IT-314

Modeling Class Diagram and Activity Diagram

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

Title: Process Sale
Actor: Cashier, Customer

Preconditions:

- User (cashier) is logged into the POS system.
- Customer has selected items for purchase.
- Items have valid barcodes and are available in stock.

Postconditions:

- Sale transaction is recorded in the system.
- Inventory is updated to reflect the sale.
- Receipt is printed and provided to the customer.

Main Flow:

1. **Initiate Transaction:** The cashier selects the option to start a new sale transaction in the POS system.
2. **Scan Items:** The cashier scans the barcodes of each item using the barcode scanner.
3. **Retrieve Item Details:** For each scanned item, the system retrieves the item name and price from the backend catalog.
4. **Update Inventory:** The system checks the inventory and deducts the quantity of each item purchased.
5. **Display Total:** The system calculates the total cost of the items, including applicable taxes and discounts, and displays it to the cashier.
6. **Apply Coupons (if any):** If the customer presents gift coupons, the cashier applies them to the total cost.
7. **Process Payment:**
    - **Cash:** The cashier receives the cash and provides change if necessary.
    - **Credit Card:** The cashier processes the credit card payment through the POS system.
    - **Check:** The cashier verifies and processes the check payment.
8. **Print Receipt:** Upon successful payment, the system generates and prints a receipt for the transaction.
9. **End Transaction:** The cashier hands the receipt to the customer and thanks them for their purchase.

Title: Handle Return
Actor: Cashier, Customer

Preconditions:

- User (cashier) is logged into the POS system.
- Customer has items to return and is within the return policy timeframe.
- Items are in acceptable condition for return.

Postconditions:

- Return transaction is recorded in the system.
- Customer receives a refund or store credit.
- Inventory is updated to reflect the returned items.

Main Flow:

1. **Initiate Return:** The customer approaches the cashier with items they wish to return.
2. **Verify Eligibility:** The cashier checks the return policy to confirm the items are eligible for return.
3. **Inspect Items:** The cashier inspects the returned items to ensure they are in acceptable condition and include all packaging.
4. **Process Return:**
    - If eligible, the cashier processes the return in the POS system.
    - If ineligible, the cashier informs the customer of the reason for the denial.
5. **Calculate Refund:** The system calculates the refund amount based on the original sale price, considering any restocking fees if applicable.
6. **Issue Refund/Store Credit:**
    - If the original payment was cash, the cashier returns the cash to the customer.
    - If it was a credit card payment, the cashier processes the refund to the original card.
    - If the customer prefers, store credit may be offered instead.
7. **Print Return Receipt:** The system generates a return receipt and prints it for the customer.
8. **Update Inventory:** The system updates the inventory to reflect the returned items, adding them back to stock.

