

Software Engineering IT-314

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Use Case: Process Sale

Actor: Cashier

- **Preconditions**

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

- **Postconditions**

1. The sale transaction is recorded in the system.
2. Inventory is updated to reflect the sale.
3. A receipt is printed for the customer.

- **Main Flow**

1. The customer approaches the point-of-sale (POS) counter with items they want to buy.
2. The cashier scans the items using a barcode scanner.
3. The POS system pulls the item's details (such as name and price) from the product catalog and shows them on the display.
4. The system totals the prices of all scanned items.
5. If there are any applicable promotions, discounts, or gift coupons, the system applies them.
6. The cashier asks the customer to choose their payment method (cash, credit card, or another option).
7. The cashier processes the payment using the POS system.
8. For card payments, the system connects to the payment gateway to verify the transaction.
9. Once the payment is confirmed, the system reduces the inventory count based on the purchased items.
10. The POS system prints a receipt, which is given to the customer.
11. The system may also generate promotional gift coupons for future use.
12. The transaction is finalized, and the cashier hands the purchased items to the customer.

- **Alternative Flows**

1. If an item is not found, the cashier is notified and can manually enter the item or skip it.
2. If the payment fails, the system prompts the cashier to retry or choose another payment method.

Use Case: Processing a Return

Actor: Cashier

- **Preconditions**

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

- **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.

- **Main Flow**

1. The cashier initiates a return transaction in the POS system.
2. The cashier scans the barcode of the returned item.
3. The system retrieves the original sale details from the transaction history.
4. The cashier verifies the return eligibility (e.g., within return period).

5. The system processes the return and updates inventory.
6. If applicable, the cashier issues a refund to the customer.
7. A return receipt is printed for the customer. 8. The transaction is completed, and the system logs the return.

Identify Entity/Boundary/Control Objects

Entity Objects:

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

Boundary Objects:

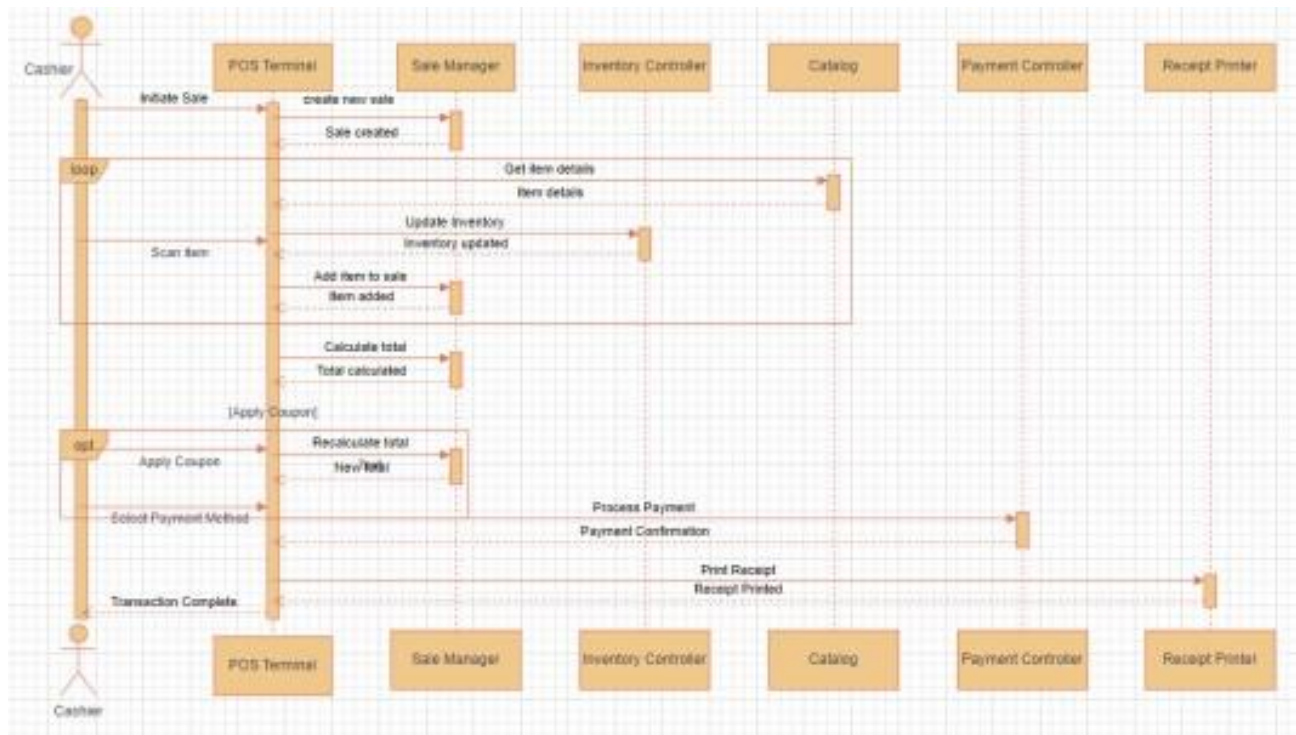
- POS Terminal Interface
- Scanner Interface
- Payment Processing Interface
- Receipt Printer Interface

