IT314 : Software Engineering

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Q1. Develop Use Case Textual Description for "Process Sale" and "Handle Return" use cases.

1. **<u>For Process Sale</u> :**

Use Case Name : Process Sale

Description : The Cashier records the purchased items and collects payment. The Catalog system displays the name and price of the good entered by the Cashier in his terminal. The Catalog system then interact with Inventory system to deduce the stock amount of this good.

Actors : Cashier, Customer, Inventory System, Payment System

Precondition :

- The Customer arrives at a POST checkout with the items to purchase.
- The Cashier starts a new sale session.

Postcondition :

- Sale is saved. Receipt is printed.
- Stock data updated.
- Payment authorization approvals are recorded.

Basic Flow :

- A Customer arrives at a POS checkout with goods to purchase. The Cashier uses the POS system to starts a new sale. The Cashier enters item identifier.
- The Catalog system determines the item information, records sale line item and presents item description, price and running total. The Cashier repeats the above steps until item entry is complete in POS.
- The Inventory system calculates and presents total price. The Cashier tells Customer the total, and asks for payment. The Customer pays and the Catalog system handle payment.
- The Catalog system records completed sale and sends sale information to the external Inventory system for stock update.

- The Inventory system presents receipt and the Customer leaves with receipt and goods.

Extensions :

- If there is more than one of the same item, the cashier can enter the quantity as well. The subtotal is shown
- Invalid identifier entered. Indicate error.
- The Catalog system process gift coupon , if applicable for the customer
- The Customer does not have enough money. Cancel transaction
- If the items stock gets below a predefined minimum place a reposition order

2. **For Handle Return**

Use Case Name : Handle Return

Actors : Cashier, Customer, Inventory System, Payment System

Preconditions:

- The customer must have the original purchase receipt or proof of purchase.
- The POS system is operational, and the cashier is logged in.

Postconditions :

- The item is returned to the inventory.
- The customer receives a refund (or store credit).
- The system logs the return transaction.

Basic Flow:

- The customer approaches the cashier to return an item with a valid purchase receipt.

- The cashier starts the return transaction by logging into the POS system and selecting the "Return" option.
- The cashier scans the barcode or enters the product information. The POS system retrieves the item details from the catalog system.
- The system checks the return policy (e.g., return window, item condition) to verify if the item is eligible for return.
- Upon successful verification, the system interacts with the inventory system to add the item back into stock.
- If eligible, the system calculates the refund amount based on the original purchase price.
- The cashier selects the refund method (cash, credit, or store credit).
- The system interacts with the payment system to process the refund.
- A new receipt is generated, showing the return details. The cashier prints the receipt and gives it to the customer.
- The return is recorded in the system, and the transaction is marked as complete.

