SOFTWARE ENGINEERING

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LAB: 06

● Use Case Textual Descriptions

Use Case: Process Sale

Actors: Cashier, Customer

Preconditions:

- The cashier is logged into the POS system.
- The customer has selected items for purchase.

Postconditions:

- The sale transaction is recorded in the system.

- Inventory is updated to reflect the sale.

- A receipt is printed for the customer.

Main Flow:

1. The cashier initiates a new sale transaction in the POS system.
2. The cashier scans the barcodes of the items.
3. The POS retrieves item details (name, price) from the catalog.
4. The system updates the inventory to deduct the sold items.
5. The cashier verifies the total amount due.
6. The customer pays using cash, credit card, or check.
7. The POS system processes the payment and updates the transaction status.
8. A receipt is printed for the customer.
9. The transaction is completed, and the system logs the sale.

Alternative Flows:

- If an item is not found, the cashier is notified and can manually enter the item or skip it.

- If the payment fails, the system prompts the cashier to retry or choose another payment method.

Use Case: Handle Return

Actors: Cashier, Customer

Preconditions:

- The cashier is logged into the POS system.
- The customer has items to return and a receipt.

Postconditions:

- The return transaction is recorded in the system.
- Inventory is updated to reflect the returned items.
  - A refund is processed, if applicable.

Main Flow:

1. The cashier initiates a return transaction in the POS system.
2. The cashier scans the barcode of the returned item.
3. The system retrieves the original sale details from the transaction history.

4. The cashier verifies the return eligibility (e.g., within return period).
5. The system processes the return and updates inventory.
6. If applicable, the cashier issues a refund to the customer.
7. A return receipt is printed for the customer.
8. The transaction is completed, and the system logs the return.

Alternative Flows:

- If the item is not eligible for return, the system informs the cashier.

●Entity/Boundary Control Objects

Entity Objects:

- Item
- Customer
- Transaction
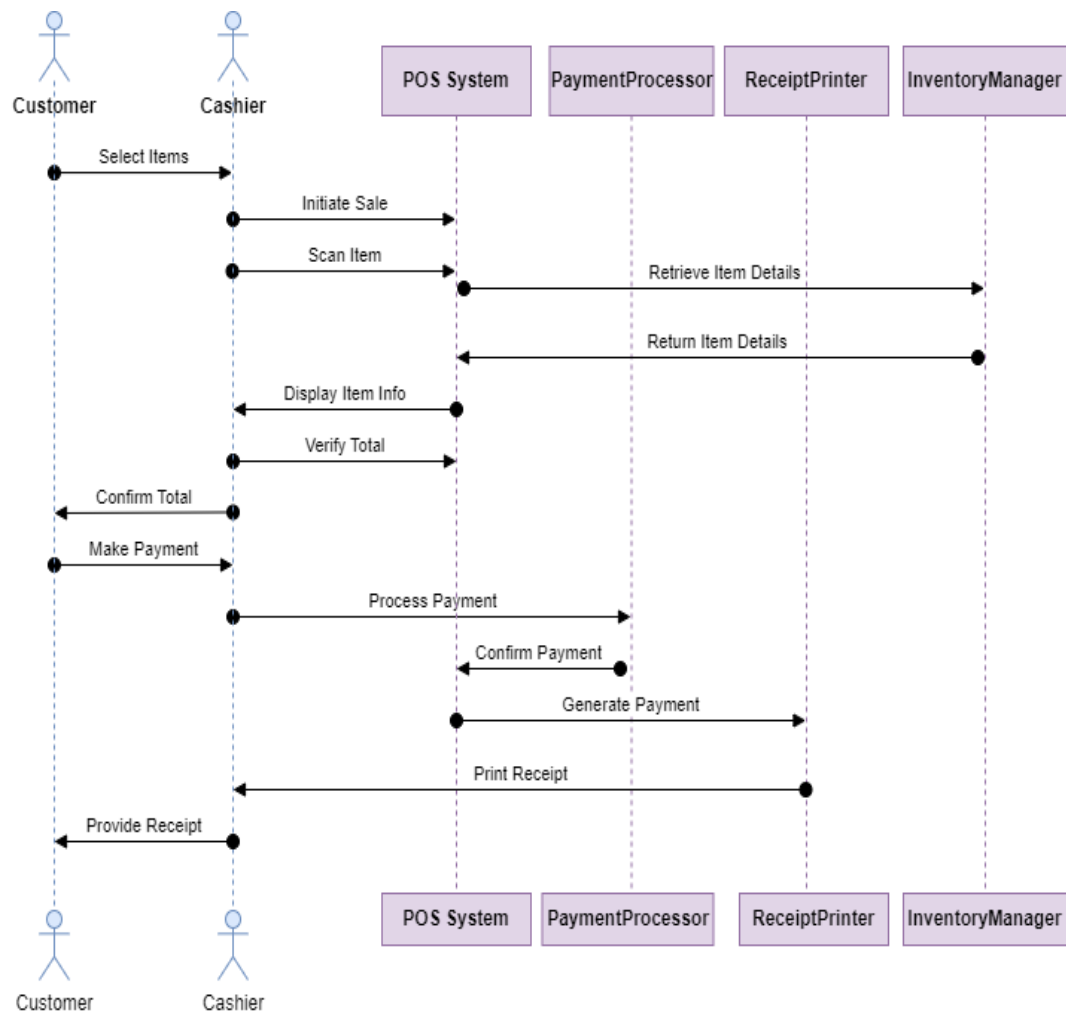- Inventory
- Payment

