Karel J Robot Chapter 3

Karel's learning ability is actually quite limited. Our programs can furnish the robot with a dictionary of useful instruction names and their definitions, but each definition must be built from simpler instructions that Karel already understands. By providing Karel with instructions that perform complex actions, we can build a vocabulary to correspond more closely to our own.

```
import karelTheRobot.*;

public class SuperRobot extends UrRobot
{
    public SuperRobot(int street, int avenue, Direction d, int beepers)
    {
        super(street, avenue, d, beepers);
    }

    public void turnRight()
    {
        turnLeft();
        turnLeft();
        turnLeft();
    }
}
```

It is useful to divide a program into small instructions, even if these instructions are executed only once. New instructions nicely structure programs, and English words/phrases make programs more understandable; they help convey the intent of the program. New instructions can be independently tested.

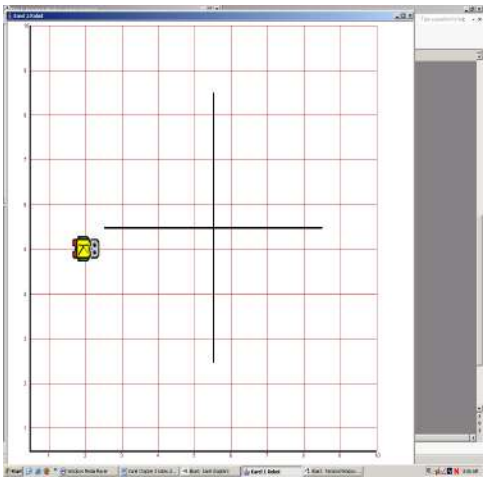
```
import karelTheRobot.*;

public class Test implements Directions
{
  public static void main(String [] args)
  {
      World.readWorld("Test.kwld");
      World.setVisible(true);
      World.setDelay(10);
      SuperRobot karel = new SuperRobot(2,5,North,4);
      karel.turnRight();
  }
}
```

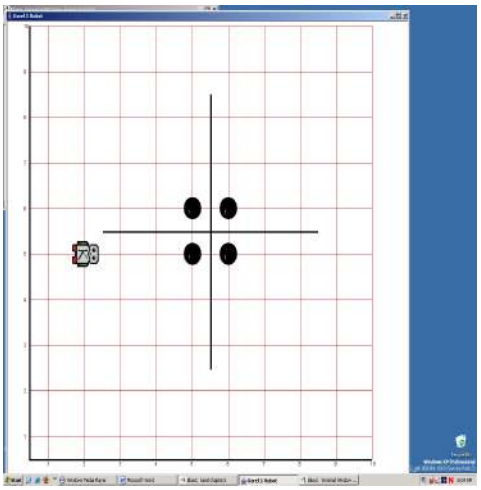
Problem Set

1. Test: Write a new robot class called SuperRobot that extends the UrRobot class. It should have the new methods turnRight(), turnAround(), and moveBackward(). The Test class should try out those methods.

2. HarvestField: The robot needs to pick up a rectangular field of beepers. Make a pickMove() method in your SuperRobot class. This pickMove() method should harvest an entire straight row.

3. GardeningTask: Karel has take a part-time job as a gardener. Karel's speciality is planting beepers. Karel's current task is to plant one and only one beeper in each corner around the "+" shaped wall arrangement. He should end in the same place and position as he started. Make a moveThree() method in your SuperRobot class (no others).





4. CarpetingTask: Karel's beeper crop failed so the robot decided to try a different part-time job. The robot now installs carpets (made from beepers) in buildings. Write a program to instruct karel to install a carpet in the building shown below. Karel should start with 28 beepers and end with no beepers. He should end in the same place and position as he started. Make a putMove() method in your SuperRobot class that puts down the beeper and moves enough times to carpet one entire side. The putMove() method does not have any turns.