

IT314 : Software Engineering
Modeling Class Diagram and Activity Diagram
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Use Case : Process Sale :

Actor: Cashier

Preconditions:

- The cashier is logged into the POS system.
- The customer has selected goods to purchase.

Main Success Scenario:

1. The cashier starts a new sale transaction in the POS system.
2. The cashier scans the barcodes of the goods, and the system retrieves the name and price of each good from the catalog system.
3. The system interacts with the inventory system to deduct the stock amount of the items being sold.
4. The cashier reviews the total price and applies any discounts or gift coupons presented by the customer.
5. The customer selects a payment method (e.g., cash, credit card, or check).
6. The cashier processes the payment through the POS system.
7. After successful payment, the system generates and prints a receipt.
8. The cashier hands the receipt and goods to the customer.

Extensions:

- 4a. If the customer uses a coupon, the system verifies its validity and applies the appropriate discount.
- 5a. If the payment method is declined, the customer chooses a different payment method, and the system reprocesses the payment.
- 6a. If the transaction fails (e.g., system error or insufficient stock), the cashier is notified, and the transaction is paused or canceled.

Postconditions:

- The sale transaction is completed, and payment is processed.
- The system updates the inventory levels based on the sale.
- A receipt is printed and given to the customer.

Use Case : Processing a Return :

Actor: Cashier

Preconditions:

- The cashier is logged into the POS system.
- The customer has proof of purchase, such as a receipt, and the item to be returned.

Main Success Scenario:

1. The customer presents the item to return along with the original receipt.
2. The cashier scans the receipt and verifies the return eligibility according to the store's return policy (e.g., return within a specific time frame, item condition).

3. The cashier scans the item to retrieve the sale details from the system.
4. The system processes the return by reversing the sale and updating inventory.
5. The cashier asks the customer for a preferred refund method (e.g., cash, store credit, or credit card).
6. The cashier processes the refund or exchange through the system.
7. The system generates a return receipt, which is given to the customer.

Extensions:

- 2a. If the item is not eligible for return (e.g., past return window or damaged item), the cashier informs the customer and cancels the return.
- 4a. If the item is part of a promotion (e.g., purchased with a coupon), the refund amount is adjusted accordingly.
- 6a. If the customer prefers an exchange, the cashier initiates the process and adjusts inventory.

Postconditions:

- The return transaction is completed, and the item is returned to inventory (if applicable).
- The customer receives a refund or store credit.
- A return receipt is generated.

Identify Entity/Boundary Control Objects :

Entity Objects :

- Item
- Sale
- Payment
- Customer
- Receipt
- Return
- Users

Boundary Objects :

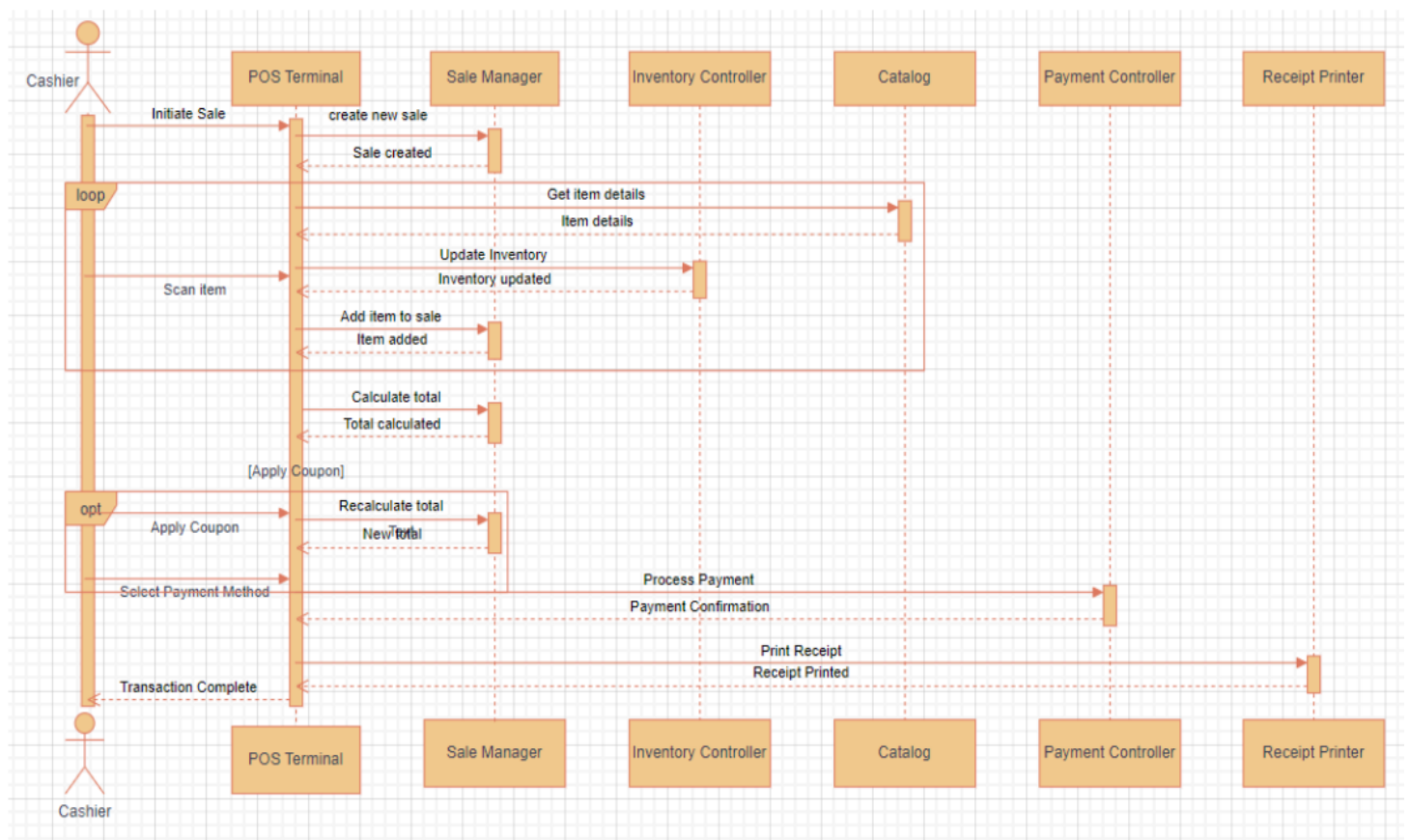
- POS Interface
- Barcode Scanner Interface
- Receipt Printer Interface
- Payment Terminal

Control Objects :

- Sale Manager
- Payment Manager
- Return Manager
- User Authentication Manager
- Inventory Update Manager
- Catalog Manager

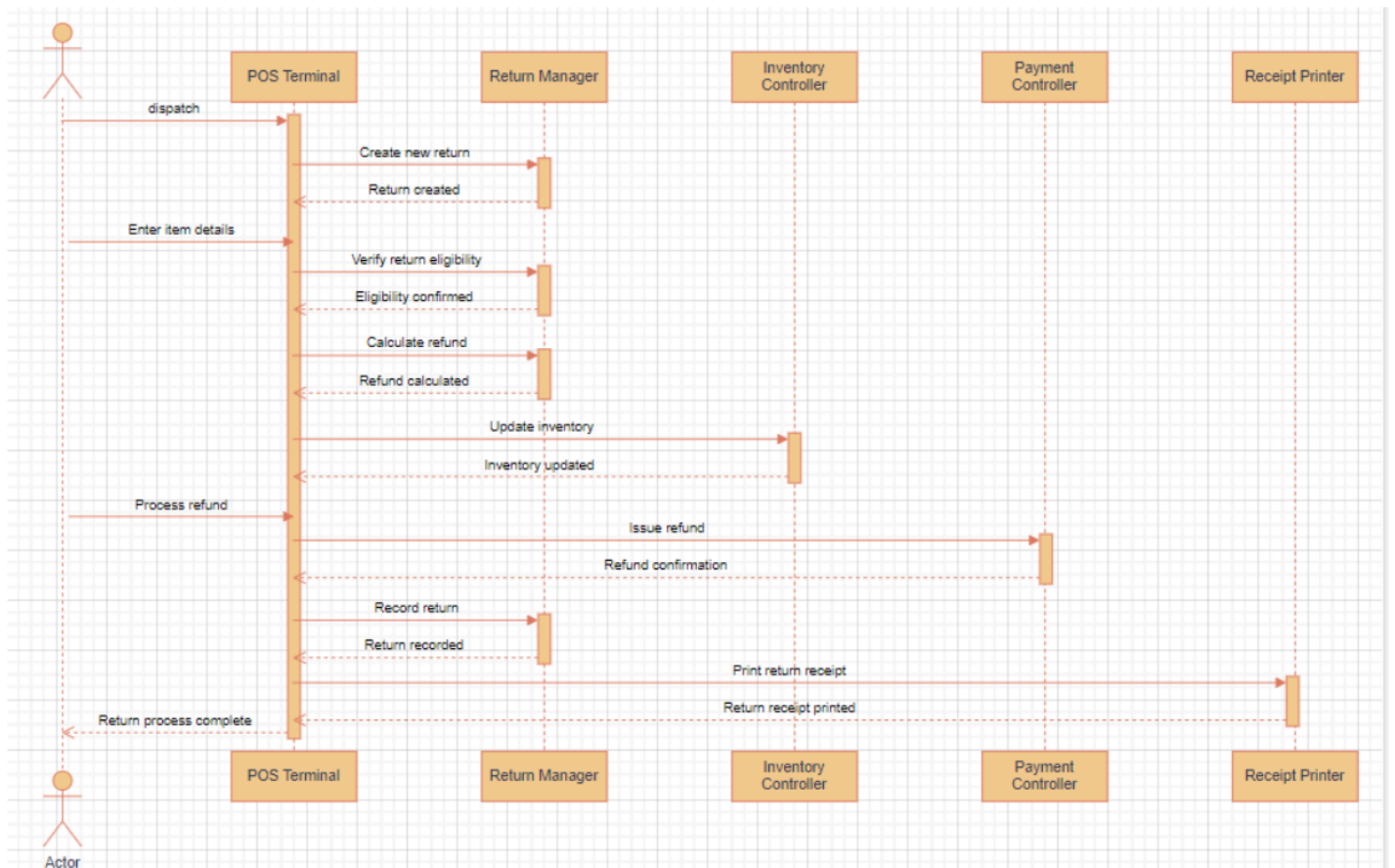
Sequence Diagram :

Process Sale

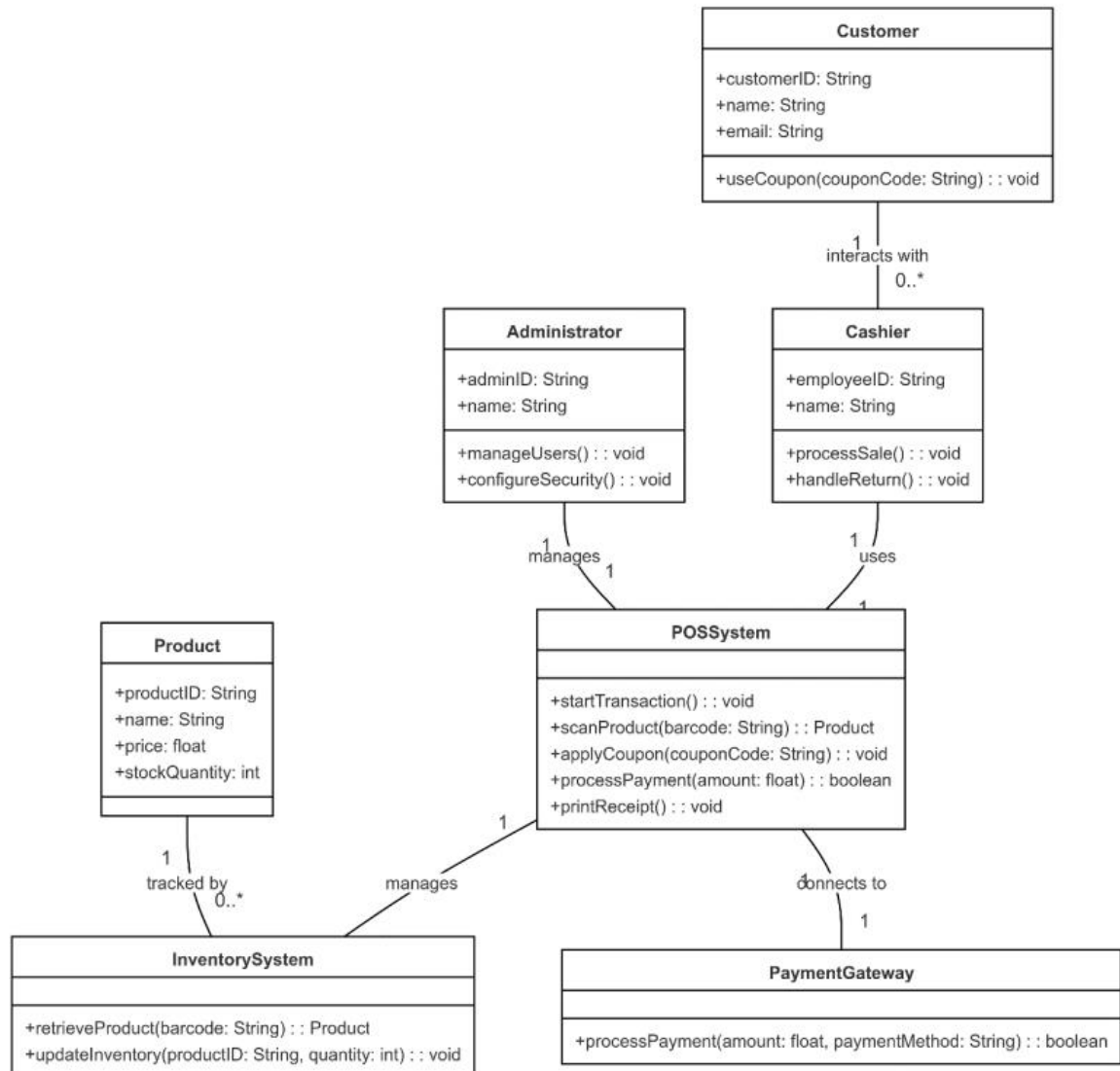


Sequence Diagram :

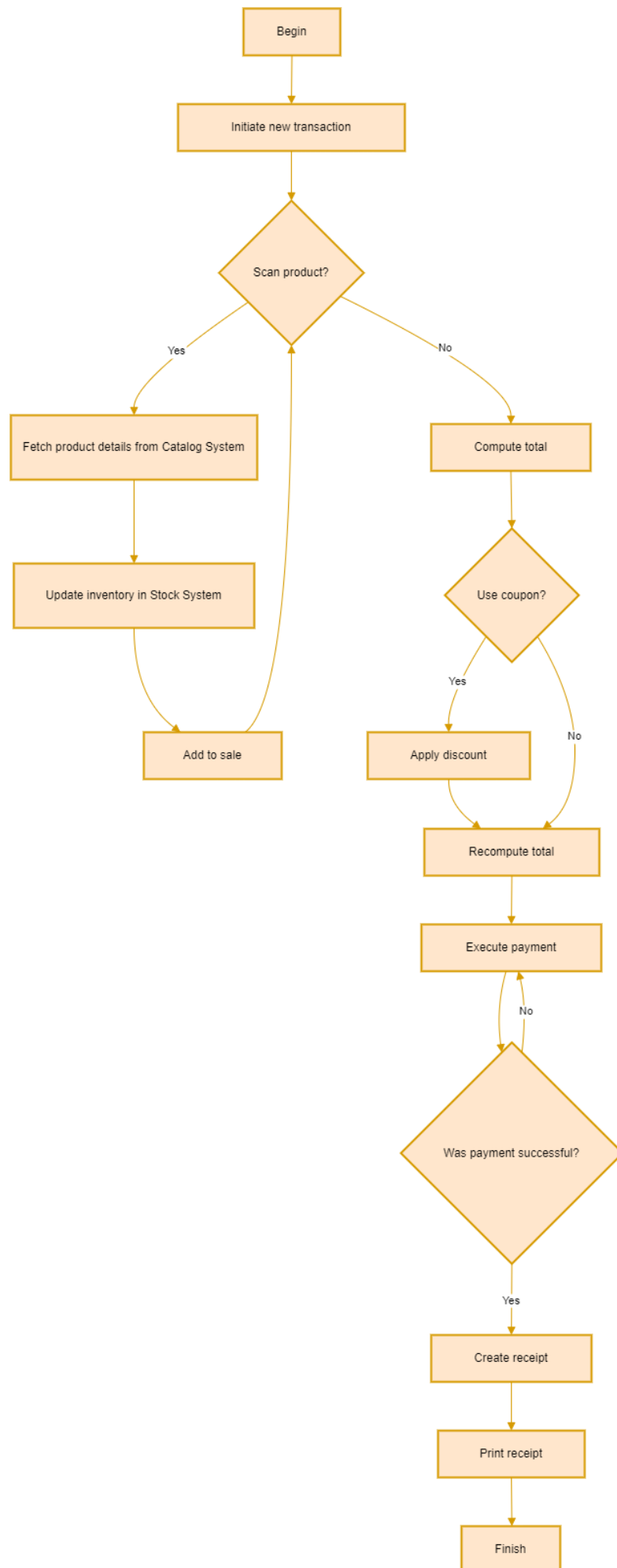
Handle Return



Analysis Domain Model :



Process Sale Activity Diagram :



Handle Return Activity Diagram :

