Team: WALL-E's
Teammates: Mark Abbott, Miles Sanders, Alberto Espinosa

Lab Report

1. What are the names of everyone in your lab group?

    Mark Abbott, Miles Sanders, Alberto Espinosa

2. What happens (in terms of the robot's behavior) during the robot.step(TIME_STEP) statement?

    The robot.step() function is used to advance the current simulation by a set amount of time i.e. by the TIME_STEP value.
    In terms of the robot behavior, it allows the robot to perform actions at the specified time. These actions may be, as we've done in this lab, sending instructions to the wheel actuators, reading the sensor's values, or computing any needed math for the instructions.

3. What happens if your robot's time step is not exactly TIME_STEP long, but slightly varies?

    If the TIME_STEP varies, then you will get inconsistent motions or readings. This means that if you access this value inside a loop, as we have done so for the lab, sometimes the robot will take longer or shorter time when executing the given instructions, which will lead to decreased accuracy in all of its functions.

4. What is the ePuck's average speed (in m/s) from Part 1?

    Our calculated speed for part 1 was of **0.1163 m/s**

5. In an ideal world, what should the ePuck's pose show each time it crosses the starting line?

    The robot's pose should be **0** every time the starting line is crossed, since that is the value we set it to be at the beginning of the simulation.

6. How did you implement loop closure in your controller?

    As the hint indicated, we implemented a flag in the form of a counter to implement our loop closure. Our flag "start_counter" kept track of when the robot passed the start line, and set its coordinates back to zeroes when it did so.

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7. Roughly how much time did you spend programming this lab?

> We spent around **8-9 hours** of work in order to finish the programming part of this lab.

8. Does your implementation work as expected? If not, what problems do you encounter?

> Our final implementation does work as expected in all of our 3 computers. The E-puck goes around the track following the black line without getting stuck or deviating from it.