# IT 314 - Software Engineering Lab 6

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**Use Case Description**

## →Use Case: Process Sale

**Use Case ID:** UC-001
**Actor:** Cashier
**Preconditions:**

- The cashier is logged into the POS system.
- The customer has selected items for purchase.

**Postconditions:**

- The sale transaction is completed, and the receipt is printed.
- Inventory is updated to reflect the sale.

**Main Flow:**

1. The cashier initiates a new sale transaction.
2. The cashier scans the barcode of the first item.
3. The system retrieves the item's name and price from the catalog.
4. The system checks the inventory for stock availability.
5. The item is added to the transaction list.
6. Steps 2-5 are repeated for each item the customer wishes to purchase.
7. The cashier confirms the total amount due.
8. The customer selects a payment method (cash, credit card, or check).
9. The system processes the payment.
    - If the payment is successful, proceed to step 10.
    - If the payment fails, notify the customer and return to step 8.
10. The system generates a receipt.
11. The cashier hands the receipt to the customer and completes the transaction.

**Alternative Flows:**

- **Invalid Barcode:**
    - If the barcode is invalid (not found in the catalog), the system alerts the cashier.
    - The cashier can manually enter the item details.

- **Insufficient Stock:**
    - If stock is insufficient, the system informs the cashier.
    - The cashier can either remove the item from the transaction or inform the customer.
- **Payment Failure:**
    - If the payment is declined (credit card), the system prompts for another payment method.
    - The cashier may ask the customer to provide an alternative payment method.
- **Promotion/Coupon Application:**
    - If the customer presents a gift coupon, the cashier scans it.
    - The system verifies the coupon and applies the discount if valid.
    - The new total is displayed for confirmation.

## →Use Case: Handle Return

**Use Case ID:** UC-002
**Actor:** Cashier
**Preconditions:**

- The cashier is logged into the POS system.
- The customer has an item to return and, if applicable, a receipt.

**Postconditions:**

- The return transaction is completed, and the inventory is updated.
- A refund is processed if applicable.

**Main Flow:**

1. The cashier initiates a return transaction.
2. The cashier scans the barcode of the item being returned.
3. The system verifies the item against the sales history.
4. If the item is eligible for return, the system retrieves the item details and original sale price.
5. The cashier confirms the return with the customer.
6. The system updates the inventory to reflect the returned item.
7. If a refund is applicable, the customer selects a refund method (cash, credit card, store credit).
8. The system processes the refund.

    - If the refund is successful, proceed to step 9.
    - If the refund fails, notify the customer and return to step 7.
9. The system generates a return receipt.
10. The cashier hands the return receipt to the customer and completes the return transaction.

**Alternative Scenarios:**

- **Item Not Found:** If the item is not found in the system, the cashier informs the customer that the return cannot be processed.
- **Return Policy Violation:** If the item does not meet return policy conditions, the system notifies the cashier, who explains the policy to the customer.
- **Missing Receipt:** If the customer does not have a receipt, the cashier checks the sales history. If found, the return is processed; if not, the cashier informs the customer that the return cannot be processed.
- **Refund Method Issue:** If there's an issue with the selected refund method, the cashier assists the customer in choosing a different method.

## Identify Entity/Boundary Control Objects

### 1. Entity Objects:

These represent objects that model data or objects within the system. They contain the business logic and represent things that exist in the system's domain.

### 2. Boundary Objects:

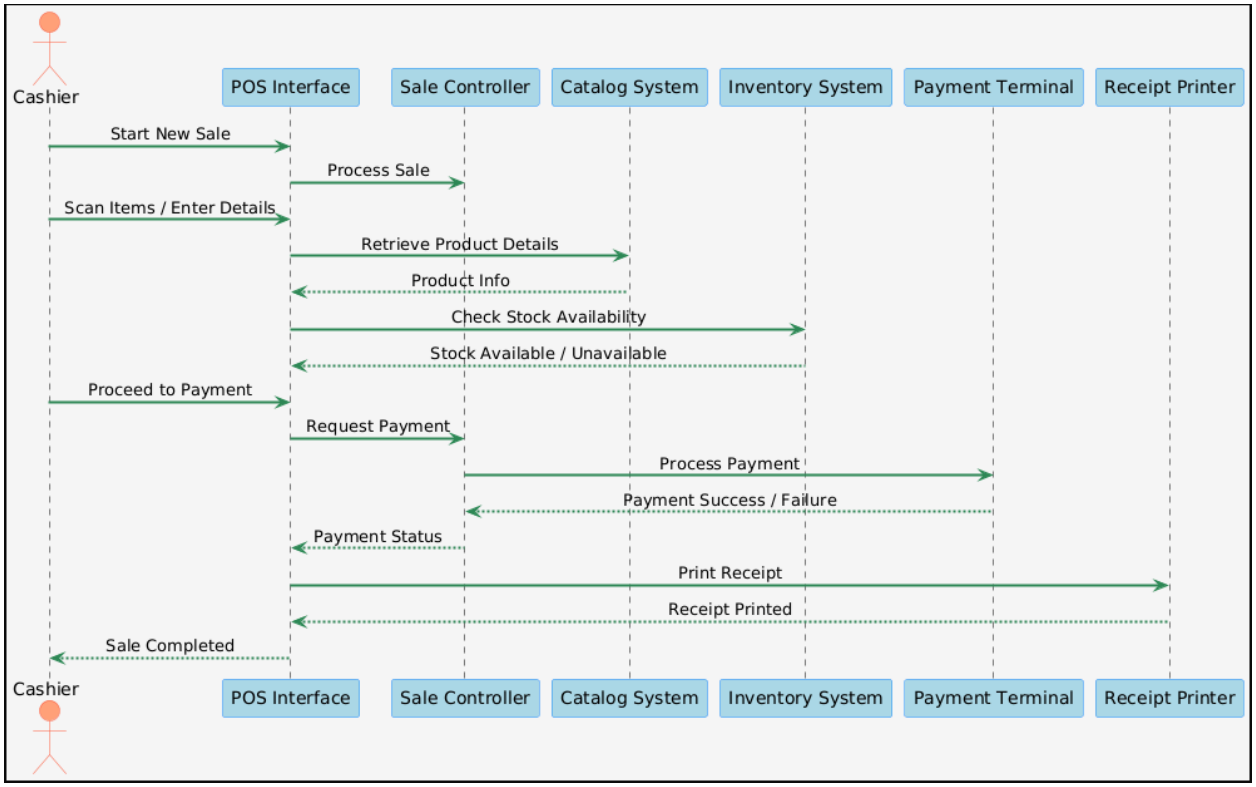
These objects are used to model interactions between actors (users and external systems) and the system. They are often UI components or external system interfaces.

### 3. Control Objects:

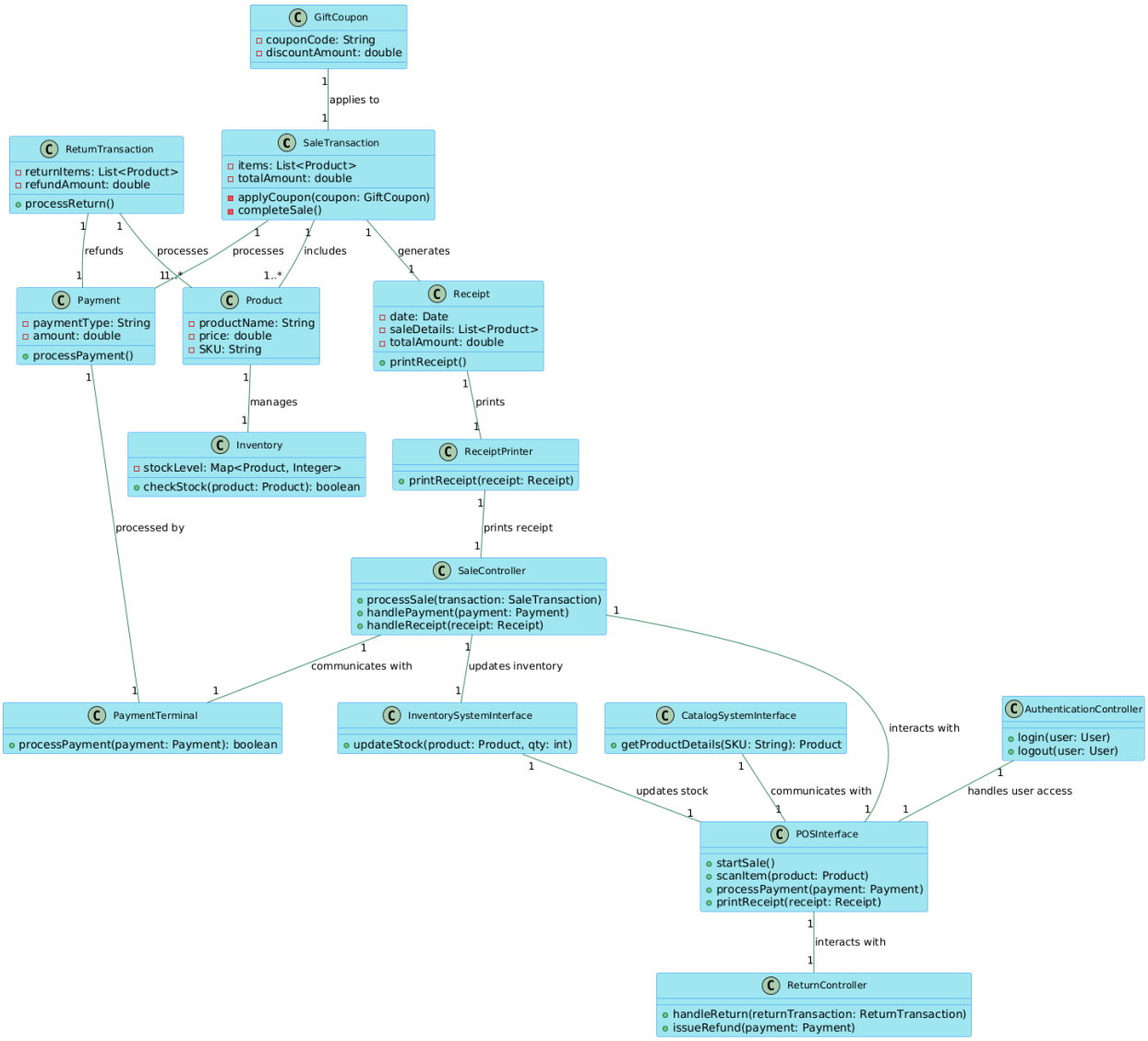
Control objects handle the logic of use case scenarios and direct the flow of information between the entity and boundary objects.

| Object Type | Object |
|---|---|
| **Entity Objects** | Sale Transaction, Item/Product, Inventory, Payment, Receipt, Gift Coupon, Return Transaction |
| **Boundary Objects** | POS Interface, Catalog System Interface, Inventory System Interface, Payment Terminal, Receipt Printer, Login Interface, Return Interface |
| **Control Objects** | Sale Controller, Payment Controller, Receipt Controller, Return Controller, Authentication Controller |

- **Develop Sequence Diagrams**



- **Develop Analysis Domain Models**



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

## Combined activity diagrams for "Process Sale" and "Handle Return"