
Software Engineering : Lab

Name – Patel Aryan

Id – 202201511

Que-1: Develop Use Case Textual Description for "Process Sale" and "Handle Return" use cases.

(1) Use case : Process Sale

Actors : Cashier, Customer

Conditions :

- > The cashier is logged into the POS system.
- > The customer has selected goods to purchase.
- > A sale transaction is recorded in the system.
- > Inventory levels are updated accordingly.
- > A receipt is printed for the customer.

Main Flow :

- > The cashier starts a new sale transaction in the POS system.
- > The cashier scans the barcode of each item presented by the customer.
- > The POS system retrieves the item details (name, price) from the backend catalog.
- > The system updates the inventory to reflect the deduction of the sold items.
- > The system calculates the total amount due, applying any promotions or gift coupons if applicable.
- > The cashier informs the customer of the total amount due.

- > The customer provides payment (cash, credit card, or check).
- > If cash, the system verifies the amount and gives change if necessary.
- > If credit card, the system processes the transaction via the payment gateway.
- > Upon successful payment, the system generates a receipt, which is printed and handed to the customer.

Alternative Flow :

- > **Invalid Payment:** If payment fails, the system prompts the cashier to retry or choose another payment method.
- > **Coupon Invalidity:** If a coupon is invalid, the system alerts the cashier, allowing the customer to pay the full amount.

(2) Use case : Handle Return

Actors : Cashier, Customer

Conditions :

- > The cashier is logged into the POS system.
- > The customer presents an item for return..
- > The return transaction is completed.
- > Inventory levels are updated.
- > A receipt for the return is generated and printed.

Main Flow :

- > The cashier initiates a return transaction in the POS system.
- > The cashier scans the barcode of the item being returned.

- > The system retrieves the item details (original sale price) from the backend catalog.
- > The cashier verifies the return conditions (e.g., within return period, item condition).
- > If eligible, the system calculates any refund amount.
- > The cashier informs the customer of the refund amount.
- > The customer provides their original purchase receipt for verification.
- > The system processes the refund: If it was a credit card, the refund is processed back to the card, If the original payment was by cash, the amount is refunded in cash.
- > The system updates the inventory to reflect the return of the item.
- > A return receipt is generated and printed for the customer, and the return transaction is recorded in the system.

Alternative Flow :

- > **Return Denied:** If the return conditions are not met, the system alerts the cashier and the return is canceled.
- > **Missing Receipt:** If the customer does not have the original receipt, the cashier may need to verify the purchase through the system based on other identifying information.

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Que-2: Identify Entity/Boundary Control Objects.

(1) Entity Objects :

