Dhirubhai Ambani Institute of Information and Communication Technology

IT314
Software Engineering

Lab - 06

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

Use Case: Process Sale

Primary Actor: Cashier

Preconditions:

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

Basic Flow:

1. The cashier initiates a new sale transaction on the POS.
2. The cashier scans the barcode of the first product.
3. The system retrieves the product details (name, price) from the catalog.
4. The system deducts the stock amount from the inventory.

5. Steps 2-4 are repeated for each additional product.
6. The system calculates and displays the total amount for the sale.
7. The customer provides a payment method (cash, credit card, or check).
8. The system processes the payment and confirms its success.
9. The system generates and prints the receipt.
10. The cashier hands the receipt and purchased goods to the customer.
11. The sale transaction is completed.

Alternate Flows:

- **Invalid Product Barcode (At Step 3):**
    - 3a. The system fails to retrieve the product details.
    - 3b. The system displays an error message.
    - 3c. The cashier manually enters the product details or retries scanning.
    - 3d. The use case continues from Step 3.
- **Insufficient Stock (At Step 4):**
    - 4a. The system detects that the stock level is insufficient.
    - 4b. The system alerts the cashier of the stock issue.
    - 4c. The cashier informs the customer and either removes the item from the transaction or checks for alternatives.
    - 4d. The use case continues from Step 2 with the next product.
- **Payment Failure (At Step 8):**
    - 8a. The system detects that the payment has failed (e.g., declined card, insufficient funds).
    - 8b. The system notifies the cashier and customer of the payment failure.
    - 8c. The customer provides an alternative payment method.
    - 8d. The use case continues from Step 7.

Use Case : Handle Return

Use Case: Handle Return

Primary Actor: Cashier

Preconditions:

- The cashier is logged into the POS system.
- The system is connected to the backend catalog and inventory systems.
- The original sale transaction exists in the system.

Basic Flow:

1. The customer approaches the cashier with goods to return.
2. The cashier searches for the original sale transaction in the POS system.
3. The cashier selects the item(s) to be returned from the original transaction.
4. The cashier scans the barcode of the returned product(s).
5. The system verifies the return eligibility (e.g., within the return period, undamaged).
6. The system updates the inventory to add the returned item(s).
7. The system processes the refund (cash, credit card reversal, or store credit).
8. The system generates and prints a return receipt.
9. The cashier hands the return receipt and refund to the customer.
10. The return transaction is completed.

Alternate Flow:

- **Original Sale Not Found (At Step 2):**
    - 2a. The system cannot find the original sale transaction.
    - 2b. The cashier asks the customer for more details (e.g., date of purchase, transaction ID).
    - 2c. The cashier manually searches the sale history.
    - 2d. If the sale is still not found, the return is denied, and the use case ends.
- **Invalid Return Product (At Step 5):**
    - 5a. The system determines that the product is not eligible for return (e.g., past return period, item is damaged).
    - 5b. The system notifies the cashier, who informs the customer of the issue.
    - 5c. The customer may either accept the denial or discuss further options with the cashier (e.g., store credit).
    - 5d. If the return is accepted under special conditions, the use case continues from Step 6.
- **Refund Failure (At Step 7):**
    - 7a. The system detects a failure in processing the refund (e.g., system error, declined credit reversal).
    - 7b. The system notifies the cashier and customer of the refund issue.
    - 7c. The cashier tries an alternative refund method (e.g., cash if the original payment was by credit card).
    - 7d. The use case continues from Step 7.

2. Identify Entity/Boundary Control Objects

Entity Objects:

- Product, Transaction, Inventory, User (Cashier, Administrator), Payment

Boundary Objects:

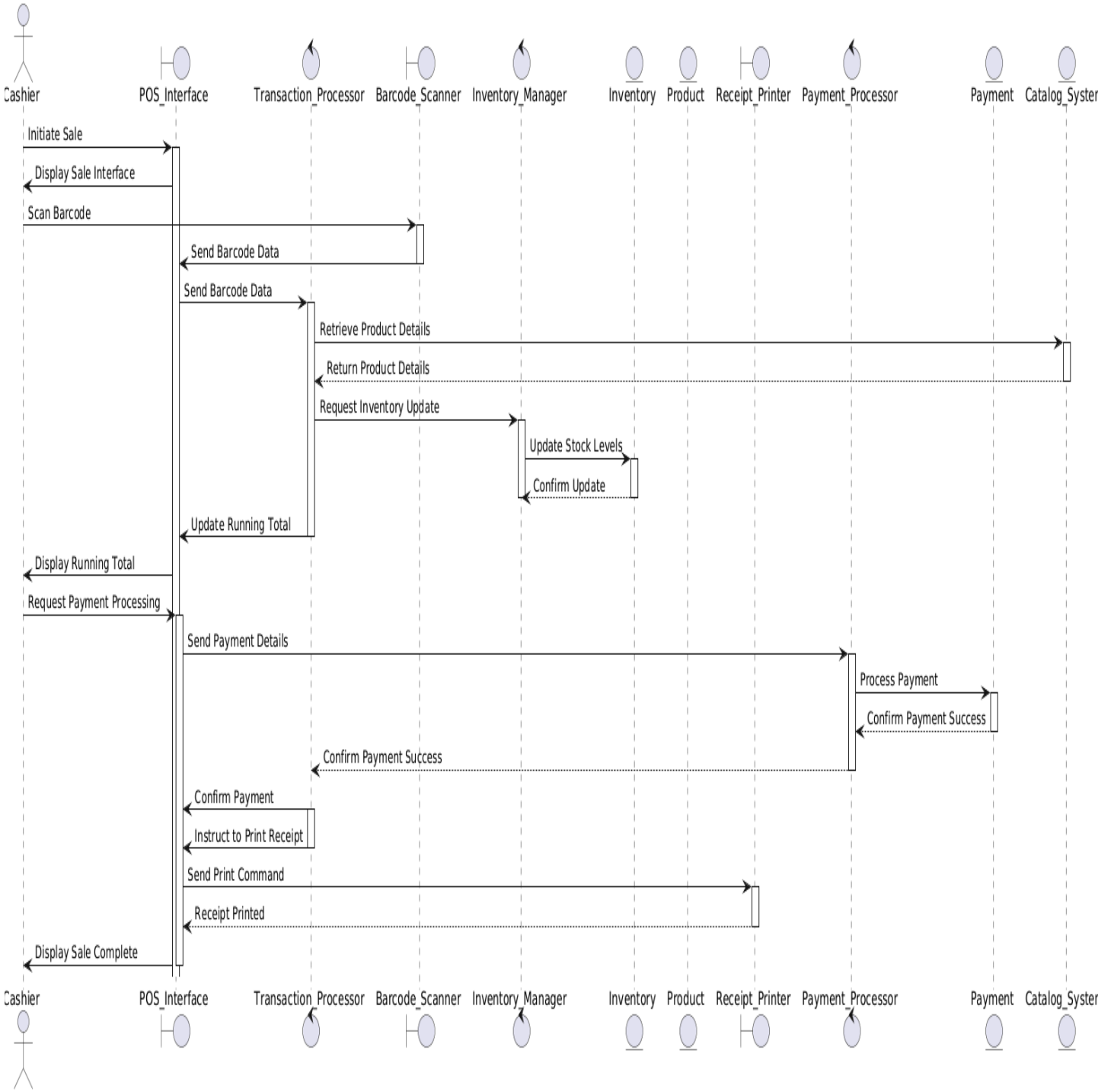
- POS Interface, Receipt Printer, Barcode Scanner

Control Objects:

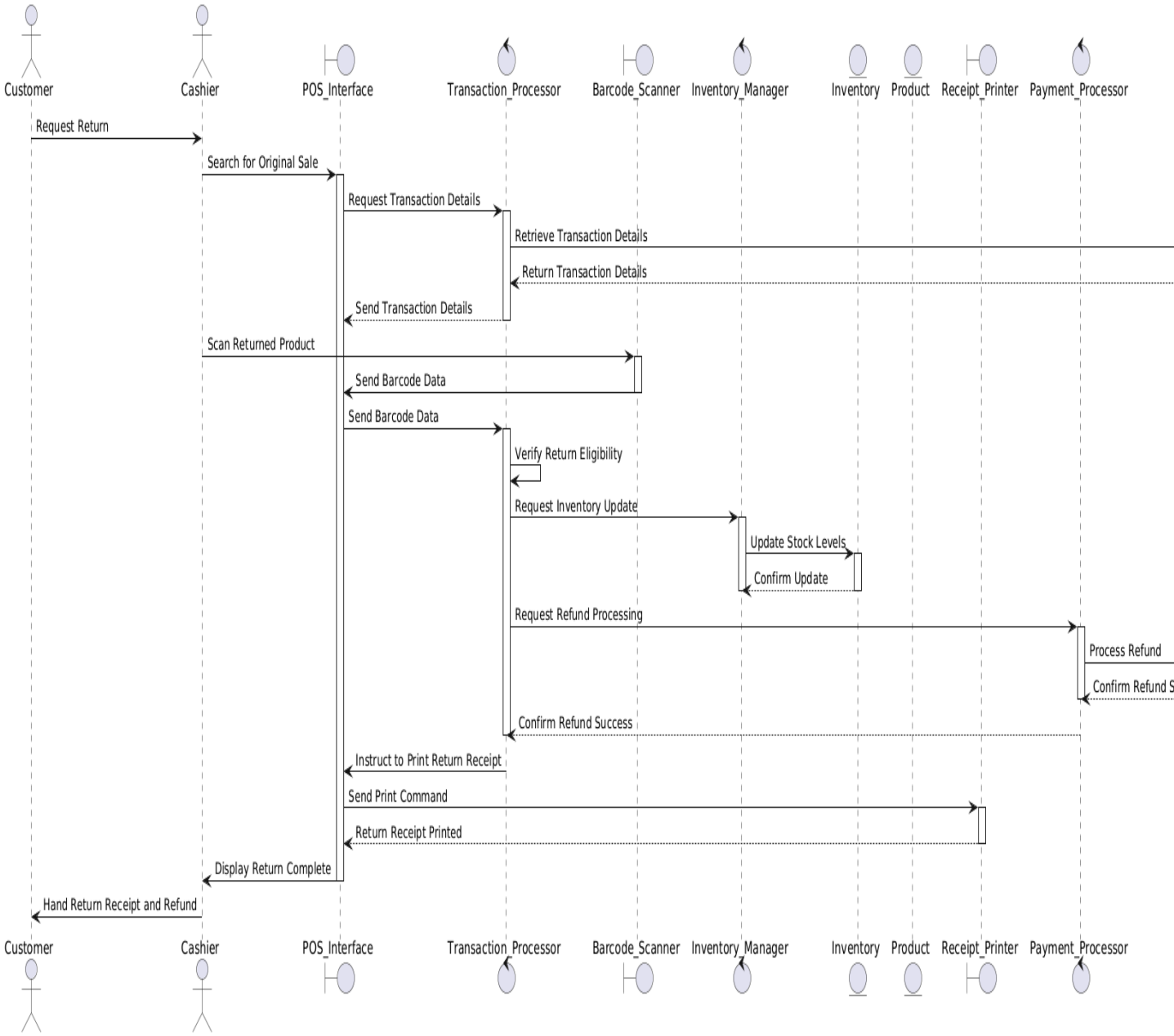
- Transaction Processor, Inventory Manage, Payment Processor, Authentication Manager

3. Develop Sequence Diagrams

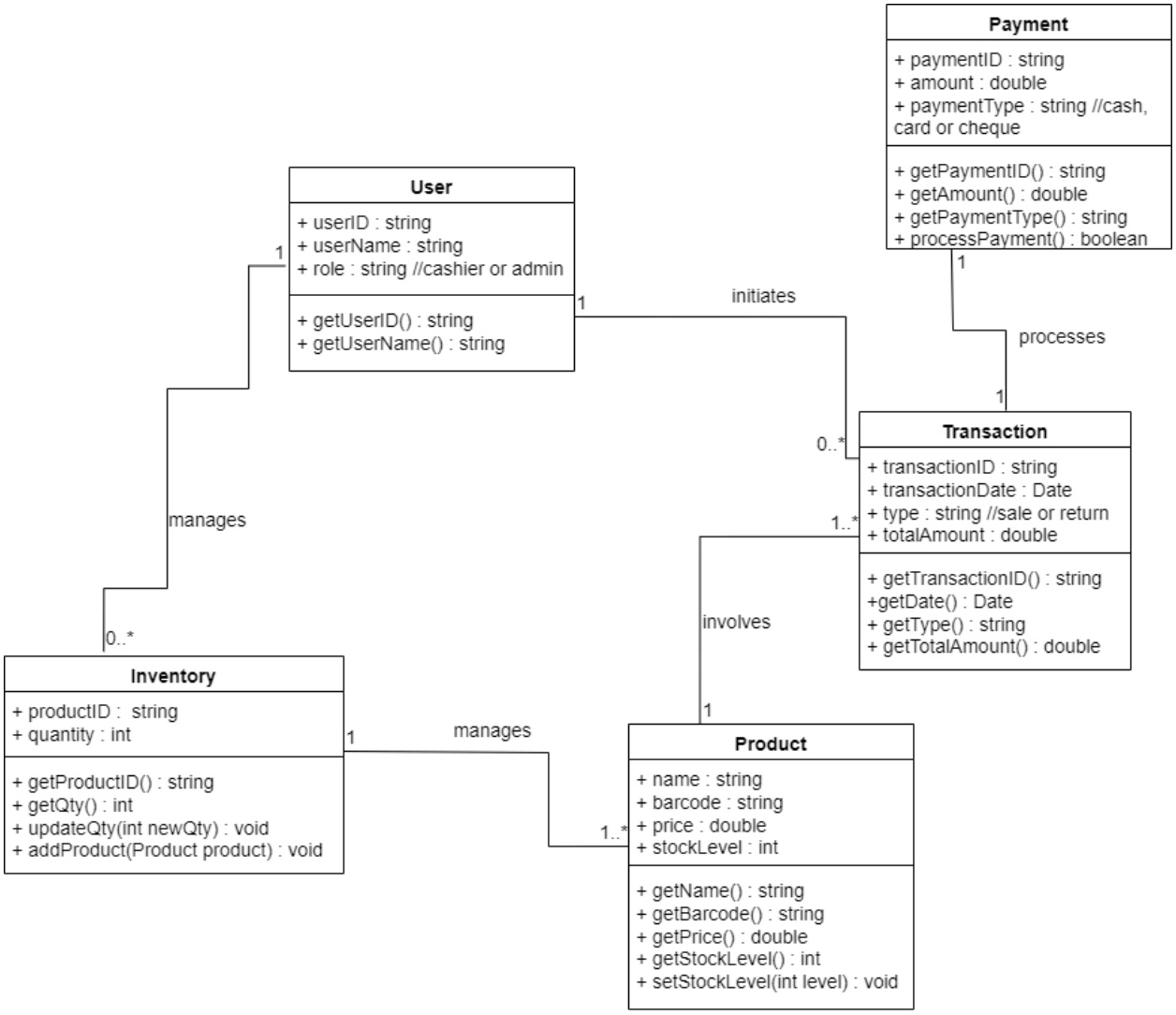
- Sequence diagram for **Process Sale**



- Sequence Diagram for **Handle Return**

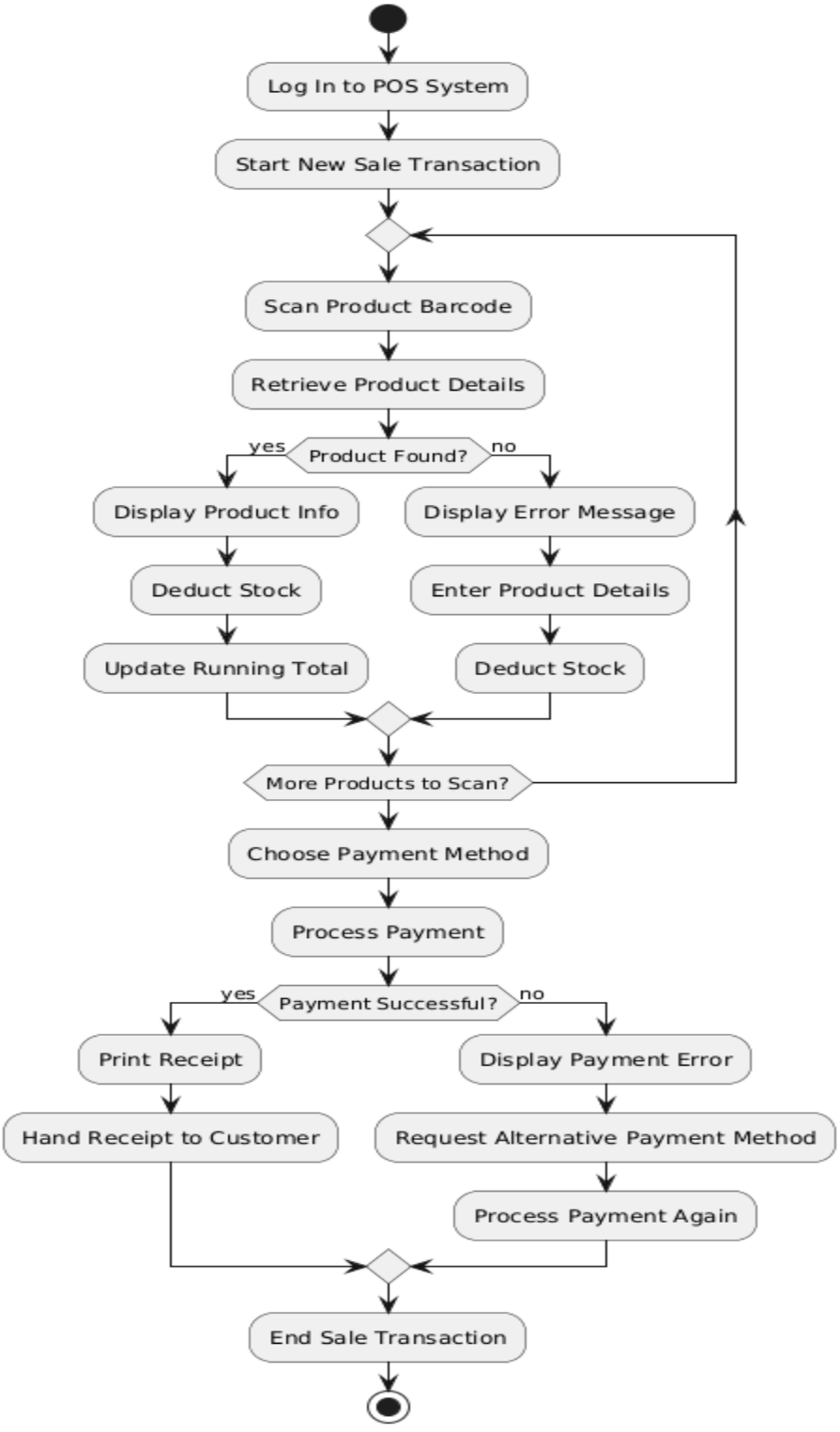


4. Develop analysis domain models



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

For **Process Sale:**



For **Handle Return:**