

IT-314 Lab-6

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

Use Case: Process Sale

Use Case Description

Name: Process Sale

Actor: Cashier

Preconditions:

- Cashier is logged into the POS system.
- Customer is present with items to purchase.

Postconditions:

- Sale transaction is completed.
- Inventory is updated.
- Receipt is generated and printed.

Main Flow:

1. Cashier starts a new sale transaction.
2. Cashier scans the barcode of the first item.
3. System retrieves the item details (name, price) from the catalog.
4. System checks inventory and confirms availability.
5. Cashier continues to scan additional items as needed.
6. System calculates the total price, applying any discounts or promotions.
7. Cashier informs the customer of the total amount.
8. Customer chooses a payment method (cash, credit card, or check).
9. Cashier processes the payment.
 - If payment is successful:

(i)System generates a receipt.

(ii)System updates inventory levels.

(iii)System confirms the sale to the cashier.

- If payment fails:

(i) System notifies the cashier of the failure.

Alternate Flows:

- **Item Not Found:** If an item's barcode does not exist in the catalog, the system notifies the cashier.
- **Insufficient Stock:** If the item is out of stock, the system alerts the cashier and the item cannot be added to the sale.
- **Coupon Redemption:** If the customer has a gift coupon, the cashier applies it during checkout, and the system recalculates the total.

Use Case: Handle Return

Use Case Description

Name: Handle Return

Actor: Cashier

Preconditions:

- Cashier is logged into the POS system.
- Customer presents items for return.

Postconditions:

- Return transaction is completed.
- Inventory is updated to reflect the returned items.
- Refund is processed (if applicable).

Main Flow:

1. Cashier starts a return transaction.
2. Cashier scans the barcode of the item being returned.
3. System retrieves the item details and original sale information.
4. Cashier verifies the return policy eligibility (e.g., within return window, condition of item).
5. System checks if the item is eligible for return.
6. Cashier informs the customer of the return approval status.
 - If approved:

(i) Cashier processes the refund (cash, credit to card, etc.).

(ii) System updates the inventory to add the returned item back.

(iii) System generates a return receipt.

- If denied:

(i) System informs the cashier of the denial reason.

Alternate Flows:

- **Item Not Found:** If the item's barcode does not exist in the system, the system notifies the cashier.
- **Return Policy Violation:** If the item does not meet the return policy requirements, the system alerts the cashier.

Q-2) Identify Entity/Boundary Control Objects

Identified Objects

Entity Objects

- **Item:** Represents individual products in the inventory.
- **Customer:** Represents customers making purchases or returns.
- **Transaction:** Represents sale or return transactions, including items, prices, and total amounts.
- **Payment:** Represents payment information and methods.

Boundary Objects

- **POS Interface:** The graphical user interface through which cashiers interact with the system.
- **Receipt Printer:** The device that prints receipts for transactions.

