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COE528 Final Project Report

Description of UML Use-Case Diagram:

This use-case diagram has 2 actors which are the manager, and the customer. Both of the actors can login which includes password authentication, and logout. The managers can add or delete customers which extend from their option to manage customers, and the customer can withdraw/deposit from their balance which extends from checking their balance.

Description of UML Class Diagrams:

The Manager class has an aggregation relationship with the abstract customer class. It uses the customer class' data to execute methods, and can also create new customers as well as delete existing customers. With reference to the generic structure of the State design pattern this would be the Context class, and it is responsible for switching the concrete states of the State class.

The Customer class is an abstract class which represents the State class in the generic structure of the State design pattern. It contains abstract methods for the concrete customer states to override.

The SilverCustomer class extends the Customer class, and is one of the concrete states of this State design pattern. It has three instance variables which are the username, password, and the balance. This class' methods override the methods in the Customer class. The purchase(int price) method subtracts the price of the purchase from the balance as well as a 20 dollar fee for being Silver. This concrete state is obtained when the balance is under 10, 000.

The GoldCustomer class extends the Customer class, and is the second concrete state of this State design pattern. It has the same instance variables as the Silver class, and it also overrides the methods in the Customer class. The purchase(int price) method subtracts the price of the purchase from the balance as well as a 10 dollar fee for being Gold. This concrete state is obtained when the balance is between 10, 000 and 20, 000.

The PlatinumCustomer class extends the Customer class, and is the third concrete state of this State design pattern. It has the same instance variables as the Gold and Silver classes. It also overrides the methods in the Customer class. The purchase(int price) method does not have any additional fees because this is Platinum level. This concrete state is obtained when the balance is over 20, 000.

The GUI class is composed of the Manager, and is responsible for providing the Graphical User Interface for the banking application. First users must login, and depending on whether the user is a manager or customer, the GUI will show the user the manager or customer options.

Class selected to address Point 2:

The class selected to address point 2 was the SilverCustomer class. The repOk function returns false if the username or password is null, or if the balance is less than 10, 000. The toString function returns the customer's username, password, and balance that is under 10, 000.