CS1073
FR03B
Assignment #3

Daniyal Khan
3765942

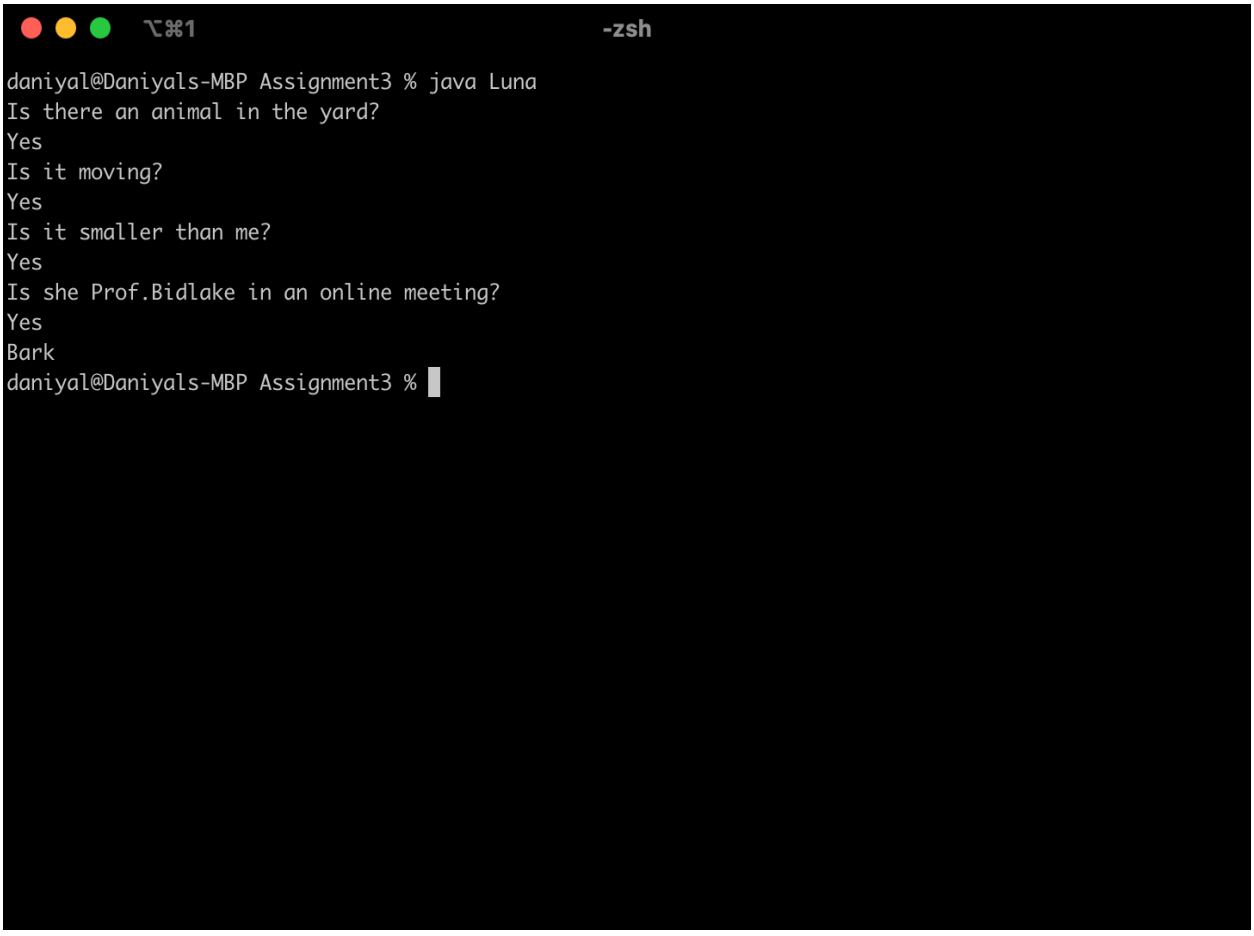
Question I:

a.) Source code:

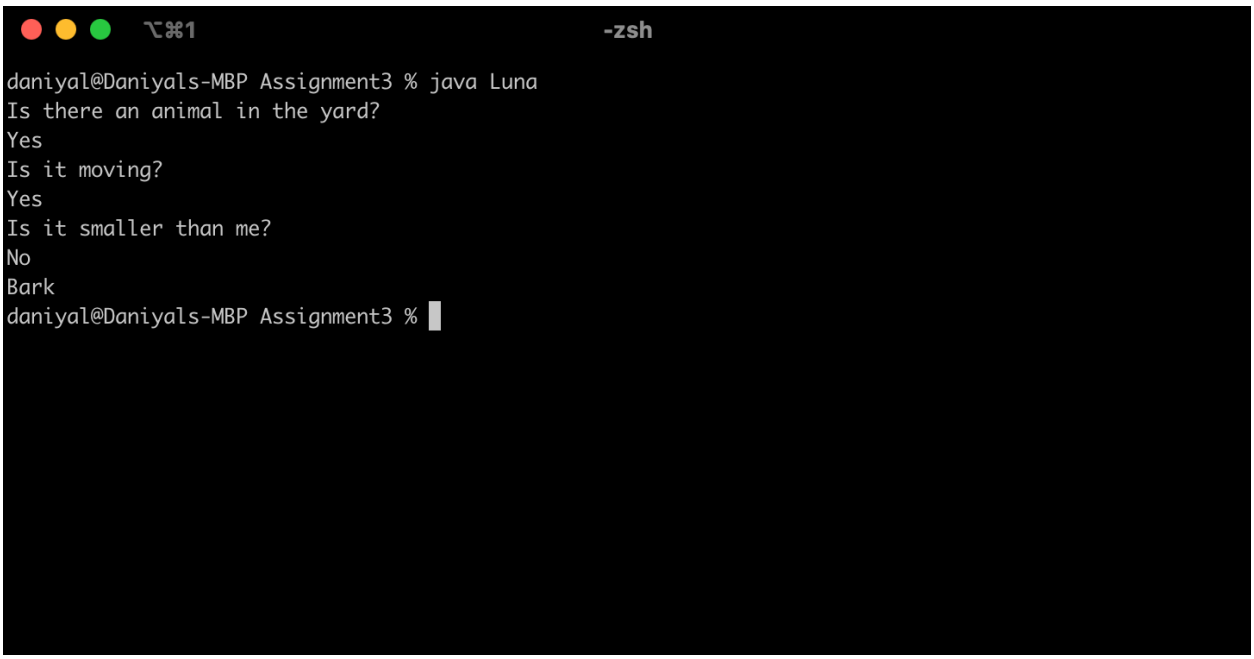
```
/**
@author Daniyal Khan 3765942
*/

import java.util.Scanner;

public class Luna {

     public static void main(String[] args) {
          Scanner scan = new Scanner(System.in);
          String userInput;
          // Initial Question 1
          System.out.println("Is there an animal in the yard?");
          userInput = scan.nextLine();

          if(userInput.equalsIgnoreCase("Yes")) {
               System.out.println("Is it moving?"); // Question
2
               userInput = scan.nextLine();
               if(userInput.equalsIgnoreCase("Yes")) {
                    System.out.println("Is it smaller than
me?"); // Question 3
                    userInput = scan.nextLine();
                    if(userInput.equalsIgnoreCase("Yes")) {
                         System.out.println("Is she Prof.Bidlake
in an online meeting?"); // Question 4
                         userInput = scan.nextLine();
                         if(userInput.equalsIgnoreCase("Yes")) {
                              System.out.println("Bark");
                         }
                         else if
(userInput.equalsIgnoreCase("No")) {
                              System.out.println("Don't bark");
                         }
                    }
                    else if (userInput.equalsIgnoreCase("No")) {
                         System.out.println("Bark");
                    }
```

