Use Case: Process Sale

Actor:

- Cashier

Preconditions:

- Cashier is logged into the POS system.
- The POS system is connected to the backend catalog and inventory systems.
- Inventory stock is available for all items being purchased.

Main Flow:

1. The use case begins when a customer arrives at the POS counter with goods to purchase.
2. The Cashier initiates a new sale transaction in the POS system.
3. For each item:
    1. The Cashier scans the item's barcode using a barcode scanner.
    2. The system retrieves the item's name and price from the backend catalog.
    3. The system interacts with the inventory system to deduct the item's stock quantity.
    4. The system adds the item to the current transaction and updates the running total.
4. If the customer presents a gift coupon:
    1. The Cashier scans or enters the coupon code.
    2. The system verifies the validity of the coupon and applies the discount.
    3. The system recalculates the total price considering the coupon.
5. The system displays the total amount due, including taxes and discounts.
6. The Cashier informs the customer of the total amount to be paid.
7. The customer selects a payment method (cash, credit card, or check).
8. The Cashier processes the payment:
    1. For cash: The Cashier enters the amount received, and the system calculates and displays the change to be returned.
    2. For credit card: The system processes the credit card transaction through a connected card reader.
    3. For check: The Cashier enters the check details, and the system verifies the check if applicable.
9. The system confirms the payment was successful and completes the sale.
10. The system prints a receipt for the transaction.
11. The Cashier hands the receipt and purchased items to the customer.

Alternative Flows:

3a. Invalid barcode:

1. The system displays an error message indicating the barcode could not be recognized.
2. The Cashier manually enters the item code or attempts to scan the barcode again.

8a. Payment unsuccessful:

1. The system displays an error message indicating the payment has failed.
2. The Cashier requests an alternative payment method and returns to step 7.

Postconditions:

- The sale is successfully recorded in the POS system.
- The inventory is updated to reflect the sold items.
- A receipt is printed and handed to the customer.
- The payment is processed, and any relevant transaction details are stored.

Use Case: Handle Return

Actors:

- Cashier

Preconditions:

- The Cashier is logged into the POS system.
- The customer has the item(s) to be returned and the original receipt.
- The POS system is connected to the backend catalog and inventory systems.

Main Flow:

1. The use case begins when a customer arrives at the POS counter with items they wish to return.
2. The Cashier initiates a new return transaction in the POS system.
3. The Cashier requests the original receipt from the customer and scans the receipt's barcode.
4. The system retrieves the details of the original sale transaction from the backend catalog system.
5. For each item the customer wants to return:

    1. The Cashier scans the item's barcode using the barcode scanner.

2. The system verifies the item against the original transaction.

3. The Cashier inspects the item for eligibility, such as whether it is undamaged and within the return period.

4. The Cashier confirms the item's return in the POS system.

5. The system updates the inventory by adding the returned item back to stock.

6. The system calculates the total refund amount based on the items returned.
7. The Cashier informs the customer of the total refund amount.
8. The Cashier processes the refund based on the original payment method:

    1. For credit card payments: The refund is credited back to the customer's card.

    2. For cash or check payments: The Cashier issues a cash refund to the customer.

9. The system confirms that the refund has been processed successfully.
10. The system prints a return receipt.
11. The Cashier hands over the return receipt and the refund (if applicable) to the customer.

Alternative Flows:

3a. Receipt not available:

1. If the customer does not have the receipt, the Cashier searches for the original sale transaction in the POS system using other details such as the customer's name or the date of the transaction.
2. If the original transaction is found, the return process continues from step 4. If the transaction is not found, the return cannot be processed.

5a. Item not found in the original transaction:

3. The system displays an error message if the item is not found in the original transaction.
4. The Cashier informs the customer that the item cannot be returned.

5b. Item not eligible for return:

5. The Cashier inspects the item and determines it is not eligible for return (e.g., beyond the return period or damaged).
6. The Cashier informs the customer that the item cannot be returned, and the item is removed from the return transaction.

Postconditions:

- The return transaction is recorded in the POS system.
- The inventory is updated to reflect the returned items.
- A return receipt is printed for the customer.
- The refund is processed.