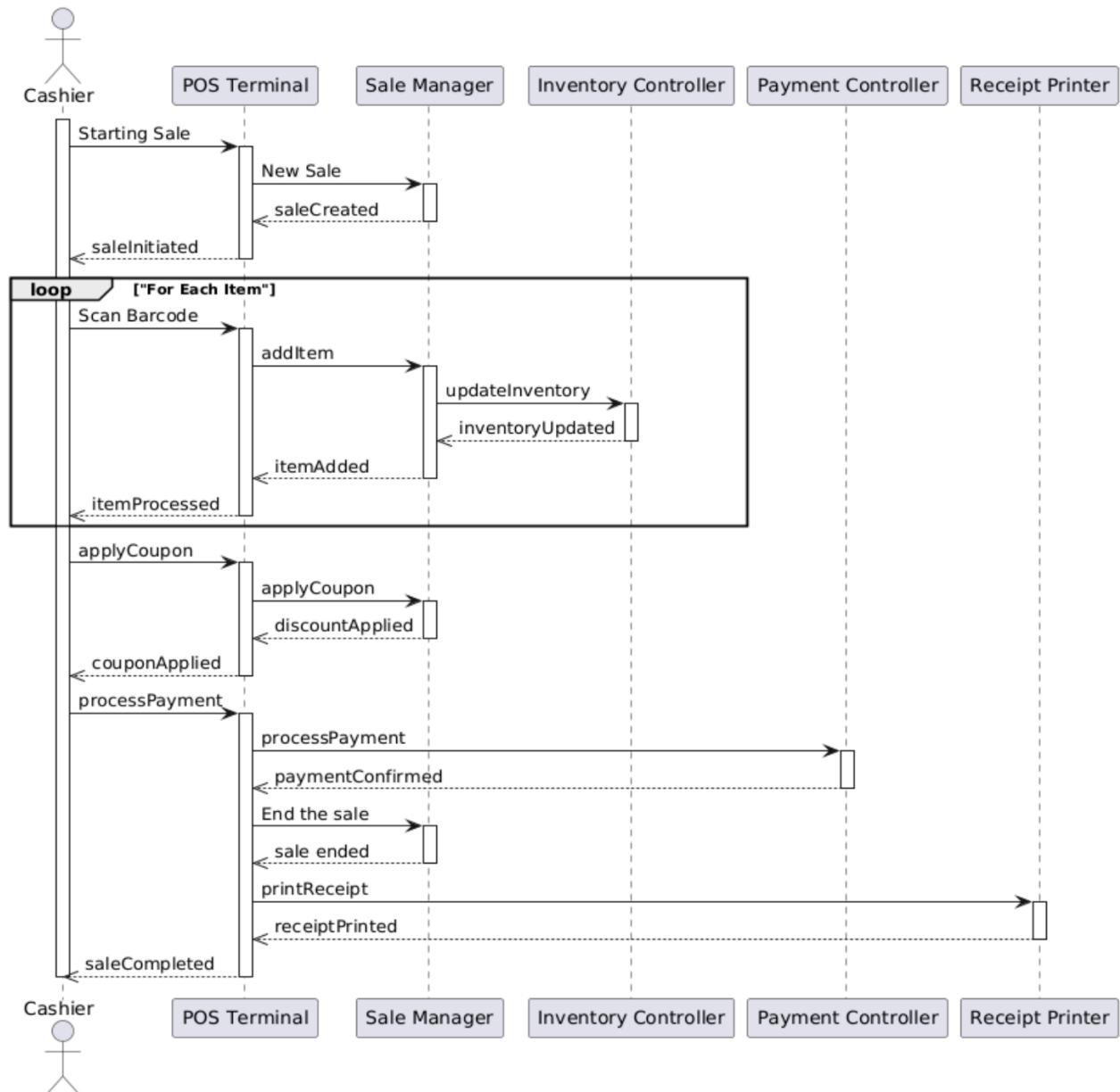
Control Objects

- **SaleController:** Manages the sale process, including item scanning, total calculation, and payment processing.
- **ReturnController:** Manages the return process, including eligibility checks and inventory updates.
- **InventoryController:** Manages updates to inventory levels based on sales and returns.
- **PaymentController:** Handles payment processing and validation.

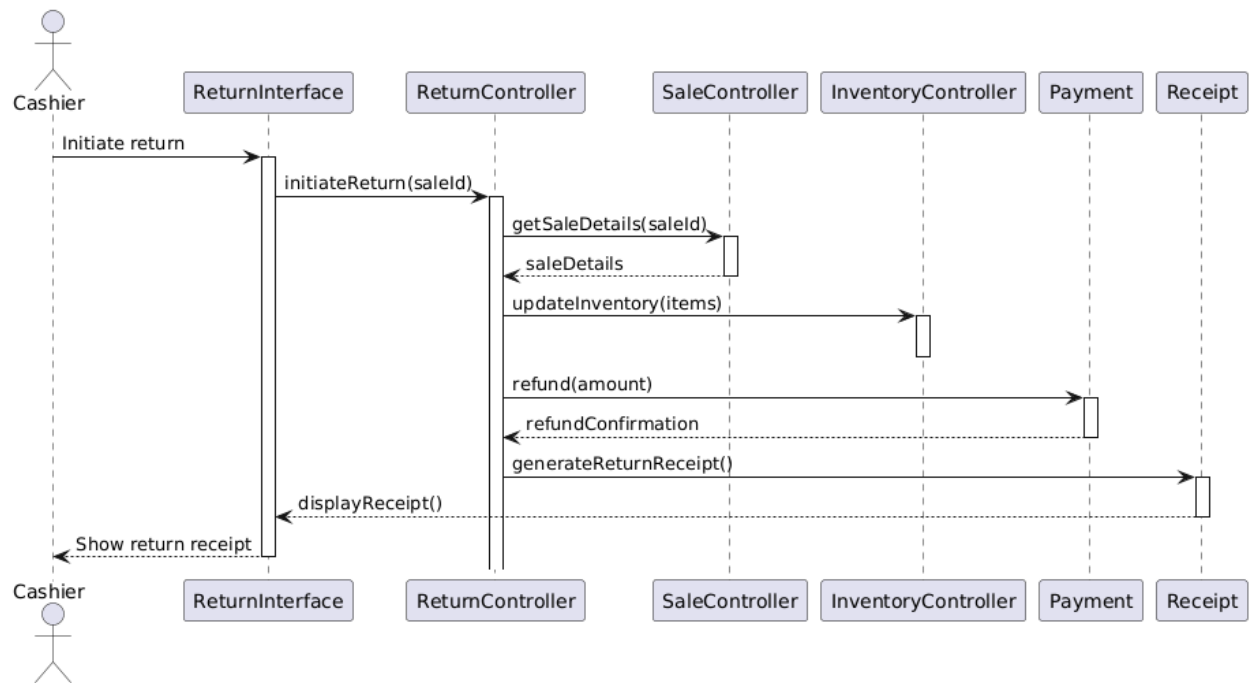
These use cases and object identifications help outline the structure and behavior of the POS system effectively.