Q2 . Identify Entity/Boundary/Control Objects

Entity Objects

Product	Customer	User
Transaction	Coupon	Inventory

Boundary Objects

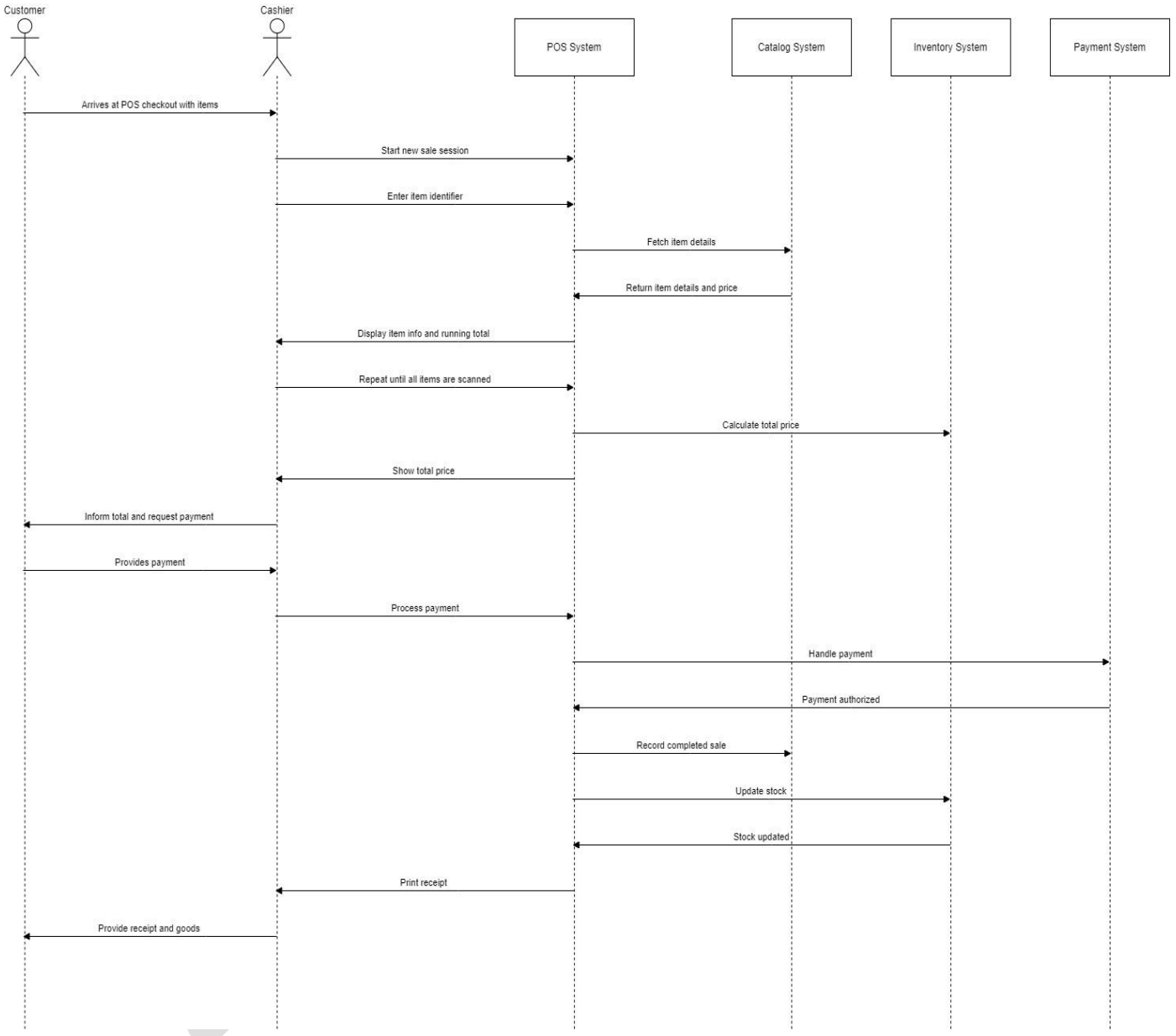
POS Interface	Payment Gateway	Receipt Printer
Barcode Scanner	Inventory System Interface	

