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# Software Engineering

## Lab-6

### 202201404

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- 1) **Develop Use Case Textual Description for "Process Sale" and "Handle Return" use cases.**
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#### **Use Case: Process Sale**

**Actors:** Cashier, Customer, Inventory System, Catalog System, Payment System

**Precondition:**

- The cashier is logged into the system.

**Main Success Scenario (Basic Flow):**

1. Cashier starts a new sale transaction in the POS system.
2. Cashier scans the barcode of the product.
3. POS retrieves the product name and price from the catalog system.
4. POS updates the stock by interacting with the inventory system.
5. Cashier repeats steps 2-4 for each product until all are scanned.
6. The POS calculates the total price.
7. Customer provides payment (cash, credit card, check, or coupon).

8. The POS system processes the payment with the payment system and confirms its success.
9. The POS prints a receipt for the customer.
10. Sale is recorded, and the transaction is completed.

**Postcondition:**

- Sale is registered in the system, stock levels are updated, and a receipt is provided.

**Alternative Flows:**

- **Invalid Barcode:** If the product barcode cannot be found in the catalog system, the POS displays an error and allows the cashier to manually input or scan again.
- **Insufficient Stock:** If the stock is insufficient, the POS notifies the cashier, who can either proceed without the product or cancel the transaction.
- **Failed Payment:** If the payment fails, the POS informs the cashier to retry or choose another payment method.

**Use Case: Handle Return**

**Actors:** Cashier, Customer, Inventory System, Sale Transaction System

**Precondition:**

- Customer provides a valid receipt or proof of purchase.

**Main Success Scenario (Basic Flow):**

1. Cashier starts a return transaction in the POS system.
2. Customer presents the receipt, and the cashier scans it.
3. The POS system retrieves the transaction details and validates the items for return.
4. Cashier selects the items being returned.
5. The POS system updates the inventory by interacting with the inventory system.
6. POS calculates the refund amount.
7. The refund is processed either as cash, credit card reversal, or store credit.

8. A receipt for the return is printed for the customer.
9. The return transaction is completed, and stock is updated.

**Postcondition:**

- Return is registered, and inventory is adjusted.

**Alternative Flows:**

- **No Receipt:** If the customer has no receipt, the POS system may allow a return for store credit or manual verification.
- **Invalid Return Item:** If the item is not eligible for return (e.g., beyond the return period), the POS informs the cashier, who may cancel the return process.

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## 2) Identify Entity/Boundary Control Objects

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**Entity Objects:**

- Product
- Sale
- Return
- Coupon
- User

**Boundary Objects:**

- POS Interface
- Receipt Printer
- Payment System Interface
- Catalog System Interface

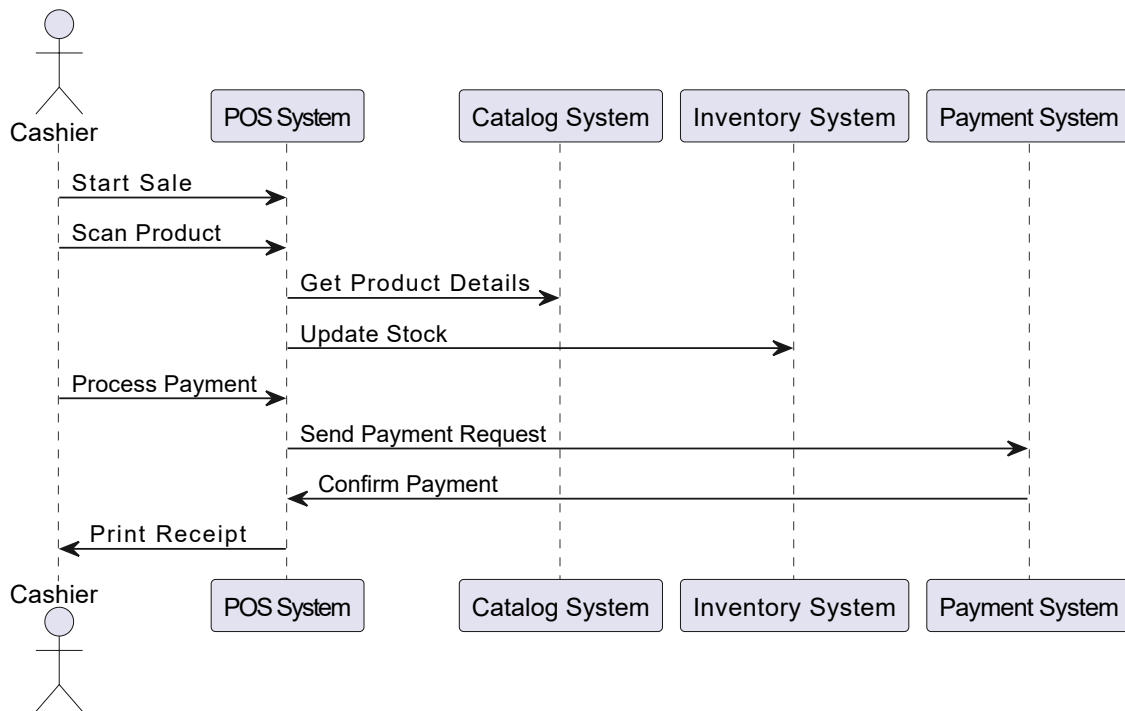
**Control Objects:**

- SaleController

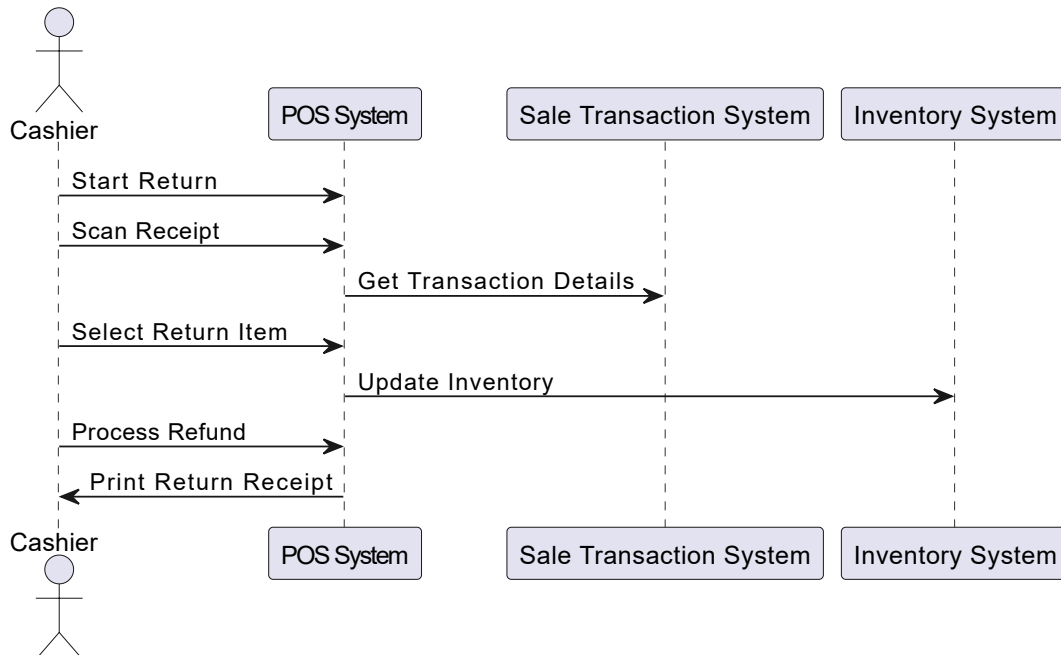
- ReturnController
- PaymentController
- StockController

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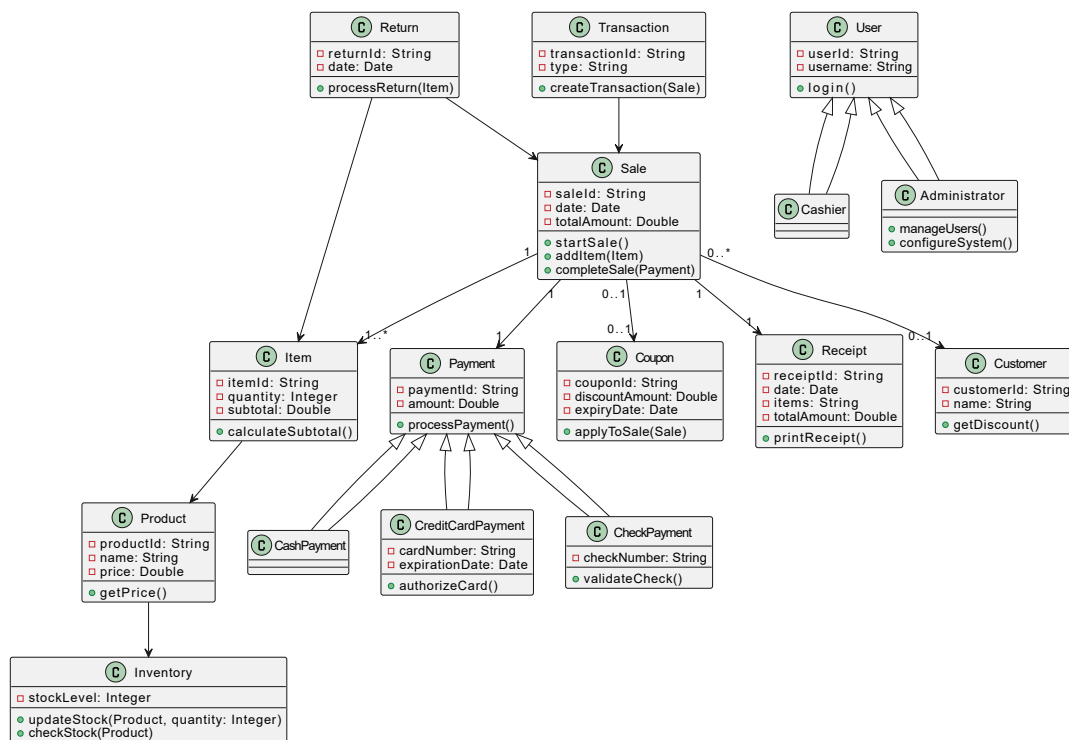
## Sequence Diagram For Process Sale :



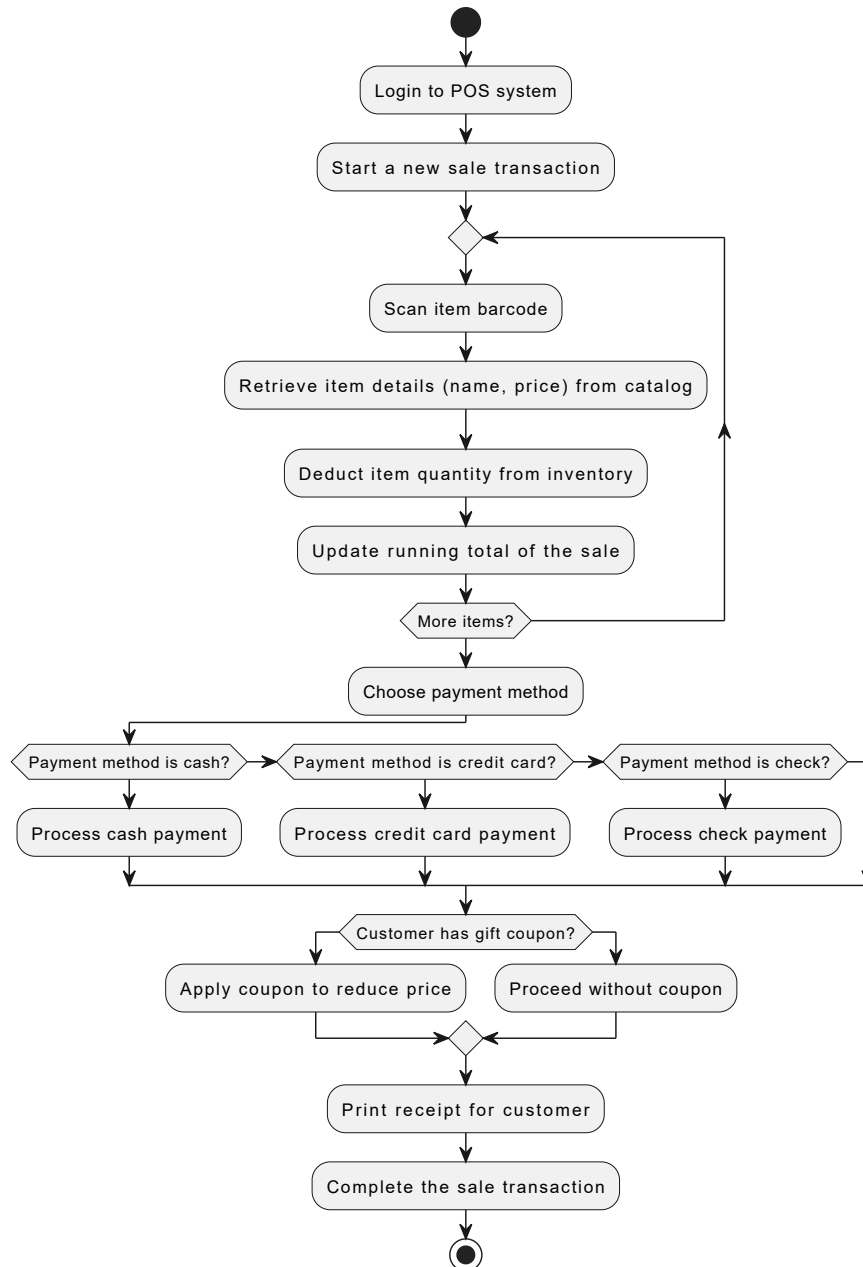
## Sequence Diagram For Handle Return :



## Analysis Domain Model for POS:



## Activity Diagram for Process Sale:



**Activity Diagram for Handle Return:**

