

IT314: Modelling Class Diagram and Activity Diagram
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Use Case Textual Descriptions

1. Use Case: Process Sale

Primary Actor: Cashier

Preconditions:

- Cashier is logged in and authenticated.
- Customer is at the POS terminal with items to purchase.

Success End Condition:

- The sale is saved, a receipt is printed, and the inventory is updated.

Basic Flow:

1. Customer arrives at the POS with goods to purchase.
2. Cashier initiates a new sale.
3. Cashier scans barcodes of items.
4. The system retrieves item information from the catalog system (name, price).
5. Cashier repeats steps 3-4 for all items.
6. The system computes the total amount.
7. Customer pays (cash, card, or check).
8. The system processes payment and deducts stock from the inventory.
9. The system prints the receipt.
10. Customer leaves with goods and receipt.

Extensions:

- If the barcode cannot be read, the cashier can input it manually.
- If a customer cancels the transaction, the cashier can void it in the system.

2. Use Case: Handle Return

Primary Actor: Cashier

Preconditions:

- Cashier is logged in and authenticated.
- Customer has a valid receipt or item for return.

Success End Condition:

- The item is returned, and the stock is updated.

Basic Flow:

1. Customer approaches the POS to return an item.
2. Cashier initiates a return transaction.
3. Cashier scans the barcode from the receipt or the item itself.
4. The system retrieves item information (name, price, date of purchase).
5. The cashier confirms the item is returnable (e.g., within return window).
6. The system processes the return and updates the stock.
7. The customer receives a refund or store credit.
8. The system prints a return receipt.

Extensions:

- If the item does not have a barcode or receipt, manual lookup may be needed.
- If the return is outside the allowed period, it can be declined.

Entity/Boundary Control Objects

1. Process Sale

● Entity Objects:

- Item
- Sale Transaction
- Receipt
- Stock
- Payment

● Boundary Objects:

- Cashier Interface
- Barcode Reader
- Credit Card Reader
- Printer

● Control Objects:

- SaleController
- PaymentController
- StockManager

2. Handle Return

- **Entity Objects:**

- Item
- Return Transaction
- Stock
- Receipt

- **Boundary Objects:**

- Cashier Interface
- Barcode Reader
- Printer

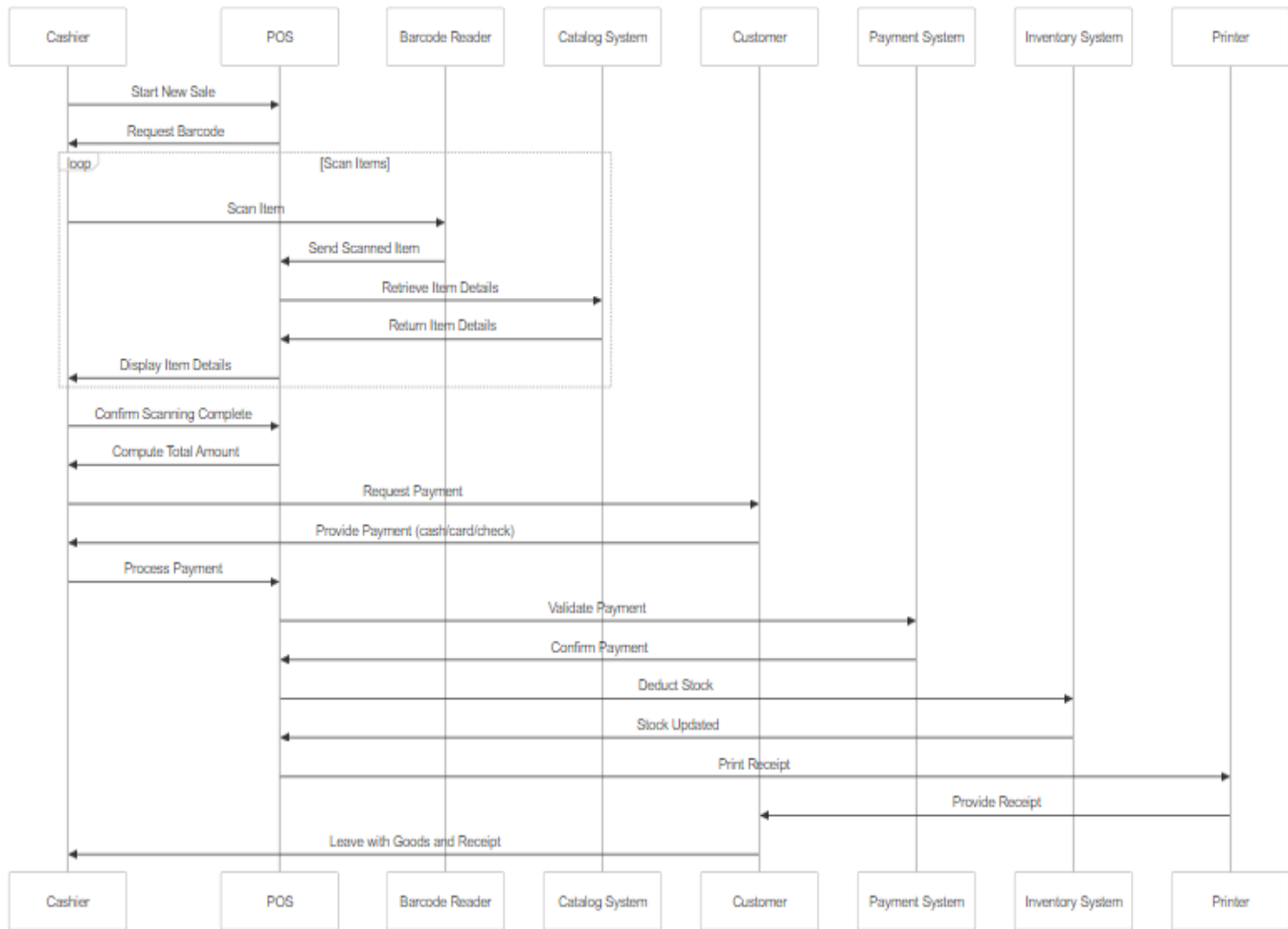
- **Control Objects:**

- ReturnController
- StockManager
- RefundProcessor

Sequence Diagrams

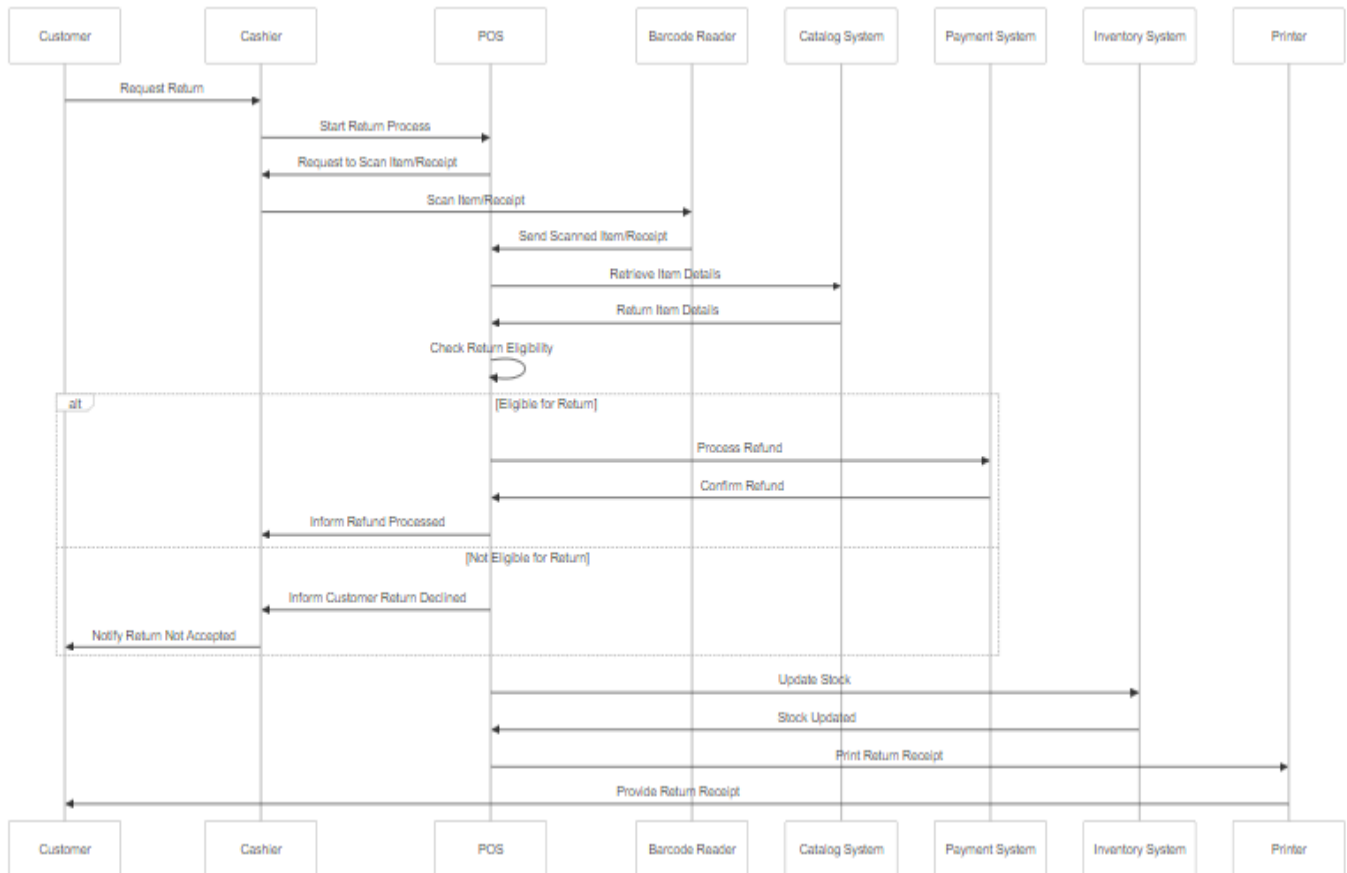
1. Sequence Diagram: Process Sale

1. Cashier starts the sale.
2. POS System asks for the barcode.
3. Barcode Reader sends the scanned item to POS System.
4. POS System retrieves the item details from the Catalog System.
5. Cashier repeats steps 2-4 until all items are scanned.
6. POS System computes the total.
7. Customer pays, and POS System interacts with the Payment System.
8. The Inventory System deducts stock.
9. POS System prints the receipt.



2. Sequence Diagram: Handle Return

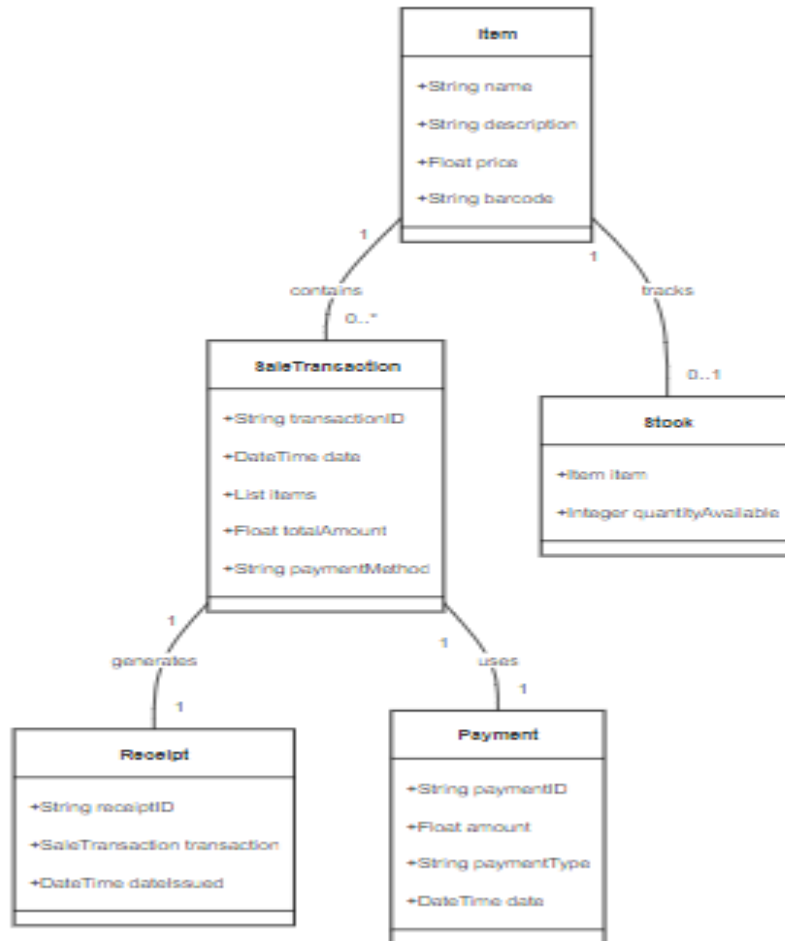
1. **Customer** requests return.
2. **Cashier** starts the return process.
3. **POS System** scans the item or receipt.
4. **POS System** retrieves details from the **Catalog System**.
5. **POS System** checks return eligibility.
6. **POS System** processes the refund through the **Payment System** or issues store credit.
7. **Inventory System** updates stock.
8. **POS System** prints the return receipt.



Analysis Domain Models

Entities for "Process Sale":

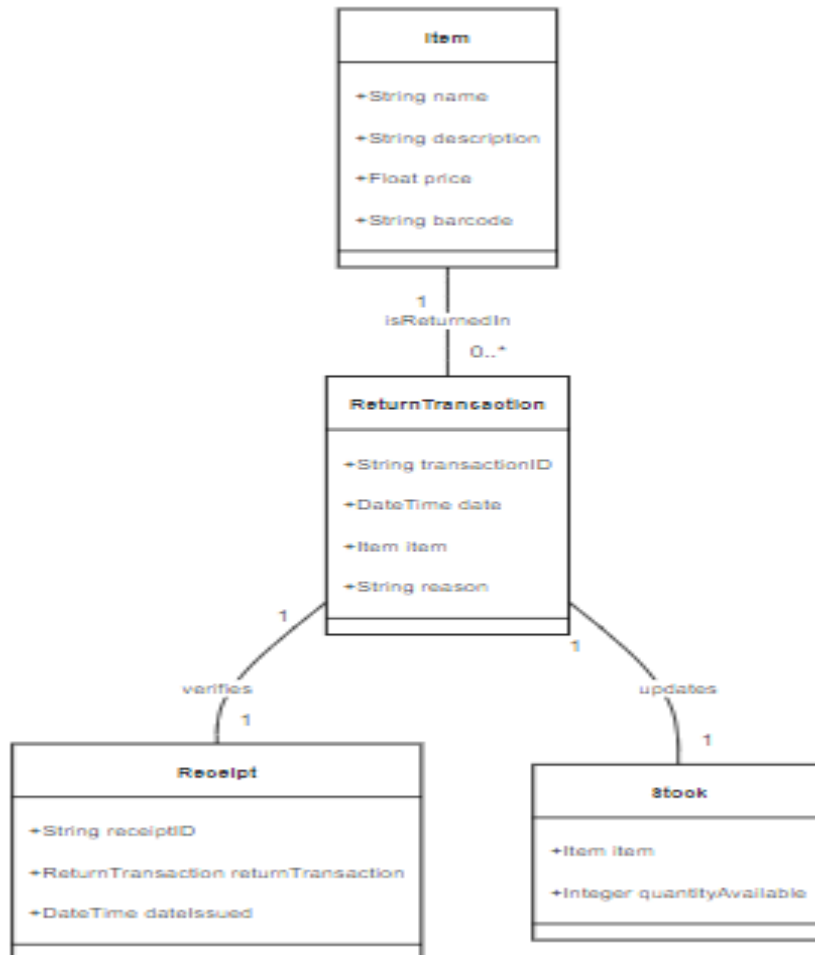
- **Item:** Holds information about products.
- **Sale Transaction:** Records all details of the transaction.
- **Receipt:** Stores transaction details for customer records.
- **Stock:** Tracks the availability of items.
- **Payment:** Manages the payment details (cash, card, check).



Entities for "Handle Return":

- **Item**: Information about the returned product.
- **Return Transaction**: Records details of the return.
- **Receipt**: Verifies return.
- **Stock**: Updates stock based on returned items.

Activity Diagram:



Process Sale (Activity Diagram):



Handle Return:

