IT314: Modelling Class Diagram and Activity Diagram
Aditya Iyer-202201322

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

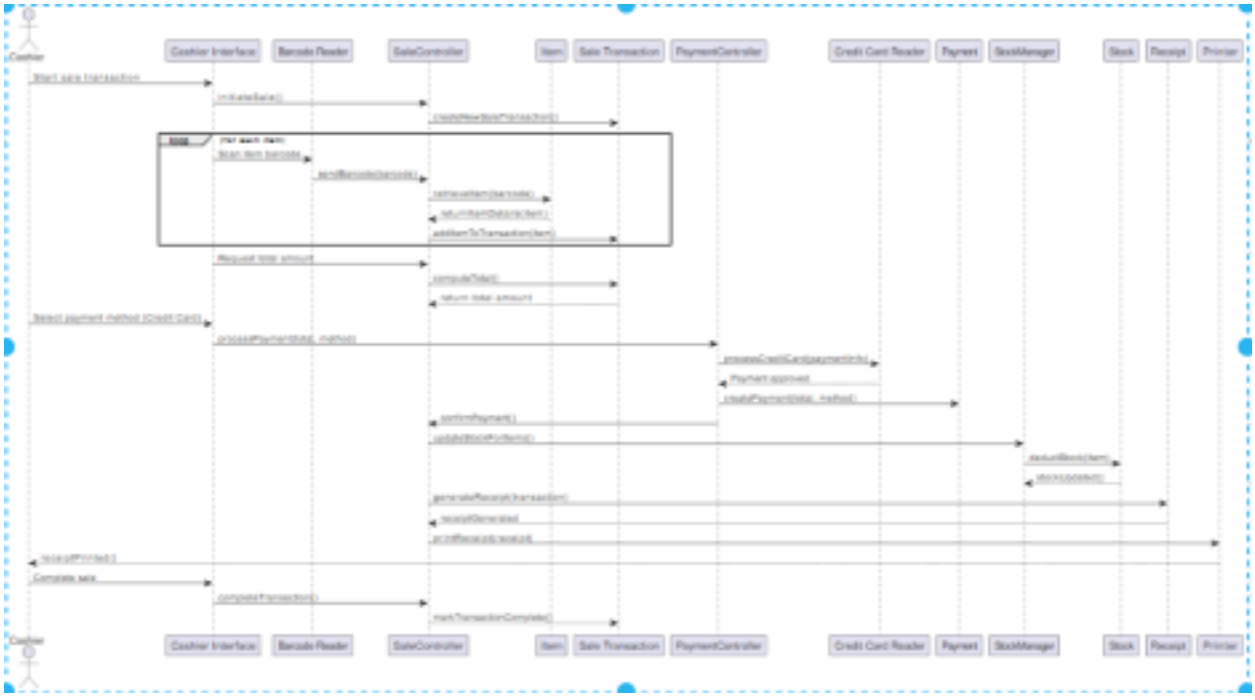
- **Entity Objects:**
    - Item
    - Return Transaction
    - Stock
    - Receipt
- **Boundary Objects:**

    - Cashier Interface
    - Barcode Reader
    - Printer
- **Control Objects:**
    - ReturnController
    - StockManager
    - RefundProcessor