Control Objects:

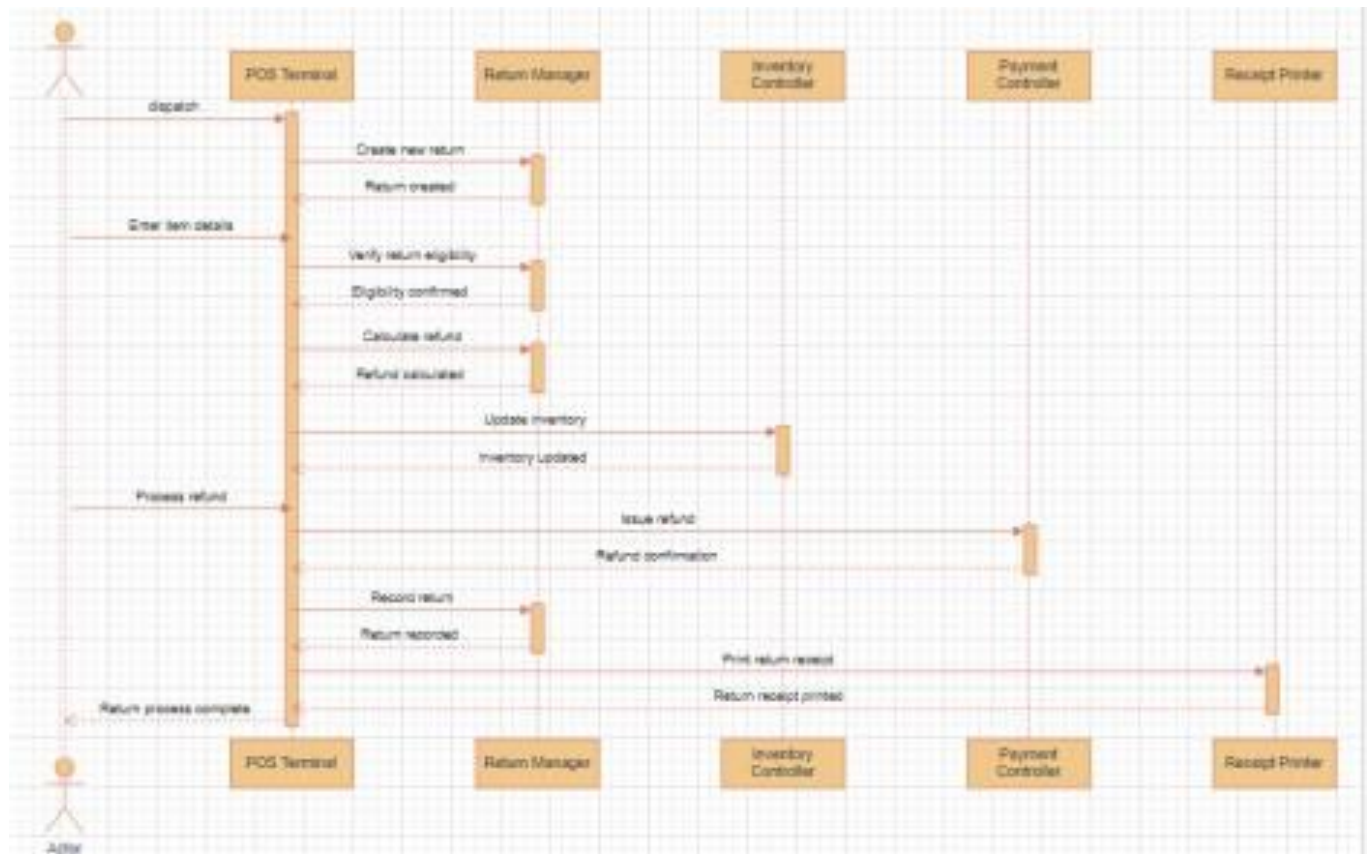
- Sale Manager
- Inventory Manager
- Catalog Manager
- Payment Manager
- User Authentication Manager
- Return Manager