Q2) Identify Entity/Boundary Control Objects

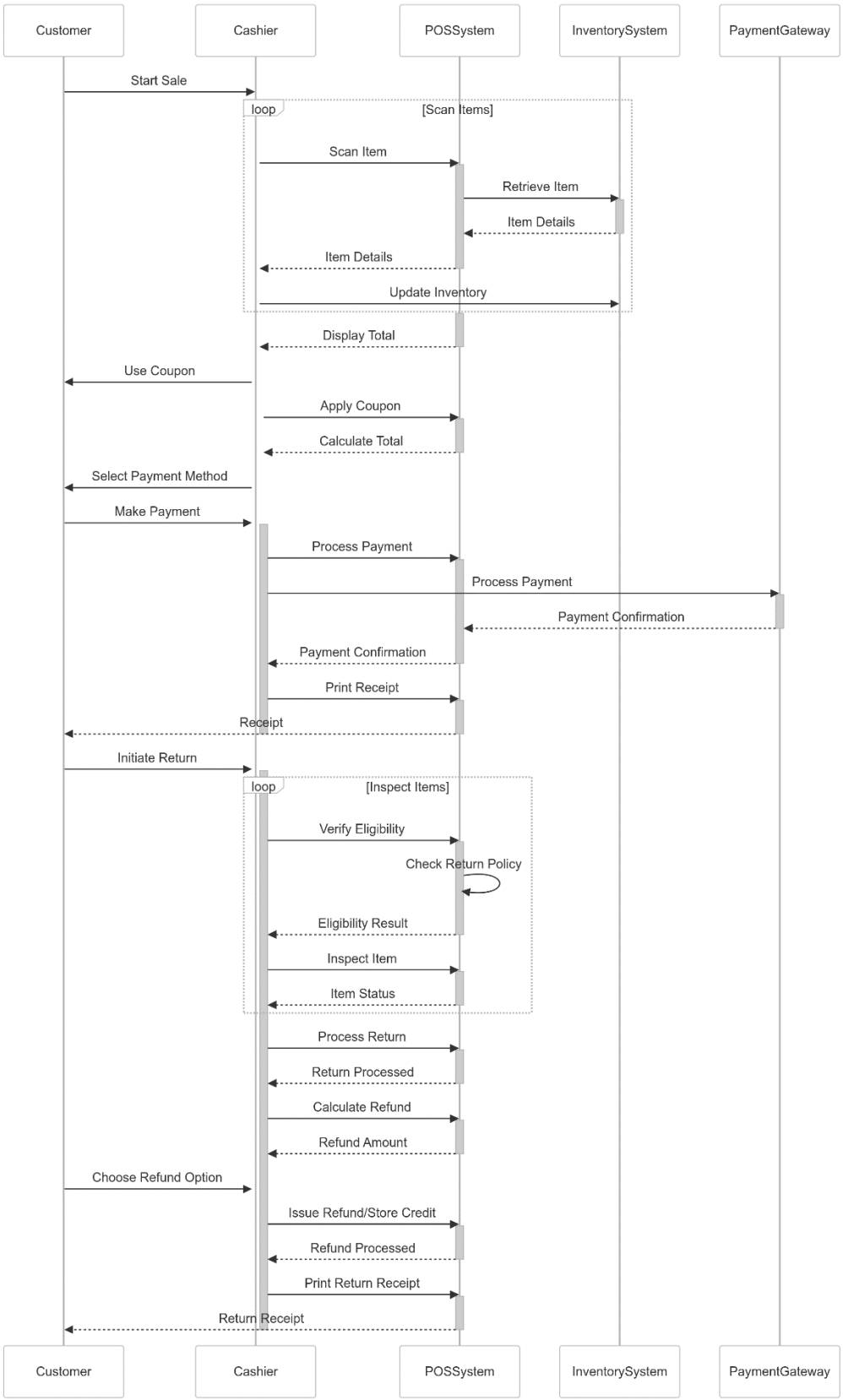
Entity Objects:

1. Item
2. Transaction
3. Customer
4. User (Employee)
5. Return

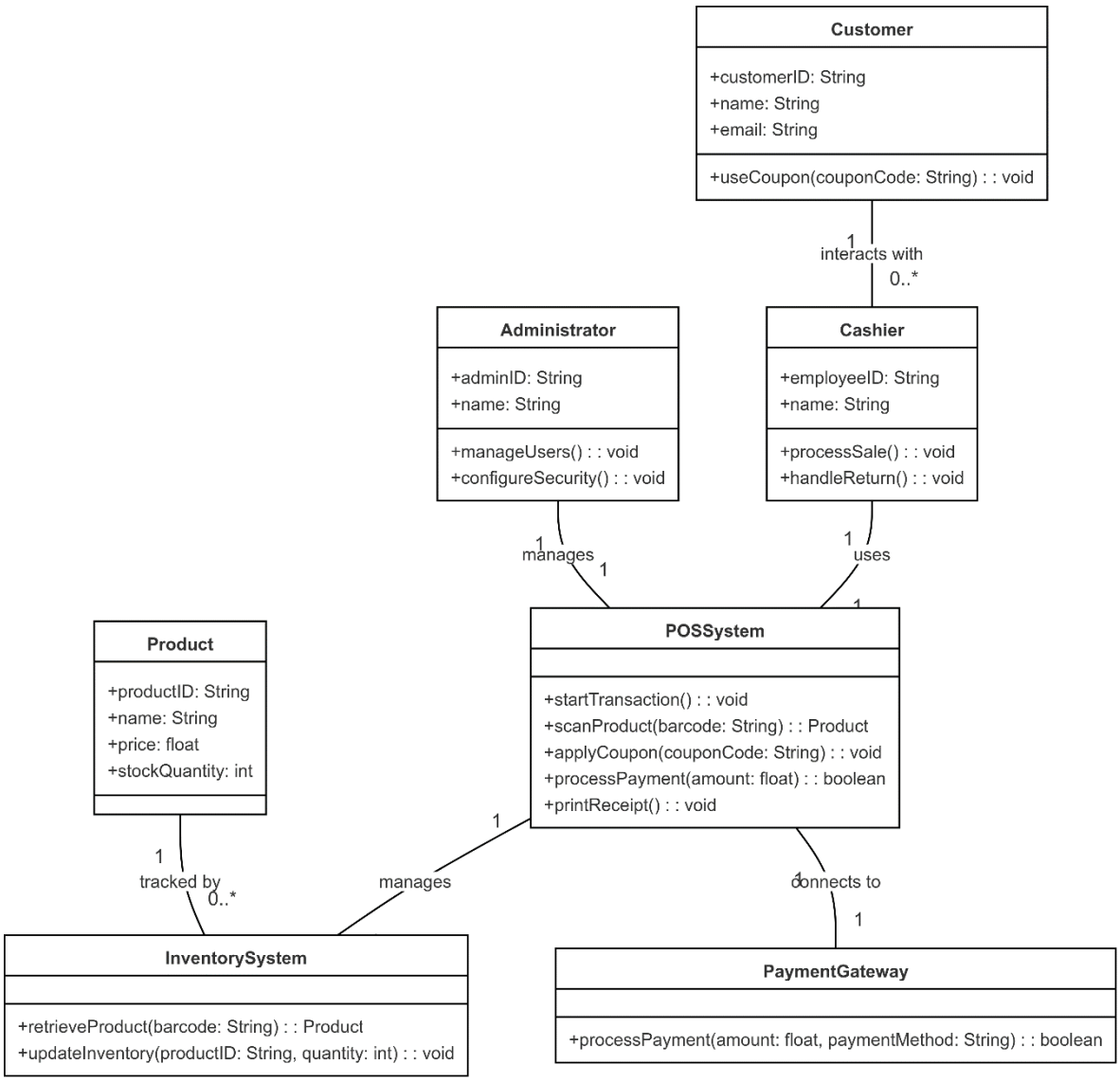
Boundary Objects:

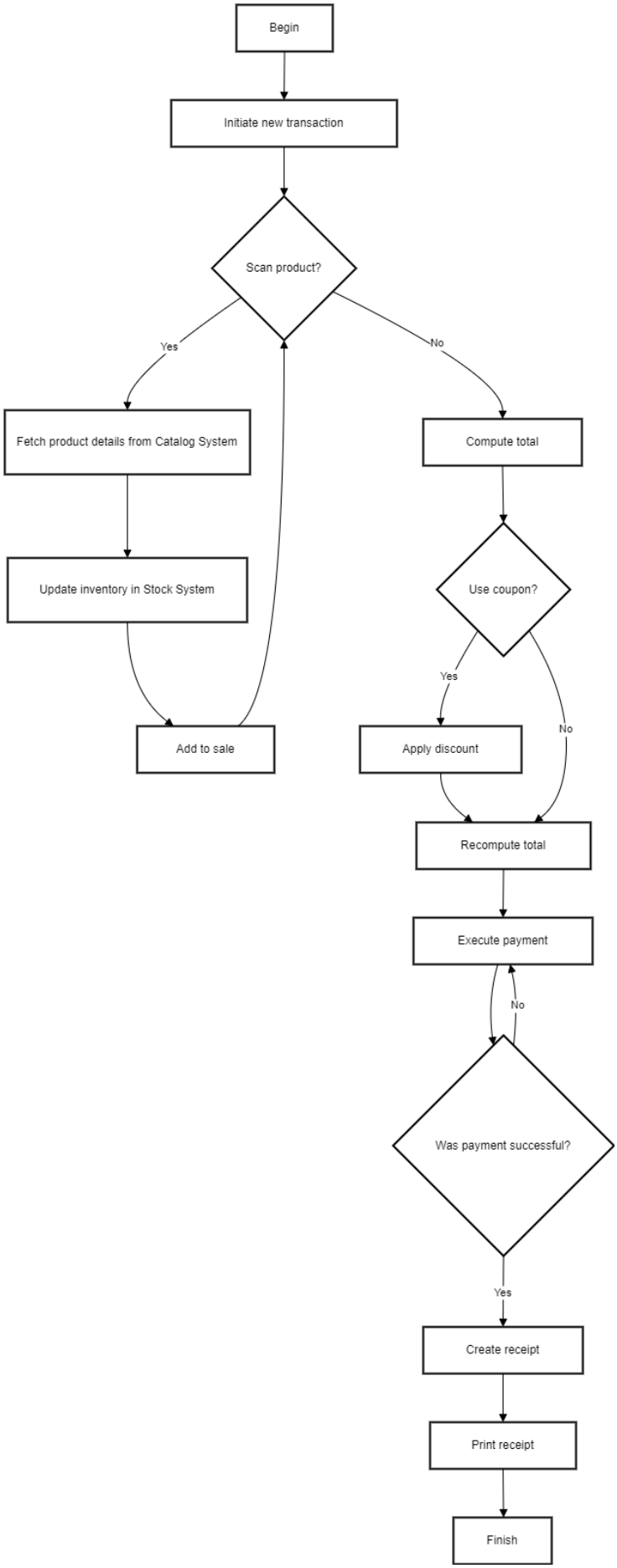
1. POS Interface
2. Login Interface
3. Return Interface
4. Payment Interface

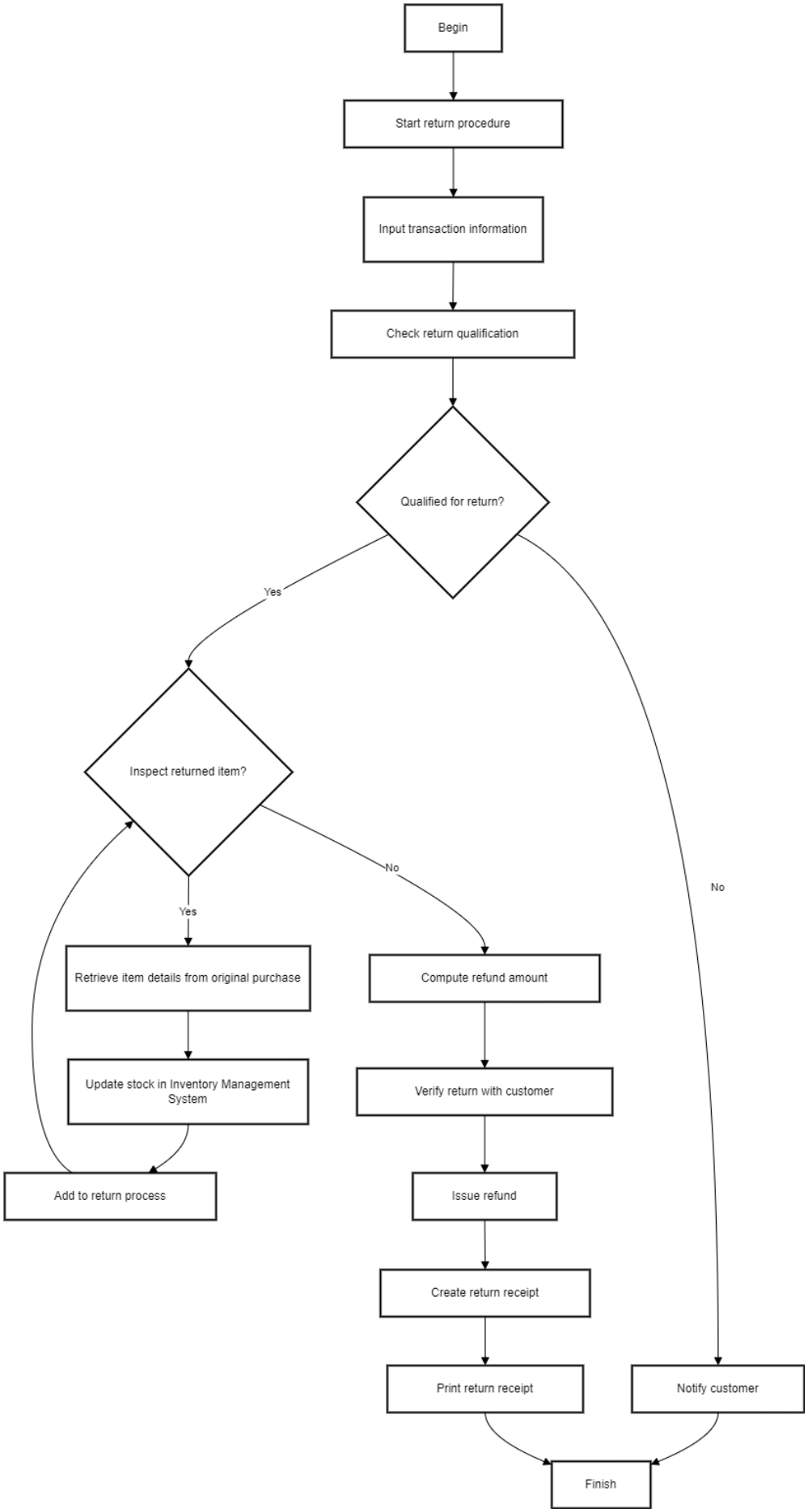
➔Sequence diagram



➔Analysis Domain Models




Begin
Initiate new transaction
Scan product?
Yes
No
Fetch product details from Catalog System
Update inventory in Stock System
Add to sale
Compute total
Use coupon?
Yes
No
Apply discount
Recompute total
Execute payment
No
Was payment successful?
Yes
Create receipt
Print receipt
Finish


Begin
Start return procedure
Input transaction information
Check return qualification
Qualified for return?
Yes
No
Inspect returned item?
Yes
No
Retrieve item details from original purchase
Update stock in Inventory Management System
Add to return process
Compute refund amount
Verify return with customer
Issue refund
Create return receipt
Print return receipt
Notify customer
Finish