Getting Ready for the Competition

Instructions

- You must work with your team to solve all the problems in this lab.

PART 1: Controlling your robot

This afternoon you will be experimenting on a mock maze. Tomorrow morning, Friday when you come in, the real maze will be setup for you to train your robots on. The competition maze will be the same Friday morning maze with some minor random changes to the moveable obstacles. It would be a good idea to move the obstacles randomly when you test as well during your Friday morning preparation.

Exercise 1: Controlling your robot #1

Using a tape or some other marker, make a line two feet away from a wall. Place your robot on this starting line facing the wall. Your robot needs to go towards the wall, detect the wall and return to the starting line. Your robot must stop on the starting line. Try to get your robot to come as close as possible to the wall before turning back. Make sure to leave enough room for the robot to turn around. Bonus if you stop exactly at the same spot as you started from.

Exercise 2: Controlling your robot #2

A triangle has been marked out on the floor for you. Write a program that traverses the triangle from start to finish. It must traverse the triangle as exact as you can. It must stop at the spot is started from. You may pick any place to start. You can turn by calculating the distance. Your sonar will not be of any help to you.

Exercise 3: Controlling your robot #3

A mini maze has been built for you in the lab. The maze has been designed to test your skill in writing robot code. The maze has two parts, a hard path and an easy path. This

question asks you to write two programs. The first program traverses the easy path. The second program traverses the more difficult path.

A) Traverse the maze using the easy path
B) Traverse the maze using the more difficult path

PART 2: Sumo wrestling with the Boe-Bot

Exercise 1: Combat

A circle has been marked out for you in the lab. A BoeBot sumo match occurs with either two or four bots. In either configuration the rules are the same: the last robot standing in the circle is the winner.

Each bot starts at the outside edge of the circle facing inwards. At the same time all the bots are released. The BoeBot's job is to either overturn an opponent or push an opponent out of the circle. The match lasts for 4 minutes. Each bot overturned or pushed out is immediately removed from the game. If there are more than one bot in the ring after the 4^{th} minute, the match is a draw.

A win is 2 points
A draw is 1 point
A loss is 0 points

A BoeBot that wanders away, on its own from the circle is disqualified.