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

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

Process Sale :-

Use Case ID: UC-01

Use Case Name: Process Sale

Actor: Cashier

Description: This use case describes the steps involved in completing a sales transaction when a customer purchases goods.

Precondition:

- The cashier is logged into the POS system.

Postcondition:

- The transaction is completed, payment is processed, and a receipt is printed.

Main Flow:

1. **Start Transaction:** The cashier initiates a new sale transaction in the POS system.
2. **Scan Items:**
 - The cashier scans the barcode of each item.
 - The system retrieves the item name and price from the catalog.

3. Display Item List:
 - The system updates the transaction display with the list of scanned items and the total amount due.
4. Apply Discounts/Coupons (Optional):
 - The cashier can input gift coupon codes.
 - The system calculates the new total after applying any discounts.
5. Process Payment:
 - The cashier selects the payment method (cash, credit card, or check).
 - If paying by credit card, the cashier processes the card through the terminal.
6. Complete Transaction:
 - The system confirms the payment and updates the inventory.
 - The cashier prints the receipt for the customer.
7. End Transaction: The system finalizes the transaction and returns to the idle state.

Alternate Flow:

- Invalid Barcode: If an invalid barcode is scanned:
 - The system notifies the cashier and prompts for re-entry.
- Payment Failure: If payment is not approved:
 - The system alerts the cashier, and the transaction can be cancelled or payment re-attempted.

Handle Return :-

Use Case ID: UC-02

Use Case Name: Handle Return

Actor: Cashier

Description: This use case describes the steps involved in processing a return when a customer wishes to return previously purchased items.

Precondition:

- The cashier is logged into the POS system.
- The customer has the item and, if applicable, the original receipt.

Postcondition:

- The return is processed, inventory is updated, and a receipt for the return is printed.

Main Flow:

1. Start Return Transaction: The cashier initiates a return transaction in the POS system.
2. Retrieve Original Receipt:
 - The cashier scans the original receipt or inputs the transaction ID.
 - The system retrieves details of the items purchased.
3. Scan Returned Items:
 - The cashier scans the barcode of each item being returned.
4. Validate Return:
 - The system checks if the items are eligible for return (e.g., within return period, unused condition).
5. Process Refund:
 - The system calculates the total refund amount.
 - The cashier selects the refund method (cash, credit card, or store credit).
6. Update Inventory:
 - The system updates inventory levels to reflect the returned items.
7. Print Return Receipt:
 - The cashier prints a receipt for the return transaction.
8. End Return Transaction: The system finalizes the return and returns to the idle state.

Alternate Flow:

- Item Not Eligible for Return: If the item cannot be returned:
 - The system notifies the cashier and provides the reason for ineligibility.
- Refund Failure: If the refund cannot be processed:
 - The system alerts the cashier and allows for alternative processing options.

