IT314: Software Engineering

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

1) Process Sale
Actor(s): Cashier, Customer

Preconditions:

- The cashier is logged into the point-of-sale (POS) system.
- The store's inventory is up-to-date and accessible.

Postconditions:

- The sale is completed, and the inventory is updated.
- A receipt is printed and given to the customer.

Main Flow:

1. The cashier greets the customer and asks for the items to be purchased.
2. The customer places the items on the counter.
3. The cashier scans the barcode of each item using the barcode scanner.
    - The system retrieves the item's name and price from the backend catalogue.
    - The system verifies inventory availability for each item.
4. The system updates the inventory by deducting the quantity of the sold items.
5. Once all items are scanned, the cashier informs the customer of the total amount due.
6. The customer selects a payment method (cash, credit card, or check).
7. The cashier processes the payment:
    - For cash: The cashier accepts the cash and provides change if necessary.
    - For credit card: The cashier swipes the card and verifies the transaction.
    - For check: The cashier verifies the check before accepting it.

8. After the payment is successfully processed, the system generates a receipt.
9. The cashier hands the receipt and the purchased items to the customer.
10. The cashier thanks the customer and invites them to return.

2) Handle Return
Actor(s): Cashier, Customer

Preconditions:

- The cashier is logged into the POS system.
- The customer presents the items for return, along with proof of purchase (receipt).

Postconditions:

- The return is processed, and the inventory is updated.
- A return receipt is printed for the customer.

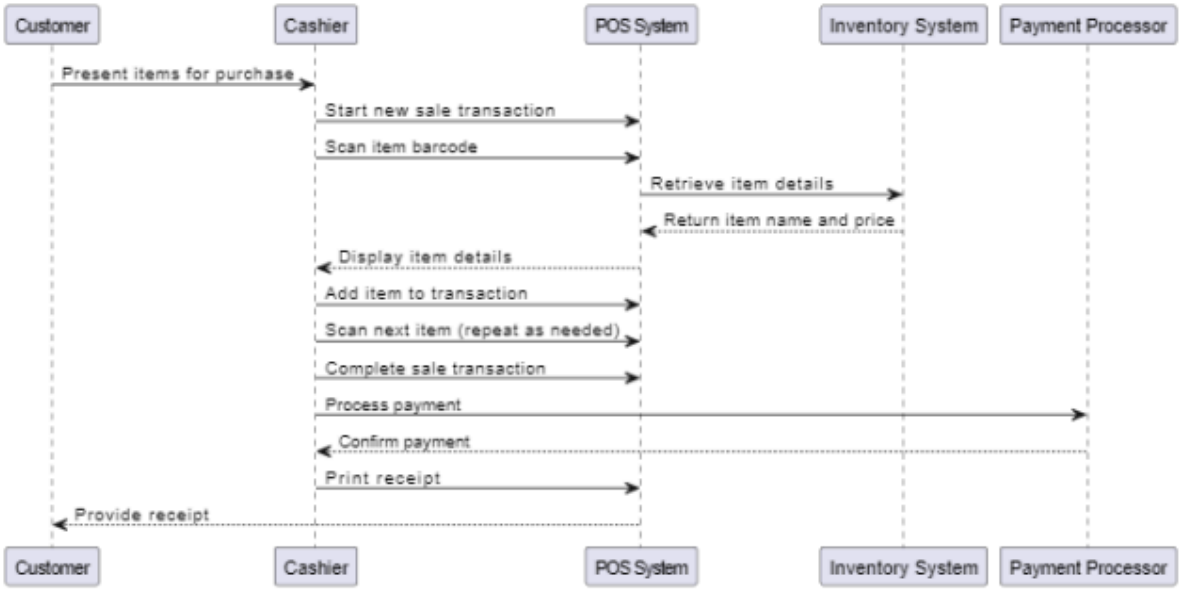
Main Flow:

1. The cashier greets the customer and inquires about the return.
2. The customer presents the items for return, along with the original purchase receipt.
3. The cashier verifies the receipt in the POS system to confirm the original sale.
4. The system checks the return policy (e.g., return period, item condition).
5. If the return is valid:
    - The system processes the return transaction.
    - The system updates the inventory by increasing the stock quantity for the returned items.
    - The system calculates any applicable refund amount.
6. The cashier informs the customer of the return approval and refund amount.
7. The customer receives the refund through the original payment method:
    - For cash: The cashier gives the refund in cash.
    - For credit card: The cashier processes the refund to the card.
    - For check: The cashier issues store credit or follows the store's refund policy.
8. The system generates a return receipt.

