Software Engineering Lab

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Use Case Description:

1) Process Sales

Actors: Cashier, Inventory system, catalog system

Trigger:

- A customer approaches the cashier with goods to purchase.

Preconditions:

- The POS system is powered on and fully operational.
- The cashier is logged into the POS system.
- The customer has selected the items for purchase.

Basic Flow:

1. Start Transaction: The cashier initiates a new sale transaction in the POS system.

2. Scan Items: The cashier scans the barcode of each item using the barcode scanner. The POS system retrieves item details (name, price) from the backend catalog.

3. Check Inventory: The POS system sends a request to the Inventory System to check the stock level for each scanned item. If the item is in stock, the quantity is decremented in the Inventory System; if not, an error message is displayed.

4. Apply Promotions/Coupons (if applicable): The cashier checks for any gift coupons. If a coupon is presented, the system applies the discount and updates the total price.

5. Calculate Total: The POS system calculates the total amount due for the transaction.

6. Process Payment: The cashier selects the payment method (cash, credit card, or check). The system processes the payment. If payment is successful, the transaction proceeds; if not, an error message is displayed.

7. Print Receipt: The POS system generates a receipt with transaction details. The receipt is printed and handed to the customer.

8. Complete Transaction: The system updates the sales records and concludes the transaction.

Alternative Flows:

3.a Insufficient Stock: If the Inventory System indicates an item is out of stock, the system notifies the cashier, and the item is not added to the transaction.

6.a Payment Failure: If the payment fails (e.g., insufficient funds or card error), the cashier can request an alternative payment method.

Postconditions:

• The sale transaction is recorded in the system.

• The inventory is updated to reflect the sale.

• A receipt is printed and provided to the customer.

• Any applicable promotions or coupons are applied to the sale.

2) Handle Returns:

Actor : Cashier

Trigger:

- A customer approaches the cashier to return a purchased item.

Preconditions:

- The POS system is powered on and fully operational.
- The cashier is logged into the POS system.
- The item being returned is eligible for return (within the return period, etc.).
- The customer has the original receipt or proof of purchase.

Basic Flow:

1) Start Return Transaction : The cashier initiates a new return transaction in the POS system.

2) Verify Purchase : The cashier scans the barcode of the item being returned. The POS system retrieves transaction details from the sales records.

3) Check Return Eligibility : The system verifies if the item is eligible for return based on store policies (e.g., return period, condition). If the item is eligible, the process continues; if not, an error message is displayed.

4) Update Inventory : The POS system updates the inventory to reflect the return of the item.

5) Process Refund : The cashier confirms the refund method (cash, credit card, store credit).

The system processes the refund. If the refund is successful, the transaction proceeds; if not, an error message is displayed.

6) Print Return Receipt: The POS system generates a return receipt with transaction details.

The receipt is printed and handed to the customer.

7) Complete Transaction: The system updates the return records and concludes the transaction.

Alternative Flows:

3.a Item Not Eligible for Return : If the item is not eligible for return, the system displays an error message, and the cashier informs the customer that the return cannot be processed.

5.a Refund Failure : If the refund fails (e.g., card error), the cashier can offer an alternative refund method or escalate the issue for further assistance.

Postconditions:

- The return transaction is recorded in the system.
- The inventory is updated to reflect the return of the item.
- A receipt for the return is printed and provided to the customer.
- Any applicable restocking fees or discounts are applied.

Use Case 1:

Entity Objects: cashier, catalog system, inventory system

Boundary Objects: Barcode scanner, user interface, payment interface, reciept printer

Control Objects: payment controller, sale processor

Use Case 2:

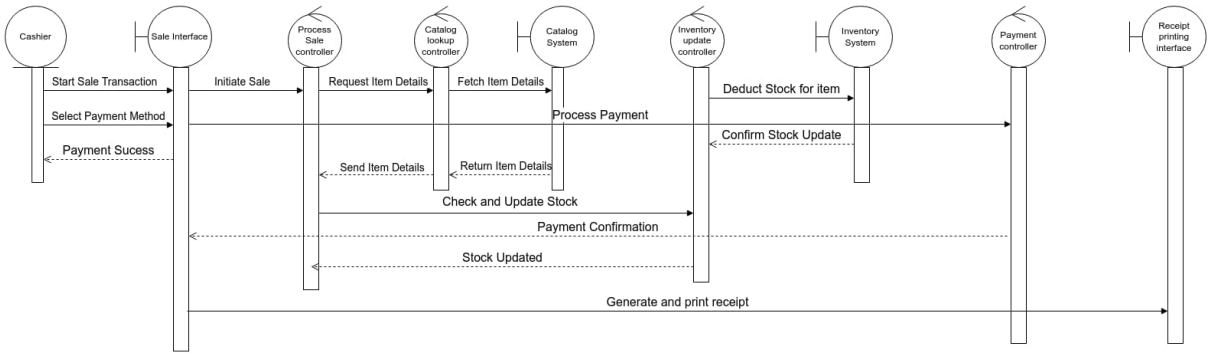
Entity object : cashier, inventory, product , rerurn transaction

Boundary object : Return Item Screen, **Receipt Scanner**:, POS Interface

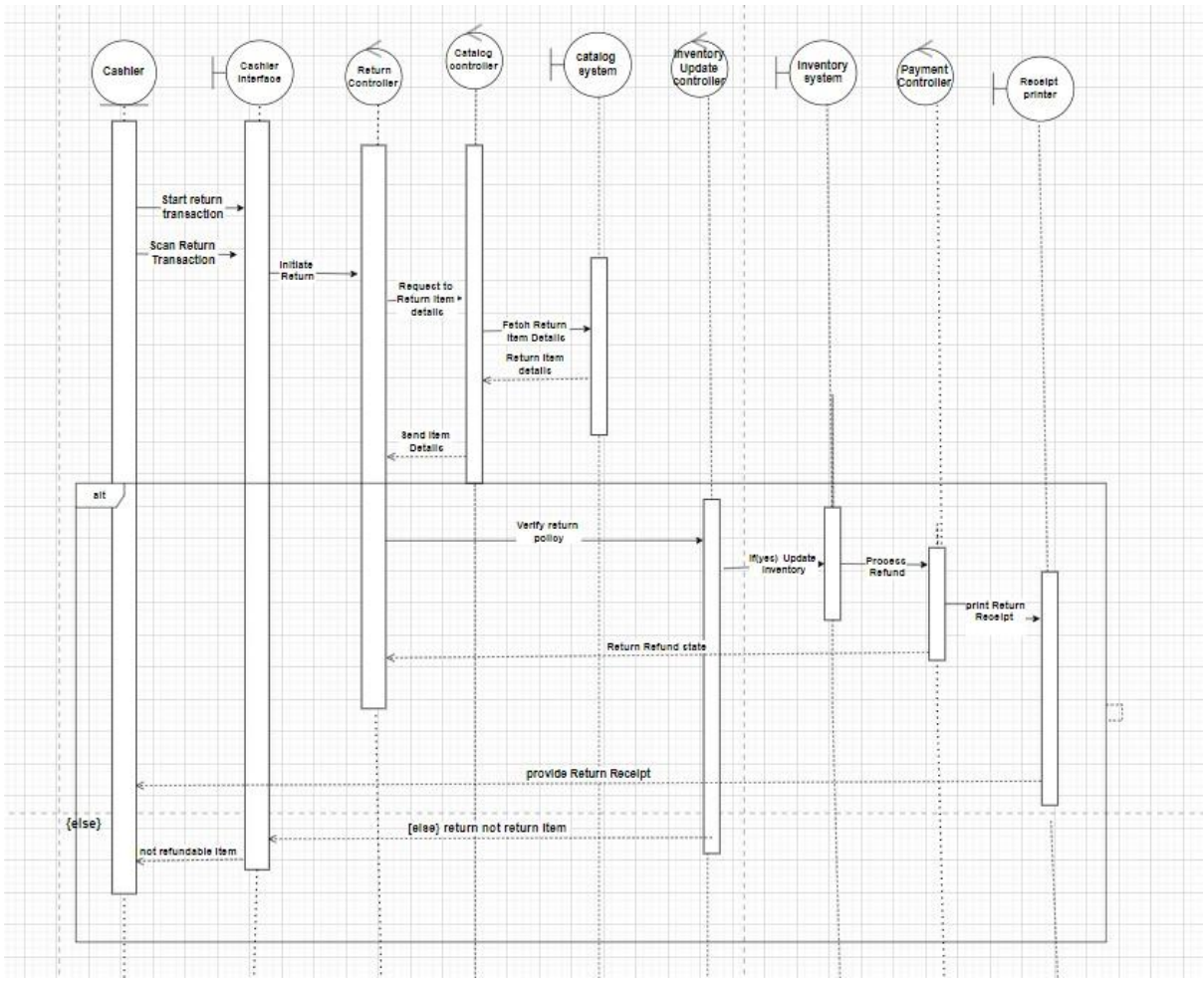
Control objects: ReturnController, TransactionProcessor, RefundCalculator

Sequence Diagrams :

Use case 1 :

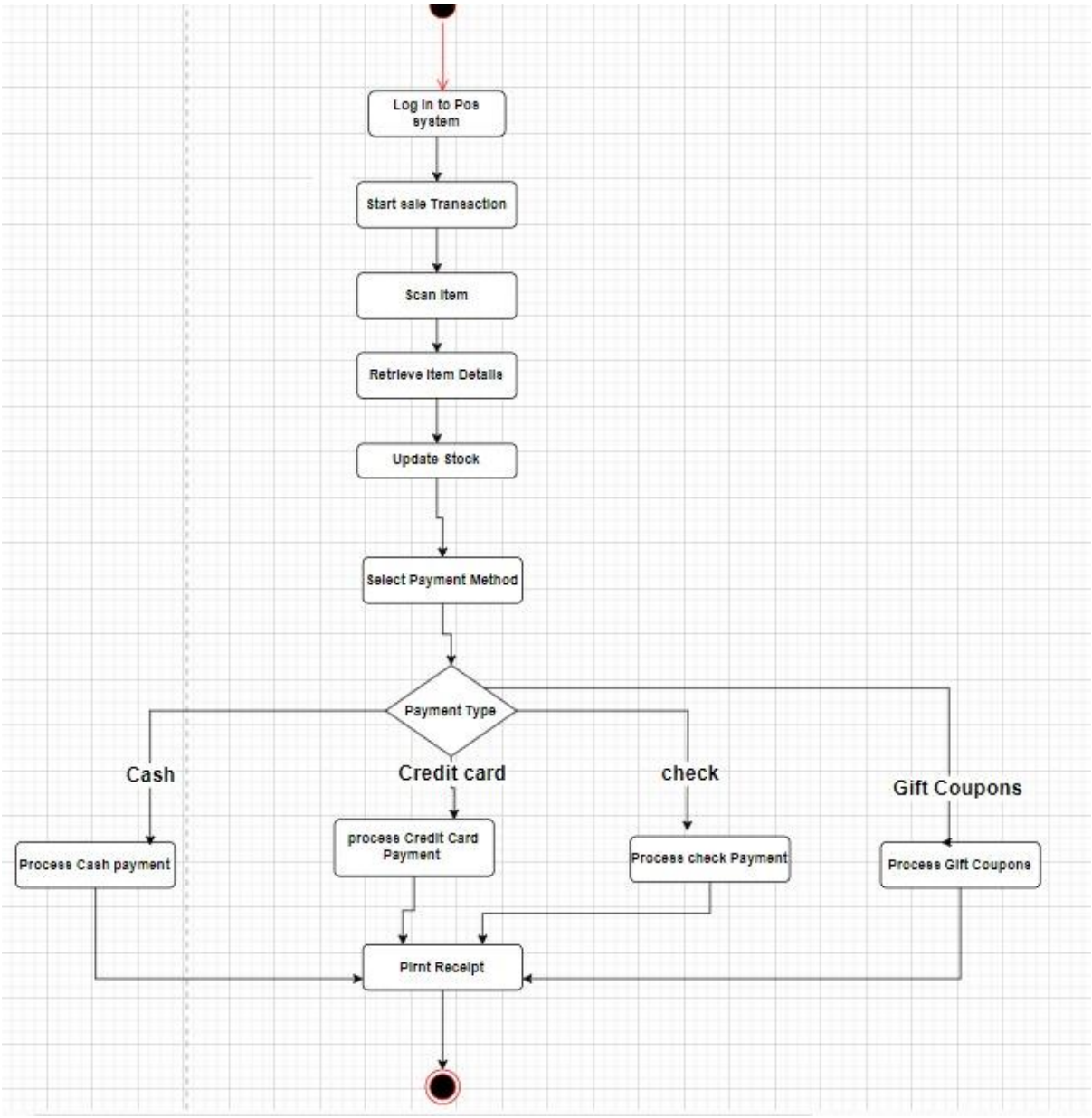


Use case 2 :

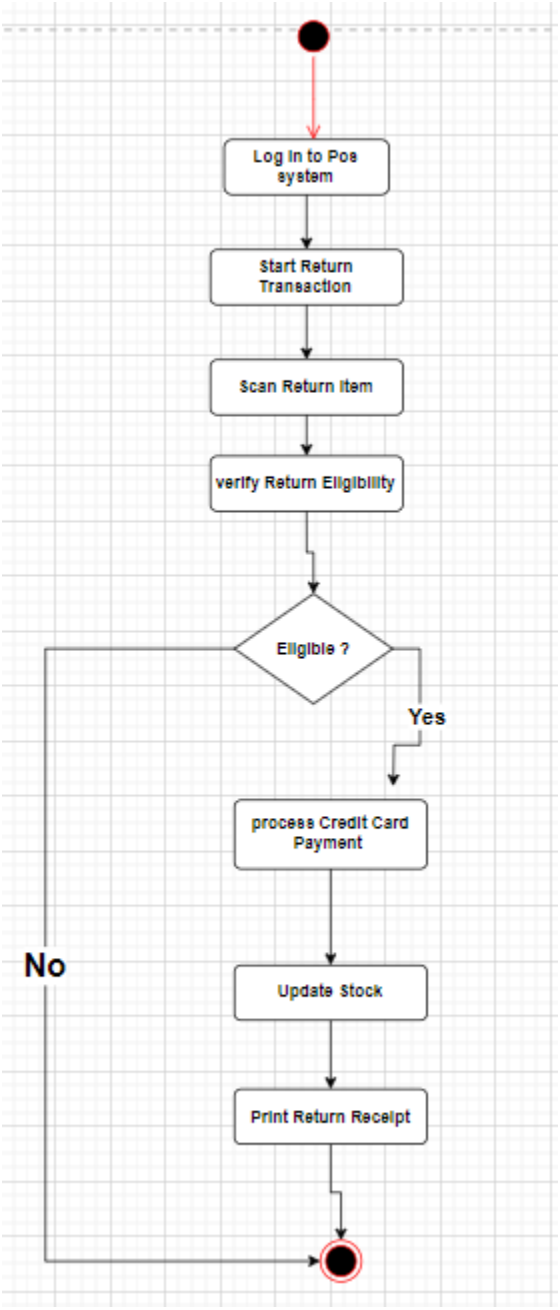


Activity Diagram:

Use Case 1:



Use case2:


Log in to Pos system
Start Return Transaction
Scan Return item
verify Return Eligibility
Eligible ?
Yes
No
process Credit Card Payment
Update Stock
Print Return Receipt

Class Diagram