Delta College

CST 283
Programming Assignment 6

Winter 2023
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Objective

This program will provide an opportunity to solve a problem using class inheritance.

Overview & Instructions

Write a program that will summarize insurance claims for a patient/customer.

The goal of the program is to summarize as set of claims by calculating the amount the patient/customer must pay versus what is paid by the insurance company. Considering that there are three distinct types of claims, utilize inheritance differentiate between the claim types and calculation requirements. The following class definitions are suggested:

Class	Purpose	Data Members
`Claim`	Store information common to all claim types.	DateOfService, Cost, InsurancePayment, CustomerPayment
`MedicalClaim`	Manage information for a **medical** claim.	TypeOfService, InOrOutOfNetwork
`DentalClaim`	Manage information for a **dental** claim.	Procedure
`PrescriptionClaim`	Manage information for a **prescription** purchase claim.	MedicationName

Be sure to complete each class with the traditional components including constructor(s), set/get methods, and a `toString()` method.

A sample set of data are described below:

```
M 20210301 SU N 12500.00        Medical claim, surgery, in-network, $12,500.00 charge
M 20210301 HO O 5000.00         Medical claim, hospitalization, out-of-network, $5000.00 charge
D 20210519 E 300.00             Dental claim, dental exam, $300.00 charge
P 20210622 G_Fragxolol 29.99    Prescription claim, generic drug Fragxolol, $29.99 charge
P 20210622 Sacroruvax 79.99     Prescription claim, drug Sacroruvax, $79.99 charge
```

Note: All generic drugs will have the "**G_**" prefix associated with the claim. Be sure to remove this for the final reporting. The codes for medical and dental claims can be found within the respective files:

dentalProcedures.txt medicalCategories.txt

For all cost values, you must determine the amount that the insurance company will pay. The remaining difference is the responsibility of the patient/customer.

- For medical claims:
  - For hospital admittance and surgeries, the insurance will pay 95% of the charge for in-network and 75% for out-of-network.
  - For all other claims, insurance will pay 80% of the charge for in-network and 60% for out-of-network.
- For dental claims, insurance pays 95% for dental exams, but 80% for all other claims.
- For prescriptions, insurance pays all but $20.00 for non-generic drugs. For generic drugs, insurance pays 95%.

Considering the intended object oriented design, there will not be a need to work with an object of the superclass you create for all claims. Its purpose is to simply provide a means of definition common information and functionality for all types of claims. However, an array (or `ArrayList`) of **`Claim`** objects is strongly suggested considering that this enables management of objects of all of the subclass types.

Construct an ***abstract*** method **`processClaim()`** to be defined in the superclass and implemented respectively in all subclasses. The purpose of this method will be to calculate the amounts that the insurance company and customer/patient will pay based on the specifications above.

Build a simple JavaFX user interface as a front-end driver for this solution including a text area and necessary buttons. Include one button that will trigger a **`FileChooser`** action to access the input data file that will drive the processing. This file will be a larger set of claims and will be house on the user's machine. The chooser should access the file and initiate loading it into an array of **`Claim`** objects.

The file to use is: insuranceclaims.txt

The general behavior then of your solution will be to:

1. Select the input file of claims
2. Read the file of claims, interpret each type of claim, instantiate the appropriate object, and store in an array of **`Claim`** objects.
3. Traverse the array of claims and calculate the insurance cost and customer/patient cost for each claim (by invoking **`processClaim()`** method for each element in the **`Claim`** array). Accumulate the costs for totals.
4. Write a summary report in the text area that includes:
    - Claim information sorted by date (items with same date can be arbitrarily ordered).
    - Summary line for each claim and the break down of costs insurance versus customer/patient.
    - Totals for insurance costs and customer/patient cost at end.

Deliverables

Deliver the following to the online course management system **Assignment** dropbox:

- **Upload** your **source code** (.java) file(s). Multiple file submissions preferably zipped.

Notice

This is an individual assignment. You must complete this assignment on your own. You may not discuss your work in detail with anyone except the instructor. You may not acquire from any source (e.g., another student or an internet site), a partial or complete solution to a problem or project that has been assigned. You may not show another student your solution to an assignment. You may not have another person (current student, former student, tutor, friend, anyone) "walk you through" how to solve the assignment.
