SE - LAB

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USE CASE OF PROCESS SALE

1. Use Case Textual Description for "Process Sale" and "Handle Return" Use Cases

Use Case: Process Sale

- **Primary Actor**: Cashier,Catalog System (External actor),Inventory System (External actor)
- **Precondition**: Cashier is logged into the POS system.
- **Trigger**: A customer arrives at the counter with goods to purchase.

Main Success Scenario:

1. The cashier starts a new sale transaction in the POS system.
2. The cashier scans the barcode of each item, and the system retrieves the product name, price, and updates the total.
3. The system updates the inventory by deducting the quantity of purchased goods.
4. The cashier provides the customer with the total price, including any applicable discounts or coupons.
5. The customer selects a payment method (cash, credit card, or check).
6. The cashier processes the payment, and the system verifies it.
7. Upon successful payment, the system prints a receipt.
8. The sale is recorded in the system, and the transaction ends.

Postcondition: The sale is completed, inventory is updated, and the receipt is printed.

Alternative Flow:

- ○ If an item is missing from the catalog,the system informs the cashier
- ○ If the stock is insufficient,cashier is notified and same is informed to the customer.
- ○ If the payment transaction fails, the cashier either retries or cancels the sale(transaction).

Use Case: Handle Return

- **Primary Actor**: Cashier,inventory system(external)

- **Precondition**: The customer has a valid purchase receipt.
- **Trigger**: A customer wants to return an item.

Main Success Scenario:

1. The cashier initiates a return transaction in the POS system.
2. The cashier scans the receipt or manually inputs the receipt number to retrieve the original purchase details.
3. The cashier selects the item(s) to be returned, and the system verifies if the return conditions are met (e.g., within the return period).
4. The system calculates the refund amount based on the item price, discounts, and any applied coupons.
5. The cashier processes the return, and the system updates the inventory by adding back the returned goods.
6. The system processes the refund via the original payment method or issues a store credit.
7. The system generates a return receipt.

Postcondition: The return is processed, and the inventory is updated.

Alternative Flow:

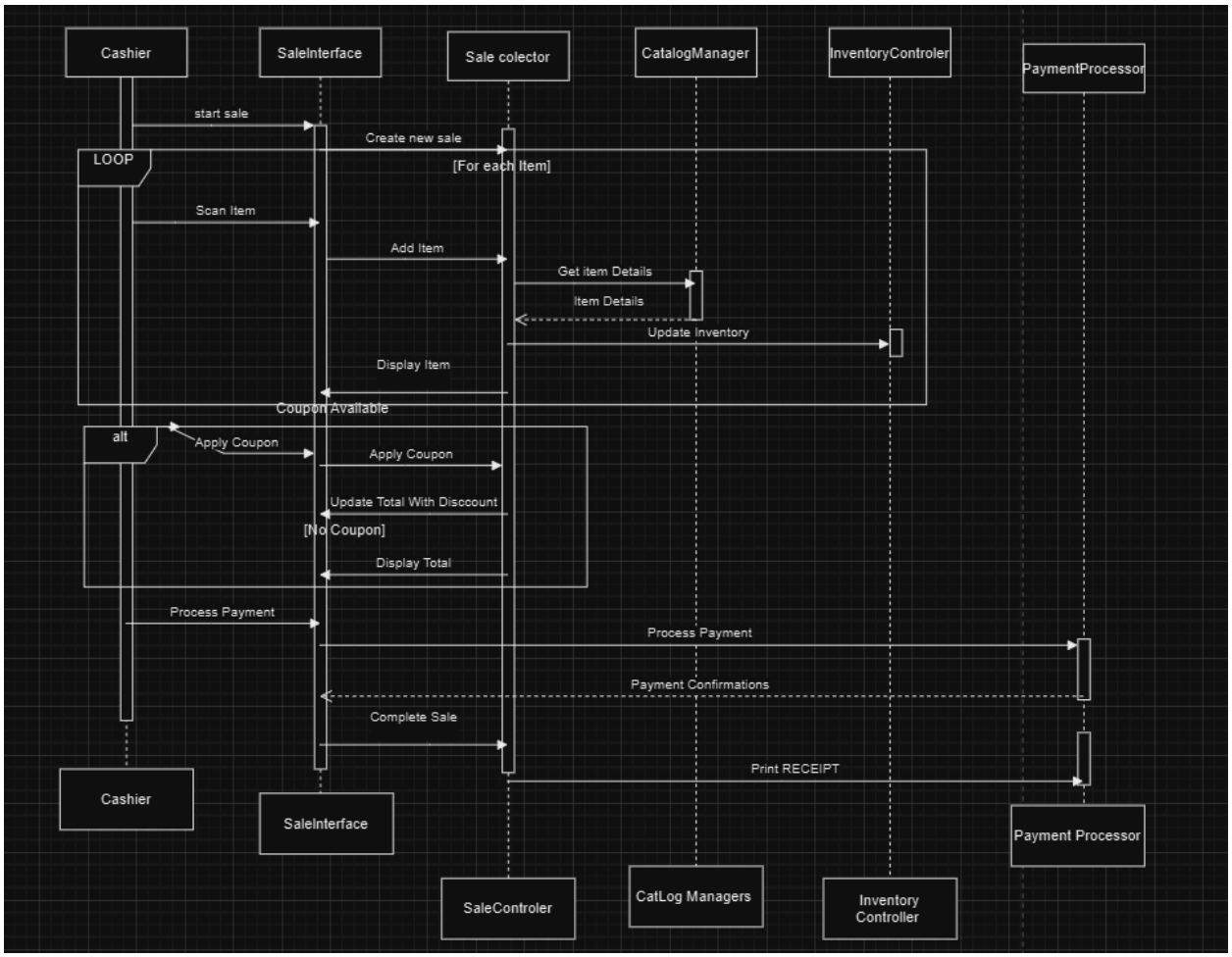
○ If the return period has been expired, the system notifies the cashier to discard the return.
○ If the item is damaged or missing, the return may be partially refunded or discarded.

