Exam Practice for OOP Question 1

You are given fully implemented classes `Circle` and `Rectangle`. Each has a `computeArea` method, which returns the area of the figure according to the usual mathematical formulas. In the `DataMiner` class, a raw list is provided, named `objects`, and the `main` method calls `populateList` in order to populate this list with instances of `Rectangle` and `Circle`.

There is one unimplemented method in `DataMiner`: `computeAverageArea`. This method should compute the average area of the figures in the `objects` list.

For this problem you must implement `computeAverageArea` *using polymorphism*. This implies that your implementation *does not check* the runtime types of the figures in the objects list.

In order to set up the code so that you can use polymorphism, create a suitable *interface* that can be implemented by both `Rectangle` and `Circle`, and insert the appropriate type parameter in the declaration of the `objects` list. Then implement `computeAverageArea`.

For this problem, here are the steps of implementation you must complete:

1. Define an appropriate interface, and make sure both `Rectangle` and `Circle` implement this interface. (You will get no credit if you do not use an interface.)

2. Implement the method `computeAverageArea`. The implementation of this method should use only one loop (if you use two loops or more, the solution is incorrect).

3. When you specify the type parameter for the `objects` list, you will need to change the type of the `temp` variable in the `swap` method.