IT-314 Software Engineering
Lab-6 Point Of Sale System

Parth Parekh
202201200

Point of Sale (POS) System Analysis

Introduction :

A Point of Sale (POS) system is a crucial component in retail and service industries, facilitating transactions between businesses and customers. This document analyzes the key functionalities of a modern POS system, focusing on two primary use cases: Processing a Sale and Handling Returns.

-> Develop Use Case Textual Description for "Process Sale" and "Handle Return" use cases :

Use Case 1: “Process Sale”

Actor

- Cashier

Preconditions

- POS system is operational and ready for use
- Cashier is authenticated and logged into the system

Postconditions

- Sale is recorded in the system
- Inventory is updated to reflect the sale
- Customer receives a receipt for the transaction

Basic Flow

1. The customer brings their items to the checkout counter.
2. The cashier starts a new sale in the POS system.
3. For each item:
    - The cashier scans the barcode.

- The system retrieves the item's details (name, price) from the database.
- The system adds the item to the ongoing transaction.

4. The system calculates and displays the total amount due.

5. The cashier informs the customer of the total.

6. The customer selects a payment method (cash, credit card, or mobile payment).

7. The cashier processes the payment through the POS system.

8. The system records the sale and updates the inventory.

9. The system generates a receipt.

10. The cashier hands the receipt and the purchased items to the customer.

Alternative Flows

3b:Manual Entry :

- If an item's barcode is unreadable, the cashier manually enters the SKU or searches for the item in the system.

5a:Apply Discount :

- The customer presents a coupon or discount code.
- The cashier applies the discount.
- The system recalculates the total amount due.

6a:Payment Declined:

- If the chosen payment method is declined, the cashier informs the customer.
- The customer either chooses an alternate payment method or cancels some items.

7a:Transaction Cancellation

- The customer may cancel the transaction at any point before finalizing.
- The cashier initiates the cancellation in the POS system.
- The system voids the transaction and restores any inventory changes.

Use Case 2: "Handle Return"

Actor

● Cashier

Preconditions

● POS system is operational and ready for use

● Cashier is authenticated and logged into the system

● Customer has items to return and the original purchase receipt

Postconditions

● Return is processed and recorded in the system

● Inventory is updated to reflect the returned items

● Customer receives a refund and a return receipt

Basic Flow

1. Customer approaches the counter with items to return and the original receipt

2. Cashier initiates a new return transaction in the POS system

3. Cashier scans the items being returned

4. System verifies the return eligibility (e.g., within return period, item condition)

5. System calculates the refund amount

6. Cashier confirms the reason for the return with the customer

7. System updates the inventory to reflect the returned items

8. Cashier processes the refund using the original payment method

9. System records the return transaction

10. System generates a return receipt

11. Cashier provides the return receipt to the customer

Alternative Flows

3a:Manual Entry:

- If the scanner is unavailable, the cashier manually enters the item's details into the system.

4a:Item Ineligible for Return:

- The system alerts the cashier if an item is not eligible for return.

- The cashier informs the customer of the issue.
- The customer can either proceed with the return of eligible items or cancel the entire return.

7a:Damaged or Used Item:

- The cashier examines the item for damage or signs of use.
- The system applies a restocking fee or adjusts the refund amount accordingly.
- The cashier informs the customer of the revised refund.
- The customer decides whether to proceed with the return.

8a:Original Payment Method Unavailable:

- If the original payment method is not available for the refund, the cashier selects an alternative method (e.g., store credit).
- The system processes the refund using the chosen alternative.

Identify Entity/Boundary/Control Objects: -

Entity Objects:

- Sale
- Item
- Payment
- Customer
- Cashier
- Inventory
- Coupon
- Return

Boundary Objects:

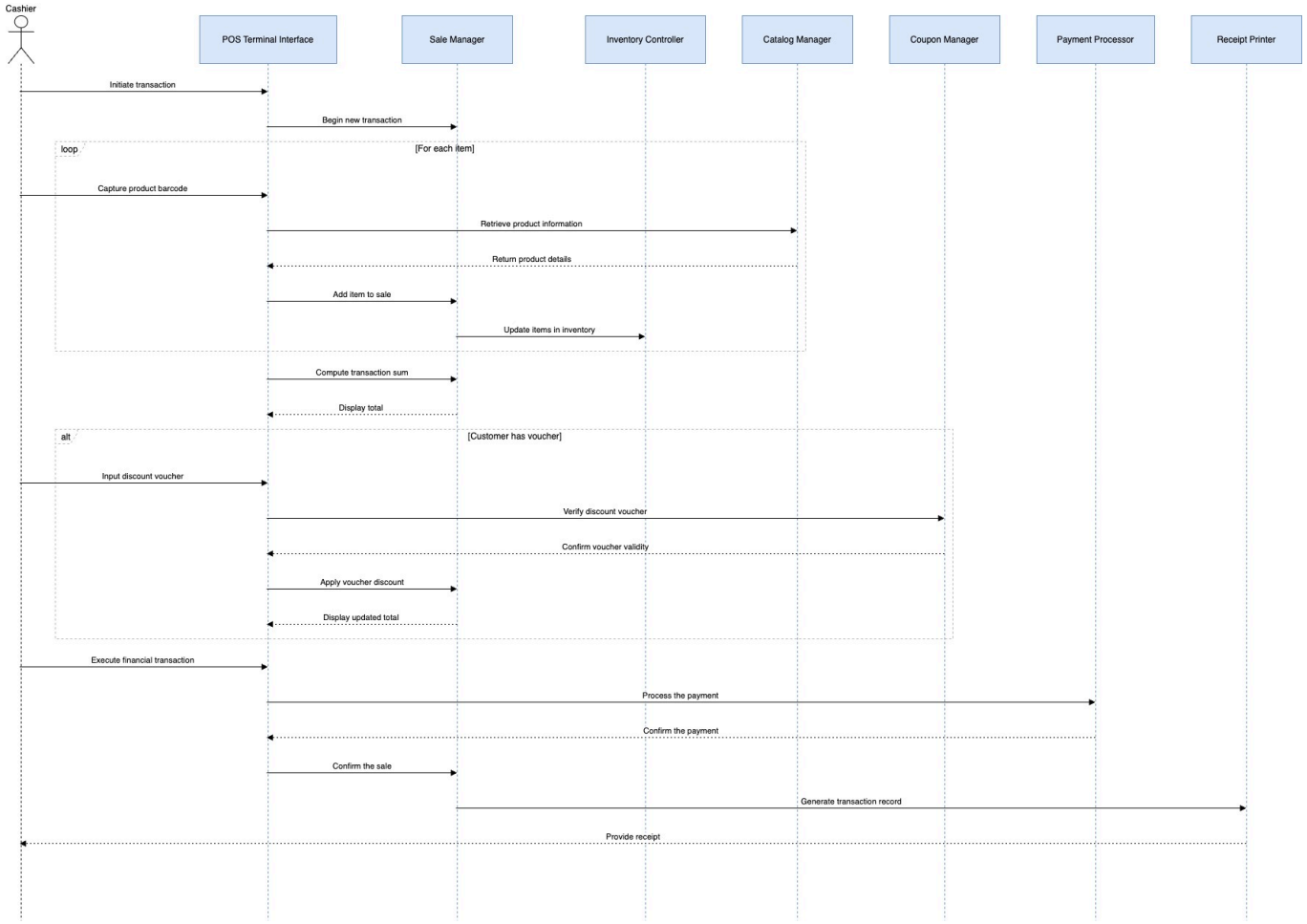
- POS Terminal Interface
- Barcode Scanner
- Receipt Printer
- Payment Terminal

Control Objects:

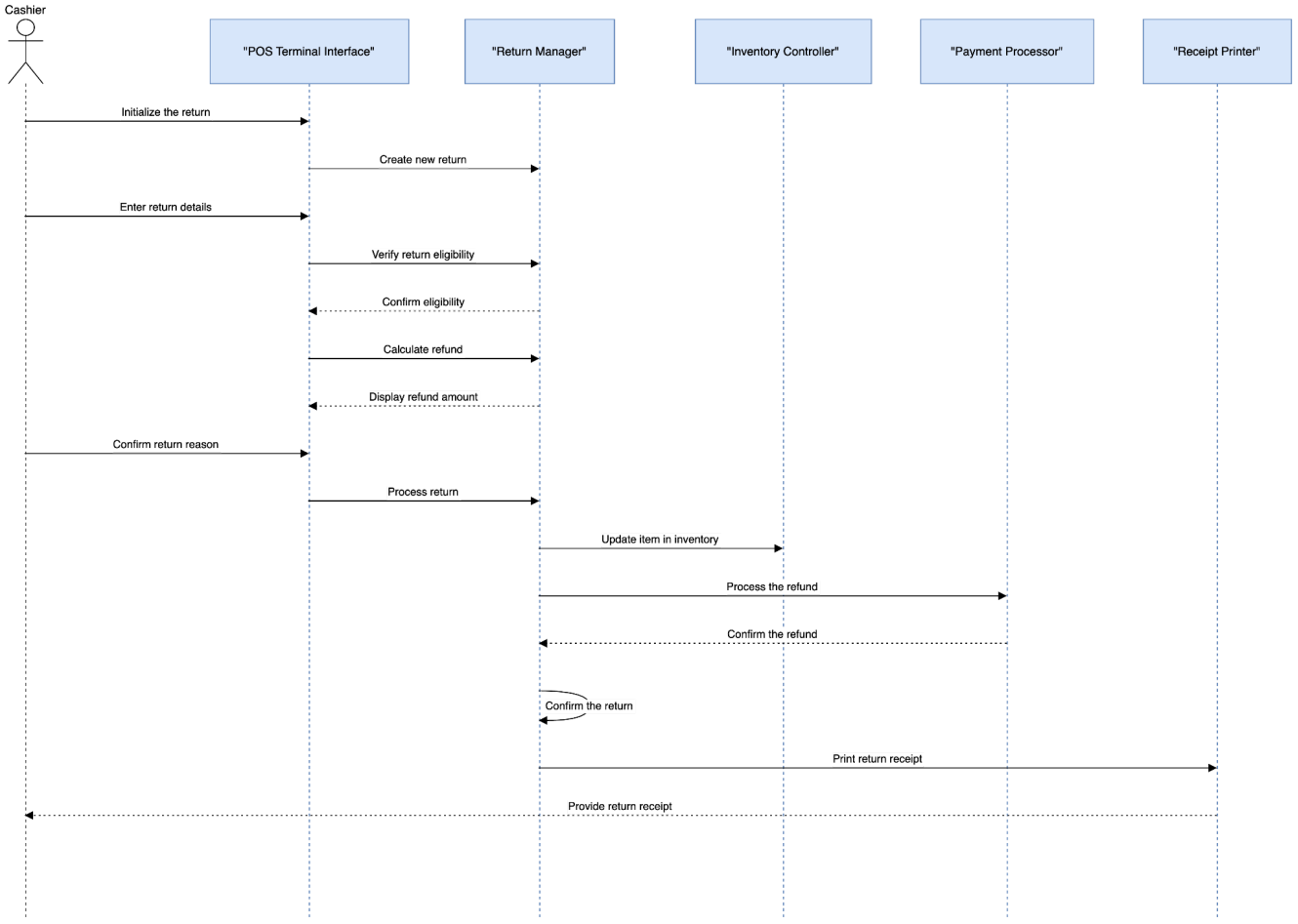
- Sale Manager
- Inventory Controller
- Payment Processor
- Catalog Manager
- Return Manager

