In-Class lab

A local company is a retail seller of personal computers. The sales staff works strictly on commission. At the end of the month each sales person's commission is calculated.

Create a class called CommissionSales to calculate the commission for the sales staff.

Declare these symbolic constants at the top of your class:

public static final double RATE\_A = 0.05

public static final double RATE\_B = 0.10

public static final double RATE\_C = 0.13

public static final double RATE\_D = 0.18

public static final double RATE\_E= 0.22

public static final int DIVISION\_FACTOR = 10000

Here are the relevant attributes:

* String salesPersonName
* int salesAmountInCAD
* double payInCad

Provide two constructors:

* The first constructor takes two parameters to initialize the fields name and sales amount. The String parameter can be used only it wasn’t null, if the passed parameter was null String throw an Illegal Argument Exception with proper error message. The sales amount should be positive and less or equal to 59999. If the passed parameter was not positive or out of the given range, throw an Illegal Argument Exception with proper error message.
* The second constructor initializes salesPersonName to “unknown”; the rest of the fields will get the default value depending on their data type.

Provide mutator methods as follows:

* The mutator method of salesAmountInCAD validates the passed parameter and uses it only if it was positive and less or equals to 59999. If the passed parameter was negative or greater than 59999 throw an IllegalArgumentException with proper error message.
* The mutator for salesPersonName validates the passed parameter and ensures it is not null. If the passed parameter was null an IllegalArgumentException will be thrown with the proper error message
* Provide standard accessor method for all fields.

* Provide a method called calculatePay() which calculates **and returns** the sales person's pay based on the amount of sales at the commission rate. The method signature is as follows:

# public double calculatePay()

This method will use a switch statement to decide which rate to be used to calculate the pay. The Expression of the switch statement will divide the sales amount by 10000. If the result was 1 then rate A will be used. If the result was 2 then rate B will be used and so on until 5. The switch statement will use the default case to print a message to state that the sales amount is either invalid or out of the acceptable range and assigns 0 to the pay amount if that was the case. The method then will multiply the rate by the amount of sales, assigns it to the field payInCAD and return the field. For example a sales person with $16000 in sales earns 5% commission of his or her sales which is $800.

Note that the cases should be from 0 to 5 in addition to the default case

Below is a table that explains the rates associated to the sales, use it as a guide line to calculate the pay.

Remember to create symbolic constants for all numbers

|  |  |  |
| --- | --- | --- |
| **Sales** | **Percentage** | **Rate** |
| 0 - 19999 | 5% | A |
| 20000-29999 | 10% | B |
| 30000-39999 | 13% | C |
| 40000-49999 | 18% | D |
| 50000-59999 | 22% | E |

Provide a method called displayDetails() . This method displays sales person's name, sales and pay amount on the screen.

Create a MathUitilites class. The goal of this class is to provide some commonly used mathematical operations.

Create a static method power. The method signature is

**public static int power(int base, int exponent )**

Using a while loop, the method will calculate and return the result of the first parameter raised to the power of the second parameter.

Demonstrate your completed project to your instructor or TA before leaving the lab and be sure we have checked it off. A suggested solution will be given during the next class and labs that have not been checked off will not receive any points.