Lab-6 Report

Modeling Class Diagram and Activity Diagram (Point of Sale System):

Rutvik Vegad

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- Develop Use Case Textual Description for "Process Sale" and "Handle Return" use cases.

➔ **For Process Sale :**

Use Case: Process Sale

Actors:

- Cashier
- Inventory System
- Catalog System
- Payment Processor

Preconditions:

- The cashier is logged into the POS system.
- The POS system is connected to the backend catalog system and inventory system.

Main Flow:

1. The cashier initiates a new sale transaction in the POS system.
2. For each item:
    1. The cashier scans the item's barcode.
    2. The system retrieves the item's name and price from the catalog system.
    3. The system updates the inventory by reducing the stock amount.
    4. The system adds the item to the current transaction.
3. The system calculates the total amount.
4. If the customer has a gift coupon:
    1. The cashier applies the coupon to the transaction.
    2. The system recalculates the total amount after applying the discount.
5. The cashier informs the customer of the total amount due.
6. The customer chooses a payment method (cash, credit card, or check).
7. The cashier processes the payment.
8. The system confirms the payment is successful through the payment processor.
9. The system generates and prints a receipt for the customer.
10. The system finalizes the sale transaction.

Extensions:

- **Payment Failure**:
  If the payment fails, the system prompts the cashier to retry the payment or cancel the transaction.

- **Invalid Barcode**:
  If an invalid barcode is scanned, the system prompts the cashier to rescan the item.

Postconditions:

1. The sale transaction is recorded in the system.
2. The inventory is updated to reflect the sale.
3. A receipt is printed for the customer.

➔ **For Handle return :-**

Use Case: Handle Return

Actors:

- Cashier
- Inventory System

Preconditions:

- The cashier is logged into the POS system.
- The customer has the item(s) to be returned along with the original receipt.

Main Flow:

1. The cashier initiates a return transaction in the POS system.
2. The cashier scans or manually enters the receipt information.
3. The system retrieves the original sale transaction.
4. For each item to be returned:
    1. The cashier scans the item's barcode.
    2. The system verifies the item against the original transaction.
    3. The system updates the inventory by increasing the stock amount.
    4. The system adds the item to the current return transaction.
    5. The system calculates the total refund amount.
5. The cashier confirms the return with the customer.
6. The system processes the refund using the original payment method.
7. The system generates and prints a return receipt.
8. The system finalizes the return transaction.

Extensions:

- **Product Not Found**:
  If the product is not found in the original sale record, the system prompts the cashier to check the receipt and confirm the details.
- **Refund Exceeds Limit**:
  If the refund amount exceeds a predefined limit, the system escalates the transaction to the administrator for approval.

Postconditions:

- The return transaction is recorded in the system.
- The inventory is updated to reflect the returned items.
- A return receipt is printed for the customer.
- The customer receives the refund through the original payment method.

- Identify Entity/Boundary Control Objects

Entity Objects

1. **Product**
   - **Attributes:**
     - **Name:** The name of the product.
     - **Price:** The price of the product.
     - **Stock:** The quantity of the product available in inventory.
2. **Sale**
   - **Attributes:**
     - **Products Sold:** A list of products included in the transaction.
     - **Total Price:** The total amount charged for the sale.
3. **Return**
   - **Attributes:**
     - **Refunded Amount:** The amount refunded to the customer for the returned product.
     - **Restocked Products:** A list of products that are restocked in inventory after the return.

