

IT314 : Software Engineering

Lab 6 : Modeling Class Diagram and Activity Diagram (Point of Sale System)

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

1. Process Sale

- **Use Case Name:** Process Sale
- **Primary Actor:** Cashier
- **Precondition:** The cashier is logged into the POS system and ready to process a sale.
- **Trigger:** A customer wants to buy a product.
- **Main Flow:**
 1. The cashier initiates a new sale transaction for the new customer.
 2. The cashier scans the barcode of each item/product.
 3. The system retrieves the name and price of each item from the Catalog System.
 4. The system updates the stock amount in the Inventory System.
 5. The cashier completes item scanning and proceeds to payment.
 6. Discounts get applied if customers provide a discount coupon.
 7. Final price displays on the monitor to pay.
 8. The customer chooses a payment method (cash, credit card, or check).
 9. The system processes the payment.
 10. The system prints a receipt for the customer.
- **Postcondition:** The sale is recorded, inventory is updated, and a receipt is printed.
- **Extensions:**
 - 4a. If an item is out of stock, an error message is displayed.

- 9a. If the payment method fails, the customer is prompted to select a different method.

2. Handle Return

- **Use Case Name:** Handle Return
- **Primary Actor:** Cashier
- **Precondition:**
 - The cashier is logged into the POS system.
 - Customer should have proof of purchase
- **Trigger:** A customer wants to return a previously purchased item.
- **Main Flow:**
 1. The cashier initiates a return transaction for a customer.
 2. The customer provides the original receipt or transaction ID of that item.
 3. The cashier verifies the item details.
 4. The system retrieves the original transaction and updates the stock in the Inventory System.
 5. The cashier completes the return and issues a refund.
 6. The system prints a return receipt for the customer.
- **Postcondition:** The item is returned, inventory is updated, and a return receipt is printed.
- **Extensions:**
 - 3a. If the item is not found in the system, the cashier cannot process the return.
 - 5a. If the refund fails, the cashier is prompted to retry or offer store credit.

❖ Identify Entity/Boundary Control Objects

➤ **Entity Objects:**

- Product
- User (Cashier/Admin)
- Customer
- Payment
- Coupon/Discount
- Receipt

➤ **Boundary Objects:**

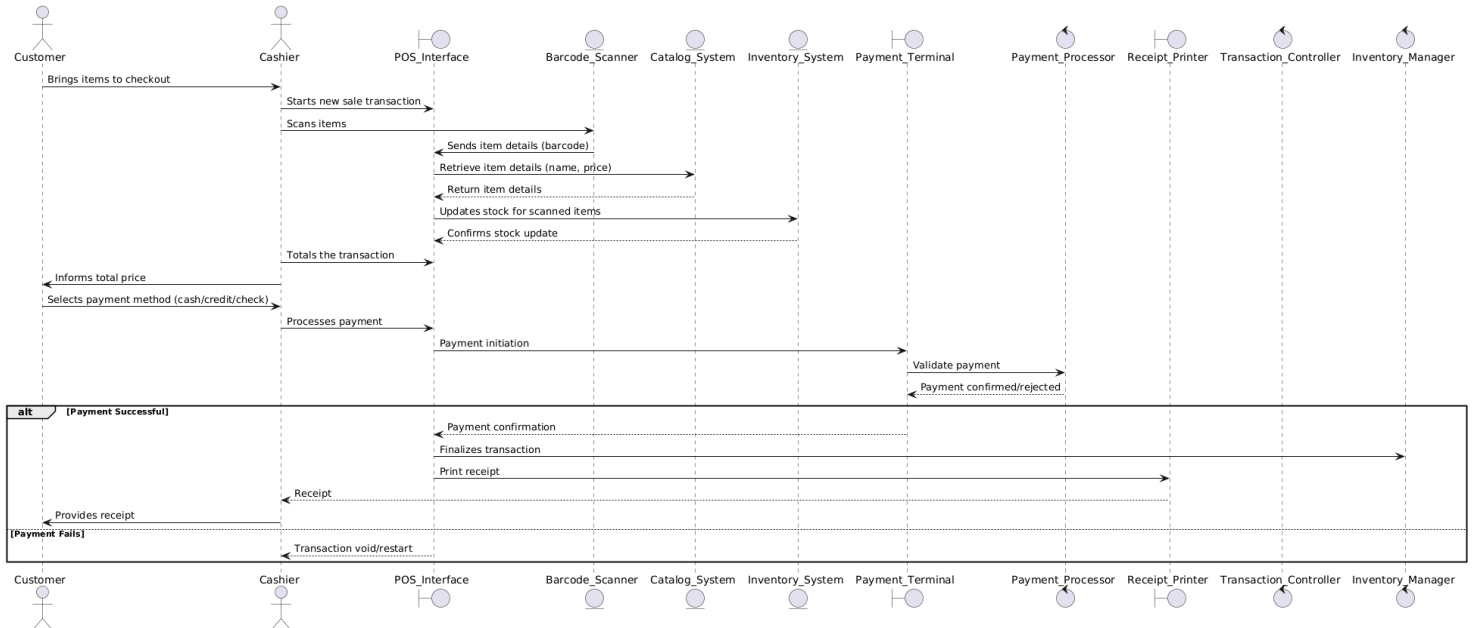
- Login Screen
- Barcode Scanner
- Inventory System Interface
- Catalog System Interface
- Payment Gateway Interface
- Receipt Printer Interface