Sequence Diagram

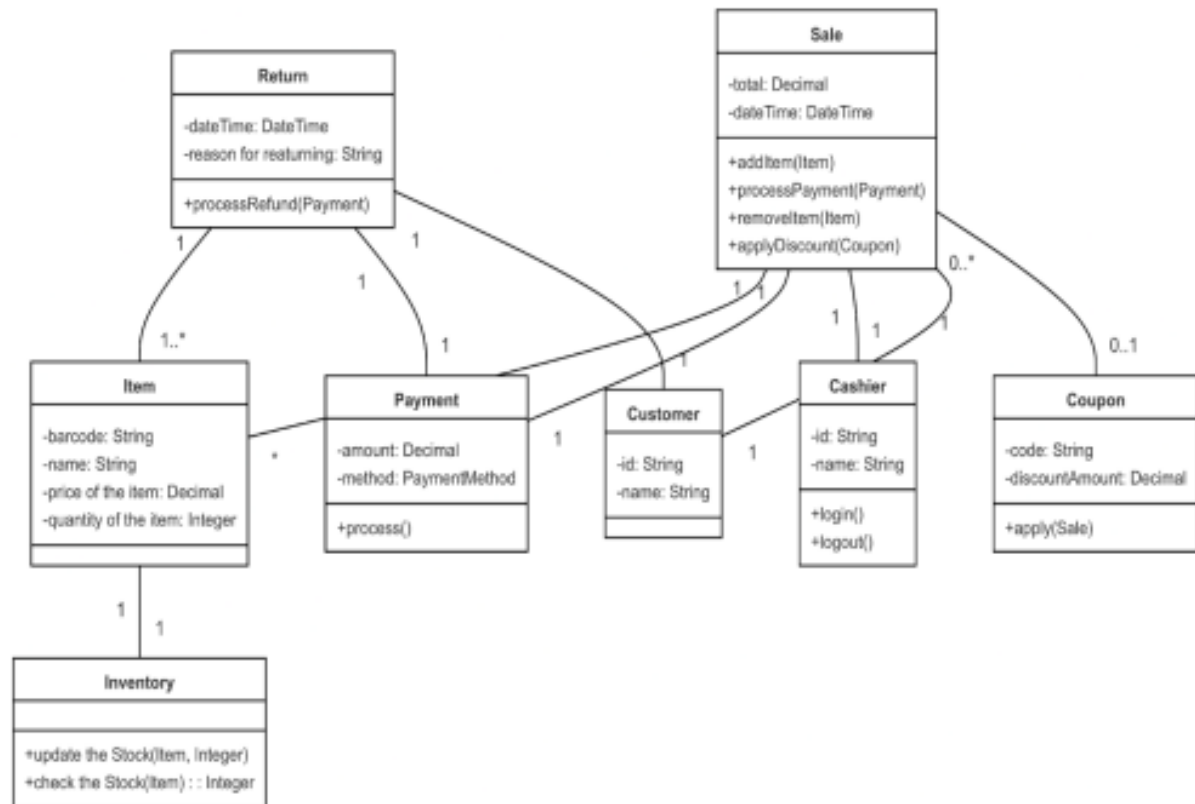
Process Sale Sequence Diagram



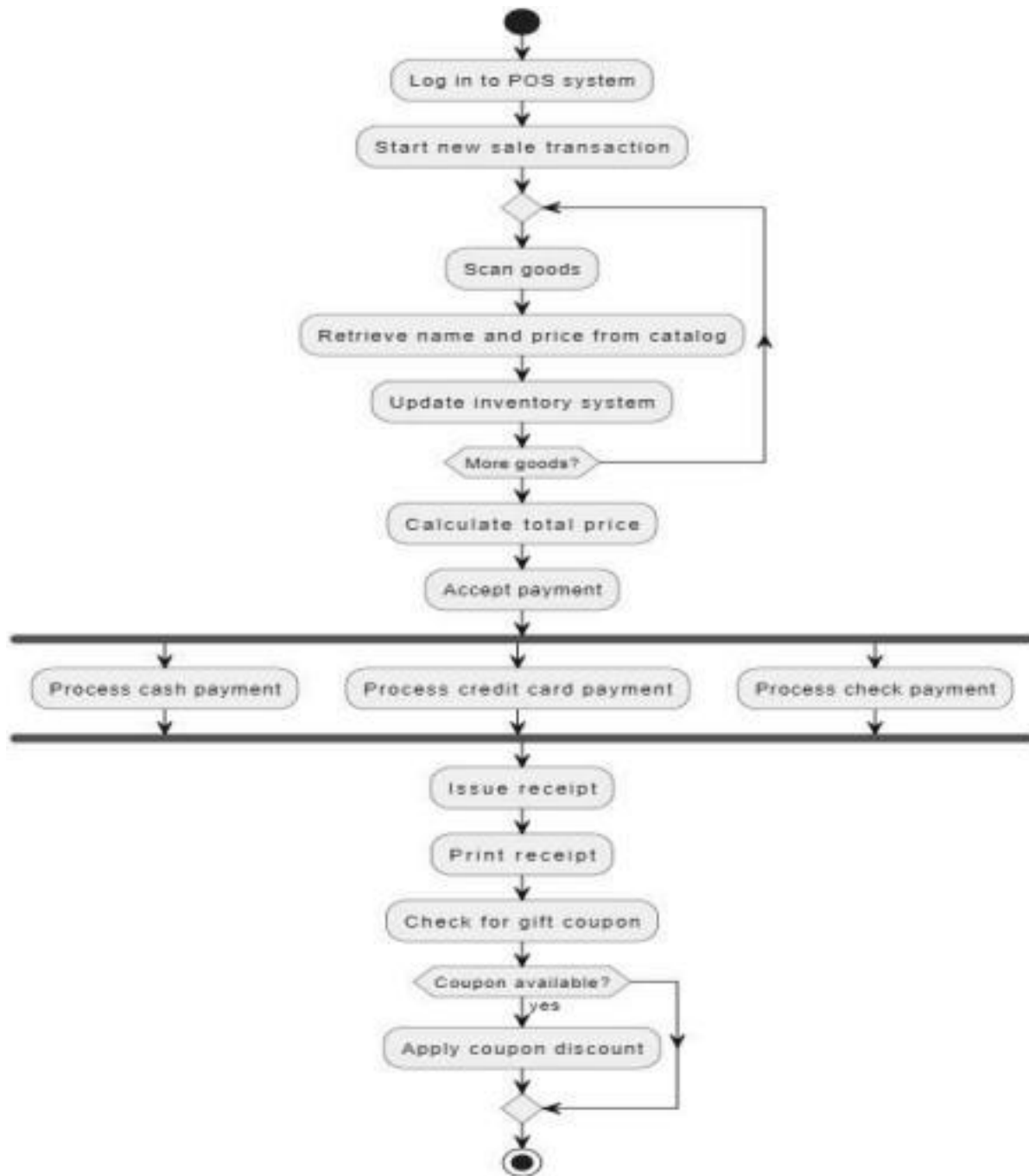
Handle Return Sequence Diagram



Analysis Domain Model



Process Sale Activity Diagram



Handle Return Activity Diagram