Product

Transaction

Customer

Payment

Coupon

User

Inventory

(2) Bounty Objects

LoginInterface

AdminInterface

InventorySystemInterface

ReceiptPrinter

SaleTransactionScreen

BarcodeScanner

(3) Control Objects

TransactionController

PaymentController

CouponController

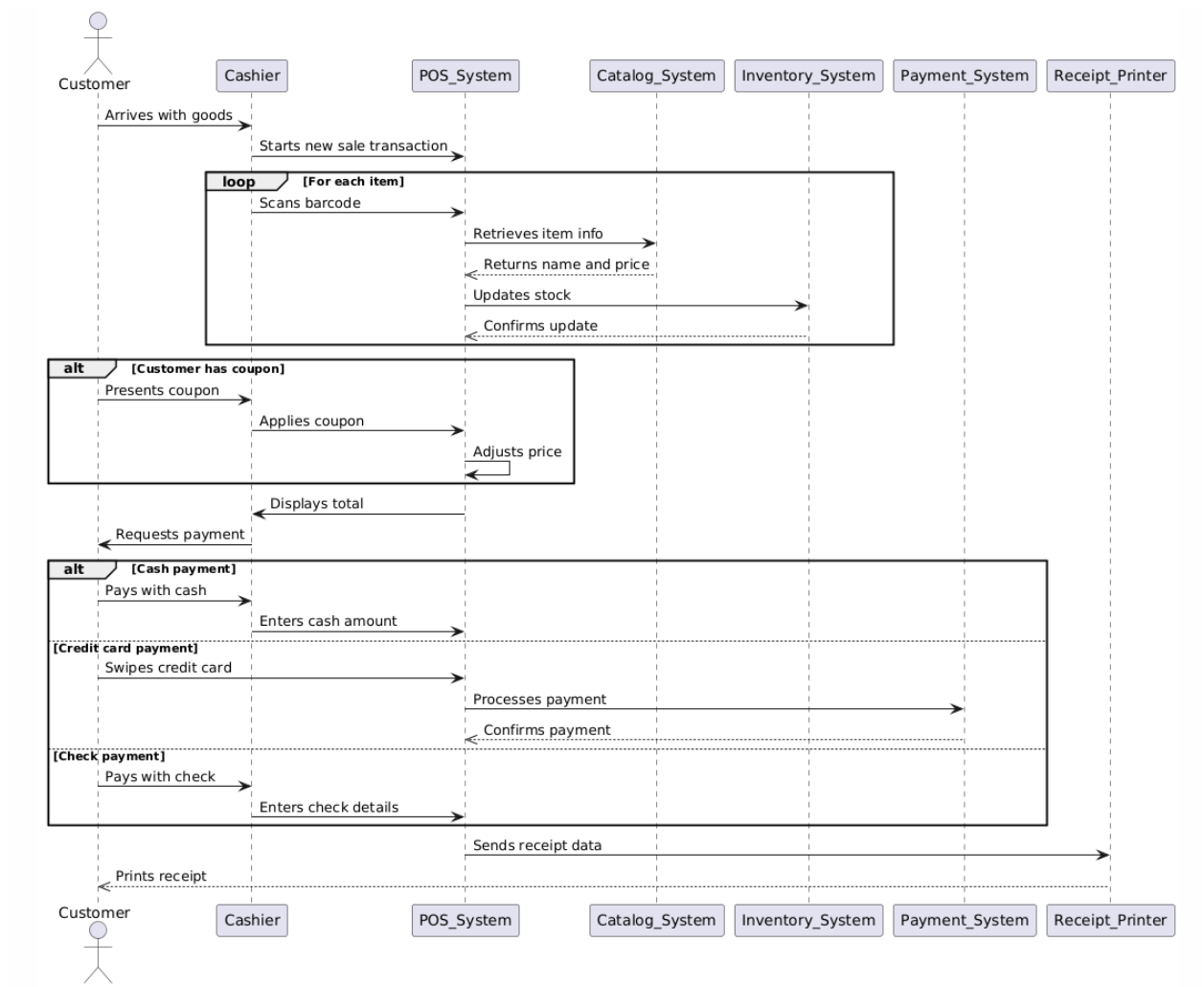
InventoryController

UserController

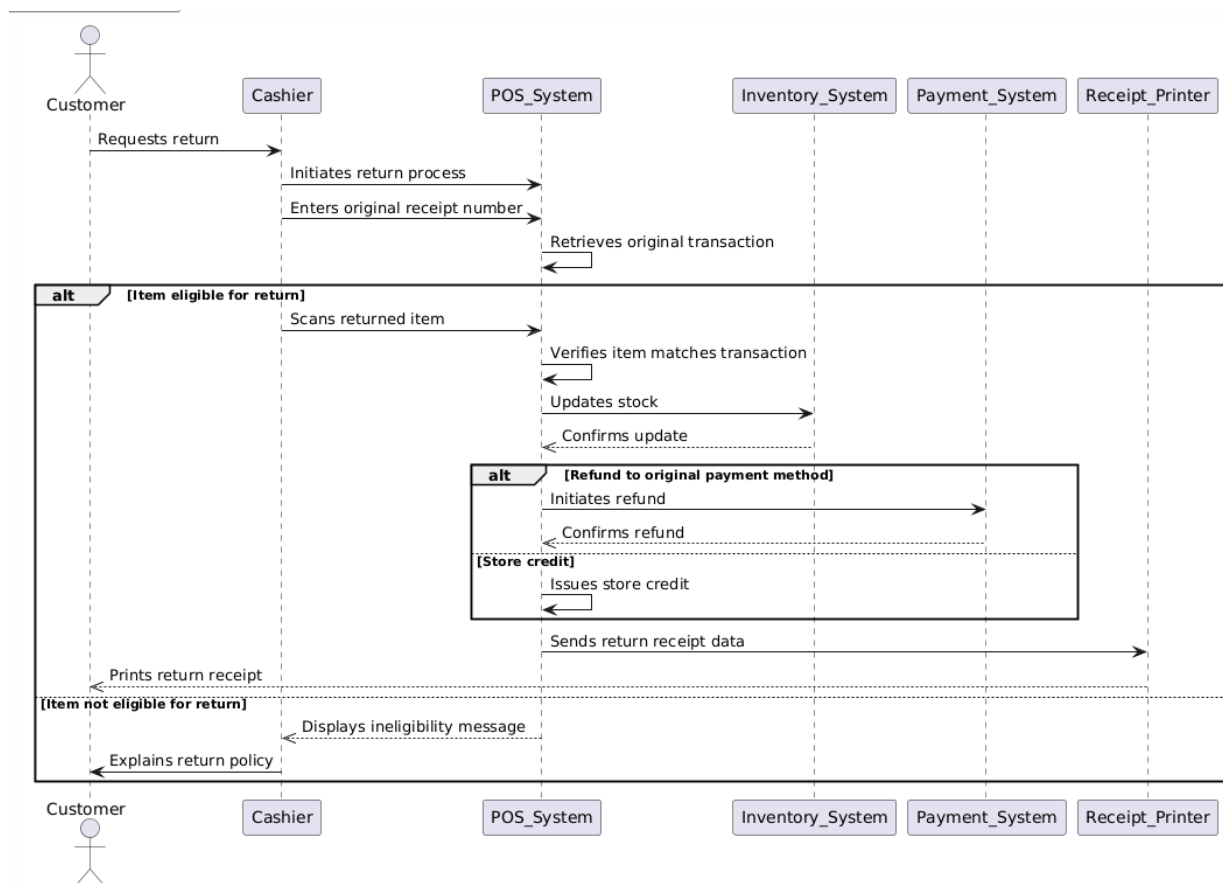
ReturnController

Que-3: Develop a Sequence Diagram.