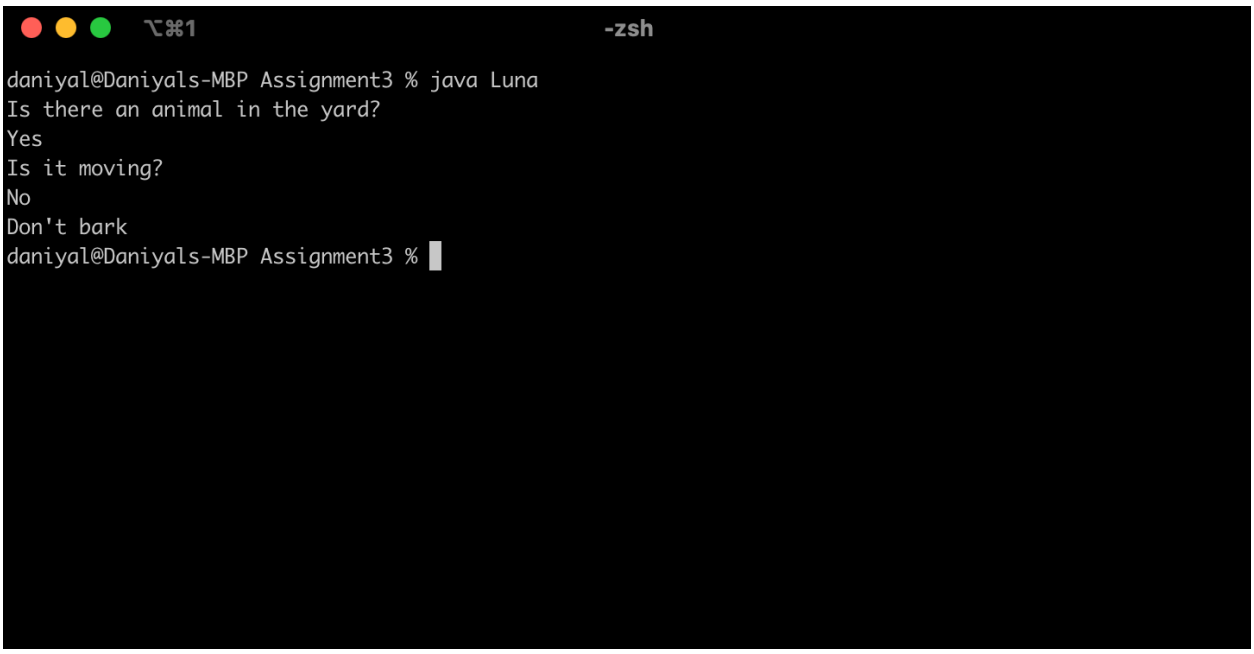
```
                }
                else if (userInput.equalsIgnoreCase("No")) {
                     System.out.println("Don't bark");
                }
           }
           else if (userInput.equalsIgnoreCase("No")) {
                System.out.println("Don't bark");
           }
           else {
           System.out.println("Invalid input. Please enter 'Yes'
or 'No'.");
           }
      }
}
```

