

IT314 (Software Engineering)

Lab 6

Name: Aastha Alpeshbhai Bhavsar.

ID: 202201259.

Use Case Textual Descriptions:

Use Case 1: Process Sale

- **Actors:** Cashier, Customer
- **Preconditions:** Cashier is logged in, and the system is operational.
- **Trigger:** Customer brings items for checkout.
- **Main Flow:**
 1. Cashier scans or enters item codes.
 2. System calculates total cost and applies discounts.
 3. Customer selects payment method (cash, card, etc.).
 4. System processes payment.
 5. System updates inventory.
 6. System generates and provides a receipt.
- **Postconditions:** Sale completed, inventory updated, receipt generated.
- **Alternate Flows:**
 - A1: Payment failure: System prompts for alternative payment.
 - A2: Invalid discount: System rejects inappropriate discounts.

Use Case 2: Handle Return

- **Actors:** Cashier, Customer
- **Preconditions:** Customer has a receipt, and the item is within the return window.
- **Trigger:** Customer requests to return an item.
- **Main Flow:**
 1. Cashier scans the receipt and item.
 2. System validates the return request (receipt and eligibility).
 3. System processes the return, including refund calculation.
 4. Inventory is updated.
 5. System generates and provides a refund receipt.
- **Postconditions:** Refund processed, inventory updated, return receipt generated.
- **Alternate Flows:**
 - A1: Item ineligible: System denies return and provides feedback.
 - A2: Payment method restrictions: Refund processed through alternate method.

2. Entity, Boundary, and Control Objects:

Entity Objects:

- Product: Contains product details like ID, price, stock level.
- Sale: Stores information about each completed sale (date, total amount).
- Return: Stores details of returned items (original sale, date, refund amount).
- Customer: Represents the customer's data (optional, only if needed for loyalty programs).
- Inventory: Tracks stock levels.
- Payment: Stores payment details for each transaction (type, status).

Boundary Objects:

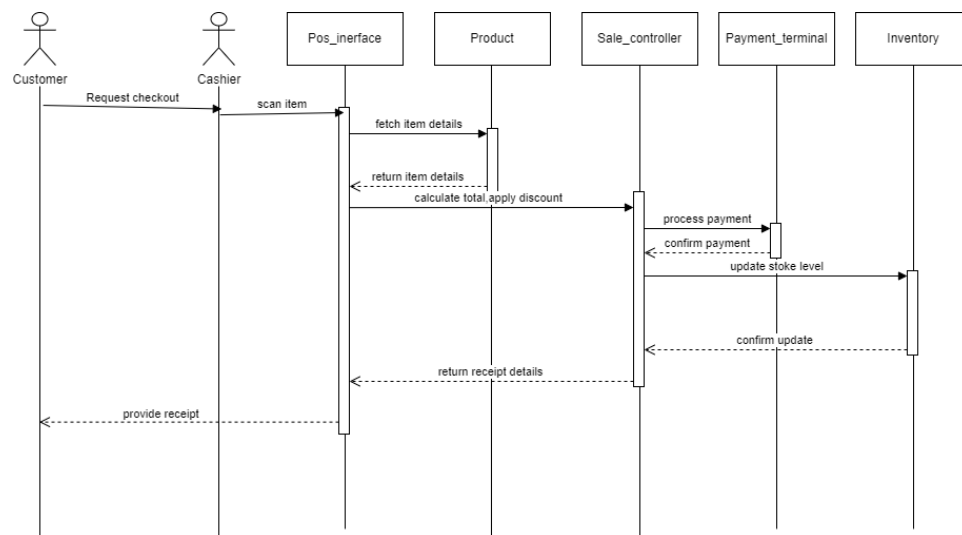
- POS Interface: The UI used by the cashier for processing transactions.
- Payment Terminal: Device used to process card/mobile payments.
- Receipt Printer: Outputs physical receipts.
- Email Service: Sends digital receipts to the customer (optional).

