

# IT314 Lab6

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## Task 1:

Use Case: **"Process Sale"**

Description : This use case describes how a cashier processes a customer's purchase transaction in a Point-of-Sale (POS) system. The process includes scanning items, applying discounts, calculating total costs, accepting payment, and issuing a receipt.

Actors:

Primary Actor : Cashier

Secondary Actors : Customer, Inventory System, Payment Gateway

Preconditions:

- The cashier is logged into the POS system.
- The items are available in stock.
- The system is connected to the payment gateway.

Postconditions:

- The sale is recorded in the system.
- The inventory is updated to reflect the sold items.
- The customer is issued a receipt.

Basic Flow:

1. The cashier initiates the sale by scanning the customer's items.
2. The system retrieves the price and description of each item from the inventory database.
3. The cashier can apply any discounts or promotions if applicable.
4. The system calculates the total price, including taxes.
5. The cashier selects the payment method (cash, card, mobile payment).
6. The customer provides payment, which is processed through the payment gateway.
7. Upon successful payment, the system confirms the sale and prints the receipt for the customer.
8. The system updates the inventory to reflect the sold items.

Alternative Flows:

- If an item is out of stock, the system notifies the cashier, who informs the customer.
- If the payment is declined, the system prompts the cashier to retry or choose a different payment method.

Use Case: "Handle Return"

Description: This use case describes how a cashier processes a customer's request to return previously purchased items. The process includes verifying the original purchase, refunding the payment, and updating the inventory.

Actors:

Primary Actor: Cashier

Secondary Actors: Customer, Inventory System, Payment Gateway

Preconditions:

- The cashier is logged into the POS system.
- The customer has a valid receipt for the item being returned.
- The item is eligible for return according to store policies.

#### Postconditions:

- The item is returned to the inventory.
- The refund is processed.
- A return receipt is issued to the customer.

#### Basic Flow:

1. The customer presents the item and receipt to the cashier for return.
2. The cashier scans the receipt to retrieve the details of the original sale.
3. The system verifies that the item is eligible for return (e.g., within the return window).
4. The cashier inspects the item for condition and eligibility.
5. If the return is approved, the system calculates the refund amount.
6. The cashier processes the refund via the original payment method (cash, card, etc.).
7. The system updates the inventory to reflect the returned item.
8. A return receipt is printed and provided to the customer.

#### Alternative Flows:

- If the item is not eligible for return (e.g., outside the return window, damaged), the system notifies the cashier, who informs the customer.
- If the original payment method is unavailable (e.g., expired card), the cashier may offer store credit.

## **Task 2:**

### **Entity Objects:**

- Item: Represents individual products that are scanned, sold, or returned. Attributes include price, description, stock level, and item ID.
- Sale: Represents a complete sale transaction, including items sold, total price, and payment method.
- Return: Represents the return transaction, detailing the returned items, original sale, and refund.
- Receipt: Represents the record of the transaction given to the customer (for both sales and returns).
- Payment: Represents the method of payment (cash, card, mobile payment) and includes details like payment amount and status.
- Inventory: Represents the stock levels of items and is updated after sales or returns.
- Customer: Represents the customer involved in the transaction, including loyalty details if applicable.

### **Boundary Objects:**

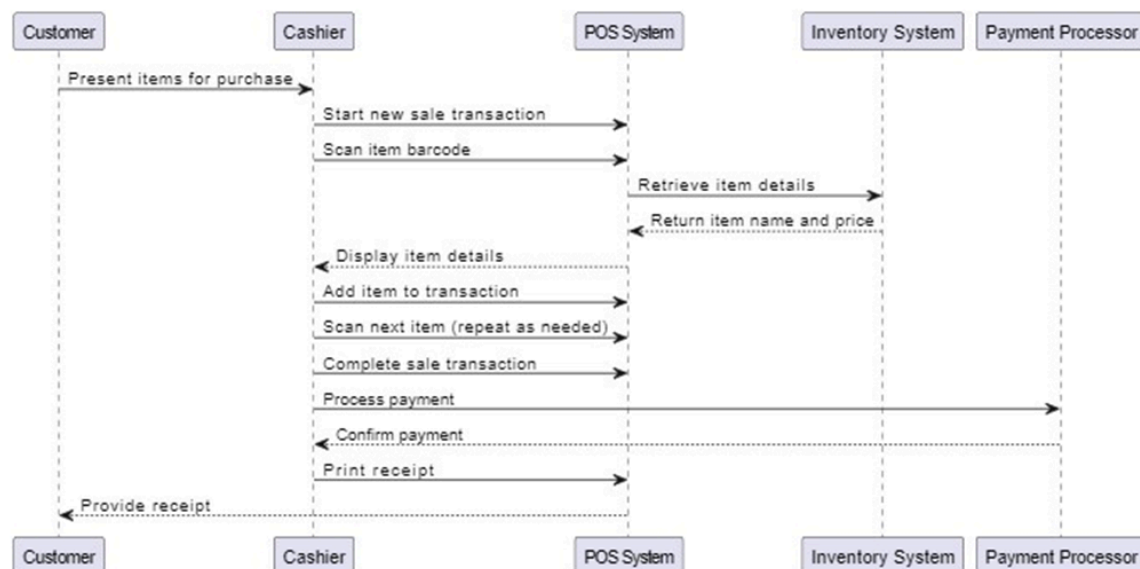
- POS Interface: The interface the cashier interacts with to process sales and returns, scan items, and handle payments.
- Scanner: The physical or digital scanner used to input item information into the system.
- Receipt Printer: The device that prints the sales or return receipt for the customer.
- Payment Gateway Interface: The system interface responsible for processing payment (e.g., verifying credit card transactions).
- Customer Display: A display that shows the transaction details (e.g., items scanned, total amount) to the customer in real-time.

## Control Objects:

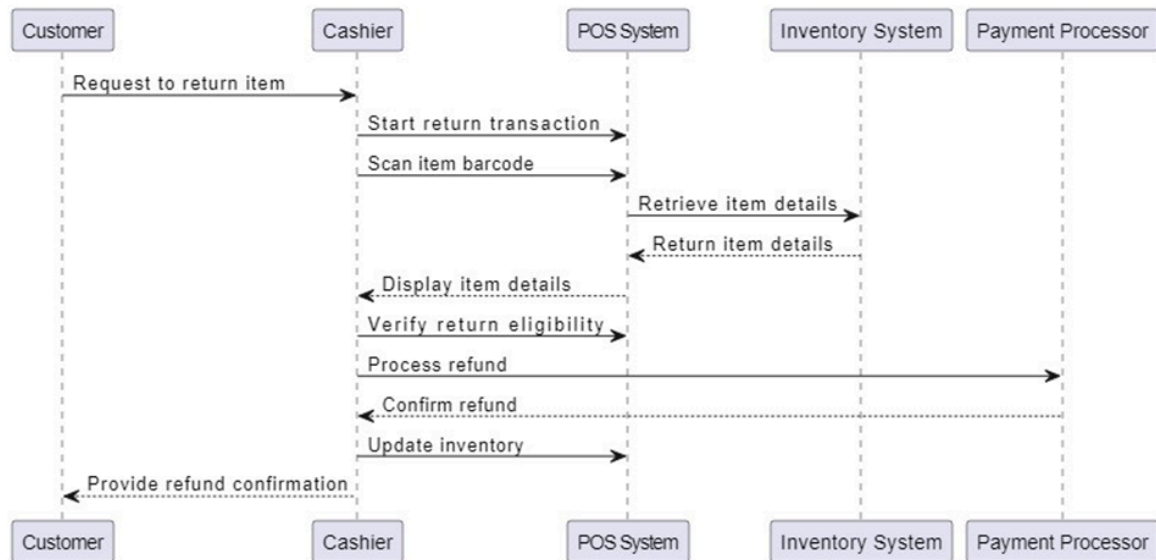
- Sale Controller: Manages the workflow for processing a sale, including scanning items, applying discounts, calculating totals, and handling payment.
- Return Controller: Manages the workflow for processing a return, including verifying the original sale, inspecting the item, and processing the refund.
- Inventory Manager: Ensures the inventory is updated when an item is sold or returned.
- Discount Controller: Handles applying promotions, discounts, or loyalty points during a sale.
- Payment Processor: Manages interactions with the payment gateway, including validating and confirming payment.

## Sequence Diagram

### Process Sales:

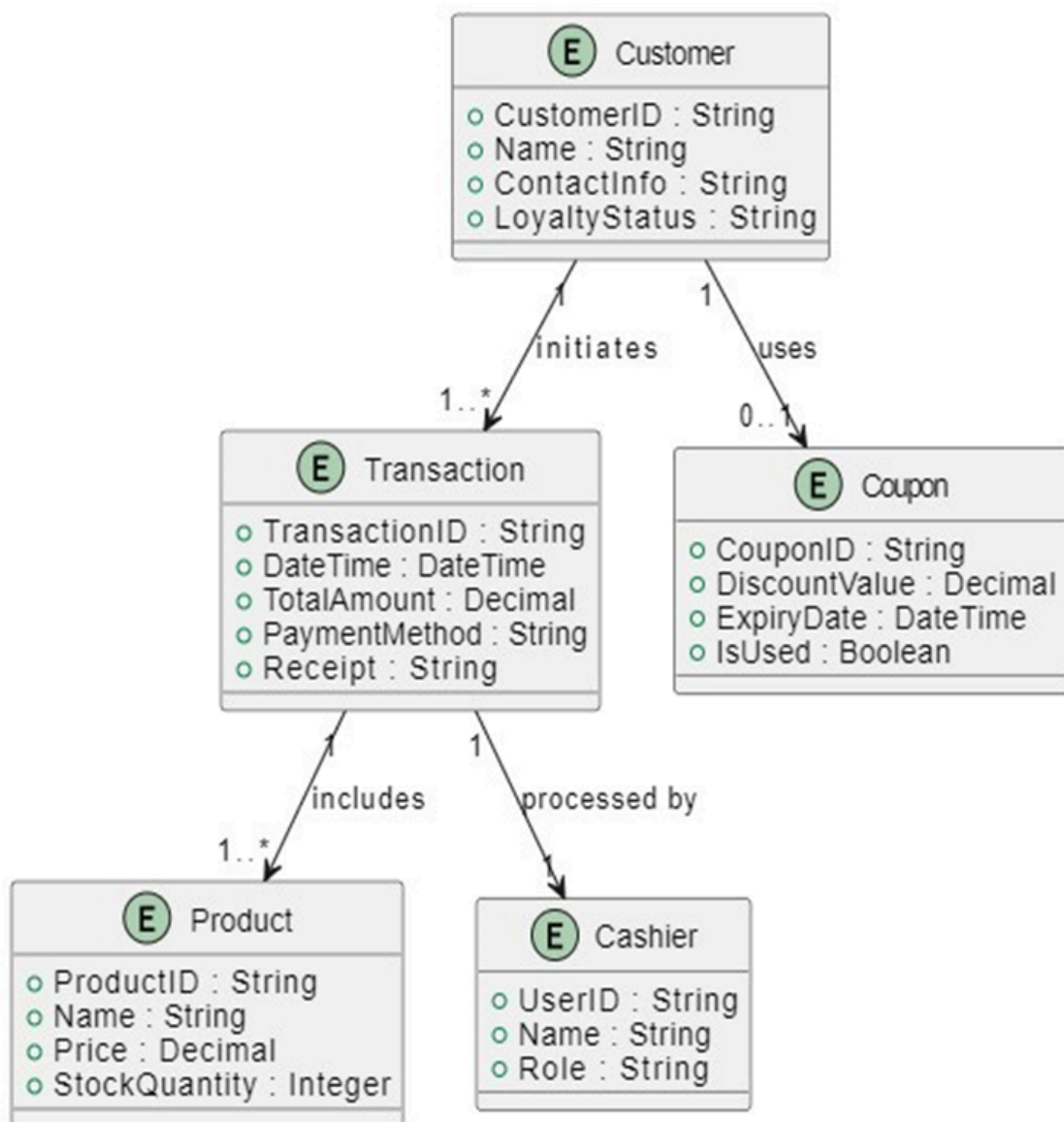


## Handle Returns:

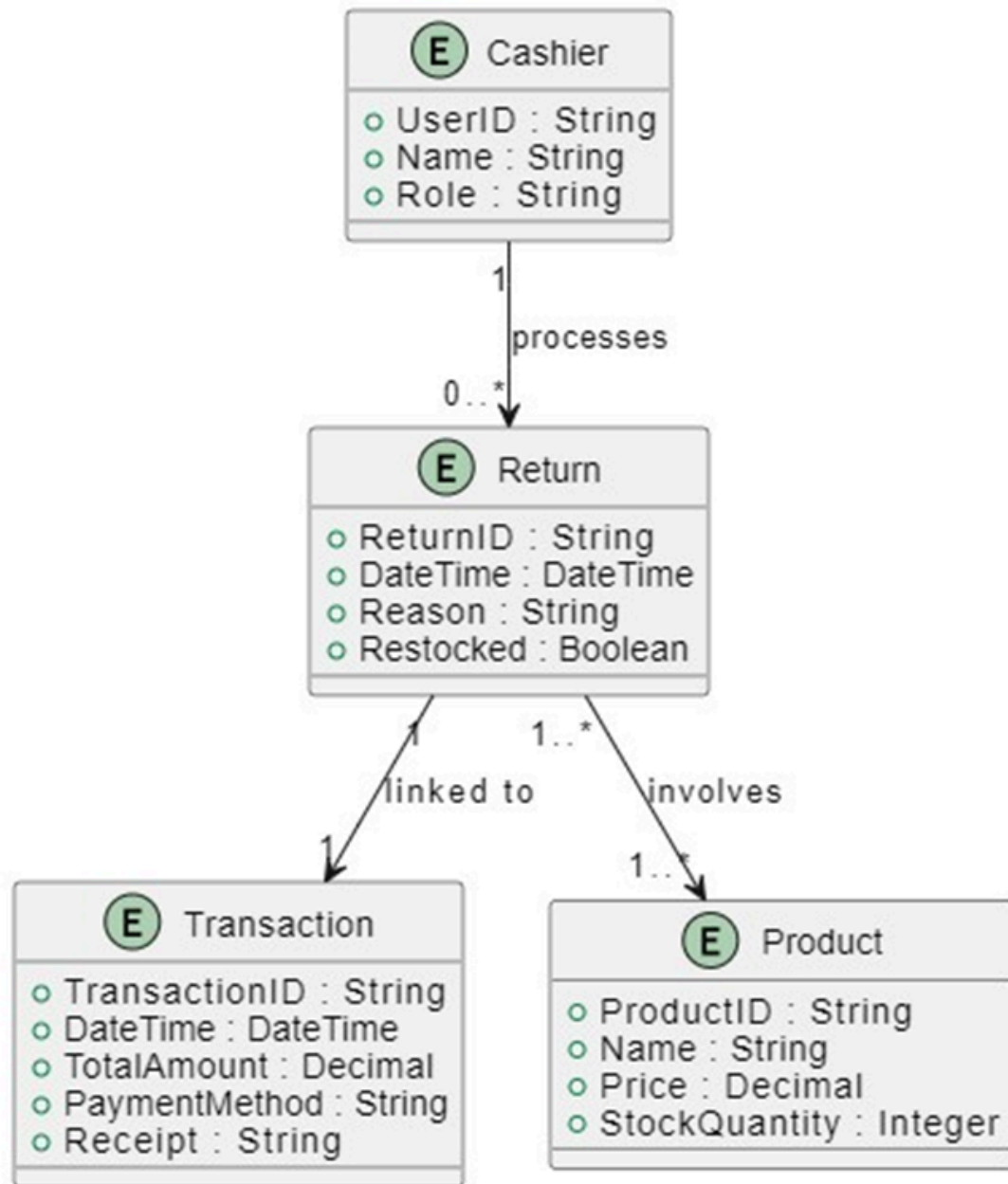


## Analysis Domain Model

### Process Sales:



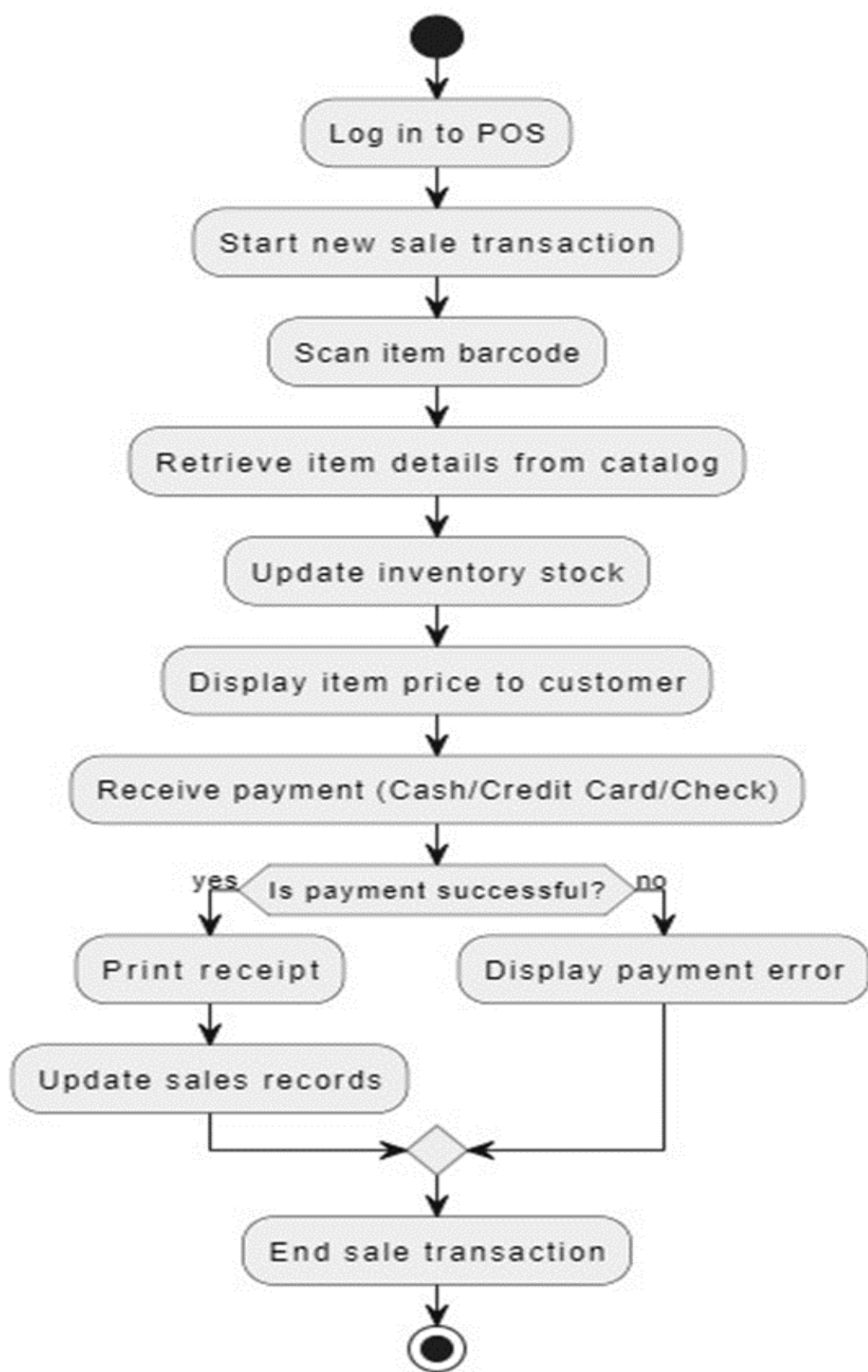
## Handle Returns:



## Activity Diagram

### Process Sales:





## Handle Returns:

