



Software Engineering(IT-314)

Point Of Sales Lab

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

Use Case: Process Sale

1. **Actors:** Cashier, Customer, Inventory System, Payment System
2. **Preconditions:**
 - The cashier is logged into the system.
 - The POS system is connected to the backend catalog and inventory system.
3. **Main Flow:**
 - The cashier initiates a new sale.
 - The cashier scans items, and the system retrieves the item information (name, price) from the catalog and updates the sale.
 - The system checks and updates the inventory to reflect the item purchase.
 - The cashier completes the sale and selects the payment method.
 - If payment is successful, a receipt is printed for the customer.
4. **Postconditions:**
 - The sale is recorded.
 - The inventory is updated.
5. **Extensions:**
 - **[E1] Item Not Found in Catalog:**
 - If an item scanned by the cashier is not found in the catalog, the system alerts the cashier, and the cashier can either manually input the item's details or ask for assistance from the administrator.
 - If no action is taken, the cashier can cancel the sale.
 - **[E2] Payment Fails:**
 - If the payment fails (due to insufficient funds, card error, etc.), the system notifies the cashier.
 - The cashier can retry the payment or ask the customer for an alternate payment method.
 - **[E3] Insufficient Stock:**
 - If the item being scanned is out of stock, the system alerts the cashier.
 - The cashier can notify the customer, remove the item from the sale, or check for similar items.

Use Case: Handle Return

1. **Actors:** Cashier, Customer, Inventory System
2. **Preconditions:**
 - The cashier is logged into the system.
 - The customer has a valid receipt for the item.
3. **Main Flow:**
 - The customer initiates a return with the cashier.
 - The cashier scans the receipt and retrieves the sale record.
 - The system checks if the item is returnable.
 - The system processes the return, updates the inventory, and issues a refund to the customer.
4. **Postconditions:**
 - The item is returned to the inventory (if applicable).
 - A refund is processed for the customer.
5. **Extensions:**
 - **[E1] Item Not Returnable:**
 - If the system finds that the item is not eligible for return (e.g., expired return window, damaged goods, etc.), the cashier is notified.
 - The cashier can either explain the policy to the customer or escalate the case to the manager.
 - **[E2] Partial Refund:**
 - If the customer has used the item or there's a partial defect, the system can calculate a partial refund based on store policies.
 - The cashier confirms with the customer and issues the adjusted refund.
 - **[E3] Payment Method Mismatch:**
 - If the original payment method (e.g., credit card) is no longer available for refund, the cashier asks the customer to choose an alternate method (e.g., cash or store credit).
 - The system processes the refund with the new payment method.

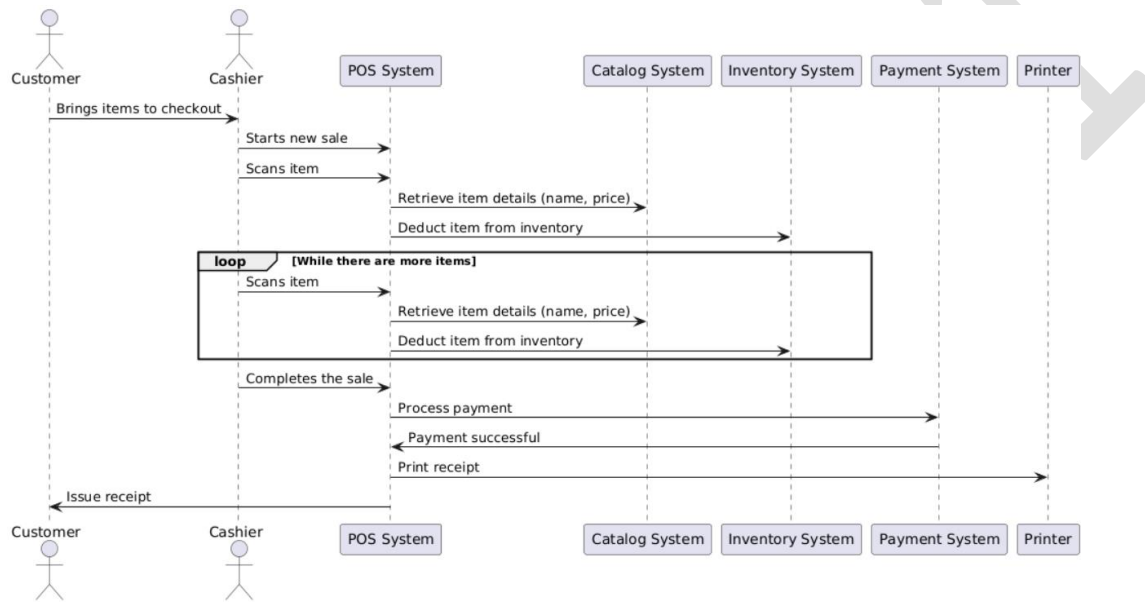
Question 2 : Identify Entity/Boundary Control Objects

- **Entity Objects:**
 - Sale
 - Product
 - Receipt
 - Payment
 - Inventory
- **Boundary Objects:**
 - Cashier Interface
 - Payment Gateway

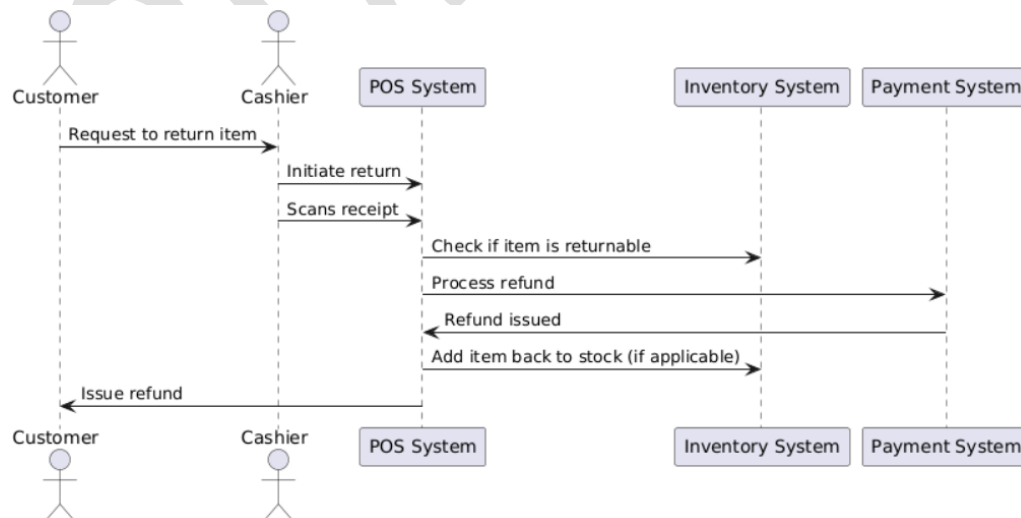
- Printer
- **Control Objects:**
 - SaleController
 - ReturnController

Question 3 : Develop Sequence Diagram

Process Sales



Handle Returns

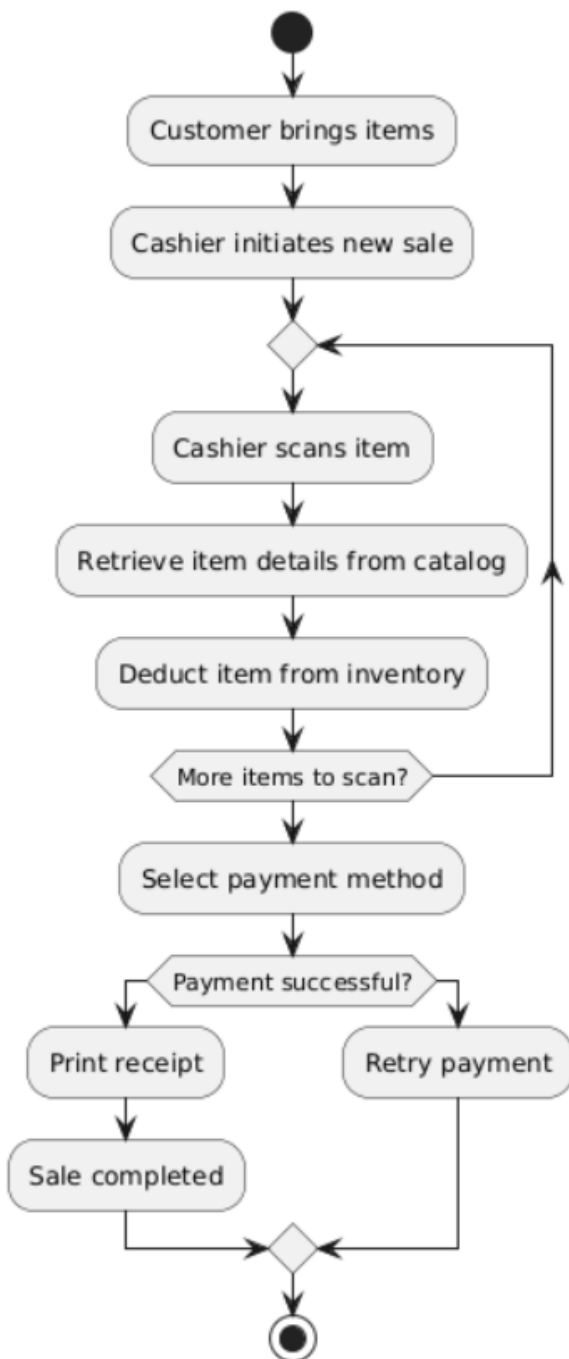


Question 4 : Develop Analysis Domain Model



Question 5 : Develop Activity diagram for “Process Sales” and “Handle Returns” use case

Process Sales



Handle Returns