Control Objects:

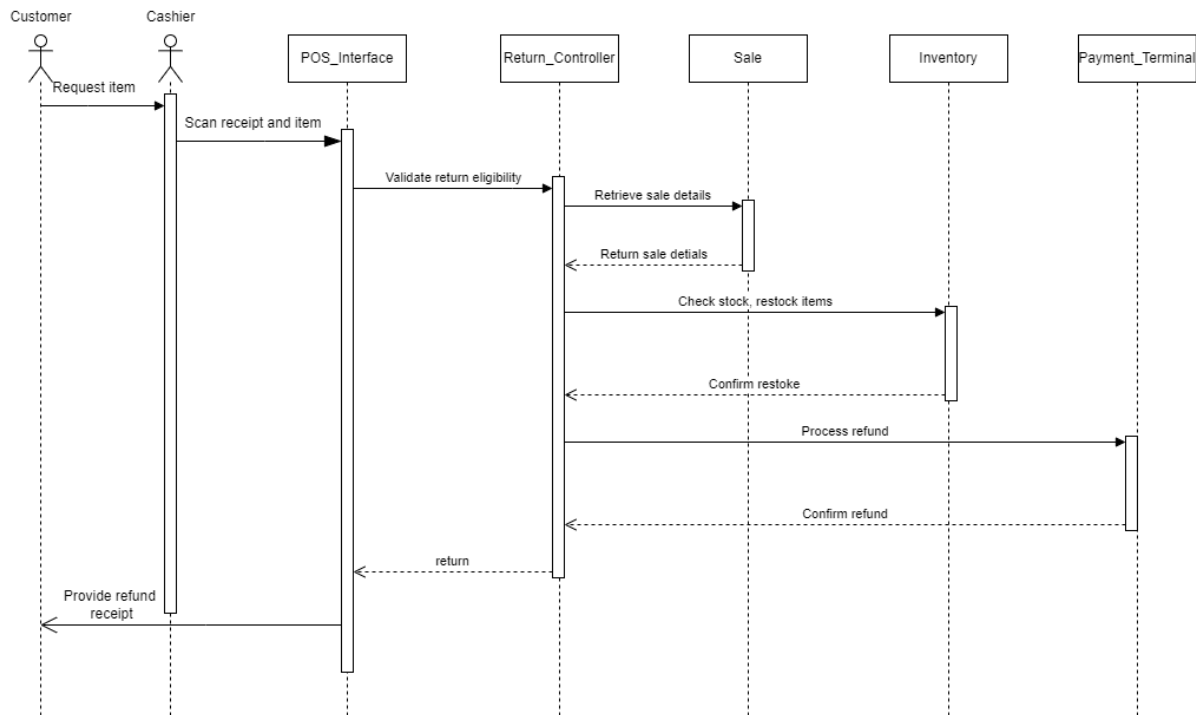
- Sale Controller: Manages the "Process Sale" operations (calculations, payment).
- Return Controller: Manages the "Handle Return" operations (validations, refunds).
- Inventory Controller: Updates the inventory after sales and returns.
- Payment Controller: Interfaces with external payment gateways.

3. Sequence Diagram :

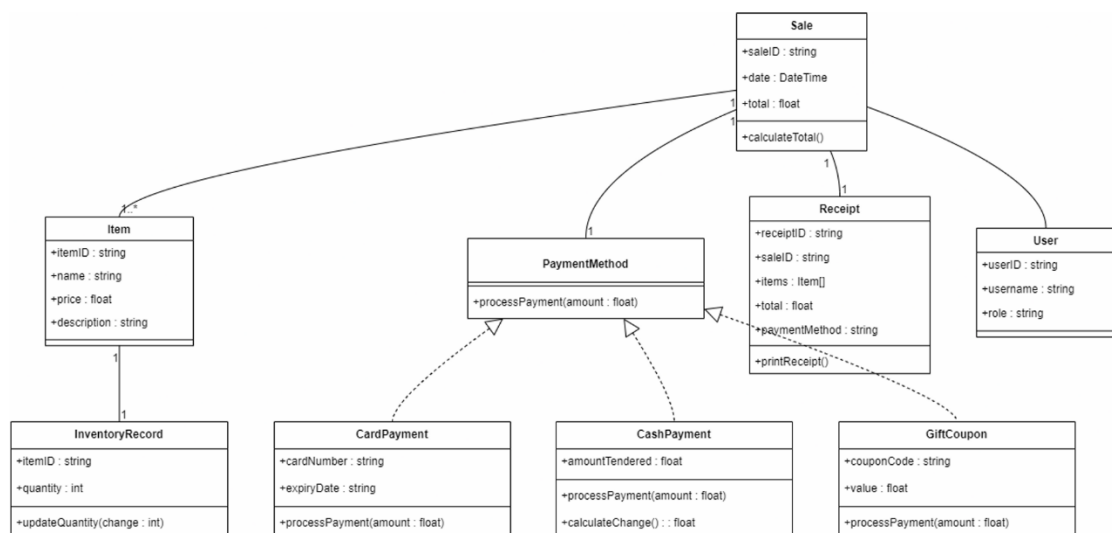
For Process Sale Use Case:



For Handle Return Use Case:

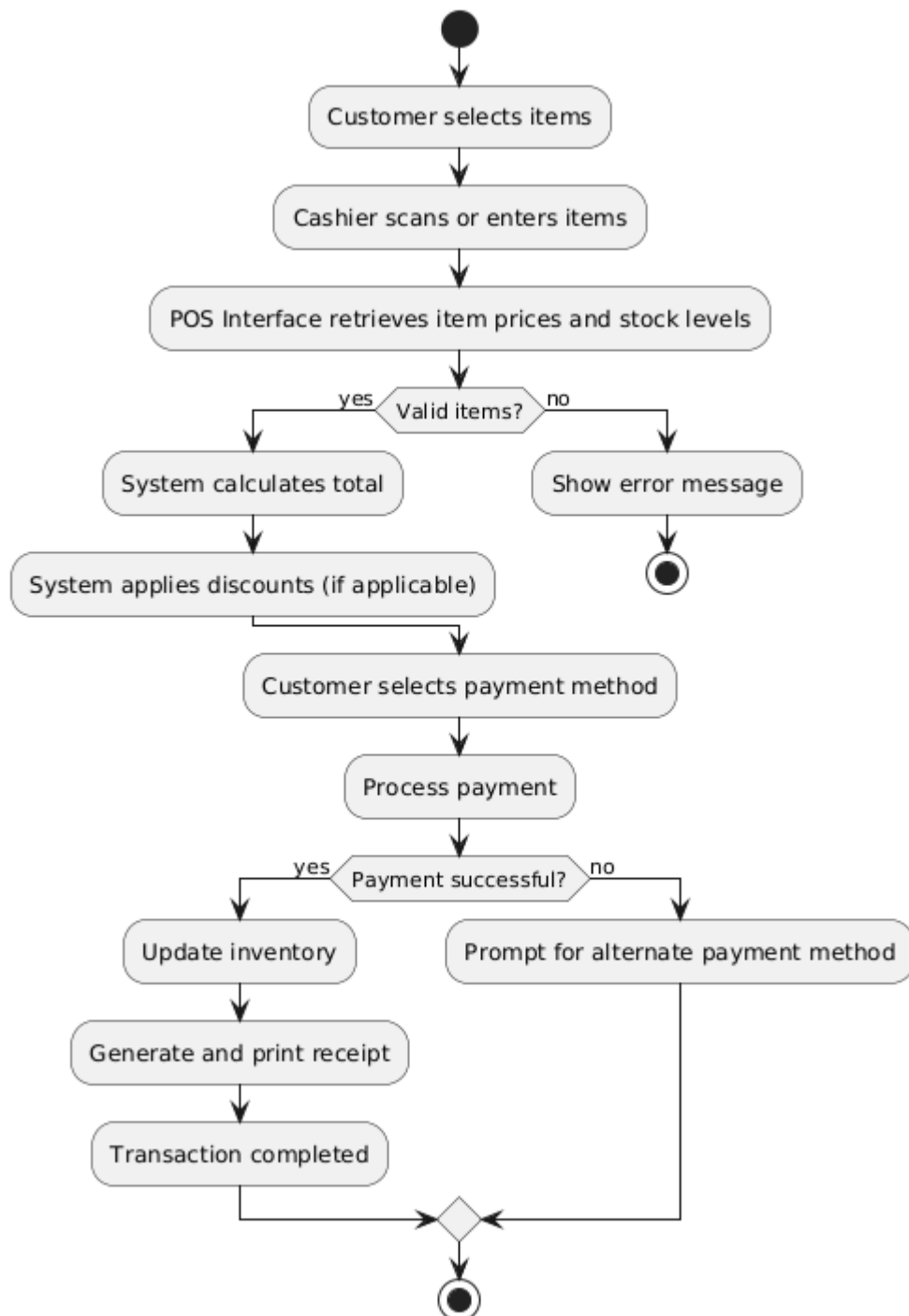


5. Analysis Domain Model:



6. Activity Diagram:

For Process Sale use Case:



For Handle Return use Case:

