**LAB ASSIGNMENT #2**

**Due Date: Week 04 Marks/Weightage: 30/10%**

**Purpose:** The purpose of this Lab Assignment is to:

* Practice the use of instance data members, constructors, methods in Java classes and objects

**References:** Read the course’s text book **chapter 09 – Classes and Objects** and the lecture notes/ppts. This material provides the necessary information that you need to complete the exercises.

**Instructions**: Be sure to read the following general instructions carefully:

This lab should be completed individually by all the students. You will have to demonstrate your solution in a scheduled lab session and submitting the project **through drop box link on e-Centennial**.

You must name your solution according to the following rule:

**FirstName-LastName\_SectionNumber\_COMP123\_Labnumber**

For Example: **Joh-Smith\_Sec001\_COMP123\_Lab01**

Each exercise should be placed in a separate namespace named firstname-last-name\_*exercise1*, firstname-last-name\_*exercise2* etc.

Submit your assignment in a **zip file** that is named according to the following rule:

**FirstName-LastName\_SectionNumber\_COMP123\_Labnumber.zip**

Example: **Joh-Smith\_Sec001\_COMP123\_Lab01.zip** *(if your section is 001..)*

Apply the naming conventions for variables, methods, classes, and packages:

- *variable names* start with a *lowercase* character for the first word and uppercase for every other word

- *classes* start with an *uppercase* character of every word

- namespaces use only *lowercase* characters

- *methods* start with a *uppercase* character for the first word and uppercase for every other word

## Exercise #1: *[5 marks]*

## Write a C# application using VS 2017 as IDE, that implements the following class(es) as per business requirements mentioned below:

Create a **BasePlusCommissionEmployee** class (***BasePlusCommissionEmployee.cs***) that has the following instance variables:

* Employee ID, First name, last name, base salary, gross sales ( amount in dollars) and commission rate. Define their data types appropriately.
* Define only property getters for employee ID, first name, last name and base salary. Ensure the proper ( no negative and null values ) data values by implementing data validations.
* Use default value of 200.00 dollars for base salary for all the employees.
* Define property getter and setter for gross sales aHnd commission rate. Ensure the values for them should never be negative or zero.
* Commission rate should be between 0.1 and 1.0%. Set default value to 0.1.
* Class should have defined two overloaded constructors:
  + One for initializing all the instance data members
  + Second for initializing employee ID, first name, base salary only.
* Define a public method - **double earnings()** which calculates employee’s commission ( commission rate \* gross sales + base salary )
* Define a public method – **String toString()** which is used to display the object’s data

Create a test class – **BasePlusCommissionEmployeeTest** (***BasePlusCommissionEmployeeTest.cs***) which tests above class by at least creating two objects of the BasePlusCommissionEmployee class.

## Exercise #2: *[5 marks]*

## Write a C# application that implements the following class(es) as per business requirements mentioned below:

Create a **CheckingAccount** class (*CheckingAccount.cs*) that has the following instance variables:

* Account number , customer name, account balance
* Define only property getter for account number and customer name
* Define property getter and setter for account balance. Balance should be positive and minimum 50.00 dollars all the time.
* Class should have defined a constructor:
  + For initializing all the instance data members
* Define one public method - **double withdraw (double amount)** which is used for taking out money. With every withdrawal, there is transaction fee of 3.00 dollars.
* Define a public method – **String toString()** which is used to display the object’s data

Create a test class – **CheckingAccountTest** (*CheckingAccountTest.cs*) which tests above class by at least creating two objects of the CheckingAccount class with different set of data values.

**Evaluation:**

|  |  |
| --- | --- |
| **Functionality** |  |
| Correct implementation of classes (instance variable declarations, constructors, getter and setter methods etc.) | 70% |
| Correct implementation of driver classes (declaring and creating objects, calling their methods, interacting with user, displaying results) | 20% |
| Comments, correct naming of variables, methods, classes, etc. | 5% |
| **Friendly input/output** | 5% |
| **Total** | 100% |