Assignment 4

Object-Oriented Programming in Java

Due Date: March 11, 2003
Folder/Packagae Name: Assignment4XXXX
Points: 100

The purpose of this project is to create payroll systems to calculate weekly salary for part-time employee. There are at present 3 types of part time employees in the company namely programmers, sales men and office workers, and each of them have their own hourly rate which is used in the salary calculation. These employees can work for a minimum of 5 hours and a maximum duration of 80 hours. Out of this 40 hrs are the regular week hour and any hours above the regular 40 hrs and 80 hours is eligible for Overtime. The classes are created for the purpose of re-usability.

1. Create an abstract class called Employee. This class has the following variables, FName, LName, which are the first and last names respectively, Wage and OvertimeRate, which are doubles, and OverTimeHours, which is an integer value. Create a default constructor which sets initializes all variable. Also create an overloaded constructor, which takes fName and LName as the argument and sets the values. This class has to have set methods to set the variables and it also has the corresponding get methods. The abstract class should also have a method to check if the first name and last name input are valid i.e. they should be a string with length greater than zero.

2. Create a class PartTimeEmployee that extends the employee class. This has the following variables hourlyRate, MinHour, MaxHour, WeekHour, hoursWorked, and salary. Create the default constructor and an overloaded constructor, which accepts First name and last name as the arguments. Create a method checkRate, which checks to ensure that the category selected by the user is a valid category (1 is a programmer, 2 is the sales person etc). Create a method ConvertRate that chooses an hourly rate depending upon the worker category (Programmer 40$ per hr, Salesperson 30$ per hr, Office worker 15$ per hr). There should be a method checkHoursWorked that verifies if the hours worked is between the specified limits. The class has a method called computeWage, which calculates the salary/ wage. The salary /wage will be calculated as follows:

   If the number of hours worked <= Weekhour,
   Then salary equals to (the number of hours worked) * (hourlyRate)
If the number of hours worked > Weekhour,
   Then salary equals to (weekhour) * (hourlyRate) +
       (((the number of hours worked) – (Weekhour))*overTimeRate) \(^1\)

In addition, create set and get methods that would set the `hoursworked`, `OverTimehours`, and also the `hourlyrate`.

3. Create a class called `MyAppXXXX` (your last four digit student ID). This class has the main method. You create an instance of `PartTimeEmployee` in the main method and have the appropriate method calls in the main method to set the data in the object. Depending upon the value returned by the get methods, the main method pops out the appropriate message, i.e. the weekly salary for an employee.

NOTE:
- Provide adequate checks for data and messages regarding the unacceptability of data.
- Hand in your source code for all classes.
- Put the working project in your floppy diskette in Assignment4 folder.
- Please make sure your name is clearly shown on the floppy diskette.
- All variables in the classes should be of the appropriate scope.
- Make sure that you have the default constructors for all your classes explicitly defined.

Output may look similar to the ones below

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\(^1\) *The over time rate per hour is assumed to be $25.
Enter Last Name: Watson

What is your job?
1. Programmer
2. Sales
3. Office worker

Enter the number of hours you worked:

Weekly Salary for James Watson is $800.0