Lab Assignment-6

IT-314 : Software Engineering

Name : Kritarth Joshi

Student Id : 202201338

1. **Develop a use case textual description for "Process Sale" and "Handle Return" use cases.**

Use Case : Process Sale

Actor :

- **Cashier**

Preconditions:

- **The cashier is logged into the POS (Point of Sale) system.**
- **The customer has items they wish to buy.**

Main Flow:

1. **The cashier initiates a new sales transaction.**
2. **For each item:**
    - **a. The cashier scans the item's barcode.**
    - **b. The POS system fetches the item's information (name, price) from the backend catalog system.**
    - **c. The POS system updates the stock quantity by communicating with the inventory system.**
    - **d. The POS system adds the scanned item to the ongoing transaction.**
3. **The POS system shows the running total.**
4. **The cashier informs the customer about the total amount due.**
5. **The customer selects a payment option (cash, credit card, or check).**

6. **If the customer provides a coupon:**
    - **a. The cashier applies the coupon to the transaction.**
    - **b. The POS system updates the total cost accordingly.**
7. **The cashier completes the payment process.**
8. **The POS system validates the payment.**
9. **The POS system generates the receipt.**
10. **The cashier prints and hands the receipt to the customer.**

Alternate Scenarios:

- **2b. If an item isn't available in the catalog system, the cashier manually inputs the item details.**
- **7a. If one payment method fails, the customer chooses a different payment method.**

Postconditions:

- **The transaction is saved in the POS system.**
- **The inventory system reflects the updated stock levels.**
- **The receipt is successfully printed.**

Use Case: Handle Product Return

Actor:

- **Cashier**

Preconditions:

- **The cashier is logged into the POS system.**
- **The customer has one or more items to return.**

Main Flow:

1. **The cashier starts the return process.**
2. **The customer provides the original receipt or details from the transaction.**

3. **The cashier checks if the item(s) are eligible for return.**
4. **For each returned item:**
    - **a. The cashier scans the item's barcode.**
    - **b. The POS system retrieves the item's information from the original transaction.**
    - **c. The POS system updates the stock in the inventory system.**
    - **d. The POS system adds the returned item to the return amount.**
5. **The POS system calculates the total refund.**
6. **The cashier confirms the return details and refund amount with the customer.**
7. **The cashier processes the refund using the original payment method.**
8. **The POS system generates a return receipt.**
9. **The cashier prints and gives the return receipt to the customer.**

<u>Alternate Scenarios:</u>

- **2b. If the customer doesn't have a receipt, the cashier searches for the transaction in the POS system and continues.**
- **3a. If the item is not eligible for return, the cashier informs the customer and stops the process.**
- **7a. If the original payment was made by credit card and the card is unavailable, an alternative refund method is applied.**

<u>Postconditions:</u>

- **The return is logged in the POS system.**
- **The inventory system is updated with the returned stock.**
- **The refund is processed.**
- **The return receipt is printed and handed to the customer.**

2) Identify Entity, Boundary, and Control Objects

Entity Objects:

- **Transaction (Sale)**
- **Product (Item)**
- **Payment**
- **Discount (Coupon)**
- **Account (User - Cashier/Admin)**

Boundary Objects:

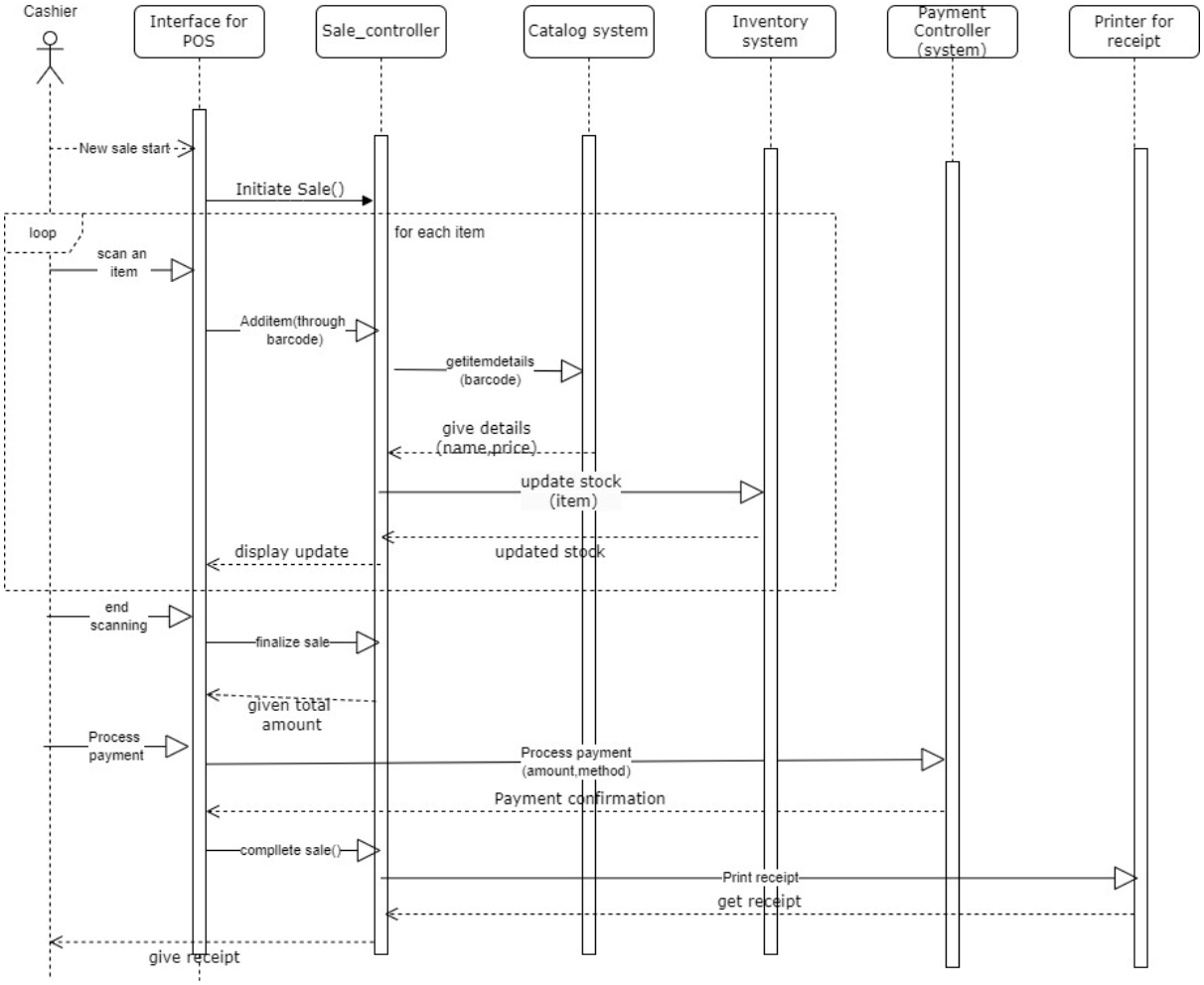
- **Login Screen**
- **POS System Interface**
- **Payment Interface**
- **Receipt Printer**
- **Barcode Scanner**

Control Objects:

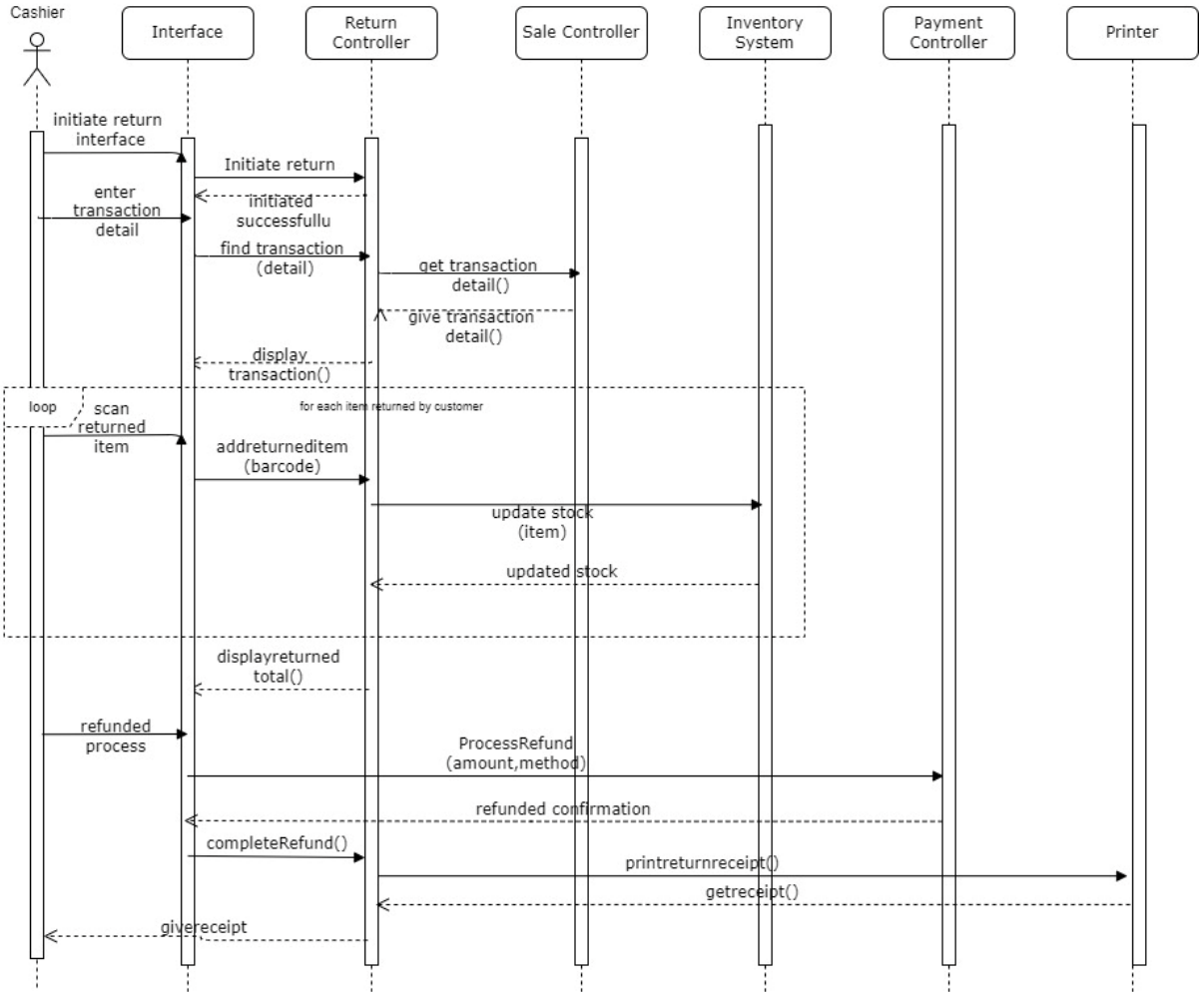
- **Transaction Manager (SaleController)**
- **Payment Manager (PaymentController)**
- **Inventory Management System (InventorySystem)**
- **Product Catalog System (CatalogSystem)**
- **Authentication Manager (UserAuthenticationController)**
- **Return Manager (ReturnController)**

3) Develop Sequence Diagram

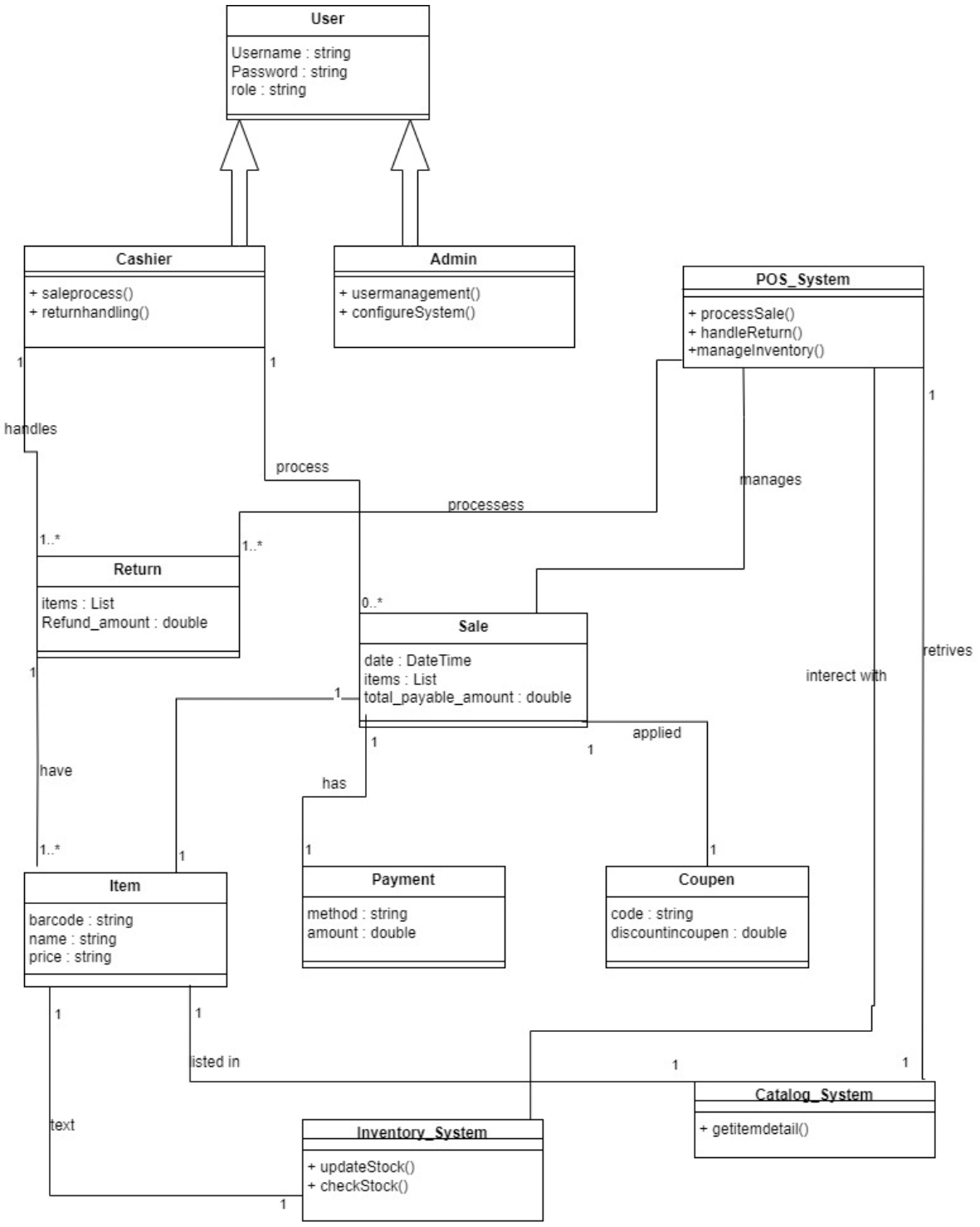
- **Process Sale:**



- **Handle Return:**

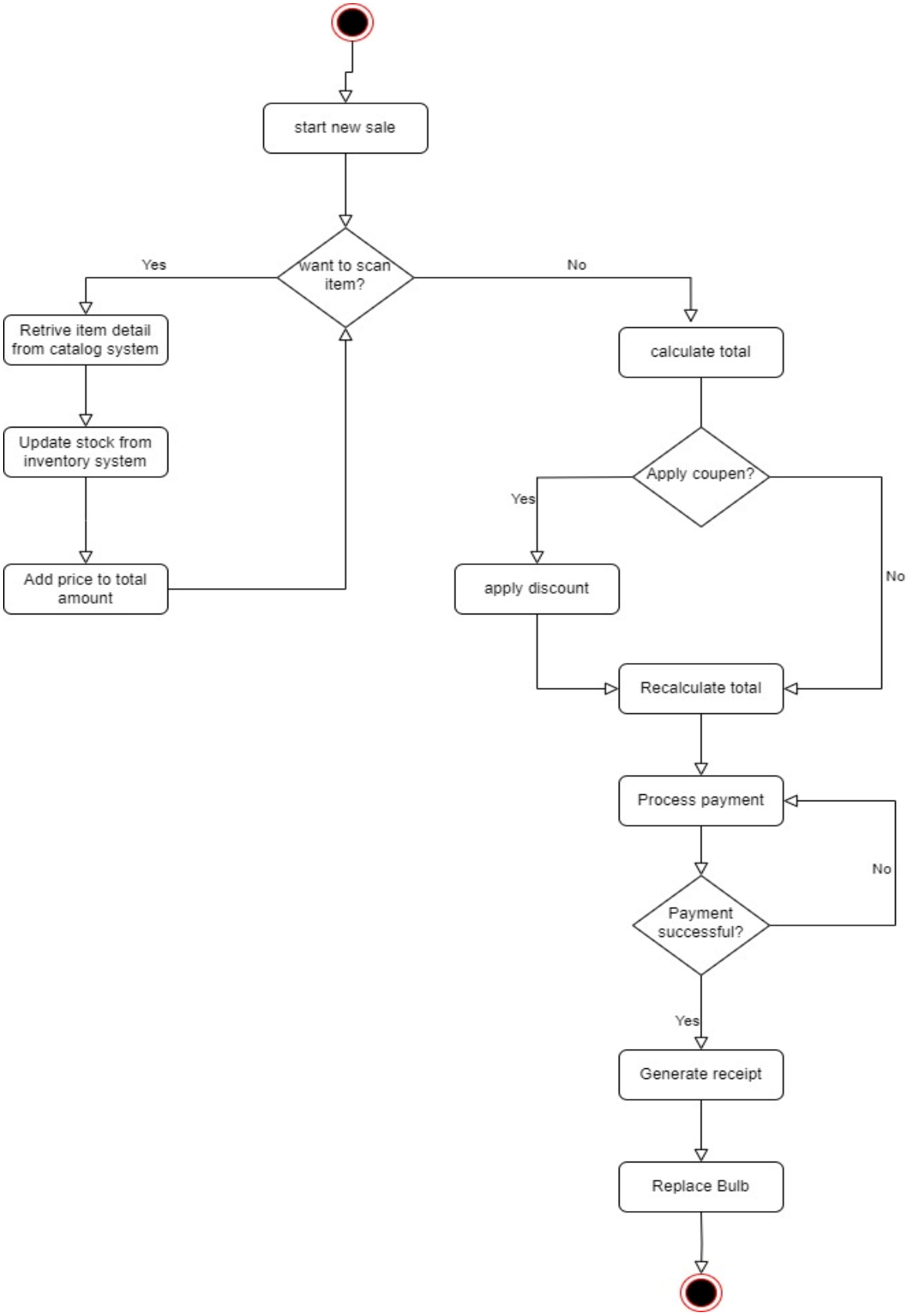


4) Develop Analysis Colony Models :



5) Develop an activity diagram for “Process Sale” and “Handle Return” Use Cases.

- **Process Sale :**



- **Handle Return :**