

IT314

Software Engineering

Lab 7



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

Use Case: Process Sale

Use Case Description:

- **Name:** Process Sale
- **Actors:** Cashier, Customer
- **Preconditions:**
 1. The cashier must be logged into the system.
 2. The customer has selected items to purchase.
 3. Items are available in stock.
- **Postconditions:**
 1. The sale is successfully completed.
 2. The payment is processed, and a receipt is issued.
 3. The inventory is updated to reflect the sale.
- **Main Success Scenario:**
 1. The cashier initiates a new sale.
 2. The cashier scans the barcode of each item.
 3. The POS system retrieves the item details (name, price) from the catalog and updates the total amount.
 4. The system checks the inventory system to ensure each item is in stock.
 5. The cashier asks the customer for the payment method (cash, credit card, or check).
 6. The customer provides payment.
 7. The POS system processes the payment.
 8. If applicable, the customer presents a coupon, and the system applies the discount.
 9. The POS system prints a receipt.
 10. The inventory system is updated to reflect the sale.

- **Alternate Scenarios:**

4a. **Item out of stock:** The system alerts the cashier that the item is not available.

7a. **Payment failed:** The cashier asks the customer to provide an alternative payment method.

8a. **Coupon invalid:** The system rejects the coupon, and the cashier informs the customer.

Use Case: Handle Return

Use Case Description:

- **Name:** Handle Return
- **Actors:** Cashier, Customer
- **Preconditions:**
 1. The cashier must be logged into the system.
 2. The customer has a receipt or the original transaction is retrievable.
- **Postconditions:**
 1. The return is successfully processed.
 2. The payment is refunded (if necessary).
 3. The inventory is updated.
- **Main Success Scenario:**
 1. The customer approaches the cashier with items to return.
 2. The cashier retrieves the original sale by scanning the receipt or looking up the sale in the system.
 3. The cashier selects the items to be returned.
 4. The POS system verifies that the items can be returned (e.g., within return policy).
 5. The system processes the return.
 6. The customer is refunded through the same payment method used in the original purchase.

- 7. The POS system updates the inventory.
- 8. A return receipt is printed for the customer.
- **Alternate Scenarios:**
 - 4a. **Items not eligible for return:** The system alerts the cashier that the return cannot be processed (e.g., past the return period).
 - 6a. **Refund failed:** The system fails to process the refund, and the cashier advises the customer of the next steps (e.g., contact the bank or use another refund method).

Q-2. Identify Entity/Boundary/Control Objects

Use Case: Process Sale

- **Entity Objects:**
 - Sale
 - Item
 - Inventory
 - Payment
 - Coupon
 - Receipt
- **Boundary Objects:**
 - User Interface (for cashier input and display)
 - Barcode Scanner
 - Payment Terminal
- **Control Objects:**
 - SaleController (manages sale transactions)
 - PaymentProcessor (handles payment logic)
 - CouponValidator (handles validation of coupons)
 - InventoryManager (manages stock level updates)

Use Case: Handle Return

- **Entity Objects:**

- Return
- Item
- Payment (Refund)
- Receipt
- Inventory

- **Boundary Objects:**

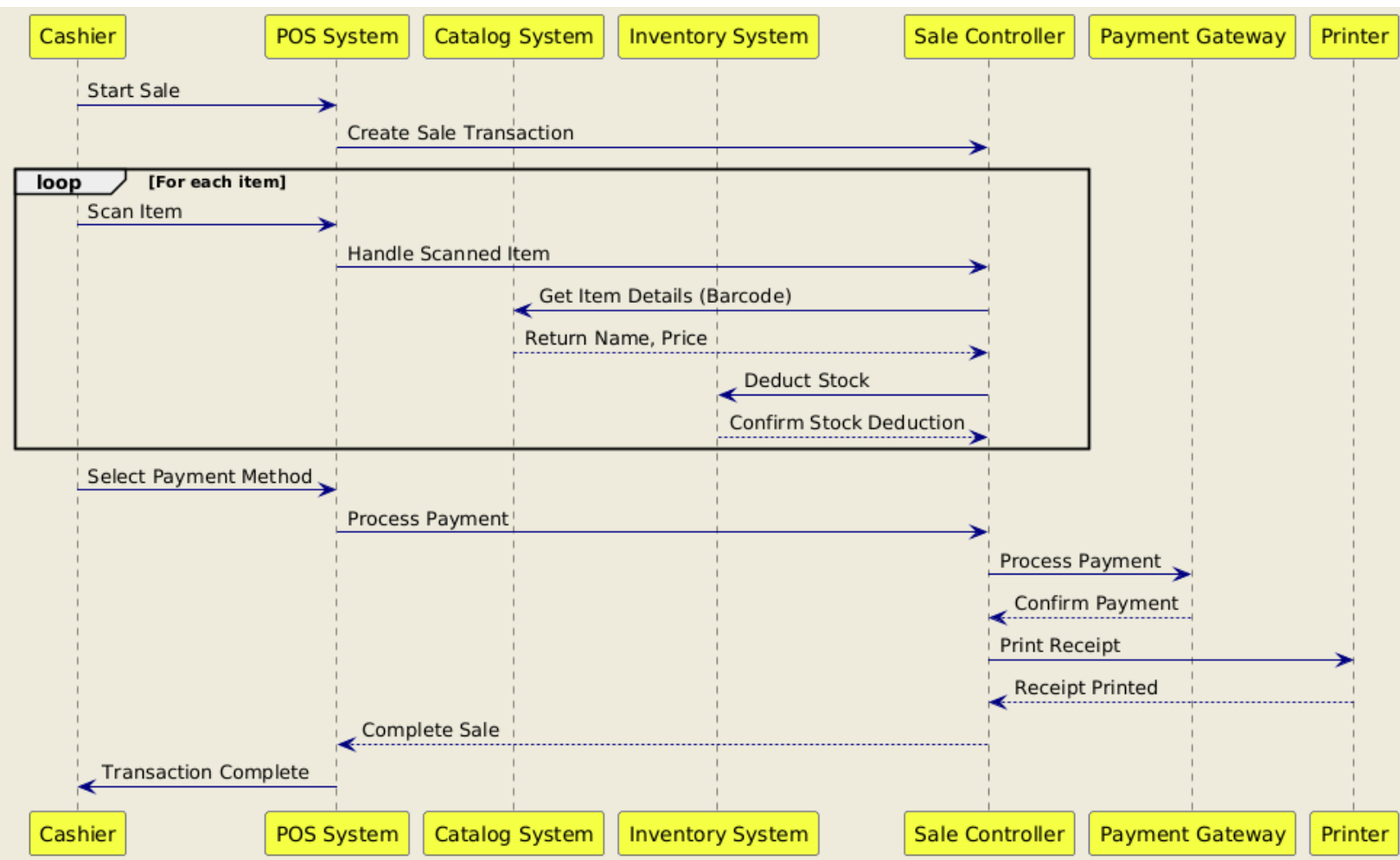
- User Interface (for cashier input and display)
- Barcode Scanner
- Payment Terminal (for processing refunds)

- **Control Objects:**

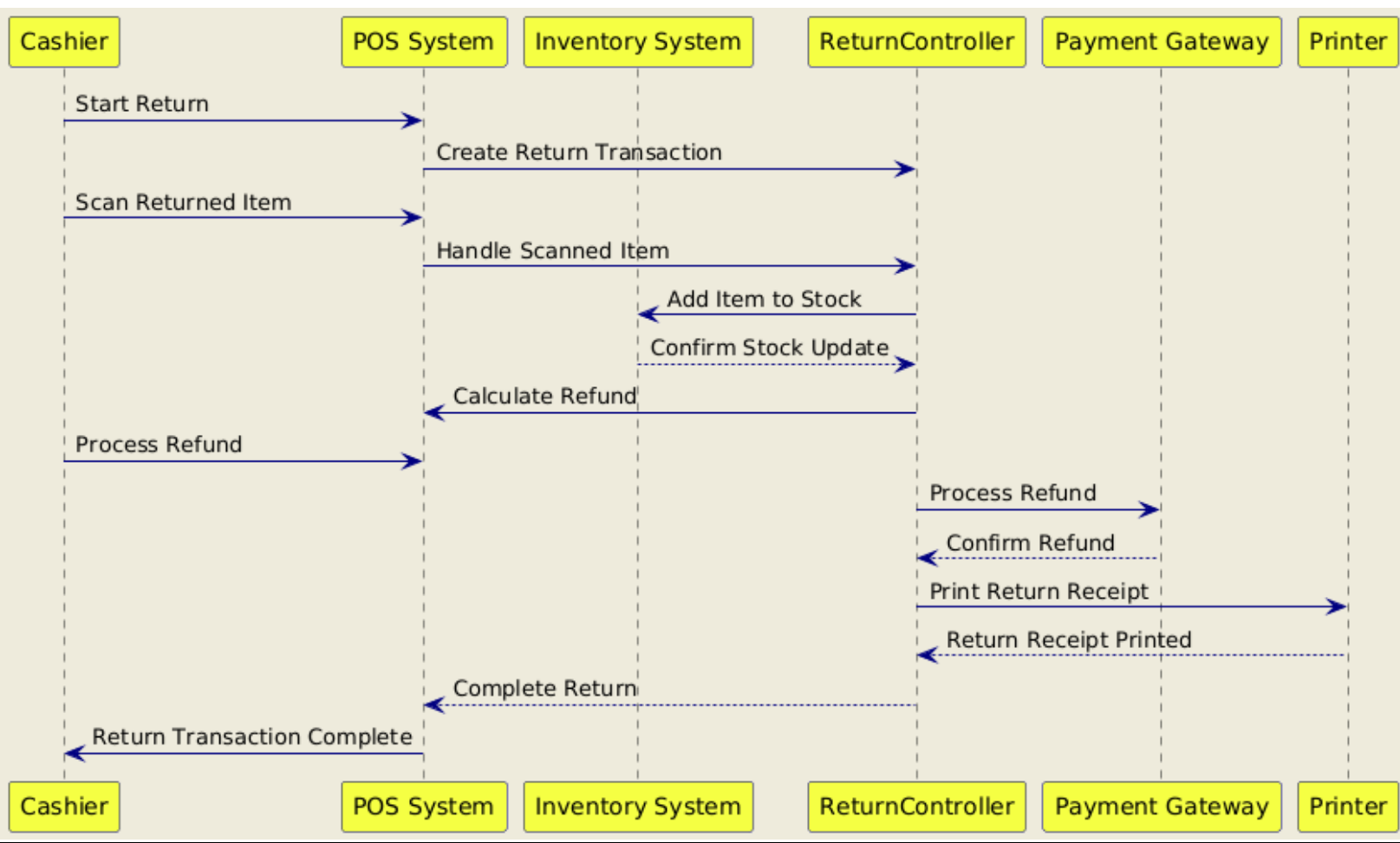
- ReturnController (manages return transactions)
- RefundProcessor (handles the refund logic)
- InventoryManager (manages stock level updates)

Q-3. Develop Sequence Diagrams

Use Case: Process Sale

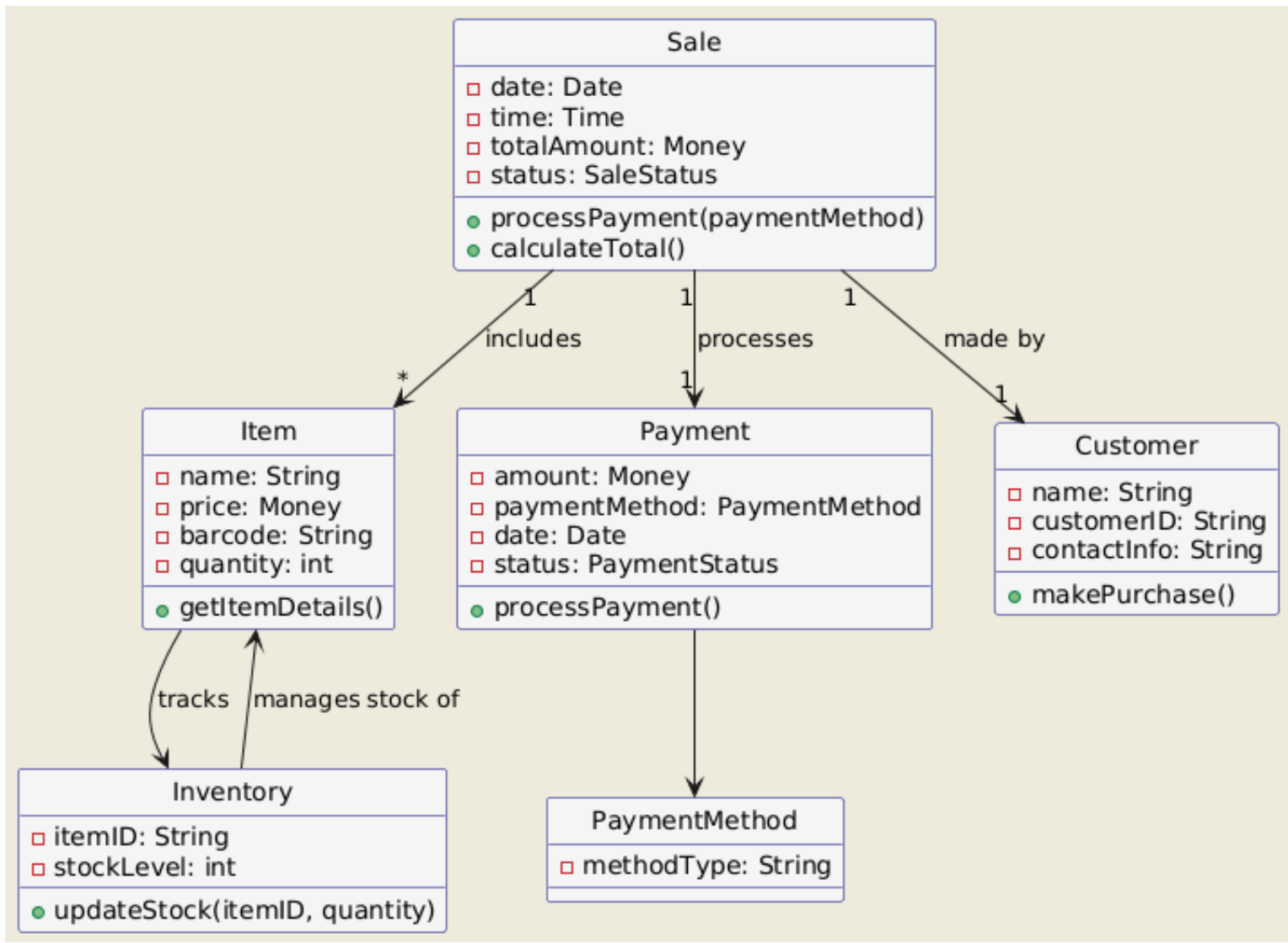


Use Case: Handle Return

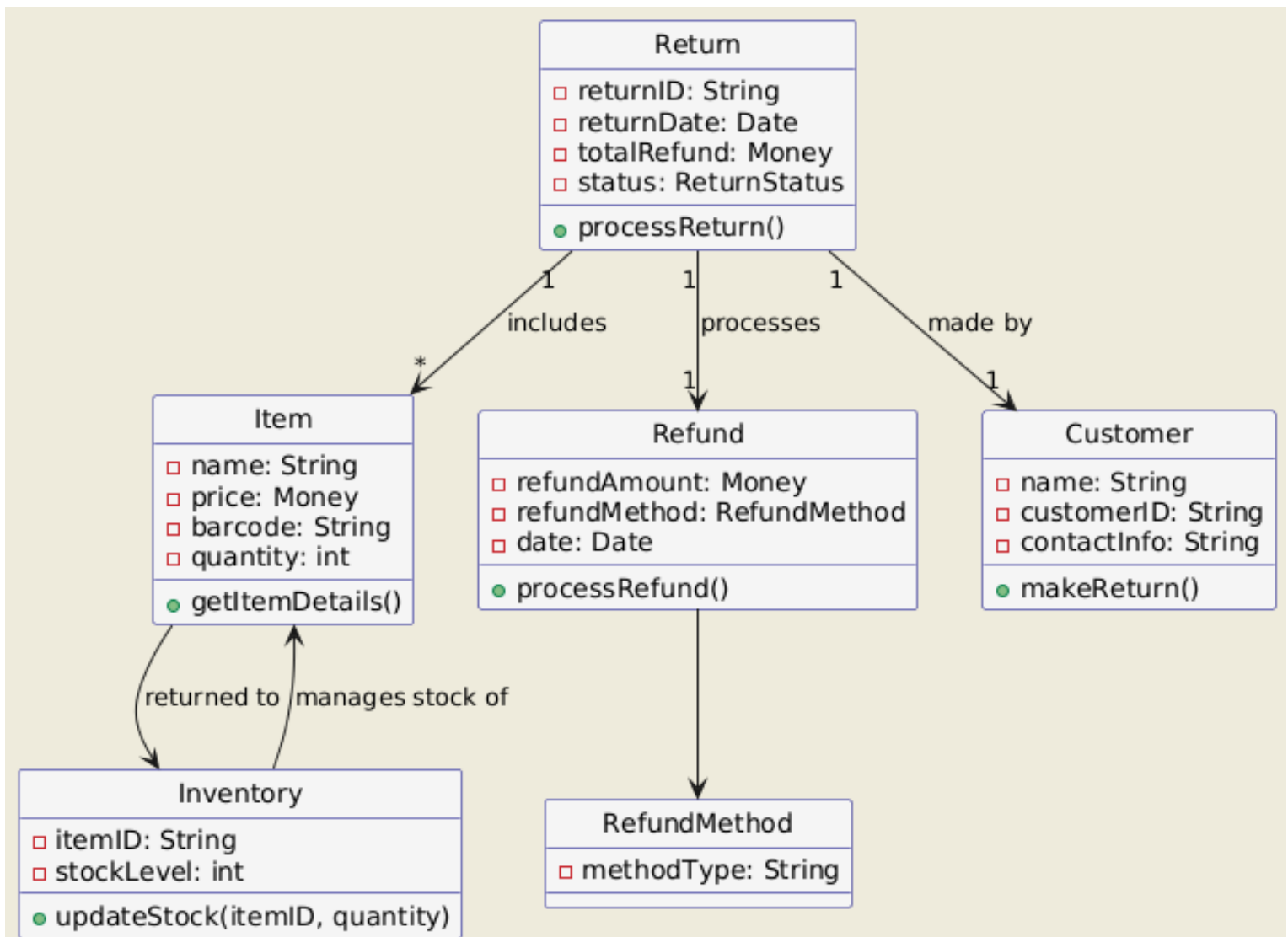


Q-4. Develop Analysis Domain Models

Use Case: Process Sale

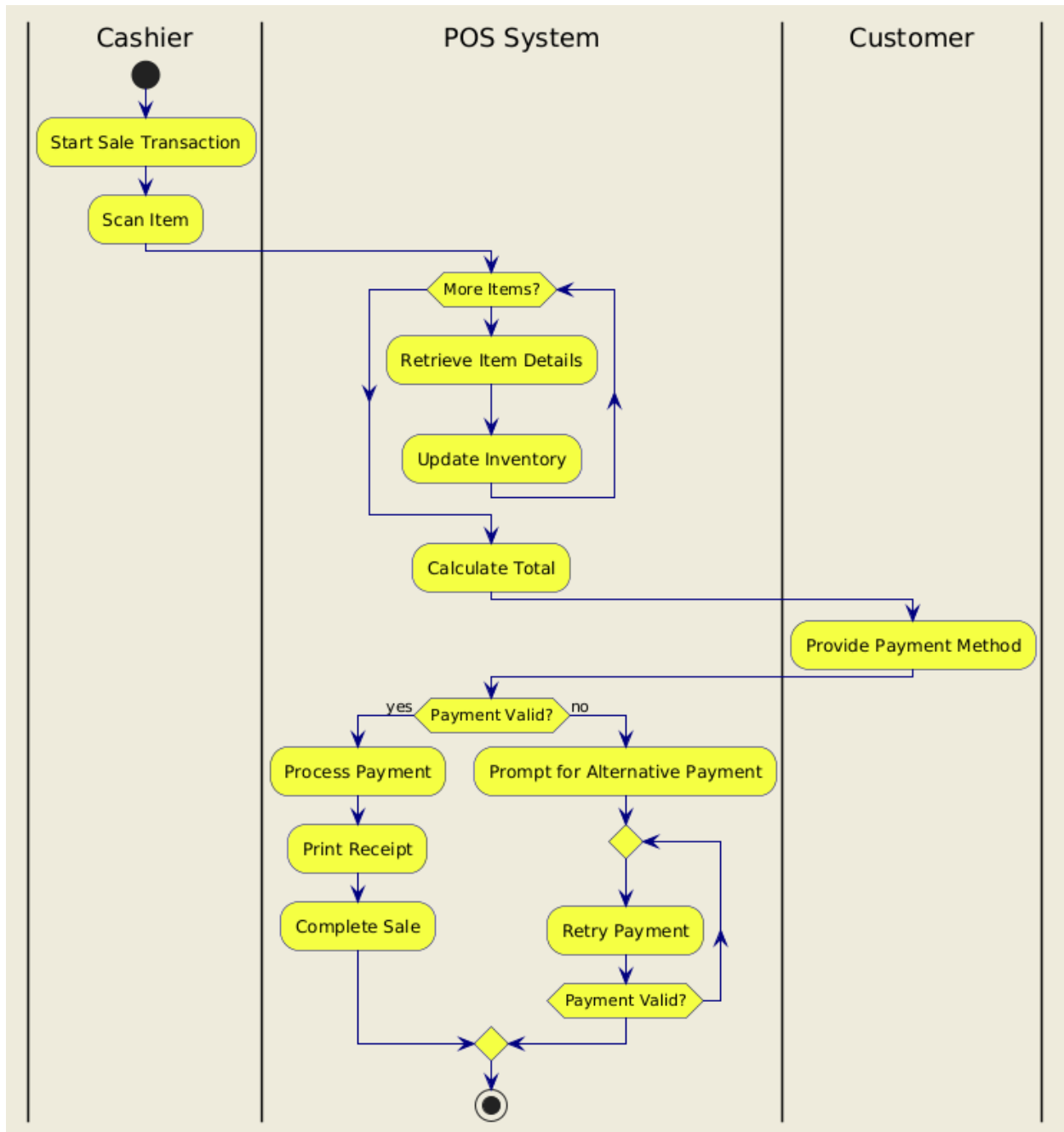


Use Case: Handle Return



Q-5. Develop activity diagrams for "Process Sale" and "Handle Return" use cases.

Use Case: Process Sale



Use Case: Handle Return