2. Entity/Boundary/Control Objects

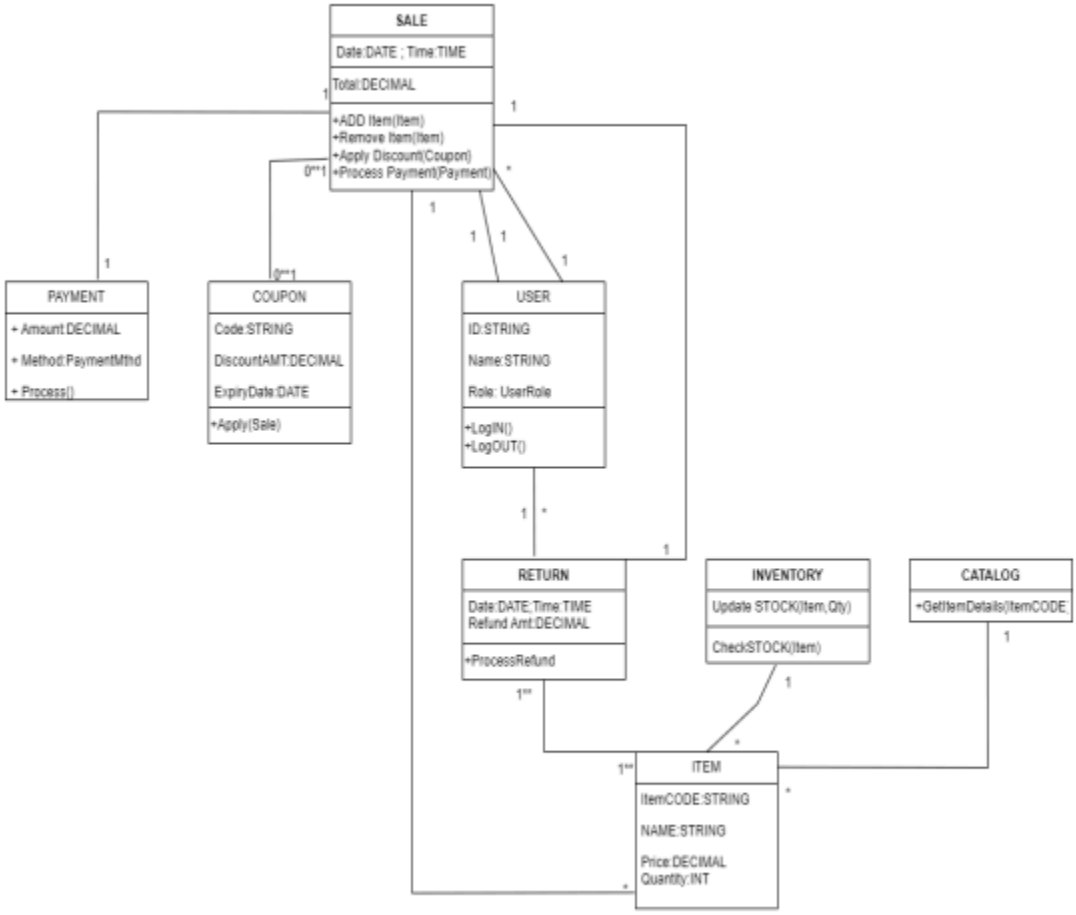
- **Entity Objects**:
    - `Product/item`: Stores product details such as name, price, and barcode.
    - `Inventory`: Tracks stock levels for each product.
    - `Sale/Transaction`: Represents a sale transaction, including line items and total price.
    - `Return`: Represents a return transaction, linked to the original sale.
    - `Customer`
    - `Payment`
    - `Coupon`
    - `Receipt`
- **Boundary Objects**:
    - `POS Interface/Cashier Interface`: The user interface for the cashier.
    - `Receipt`
    - `Payment Gateway`
    - `Inventory System`

