Lab06 - Modeling Class Diagram and Activity Diagram (Point of Sale System)

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Task 1: Use Case Textual Descriptions for "Process Sale" and "Handle Return" Use Cases

Use Case 1: Process Sale

- **Use Case Name:** Process Sale
- **Actor(s):**
  - Cashier
  - Catalog System (external actor)
  - Inventory System (external actor)
- **Precondition:**
  - The cashier must be logged in.
  - The items must be available in both the catalog and inventory systems.
- **Postcondition:**
  - The sale is successfully recorded in the system.
  - The inventory stock is updated.
  - A receipt is printed for the customer.
- **Main Flow:**
  - The cashier initiates a new sale.
  - The cashier scans an item.
  - The system retrieves item details from the catalog.
  - The system decreases the item quantity in the inventory.
  - Steps 2-4 are repeated for each item.
  - The customer selects a payment method.
  - The system processes the payment (cash, credit card, etc.).
  - Upon payment confirmation, the system prints a receipt.
- **Alternative Flow:**
  - If an item cannot be found in the catalog, the cashier is alerted.
  - If stock is insufficient, the cashier is informed to notify the customer.
  - If the payment fails, the cashier may retry or cancel the sale.

Use Case 2: Handle Returns

- **Use Case Name:** Handle Returns
- **Actor(s):**
  - Cashier
  - Inventory System (external actor)
- **Precondition:**
  - The cashier must be logged in.
  - The item being returned must be associated with a previous sale.
- **Postcondition:**
  - The return is successfully processed, and stock levels are updated in the inventory.
  - The customer receives a refund or store credit, as applicable.
- **Main Flow:**
  - The cashier begins a return transaction.
  - The cashier scans the item(s) being returned and verifies the original sale if necessary.
  - The system retrieves item information from the inventory.
  - The cashier checks if the return is within the return policy.
  - The system updates the inventory by restocking the returned item(s).
  - The system issues a refund or store credit to the customer.
- **Alternative Flow:**
  - If the return period has expired, the system alerts the cashier to decline the return.
  - If the item is damaged or incomplete, the return may be partially refunded or denied.

Task 2: Identification of Entity, Boundary, and Control Objects

Entity Objects:

- Sale
- Product
- Payment
- Receipt
- Return

Boundary Objects:

- Cashier Interface

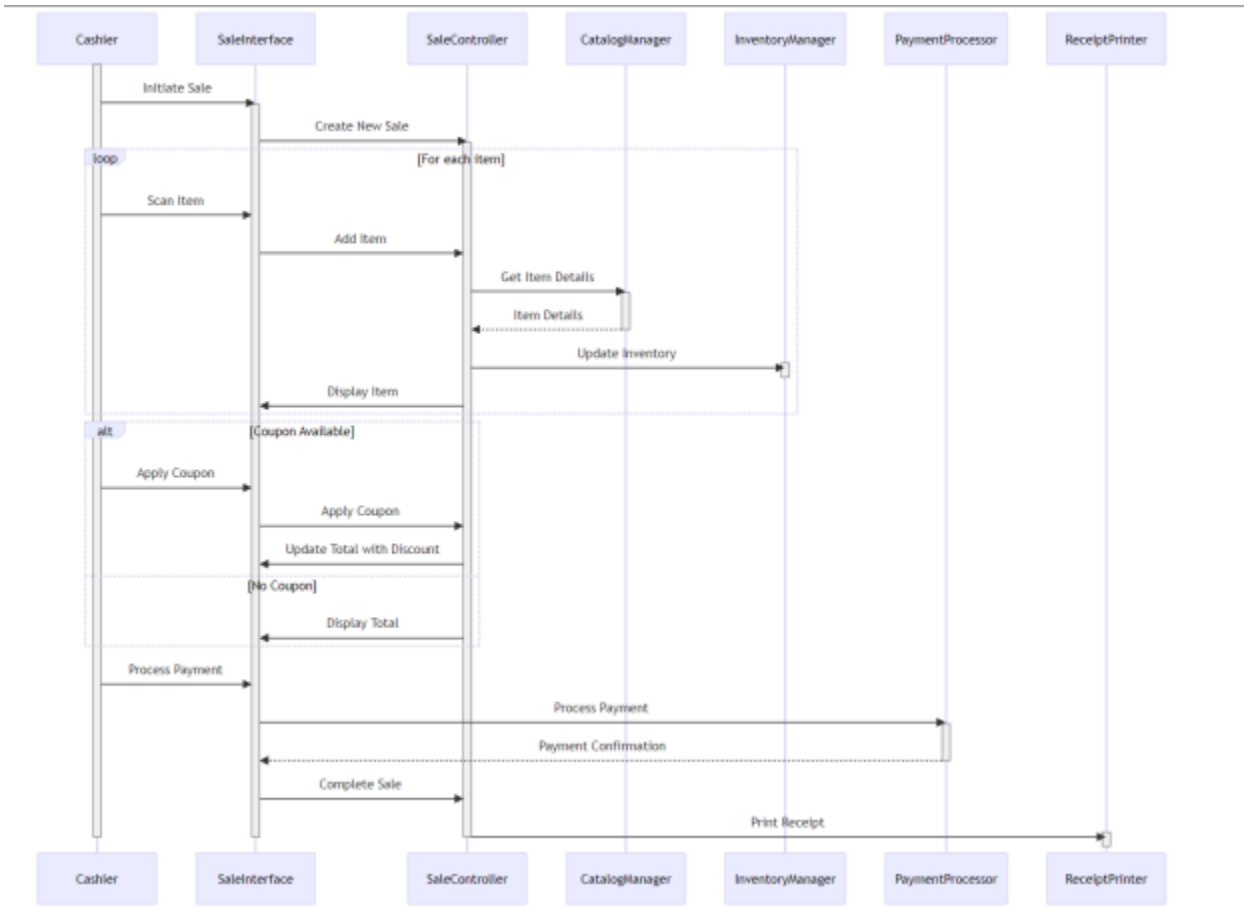
- Catalog System
- Inventory System

Control Objects:

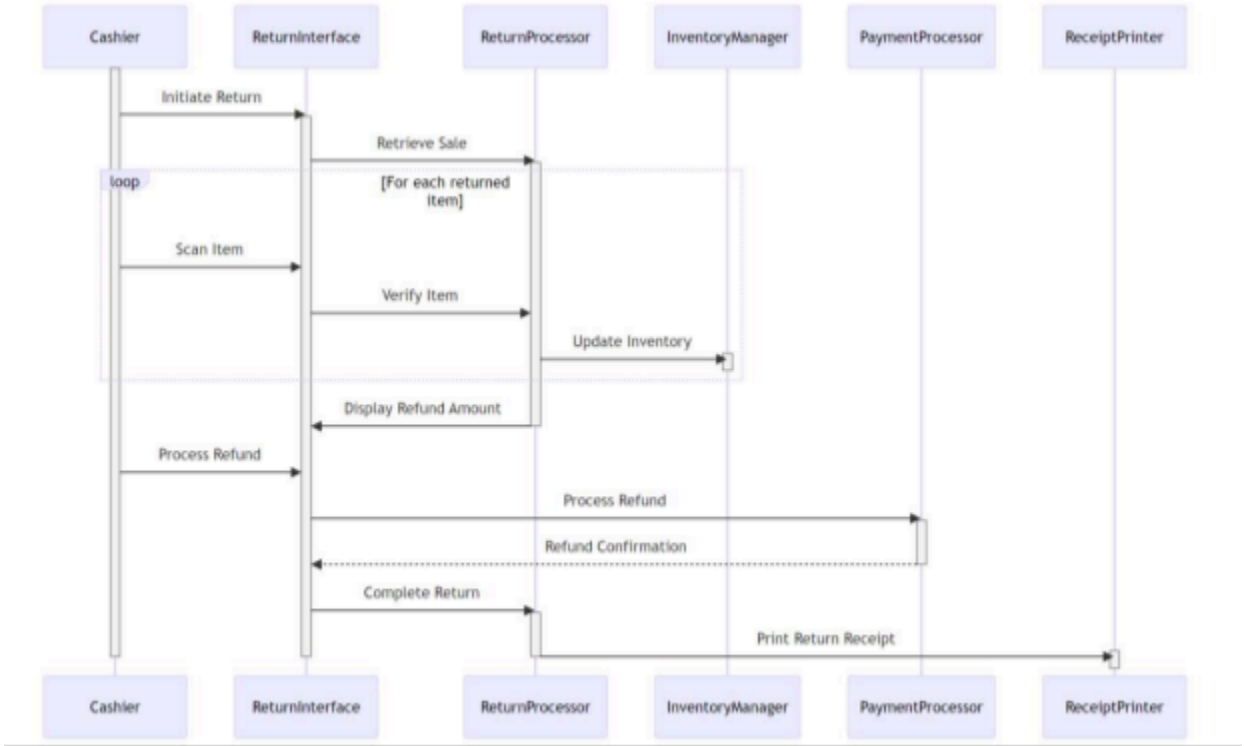
- Process Sale Controller
- Handle Payment Controller
- Handle Return Controller

Task 3: Develop Sequence Diagrams

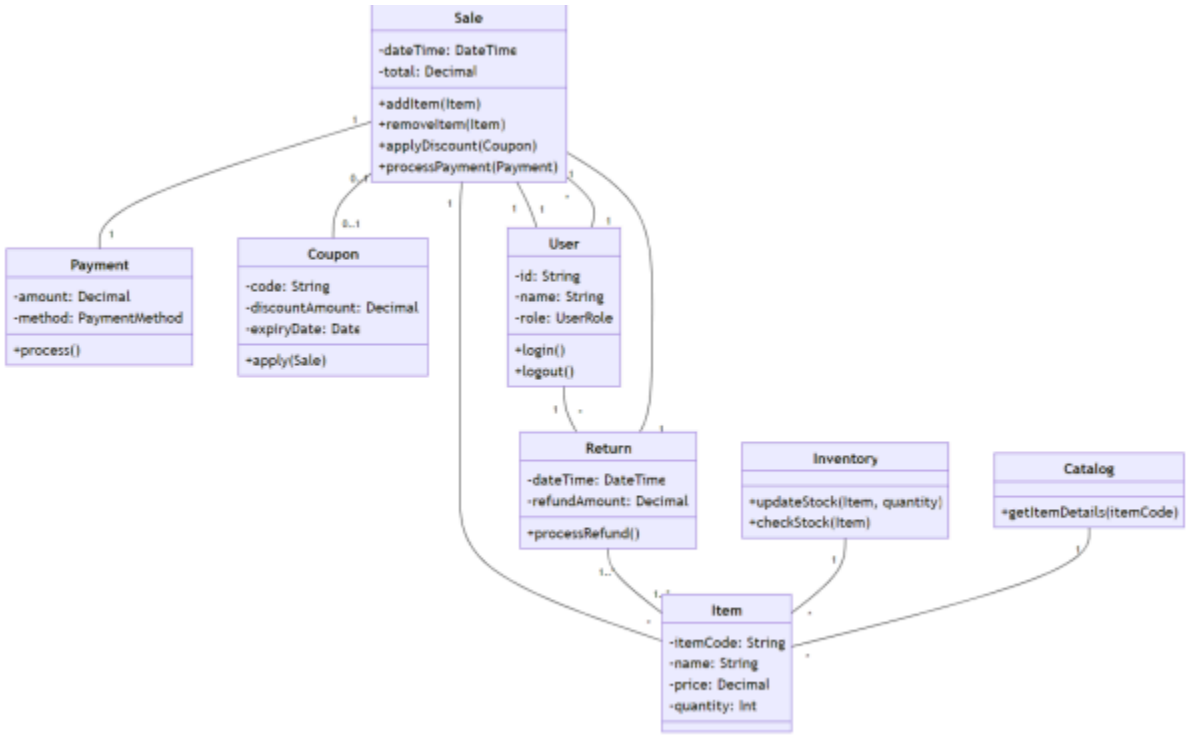
• Process Sale



- **Handle Return**

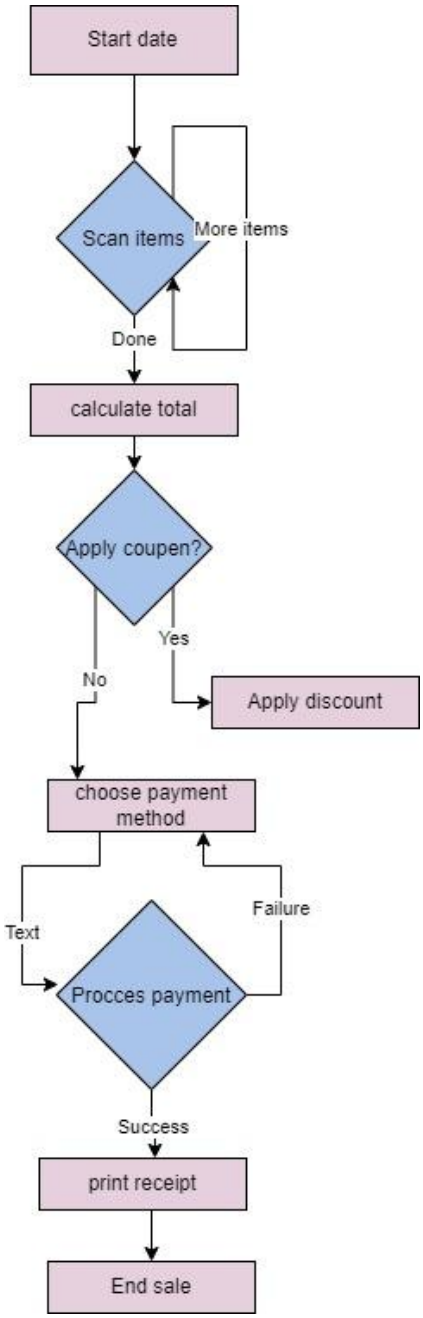
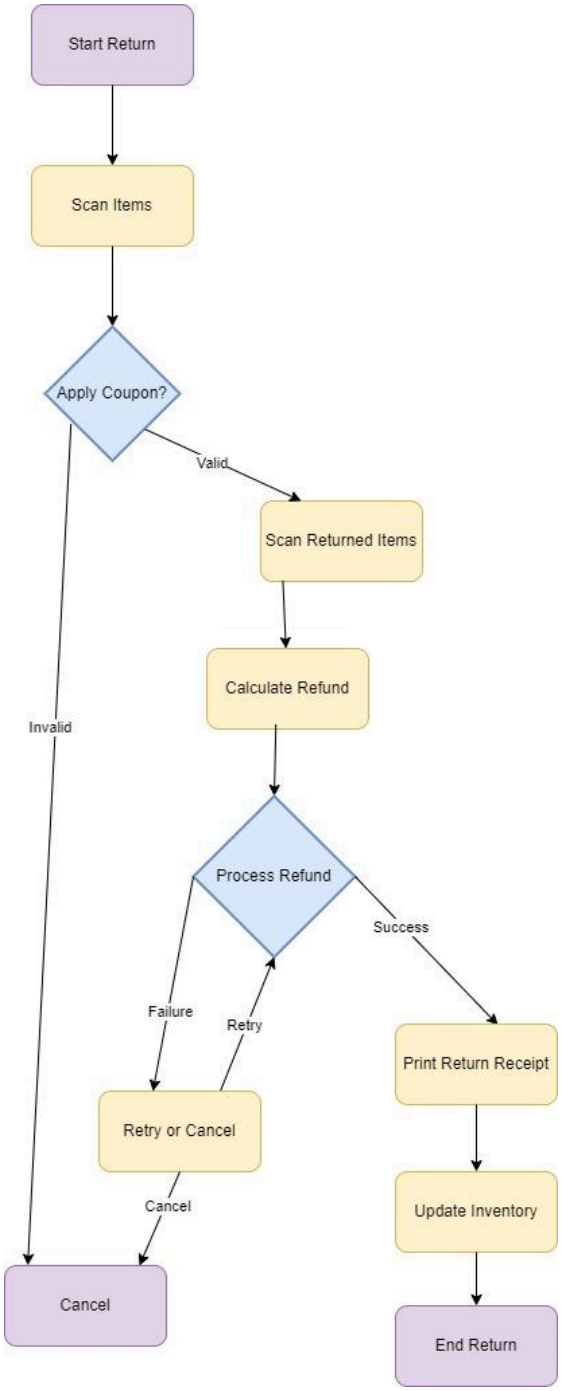


Task 4: Develop Analysis Domain Models



Task 5: Develop activity diagram for "Process Sale" and "Handle Return" use cases.

- **Process Sale**



- **Handle Return**