IT - 314 Software Engineering

LAB - 6

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

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

1) Process Sales

Use Case: Process Sale

Primary Actor: Cashier

Preconditions:

- Cashier is logged in.
- The database is up to date.
- The item has a barcode scanner.
- POS system is operating efficiently.

Postconditions:

- The sales are recorded in the system.
- In the inventory , the stock is updated.
- The receipt is printed, and payment is processed.

Main Flow:

1. The cashier starts a new session for the new customer.
2. The cashier scans the item’s barcode.
3. The POS retrieves the details of all the items from the catalog system.
4. The selected quantity of the items is deducted from the inventory.
5. Cahier applies the discount if the customer provides any gift coupons.
6. The final price is displayed.

7. The customer makes the payment.
8. Receipt is generated upon successful completion of the transaction.

Extensions:

2. A) If an item’s barcode is unrecognized, the cashier is prompted to manually enter the item's information or scan it again.

5 A) If the coupon is expired or invalid, the system displays an error, and the cashier informs the customer.

7. A) If the payment is declined, the cashier asks the customer for an alternative payment method. The process restarts at step 7.

2) Handle Returns

Use Case: Process Sale

Primary Actor: Cashier

Preconditions:

- Cashier is logged in.
- The database is up to date.
- The customer has the receipt or proof of purchase.
- POS system is operating efficiently.

Postconditions:

- The refund is carried out smoothly.
- In the inventory , the stock is updated.

Main Flow:

1. Customer requests a return for one or more items.
2. Cashier scans the receipt or manually enters the transaction details to locate the original sale.
3. The POS retrieves the details of all the items from the catalog system.
4. POS shows the items to be returned.
5. POS check if the items can be returned and then starts the process.
6. The cashier selects the refund method.
7. POS updates the inventory.
8. Return Receipt is generated upon successful completion of the transaction.

Extensions:

2. A) If the customer doesn't have the receipt, the cashier can manually run the POS to find.

5 A) If the items can’t be returned, the cashier conveys it to the customer.

7. A) If the refund transaction is declined (e.g., for credit card returns), the cashier informs the customer.

Identify Entity/Boundary/Control Objects

Entity Object:

- Item/Product
- Receipt
- Customer
- Payment
- Coupon/Discount

- User (Cashier/Admin)

Boundary Object:

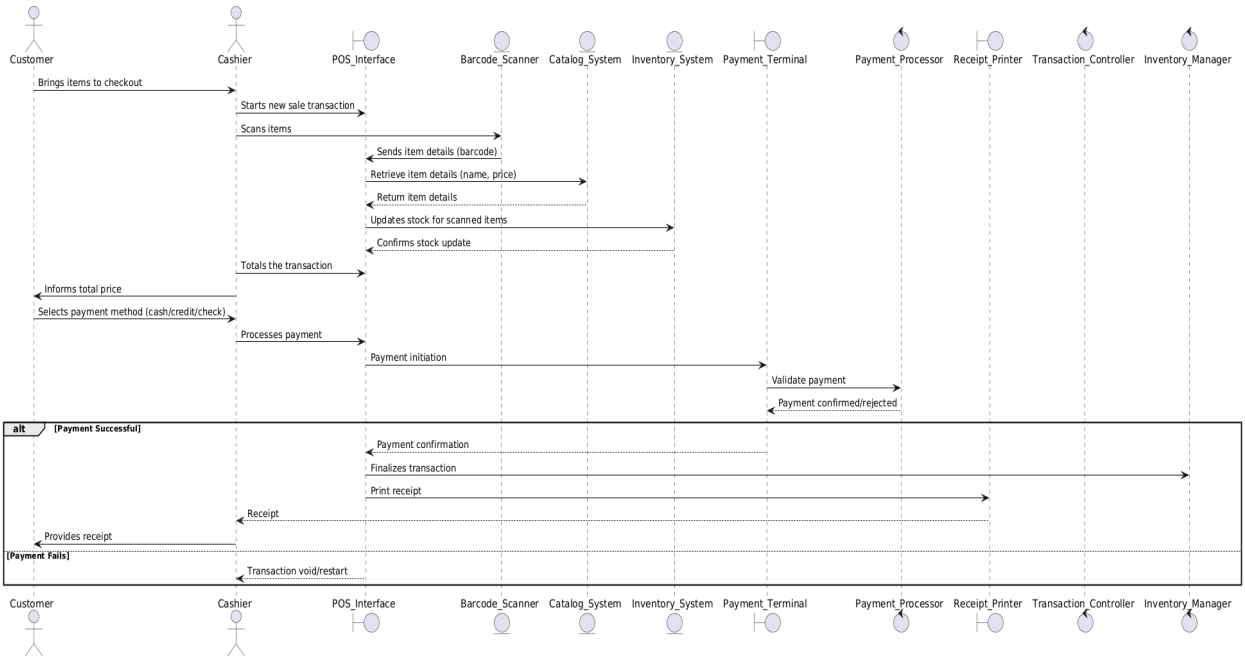
- Login Screen
- Barcode Scanner
- Payment Gateway Interface
- Receipt Printer Interface
- Catalog System Interface
- Inventory System Interface

Control Objects

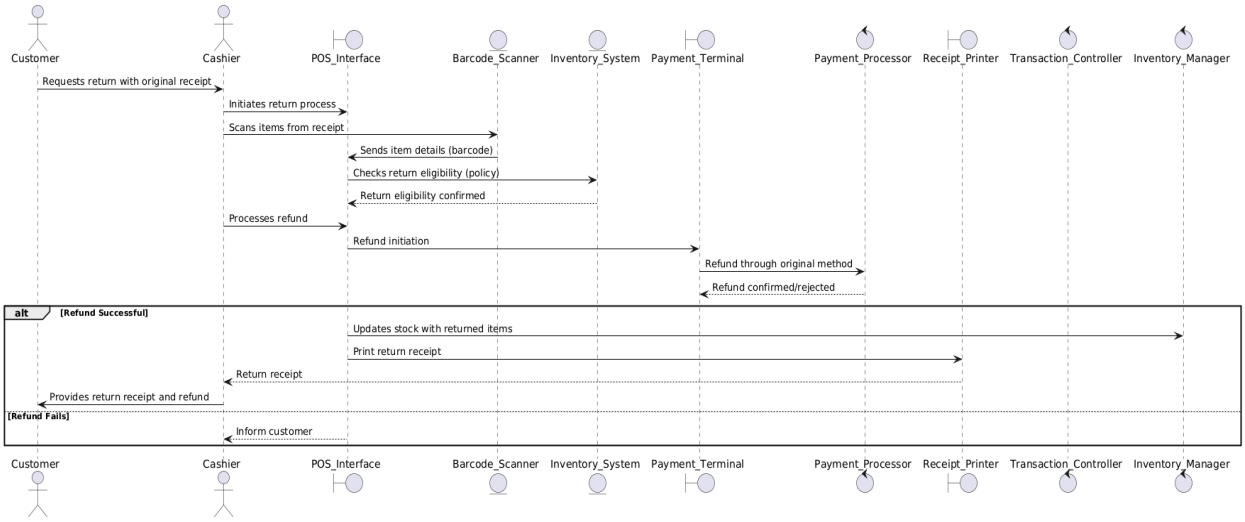
- Payment Controller
- Inventory Controller
- Transaction Controller
- Receipt Controller

Develop Sequence Diagrams

Process Sales

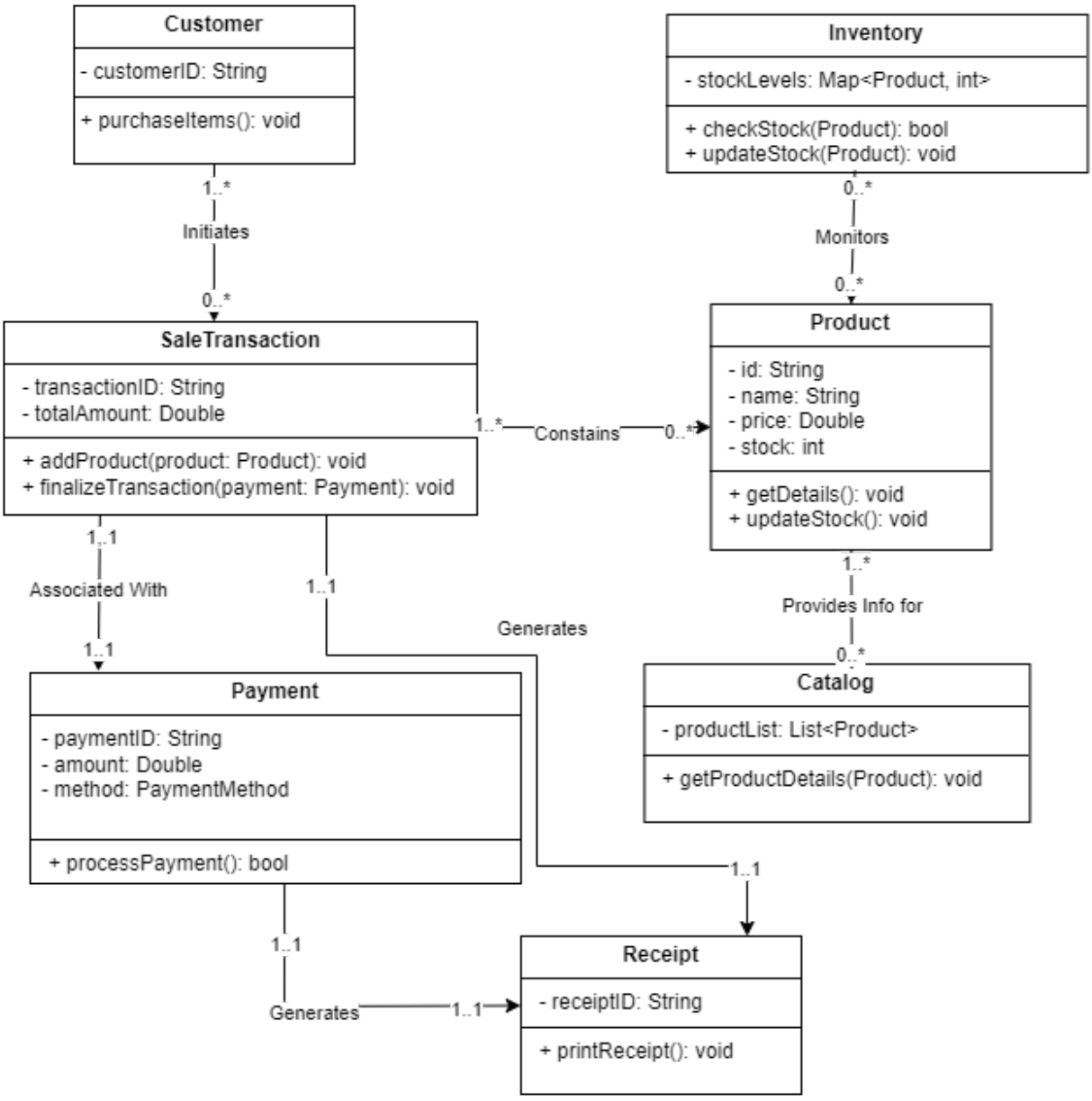


Handle Return

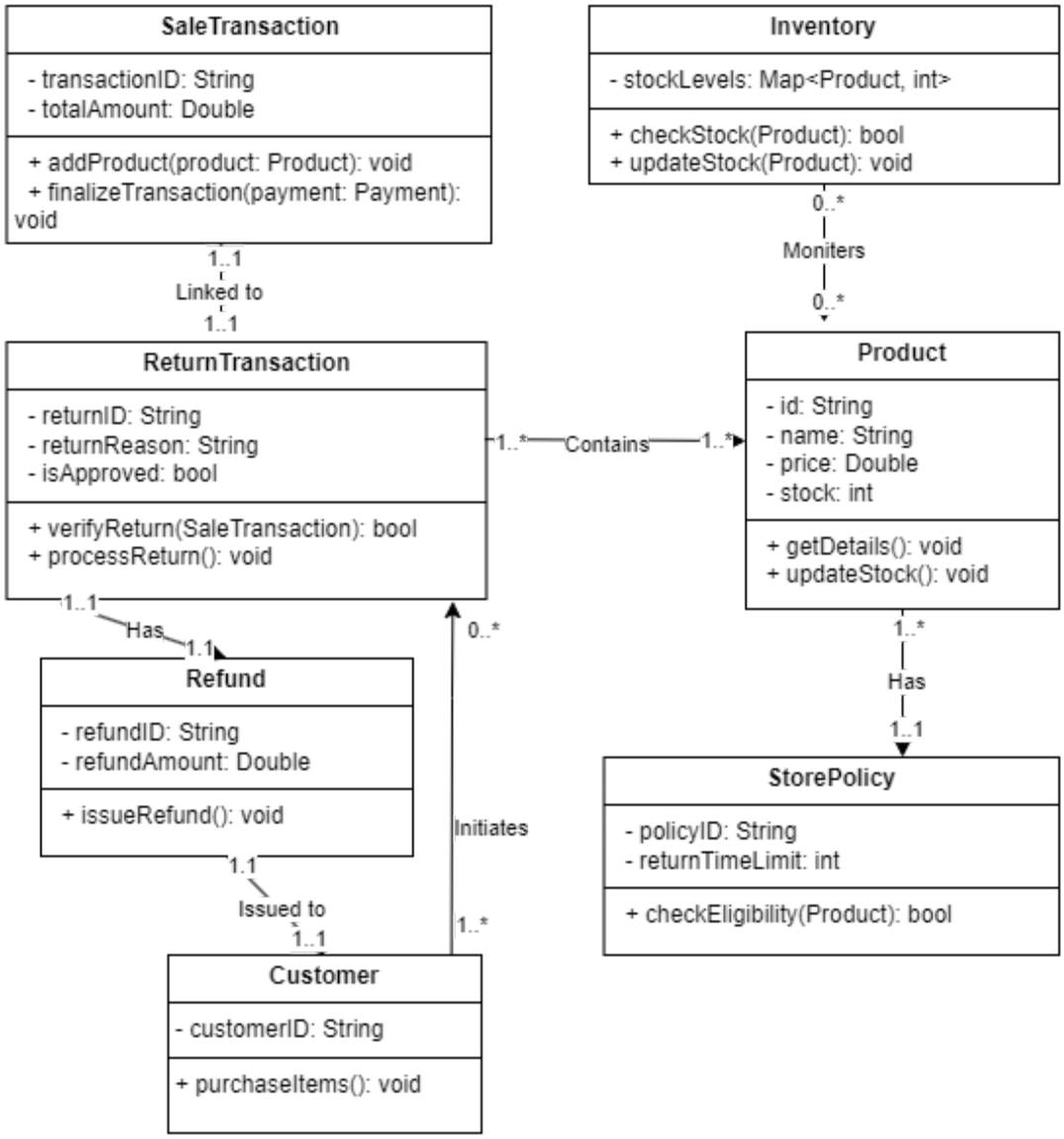


Develop Analysis Domain Models

- Process Sales