Boundary Objects:

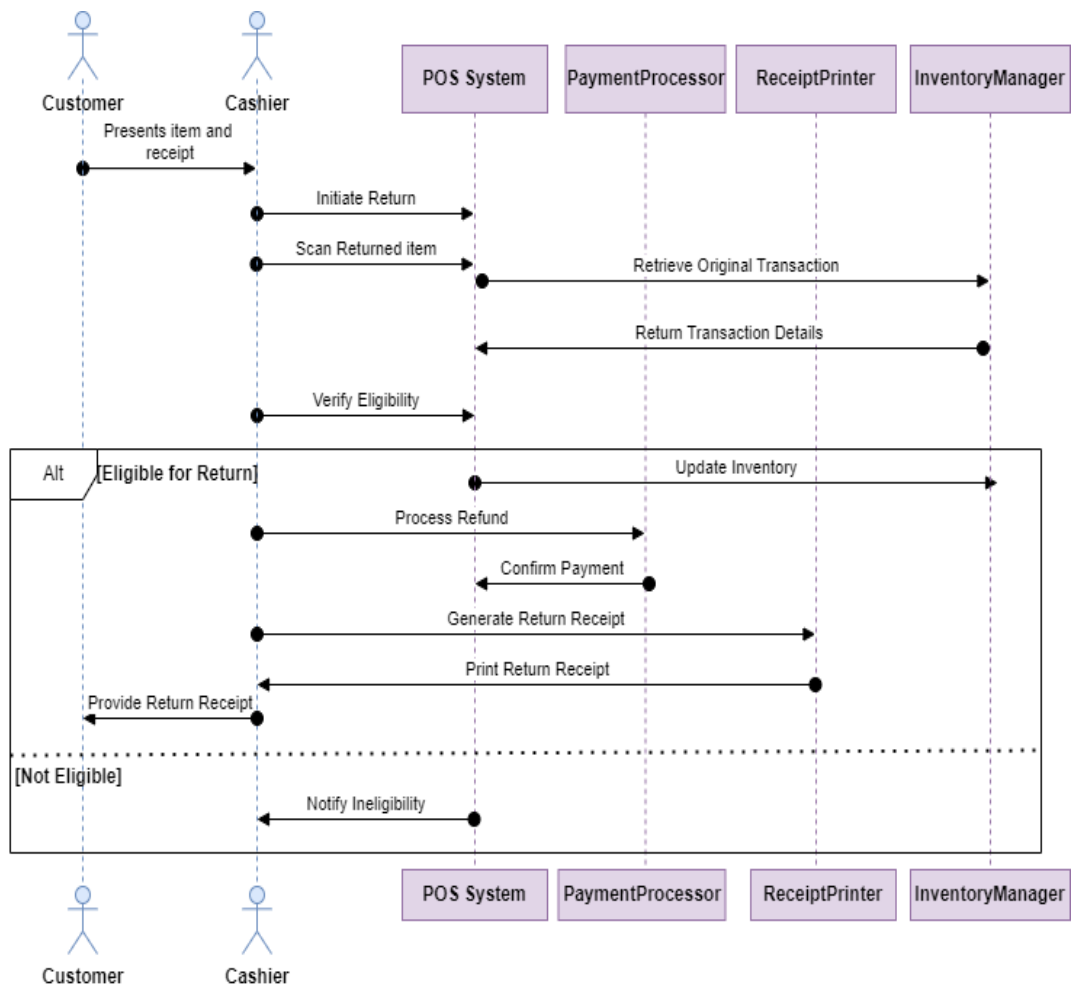- POS Interface (Cashier View)
- Receipt Printer

Control Objects:

- SaleController
- ReturnController
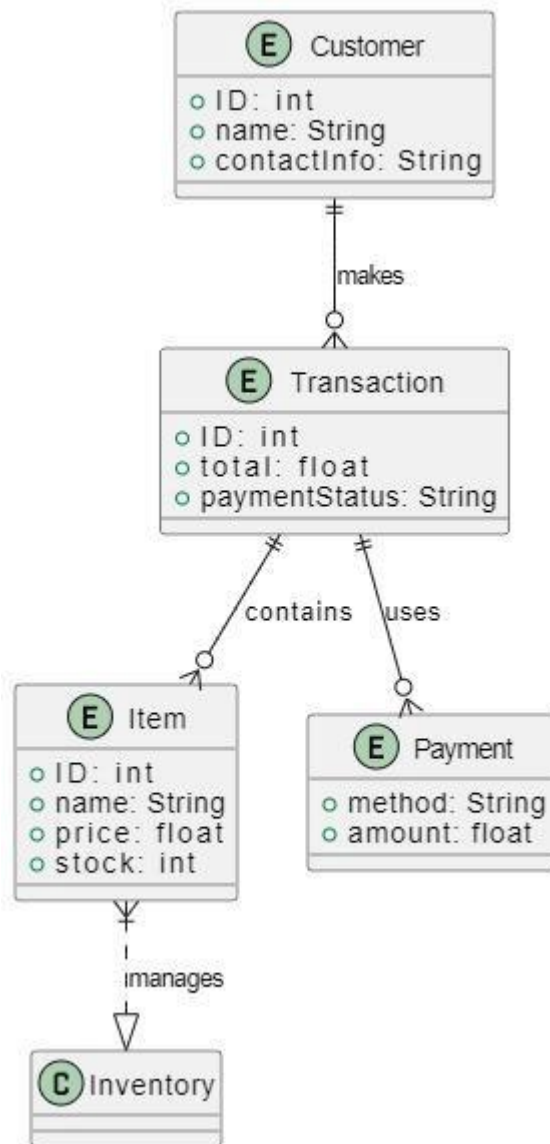- PaymentProcessor
- InventoryManager

Develop Sequence Diagrams:

Process Sale:

Handle Return:

Customer | Cashier | POS System | PaymentProcessor | ReceiptPrinter | InventoryManager

Presents item and receipt

Initiate Return

Scan Returned item

Retrieve Original Transaction

Return Transaction Details

Verify Eligibility

Alt [Eligible for Return]

Update Inventory

Process Refund

Confirm Payment

Generate Return Receipt

Print Return Receipt

Provide Return Receipt
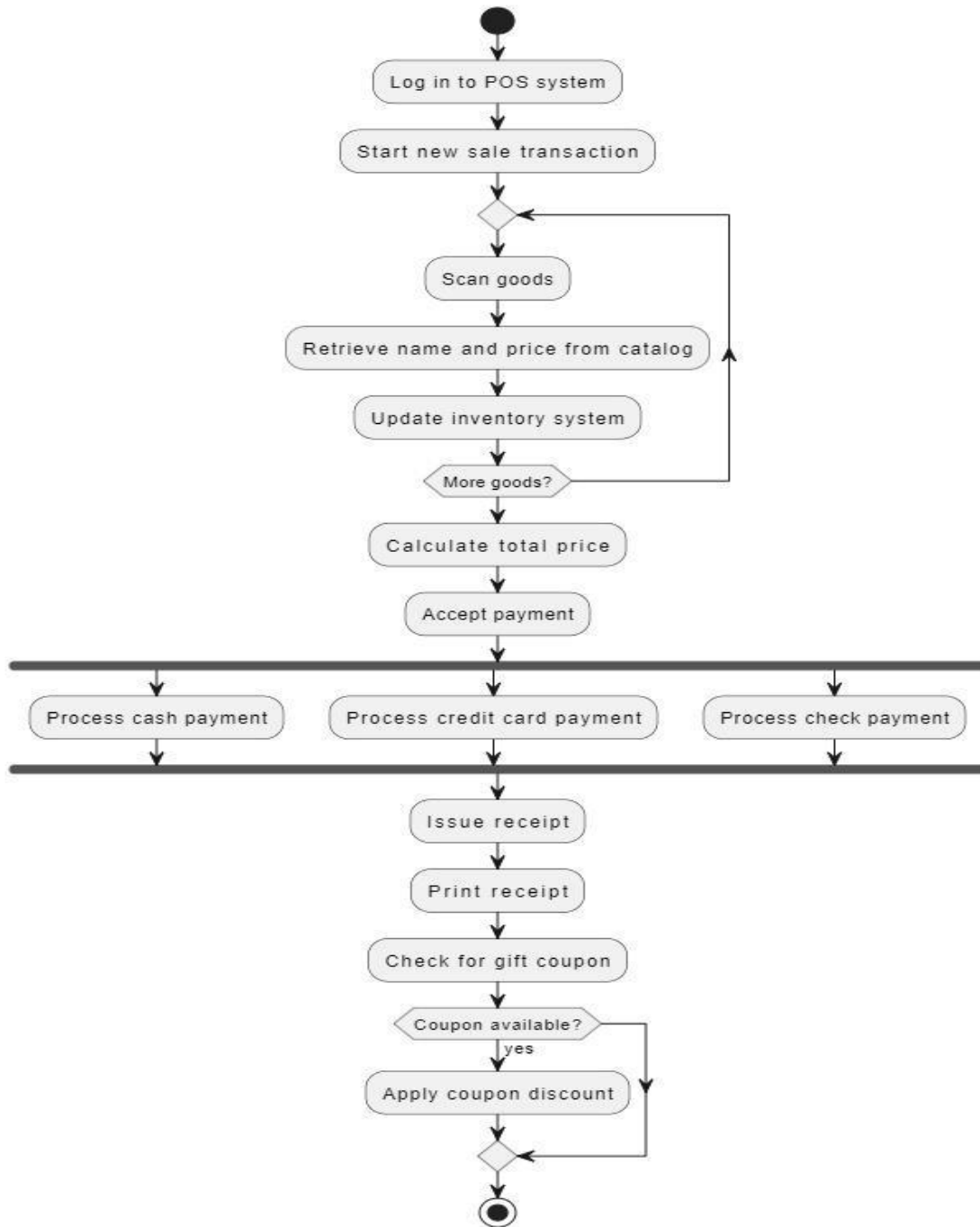
[Not Eligible]

Notify Ineligibility

●Develop Analysis Domain Models

● Develop Activity Diagrams for "Process Sale" and "Handle Return" use cases.

Process Sale:

Handle Return:

Log in to POS system

Start return transaction

Scan returned goods

Retrieve original sale information

yes — Is return valid? — no

Process refund

Display error message

Refund cash

Refund credit card

Refund via check

Update inventory system

Issue return receipt