IT314 Software Engineering
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Lab 6

Process scale

Actor: Cashier

Preconditions

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

Main Flow

1. The cashier starts a new sales transaction.
2. For each item in the transaction:
   a. The cashier scans the item's barcode.
   b. The system retrieves the item's details and price from the product catalog.
   c. The inventory count is updated accordingly.
   d. The item is added to the current sale.
3. The system calculates the total amount for the transaction.
4. If the customer presents a discount coupon:
   a. The cashier applies the coupon to the sale.
   b. The system recalculates the total after applying the coupon.
5. The cashier informs the customer of the final amount due.
6. The customer selects a payment option (cash, credit card, or check).
7. The cashier processes the chosen payment option.
8. The system verifies the payment information.
9. A receipt is generated and printed by the system.
10. The system closes and finalizes the transaction.

Alternative Flows

4a. Coupon Invalid Scenario:

1. The system notifies the cashier that the coupon is invalid.
2. The cashier informs the customer of the invalid coupon and continues the transaction from step 5.

8a. Payment Validation Issue:

1. The system alerts the cashier that payment validation has failed.
2. The cashier requests the customer to provide an alternate payment method.
3. If the customer offers a different method, return to step 7; if not, cancel the transaction.

Postconditions

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

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 they wish to return.

Main Flow

1. The cashier initiates a new return transaction.
2. The cashier scans the receipt or inputs the receipt details manually.
3. The system retrieves the original transaction details.
4. For each item being returned:
   a. The cashier scans the item's barcode.
   b. The system verifies that the item matches the original transaction.
   c. The inventory levels are updated to reflect the return.
   d. The system adds the item to the ongoing return transaction.
5. The system calculates the total refund amount.
6. The cashier confirms the return details with the customer.
7. The system processes the refund using the same payment method as the original purchase.
8. A return receipt is generated and printed by the system.
9. The system finalizes the return transaction.

Alternative Flows

2a. **Receipt Not Found:**

1. The system alerts the cashier that the receipt is invalid or cannot be found.
2. The cashier informs the customer that the return cannot proceed and terminates the process.

4b. **Item Verification Fails:**

1. The system flags the item as not matching the original transaction.
2. The cashier informs the customer and either moves to the next item or stops the return process.

7a. **Original Payment Method Unavailable:**

1. The cashier selects an alternative refund option (e.g., store credit or cash).
2. The system processes the refund using the newly selected method.

Postconditions

1. The return is recorded in the system.
2. Inventory is updated to reflect the returned items.
3. The refund has been successfully processed.
4. A return receipt is printed and provided to the customer.

Identify Entity

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

Identify Boundary Objects

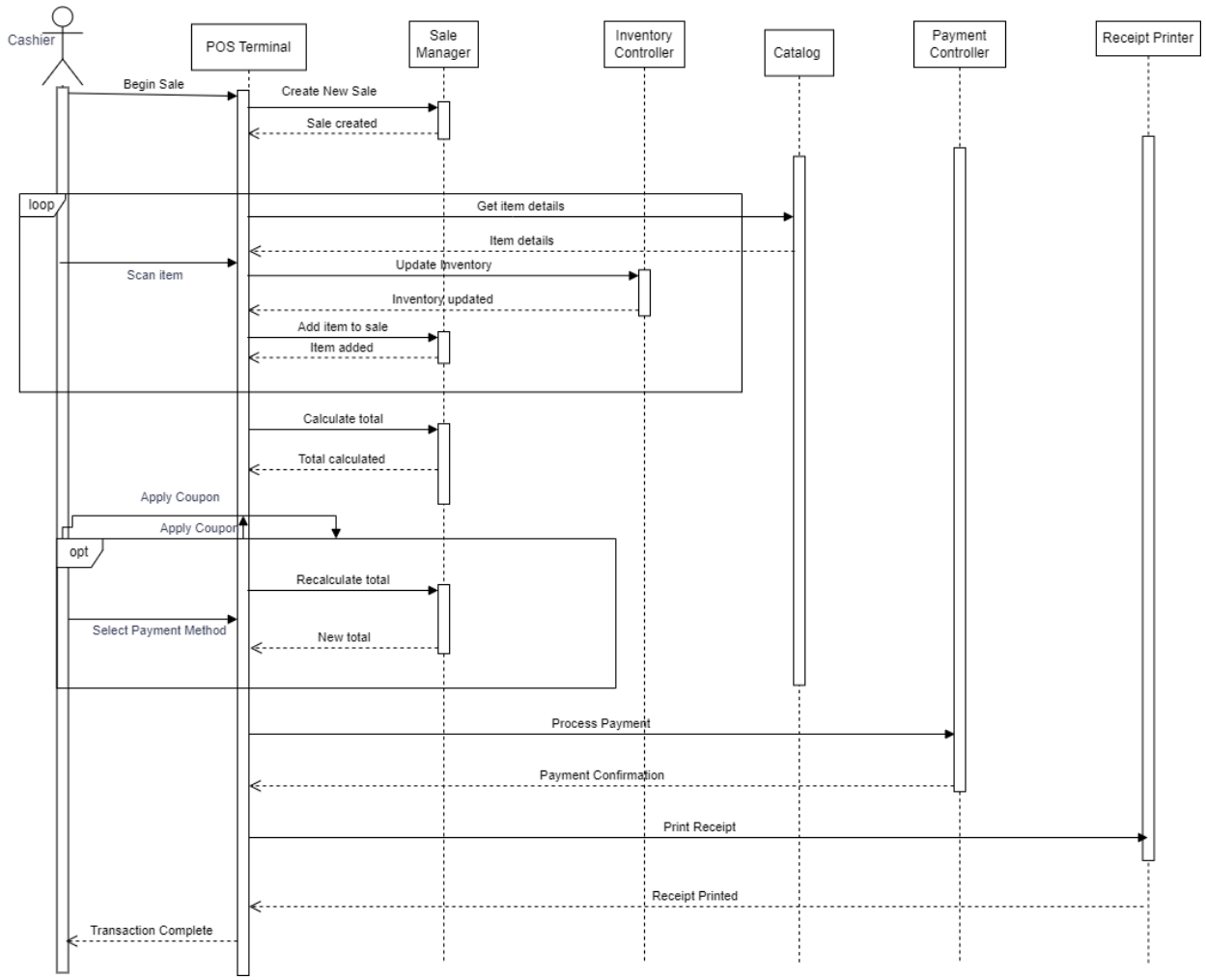
- POS Terminal Interface
- Scanner Interface
- Payment Processing Interface
- Receipt Printer Interface

Identify Control Objects:

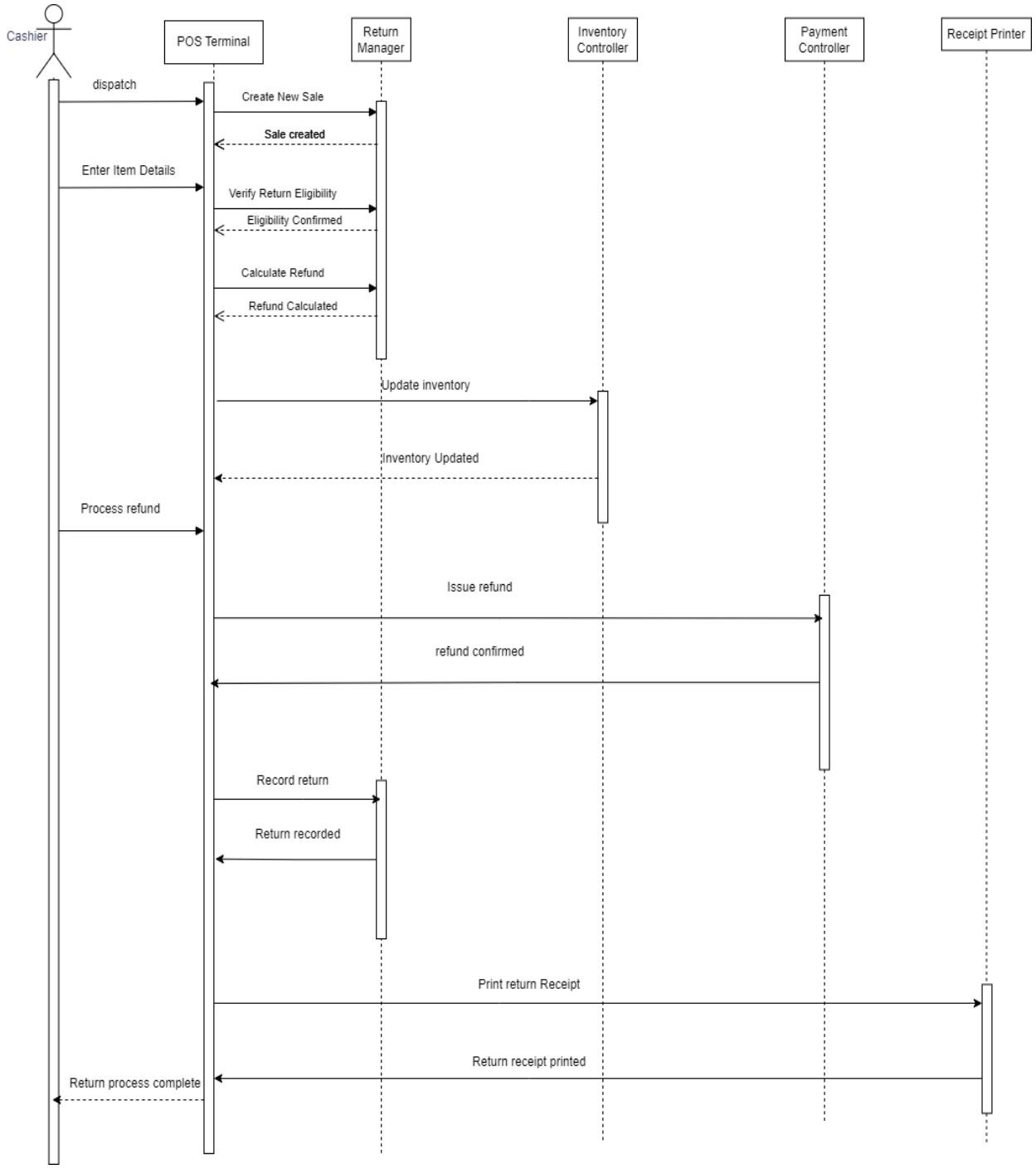
- Sale Manager
- Inventory Manager
- Catalog Manager
- Payment Manager
- User Authentication Manager
- Return Manager

Sequence Diagram

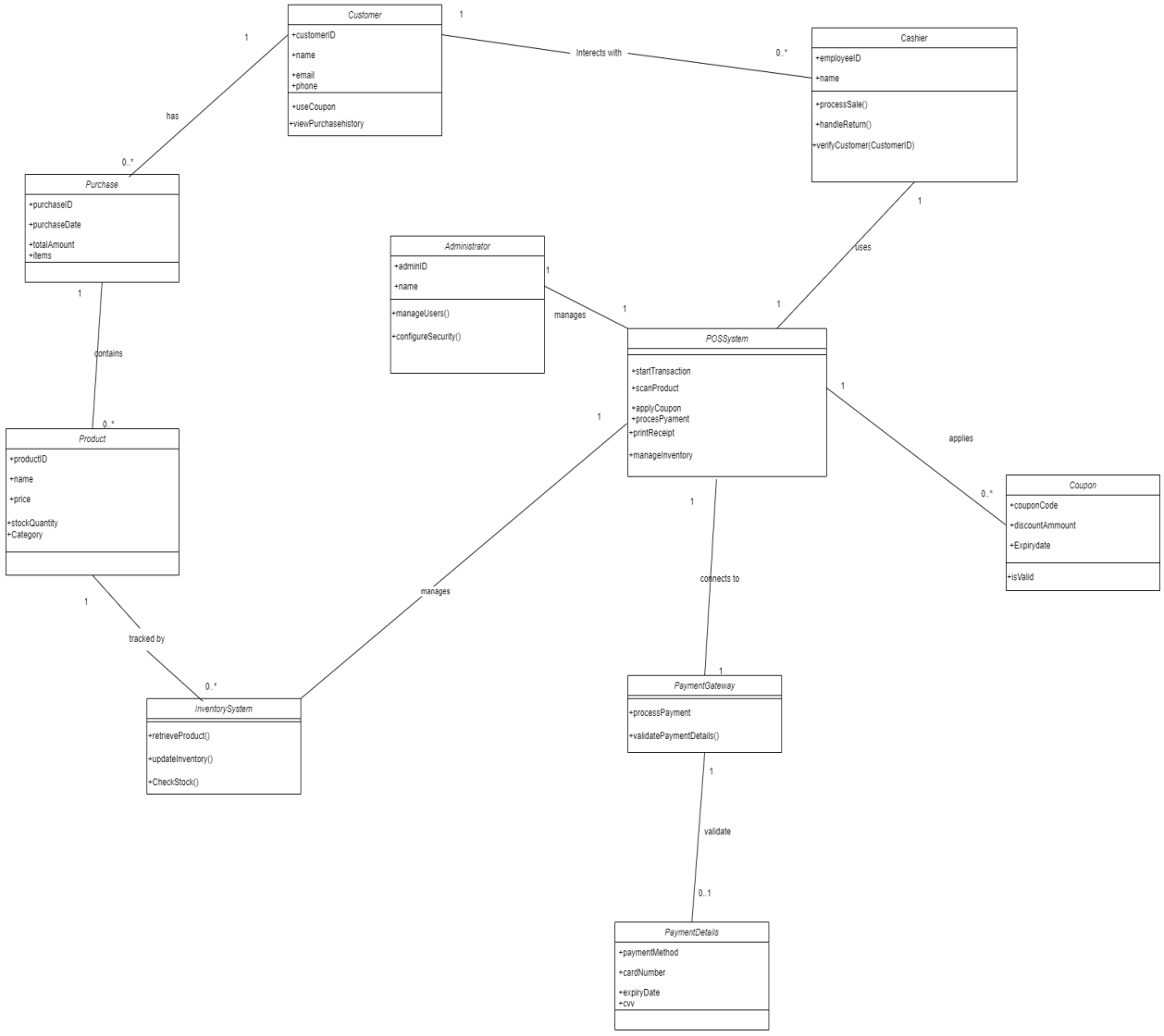
Process Sale Sequence Diagram



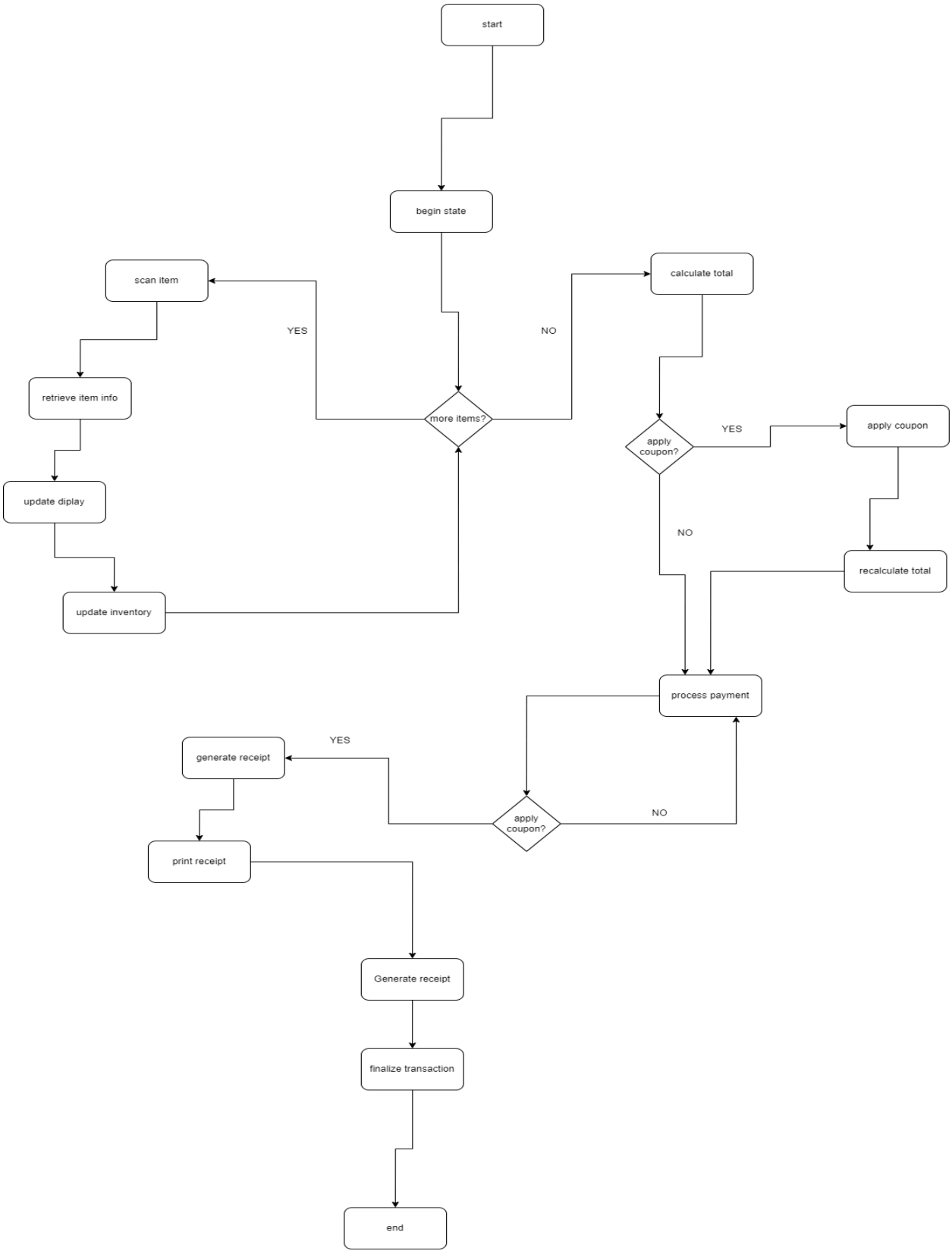
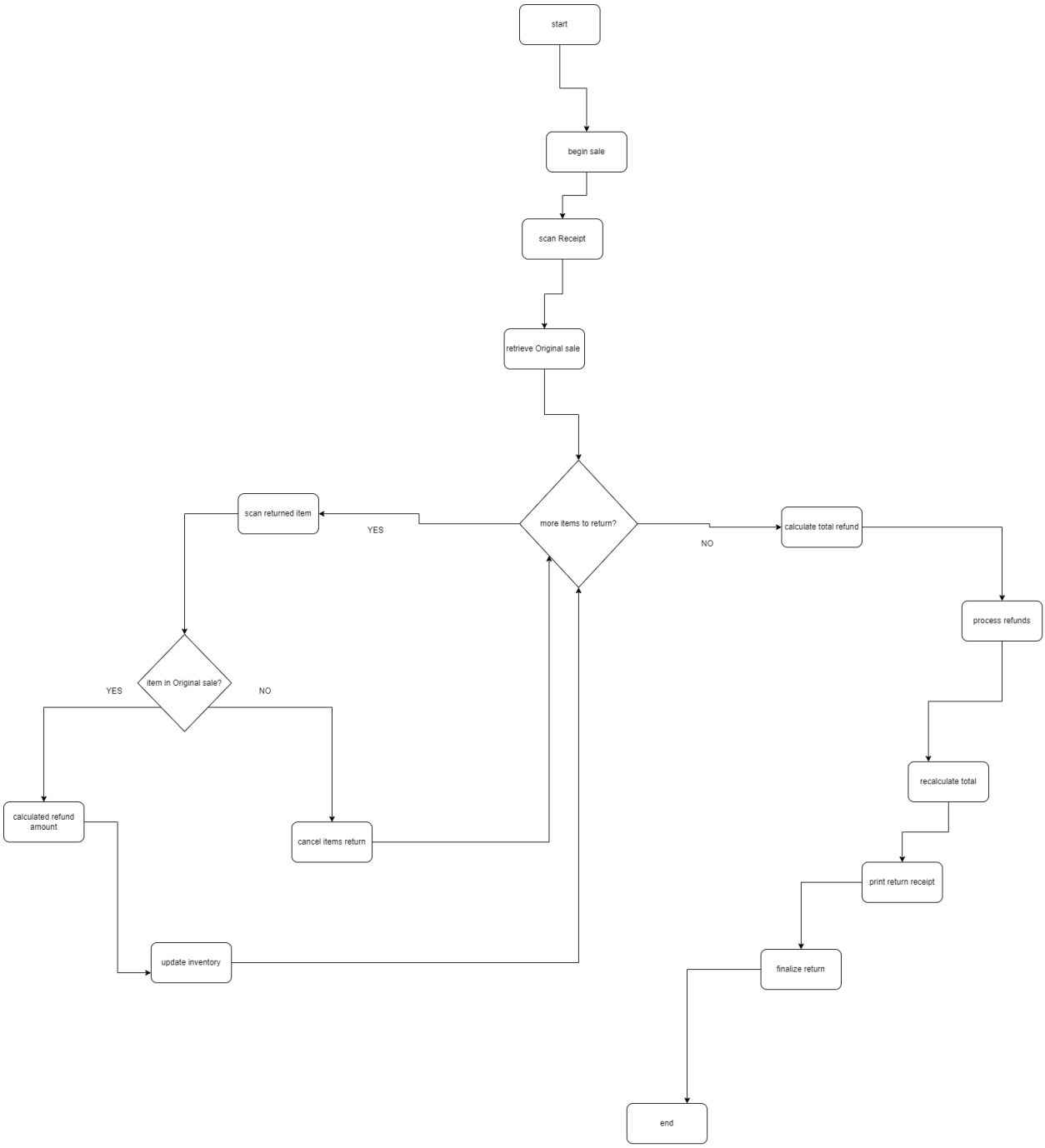
Handle return sequence Diagram



Analysis Domain Model



Process Sale Activity Diagram



Handle Return Activity Diagram