    - `Catalog System`
    - `Login Interface`: Used for authentication of employees.
- **Control Objects**:
    - `SaleController`: Manages the logic for handling sales.
    - `ReturnController`: Manages the logic for handling returns.
    - `PaymentProcessor`
    - `InventoryController`
    - `CatalogController`

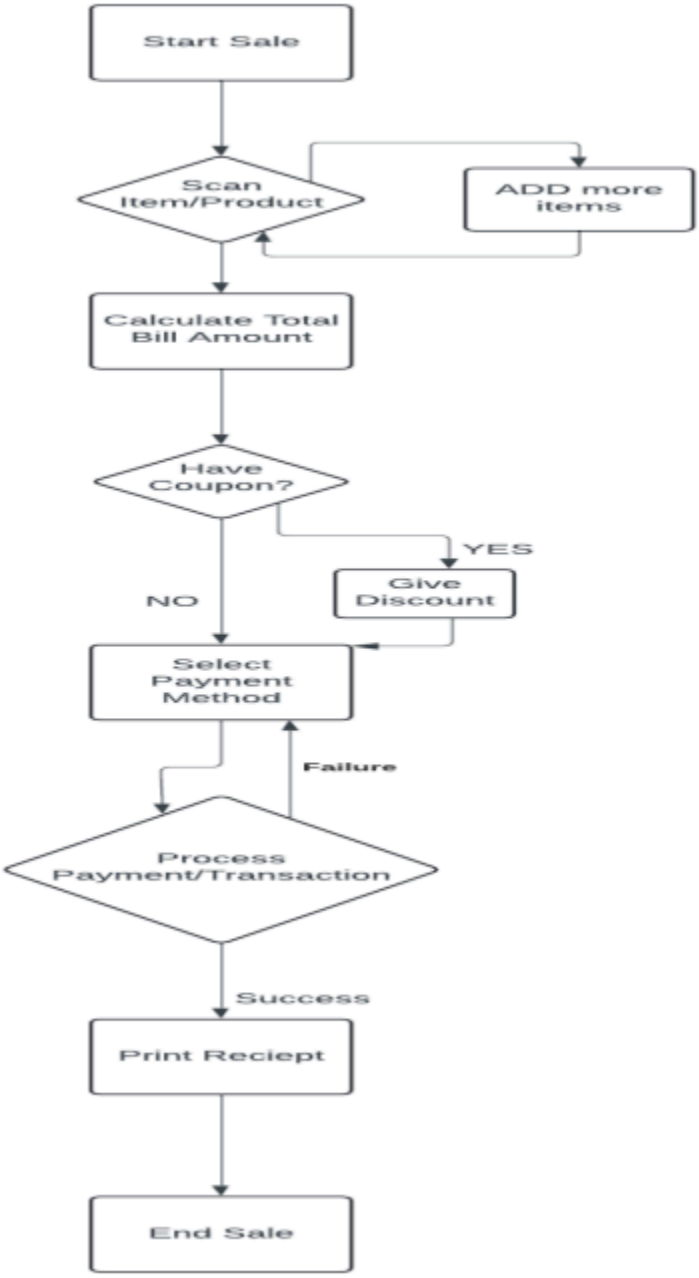
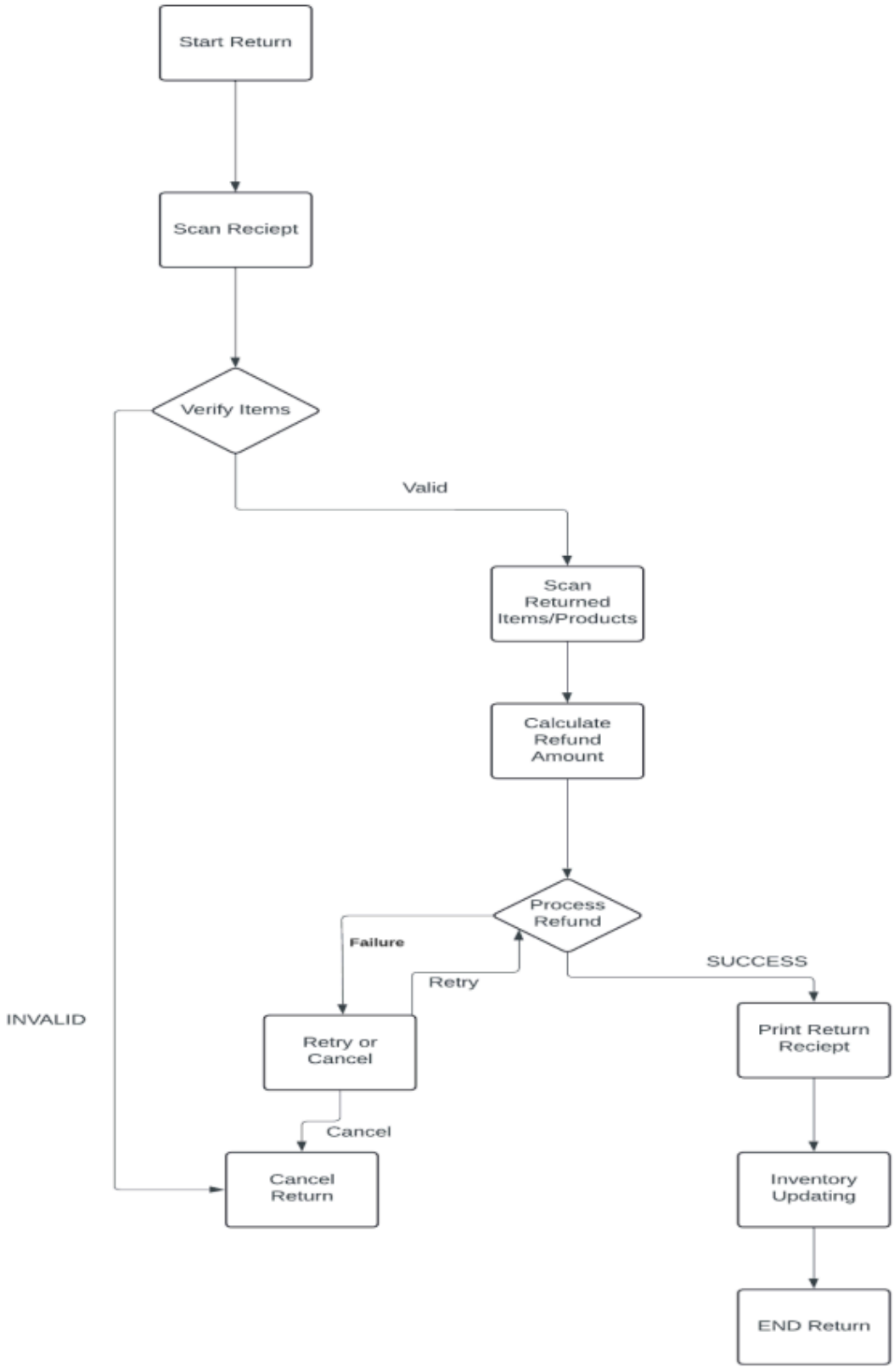
Develope Sequence Diagrams



Develope Analysis Domain Model



Process Sale



Handle Return