

# COMP 329 2014 Lab 02

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1. Download the program `SimplePilot.java` from the course website — you can find it at:

[http://cgi.csc.liv.ac.uk/~rmw/329\\_labs.php](http://cgi.csc.liv.ac.uk/~rmw/329_labs.php)

This program tries to drive the robot in a square.

- Calibrate the program so that the robot gets back to its starting position.
- Now modify the program so that it turns in the other direction.
- Does the robot get back to close to its starting position? If not, recalibrate so that it does.

2. Download the program `RandomDriver.java` from the course website — you can find it at:

[http://cgi.csc.liv.ac.uk/~rmw/329\\_labs.php](http://cgi.csc.liv.ac.uk/~rmw/329_labs.php)

This program drives the robot at random for a while.

- Add code to `RandomDriver` to navigate the robot back to its starting place after the random driving.
- You should do this by using the `OdometryPoseProvider` data.
- Hint: If the odometry tells you that the random motion has moved the robot through  $D$  degrees, then turning  $-D$  degrees should have the robot facing back to its start point.
- Hint: To figure out how to use the odometry information you will have to look at the LeJOS API online.
- Expect that even when your code is right (which you can tell by looking at the pose stored in the `Pose` in your `OdometryPoseProvider` data) there will likely be some error in the final position of the robot.

3. Write a program that drives the robot around the robot arena, detecting when it bumps into objects, and logging the positions of the objects it bumps into. Replay the locations of the “bumps” on the LCD screen when the robot finishes driving round (you decide how to end the driving round.)