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REPORT 1

1. **What problems did you come across during the lab?**

We had some problems with the installation and Eclipse versions. We could only install it and run Eclipse in a single computer. Also, we had problems with how to fix the Clicking Brick of the robot. So we needed to update the firmware of the robot for it will work correctly.

About the behaviour of our robot, we had some problems with the rotation. We searched for some libraries to make it work but we misunderstood how to do it and we wasted some time in it. Selecting the library was an important step in order to satisfy our needs, we decided to use Differential Pilot library which we could use perfectly.
Also, it was important to know each part of the robot because it has a lot of sensors and we needed to decide which of them we wanted to use. We decided to use the Ultrasonic sensor to detect an object.
In addition, we had some problems interrupting the robot while running because we couldn't find a listener for the sensor and we tried to do it manually with java threads. Finally we figured out a method that makes the functionality of a listener.

Robot's behavior

The robot draws a shape (an 'R' letter as first) and will continue drawing the same shape until it detects something by using the ultrasonic sensor.
When the robot detects something, it will change the behaviour.
The behaviours are:

- Drawing an 'R' letter.
- Drawing a heart.

2. **What modification would be required to turn your behaviour into a solution for any real problem? i.e. Where could it be used and how?**

This program could be extended to be able to write an entire alphabet, so that it can write any message that it's commanded to. This would be useful for printing messages in places that may be hard to reach, or even dangerous, for humans, such as billboards or any other type of sign.

A robot that can pretend to give affection when the user gets close could also be very useful for comforting people, in the same way that therapy dogs do already. The advantage of using a robot in place of an actual animal is that a robot needs less care than an animal, so it's better for children and people who cannot handle the responsibility of taking care of a living being. The behaviour of a therapy robot is far more predictable than an animal's, so it could also be safer to use a robot.
The latter would require far more modifications to be useful though, as it would require the robot to do more things, otherwise the robot would become extremely boring after a short time. The robot would probably need to have intelligent behaviour as well in order for it to properly react to user input.

Code: https://codeshare.io/50gQJg
Video: https://www.youtube.com/watch?v=4Zf-A6MAk3k&feature=youtu.be