

Analyze the following code and answer the questions below.

```
import info.gridworld.actor.Bug;

public class MysteryBug extends Bug
{
    private int segmentLength;    //
    private int steps;            //

    public MysteryBug(int length)
    {
        setDirection(90);
        steps = 0;
        segmentLength = length;
    }

    public void act()
    {
        if (steps < segmentLength && canMove())
        {
            move();
            steps++;
        }
        else if (steps == segmentLength && canMove())
        {
            Location currentLoc = getLocation();
            int currentColumn = currentLoc.getCol();
            int currentRow = currentLoc.getRow();
            Location nextLoc = new Location(currentRow, currentColumn + segmentLength);
            moveTo(nextLoc);

            // or typed as one line of code.....
            // moveTo(new Location(getLocation().getRow(), getLocation().getCol() + segmentLength));

            steps = 0;
        }
        else
        {
            removeSelfFromGrid();
        }
    }
}
```

1. Write a line of code that would instantiate a `MysteryBug` object named `misty` in a client program (i.e. a runner program) with a `segmentLength` of 2.
2. What `Location` class constant could be used instead of 90 in the constructor?
3. What import statement would have to be added to the program to use the `Location` class constant in ex. #2?
4. Describe a scenario in which `MysteryBug` dies (i.e. is removed from the grid).

(continue on the back of this worksheet)

5. From what class is each of the following methods inherited?

a. `setDirection` -

b. `move` -

c. `getLocation` -

d. `moveTo` -

e. `removeSelfFromGrid` -

6. In what class are the methods `getCol` and `getRow` implemented?

7. In the area below, sketch a 10 x 10 grid with your pencil, label the rows and columns from 0 to 9, place a `MysteryBug` in the position Row 4, Column 4 and trace the `act` method. Show scratch work for full credit. Then, also in the area below, fully explain how a `MysteryBug` (with a `segmentLength` of 2) moves?