Design Principles and Methods - Odometry Lab Report

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1 Objective

To determine the accuracy of the implemented odometry system, and implement a simple correction using a light sensor.

2 Method

1. In the file Odometer.java, implement code that performs the task of an odometer as described in the Odometry tutorial and in class. You should only need to add member variables to and modify the run() method of the Odometer class.

2. Run the robot in a 3-by-3 tile square (where one tile is 30.48 cm in linear dimension) using the provided code and tweak the leftRadius, rightRadius, and width parameters passed to the SquareDriver.drive() method in Lab2.java until the robot returns (approximately) to its starting position. If your left and right wheel motors are not connected to motor ports A and B respectively, you may need to also modify those parameters. The call to SquareDriver.drive() is shown below.

3 Data

Offset from Origin - Correction Disabled

X (cm)	Y (cm)	θ (rad)
-0.42	-0.66	0.01
-0.67	-0.86	0.01
-0.84	-0.84	0.01
-0.45	-0.46	0.01
-0.64	-0.82	0.01
-0.82	-0.45	0.01
-0.69	-0.66	0.01
-0.39	-0.44	0.01
-0.84	-0.66	0.01
-0.64	-0.63	0.01

Offset from Origin - Correction Enabled

X (cm)	Y (cm)	θ (rad)
-0.04	-0.09	0.01
-0.28	-0.18	0.01
-0.18	-0.19	0.01
-0.28	-0.27	0.01
-0.31	-0.18	0.01
-0.19	-0.20	0.01
-0.27	-0.13	0.01
-0.18	-0.25	0.01
-0.08	-0.12	0.01
-0.17	-0.11	0.01

4 Data Analysis

5 Observations and Conclusion

6 Further Improvements