Lab 1: Using Robots for AI

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For the lab we decided to use the ultrasonic sensor to detect probable collisions and to change the course of the robot. For the reasoning of the code we put a loop for the robot to advance while checking the for the distance in the sensor input. If the sensor does not find anything near, it keeps on the loop of moving forward until the specified milliseconds pass. If the sensor detects something near enough, the program enters a new loop where it moves a little back until the minimum separation is reached. The robot then proceeds to make an approximate 90 degrees by turning one wheel forward and the other one backward, if the sensor detects movement it undoes the turn until the minimum separation is reached. The robot does this two movements 4 times each to form a square, due to the quality of the motors and the lack of a gyrometer we had to measure the milliseconds in order to create a perfect square, but we ended with an approximation that turns more than 90 degrees but the robot arrives no more than 10 centimeters from its start point.

We came across with some problems which were:

* The robots was bricked, and we could not establish the connection to the computer.
* We had an 64-bit IDE and the lego needs a 32-bit IDE.
* The Windows drives installs themselves, and they would not let the driver of the robot create the link.
* We had to read everything on sensors to understand how they needed to be initialized, and how they worked. i.e. Some materials do not reflect as well the ultrasonic waves to read how far something was.
* The sensors were not properly connected in the lego.
* The motors code simulate a switch, so we needed to create loops to control their action time

For a real world problem we think that the lego could have sensors in all directions that could help the robot know its surroundings and move freely. This can help with some of the robots that move thing in warehouses or in car assembly lines. Moving without bumping into anything or anyone can have many uses in the real world, from cars to droids to even some AI.