



## **IT314 - Software Engineering**

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**LAB - 06**

## **Process Overview: Sales Transaction**

**Actor:** Cashier

### **Preconditions:**

1. The cashier is logged into the point-of-sale (POS) system.
2. The POS system has active connections to the product catalog and inventory management systems.

### **Main Flow:**

1. The cashier initiates a new sales transaction.
2. For each product in the transaction: a. The cashier scans the product's barcode. b. The system retrieves the product details and price from the catalog. c. Inventory counts are adjusted accordingly. d. The item is added to the current sale.
3. The system computes the total cost of the transaction.
4. If the customer presents a discount coupon: a. The cashier applies the coupon to the transaction. b. The system recalculates the total after the coupon is applied.
5. The cashier informs the customer of the final amount owed.
6. The customer chooses a payment method (cash, credit card, or check).
7. The cashier processes the selected payment method.
8. The system validates the payment information.
9. A receipt is generated and printed.
10. The system finalizes the transaction.

### **Alternative Flows:**

- **Invalid Coupon Scenario:**
  1. The system alerts the cashier that the coupon is not valid.
  2. The cashier communicates the invalid status to the customer and continues the transaction from step 5.
- **Payment Verification Issue:**
  1. The system notifies the cashier that payment validation has failed.
  2. The cashier asks the customer for an alternative payment method.
  3. If a different method is provided, return to step 7; if not, the transaction is canceled.

### **Postconditions:**

1. The transaction is recorded in the system.
2. Inventory is updated to reflect the sale.
3. The payment is successfully processed.
4. A receipt has been printed.

## **Process Overview: Processing a Return**

**Actor:** Cashier

### **Preconditions:**

1. The cashier is logged into the point-of-sale (POS) system.
2. The customer has a valid receipt for the items being returned.

### **Main Flow:**

1. The cashier starts a new return transaction.
2. The cashier scans the receipt or enters its details manually.
3. The system retrieves the original transaction information.
4. For each item being returned: a. The cashier scans the item's barcode. b. The system confirms that the item matches the original transaction. c. Inventory levels are updated to account for the return. d. The item is included in the current return transaction.
5. The system calculates the total refund amount.
6. The cashier verifies the return details with the customer.
7. The system processes the refund using the original payment method.
8. A return receipt is generated and printed.
9. The system finalizes the return transaction.

### **Alternative Flows:**

- **Receipt Not Found:**
  1. The system alerts the cashier that the receipt is invalid or missing.
  2. The cashier informs the customer that the return cannot proceed and ends the process.
- **Item Verification Failure:**
  1. The system indicates that the item does not match the original transaction.
  2. The cashier informs the customer and may either proceed with the next item or halt the return process.
- **Original Payment Method Unavailable:**
  1. The cashier selects a different refund method (e.g., store credit or cash).
  2. The system processes the refund with the newly chosen method.

### **Postconditions:**

1. The return is recorded in the system.
2. Inventory is updated to reflect the returned items.
3. The refund has been processed successfully.

4. A return receipt is printed and given to the customer.

**Identified Entities:**

- Item
- Catalog
- Inventory
- Receipt
- Payment
- Coupon
- User (Cashier/Administrator)
- Return

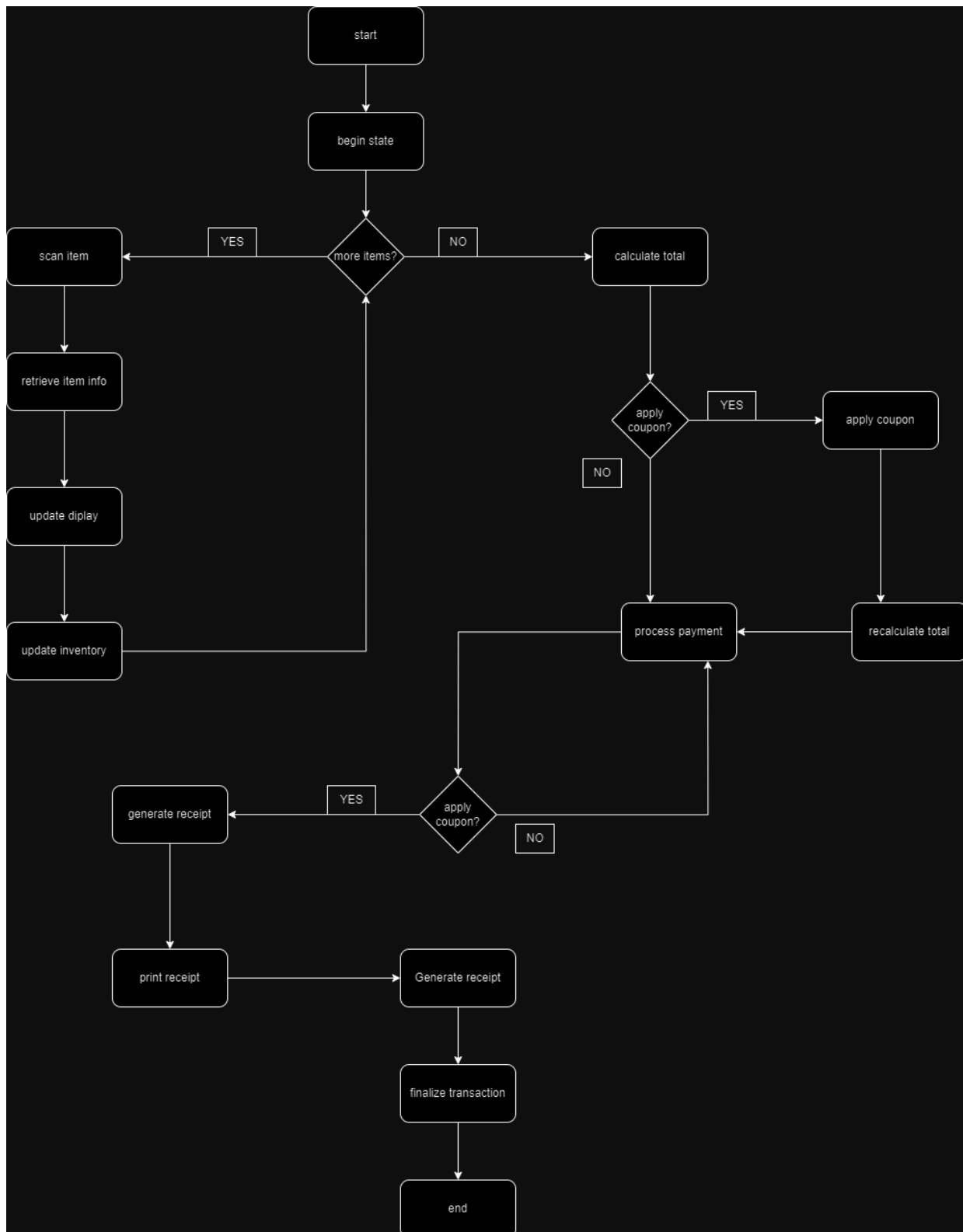
**Boundary Objects:**

- POS Terminal Interface
- Scanner Interface
- Payment Processing Interface
- Receipt Printer Interface

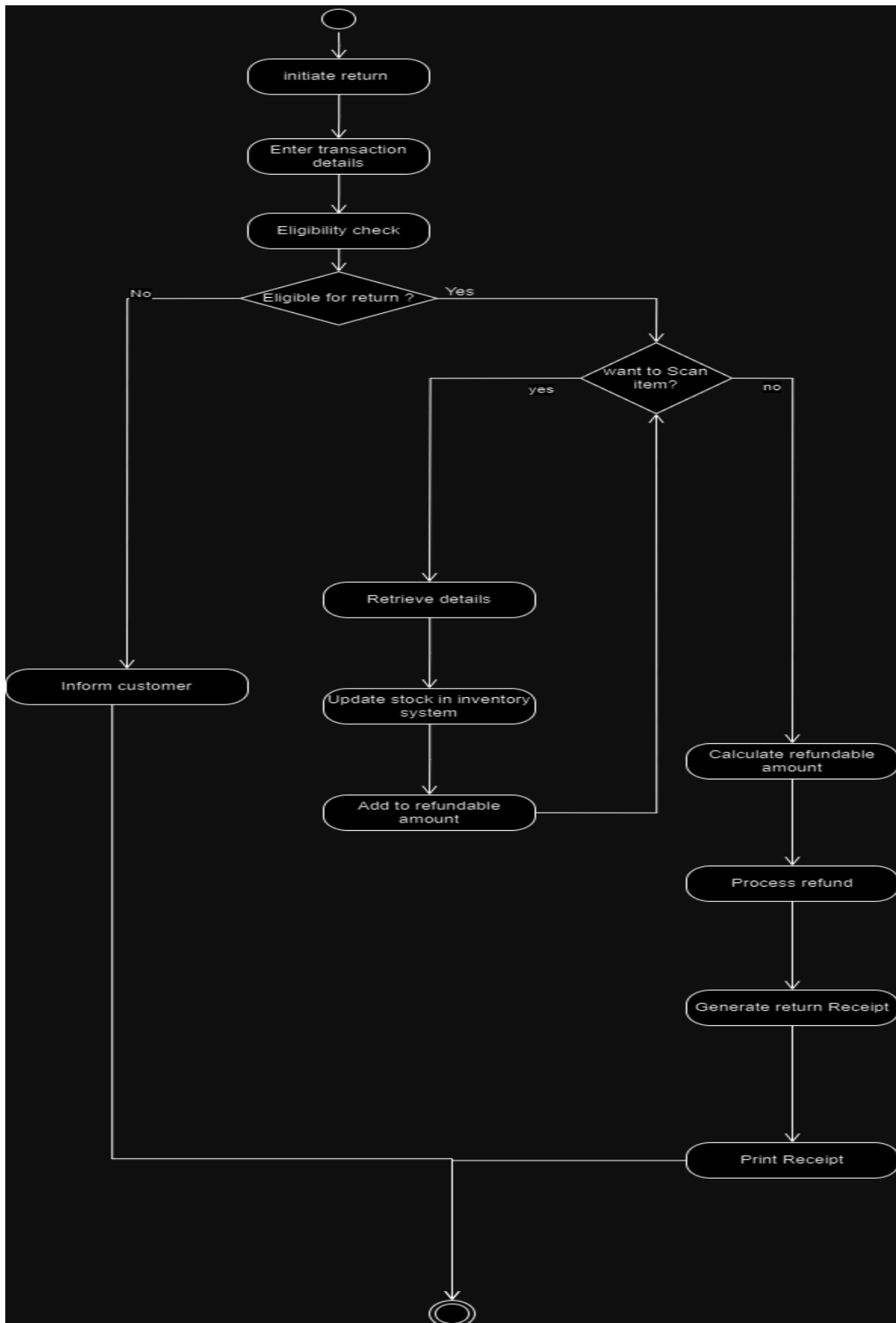
**Control Objects:**

- Sale Manager
- Inventory Manager
- Catalog Manager
- Payment Manager
- User Authentication Manager
- Return Manager

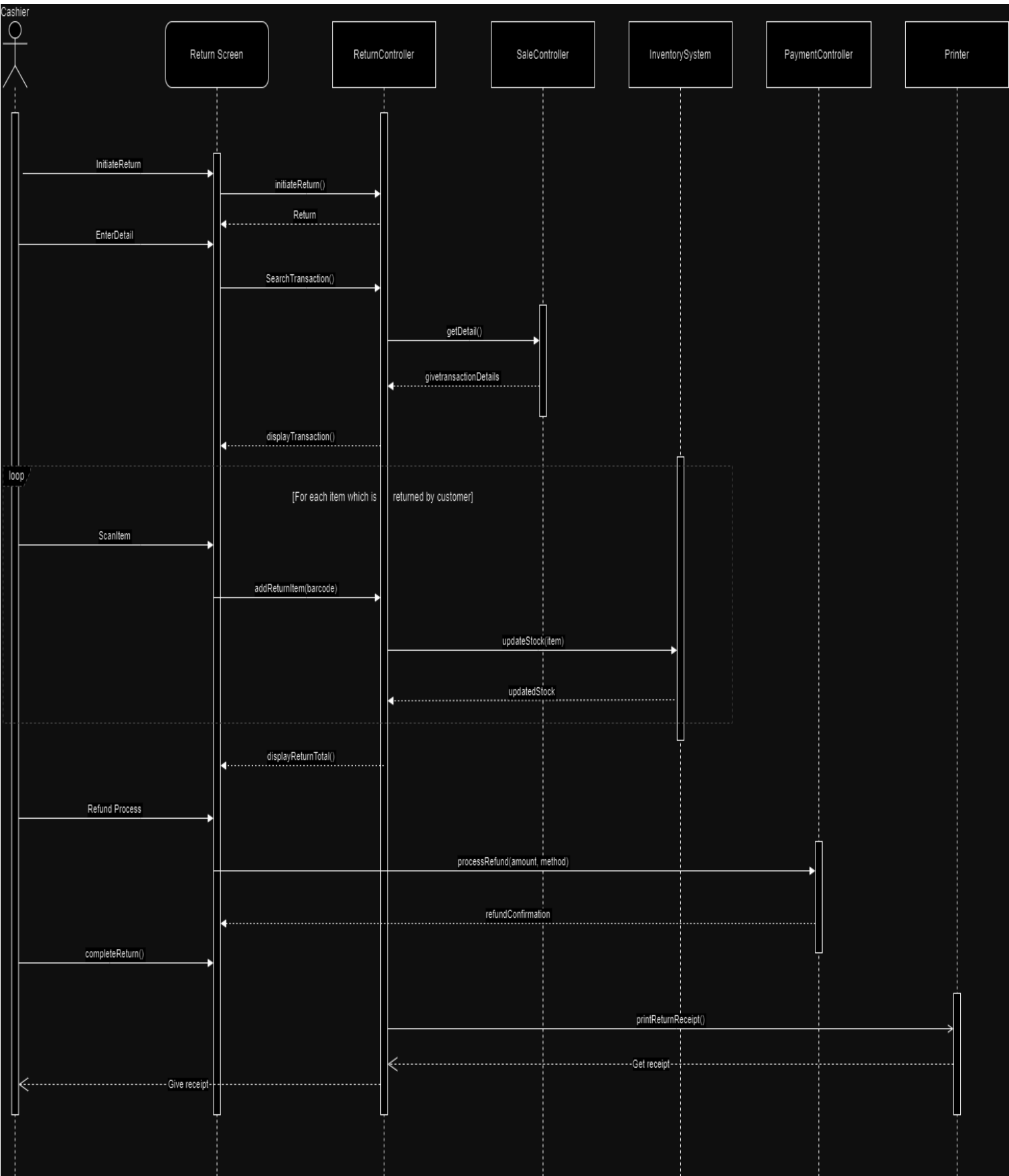
## Processsale activity :



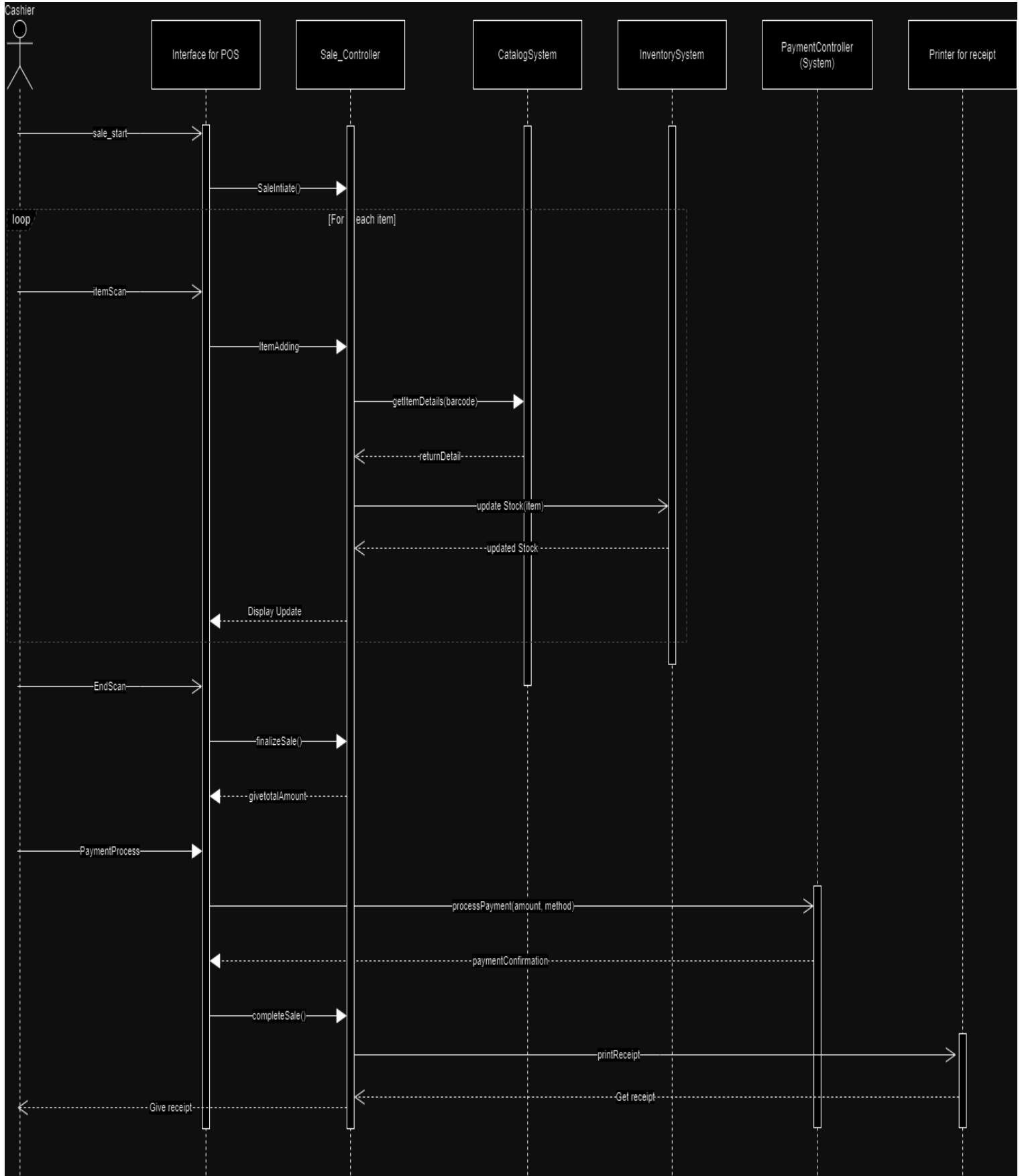
## Handle Return Activity Diagram:



Handle Return Sequence Diagram:



## Process sale Sequence Diagram:





## Analysis Domain Model:

