ASSIGNMENT 5

Gift Shipping – Part 2

Due Date: Monday, 7th Nov., 11:59 PM PDT

You finally finished validating the sizes and weights of all gifts to be sent. Now, you want to compare different shipping services for each gift package. Assuming your local shipping agency currently provides two shipping services, "Regular" and "Express." "Regular" service starts at $5 for one pound and charges $0.6 for every additional pound added, but it takes 14 days to deliver. "Express" service, on the other hand, is much faster and usually takes 5 days. Express service starts at $10 for one pound and charges $1.1 for every additional pound added. Additionally, the express service also applies Dimensional Weight* pricing.

Requirements:

1. Create a class 'Service' that contains **private** data fields – days (int), weight (int, in lbs.), rate (double), packageName (String), totalPrice (double) and two member methods - 'comparePrice()' which returns the price difference of two different services given the same package and an **abstract** 'printInfo()' to print the output information.

2. Create two other separate classes- 'Regular' and 'Express' that inherit the properties of the Service class and have other **private** data fields as follows:

Regular.java:

1) startPrice (double)

Express.java:

1) startPrice (double)
2) length(int), width(int), height(int) (in inches)
3) DIMWeight(int, in lbs.)

Dimensional Weight is calculated by multiplying Length x Width x Height and dividing by 166, rounding to *the next integer*. If the DIM weight is greater than the actual package weight, the total price will be computed based on the DIM weight.

* Dimensional weight, also called DIM weight, is a pricing technique used for commercial freight transfer. It takes into account the length, width & height of the package that you are shipping.

3. All three classes should have corresponding constructors.

For both Regular and Express classes:

- totalPrice is the start price plus the rate times additional pounds after one pound
  e.g. if a Regular service package is weighted 5 lbs.,
  then shipping cost = $5 + 4*$0.5
- printInfo() needs to be overridden to print the information as shown in the output below

4. Create a last java class 'LastnameFirstnameA5' in the same package which contains the main method to initiate objects and call printInfo() method to print the output. Your should use *only* the printInfo() to generate the output.

5. Your output should be like the following test samples.

Sample Test Cases:

1. Prof. Ghiassi's package
   Weight: 22 lbs.
   Dimension of package: 10 x 10 x 10
2. Leavey's package
   Weight: 12 lbs.
   Dimension of package: 15 x 25 x 9

Output:

```
Prof. Ghiassi's package
Service: Regular
Delivery Speed: 14 days
Total Price: $17.60

Service: Express
Delivery Speed: 5 days
Total Price: $33.10
Express service costs $15.50 more than Regular service.
```

```
Leavey's package
Service: Regular
Delivery Speed: 14 days
Total Price: $11.60

Service: Express
Delivery Speed: 5 days
Total Price: $32.00
Express service costs $20.40 more than Regular service.

Program Completed
```

Note:

1. The program should always print '**Program Completed**' before exiting.
2. Check if your program works properly by giving different inputs.
3. Give comments to increase code readability.
4. Mention the sources used to complete the assignment.
5. **Object data field values are hard coded in the main method, no user input needed**.
6. Save the file as **Service**.java, **Regular**.jave, **Express**.java, and **LastnameFirstnameA5**.java.
7. Submit **.java file** only.