Sequence Diagrams

1. Sequence Diagram: Process Sale

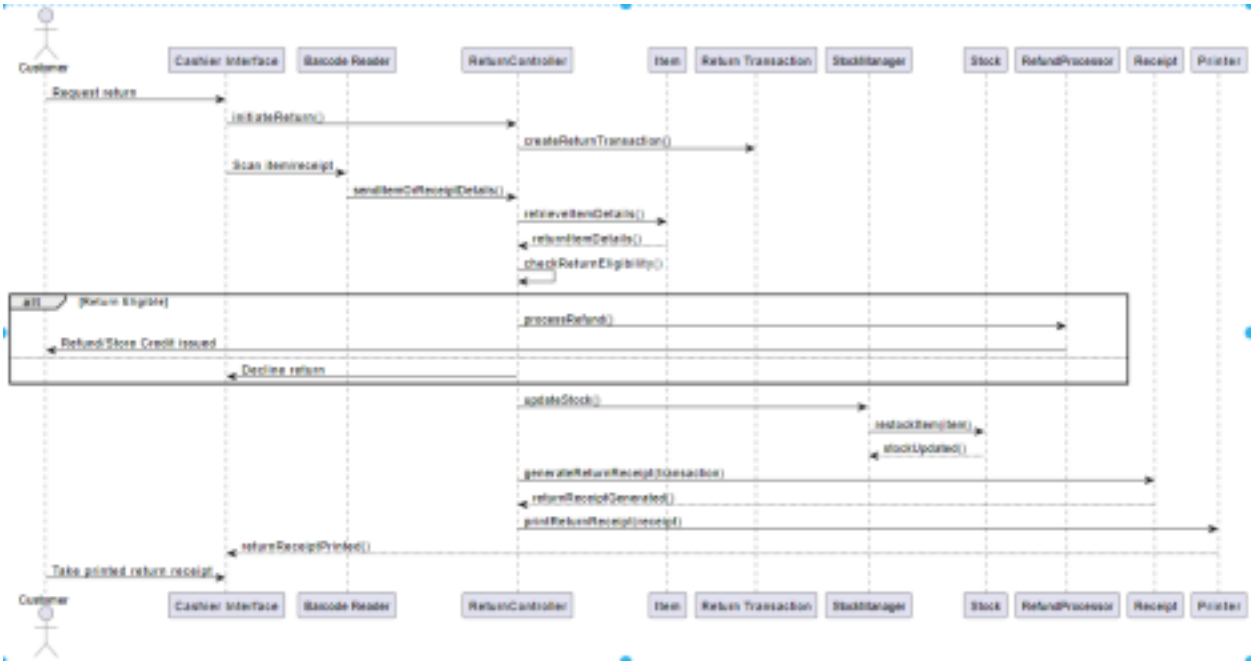
1. **Cashier** starts the sale.
2. **POS System** asks for the barcode.
3. **Barcode Reader** sends the scanned item to **POS System**. 4. **POS System** retrieves the item details from the **Catalog System**. 5. Cashier repeats steps 2-4 until all items are scanned.
6. **POS System** computes the total.
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**.

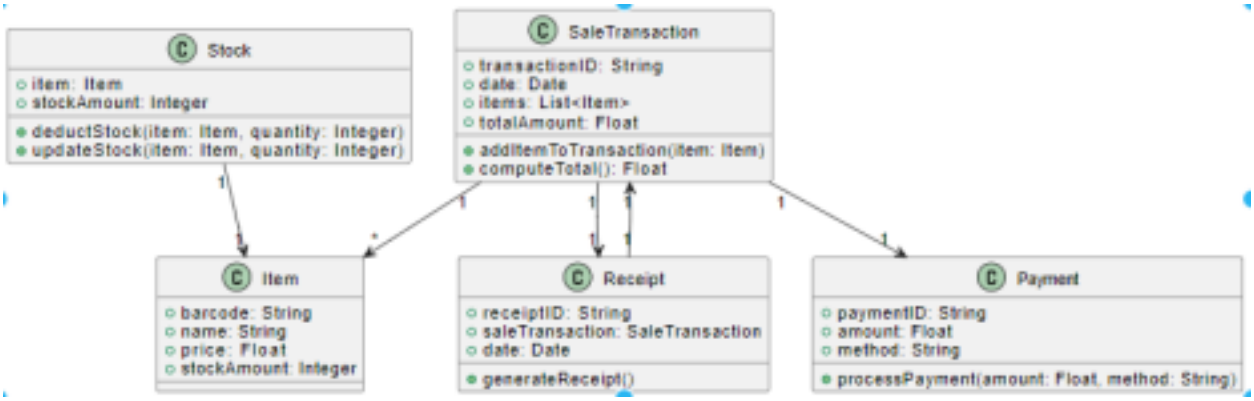
5. **POS System** checks return eligibility.
6. **POS System** processes the refund through the **Payment System** or issues store credit.
7. **Inventory System** updates stock.
8. **POS System** prints the return receipt.



Analysis Domain Models

Entities for "Process Sale":

