

IT-314

Software Engineering

Lab 6: Modeling Class and Activity Diagram



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

1) Process Sale:

- **Use case Name:** Process Sale
- **Actors:** Cashier, Catalog System, Inventory System, Payment System
- **Description:** This use case outlines the steps involved when a cashier initiates and completes a sale. The system retrieves product information from the catalog, interacts with the inventory system to adjust stock levels, processes the customer's payment, and prints a receipt for the transaction.
- **Preconditions:**
 1. The cashier is logged into the system.
 2. The customer has selected items for purchase.
 3. The system is connected to the Catalog System, Inventory System, and Payment Systems.
- **Postconditions:**
 1. The sale is successfully recorded in the system.
 2. The inventory is updated to reflect the sold items.
 3. A receipt is printed for the customer.
- **Main Flow:**
 1. The cashier scans or enters items, and the system retrieves product details from the Catalog System.
 2. The system updates the Inventory System to reflect the reduced stock levels.
 3. The system calculates the total amount, applying any discounts and taxes.
 4. The cashier selects the payment method (e.g., cash, credit card).
 5. The system communicates with the Payment System to process the payment.
 6. Upon successful payment, the system prints a receipt and finalizes the sale.
- **Alternate Flows:**
 - **Payment Failure:** If the payment is declined, the system notifies the cashier and prompts for another payment method.
 - **Discount or Gift Card Application:** If the customer has a discount coupon or gift card, the system applies the discount before the payment is processed.

2) Handle Return:

- **Use case Name:** Handle Return
- **Actors:** Cashier, Inventory System, Payment System
- **Description:** This use case describes the process for handling item returns. The cashier verifies the purchase details, processes the return, and updates the inventory system. Depending on the return conditions, a refund or store credit is issued to the customer.

- **Preconditions:**
 1. The cashier is logged into the system.
 2. The customer provides the item and a valid proof of purchase (e.g., a receipt).
- **Postconditions:**
 1. The item is returned to stock or removed based on its condition.
 2. A refund or store credit is processed.
- **Main Flow:**
 1. The cashier scans or enters the returned item details and verifies the proof of purchase.
 2. The system checks the Inventory System to determine if the item can be returned to stock or needs to be removed.
 3. The cashier selects whether the customer will receive a refund or store credit.
 4. The system processes the refund or generates the store credit, and the return is finalized.
- **Alternate Flows:**
 - **Item Not Eligible for Return:** If the item is ineligible for return (e.g., due to damage or being outside the return period), the system notifies the cashier, and the return is rejected.
 - **Partial Refund or Exchange:** If the customer requests an exchange or partial refund, the system handles this before finalizing the return process.

Identify Entity/Boundary/Control Objects

1) Entities:

- **Sale:** Represents the transaction.
- **Item:** Represents the product sold.
- **Receipt:** Document generated for the sale.
- **Customer:** Represents the customer.

2) Boundary Objects:

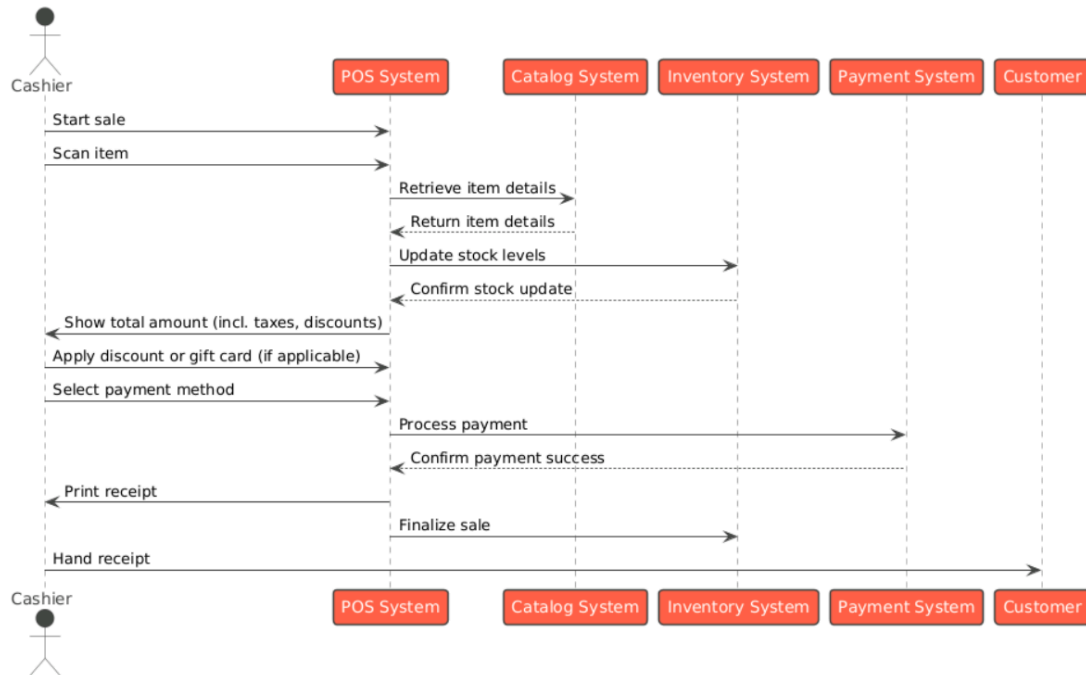
- **User Interface (UI):** Cashier interacts with this interface for input.
- **Payment Gateway:** Handles transactions for payment processing.

3) Control Objects:

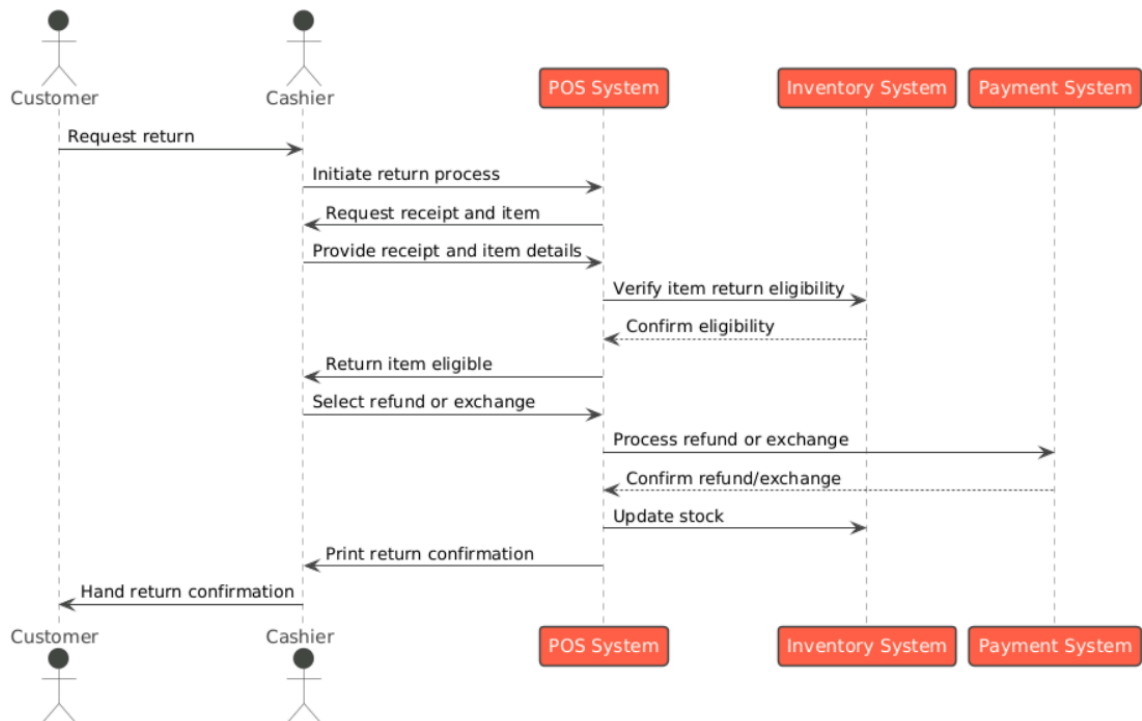
- **Sales Controller:** Manages the flow of sales.
- **Return Controller:** Manages the return processes.
- **Inventory Controller:** Updates item quantities after sales/returns.

Develop Sequence Diagrams

1) Process Sales

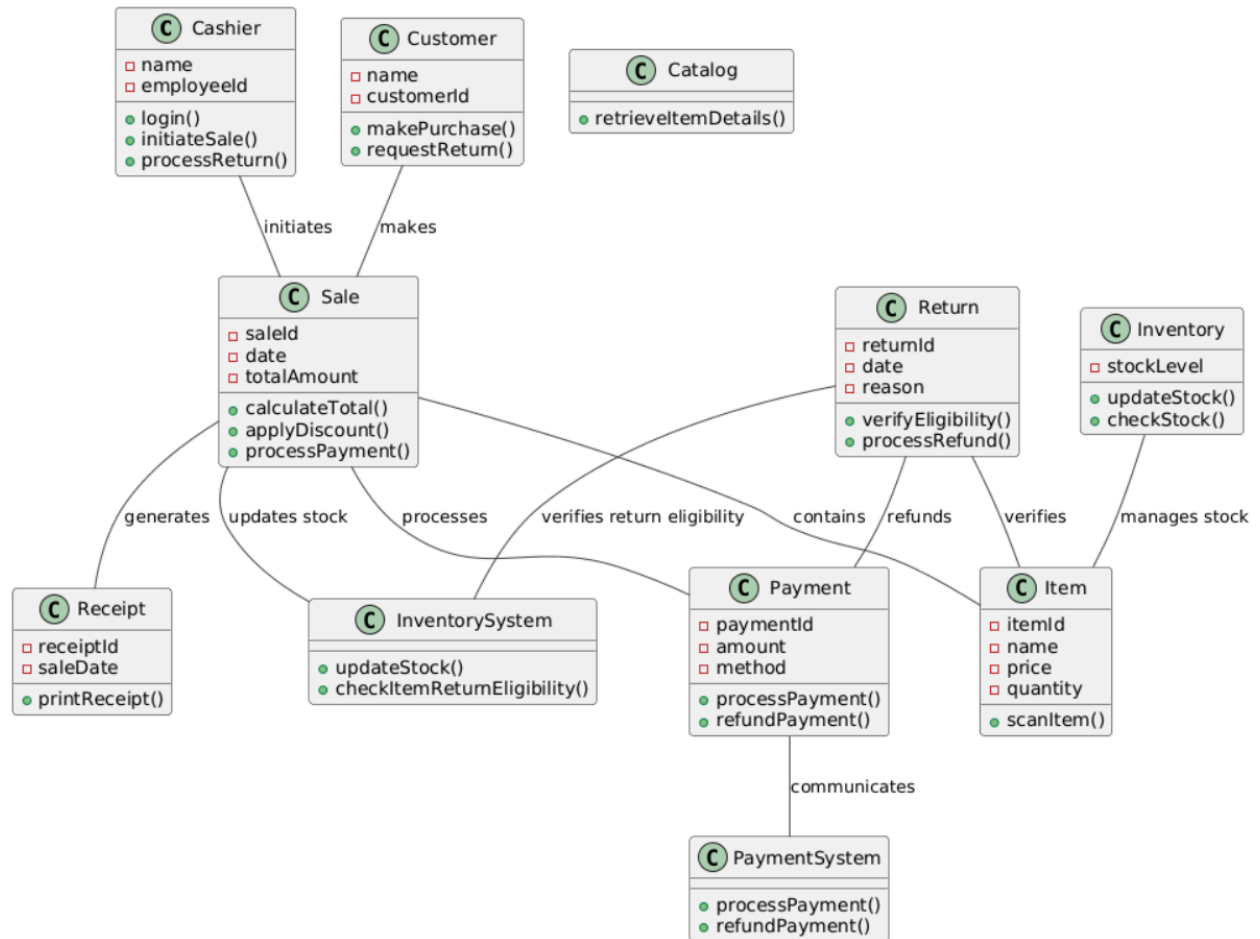


2) Handle Return



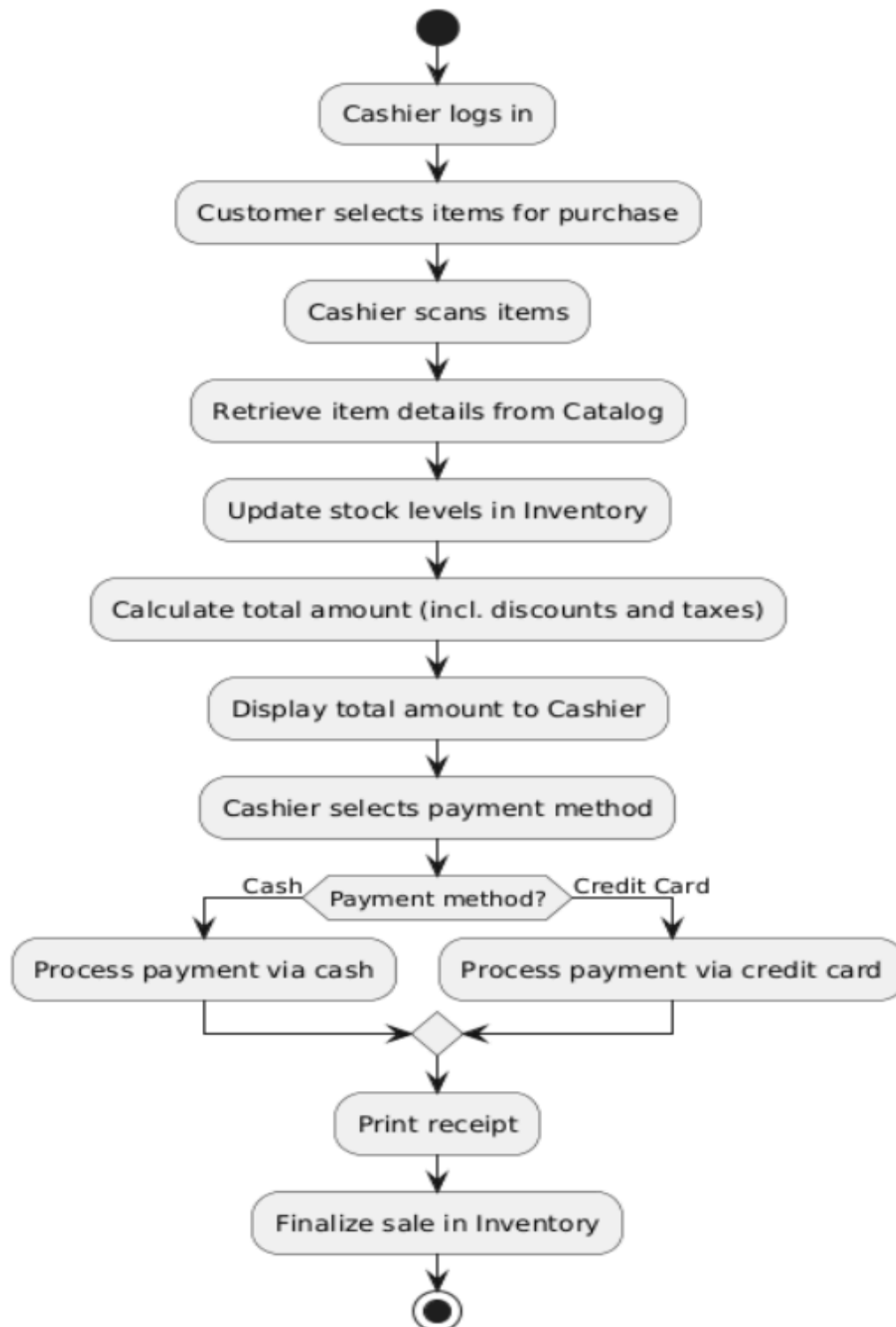
Develop Analysis Domain Models

Following is the Combined Analysis Diagram for Process Sales and Handle Return



Develop Activity Diagram for "Process Sale" and "Handle Return" use cases.

1) Process Sales



2) Handle Return

