Batch-2 -JAVA LAB WEEK-3(16/2/2023) Exercises

1) Design a class named Rectangle to represent a rectangle. The class contains:

   ■ Two double data fields named width and height that specify the width and

   height of the rectangle. The default values are 1 for both width and height.

   ■ A no-arg constructor that creates a default rectangle.

   ■ A constructor that creates a rectangle with the specified width and height.

   ■ A method named getArea() that returns the area of this rectangle.

   ■ A method named getPerimeter() that returns the perimeter.

Write a test program that creates two Rectangle objects—one with width 4 and height 40

and the other with width 3.5 and height 35.9. Display the width, height, area,

and perimeter of each rectangle in this order.

2) Design a class named Linear Equation for a system of linear equations:

$$\begin{matrix} ax + by = e \\ cx + dy = f \end{matrix} \qquad x = \frac{ed - bf}{ad - bc} \qquad y = \frac{af - ec}{ad - bc}$$

   The class contains:

   ■ Private data fields a, b, c, d, e, and f.

   ■ A constructor with the arguments for a, b, c, d, e, and f.

   ■ Six get methods for a, b, c, d, e, and f.

   ■ A method named isSolvable() that returns true if is not 0.

   ■ Methods getX() and getY() that return the solution for the equation.

3) Define a class called Time that has data fields: seconds, minutes and hour of type integer. Time should have get methods and constructors (default, three arguments). Provide timeelapsed(int) method that takes the number of seconds of elapsed and the instance invoking method should add the seconds to its seconds data field. If the seconds exceed 60, the minute should be incremented and subsequently the hour has to be incremented if exceeds 60 minutes. Write a test program to test the functionalities of the Time class.