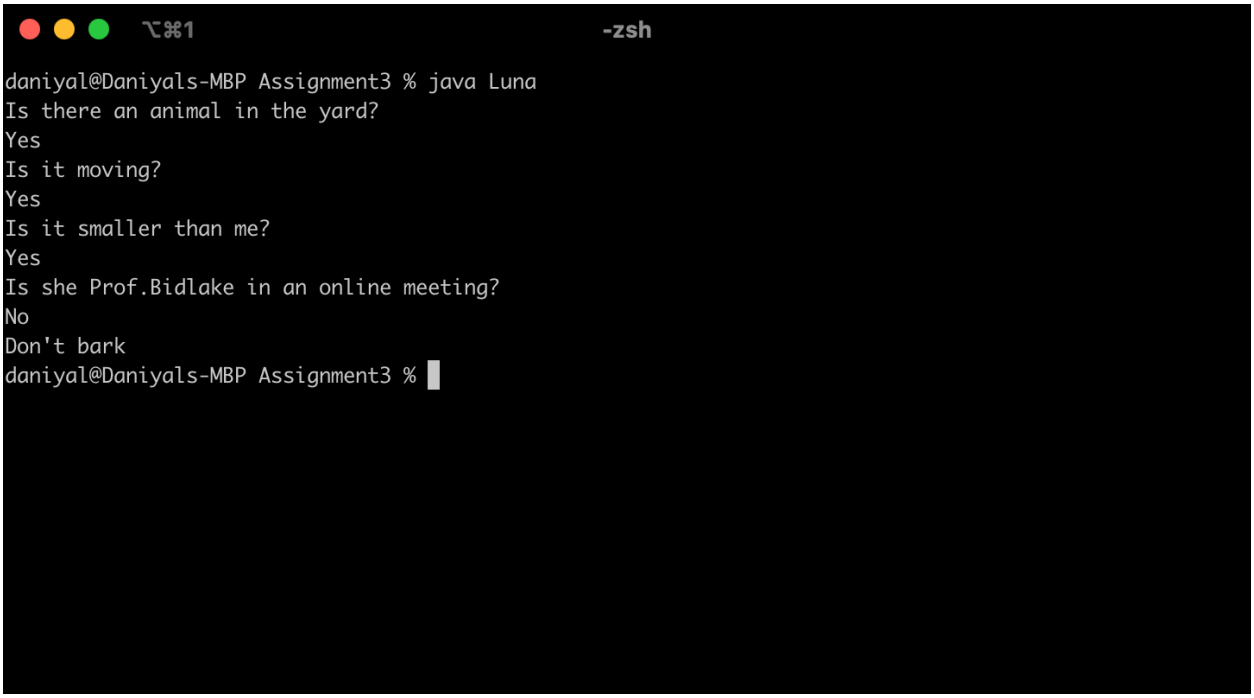
b.) Output:




⌥⌘1
-zsh
daniyal@Daniyals-MBP Assignment3 % java Luna
Is there an animal in the yard?
No
Don't bark
daniyal@Daniyals-MBP Assignment3 %


⌥⌘1
-zsh
daniyal@Daniyals-MBP Assignment3 % java Luna
Is there an animal in the yard?
Yes
Is it moving?
Yes
Is it smaller than me?
No
Bark
daniyal@Daniyals-MBP Assignment3 %


⌥⌘1
-zsh
daniyal@Daniyals-MBP Assignment3 % java Luna
Is there an animal in the yard?
Yes
Is it moving?
No
Don't bark
daniyal@Daniyals-MBP Assignment3 %


⌥⌘1
-zsh
daniyal@Daniyals-MBP Assignment3 % java Luna
Is there an animal in the yard?
Yes
Is it moving?
Yes
Is it smaller than me?
Yes
Is she Prof.Bidlake in an online meeting?
No
Don't bark
daniyal@Daniyals-MBP Assignment3 %

Question II:

c.) Source code:

```
/**
 This class represents a triangle shape using 3 points.
 @author Natalie Webber
 @author Daniyal Khan 3765942
*/
public class Triangle {

     private CartesianPoint pointA;
    private CartesianPoint pointB;
    private CartesianPoint pointC;

    public Triangle (double x1, double y1,
                     double x2, double y2,
                     double x3, double y3) {
          pointA = new CartesianPoint (x1, y1);
         pointB = new CartesianPoint (x2, y2);
         pointC = new CartesianPoint (x3, y3);
   }

     public Triangle (CartesianPoint p1,
                     CartesianPoint p2,
                     CartesianPoint p3) {
          pointA = p1;
          pointB = p2;
          pointC = p3;
     }

     /**
     This method returns the perimeter of a triangle
     @return The perimeter of the triangle
     */
     public double getPerimeter() {
          return pointA.distance(pointB) +
pointB.distance(pointC) + pointC.distance(pointA);
    }

    /**
    This method tells if a triangle is equilateral or not
```

