

Software Engineering Lab-6

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Q1. Develop Use Case Textual Description for "Process Sale" and "Handle Return" use cases.

Use Case Textual Descriptions :

1. Process Sale

Actors:

- Cashier
- Inventory System
- Catalog System
- Payment Processor

Preconditions:

- The cashier is logged into the POS system.
- The POS is connected to both the inventory and catalog systems.

Postconditions:

- The sale is successfully completed.
- Payment is processed.
- Inventory stock is updated.
- A receipt is printed.

Main flow:

1. Cashier initiates a new sale.
2. Cashier scans the product barcode.
3. System retrieves the product name and price from the catalog.
4. Inventory stock is automatically updated for the product.
5. Cashier confirms the sale and selects a payment method.
6. Payment is processed (cash, card, or check).
7. System prints the receipt.
8. If a coupon is used, the system applies a discount before processing payment.

Extensions:

- If payment fails, the system prompts the cashier to retry or cancel the transaction.
- If the scanned barcode is invalid, the system prompts the cashier to rescan.

2. Handle Return**Actors:**

- Cashier
- Inventory System

Preconditions:

- The cashier is logged into the POS system.
- A valid receipt or sale record exists for the item being returned.

Postconditions:

- Return is completed.
- Inventory stock is updated.
- Refund is issued.

Main flow:

1. The cashier starts the return process.
2. The product details are provided by scanning or manually entering information from the receipt.
3. The system cross-references the product and price with the original sale record.

4. The inventory is updated to reflect the return by adding the product back to stock.
5. Refund is issued according to the original method of payment.
6. A return receipt is printed for the customer.

Extensions:

- If the system cannot locate the product in the sale record, the cashier is prompted to recheck the receipt.
- If the refund exceeds a specified limit, the transaction is escalated for administrator approval.

Q2. Identify Entity/Boundary Control Objects :

Entity Objects:

- **Product:** Contains key information about an item, including its name, price, and available stock.
- **Sale:** Represents a completed transaction, detailing the products sold and the total amount paid.
- **Return:** Represents a product return, capturing the refunded amount and the items restocked.

Boundary Objects:

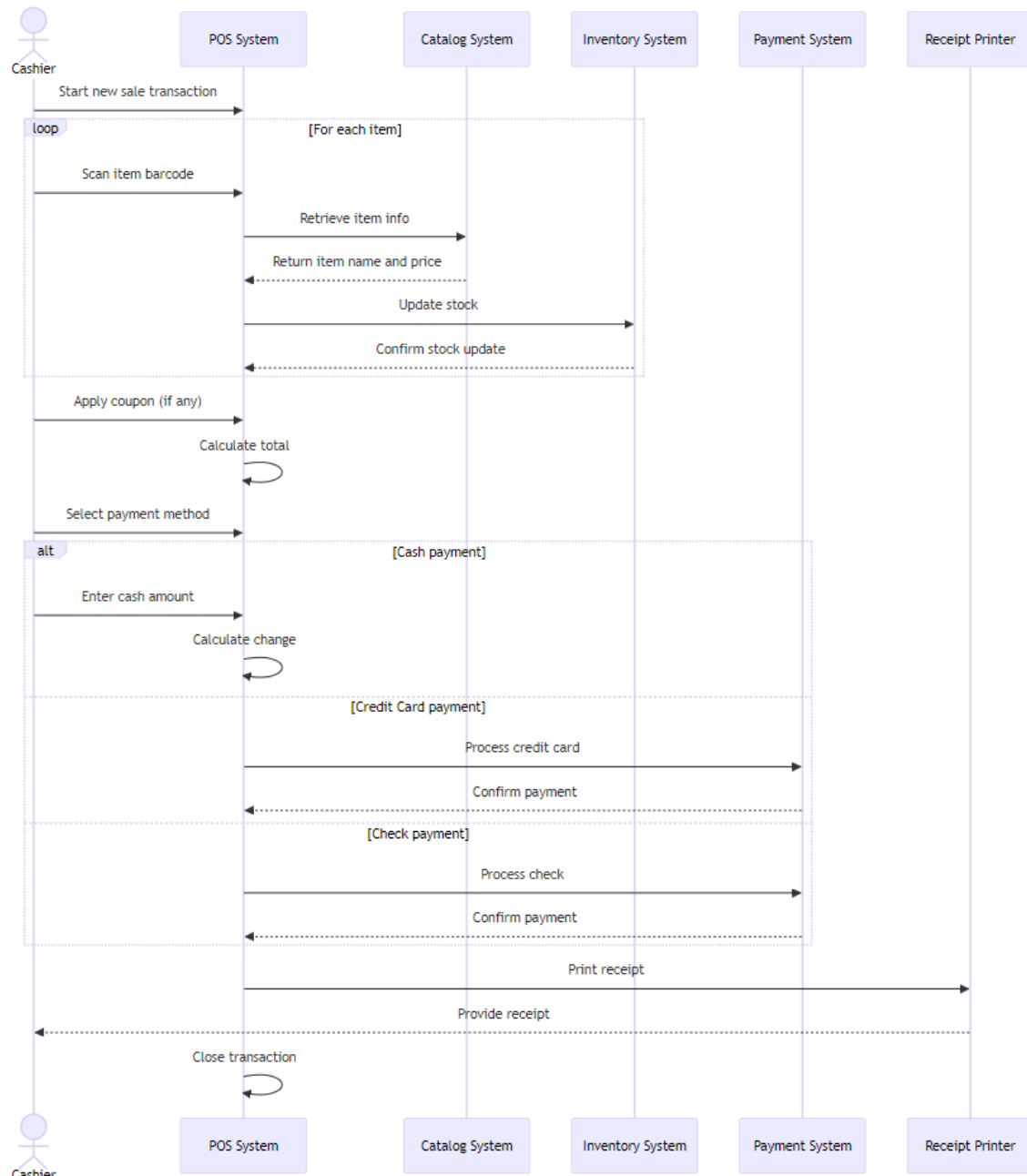
- **POS Terminal:** The interface used by the cashier to handle sales and returns.
- **Receipt:** A printed document provided to the customer after completing a sale or return.
- **Payment Interface:** Manages customer payments, whether by cash, credit card, or check.

Control Objects:

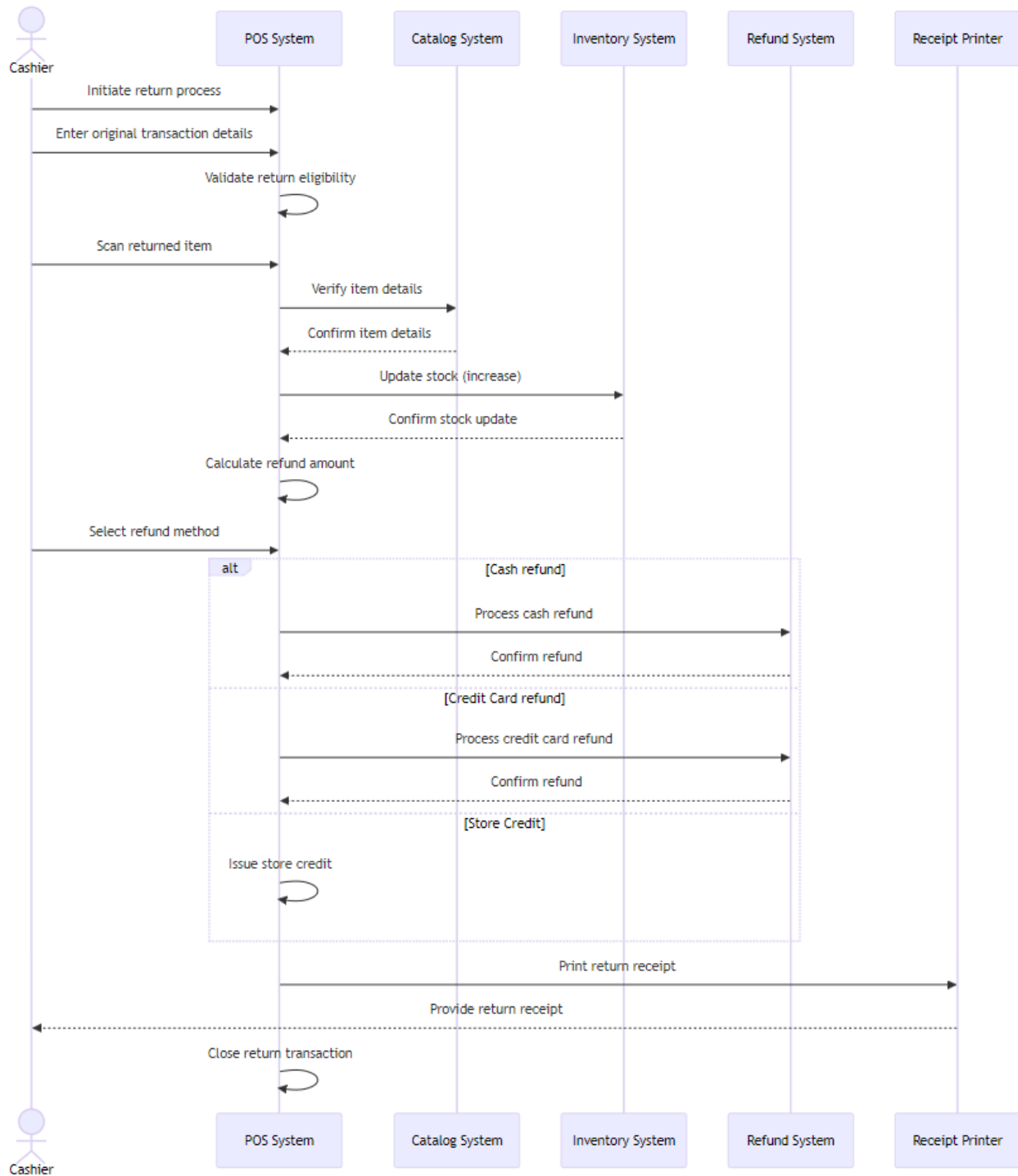
- **Sale Controller:** Oversees the sale process, updates inventory levels, and interacts with payment systems.
- **Return Controller:** Manages the return process, adjusts stock levels, and processes refunds.

