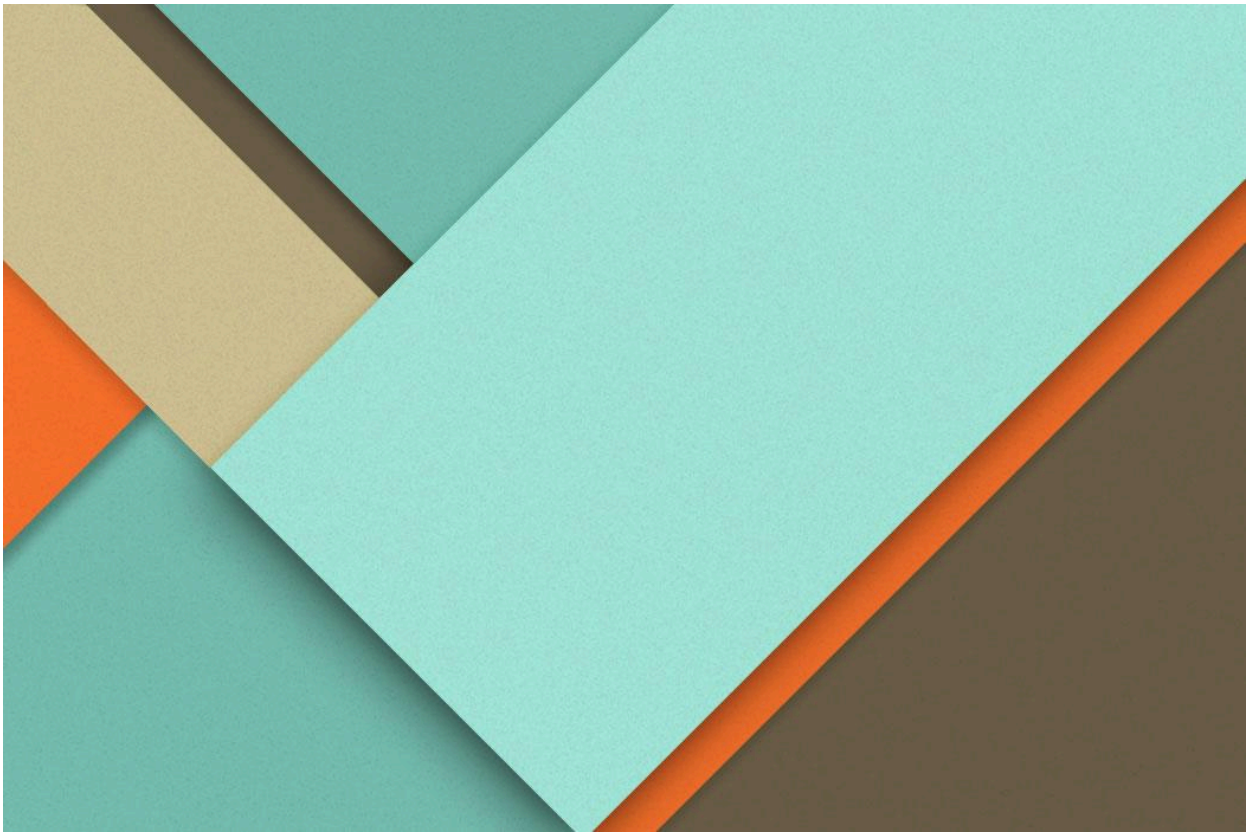
SE LAB-6



Lab Session: Modeling Class Diagram and Activity Diagram (Point of Sale System)

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

Use Case: Process Sale

- **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 catalog and inventory systems.

  - **Main Flow**

1. The cashier initiates 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 name and price from the product catalog.
   - c. The inventory count is updated accordingly.
   - d. The item is added to the current transaction.
3. The system calculates the total amount for the transaction.
4. If the customer has a gift coupon:
   - a. The cashier applies the coupon to the transaction.
   - b. The system adjusts the total amount based on the coupon.
5. The cashier informs the customer of the total amount due.

6. The customer selects a payment method (cash, credit card, or check).
7. The cashier processes the selected payment method.
8. The system verifies the payment information.
9. A receipt is generated and printed by the system.
10. The transaction is completed and finalized by the system.

- **Alternative Flows**

4a. Invalid Coupon Scenario

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

8a. Payment Validation Failure

1. The system alerts the cashier that payment validation has failed.
2. The cashier asks the customer for an alternative payment method.
3. If the customer provides a different method, return to step 7; if not, cancel the transaction.

- **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.

Use Case: Processing a Return

- **Actor: Cashier**

- **Preconditions**

1. The cashier is logged into the POS system.
2. The customer has a valid receipt for the items they intend to return.

- **Main Flow**

1. The cashier initiates a new return transaction.
2. The cashier either scans the receipt or manually enters the receipt details.
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 verifies that the item corresponds to the original transaction.
   - c. The inventory levels are updated to reflect the return.
   - d. The item is added to the current 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 completes and finalizes the return transaction.

- **Alternative Flows**

2a. Receipt Not Found

1. The system notifies the cashier that the receipt is invalid or cannot be found.

2. The cashier informs the customer that the return cannot proceed and cancels 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 continues with the next item or halts 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 item(s).

3. The refund has been successfully processed.

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

Task 2: Identify Entity/Boundary Control Objects

Entity Objects:

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

Boundary Objects:

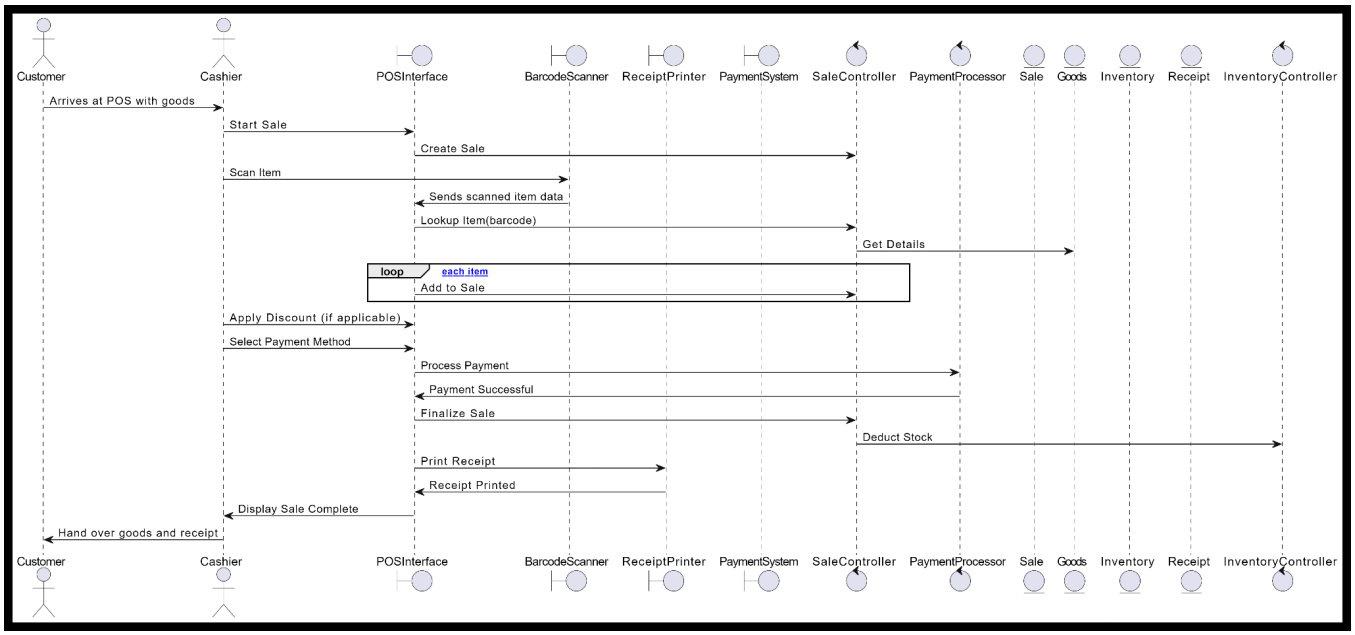
- POS Terminal Interface
- Scanner Interface
- Payment Processing Interface
- Receipt Printer Interface

Control Objects:

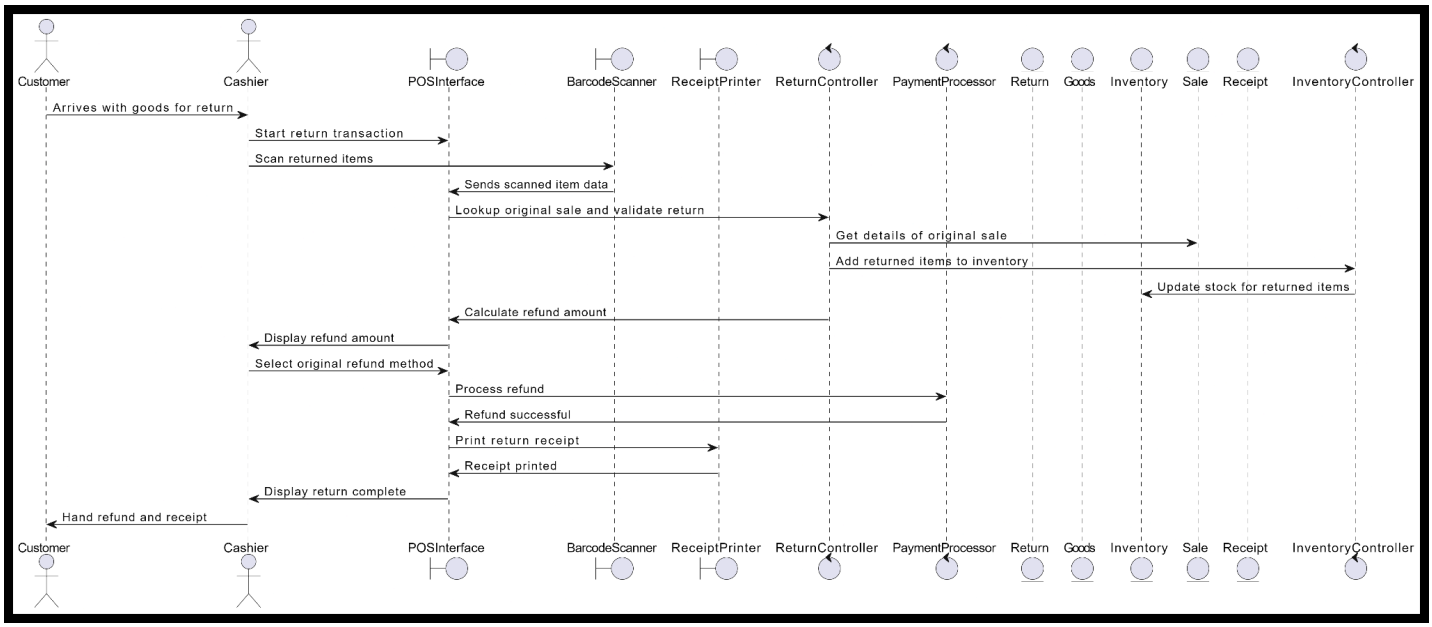
- Sale Manager
- Inventory Manager
- Catalog Manager
- Payment Manager
- User Authentication Manager
- Return Manager

Task 3: Develop Sequence Diagrams

1. “Process Sale Use Case”

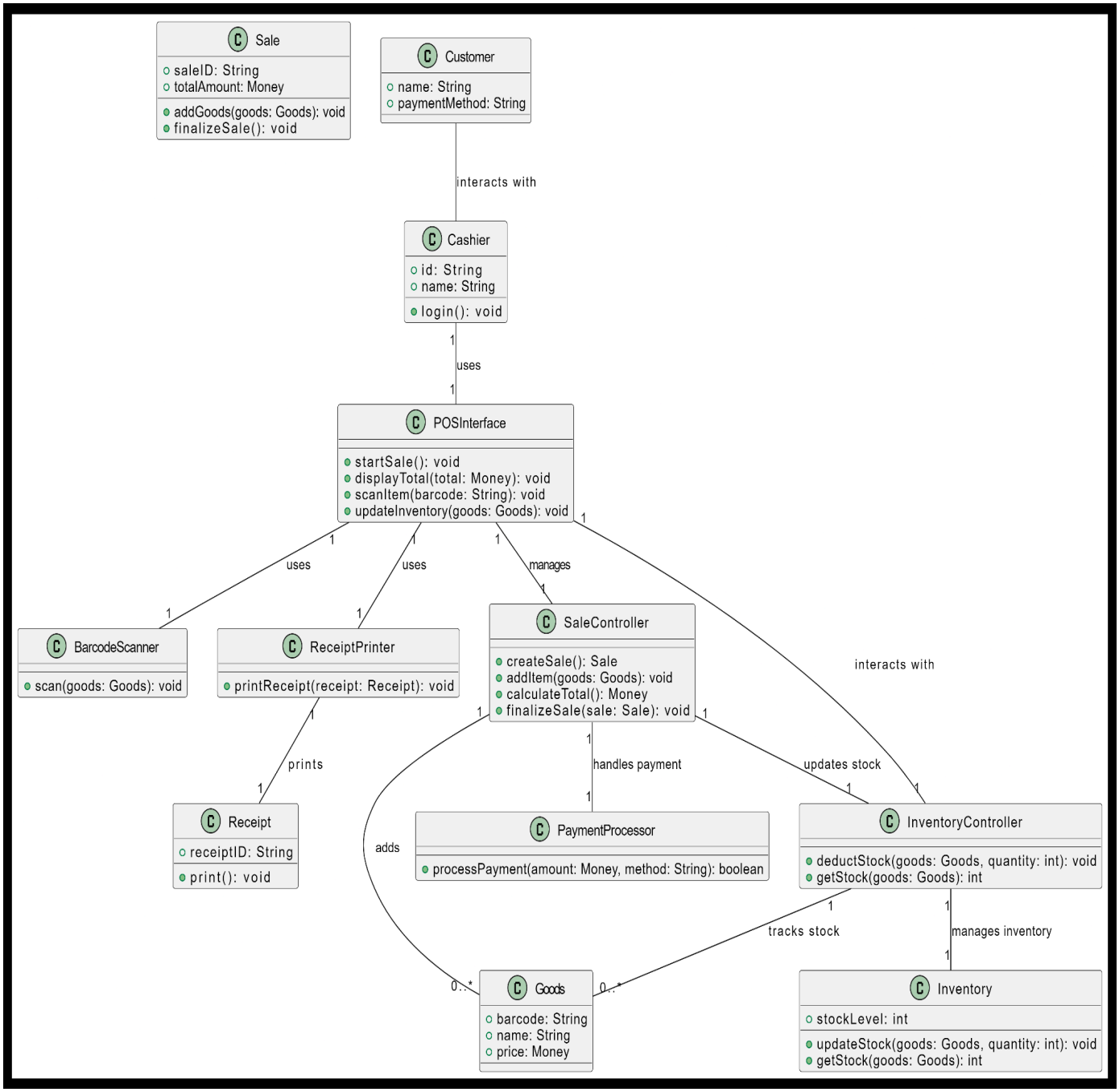


2. “Handling Returns Use Case”

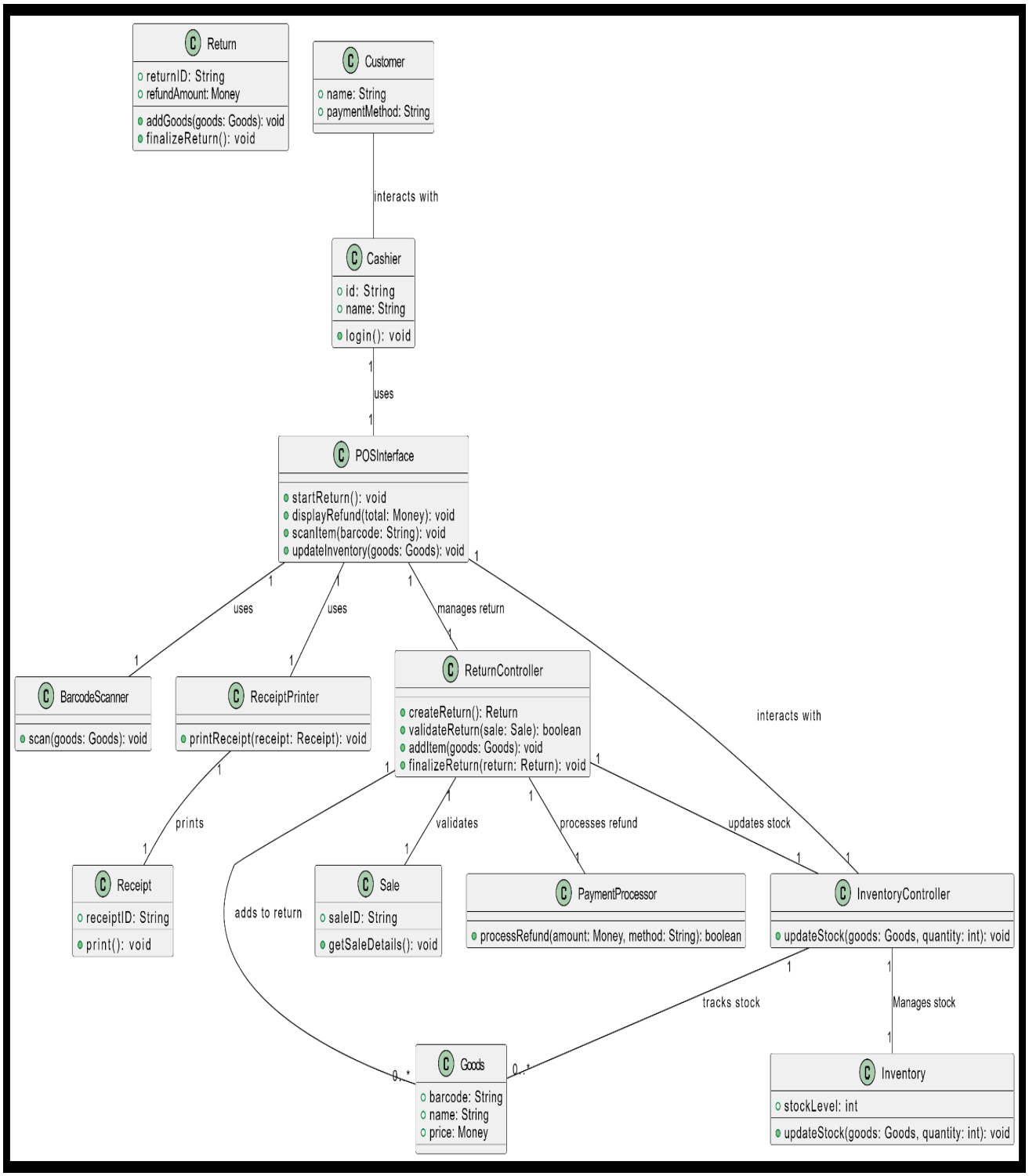


Task 4: Develop Analysis Domain Models

1.“Process Sale Use Case”

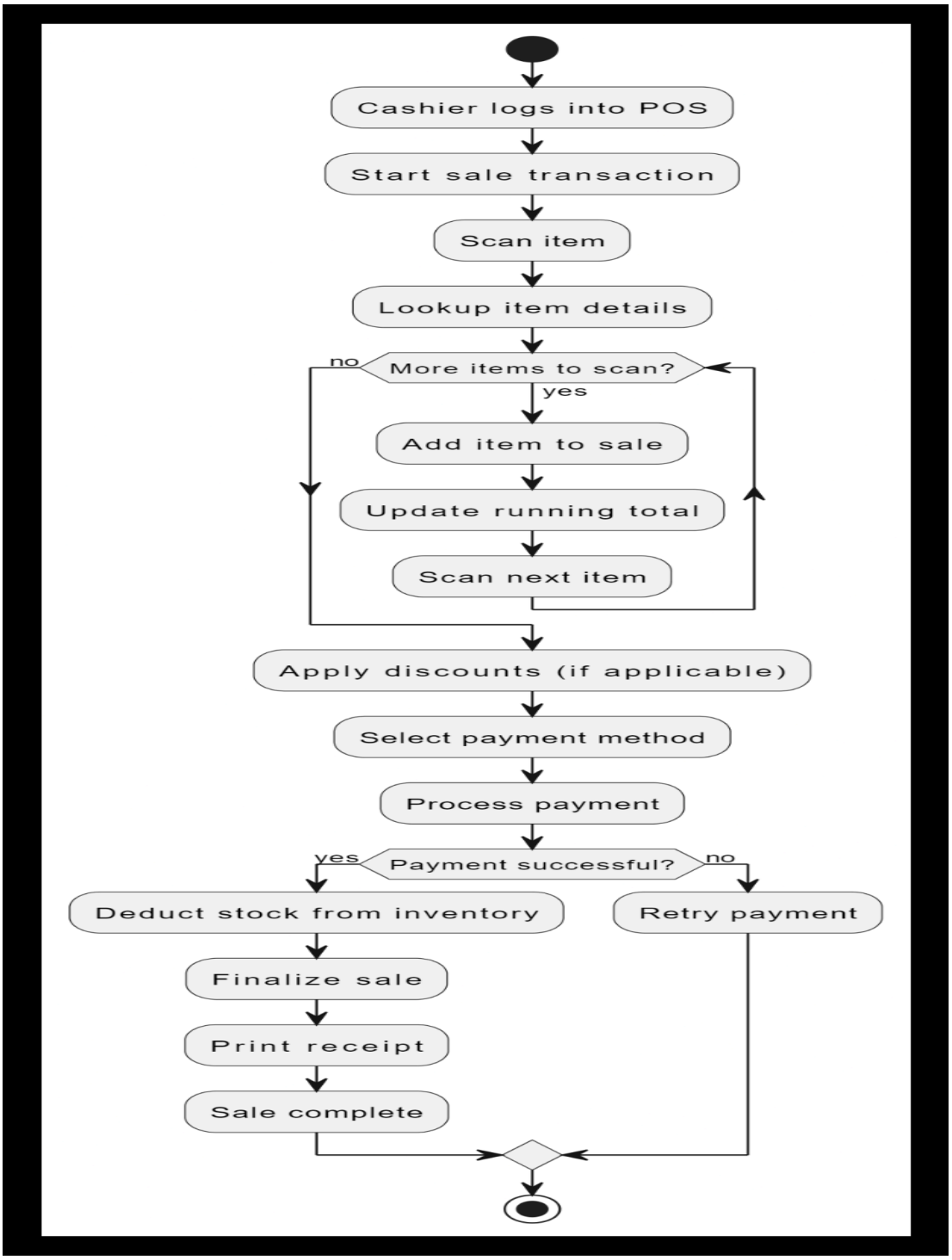


2.”Handle Returns Use Case”



Task : 5 Develop activity diagram for "Process Sale" and "Handle Return" use cases.

1. **Process Sale Use Case**



2. Handle Returns Use Case