Midterm Exam

July 31, 2020

`Person` and `Client` and `RegularClient` Classes

1. (2pts) Design a class named `Person` with fields for holding a person's name, address, and telephone number. Write one or more constructors and the appropriate mutator and accessor methods for the class's fields.

2. (2pts) Next, design a class named `Client`, which extends the `Person` class. The `Client` class should have a field for a customer number, and a boolean field indicating whether the customer wishes to be on a mailing list. Write one or more constructors and the appropriate mutator and accessor methods for the class's fields.

3. (2pts) Next, design a class named `RegularClient`, which extends the `Client` class. The `RegularClient` class should have fields for friends (`RegularClient`), the amount of the customer's purchases and the customer's discount level. Write one or more constructors and the appropriate mutator and accessor methods for the class's fields. A retail store has a promotion plan where customers can earn discounts on all their purchases. The amount of a customer's discount is determined by the amount of the customer's cumulative purchases in the store as follows:
   - When a customer spends $500, if he or she is gets a 5 percent discount on all future purchases.
   - When a preferred customer spends $1,000, he or she gets a 6 percent discount on all future purchases.
   - When a preferred customer spends $1,500, he or she gets a 7 percent discount on all future purchases.
   - When a preferred customer spends $2,000 or more, he or she gets a 10 percent discount on all future purchases.
   - When a friend spends $2,500 or more,
     - he or she gets a 15 percent discount on all future purchases.
     - his or her friends can gets 1 percent discount on all future purchases.

4. (2pts) Draw UML class diagrams

5. (2pts) Create 3 `RegularClient` objects: *Nga*, *Khang* and *Thai*

- *Nga, Khang* and *Thai* are friends
- Nga purchased 4 times ($800, $800 and $1600)
- Khang purchased 4 times ($950, $950 and $2200)
- Thai purchased 4 times ($950, $850 and $2400)
- Compute the total money they had paid.