IT-314 : Software Engineering

LAB - 6

Name : Om Patel
ID : 202201138

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

1. Process Sale

- **Primary Actor:** Cashier
- **Precondition:** The cashier is logged into the POS system.
- **Main Success Scenario:**
    1. The cashier scans the barcode of items being purchased.
    2. The POS system retrieves item details (name, price) from the Catalog System.
    3. The POS system calculates the total price of the items.
    4. The customer chooses a payment method (cash or credit card).
        - If cash, the cashier inputs the amount received, and the system calculates and displays the change.
        - If credit card, the customer's card is swiped and payment is processed.
    5. The payment is successfully processed, and the Inventory System updates the stock of purchased items.
    6. A receipt is printed.

- **Postcondition:** The sale is completed, and stock is updated in the system.
- **Extensions:**
    - If the customer uses a gift coupon, the system deducts the coupon value from the total price.
    - If the payment fails (credit card declined), the system prompts the cashier to retry or choose another payment method.

1. Handle Return

- **Primary Actor:** Cashier
- **Precondition:** The cashier is logged into the POS system, and the customer presents the receipt for the return.
- **Main Success Scenario:**
    1. The cashier scans the item being returned.
    2. The system checks the original sale in the database using the receipt information.

3. The system validates that the item can be returned based on the return policy.
4. The system calculates the refund amount.
   - If the original purchase was made by cash, the refund is issued in cash.
   - If the original purchase was made by credit card, the refund is issued back to the credit card.
5. The **Inventory System** updates stock levels for the returned item.
6. A return receipt is printed.

- **Postcondition:** The item is successfully returned, and stock is updated.
- **Extensions:**
  - If the receipt is missing or damaged, the system allows a search by date or transaction ID.
 - If the item is not eligible for return, the system notifies the cashier.

❖ Identifying Entity, Boundary, and Control Objects

- **Entity Objects** (represent real-world business objects and data):
  - **Sale**
  - **Item**
  - **Payment**
  - **Customer**
  - **Receipt**
  - **Return**
  - **Gift Coupon**
- **Boundary Objects** (interface between actors and the system):
  - **Cashier Interface**
  - **Payment Gateway Interface**
  - **Catalog System Interface**
  - **Inventory System Interface**
- **Control Objects** (manage workflows of the use cases):

○ **SaleController** (handles the logic for processing sales)
○ **ReturnController** (manages the return process)
○ **PaymentController** (handles different payment methods)
○ **CouponController** (manages applying coupons)
○ **StockController** (communicates with the Inventory System)

