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StatExam.java

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```
public class StatExam {  
    private final static int NOTE_MAX = 20;  
  
    public static int[] creerTableau(int[] note) {  
        int[] stat = new int[NOTE_MAX + 1];  
  
        for(int i = 0; i < note.length; i++)  
            if(note[i] < 0 || note[i] > NOTE_MAX)  
                throw new RuntimeException("Note non valide");  
            else  
                stat[note[i]]++;  
  
        return stat;  
    }  
  
    public static void afficherTableau(int[] stat) {  
        double total = 0;  
  
        for(int i = 0; i < stat.length; i++)  
            total += stat[i];  
  
        for(int i = 0; i < stat.length; i++)  
            if(stat[i] != 0)  
                System.out.println("note " + i +  
                                    ":" + stat[i] +  
                                    "\t" + ((stat[i] / total) * 100) +  
                                    "%");  
    }  
  
    public static void usage() {  
        System.err.println("Usage : StatExam <note> ... <note>");  
        System.exit(1);  
    }  
  
    public static void main(String[] args) {  
        if(args.length == 0)  
            usage();  
        int[] note = new int[args.length];  
        for(int i = 0; i < args.length; i++)  
            note[i] = Integer.parseInt(args[i]);  
        afficherTableau(creerTableau(note));  
    }  
}
```

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Point.java

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```
public class Point {  
    private double abscisse;  
    private double ordonnee;  
  
    public Point(double x, double y) {  
        abscisse = x;  
        ordonnee = y;  
    }  
  
    public double getX() {  
        return abscisse;  
    }  
  
    public double getY() {  
        return ordonnee;  
    }  
  
    public void setX(double nouveauX) {  
        abscisse = nouveauX;  
    }  
  
    public void setY(double nouveauY) {  
        ordonnee = nouveauY;  
    }  
  
    public double distance(Point p) {  
        return Math.sqrt(((this.getX() - p.getX()) * (this.getX() - p.getX()))  
            + ((this.getY() - p.getY()) * (this.getY() - p.getY())));  
    }  
}
```

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Figure.java

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```
public interface Figure {  
    public boolean appartient(Point p);  
    public double aire();  
    public double perimetre();  
}
```

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Cercle.java

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```
public class Cercle implements Figure {  
    private Point centre;  
    private double rayon;  
  
    public Cercle(Point c, double r) {  
        centre = c;  
        rayon = r;  
    }  
  
    public boolean appartient(Point p) {  
        return centre.distance(p) <= rayon;  
    }  
  
    public double perimetre() {  
        return 2 * Math.PI * rayon;  
    }  
  
    public double aire() {  
        return Math.PI * rayon * rayon;  
    }  
}
```

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Rectangle.java

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```
public class Rectangle implements Figure {  
  
    private Point basGauche;  
    private double longueur;  
    private double largeur;  
  
    public Rectangle(Point bg, double lo, double la) {  
        basGauche = bg;  
        longueur = lo;  
        largeur = la;  
    }  
  
    public boolean appartient(Point p) {  
        return ( p.getX() >= basGauche.getX()  
                && p.getX() <= basGauche.getX() + longueur  
                && p.getY() >= basGauche.getY()  
                && p.getY() <= basGauche.getY() + largeur);  
    }  
  
    public double aire() {  
        return longueur * largeur;  
    }  
  
    public double perimetre() {  
        return 2 * longueur + 2 * largeur;  
    }  
}
```

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Carre.java

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```
public class Carre extends Rectangle implements Figure {  
    public Carre(Point basGauche, double cote) {  
        super(basGauche, cote, cote);  
    }  
}
```

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Test.java

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```
public class Test {  
  
    private static void test(Figure f, Point p) {  
        System.out.println("appartient?" + f.appartient(p) +  
            ". Perimetre:" + f.perimetre() +  
            ". Aire:" + f.aire() + "\n");  
    }  
  
    public static void main(String[] args) {  
        Point p = new Point(-2, 1.5);  
        Point p1 = new Point(-3, 1);  
        Cercle c = new Cercle(p, 2);  
        Rectangle r = new Rectangle(p, 3, 5);  
        Carre ca = new Carre(p, 5);  
  
        System.out.println("Cercle:");  
        test(c, p1);  
        System.out.println("Rectangle:");  
        test(r, p1);  
        System.out.println("Carre:");  
        test(ca, p1);  
    }  
}
```