Boundary Objects

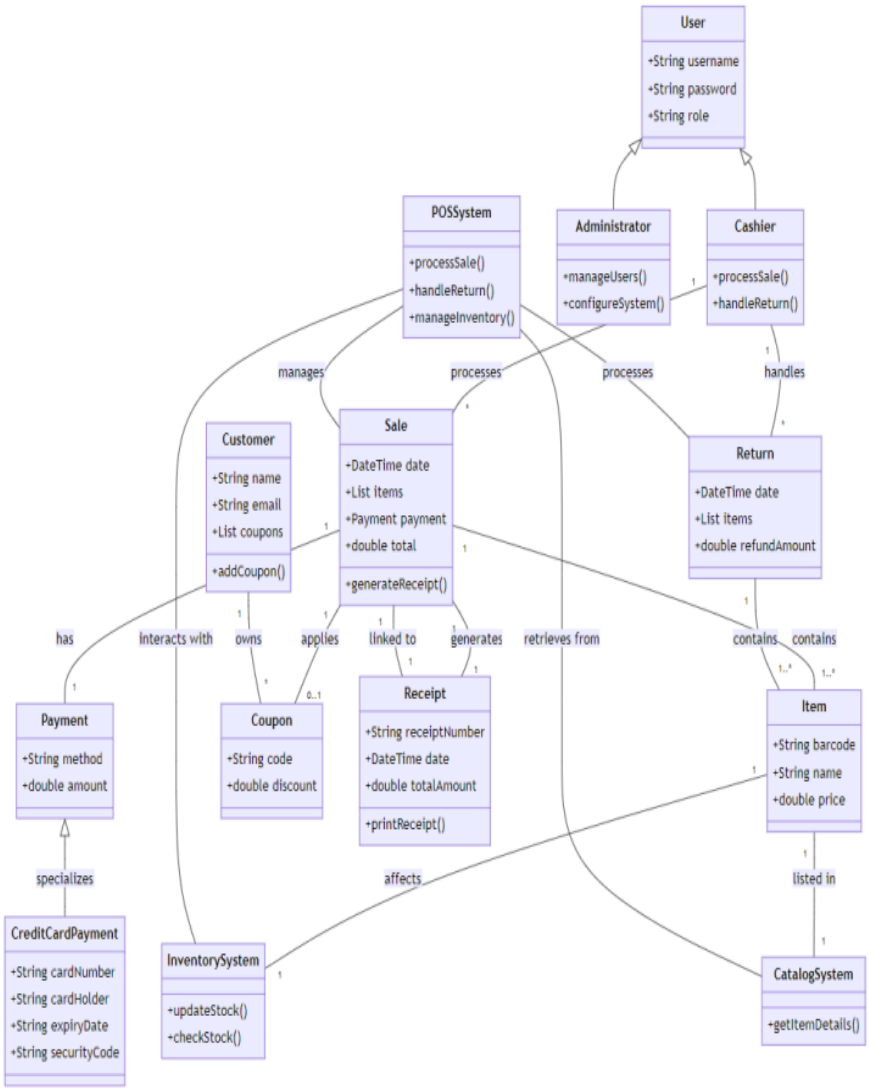
1. **POS Terminal**
   - **Description:** The interface used by the cashier to process sales and returns.

2. **Receipt**
    - **Description:** The printed document generated after a sale or return, detailing the transaction.
3. **Payment Interface**
    - **Description:** Manages customer payments, supporting various methods such as cash, credit card, or check.

Control Objects

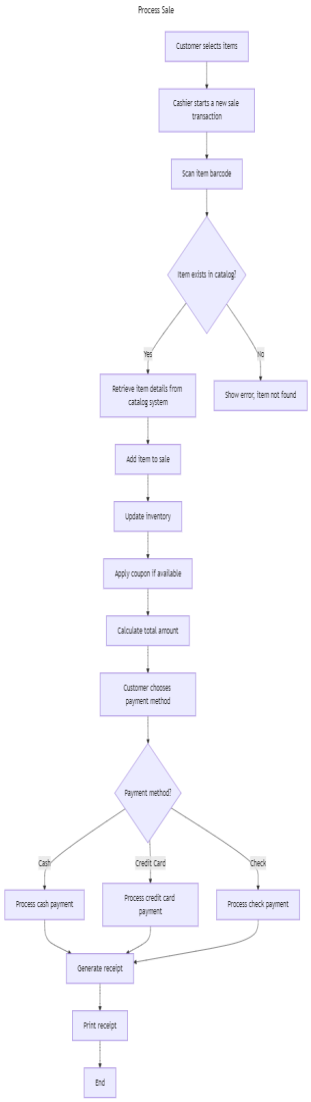
1. **Sale Controller**
    - **Responsibilities:**
        - Manages the sale process.
        - Updates inventory based on completed transactions.
        - Communicates with payment systems to process payments.
2. **Return Controller**
    - **Responsibilities:**
        - Manages product return processes.
        - Updates stock levels after returns.
        - Handles refund transactions.

- Develop Analysis Domain Models

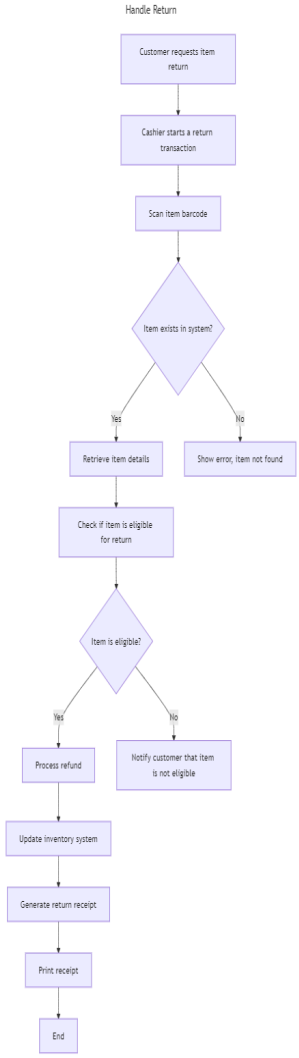


- Develop activity diagram for "Process Sale" and "Handle Return" use cases.