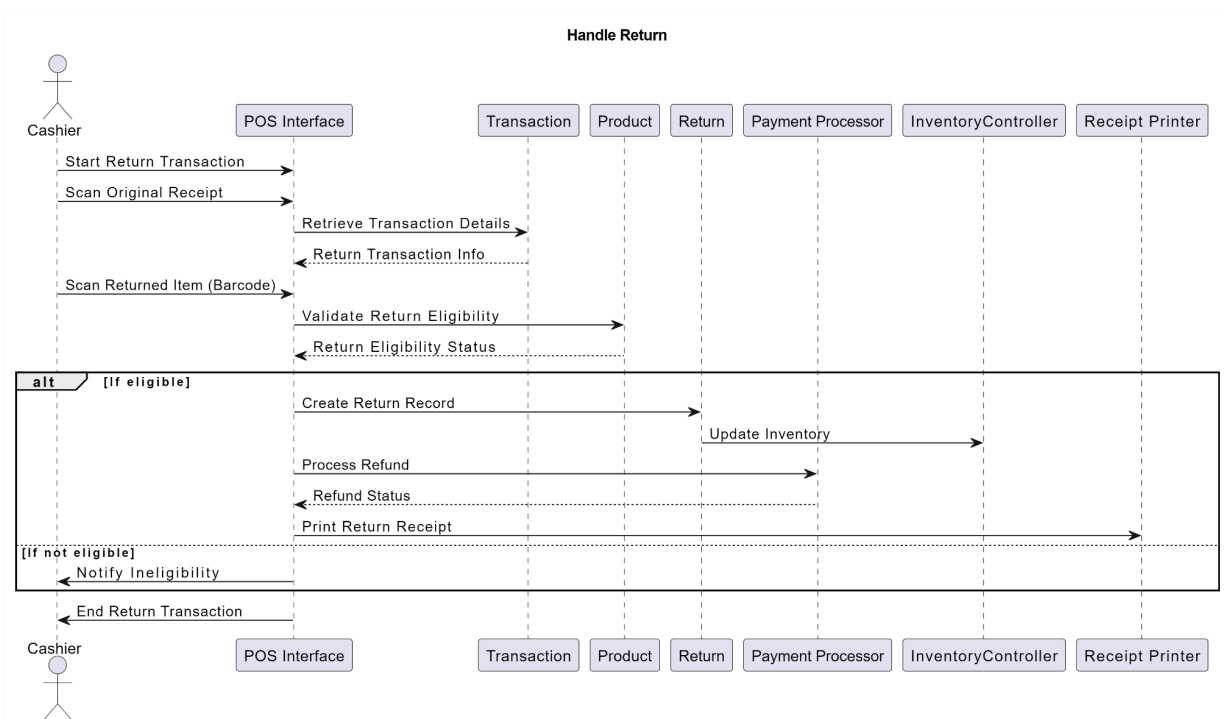
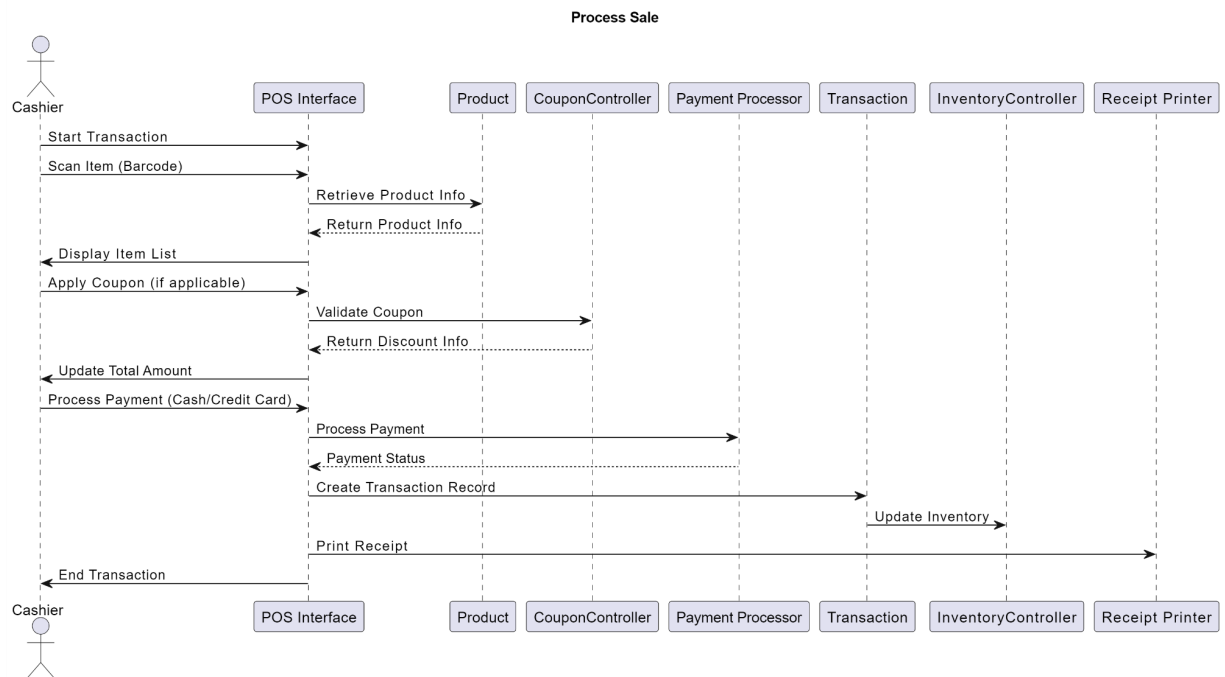
- **Identify Entity/Boundary Control Objects**

1. Entity Objects: Product, transaction, user, coupon, return

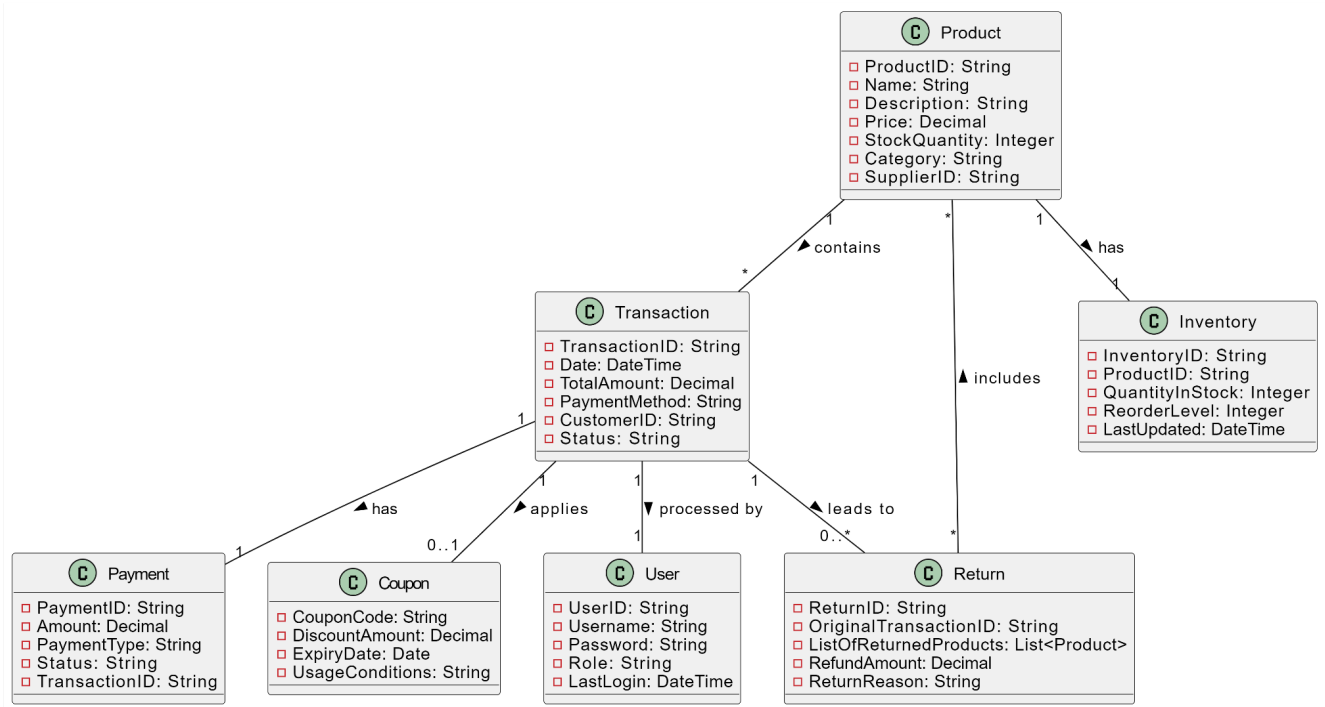
2. Boundary Objects: POS Interface, login interface, transaction Interface, Inventory, Receipt Printer, Payment Processor

