Assignment 6: Interfaces

Exercise 6.1

Write an interface Measurable, which has methods

```
public double area();
public double perimeter();
public void scale(double scaleValue);
```

Copy your Rectangle class from assignment 2 and change it so that it implements Measurable interface. When you scale a rectangle, its lower left corner does not change, but its width and height are scaled (the new x coordinate of upper right corner will be

upper_x = lower_x + scaleValue * width();

and the y coordinate correspondingly).

Copy the Circle class from chapter 4 in lectures and change it so that it implements also Measurable interface. When you scale a circle, you multiply its radius with the scaleValue.

Write a main method with an ArrayList for Measurable objects. Create some Rectangle and Circle objects and add those to your ArrayList.

Print the area and perimeter of all objects in your ArrayList.

Scale all objects in your ArrayList with a scale value which is asked from the user. And print again the area and perimeter of all objects in your ArrayList.

Study how the area and perimeter of the shape changes when you scale it with value 0.5, or 2, or 3.

Exercise 6.2

Use your class that describes the characteristics of a date from assignment 2.

Change your class so that it implements Comparable<T> interface.

Write a program that stores dates in an ArrayList (you can choose yourself if you write those in program code or if you ask those from the user) and prints out the dates.

The program asks a date from the user and prints out those dates from the AarryList, which are after the given date (later in time).

The program sorts the dates into an ascending order and prints out the dates.