



IT314-SOFTWARE ENGINEERING

**LAB 6- Modeling Class Diagram and
Activity Diagram (Point of Sale System)**

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

Use Case 1: Process Sale

- **Actors:**
 - ➔ Cashier
 - ➔ External systems: Catalog System and Inventory System
- **Preconditions**
 - ➔ The cashier is authenticated and logged in.
 - ➔ The products being sold are available in both the catalog and inventory systems.
- **Postconditions**
 - ➔ The sale is recorded.
 - ➔ The inventory system reflects updated stock levels.
 - ➔ A receipt is printed for the customer.
- **Main Flow**
 1. The cashier initiates a new sale.
 2. An item is scanned by the cashier.
 3. The system fetches item details from the catalog.
 4. The inventory is adjusted to reflect the sale of the item.
 5. Steps 2-4 are repeated until all items are processed.
 6. The customer selects a payment option.
 7. The system processes the payment (cash, credit card, etc.).
 8. Once payment is successful, the system generates and prints a receipt.
- **Alternative Flows**
 - ➔ If an item is not found, the cashier receives a notification.
 - ➔ If stock is insufficient, a message alerts the cashier.

- ➔ If payment is unsuccessful, the cashier may retry or cancel the transaction.

Use Case 2: Handle Returns

- **Actors:**

- ➔ Cashier
- ➔ Inventory System (external actor)

- **Preconditions:**

- ➔ The cashier must be logged in.
- ➔ The returned item must be part of a previous purchase.

- **Postconditions:**

- ➔ The return is processed, and the stock is updated.
- ➔ The customer receives a refund or store credit.

- **Main Flow:**

1. The cashier initiates the return process.
2. The cashier scans the item(s) being returned and may verify the original purchase.
3. The system retrieves the details of the returned items from the inventory.
4. The cashier ensures that the return complies with the return policy.
5. The system updates the inventory by adding the returned items.
6. The system processes a refund or store credit for the customer.

- **Alternative Flows:**

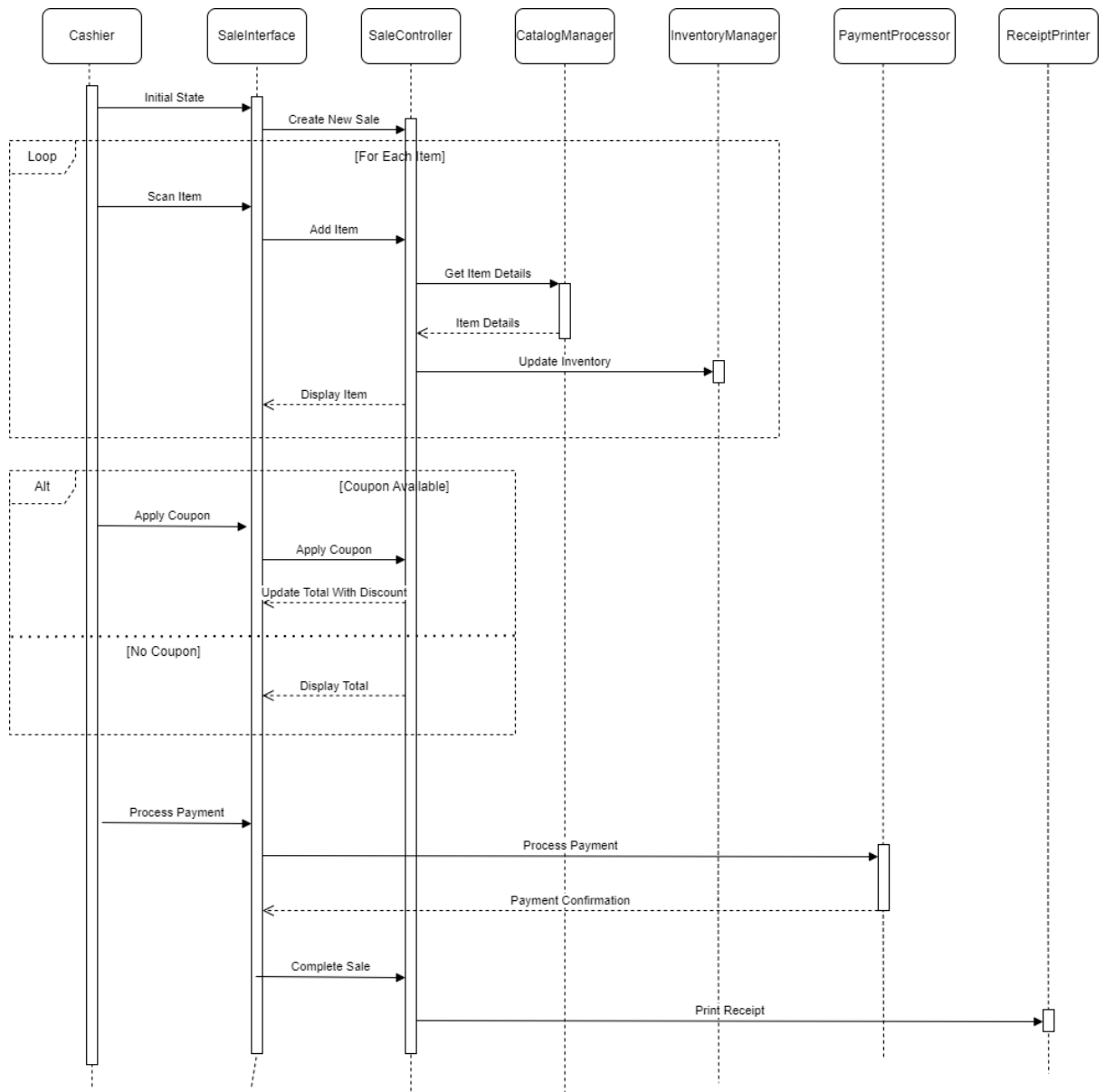
- ➔ If the return period is expired, the system notifies the cashier to reject the return.
- ➔ Damaged or incomplete items may result in partial refunds or rejection.

Task 2: Identifying Entity, Boundary, and Control Objects

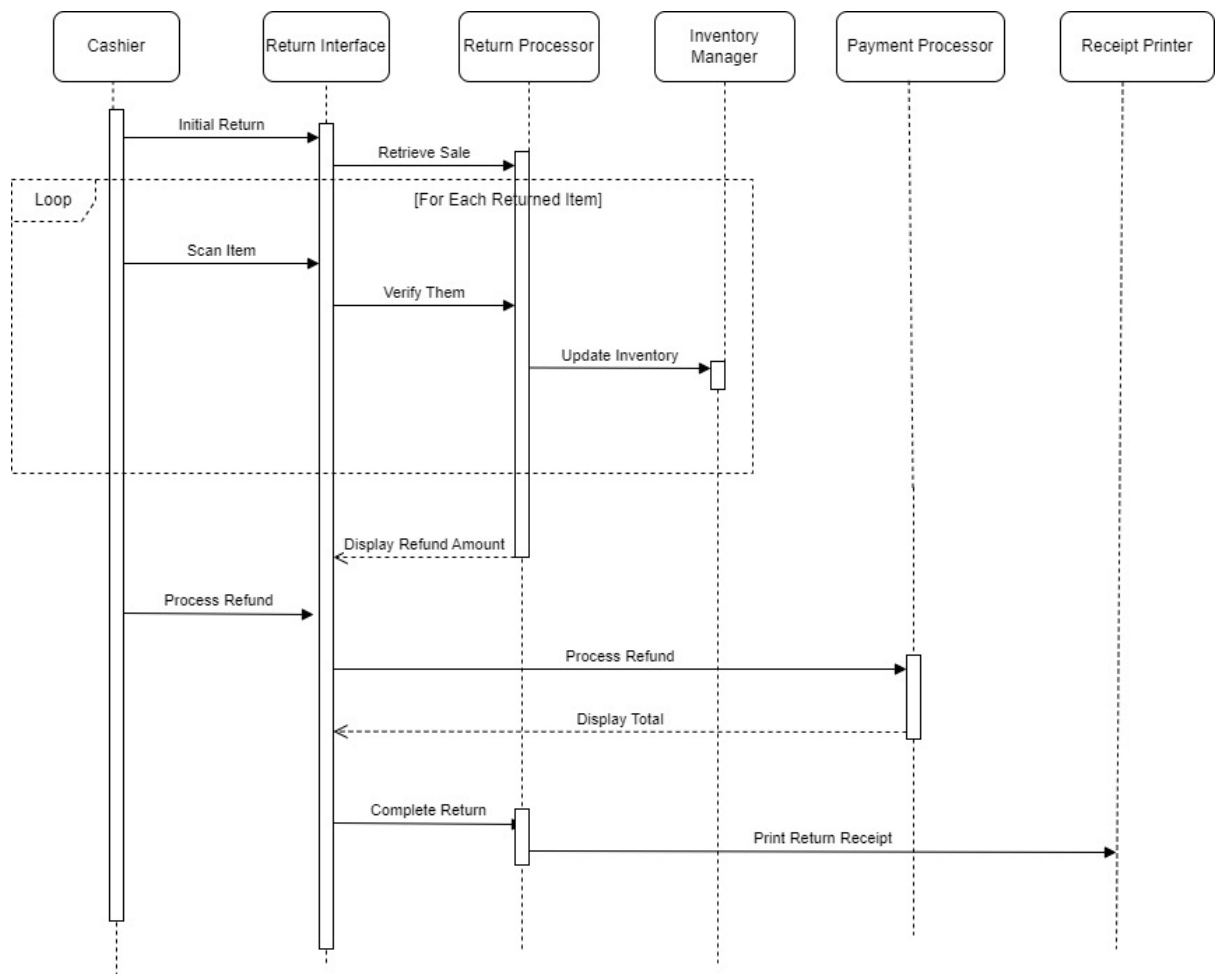
- **Entity Objects**
 - Sale
 - Product
 - Payment
 - Receipt
 - Return
- **Boundary Objects**
 - Cashier Interface
 - Catalog System
 - Inventory System
- **Control Objects**
 - Process Sale Controller
 - Payment Controller
 - Return Controller

Task 3: Sequence Diagrams

- **Process Sale**

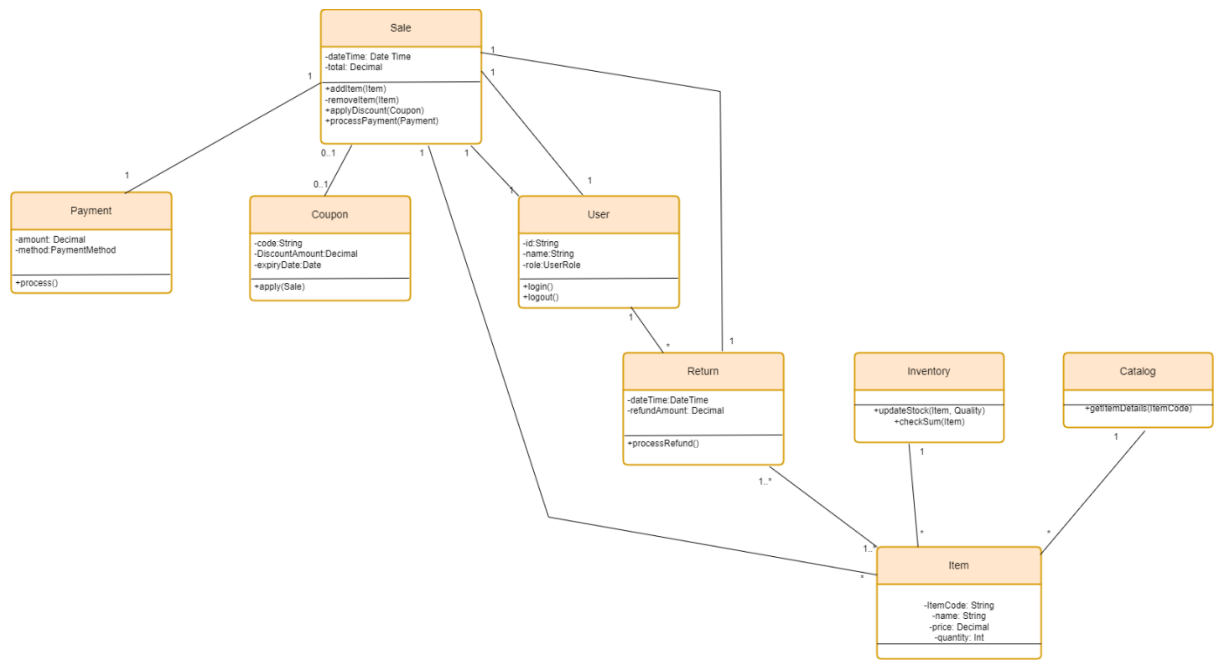


• Handle Return



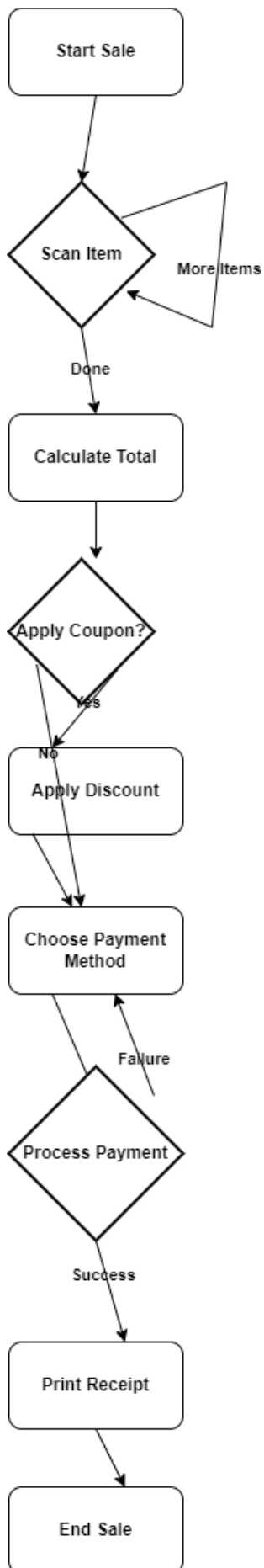
Task 4: Analysis Domain Models

Domain models created to represent the entities involved in the system.



Task 5: Activity Diagrams for "Process Sale" and "Handle Return"

- **Process Sale**



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- **Handle Return**

