IT314-Software Engineering
Lab6: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.

Use Case 1: Process Sale

Actors:

- Cashier
- Catalog System
- Inventory System
- PaymentProcessors

Preconditions:

- The cashier is logged into the POS system.
- The Catalog System and Inventory System are functional and connected to the POS.
- The items to be sold are available in stock.

Basic Flow:

1. The cashier initiates a new sale transaction.
2. The cashier scans the barcodes of the items the customer wants to purchase.
3. The POS system requests item details (name, price, description) from the Catalog System.
    - The Catalog System provides the item details to the POS.
4. The POS system sends a request to the Inventory System to verify stock availability and reduce the inventory for the selected items.
    - The Inventory System confirms the stock update and availability to the POS.
5. Once all items are scanned, the cashier selects the payment method (cash, credit card, gift coupon).
6. The customer makes a payment:
    - If the customer pays by credit card, the POS processes the card payment.

    - If the customer pays by cash, the system processes the cash payment.
    - If the customer uses a gift coupon, the system validates the coupon and applies the discount.
7. After successful payment, the POS system generates a receipt and sends it to the printer.
8. The cashier hands the printed receipt and purchased items to the customer.

Postconditions:

- The sale transaction is completed and recorded in the system.
- The inventory is updated based on the items sold.
- A receipt is printed for the customer.

Extensions (Alternate Flows):

- 6a. If the payment fails, the cashier can retry the payment or offer an alternative payment method (e.g., switching from credit to cash).

Use Case 2: Handle Return

Actors:

- Cashier
- Catalog System
- Inventory System
- Payment Processor

Preconditions:

- The cashier is logged into the POS system.
- The customer has an item to return.
- The Catalog System and Inventory System are functional and connected to the POS.

Basic Flow:

1. The cashier initiates a new return transaction in the POS system.
2. The cashier scans or manually enters the item(s) the customer wants to return.
3. The POS system sends a request to the Catalog System to retrieve the item details (e.g., price, description).
    - The Catalog System provides the item details to the POS system.
4. The POS system communicates with the Inventory System to validate return conditions (e.g., item is returnable, item is in stock).
    - The Inventory System confirms the return conditions and updates stock levels to reflect the return.
5. If the return conditions are satisfied, the cashier proceeds with the refund process:
    - If the customer originally paid by credit card, the POS system processes a refund back to the card.
    - If the customer originally paid in cash, the system processes a cash refund.
    - If the customer used a gift coupon, the system processes the appropriate refund.
6. The POS system generates and prints a return receipt.
7. The cashier hands the return receipt to the customer.

Postconditions:

- The return transaction is completed and recorded in the system.
- The inventory is updated to reflect the returned item.
- The appropriate refund is processed.

Extensions (Alternate Flows):

- 4a. If the Inventory System rejects the return due to invalid conditions (e.g., expired return window), the cashier informs the customer and the return is not processed.

Identify Entity/Boundary Control Objects

Entity Objects:

- Catalog System
- Inventory System
- Payment Processor
- Receipt Generator

Boundary Objects:

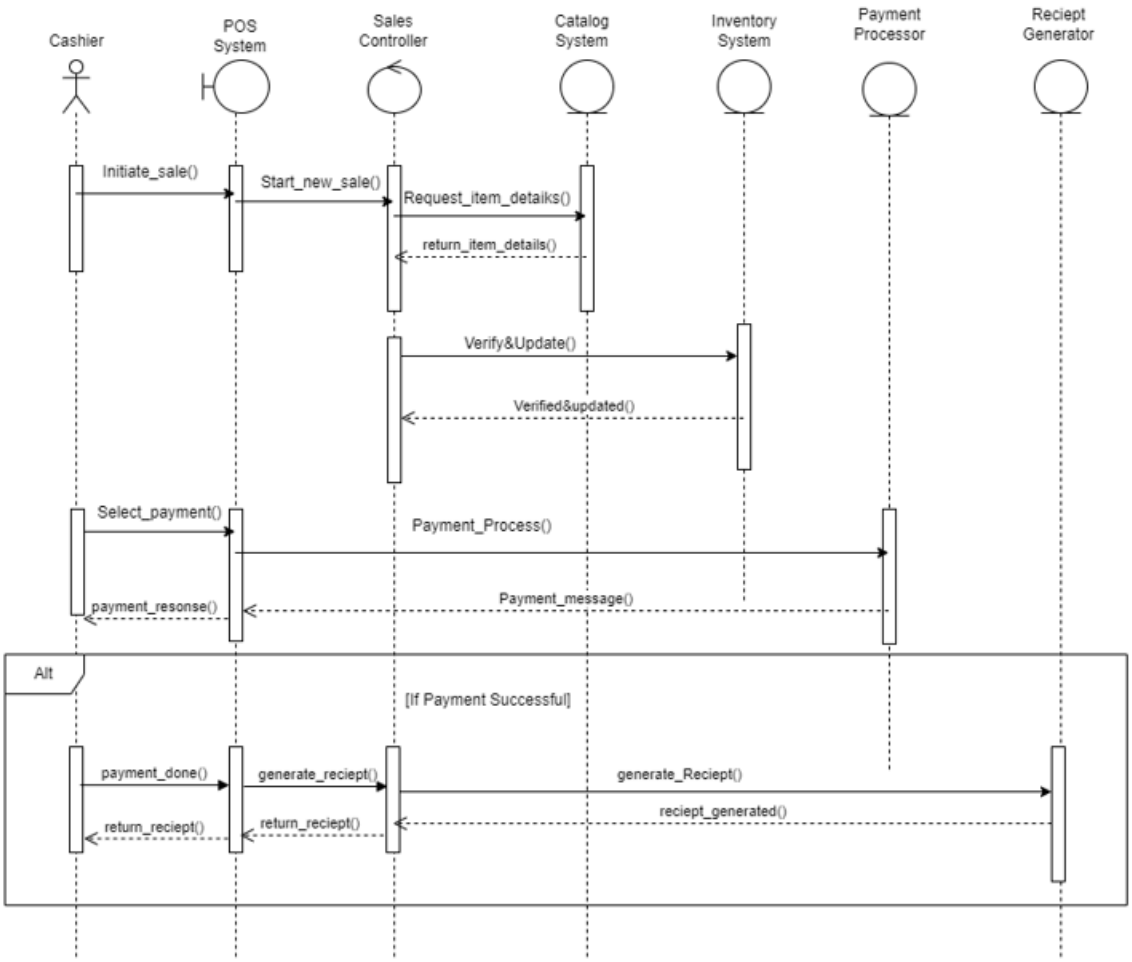
- POS system

Controller Objects:

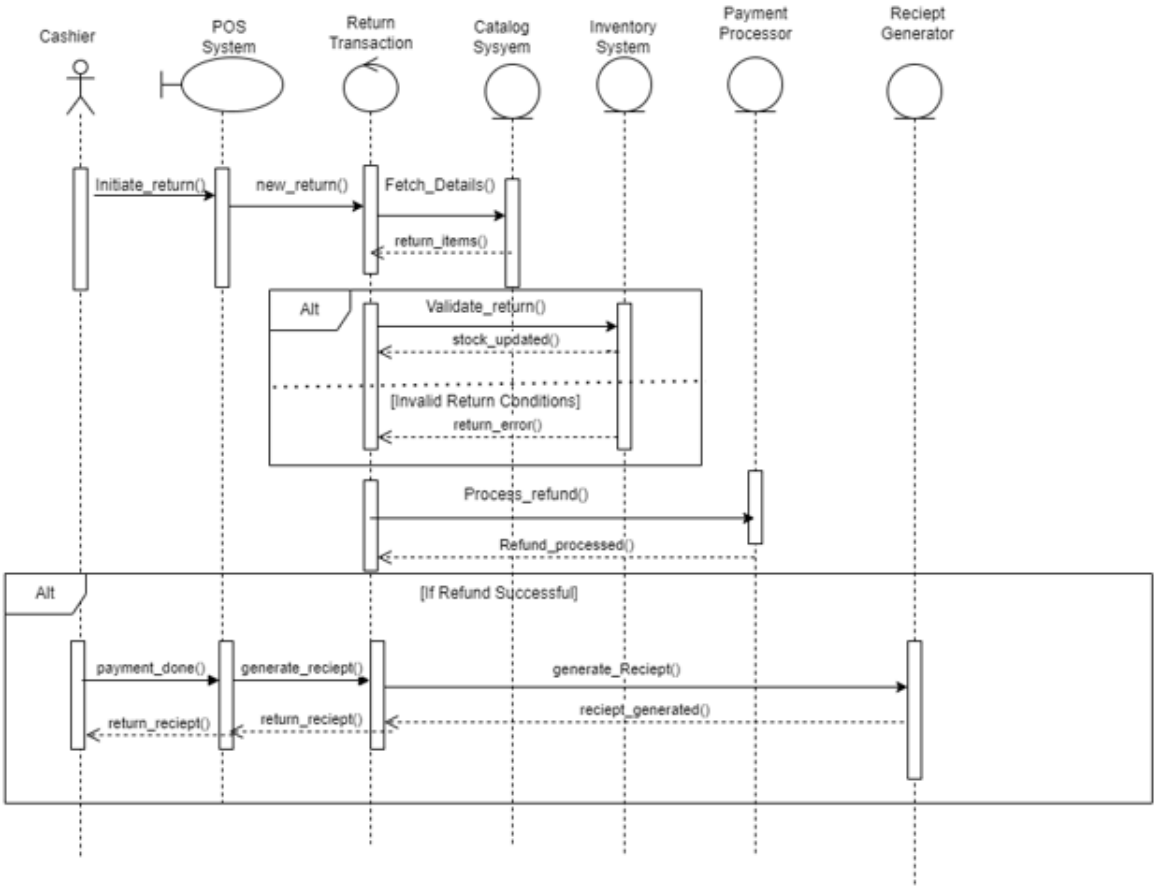
- Sales Controller

Develop Sequence Diagrams.

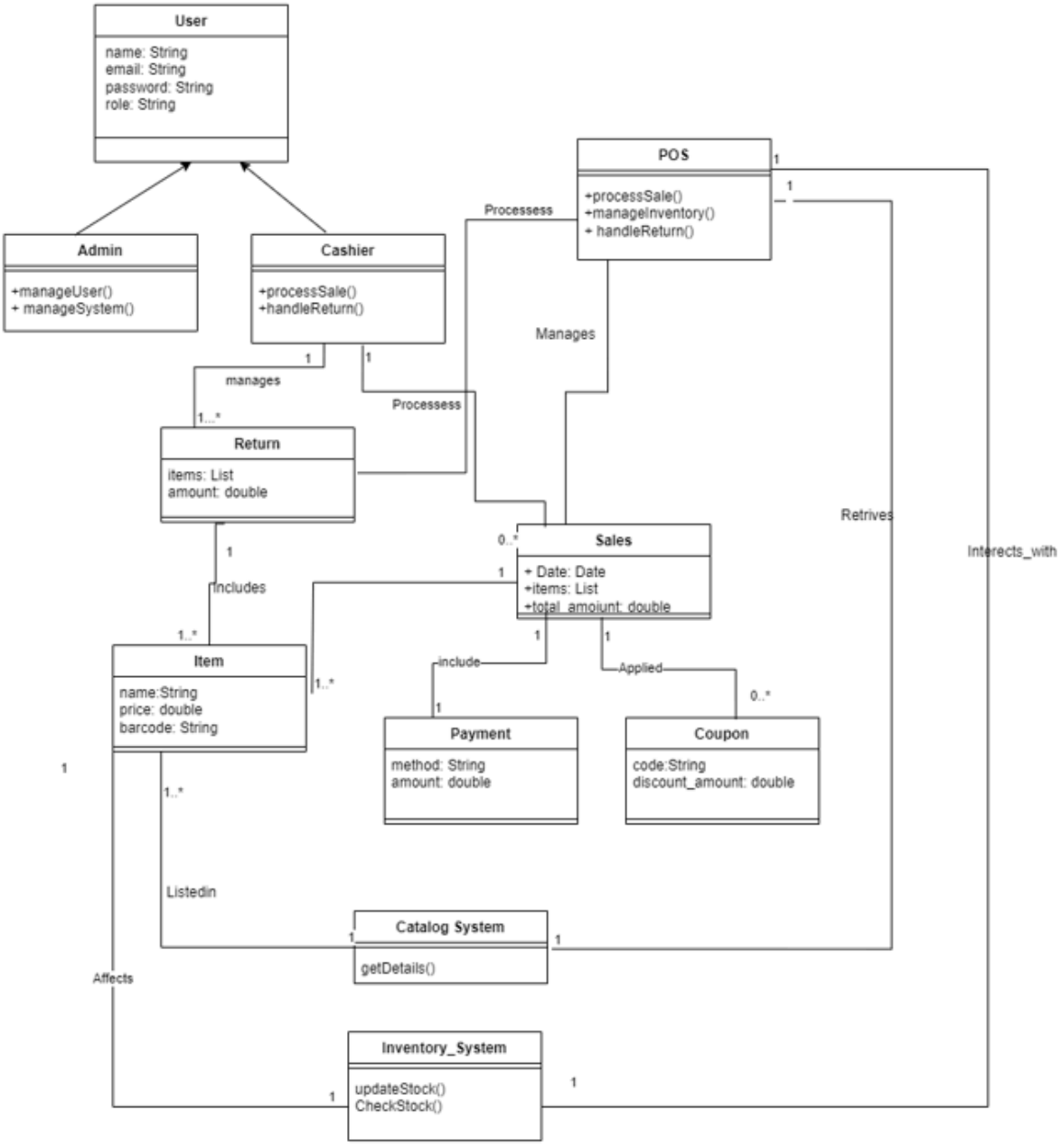
Process Sales:



Handle Return:

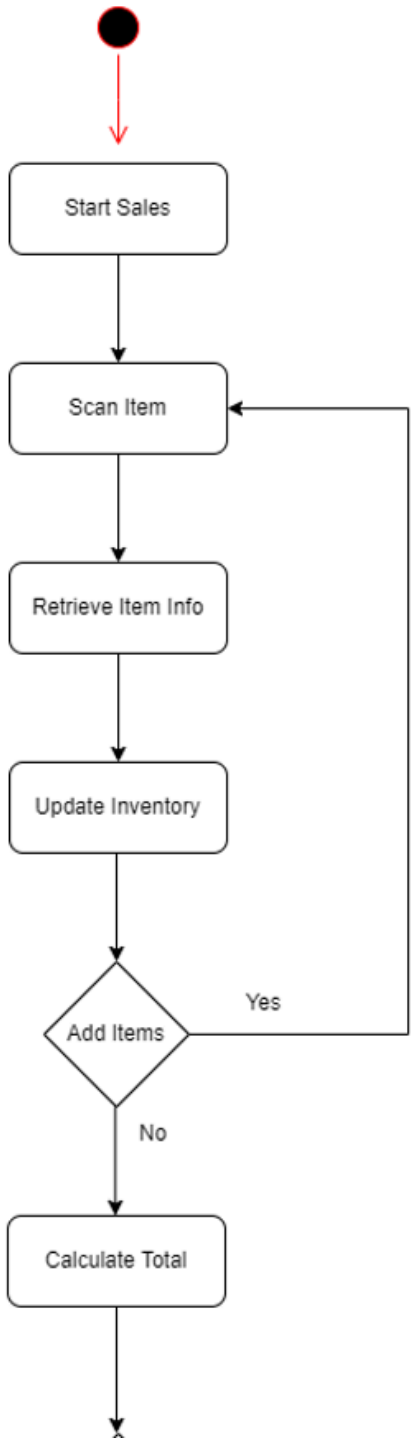


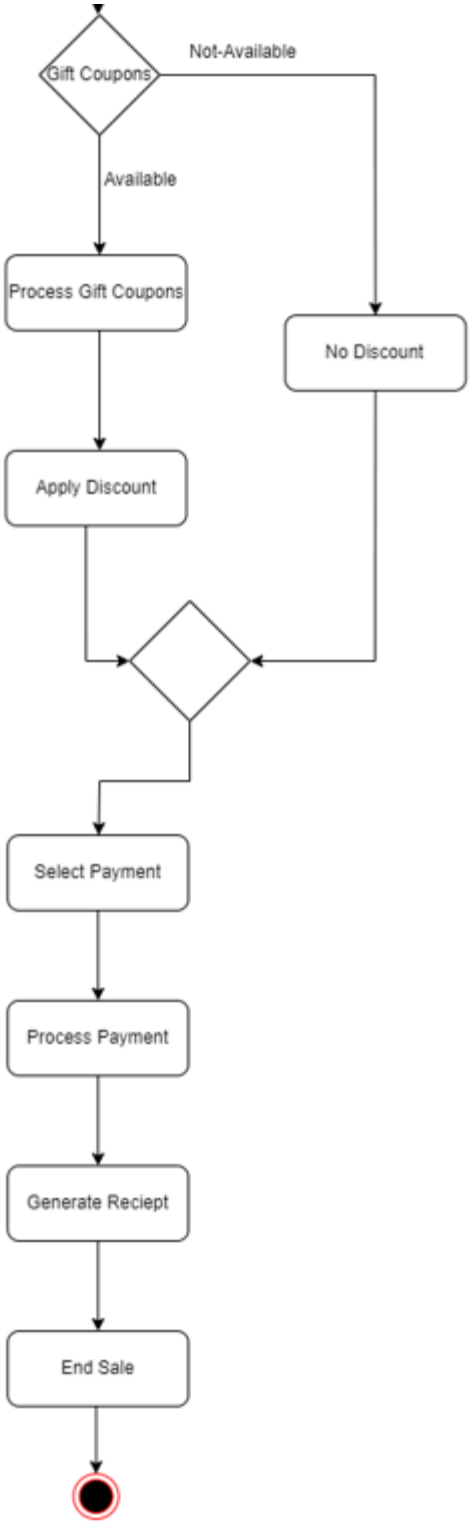
Develop Analysis Domain Models



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

Process Sale:




Gift Coupons
Not-Available
Available
Process Gift Coupons
No Discount
Apply Discount
Select Payment
Process Payment
Generate Reciept
End Sale

Handle Return: