



# Modeling Class Diagram & Activity Diagram Point of Sale System

Task 1: Develop Use Case Textual Description for "Process Sale" and "Handle Return" use cases.

## 1. Process Sale

- **Primary Actor:** Cashier
- **Preconditions:**
  - The cashier must be logged into the POS system.
  - The POS system is connected to the catalog and inventory systems.
- **Main Flow:**
  - The cashier starts a new sale transaction in the POS system.
  - The cashier scans the barcode of each item.
  - The POS system retrieves the name and price of each item from the catalog system.
  - The POS system updates the inventory system by reducing the stock amount for each scanned item.
  - The cashier confirms the total amount.
  - The customer selects a payment method (cash, credit card, or check).
  - The cashier processes the payment.
  - If the payment is successful, the POS system prints a receipt.
- **Postconditions:**
  - The sale is recorded in the POS system.
  - The inventory is updated.
  - The customer receives a receipt.
- **Alternative Flows:**
  - If the barcode scan fails, the cashier can manually enter the item code.
  - If payment fails, the cashier retries the payment or cancels the sale.

## 2. Handle Return

- **Primary Actor:** Cashier
- **Preconditions:**
  - The cashier must be logged into the POS system.
  - The customer must present the original receipt.
- **Main Flow:**
  - The cashier initiates a return transaction in the POS system.
  - The cashier scans the receipt or enters the transaction number.
  - The POS system retrieves the details of the original sale.
  - The cashier scans the items being returned.
  - The POS system validates the return and updates the inventory system by increasing the stock amount for each returned item.
  - The cashier confirms the refund amount.
  - The customer selects the refund method (cash, credit card, or store credit).
  - The cashier processes the refund.
  - The POS system prints a return receipt.
- **Postconditions:**
  - The return is recorded in the POS system.
  - The inventory is updated.
  - The customer receives a return receipt.
- **Alternative Flows:**
  - If the item is damaged, the cashier may reject the return.
  - If the receipt is missing, the cashier may perform a manual lookup of the original transaction.

## Task 2: Identify entity, boundary & control objects.

### Entity Objects:

- **Sale:** Represents a completed sale transaction.
- **Item:** Represents the goods being sold or returned.
- **Payment:** Represents the payment details (e.g., amount, method).
- **Return:** Represents a return transaction.
- **Inventory:** Represents stock levels for items.
- **Coupon:** Used to get a discount on a sale.

### Boundary Objects:

- **POS Interface:** User interface for cashiers to interact with the POS system.
- **Receipt Printer:** Interface for printing receipts.
- **Catalog System Interface:** Interface for retrieving item details.

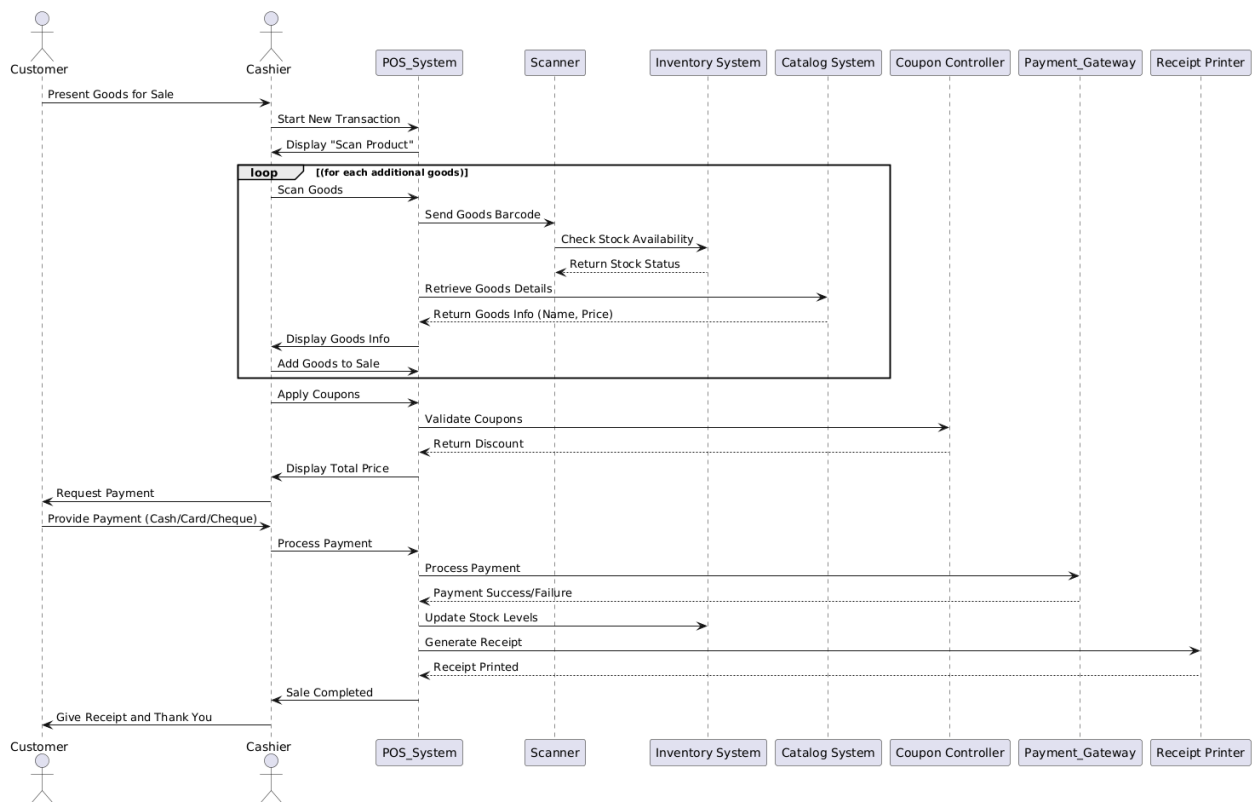
- Inventory System Interface: Interface for updating stock levels.

Control Objects:

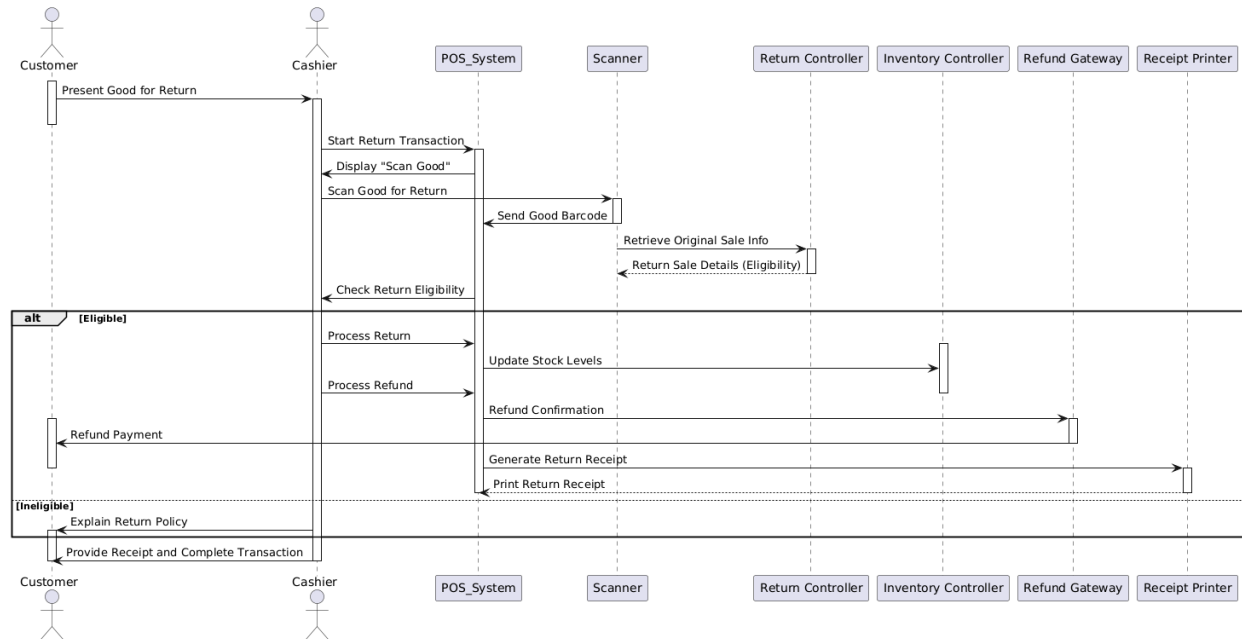
- SaleController: Manages the process of a sale.
- ReturnController: Manages the process of a return.
- PaymentController: Handles payment processing.

## Task 3: Develop Sequence Diagrams

Process Sale:

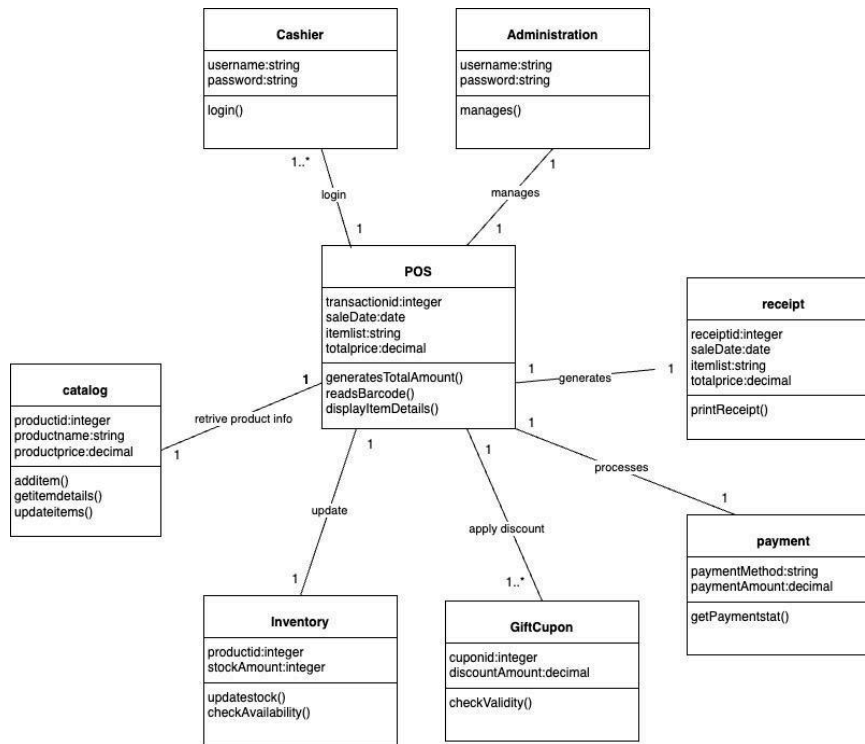


## Handle Returns:

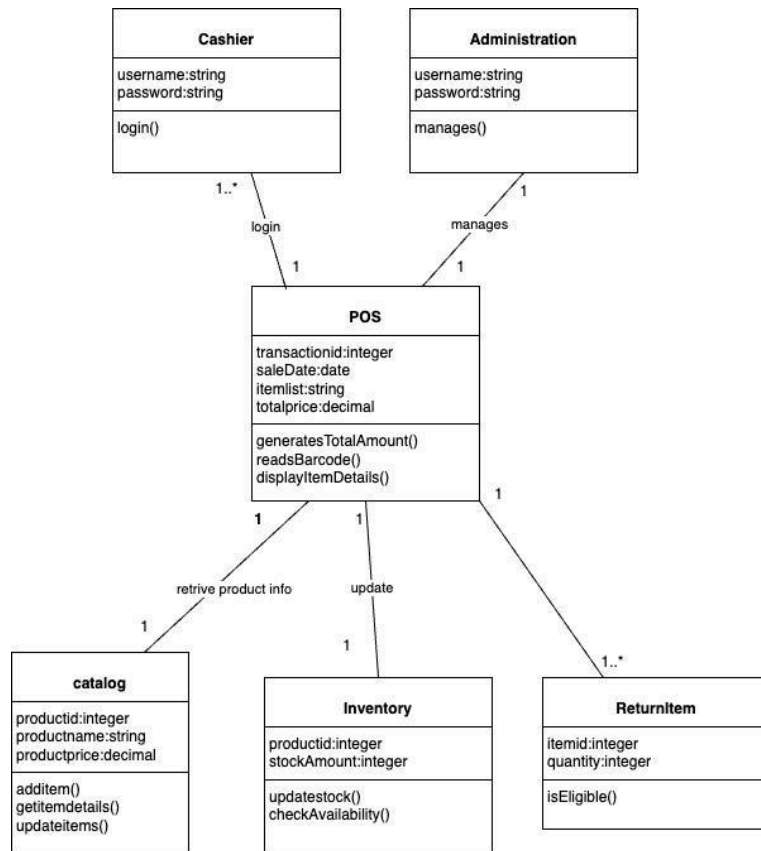


## Task 4: Develop Analysis Domain Models

### Process Sale:



## Handle Returns:



## Task 5: Develop activity diagrams for:

### Process Sale:

(Image too large, uploaded separately in repository)

### Handle Returns:

(Image too large, uploaded separately in repository)