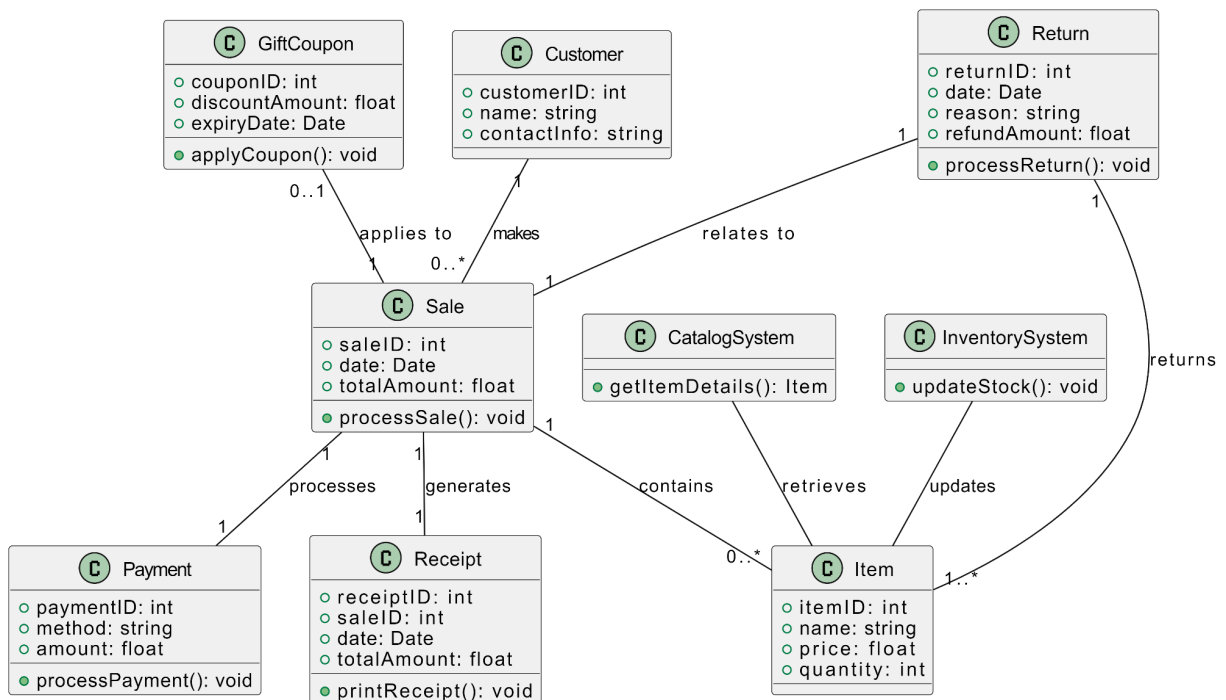❖　**Develop Sequence Diagrams**

1. Process Sale Sequence Diagram
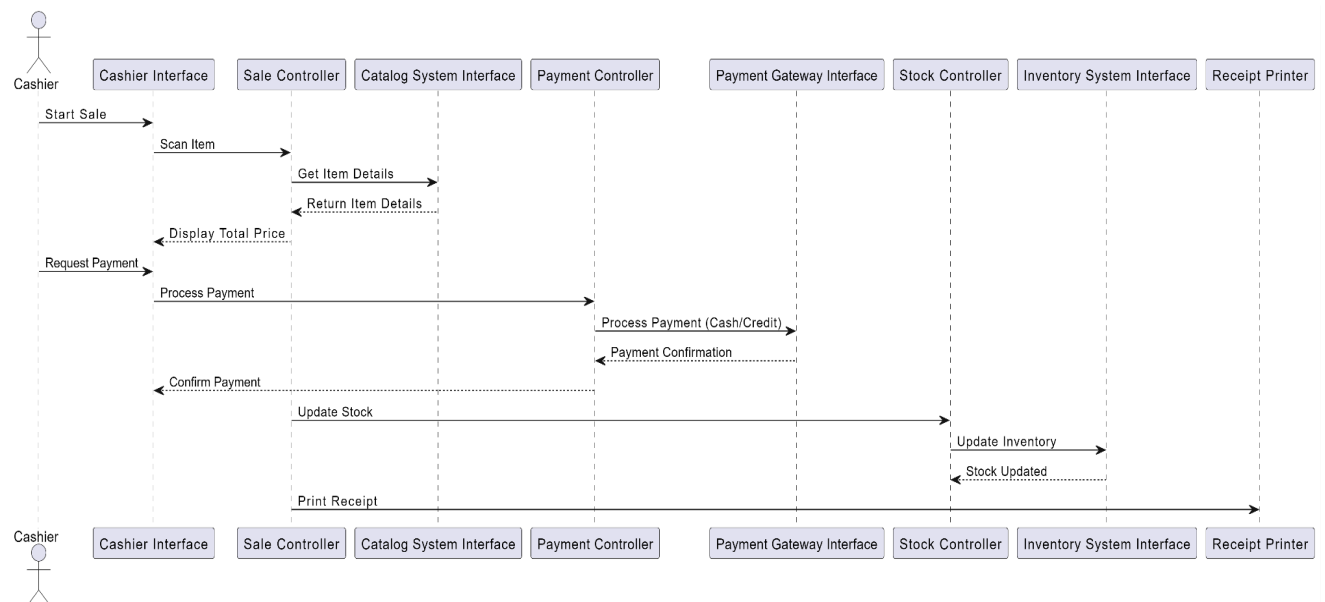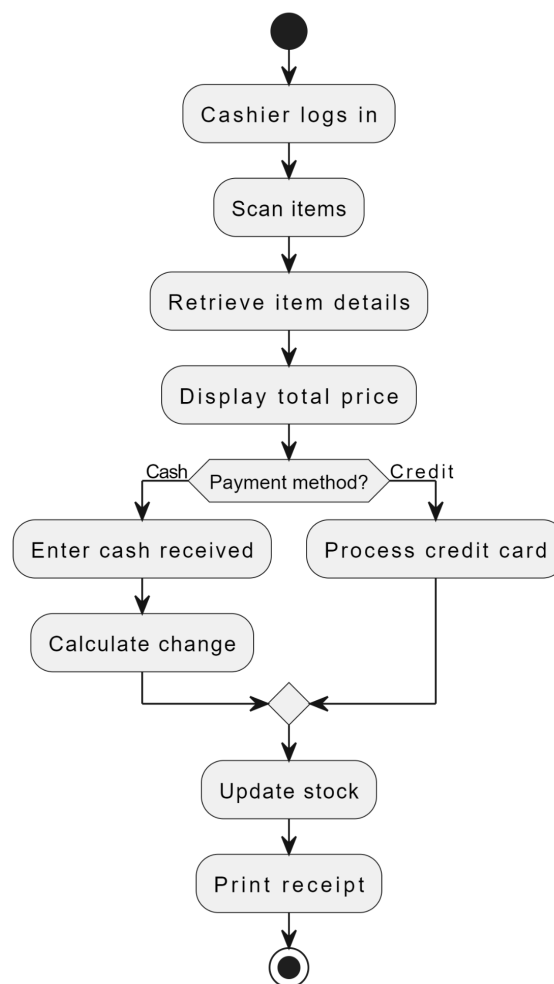
2. Handle Return Sequence Diagram
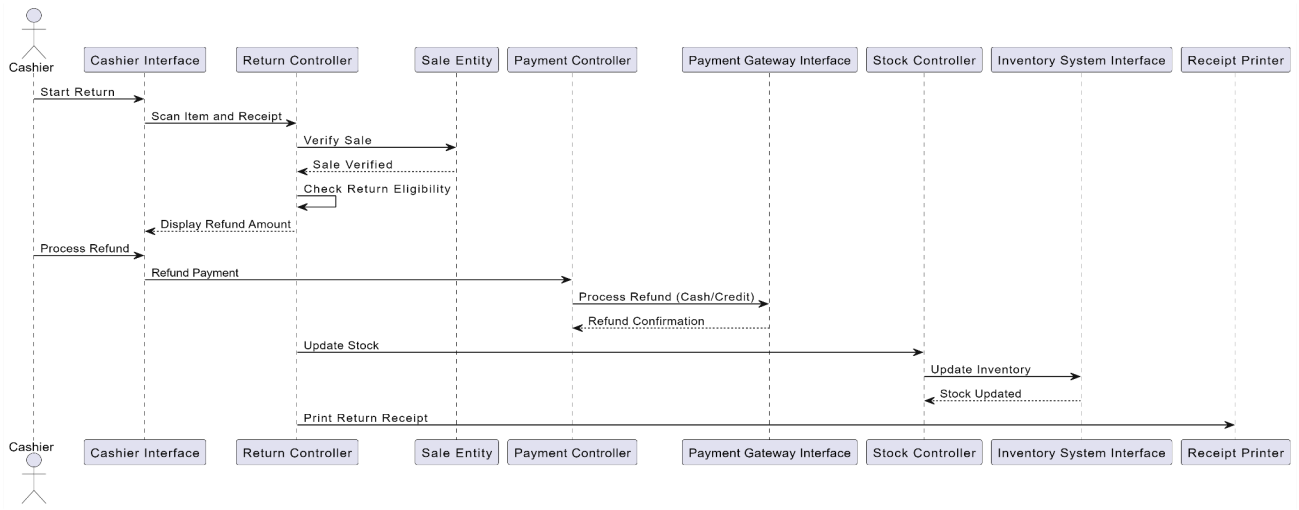
❖ Analysis Domain Model (Class Diagram)

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

1. Process Sale Activity Diagram

2. Handle Return Activity Diagram