Sofia University
Department of Mathematics and Informatics

Course : OO Programming C#.NET

Date: November 6, 2008

Student Name:

Lab No. 6 plus

Submit the all C# .NET files developed to solve the problems listed below. Use comments and Modified-Hungarian notation.

Problem No. 1

Code a declaration for a Point class. A Point object ***has*** **two private data members**- the x and y coordinates of the Point. **Define** a **default** constructor, a **general purpose** constructor and a **copy** constructor. Define **properties** for the coordinates of a Point object and a **ToString**() method.

Problem No. 2

A **point** can be defined by using polar coordinates (r,θ), where r is the distance of the point from the origin. If we imagine a straight line drawn through the origin and the point, this line will form an angle with the x- axis, and this is θ. Conversion from polar coordinates can be effected with the formula

$$x = r \bullet \cos\theta$$
$$y = r \bullet \sin\theta$$

Define a class **Rpoint**, where the points are defined using polar coordinates **and a member function** that computes the distance between two **Rpoints** (r_1,θ_1) and (r_2,θ_2) using the formula:

$$d = \sqrt{(r_1\cos\theta_1 - r_2\cos\theta_2)^2 + (r_1\sin\theta_1 - r_2\sin\theta_2)^2}$$

Problem No. 3

Construct a class **Passenger** that will define a passenger on a **flight**. Each passenger can **have a maximum of ten departures** during a flight. A passenger **object must therefore know this** (contain references to). There **should be a constructor** that initializes a passenger with appropriate flight departures. Here you **should check that times and flights correspond**, so that a person will not take a flight that leaves before the previous flight has arrived. There should **also be a member function with which you should replace one flight by another**. Check here, too, that times and flights correspond. **If a flight is delayed, a passenger may need to change the flight that follows**. **Write a member function** that checks whether this is necessary for a particular passenger. To solve this program statement you must **add two functions which make it possible to examine the departure and the arrival** of a flight.

Submit the source/ executables of the C# program used to test this class **Passenger, as well as, the** class **Passenger**