Problem 5: RandomWalkRobot Class

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Problem Set due Nov 18, 2022 07:30 +08 Completed

Problem 5: RandomWalkRobot Class

10.0/10.0 points (graded)

iRobot is testing out a new robot design. The proposed new robots differ in that they change direction randomly **after every time step**, rather than just when they run into walls. You have been asked to design a simulation to determine what effect, if any, this change has on room cleaning times.

Write a new class `RandomWalkRobot` that inherits from `Robot` (like `StandardRobot`) but implements the new movement strategy. `RandomWalkRobot` should have the same interface as `StandardRobot`.

Test out your new class. Perform a single trial with the `StandardRobot` implementation and watch the visualization to make sure it is doing the right thing. Once you are satisfied, you can call `runSimulation` again, passing `RandomWalkRobot` instead of `StandardRobot`.

Enter your code for classes `Robot` and `RandomWalkRobot` below.

```
# Enter your code for Robot and RandomWalkRobot in this box
class Robot(object):
    """
    Represents a robot cleaning a particular room.
    At all times the robot has a particular position and direction in the room.
    The robot also has a fixed speed.
    Subclasses of Robot should provide movement strategies by implementing
    updatePositionAndClean(), which simulates a single time-step.
    """
    def __init__(self, room, speed):
        """
        Initializes a Robot with the given speed in the specified room. The
        robot initially has a random direction and a random position in the
        room. The robot cleans the tile it is on.
        room:  a RectangularRoom object.
```

Press ESC then TAB or click outside of the code editor to exit

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