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Problem 2: Robot Class

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

Problem 2: Robot Class

10.0/10.0 points (graded)

In *ps2.py* we provided you with the Robot class, which stores the position and direction of a robot. For this class, decide what fields you will use and decide how the following operations are to be performed:

- Initializing the object
- Accessing the robot's position
- Accessing the robot's direction
- Setting the robot's position
- Setting the robot's direction

Complete the Robot class by implementing its methods in ps2.py.

Note: When a Robot is initialized, it should clean the first tile it is initialized on. Generally the model these Robots will follow is that after a robot lands on a given tile, we will mark the entire tile as clean. This might not make sense if you're thinking about really large tiles, but as we make the size of the tiles smaller and smaller, this does actually become a pretty good approximation.

Although this problem has many parts, it should not take long once you have chosen how you wish to represent your data. For reasonable representations, a majority of the methods will require only a couple of lines of code.

Note: The Robot class is an *abstract* class, which means that we will never make an instance of it. Read up on the Python docs on abstract classes at <u>this link</u> and if you want more examples on abstract classes, follow <u>this link</u>.

In the final implementation of Robot, not all methods will be implemented. Not to worry -- its subclass(es) will implement the method updatePositionAndClean()

Enter your code for classes RectangularRoom (from the previous problem) and Robot below.

```
1 # Enter your code for RectangularRoom (from the previous problem)
 2 # and Robot in this box
 3 # === Problem 1
 4 class RectangularRoom(object):
 5
 6
      A RectangularRoom represents a rectangular region containing clean or dirty
7
      tiles.
 8
      A room has a width and a height and contains (width * height) tiles. At any
      particular time, each of these tiles is either clean or dirty.
9
10
      def __init__(self, width, height):
11
12
          Initializes a rectangular room with the specified width and height.
13
          Initially, no tiles in the room have been cleaned.
14
15
          width: an integer > 0
```

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

Correct

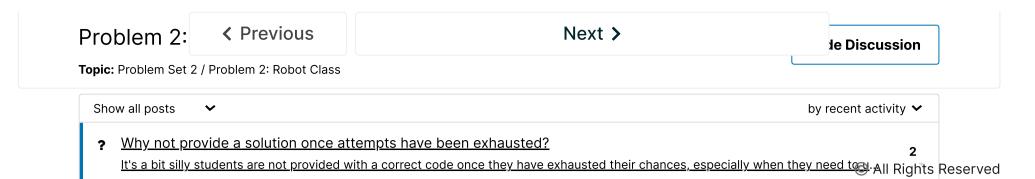
Test results

```
CORRECT

See full output

See full output

You have used 2 of 30 attempts
```





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