LAB # 12 Evaluation

Exercise: By looking at the formulae for an ellipse, provide the missing code for all of the methods in the class Ellipse including the toString() method. Test your program using the TestShapes.java class.

Code:

Main:

IEccentric (Interface):

```
package javaapplication3;

public interface IEccentric {

}
```

Shape (Abstract Class):

```
package javaapplication3;

public abstract class Shape {

    public abstract String toString();
    public abstract double Area();
    public abstract double Perimeter();
}
```

Circle (Child Class):

```
package javaapplication3;

public class Circle {

}
```

Ellipse (Child Class):

```
package javaapplication3;

public class Ellipse extends Shape implements IEccentric {

    double a, b;

    public Ellipse(double s1, double s2) {
        if (s1 < s2) {
            a = s2;
            b = s1;
        } else {
            a = s1;
            b = s2;
        }
    }
    public double Perimeter(){
        return Math.PI*Math.sqrt(2*(Math.pow(this.a,2) + Math.pow(this.b,2)-
Math.pow(this.a-this.b,2))/2);
    }
    public double Area(){
        return Math.PI*this.a*this.b;
    }
    public double Eccetricity(){
```

```
        return Math.sqrt(1-(Math.pow(this.a,2)/Math.pow(this.b, 2)));
    }
    public String toString(){
        return "Perimeter is " + Perimeter() + "Area is " + Area() + "Eccetricity is
" + Eccetricity();
    }
}
```

Output: