IT314 : software engineering

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- ## Develop Use Case Textual Description for "Process Sale"

Process Sale
Primary Actor : Cashier
Precondition : The cashier is logged into the POS system.

Main Success Scenario:

1. The cashier scans the barcodes of the items the customer wishes to purchase.
2. The POS system retrieves the relevant item information (name and price) from the Catalog System.
3. The system calculates the total cost of all items.
4. The customer chooses a payment method, which can be either cash or credit card.
   - For cash payments, the cashier inputs the amount received, and the system calculates the change due.
   - For credit card payments, the customer's card is swiped to process the payment.
5. After the payment is successfully processed, the Inventory System updates the stock levels of the sold items.
6. A receipt is generated and printed for the customer.

Postcondition: The sale is finalized, and inventory records are updated accordingly.

Extensions:
- If a gift coupon is presented, the system reduces the total amount by the value of the coupon.

- In the event of a payment failure (such as a declined credit card), the system prompts the cashier to either retry the transaction or select a different payment option.

Handle Return

Primary Actor : Cashier
Precondition: The cashier is logged into the POS system, and the customer provides the receipt for the return.

Main Success Scenario:

1. The cashier scans the item that the customer wishes to return.
2. The system verifies the original sale by checking the receipt details in the database.
3. The system determines if the item meets the return policy eligibility.
4. The system calculates the refund amount:
   - For cash purchases, the refund is issued in cash.
   - For credit card purchases, the refund is processed back to the original credit card.
5. The Inventory System updates stock levels to account for the returned item.
6. A return receipt is generated and printed for the customer.

Postcondition: The return is successfully processed, and inventory records are updated.

Extensions:

- In cases where the receipt is lost or damaged, the system enables the cashier to search using the transaction date or ID.

- If the item does not meet the return eligibility criteria, the system notifies the cashier with an alert.

Identifying Entity, Boundary, and Control Objects

Entity Objects (representing real-world business objects and data):

- Sale
- Item
- Payment
- Customer
- Receipt
- Return
- Gift Coupon

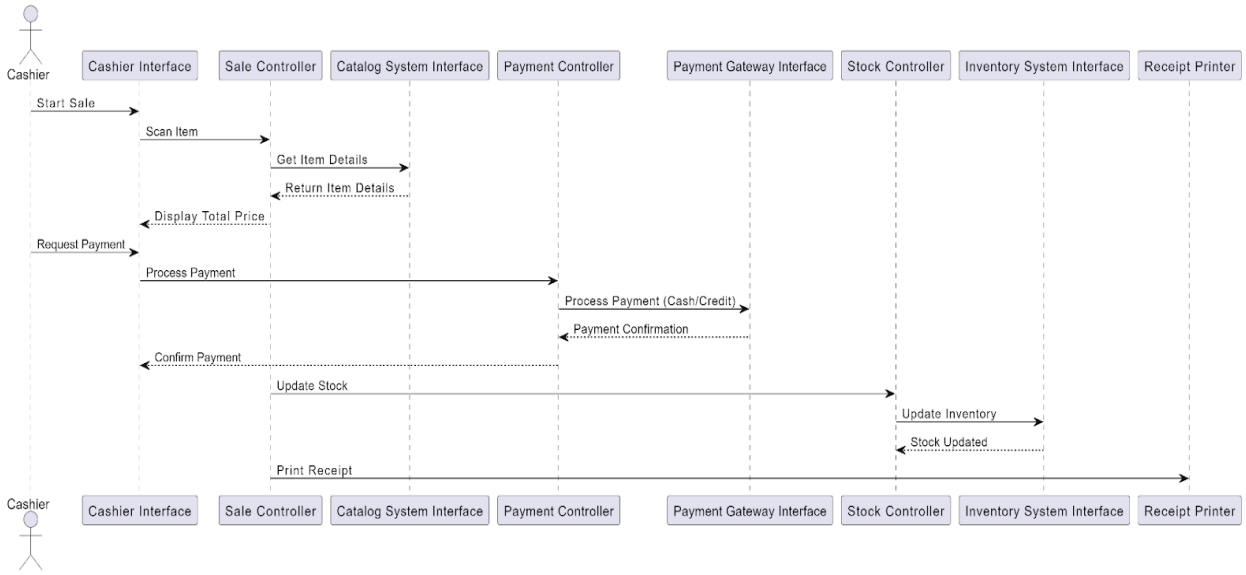
Boundary Objects (serving as the interface between actors and system):

- Cashier Interface
- Payment Gateway Interface
- Catalog System Interface
- Inventory System Interface

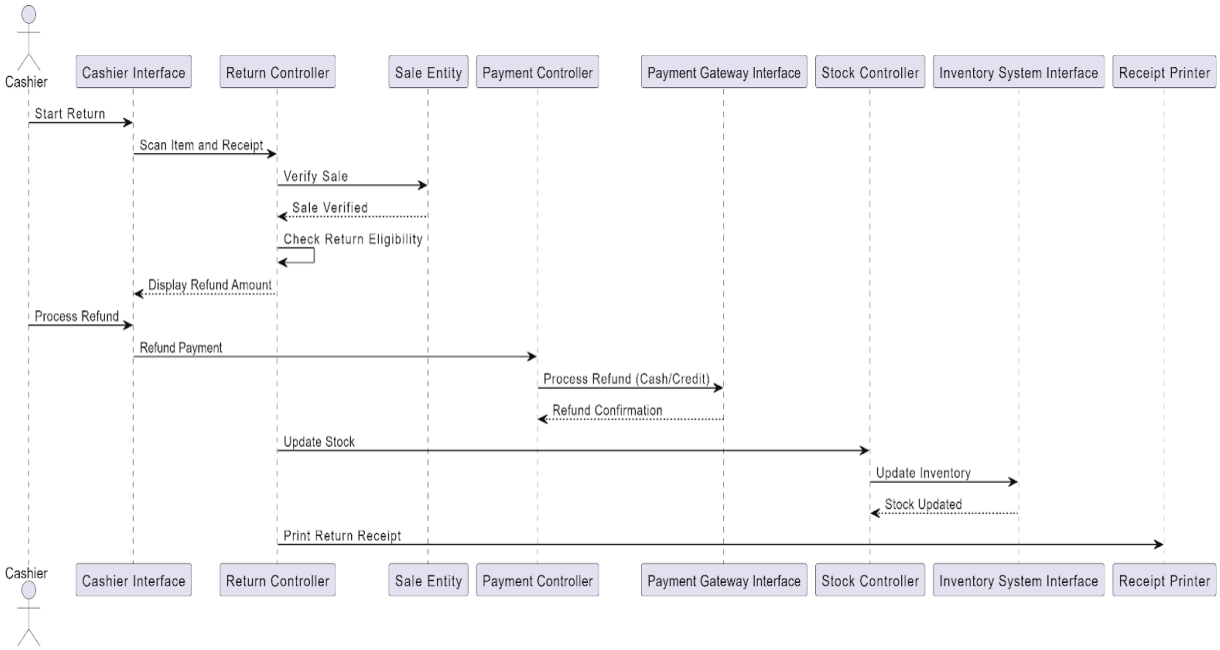
Control Objects (responsible for managing workflows of the use cases):

- SaleController (handles the logic for processing sales)
- ReturnController (manages the return process)
- PaymentController (facilitates various payment methods)
- CouponController (manages the application of coupons)
- StockController (coordinates with the Inventory System)

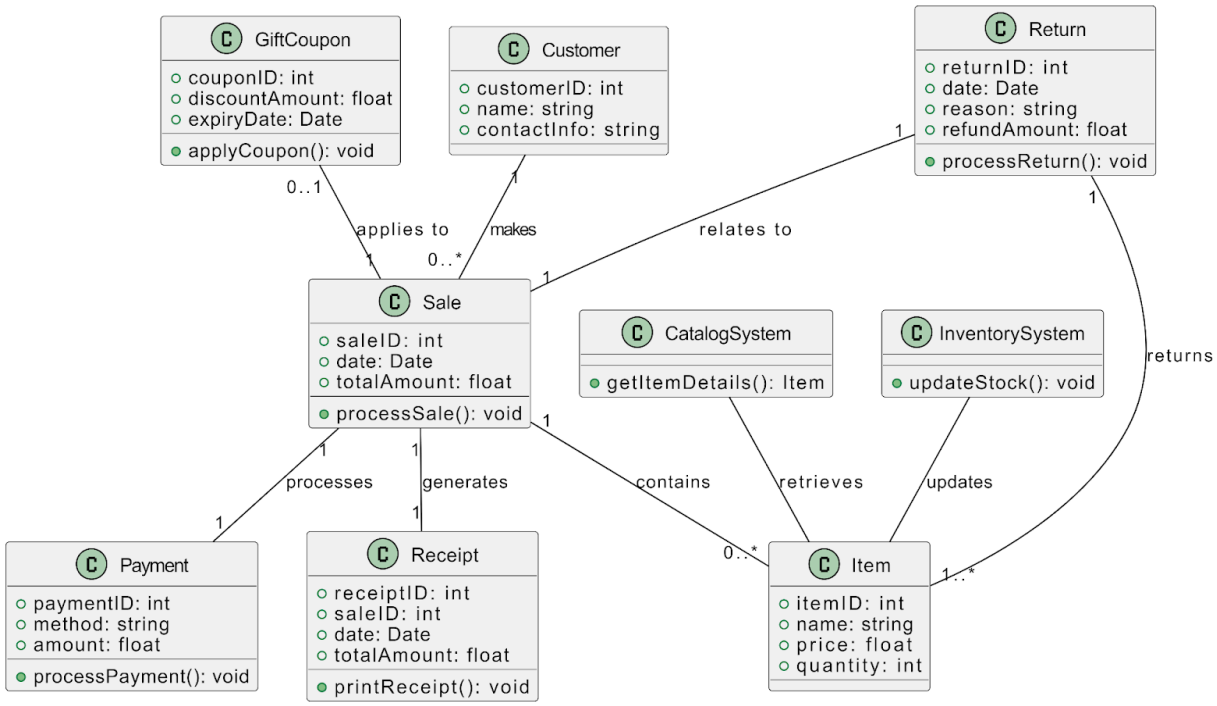
1. Process Sale Sequence Diagram



2. Handle Return Sequence Diagram

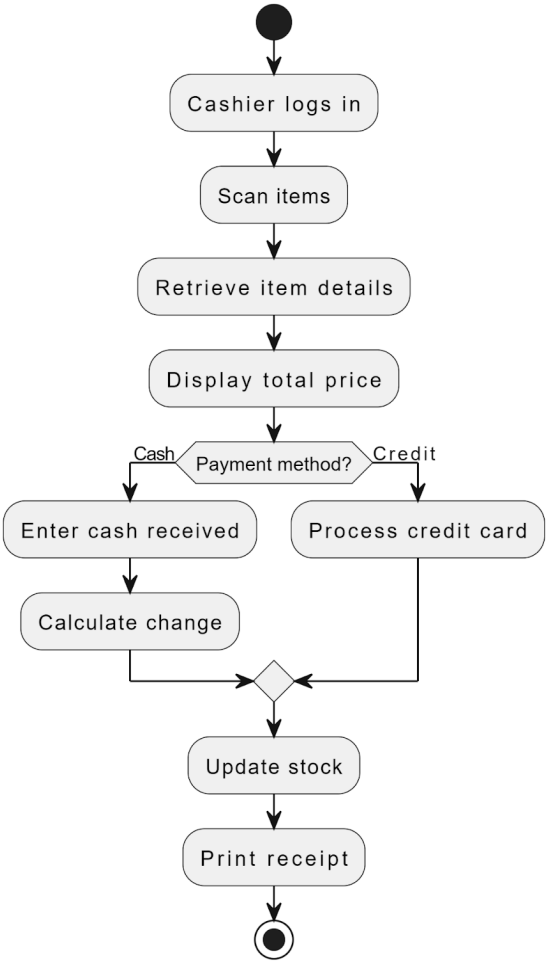


• Analysis Domain Model (Class Diagram)



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

1. Process Sale Activity Diagram:



2. Handle Return Activity Diagram: