Lab 6

Modeling Class Diagram and Activity Diagram (Point of Sale System)

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Process Sale:

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

Use Case: Process Sale

Actors: Cashier

Preconditions:

- The cashier is logged into the in-store Point of Sale (POS) system.
- The system has the latest inventory and pricing information.
- Payment systems (like card readers) are connected or offline-ready for cash transactions.

Basic Flow:

- 1. Customer arrives at the checkout point with products.
- 2. The cashier scans or manually enters the items being purchased.
- 3. The POS system retrieves the price, description, and stock status from the stored database.
- 4. The cashier confirms the total price, including any applicable taxes or discounts.
- 5. The system calculates the final amount based on locally stored tax and discount rules.
- 6. The cashier tells the final amount to the customer
- 7. Customer selects a payment method and the cashier processes the payment.

- 8. Once the payment is successful, the system deducts the sold items from the inventory.
- 9. The system prints a receipt for the customer.
- 10. The sale is recorded in the database.

Post Condition:

- The sale is logged in the POS system.
- Inventory is updated to reflect the sold items.

Alternate Flow:

- 2.1 Barcode Scan Error: System prompts an error and cashier manually enters the code.
- 2.2 Remove an item: Cashier removes the item from the list and bill is updated.
- 4.1 Amount mismatch: The customer updates
- 7.1 Promotional Coupons: Customer presents a coupon to the cashier and cashier enters/scans the code and amount is updated.
- 7.2 Payment Failure: The customer's card payment is declined, and the cashier requests an alternative payment method.

2. Identify Entity/Boundary Control Objects

Entity Objects:

- Product
- Inventory System
- Cashier

- Customer
- Receipt
- Payment

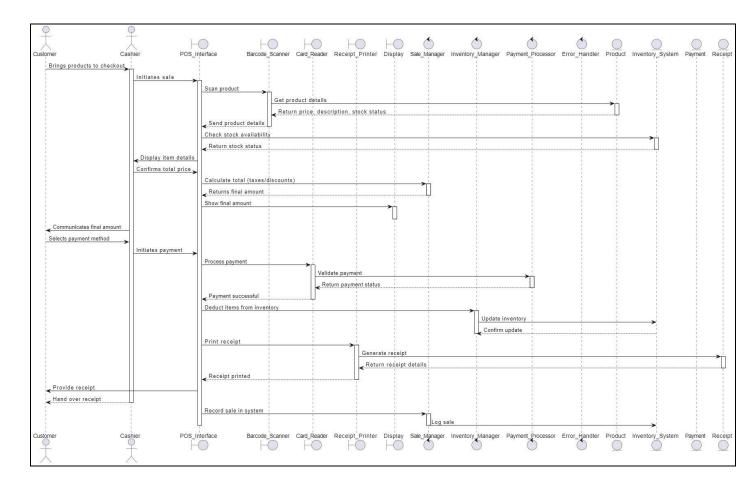
Boundary Objects:

- POS Interface
- Barcode Scanner
- Card Reader
- Receipt Printer
- Display

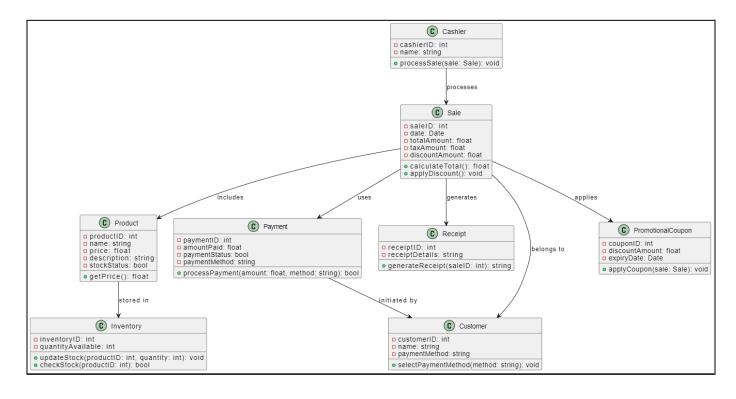
Control Objects:

- Inventory Manager
- Payment Processor
- Sale manager
- Error Handler

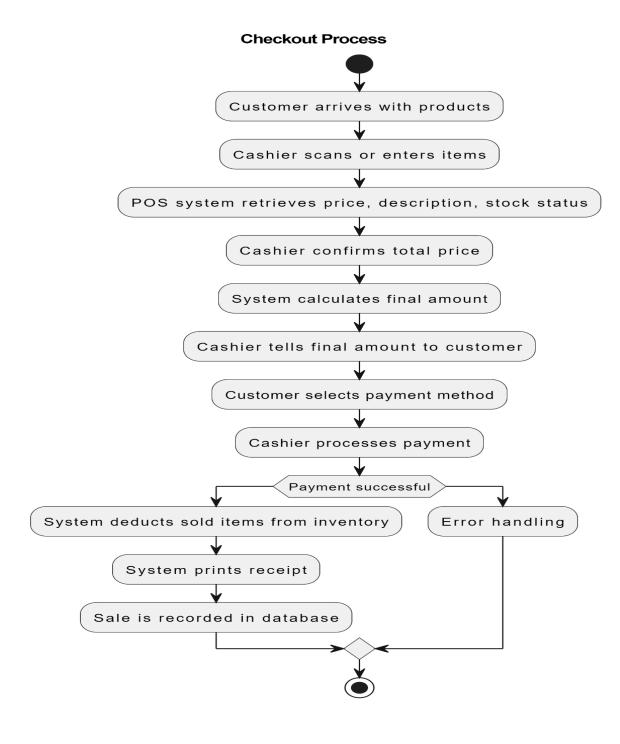
3. Develop Sequence Diagrams



4. Develop Analysis Domain Models



5. Develop activity diagram



Handle Returns:

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

Use Case: Handle Returns

Actor: Cashier

Precondition:

- The POS system is operational.
- The customer provides a valid receipt or proof of purchase.
- Sales data is accessible.

Flow:

- 1. The customer requests a return.
- 2. The cashier manually searches for the sale in the local database using the receipt or transaction ID.
- 3. The system verifies if the items are eligible for return based on the store policy.
- 4. The cashier confirms the return and processes it.
- 5. The system calculates the refund based on the original transaction (refund will likely be cash-based since online payment methods may not be accessible).
- 6. The system updates the local inventory and stores the return transaction locally.
- 7. A return receipt is printed for the customer.

Postcondition:

- The return is recorded in the local database.
- Local inventory is updated to reflect the returned items.
- The system waits to sync with the central server once connectivity is restored.

Alternate Flow:

2.1 Product Not Found in the System:

The system prompts an error indicating the product cannot be found in the database, and the cashier manually verifies the purchase receipt.

3.1 No Receipt Available:

The customer does not have a receipt, so the cashier requests alternate proof of purchase (e.g., loyalty account, card transaction, etc.).

4.1 Item Condition Not Acceptable:

The item is damaged or not in acceptable return condition, and the cashier informs the customer of the return policy.

5.1 Partial Refund or Exchange:

Instead of a full refund, the customer opts for an exchange or partial refund based on the store's return policy.

6.1 Payment Method Mismatch:

The customer requests the refund via a different payment method (e.g., wants cash for a card transaction), but the system only allows the refund to the original payment method.

7.1 System Error During Refund:

A system error occurs during the refund process, and the cashier manually processes the refund or issues store credit to the customer.

2. Identify Entity/Boundary Control Objects

Entity Objects:

- 1. Product
- 2. Receipt
- 3. Return
- 4. Refund
- 5. Inventory System
- 6. Customer
- 7. Cashier

Boundary Objects:

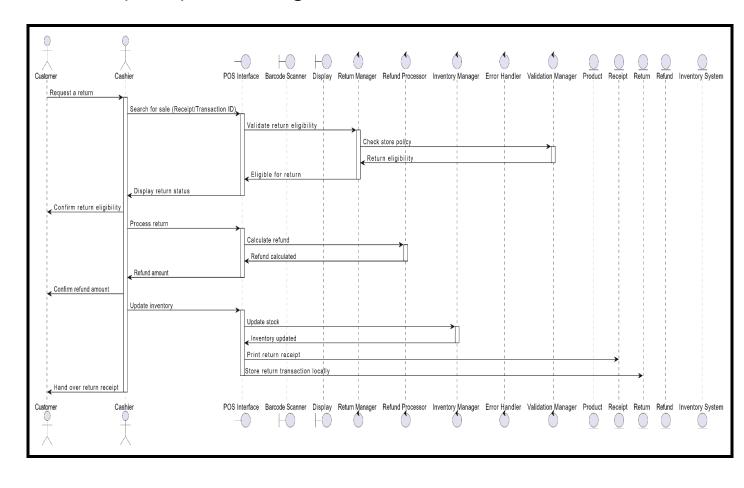
- 1. POS Interface
- 2. Barcode Scanner
- 3. Display

Control Objects:

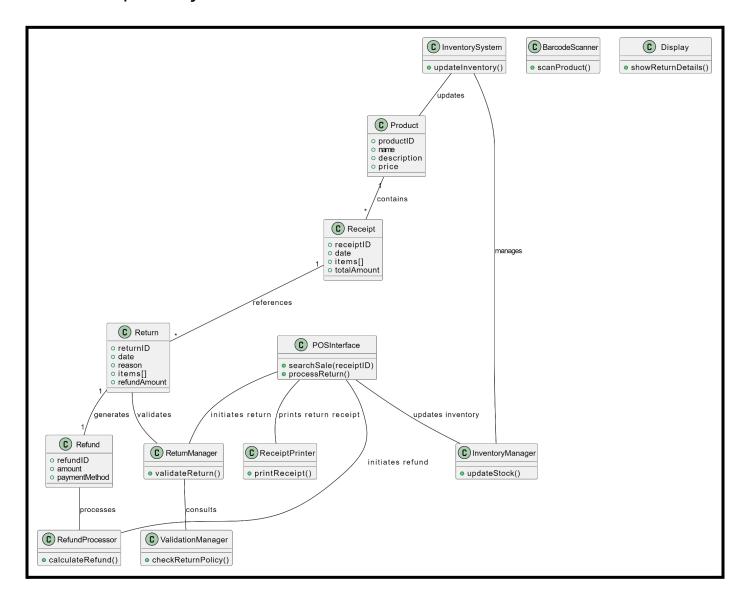
- 1. Return Manager
- 2. Refund Processor
- 3. Inventory Manager
- 4. Error Handler

5. Validation Manager

3. Develop Sequence Diagrams



4. Develop Analysis Domain Models



5. Develop activity diagram