Sequence Diagrams : -

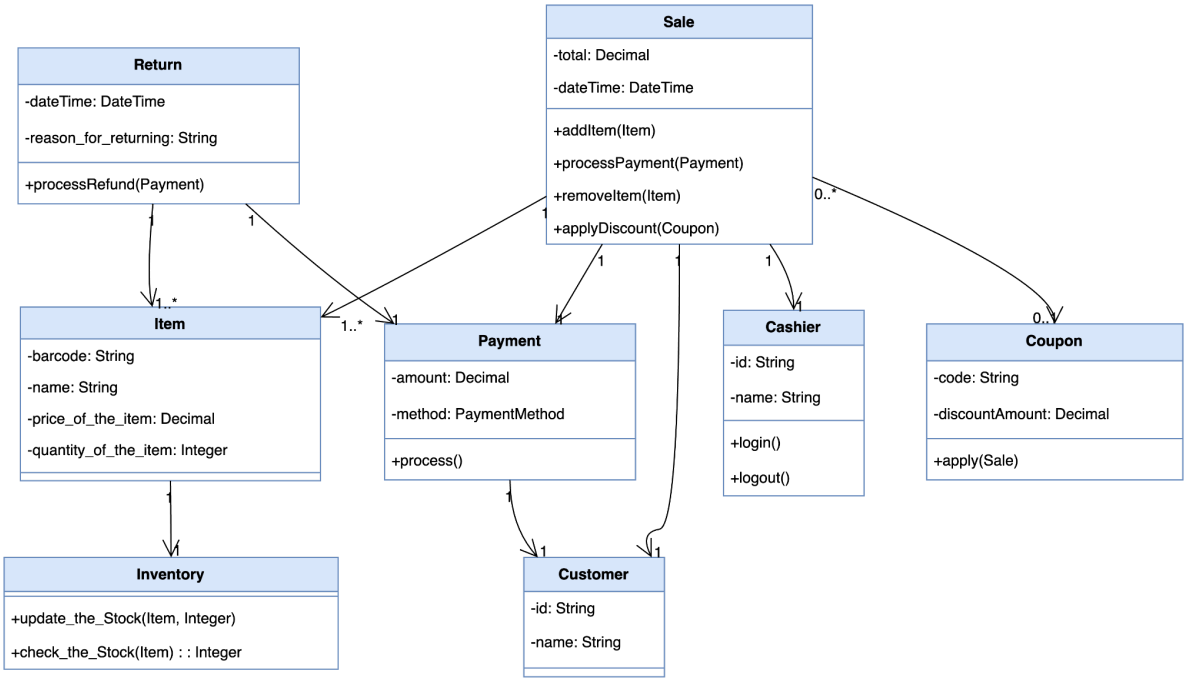
● For "Process sale": -



- **For "Handle Returns": -**

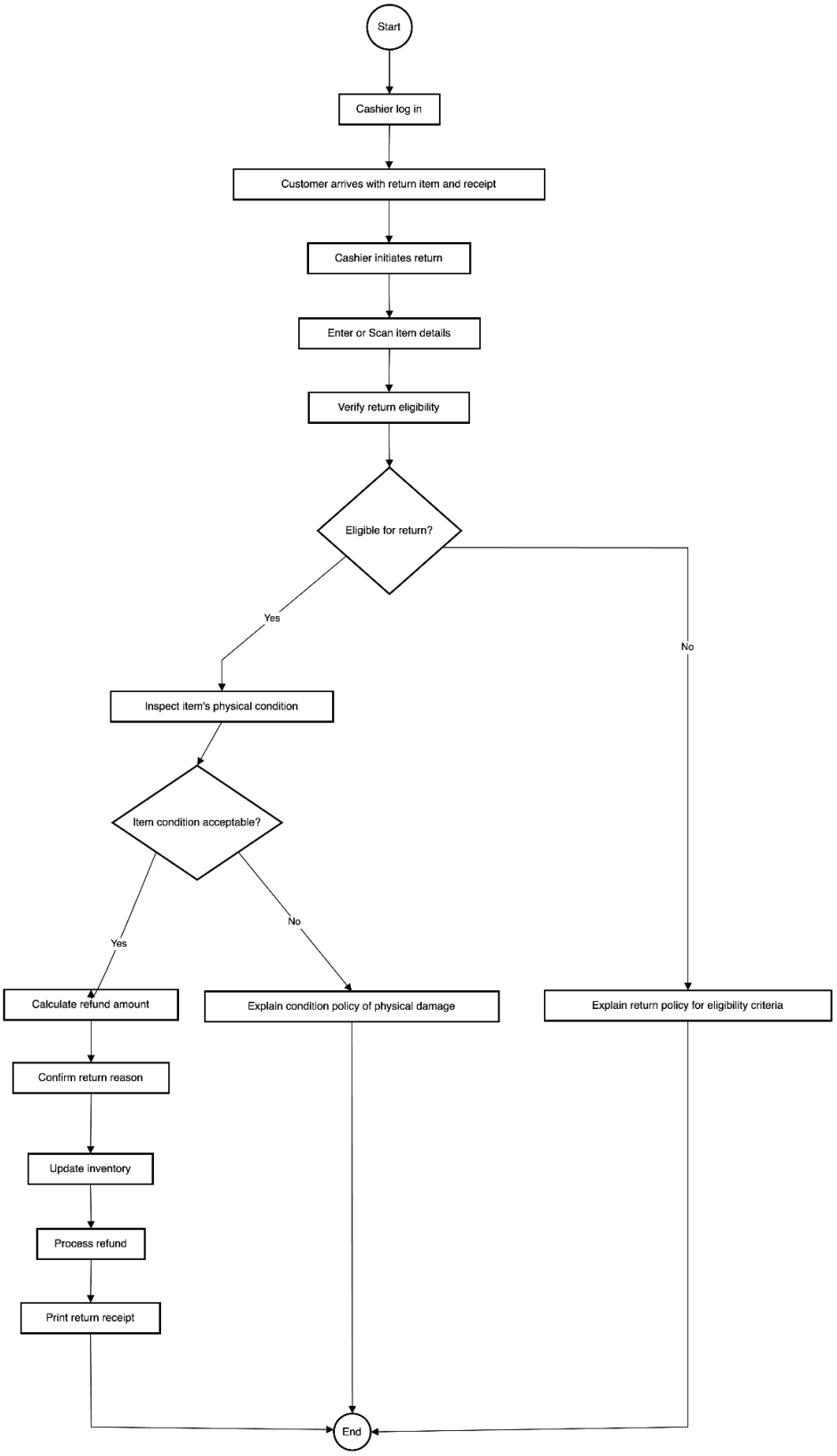


Develop Analysis Domain Models:



Develop Activity Diagram:

- **For Process Sale:**



- **For Handle Return:**