot supposed to achieve? Why did you pick the speed that you did (faster than/slower than/same as square-bot)?

What added features did you include on your robot? What did you expect them to do? (In data, below, describe how well (or poorly) the robot performed these features.)

How robust was your robot? Were screws falling out? What could you do to fix this?

Gear boxes:
What was the gear ratio of your drive system (G)?
How many motors did you use in your drive system (N)?
What was the wheel diameter (D)?
Based on these numbers, how much force did your robot exert on the ground?
HINT: $F = G\,N\,\frac{T_{stall}}{\frac{1}{2}D}$ where T_{stall} is the stall torque for the motor (6.5 in-lb or 0.734 N m) . How would you classify your robot? [fluffy bunny, angry cat, small dog]

Based on these numbers, how fast should your robot have been? HINT: $v = \frac{1}{2} D \frac{\omega_{free\,speed}}{G}$ where $\omega_{free\,speed}$ is the unloaded speed for the motor in radians per second. For the vex motors, $\omega_{free\,speed} = 100\,rpm = 10.47\,\frac{rad}{s}$. How does this theoretical number compare to the measured value?

BONUS (10 points): If your robot used an arm, use the formula given in class to present relevant calculations of required torque and arm speed.

Data

Measure the weight of your robot.

Measure the speed of your robot.

BONUS (see above): measure the length of your arm.

Measure the weight of your arm.

Measure the speed of your arm through it's motion.

Conclusion

How satisfied were you with your robot? If you could improve something on your concept, what improvements would you make?