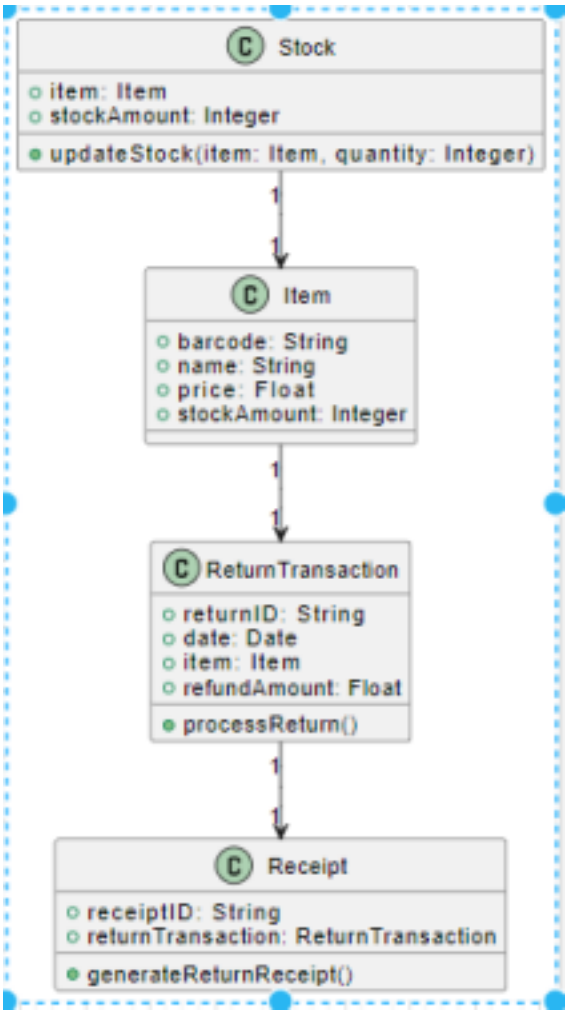
- **Item:** Holds information about products.
- **Sale Transaction:** Records all details of the transaction.
- **Receipt:** Stores transaction details for customer records.
- **Stock:** Tracks the availability of items.
- **Payment:** Manages the payment details (cash, card, check).



Entities for "Handle Return":

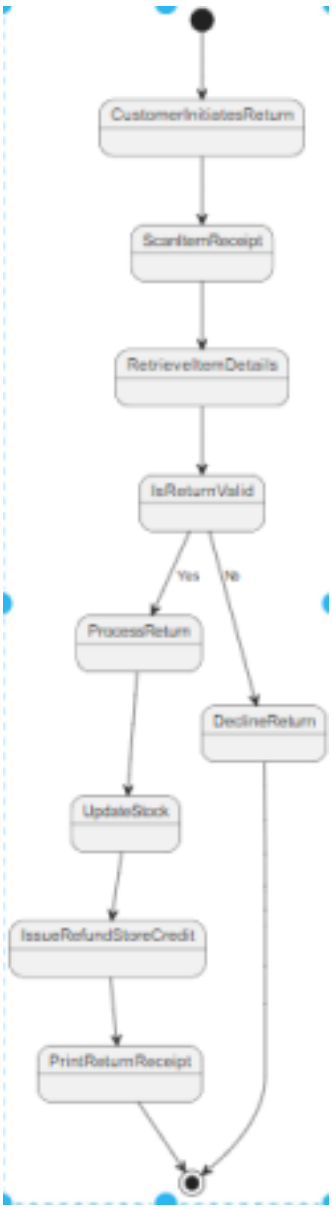
- **Item:** Information about the returned product. ● **Return Transaction:** Records details of the return. ● **Receipt:** Verifies return.

- **Stock:** Updates stock based on returned items.

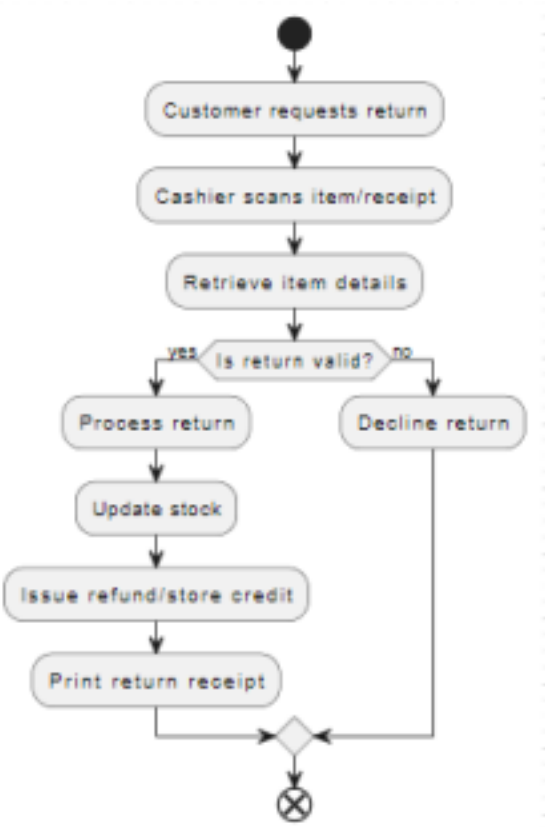


Activity Diagram:

Process Sale:



Handle Return:


Customer requests return
Cashier scans item/receipt
Retrieve item details
Is return valid?
yes
no
Process return
Decline return
Update stock
Issue refund/store credit
Print return receipt