CST 8284

LAB 5 EXERCISE

Important Instructions

This lab exercise focuses on advancing and demonstrating your knowledge of **Polymorphism**. The due date for the lab is as stated on your Lab 5 page. Please pay attention to your professor for further information regarding due date or submission.

You have just been contacted by Stoneware Corporation, a large milling company in Edmonton and asked to develop a new payment system for their employees and consultants. Both the employees and consultants are referred to as millers.

Lab Description (Problem Scenario)

Stoneware Corporation is a multi million-dollar company that has hundreds of millers across Edmonton. A challenging fact with Stoneware Corporation's system is that the company does not compute the pay of every miller in the same way. The reason is that payments received depends on the category of the miller. Despite the fact that the millers' pay is not computed in the same way, every miller receives their pay on the same day bi-weekly.

As a student of CST8284, you have been requested to develop a payment system that takes care of each category of miller by ensuring that every miller is paid based on their category through the same payment system.

Stoneware Corporation requires that the category of the millers to be considered are:

1. Millers paid per hour – This category of millers are called **Consultants.** Note that the bi-weekly pay for this category of millers is calculated as the **product** of the hoursWorked and consultantWage.
   Your code should consider the fact also that whenever a consultant works for more than 76 hours bi-weekly, there is an overtime amount added to the pay.

2. Millers who are paid a particular amount despite the number of hours they have worked are referred to as **Employees.** Note that the bi-weekly pay for this category of workers is computed by dividing the annual pay of the employee by the number of bi-weeks per year (assume that the number of weeks in the year is 52 weeks).

3. Millers who are part of employees, but supervise other employees are called **Supervisors.** Apart from their pay, supervisors are also entitled to an additional bonus amount bi-weekly. Note that the bi-weekly pay for the **supervisor** is computed exactly as that of the **employees,** but with a bi-weekly bonus amount added to the supervisor.

In this lab, you are provided the following files:

- Stoneware Corporations' Class named **Millers.java**.
- Sample output to show what your output should look like.

You are required to (tasks towards grading):

1. Review the relationship between all the categories of millers as stated in the problem scenario.
2. Review the **Millers.java** and the sample output files provided. You will need to understand the code/output, any issues, and therefore should determine what to do subsequently (in the other classes as would be required).
3. Make a **sketch diagram** to show the relationship between all the classes as elaborated in the problem scenario to help your understanding. - 0.8%
4. **List** the additional classes that you are required to create (names only). 0.5%
5. Create the required additional classes by Stoneware Corporation using the empty code shells that have been provided for you. 1%
6. Create a driver class named **MillersTest** for this pay system. The driver class will contain your main method. In this class you must implement an **array** to capture the different categories of millers. Also, provide the possibility for **users** of this system to **enter** more millers. 1%
7. **Your output should show** that when executed, your program runs **polymorphically** and computes the pay for **each category of millers** in the system. Include output screen shots. 0.7%

Grading

The total mark for this lab is 4% of the total course grade. You are required to complete and submit this lab during the lab session period. Pay attention and comply with any other instructions provided by your lab section professor in this regard.