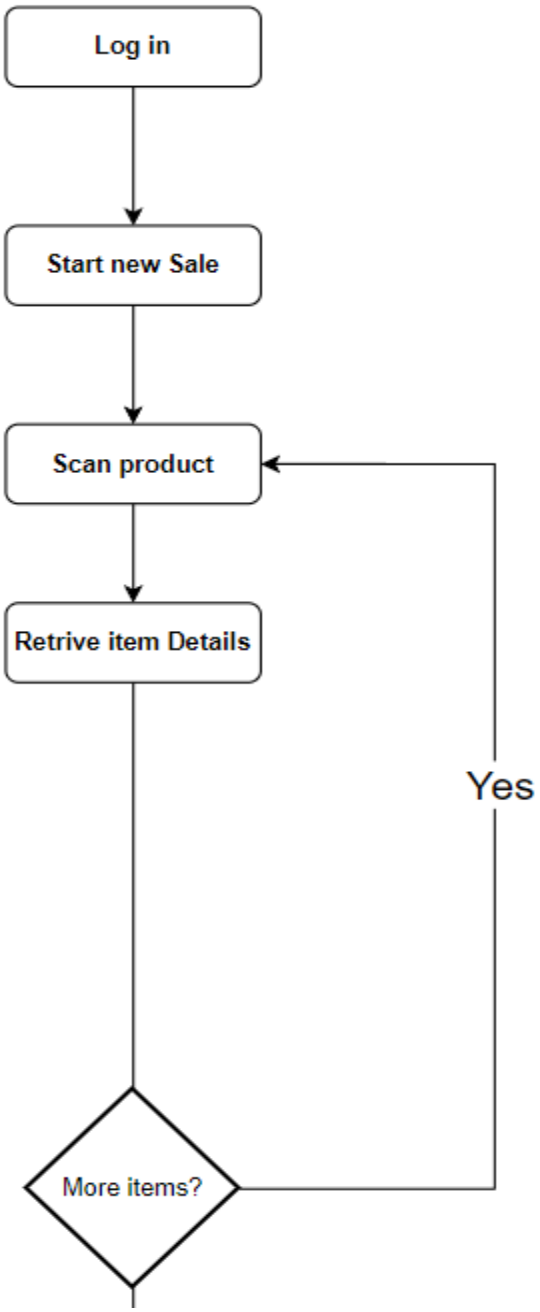


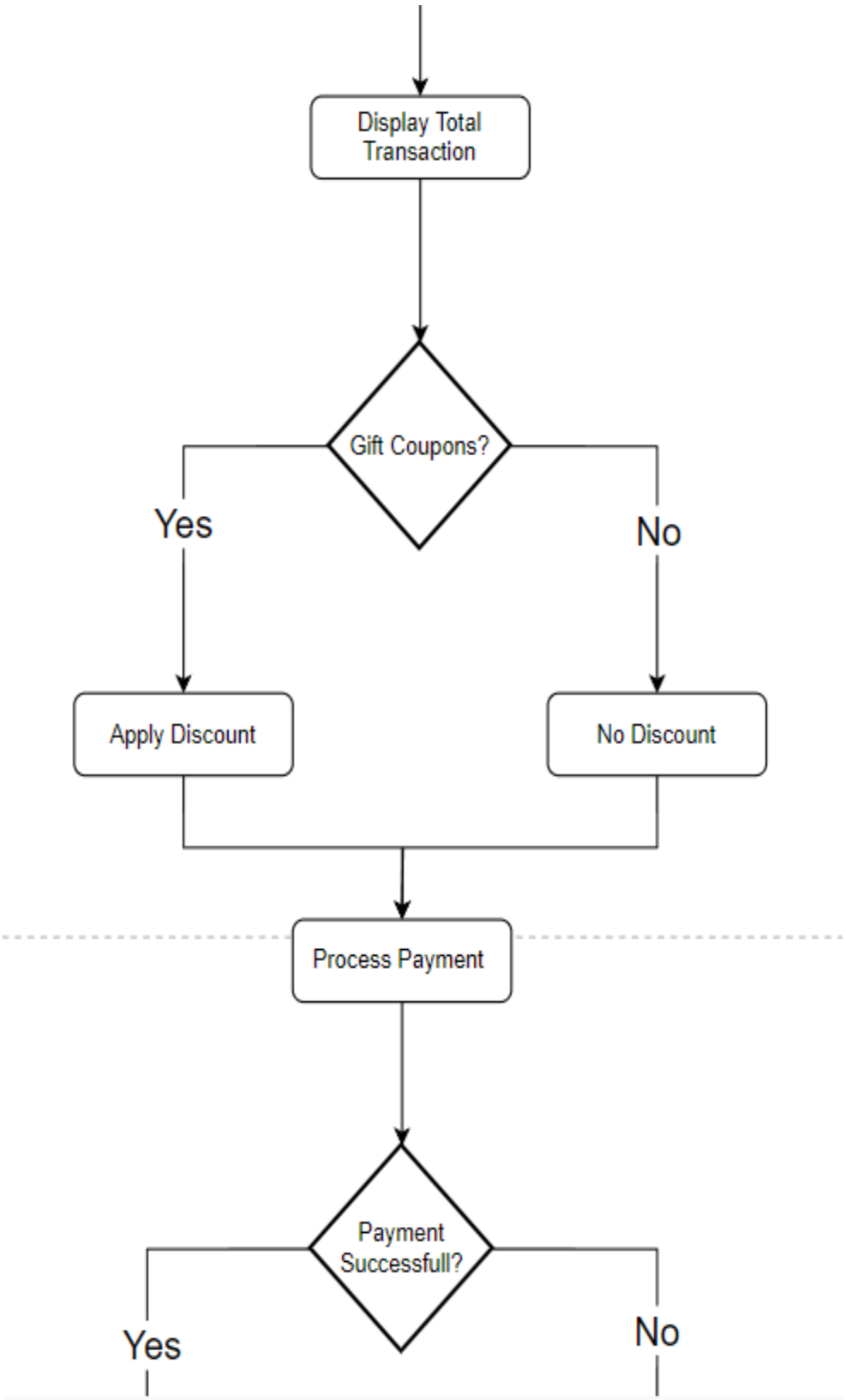
- Handle Returns



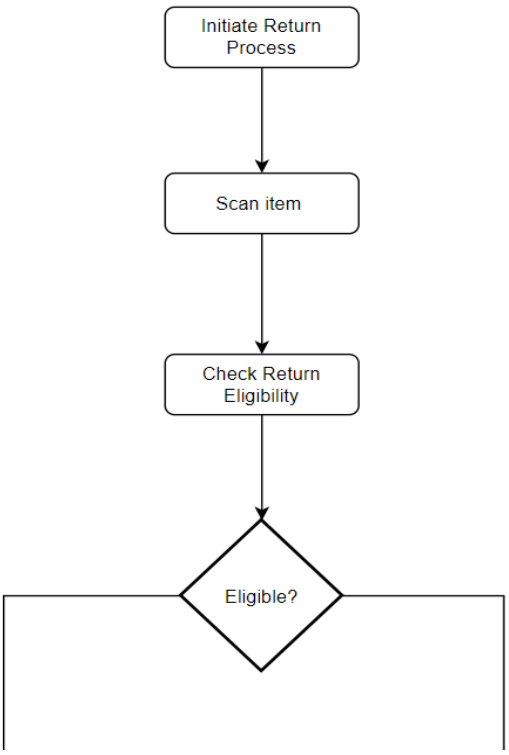
Develop activity diagrams for "Process Sale" and "Handle Return" use cases.

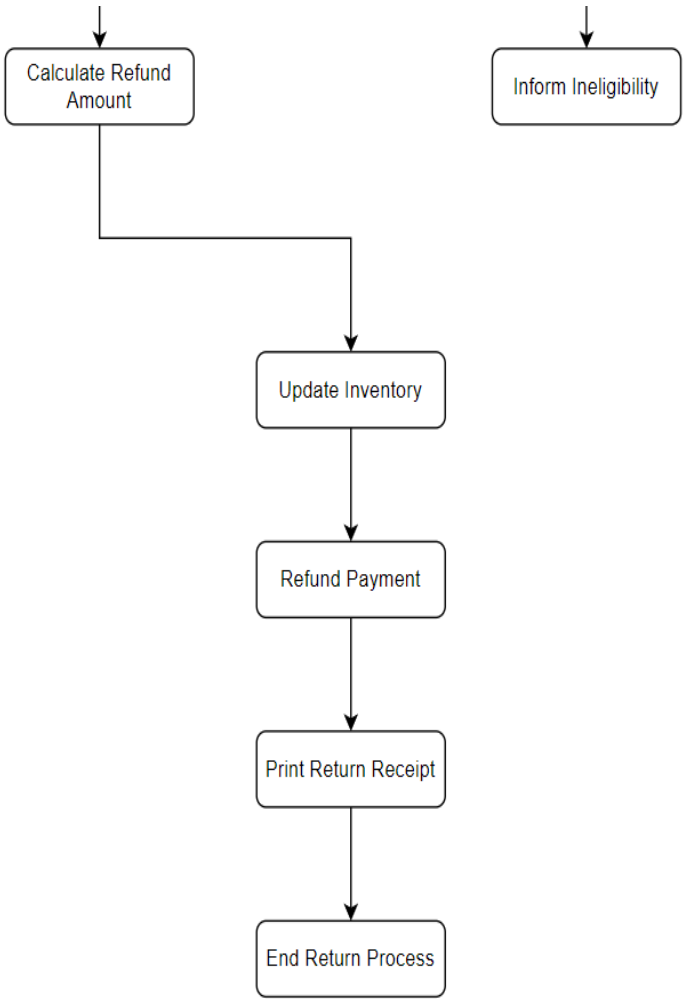
1) Process Sale




Display Total Transaction
Gift Coupons?
Yes
No
Apply Discount
No Discount
Process Payment
Payment Successfull?
Yes
No

2) Handle Return




Calculate Refund Amount
Inform Ineligibility
Update Inventory
Refund Payment
Print Return Receipt
End Return Process

Thank You