Part 1

Running the Demo

1.Does the bug always move to a new location? Explain.

A: NO! The bug can only move to a new cell which exists and is empty or contains a flower.

2.In which direction does the bug move?

A: The bug moves in its current direction, in other word, it always moves forward if it can move.

3. What does the bug do if it does not move?

A: It will turns 45 degrees to the right.

4.What does a bug leave behind when it moves?

A: It leaves a flower!

5.What happens when the bug is at an edge of the grid? (Consider whether the bug is facing the edge as well as whether the bug is facing some other direction when answering this question.)

A: If the bug is facing the edge and it is called to act, it will turn 45 degrees to the right. But when it is called to move and it is facing the edge, it will be removed and leaves a flower.

6.What happens when a bug has a rock in the location immediately in front of it?

A: The bug will turns 45 degrees to the right one time until it can move forward.

7.Does a flower move?

A: No, flowers cannot move.

8.What behavior does a flower have?

A: The flower can change its color, from its original color to a darker color.

9.Does a rock move or have any other behavior?

A: No, the rock always stay in its location.

10.Can more than one actor (bug, flower, rock) be in the same location in the grid at the same time?

A: No, a cell can only contain a actor at the same time.

Exercises

1. Test the setDirection method with the following inputs and complete the table, giving the compass direction each input represents.

Degrees	Compass Direction
0	North
45	Northeast
90	East
130	Southeast
180	South
225	Southwest
270	West
315	Northwest
360	North

2. Move a bug to a different location using the moveTo method. In which directions can you move it? How far can you move it? What happens if you try to move the bug outside the grid?

A: The bug can move to any location inside the grid, but its direction will never change.

   I can move it as far as the grid allowed.

   If I move it outside the grid, An IllegalArgumentException will be thrown and the bug stay in its original location.

3. Change the color of a bug, a flower, and a rock. Which method did you use?

A: setColor().

4. Move a rock on top of a bug and then move the rock again. What happened to the bug?

A: The bug will be removed.