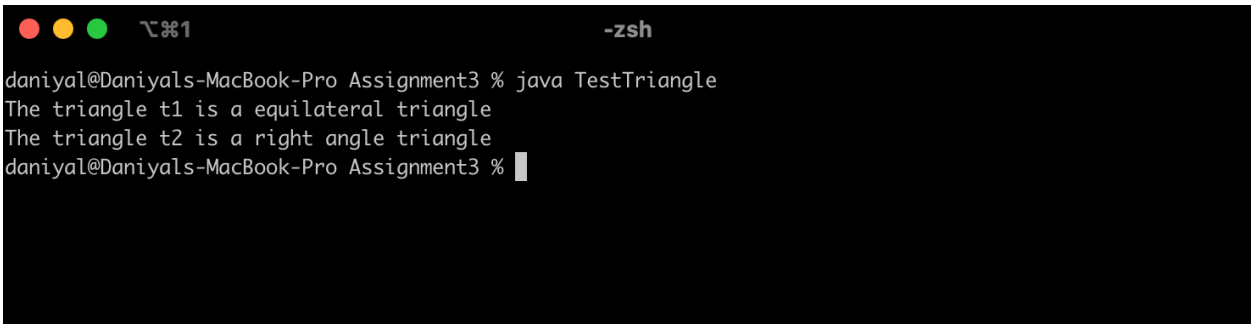
```
    @return True if the triangle is an equilateral and false if
not
    */
    public boolean isEquilateral() {
     double distanceAb = pointA.distance(pointB);
          double distanceBc = pointB.distance(pointC);
          double distanceCa = pointC.distance(pointA);
          double tolerance = 1e-14;

     if ((Math.abs(distanceAb-distanceBc) < tolerance)
          && Math.abs(distanceBc-distanceCa) < tolerance) {
          return true;
     }
     return false;
    }

     /**
    This method tells if a triangle is right-angled or not
    @return True if the triangle is right-angled and false if
not
    */
     public boolean isRight() {
          double distanceAb = pointA.distance(pointB);
          double distanceBc = pointB.distance(pointC);
          double distanceCa = pointC.distance(pointA);

          double tolerance = 1e-14;
          double sqDistanceAb = distanceAb * distanceAb;
     double sqDistanceBc = distanceBc * distanceBc;
          double sqDistanceCa = distanceCa * distanceCa;

          if (Math.abs(sqDistanceAb + sqDistanceBc -
sqDistanceCa) < tolerance ||
               Math.abs(sqDistanceBc + sqDistanceCa -
sqDistanceAb) < tolerance ||
               Math.abs(sqDistanceCa + sqDistanceAb -
sqDistanceBc) < tolerance) {
               return true;
          }
          return false;
     }

}
```

d.) Source code for the driver:

```
/**
@author Daniyal Khan 3765942
*/

public class TestTriangle {

     public static void main(String[] args) {
          Triangle t1 = new Triangle(-0.5, 0.0, 0.5, 0.0, 0.0,
Math.sqrt(3)/2);
          Triangle t2 = new Triangle(0.0, 0.0, 1.0, 0.0, 0.0,
1.0);

          if(t1.isEquilateral()) {
               System.out.println("The triangle t1 is a
equilateral triangle");
          }
          else {
               System.out.println("The triangle t1 is not an
equilateral triangle");
          }

          if(t2.isRight()) {
               System.out.println("The triangle t2 is a right
angle triangle");
          }
          else {
               System.out.println("The triangle t2 is not a
right angle triangle");
          }
     }
}
```

Output:

```
The triangle t1 is a equilateral triangle
The triangle t2 is a right angle triangle
```


⌥⌘1
-zsh
daniyal@Daniyals-MacBook-Pro Assignment3 % java TestTriangle
The triangle t1 is a equilateral triangle
The triangle t2 is a right angle triangle
daniyal@Daniyals-MacBook-Pro Assignment3 %