Control Objects

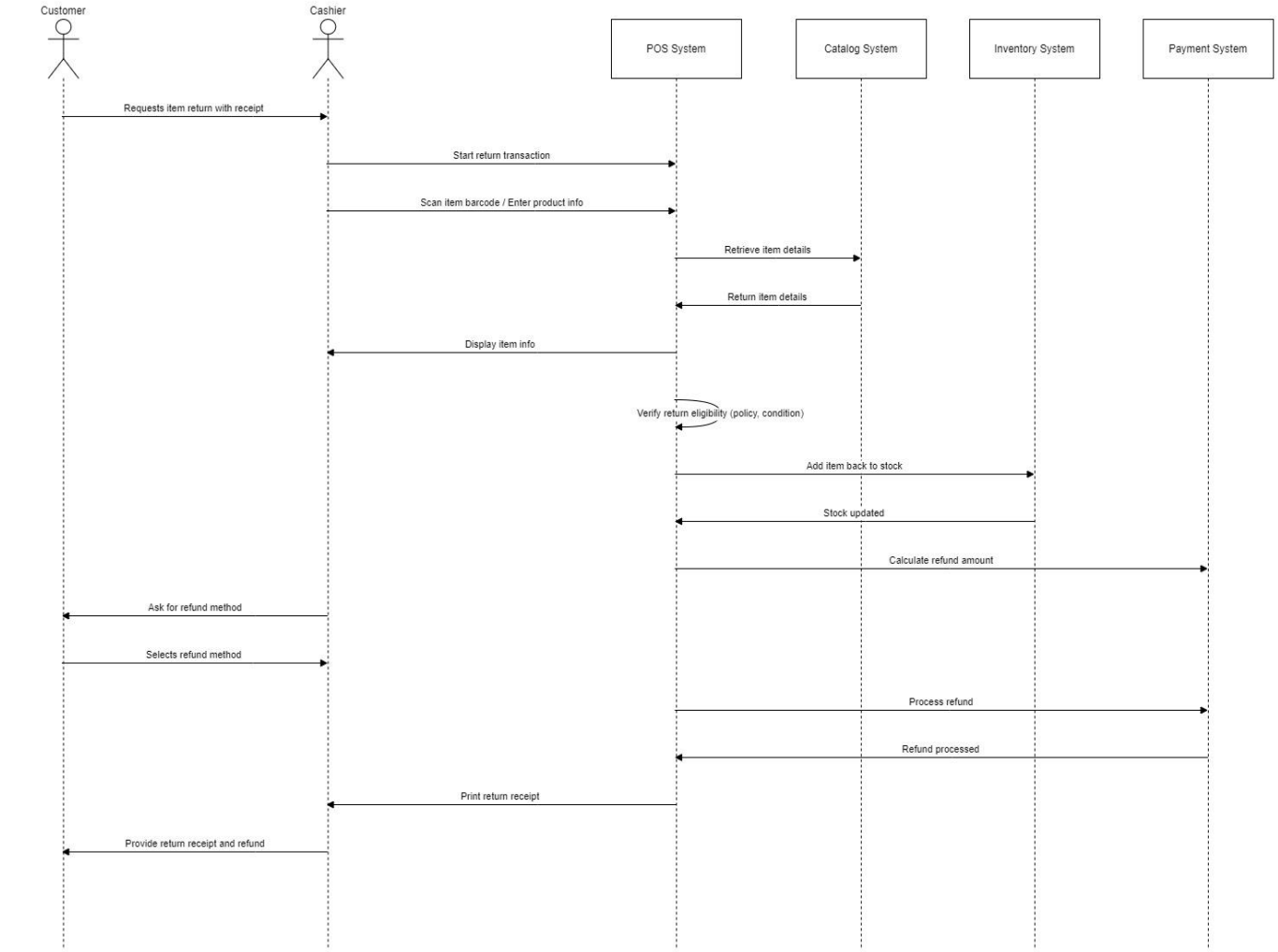
SaleController	PaymentController	ReturnController
InventoryController	UserController	

Q3. Develop Sequence Diagrams

For Process Sale :

