1.The instance variable sideLength defines the max length of the BoxBug move on a side.

initialize the sideLength:

//@file:projects/boxBug/BoxBug.java

//@line:37

sideLength = length;

When the step reach the max sideLength, change it's direction:

//@file:projects/boxBug/BoxBug.java

//@line:45 and 50~55

if (steps < sideLength && canMove())

else

{

turn();

turn();

steps = 0;

}

2.The instance variable steps keep the length that the boxBug moves on a side.

when the BoxBug move, the steps++:

//@file:projects/boxBug/BoxBug.java

//@line:47~48

move();

steps++;

when the boxBug change direction, the steps = 0:

//@file:projects/boxBug/BoxBug.java

//@line:52~54

turn();

turn();

steps = 0;

3.Because the BoxBug traces a square, so it must turn 90 degrees to move on the next side when steps becomes equal to sideLength.

The turn() method only turns 45 degrees once.So we need to call it twice.

`//@file:info/gridworld/Actor/Bug.java

//@line:64

setDirection(getDirection() + Location.HALF\_RIGHT);

4.Because the BoxBug class extends the Bug class, and the Bug class has the move() method.So the BoxBug.class inherits the move() method.

the BoxBug class extends the Bug class:

//@file:projects/boxBug/BoxBug.java

//@line:25

public class BoxBug extends Bug

the Bug class has the move() method:

//@file:info/gridworld/Actor/Bug.java

//@line:71

public void move()

1. Yes.Because the sideLength will not change when the BoxBug is constructed.\*\*There is no code to change the sideLength in BoxBug.java after it is constructed\*\*

6.Yes.When the canMove() method return false(e.g There is a rock in the next location):

//@file:projects/boxBug/BoxBug.java

//@line:45

if (steps < sideLength && canMove())

//@file:info/gridworld/Actor/Bug.java

//@line:98~101

if (!gr.isValid(next))

return false;

Actor neighbor = gr.get(next);

return (neighbor == null) || (neighbor instanceof Flower);

,it will change it's direction and at this time it's steps doesn't equal to the sideLength.Then the path changed.:

//@file:projects/boxBug/BoxBug.java

//@line:50~55

else

{

turn();

turn();

steps = 0;

}

7.When the BogBug is constructed, the steps is initialized to 0:

//@file:projects/boxBug/BoxBug.java

//@line:36

steps = 0;

And when the BoxBug has to change it's direction(e.g The steps becomes equal to the sideLength or the canMove()method return false), the steps becomes to 0:

//@file:projects/boxBug/BoxBug.java

//@line:54

steps = 0;