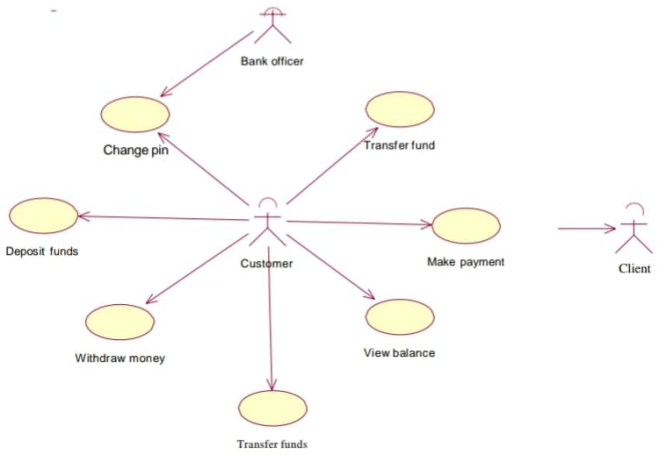
Experiments

1.Imagine you are tasked with developing a comprehensive UML diagram for an Automated Teller Machine (ATM) application. The ATM system should support basic banking transactions such as cash withdrawals, balance inquiries, and fund transfers

ATM Scenario Use Case Diagram:



Use Case Diagram for ATM System:

Actors:

- **Customer:** Interacts with the ATM to perform transactions.
- **Bank:** Manages the ATM system.

Use Cases:

1. **Withdraw Cash:**
   - **Actor:** Customer
   - **Description:** The customer inserts their bank card, enters the PIN, selects the withdrawal option, specifies the amount, and receives the cash.

2. **Deposit Cash:**
   - **Actor:** Customer
   - **Description:** The customer inserts their bank card, enters the PIN, selects the deposit option, inserts cash or checks, and confirms the transaction.

3. **Check Balance:**

- **Actor:** Customer
- **Description:** The customer inserts their bank card, enters the PIN, selects the balance inquiry option, and receives information about their account balance.

4. **Transfer Money:**
   - **Actor:** Customer
   - **Description:** The customer inserts their bank card, enters the PIN, selects the transfer option, specifies the recipient and amount, and confirms the transfer.

5. **Change PIN:**
   - **Actor:** Customer
   - **Description:** The customer inserts their bank card, enters the current PIN, selects the change PIN option, enters a new PIN, and confirms the change.

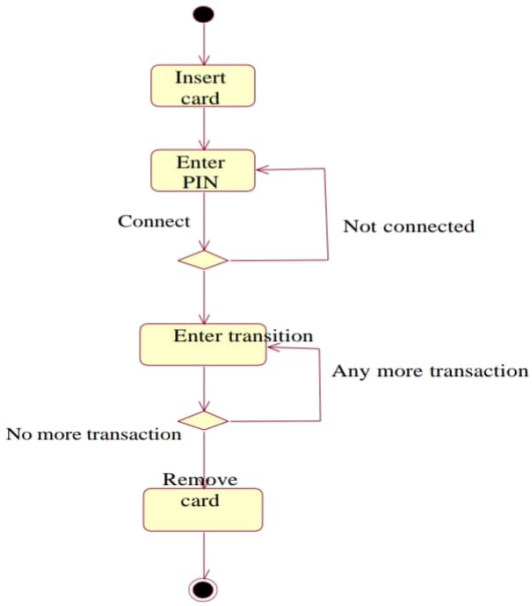
6. **ATM Maintenance:**
   - **Actor:** Bank
   - **Description:** The bank initiates maintenance activities on the ATM, such as refilling cash, updating software, or fixing hardware issues.

7. **Relationships:**

- **Includes Relationship:**
  - Withdraw Cash includes Check Balance (customer needs to check balance before withdrawing).
  - Transfer Money includes Check Balance (customer needs to check balance before transferring).
- **Extends Relationship:**
  - Deposit Cash extends Withdraw Cash (depositing is an extension of the withdrawal process).

This use case diagram provides a high-level overview of the interactions between actors and the ATM system. Note that this is a simplified representation, and additional details, such as preconditions, postconditions, and exceptions, could be added for a more comprehensive understanding.

ATM Scenario Activity Diagram:



Activity Diagram for ATM System:

An activity diagram models the workflow or activities involved in a particular process. Below is a simplified activity diagram for an ATM system:

Activities:

1. Start: Initial point of the activity diagram.

2. Customer Inserts Card: The process begins when the customer inserts their bank card into the ATM.

3. System Verifies Card: The ATM system verifies the inserted card, checking its validity.

4. Customer Enters PIN: The customer enters their Personal Identification Number (PIN).

5. System Verifies PIN: The ATM system verifies the entered PIN with the one stored in the system.

6. Menu Display: Once the card and PIN are verified, the ATM displays a menu with options such as Withdraw Cash, Deposit, Check Balance, Transfer Money, Change PIN, etc.

7. Customer Selects Transaction: The customer selects a transaction from the displayed menu.

8. Perform Transaction: Depending on the selected transaction, the system performs the necessary actions (e.g., dispensing cash, processing a deposit, checking balance, etc.).

9. Additional Transaction?

- **(Decision):** After completing the selected transaction, the system checks if the customer wants to perform another transaction.
- **If Yes:** The process loops back to the "Menu Display" step.
- **If No:** The process proceeds to the "End" activity.

10. End: Final point of the activity diagram.

Swim lanes:

- **Customer:** Activities performed by the customer, such as inserting the card, entering the PIN, and selecting a transaction.
- **ATM System:** Activities performed by the ATM system, including card verification, PIN verification, transaction processing, and menu display.
- **Arrows and Control Flow:** Arrows indicate the flow of control between activities.

Decision points are represented by diamond shapes, with outgoing arrows labelled with the conditions (e.g., Yes or No).

Notes:

- The activity diagram illustrates the sequence of actions in an ATM transaction from the customer's perspective.
- It assumes a successful verification process; error handling and exceptions can be added for a more detailed diagram.

This activity diagram provides a visual representation of the steps involved in a typical ATM transaction, making it easier to understand the flow of activities in the system.