Part 1

**Do you Know?**

**Set 1**

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

不是。只有在bug朝向的方向上有格子且其是空的或者有flower，bug才会移动到其前面的位置。

1. In which direction does the bug move?

Bug的移动方向是其朝向的方向。

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

Bug会向右转45度。

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

Bug会留下一朵颜色与bug相同的flower。

1. 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.)

bug处于边缘时，如果其不朝向边缘，bug会往前移动。如果其朝向边缘，若选择act，bug向右转45度，若一直继续选择act，bug会旋转至所朝方向可以移动为止；若选择move，则bug会执行removeSelfFromGrid，消失后在原来的位置上留下一朵flower。

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

Bug会向右旋转45度。

1. Does a flower move?

不会，flower不移动。

1. What behavior does a flower have?

花会逐渐枯萎，颜色逐渐变深直到变成深灰色。

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

Rock不会移动，按下step或run按钮时rock没有任何行为。

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

不可以，同一时刻一个位置只能有一个actor。

**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 |
| 135 | SouthEast |
| 180 | South |
| 225 | SouthWest |
| 270 | West |
| 315 | NorthWest |
| 360 | North |

1. 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?

使用moveto可以将bug移动到网格上的任意有效位置，任意方向任意距离。

移动失败，报错IllegalArgumentException。

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

方法setColor。

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

当rock移动到bug之上时，bug会消失。

当rock再次移动后，bug不会重新出现。