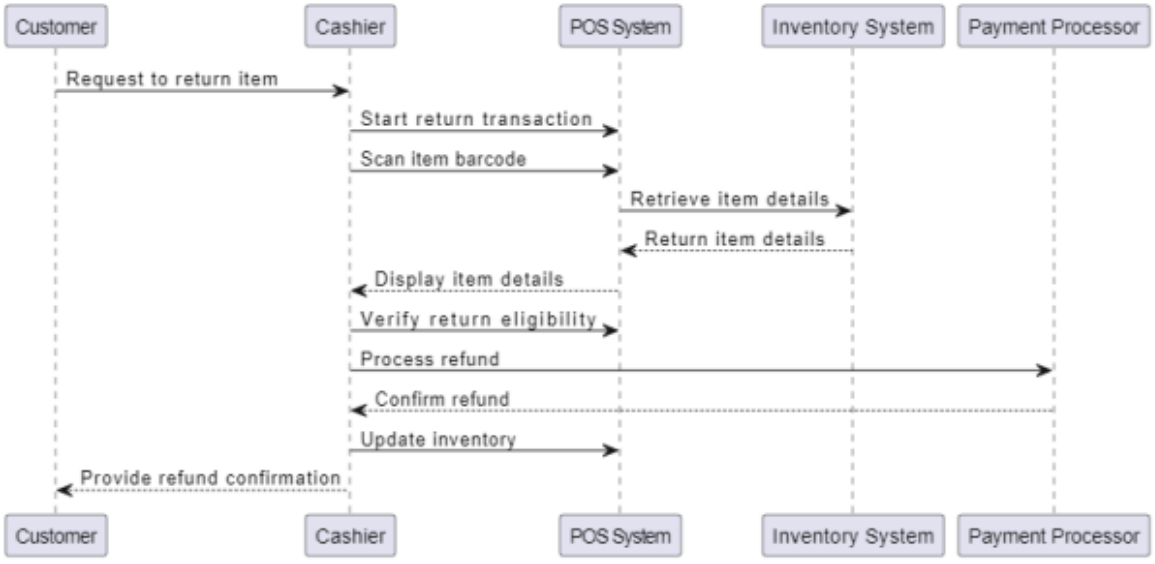
9. The cashier hands the return receipt and any refunded amount to the customer.
10. The cashier thanks the customer for visiting.

Sequence diagram:

1) Process sales:

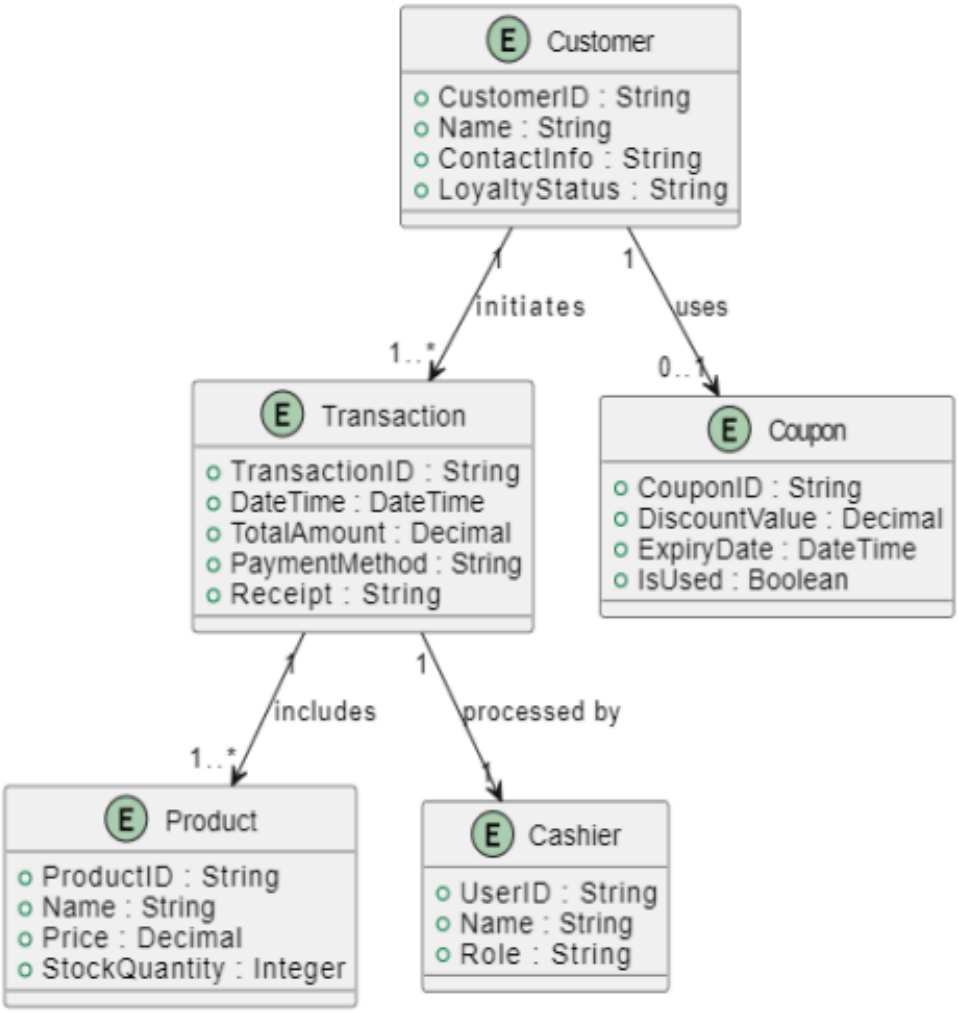


2) Handel return

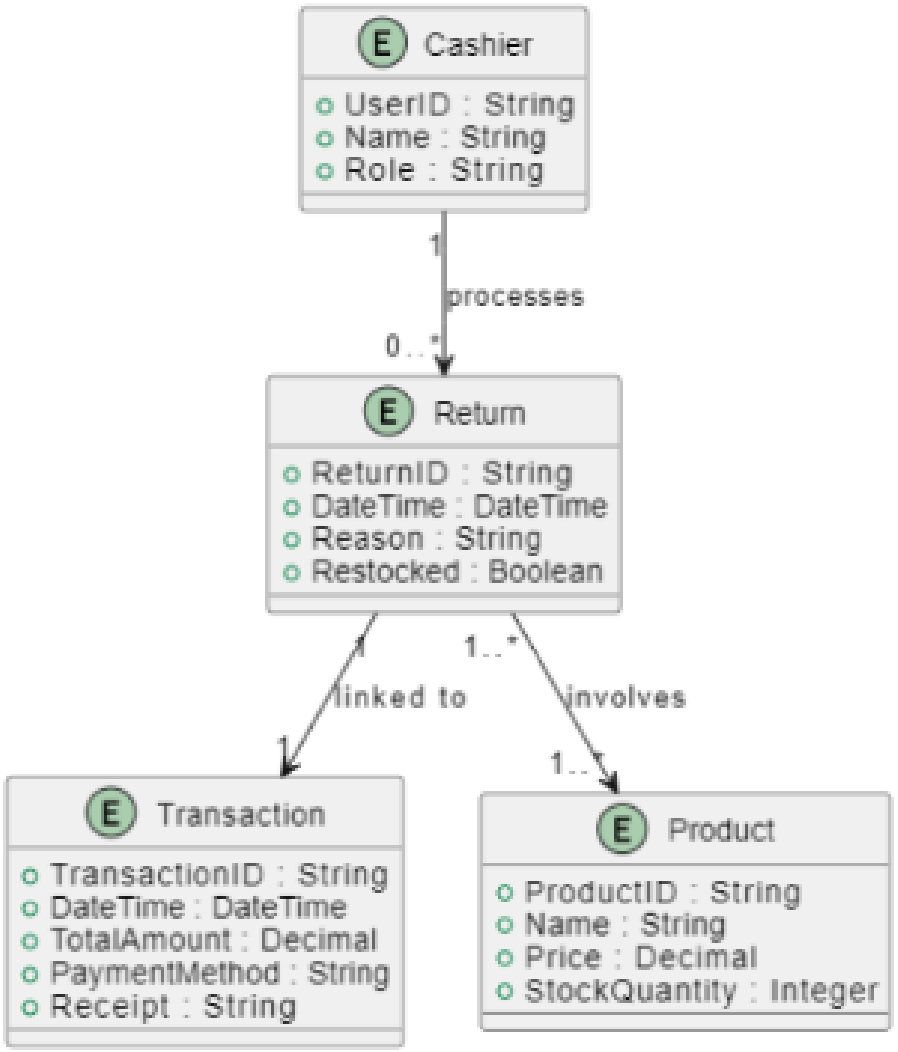


Analysis domain model:

1) Process sale

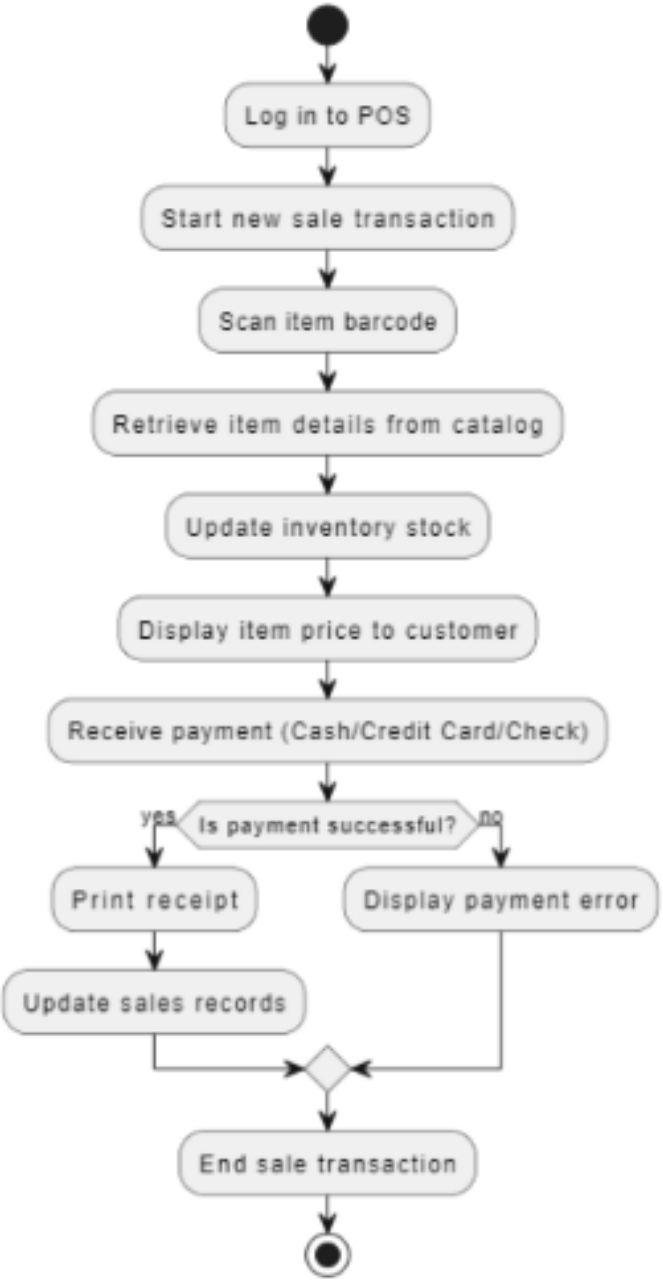
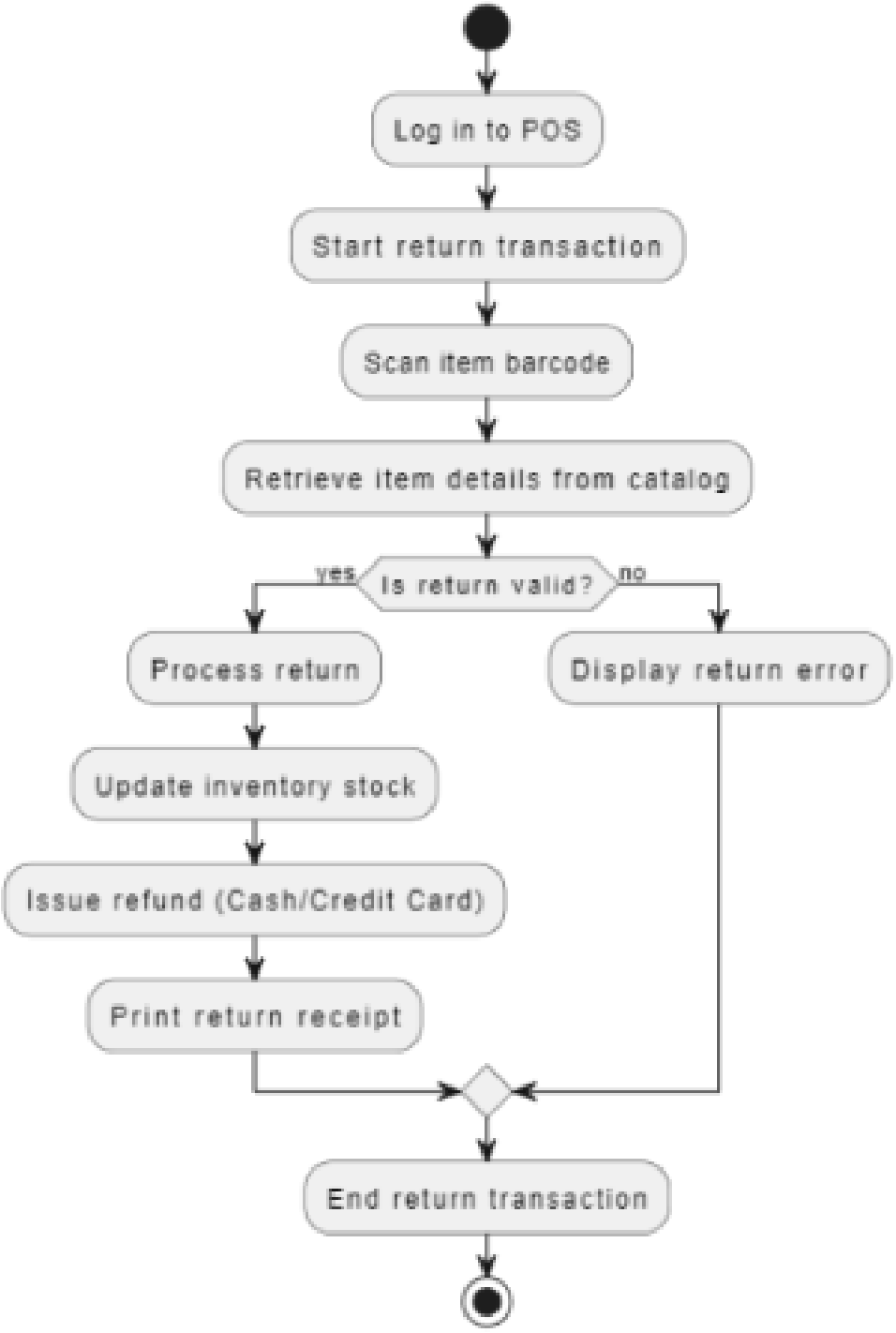


2) Handle Return



Activity Diagram:

1) Process sales



2) Handle return