(1) Use case : Process Sale

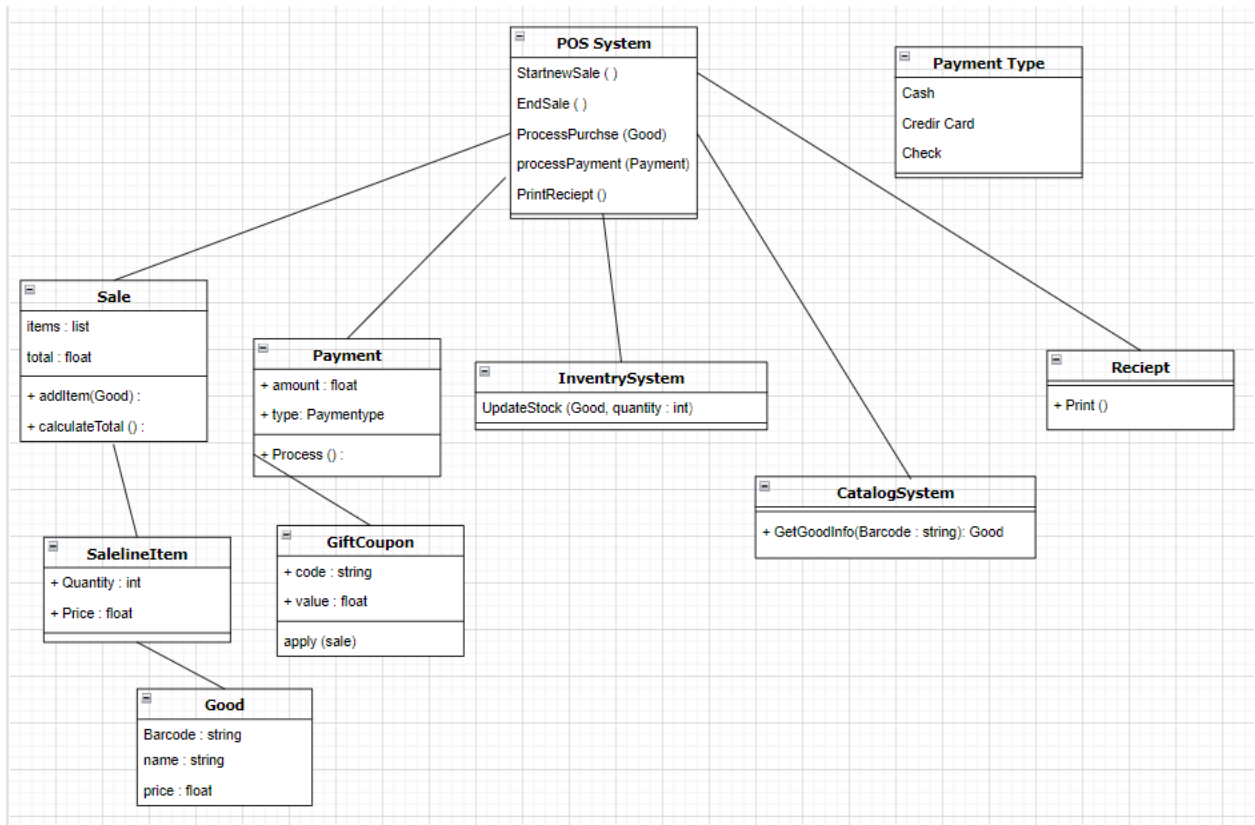


(2) Use case : Handle Return

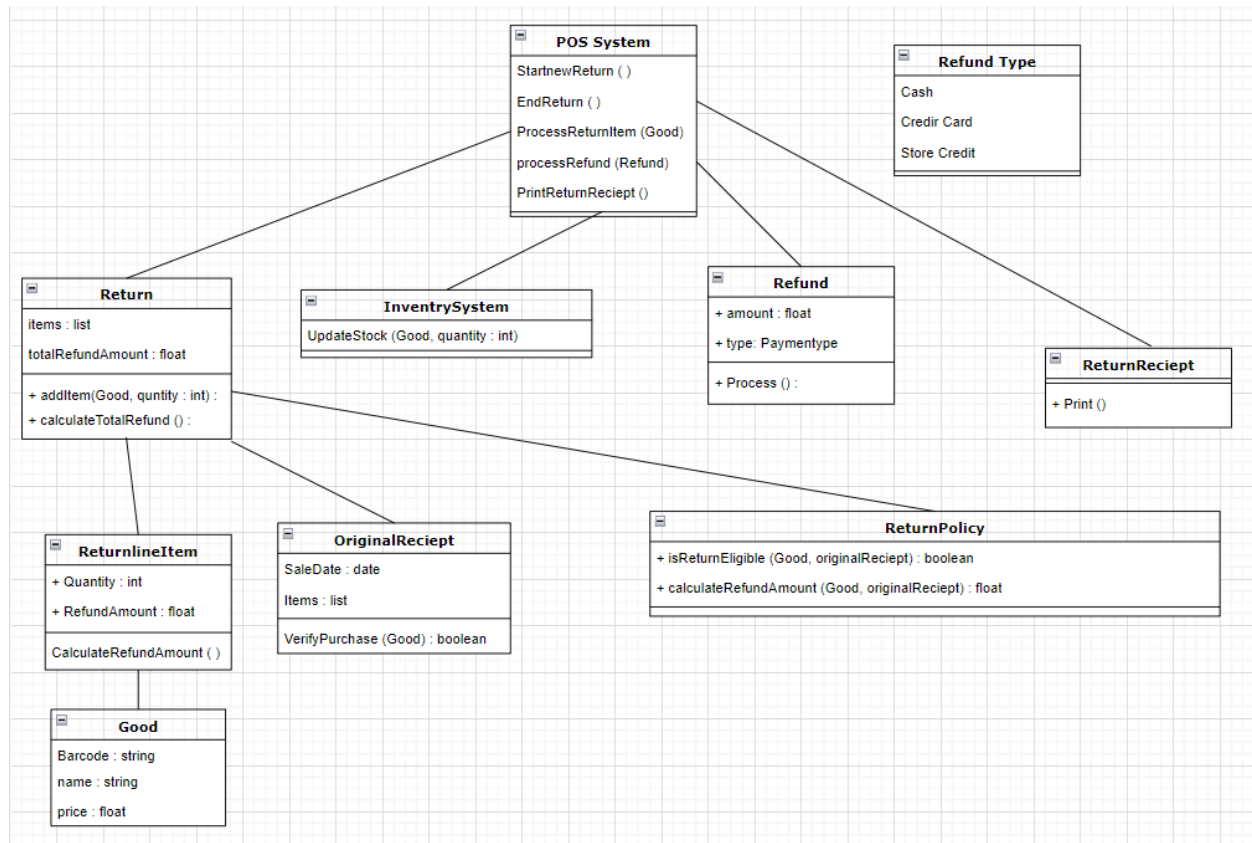


Que-4: Develop Analysis Domain Model.

(1)Use case : Process Sale



(2)Use case : Handle Return



Que-5: Develop activity diagram.

