CS212 Worksheet 3

Monday, February 22, 2016

1. Add the *smallerThan* method to the *Circle* class taught in the classroom.

```
import java.text.DecimalFormat;
class Circle
{
        DecimalFormat f1 = new DecimalFormat("0.00");
        private double radius;
        public Circle() {  radius = 0;  }
        public void set(double r)
        {       radius = r;  }
        public double area()
        {       return Math.PI*radius*radius;  }
        public double circumference()
        {       return Math.PI*2.0*radius;  }
        public void writeOutput()
        {
                System.out.println("Area = " + f1.format(area()));
                System.out.println("Circumference = " +
                        f1.format(circumference()));
        }
        public boolean smallerThan(Circle x)
        {
                return radius < x.radius;
        }
}
```

2. Write the statements to perform the following tasks.

a) Declare two objects of *Circle*, *C0* and *C1* and initialized with 0 of radius for both objects.

```
Circle C0 = new Circle();
Circle C1 = new Circle();
```

b) Change the radius of *C1* to 1.

```
C1.set(1);
```

c) Output only the circumference of *C1* to the monitor.

```
System.out.println(C1.circumference());
```

d) Compare the two circles, and output a message to tell which circle is smaller.

```
if(C0.smallerThan(C1)) System.out.println("C0 is smaller.");
else  System.out.println("C1 is smaller.");
```

3. Write a segment of code to read different radius values (from the keyboard) for *C0*, until a negative is read, and output the corresponding area values to the monitor. Also output the area for the smallest one.

```
double val = input.nextDouble();
Circle SC = new Circle();
SC.set(val);
while(val>=0)
{
        C0.set(val);
        System.out.println(C0.area());
        if(C0.smallerThan(SC))
              SC.set(val);

        val = input.nextDouble();
}
System.out.println(SC.area());
```