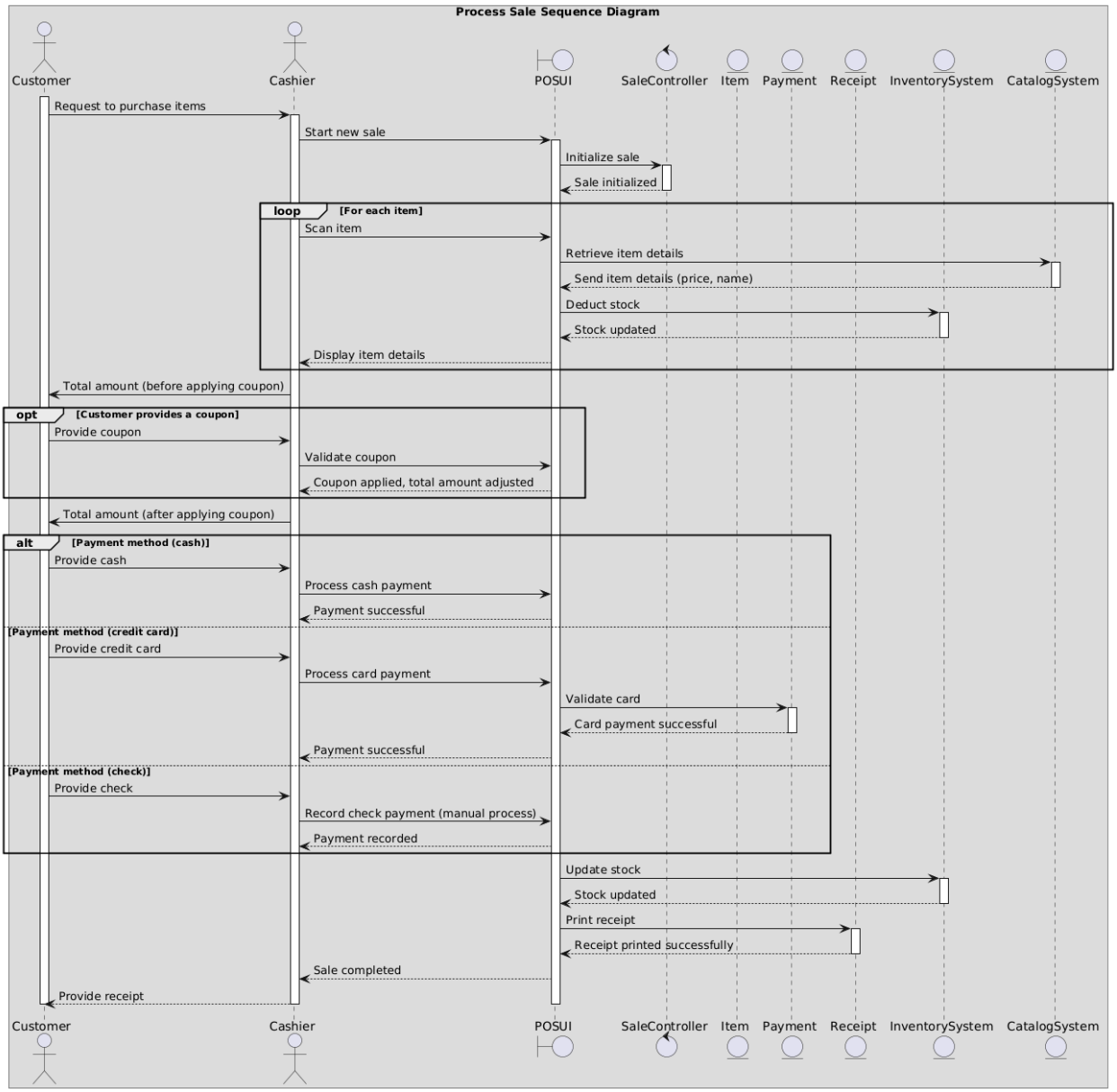
1. **For Process Sale :**



2. **For Handle Return :**



- Develop Sequence Diagrams.
    1. **For Process Sale :**



2. **For Handle Return :**