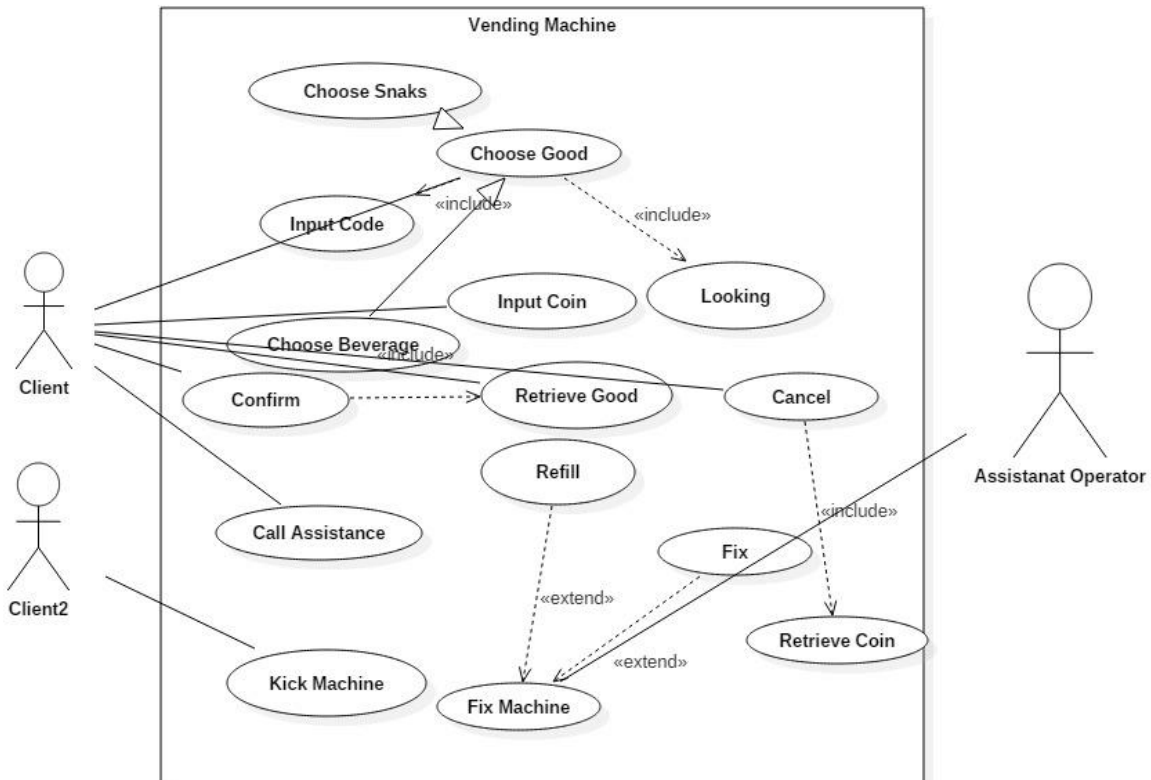


Q1: Draw Use Case diagram 10 Marks Propose a use case diagram for a vending machine that sells beverages and snacks. Make use of inclusion and extension associations and remember that a vending machine may need technical assistance from time to time.

Solution:



Q2: Draw Sequence Diagram 10 Marks Model a scenario of the Withdraw Money use case of a Bank ATM system. The user is able to make withdrawal of money. The system employs a standard procedure of validating the card and account holder's password.

Solution:

Main Objects:

- User / Customer / Cardholder
- ATM System

Ideal Main Flow of Events:

- Customer arrives at the ATM machine and inserts a bank card.
- The system requests for user authentication (request PIN number).
- Customer inserts PIN number.
- System prompts user to select services.
- Customer request withdrawal of money.
- System prompts the amount of withdrawal.
- Customer enters withdrawal amount.
- System displays success of request message, ejects card and dispense money.
- User collects card and money

Input and Responses:

Actor System Response

System prompts user to enter PIN

System prompts user to select service

System prompts user to enter withdrawal Amount

System displays successful withdrawal

Message cards and money

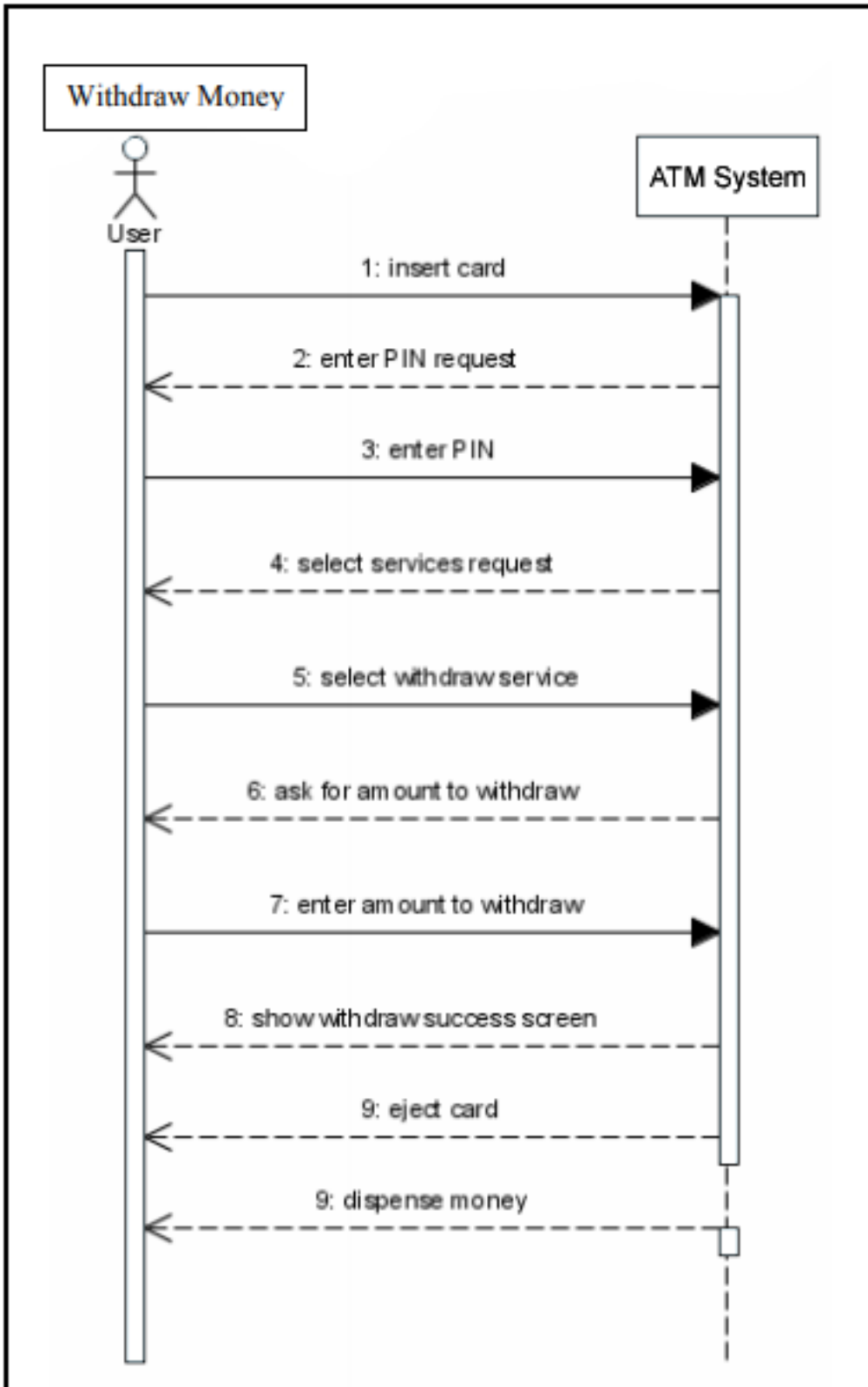
User inserts card

User inserts PIN

User request withdraw money

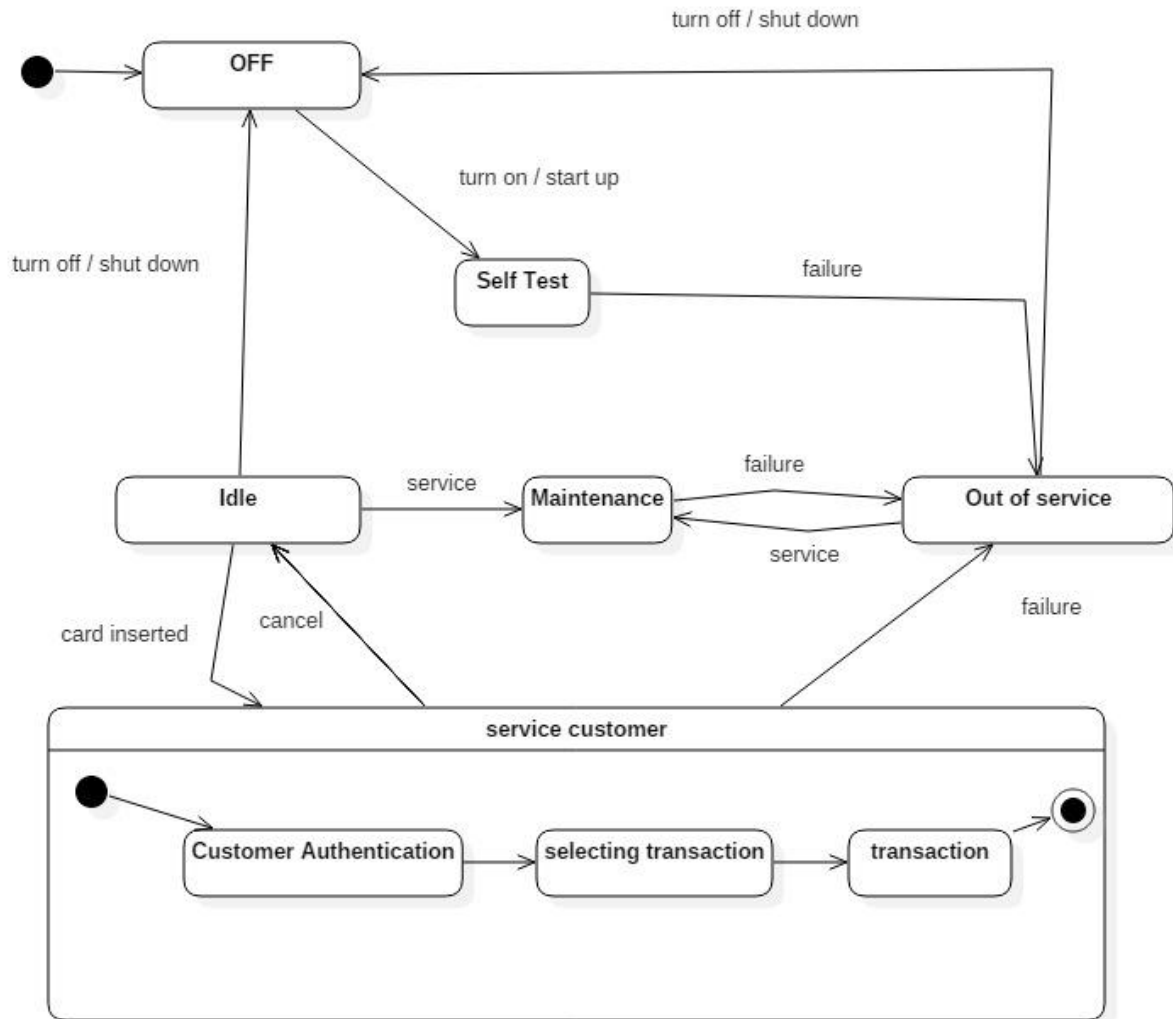
User enter withdrawal amount

User collects card and money



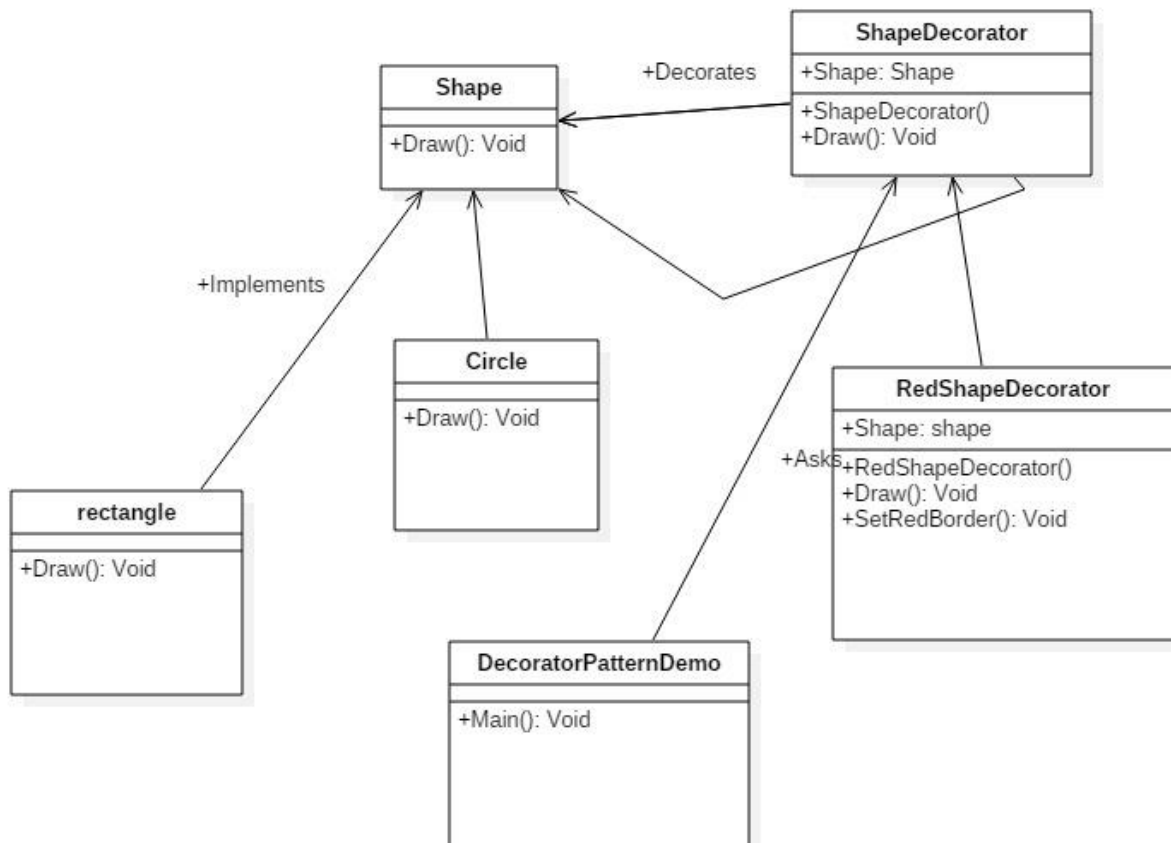
Q3: Draw State chart diagram 10 Marks ATM is initially turned off. After the power is turned on, ATM performs startup action and enters Self Test state. If the test fails, ATM goes into Out of Service state, otherwise transition to the Idle state. In this state ATM waits for customer interaction. The ATM state changes from Idle to Serving Customer when the customer inserts banking or credit card in the ATM's card reader. On entering the Serving Customer state that is composed of basic ATM functions i.e authentication, money withdrawal etc

Solution:



Q4: Draw Class Diagram 10 Marks Illustrate Class diagram for ATM Machine. The various Classes involved in the system are: Bank, Account, Customer Info, Debit Card, Current Account, Saving Account, ATM Info, ATM Transaction, Withdraw Transaction, Change Pin, Transfer Money, Check Balance. The Bank maintains personal and ATM information of each customer. The customer can access their account using Debit Card issued by the Bank. In this system there could be two types of Account: Current Account and Saving Account. Both use to share many of the properties and methods. The ATM Machine can perform multiple transactions such as Withdrawing cash, change pin, check balance and Transfer Money to each account.

Solution:



Q5: Design Pattern 10 Marks Suppose we have the following java files. Identify the pattern also Considering the java files draw class diagram?

Solution: class diagram:

