Sofia University
Department of Mathematics and Informatics

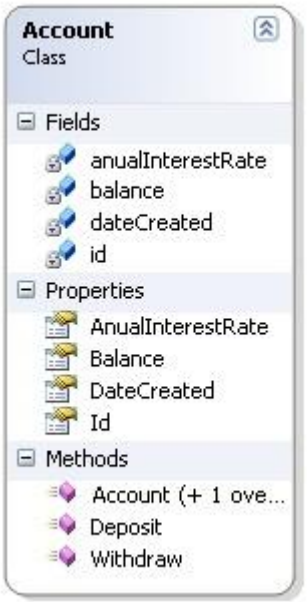
Course : **OO Programming with C#.NET**
Date: **October 13, 2020**
Student Name:

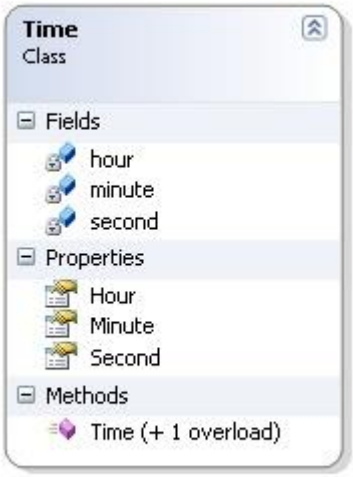
Lab No. 2a

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

Problem No. 1

Use VS Visual designer to produce the following classes





Problem No. 2

Modify ***`class GradeBook`*** from ***`Fig. 4.12`*** as follows:

a) Include a second `string` instance variable that represents the name of the course's instructor.
b) Introduce a getter property `CourseStart` to hold the current year of the `GradeBook`
c) Provide a property with accessors to change the instructor's name and to retrieve it employing an auto-implemented property.
d) Modify the constructor to specify two parameters one for the course name and one for the instructor's name.

e) Modify method `DisplayMessage` such that it first outputs the welcome message and `course name`, then outputs "`This course is presented by:` ", followed by the instructor's `name`. Use String interpolation.

f) Add a public method `GradeBookTitle` returning a tuple with the values of the `CourseStart`, `CourseName` and `instructor`

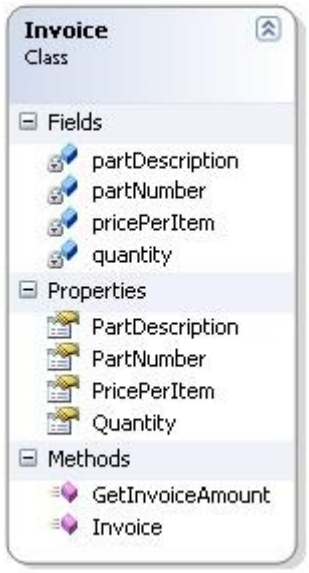
g) Add a public method `ChangeCourseTitle` that accepts a tuple named title with two `string`s for instructor name and course name. The method updates the tuple made of `CourseName` and `instructor` with the values passed by `title`

Use your modified class in a test application that demonstrates the class's new capabilities.

Problem No. 3

Employing the Visual Designer develop a model for a class called ***`Invoice`*** that a hardware store might use to represent an invoice for an item sold at the store. An Invoice should include four pieces of information as instance variables - a part number (type ***`string`***), a part description (type ***`string`***), a quantity of the item being purchased (type ***`int`***) and a price per item (***`decimal`***). Your class should have a ***`constructor`*** that initializes the four instance variables. Provide a ***`property`*** with a ***`get`*** and ***`set`*** accessor for each instance variable. Generate the necessary C# code and in addition provide a method named ***`GetInvoiceAmount`*** that calculates the invoice ***`amount`*** (i.e., multiplies the quantity by the price per item), then returns the amount as a decimal value. If the ***`quantity`*** is negative, it should be left unchanged. Similarly, if the ***`price`*** per item is negative, it should be left unchanged.

Write a test application named ***`InvoiceTest`*** that demonstrates class Invoice's capabilities.



Problem No. 4

What does the following application print?

```
1 // Ex. 5.25: Mystery2.cs
2 using System;
3
4 public class Mystery2
5 {
6    public static void Main( string[] args )
7    {
8       int count = 1;
9
10       while ( count <= 10 )
11       {
12         Console.WriteLine( count % 2 == 1 ? "****" : "++++++++" );
13          count++;
14       } // end while
15    } // end Main
16 } // end class Mystery2
```

Problem No. 5

Identify and correct the errors in each of the following pieces of code. [Note: There may be more than one error in each piece of code.]

a.

```
if ( age >= 65 );
   Console.WriteLine( "Age greater than or equal to 65" );
else
```

Console.WriteLine("Age is less than 65)";

b.

```
int x = 1, total;
while ( x <= 10 )
{
total += x;
++x;
}
```

c.

```
while ( x <= 100 )
   total += x;
   ++x;
```

d.

```
while ( y > 0 )
{
Console.WriteLine( y );
++y;
```