Do You Know?
Set 2

The source code for the BoxBug class can be found in the boxBug directory。.

1. What is the role of the instance variable sideLength?
   Answer: the instance variable sideLength is used to indicate the size of the boxbug can make.
2. What is the role of the instance variable steps?
   Answer: The instance variable steps shows whether a bug has made a edge.
3. Why is the turn method called twice when steps becomes equal to sideLength?
   Answer: each turn is 45 degree, and turning twice can turn to the right of the bug's former direction.
4. Why can the move method be called in the BoxBug class when there is no move method in the BoxBug code?
   Answer: it is because the move method has been implemented in the Bug class and the BoxBug class is an extension of the Bug class, thus the move method can be inherited.
5. After a BoxBug is constructed, will the size of its square pattern always be the same? Why or why not?
   Answer:Yes. After construction, there is no other way to change the sideLength, so the square a boxbug makes is always the same.
6. Can the path a BoxBug travels ever change? Why or why not?
   Answer: Yes. The BoxBug can turn when it moves steps as many as sideLength or encounters a rock.
7. When will the value of steps be zero?
   Answer: Yes. When the steps is equal to sideLength, the step will reset to zero. On the other hand, the siedLength can be set to zero when constructing.

Exercises

In the following exercises, write a new class that extends the *Bug* class. Override the *act* method to define the new behavior.

1. Write a class CircleBug that is identical to BoxBug, except that in the act method the turn method is called once instead of twice. How is its behavior different from a BoxBug?
   Answer: codes seen in folder src. The differences of a BoxBug is that it traces square before and an octagon after.

(Exercises2~4 codes seen in folder src)

5. Study the code for the BoxBugRunner class. Summarize the steps you would use to add another BoxBug actor to the grid.
   Answer: 1.get an instance of a BoxBug. Meanwhile you should initialize the side length of the square the bug will traces
   2.set color for the bug
   3.add the bug to a certain location in the grid.