Q3. Develop Sequence Diagram

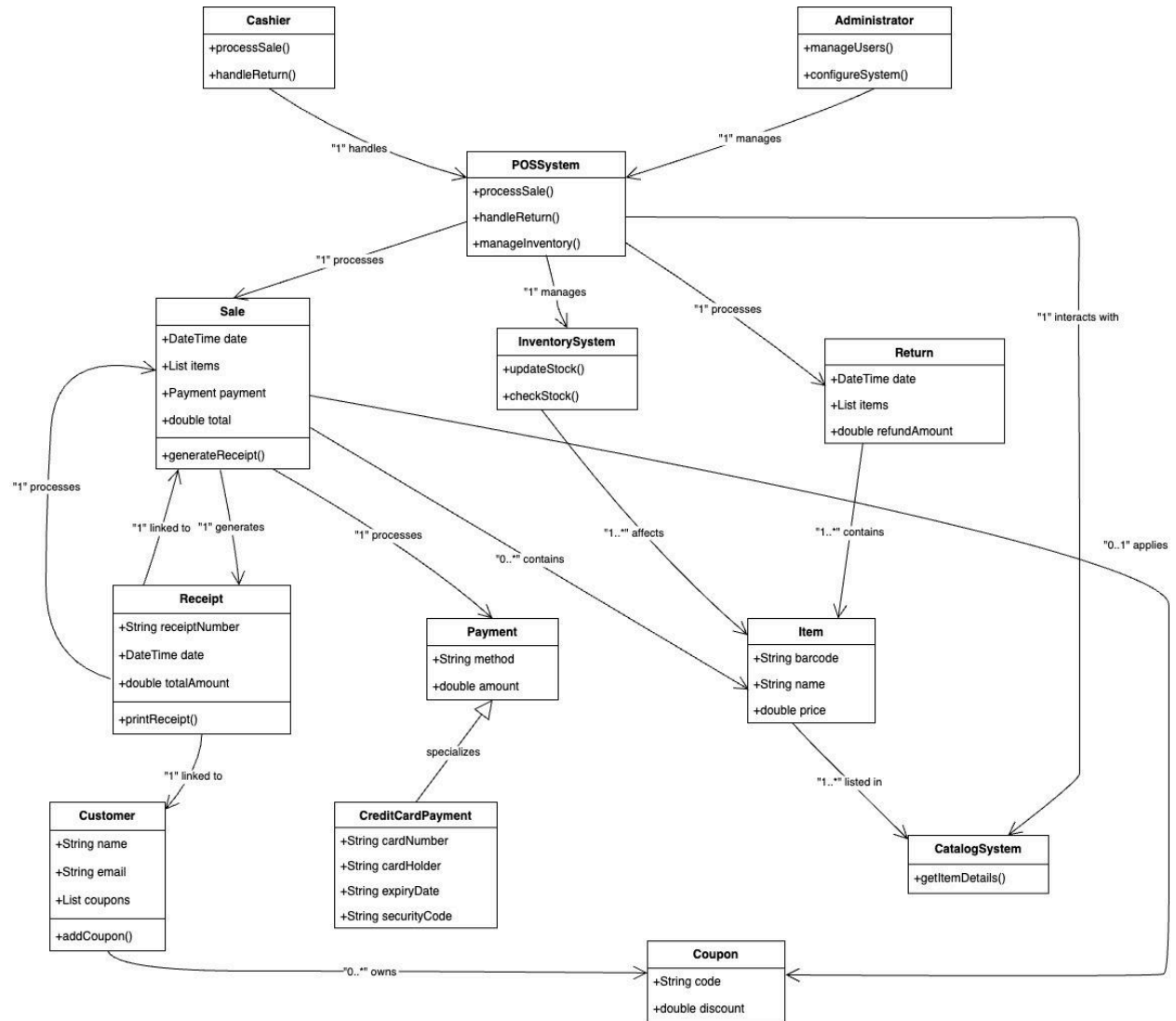
1. Process sale



2. Handle return

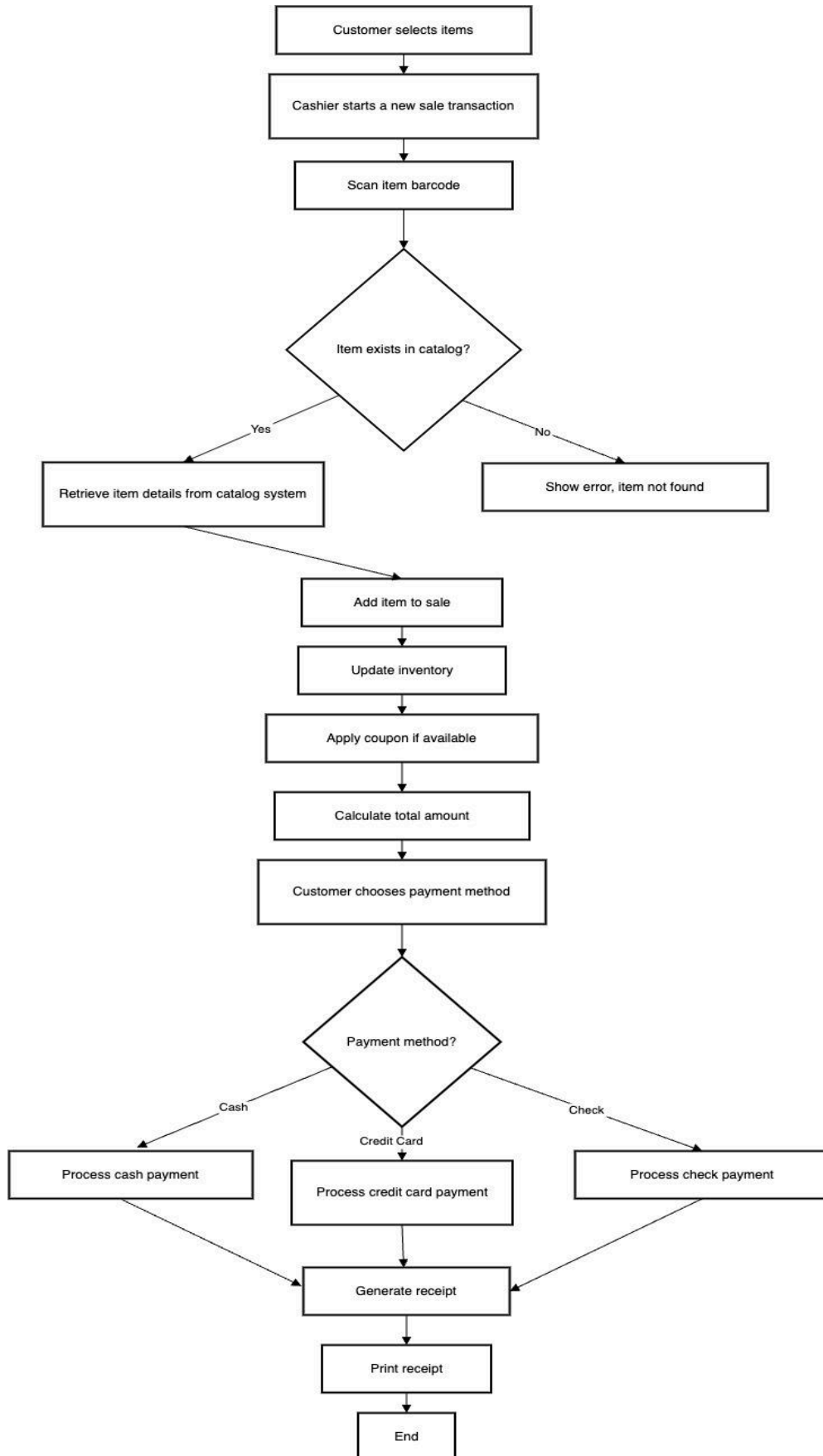


Q4. Develop Analysis Domain Models



Q5. Develop activity diagram for "Process Sale" and "Handle Return" use cases.

Activity Diagram for "Process-Sale" :



Activity Diagram for “Handle return” :