3. Control Objects: TransactionController, ReturnController, CouponController, InventoryController, UserController

• Develop sequence Diagrams

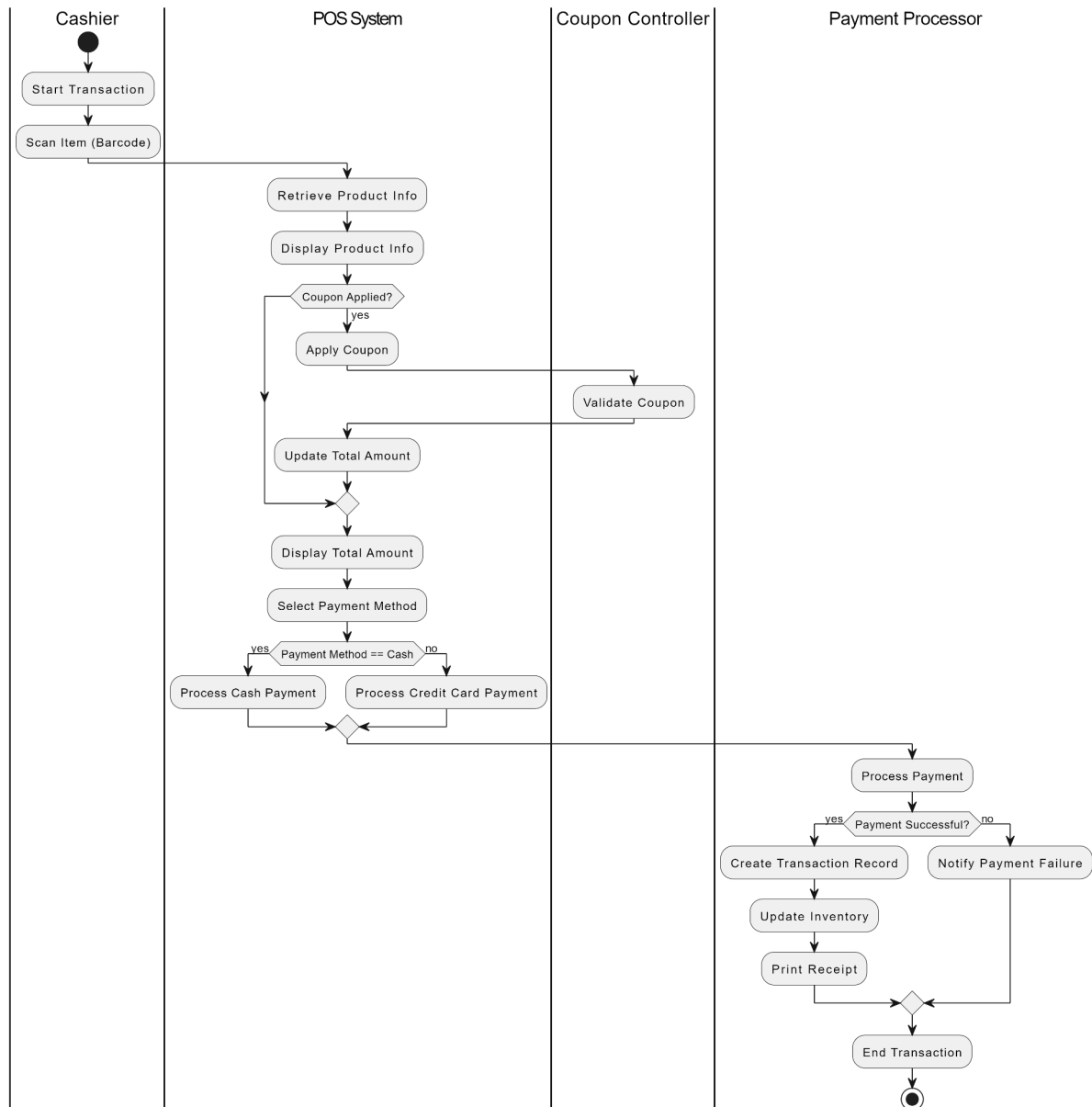


• Develop analysis domain models



- Develop activity diagrams for "Process Sale" and "Handle Return" use cases.

Process Sale



Handle Return

