**LAB 7**

**Problem 1**

Create a class called ***Date*** that includes three pieces of information as instance variables

1. Month (type int)

2. Day (type int)

3. Year (type int).

Your class should have the following methods:

- ***Constructor*** that initializes the three instance variables and assumes that the values provided are correct.

- Provide a ***set*** and a ***get*** method for each instance variable.

- Provide a method display Date that displays the month, day and year separated by forward slashes (/).

Write a test application named ***DateTest*** that demonstrates class Date's capabilities.

Solution: <http://www.javaproblems.com/2013/12/creating-date-class-in-java.html>

**Problem 2**

Create a class called ***Employee*** that includes three pieces of information as instance variables

1. First name (type String)

2. Last name (type String)

3. Monthly salary (double).

Your class should have the following methods:

-Constructor that initializes the three instance variables.

-Provide a ***set*** and a ***get*** method for each instance variable. If the monthly salary is not positive, set it to 0.0.

Write a test application named EmployeeTest that demonstrates class Employee's capabilities. Create two Employee objects and display each object's yearly salary. Then give each Employee a 10% raise and display each Employee's yearly salary again.

Solution: <http://www.javaproblems.com/2013/12/creating-employee-class-in-java.html>

**Problem 3**:

Write a class ***Student*** having the following instance variables:

1. firstName (String), lastName (String), age (int), IDNumber (int), gender (int 0 for male and 1 for female), firstGrate (Double), secondGrade and thirdGrade.

Your class should include getter methods for all instance variables, setter methods for the grades and the constructor should allow the user to specify all values (except for the grades since all the other information should not be modified) when creating an instance of the class.

Next, you should write a calculateAverage method that calculates the average of the student and returns the value. Your toString method should return the following String:

[First Name: ...] [Last Name: ...] [Age: ...] [ID: ...] [Gender: ...] [Grades: ..., ... and ...].

In your tester method (StudentTest), you will create 3 different Student objects then calculate the average of each and the overall average.

In addition, you should compute the number of males and the number of females as well as the average age.

The output should be as follows:

First Student: [First Name: ...] [Last Name: ...] [Age: ...] [ID: ...] [Gender: ...] [Grades: and....] [Average: ...]

- Second Student: [First Name: ...] [Last Name: ...] [Age: ...] [ID: ...] [Gender: ...] [Grades: ..., ... and ...] [Average: ...]

- Third Student: [First Name: ...] [Last Name: ...] [Age: ...] [ID: ...] [Gender: ...] [Grades: ..., ... and ...] [Average: ...]

- Overall Average: ...

- Average age: ...

Solution: <http://www.javaproblems.com/2013/12/creating-student-class-in-java.html>

**Problem 4**

Write a class (SimpleCalculator) having two instances variables firstNumber and secondNumber (Doubles) with their corresponding setters and getters. The constructor should enable the user to set the two values when creating an instance of the class. In addition, your class should include four other methods: toString, add, sub, and divide. The toString method should return the two numbers as string as follows: "[First Number is: ...] [Second Number is: ...]" (without the quotes and replacing the three dots with the actual values). Each of the remaining three methods performs the operation on the two instance variables and returns the corresponding result. You should write a separate class (SimpleCalculatorTester) to test your class. In the test class, you should ask the user to enter the numbers and use set methods to set their values. Then use the getters to make sure that their values are correctly set. The tester should also include all methods in your class at least once (add, sub and divide).

Solution: <http://www.javaproblems.com/2013/12/creating-simple-calculator-class-in-java.html>