➤ **Control Objects:**

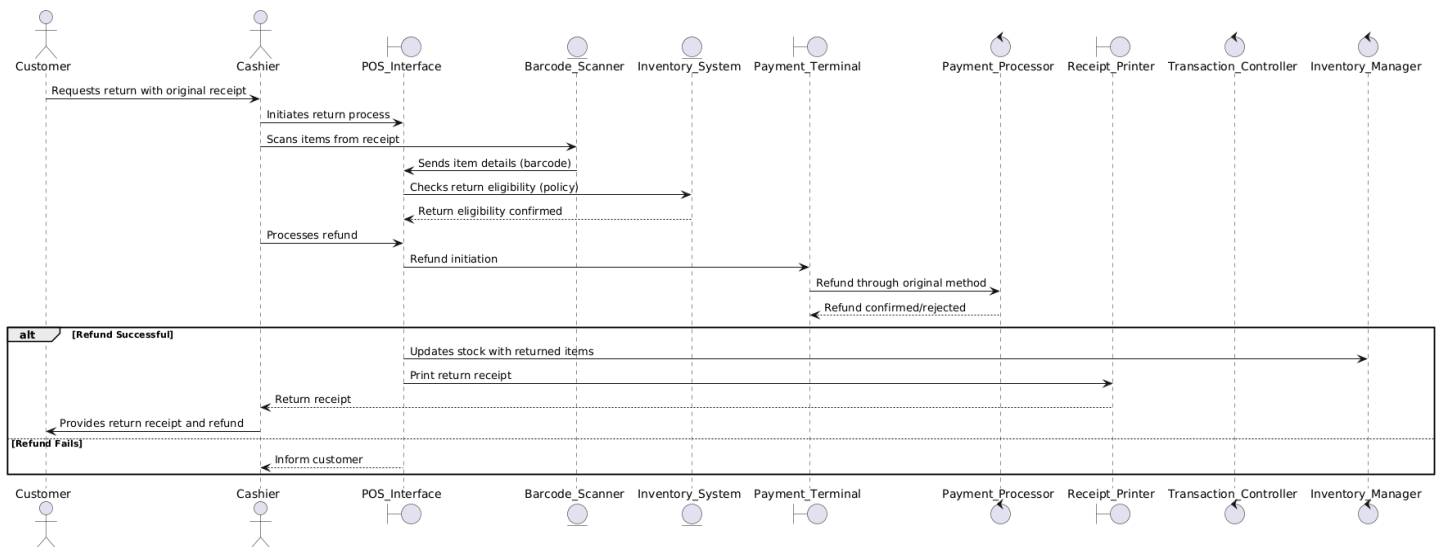
- Payment Controller
- Transaction Controller
- Inventory Controller
- Receipt Controller

❖ Develop Sequence Diagrams

1. Process Sales :

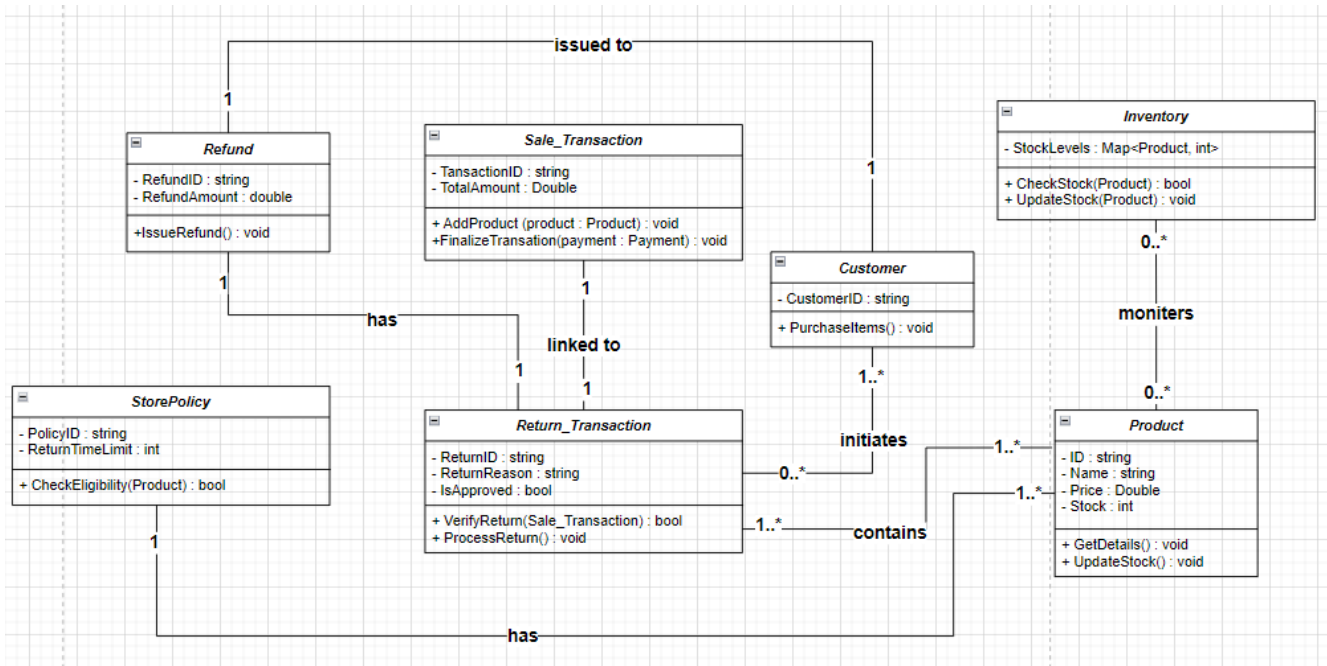


2. Handle Return :

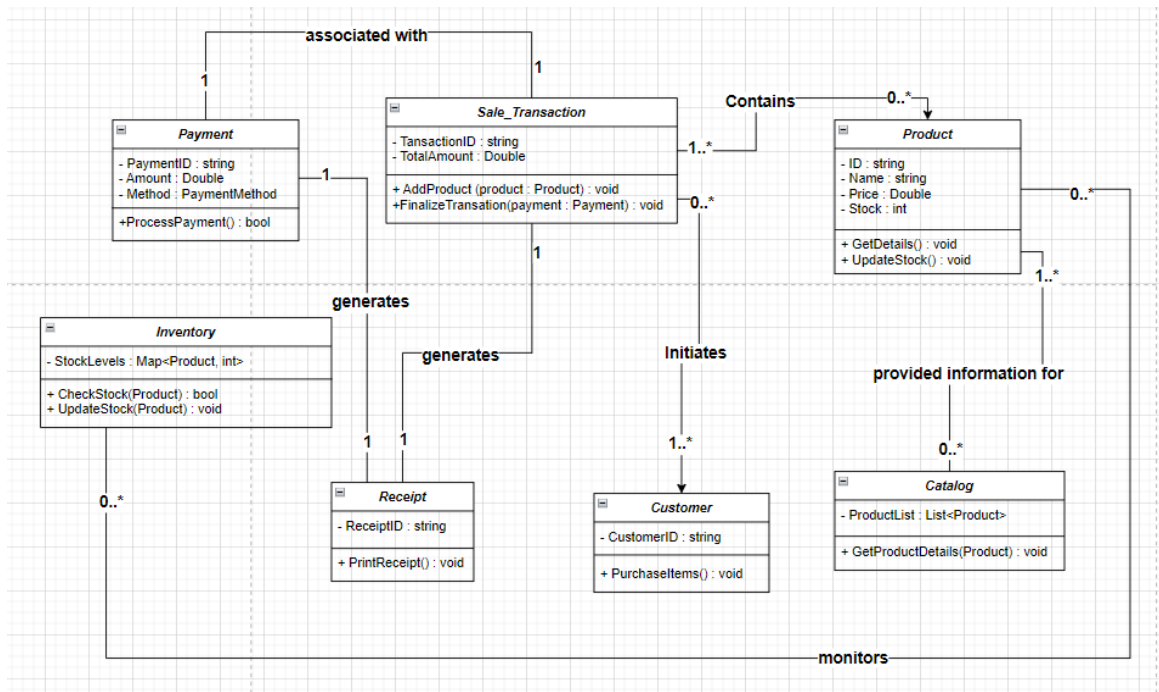


❖ Develop Analysis Domain Models

➤ Handle Returns Diagram :

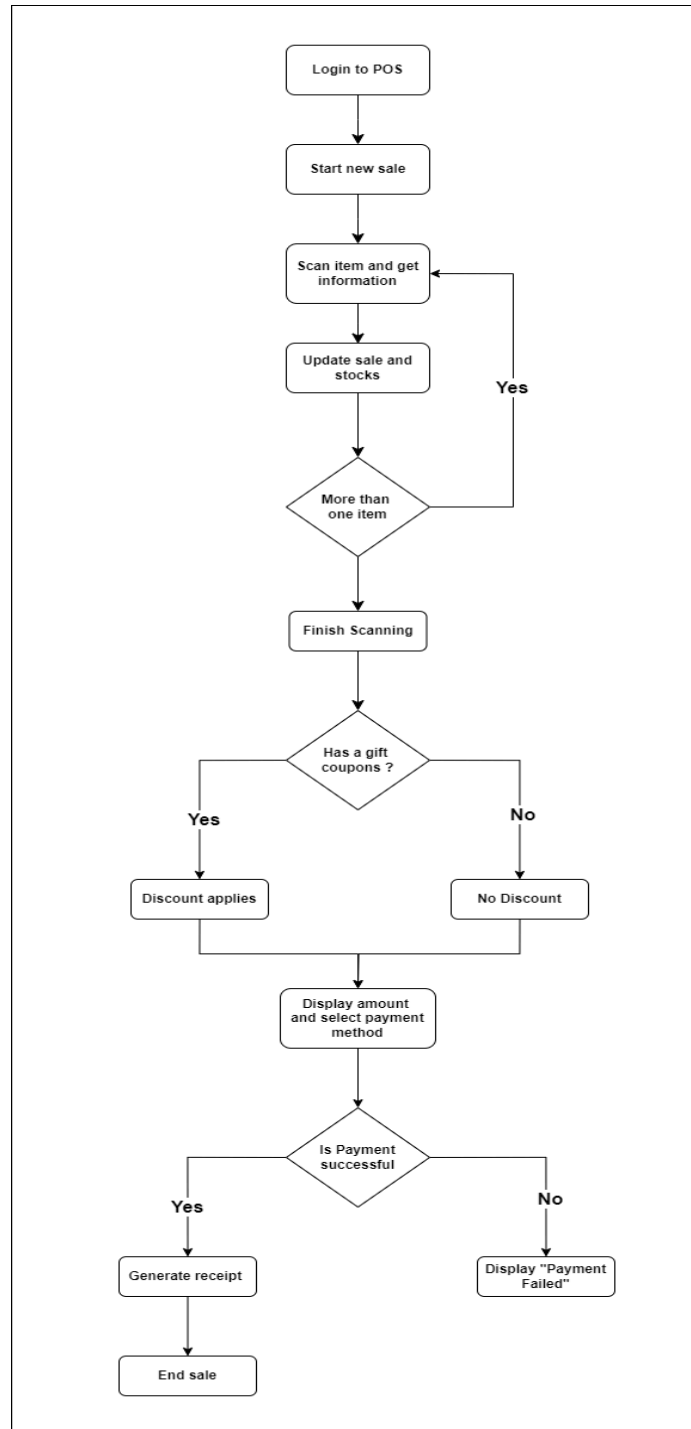


➤ Process Sales Diagram :



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

1. Process Sale :



2. Handle Return :