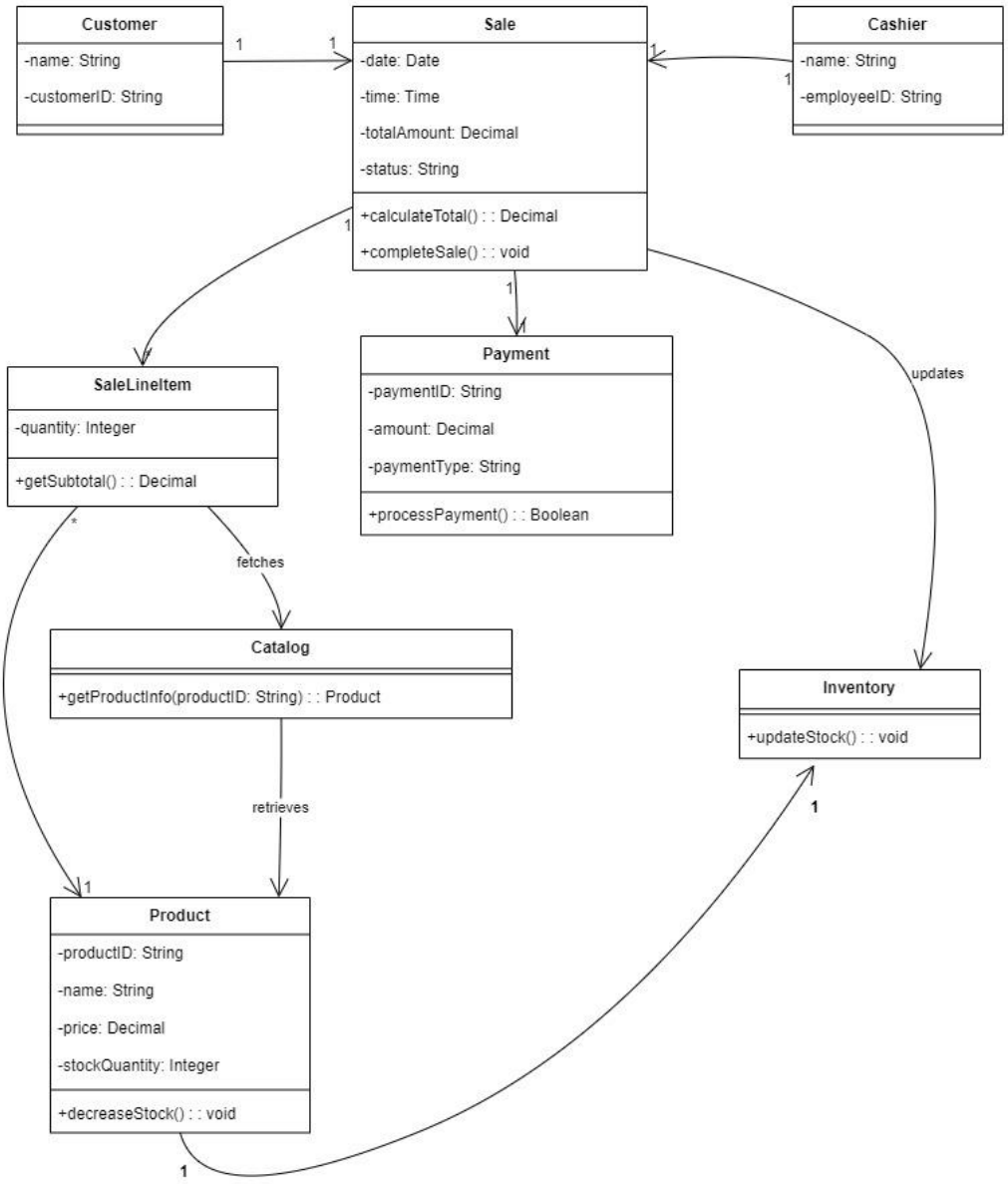


For Handle Return :

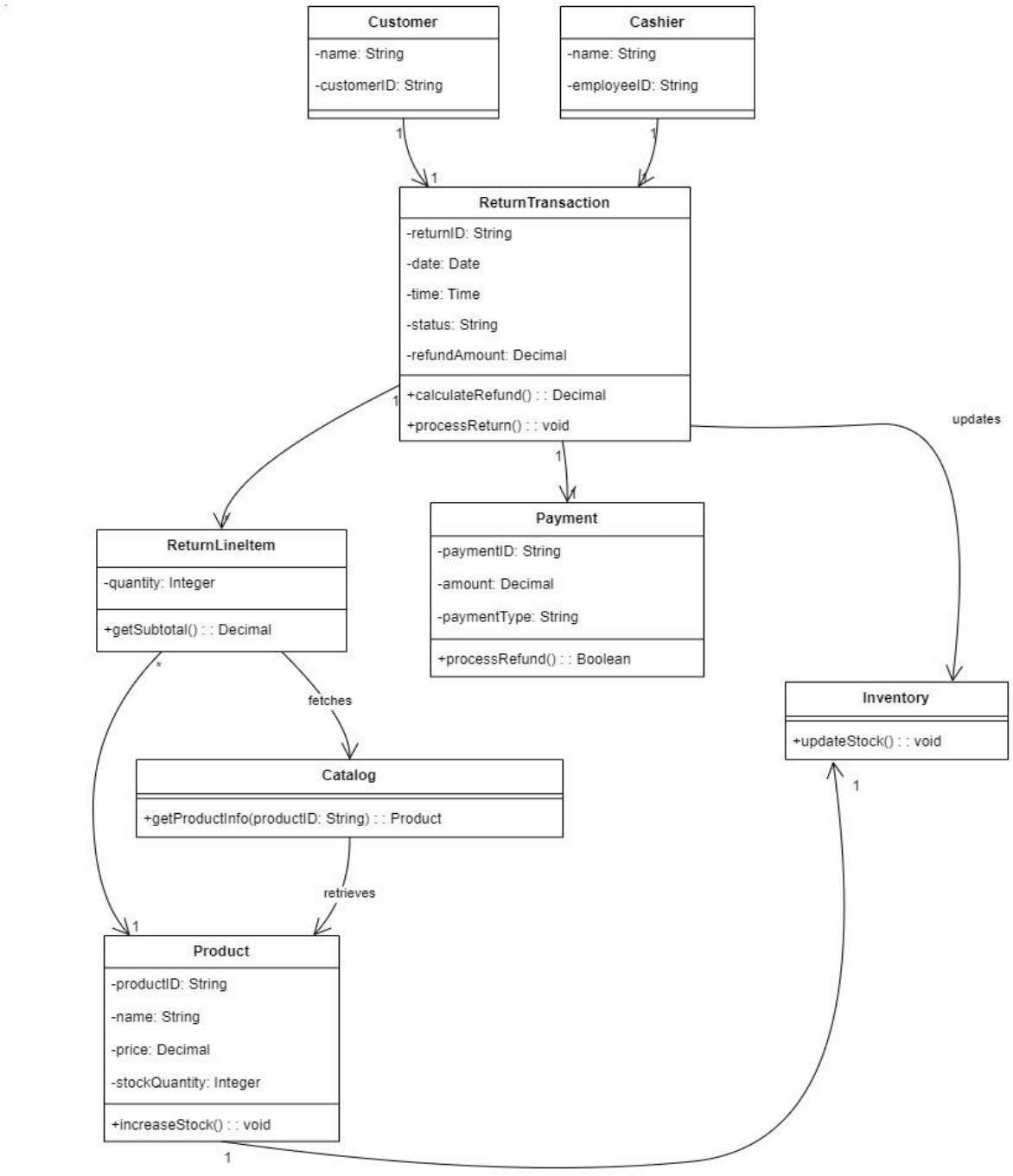


Q4. Develop Analysis Domain Models

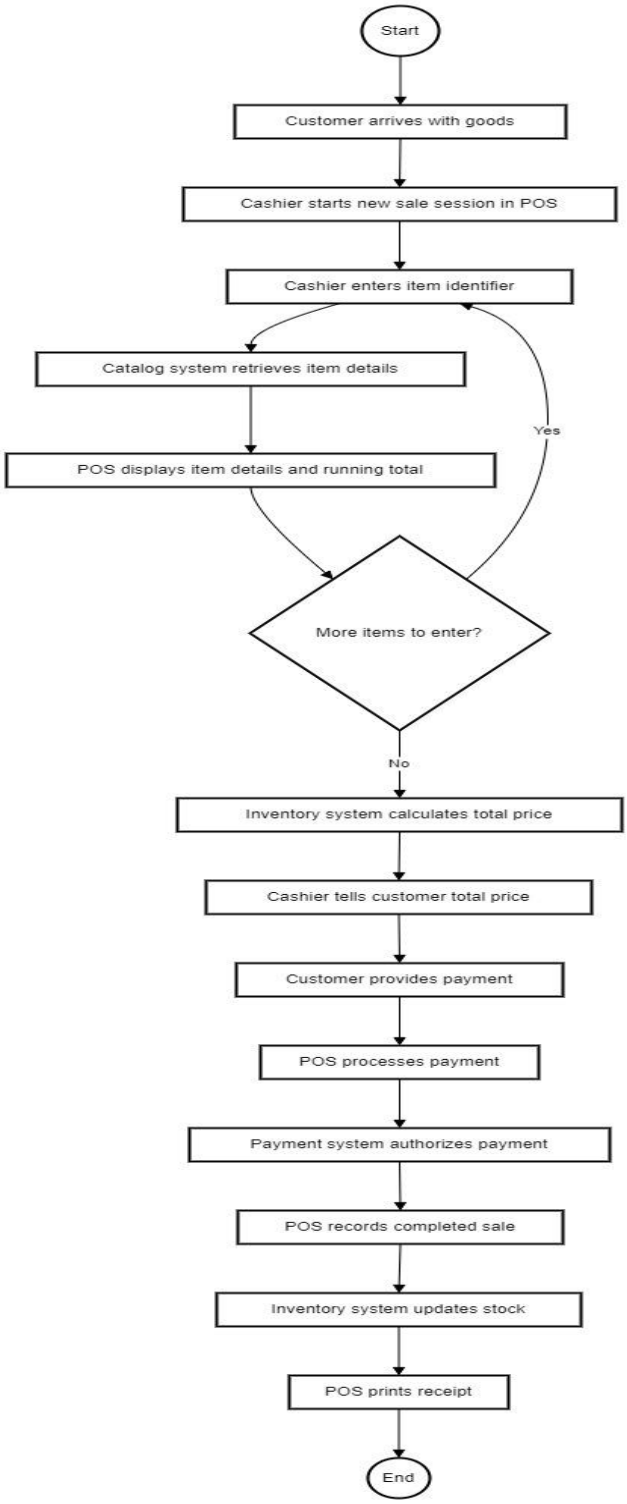
For Process Sale :



For Handle Return :



Q5. Develop activity diagram for "Process Sale" and "Handle Return" use cases. For Process Sale :



For Handle Return :