Q-3) Develop Sequence Diagrams

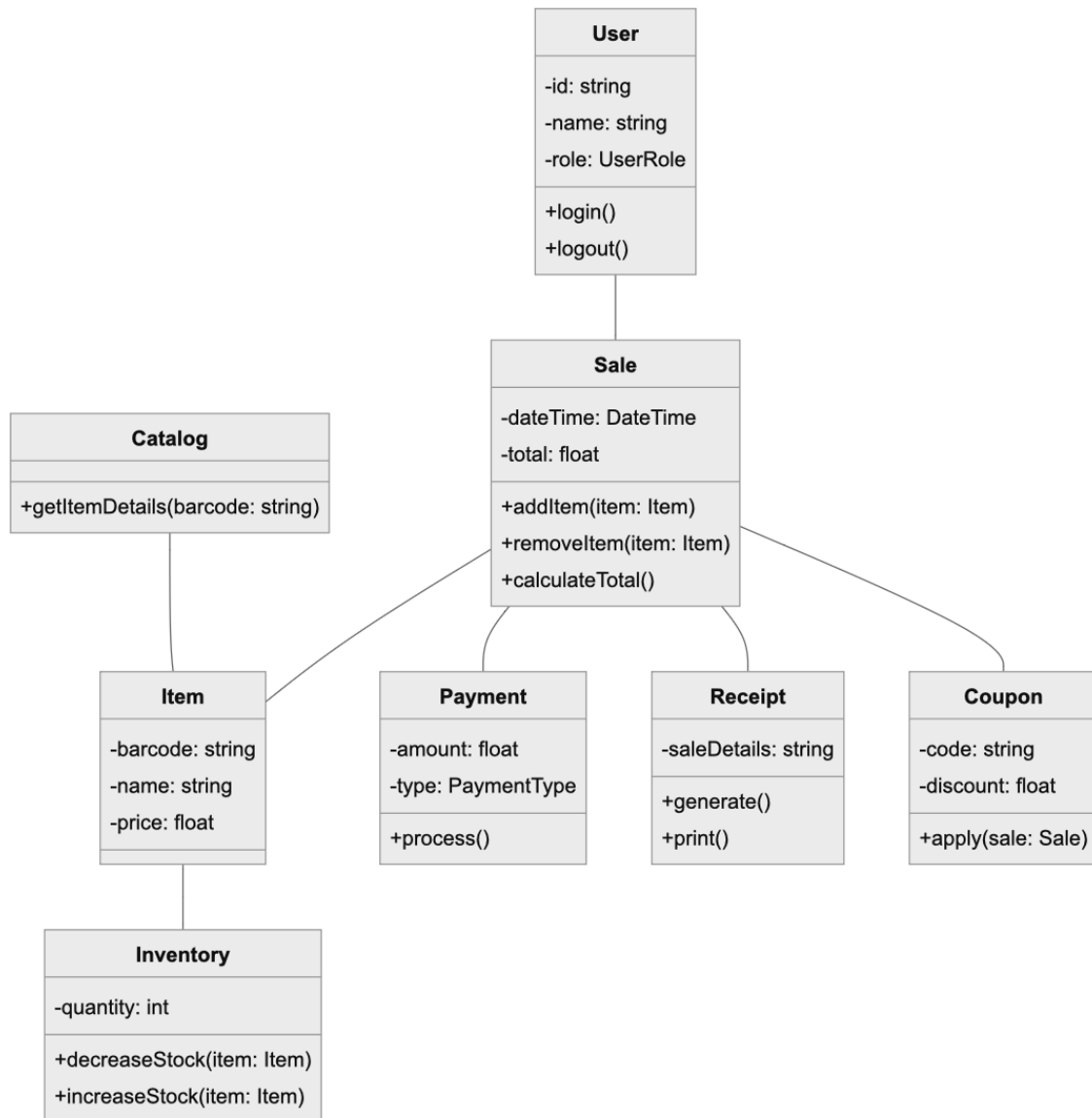
(i) process sale:



(ii) handle return:

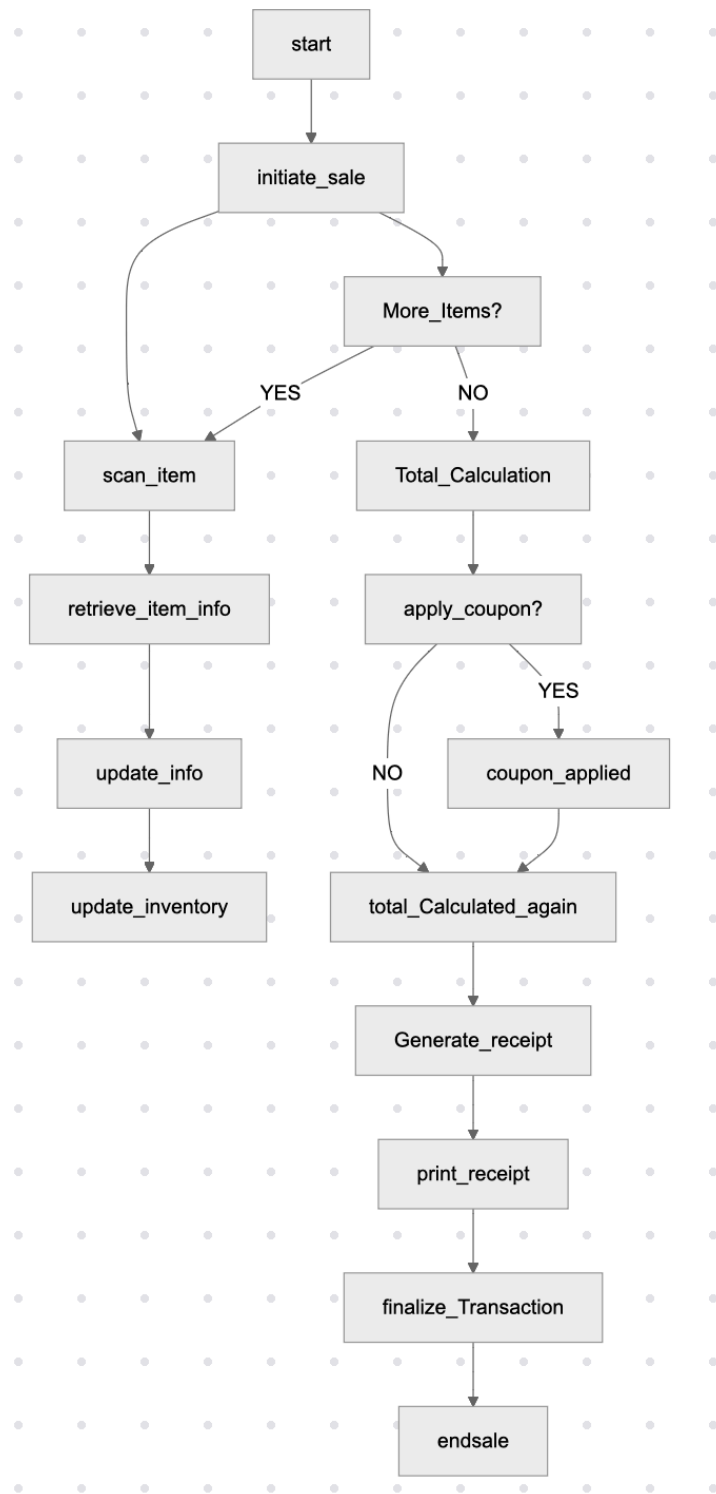


Q-4) Develop Analysis Domain Models



(Q-5) Develop activity diagram for "Process Sale" and "Handle Return" use cases:

(i) Process Sale:



(ii) Handle Return:

