French-Azerbaijani University / University of Strasbourg
Computer Science track, 1 st year / Object Oriented Programming 1
Practical exam
Time allowed: 1h30

Instructions

- You must read the description of the exercise very carefully: it contains all you need and it is up to you to analyze this description to determine which attributes and methods you will have to implement.
- Your code must be indented, concise and clear. In that sense, you can add comments whenever you think it is important.
- Code similarity on the submissions (more than or equal 90%) will be evaluated 0 point.
- This is closed book exam. Internet search and access to local resources are not allowed.
- Take the screen capture of your result and include it to your compressed folder.
- Name your submission as name_surname.tar.xz
- Please, submit your code before the assignment deadline. Late submissions won't be evaluated.

Plane Figures

In the below code, you are introduced a Main class for testing the plane figure classes - Triangle, Rectangle, Circle and Rhombus. Follow the below instructions to complete your task:

- Create figure classes - Triangle, Rectangle, Circle and Rhombus.
- Create PlaneFigure interface which has abstract methods implemented by the figure classes.
- Create Point class which has aggregation relation with the class Circle. You can use it to compute the radius. Accept center point of your circle as (0,0).
- Create Diagonal class which has composition relation with the class Rhombus. You will use it to compute the diagonal of your Rhombus.
- Attributes, constructors and methods should be determined by yourself based on the given code.
- Numeric values passed to the figure objects in the below code are optional.
- Use the Main class (given to you on this document) to test your codes.

```
public class Main {
  public static void main(String[] args) {

            PlaneFigures  pf;

            pf = new Triangle(3.0f,4.0f,5.0f);
            System.out.println("Area(Triangle)= "+pf.area());
            System.out.println("Perimeter(Triangle)= "+pf.perimeter());

            pf = new Rectangle(3.4f, 8.2f);
            System.out.println("Area(Rectangle)= "+pf.area());
            System.out.println("Perimeter(Rectangle)= "+pf.perimeter());

            Point point = new Point(5.6f, 4.8f);
            pf = new Circle(point);
            System.out.println("Area(Circle)= "+pf.area());
            System.out.println("Perimeter(Circle)= "+pf.perimeter());

            pf = new Rhombus(5.0f,(float)(2*Math.PI/3));
            System.out.println("Area(Rhombus)= "+pf.area());
            System.out.println("Perimeter(Rhombus)= "+pf.perimeter());

  }
}
```