Entity Objects:

1. Sale
2. Item
3. Inventory
4. User
5. Payment
6. Coupon
7. Return

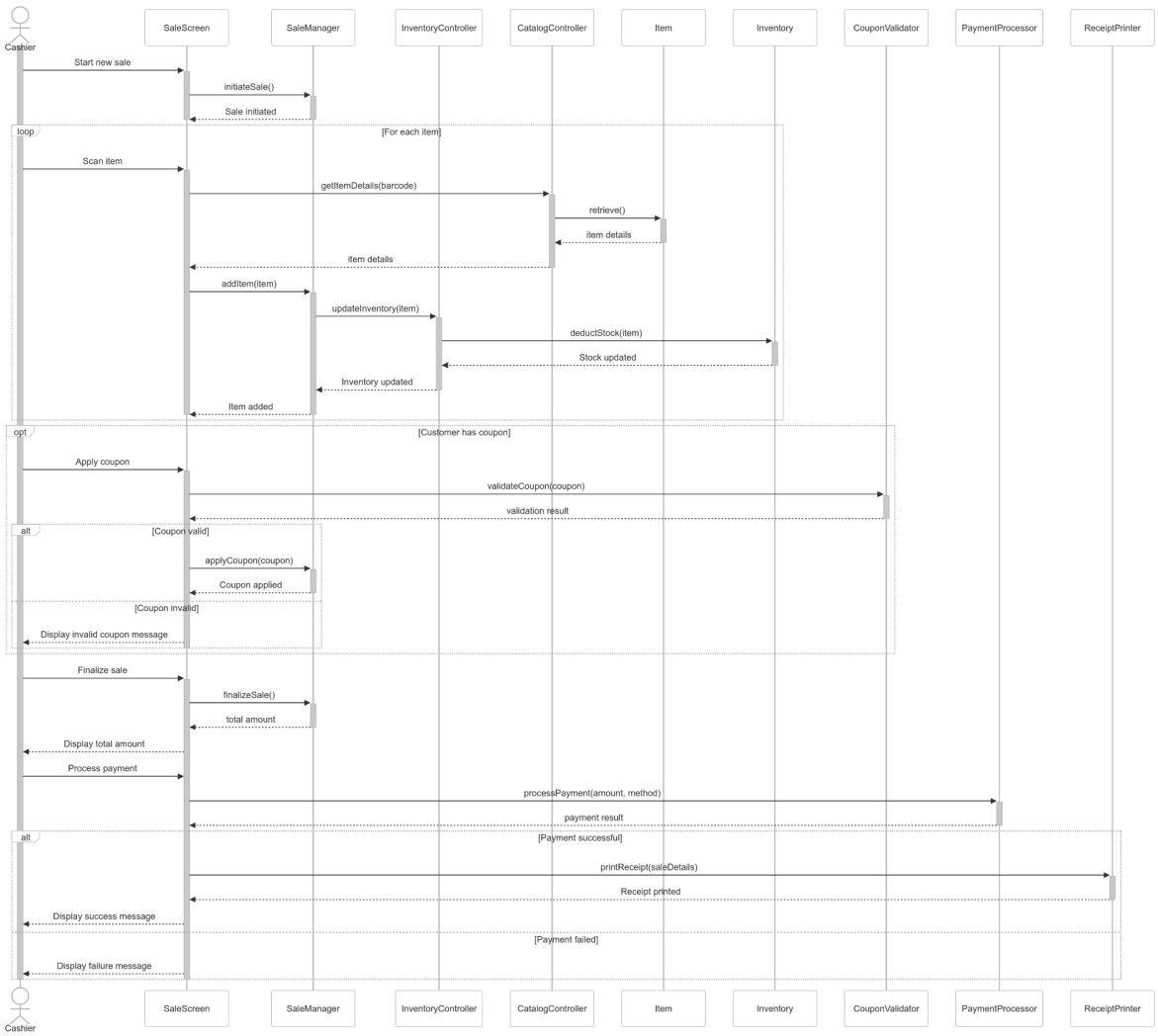
Boundary Objects:

1. LoginScreen
2. SaleScreen
3. ReturnScreen
4. InventoryScreen
5. AdminScreen
6. ReceiptPrinter
7. BarcodeScanner
8. PaymentTerminal
9. CatalogSystem
10. InventorySystem

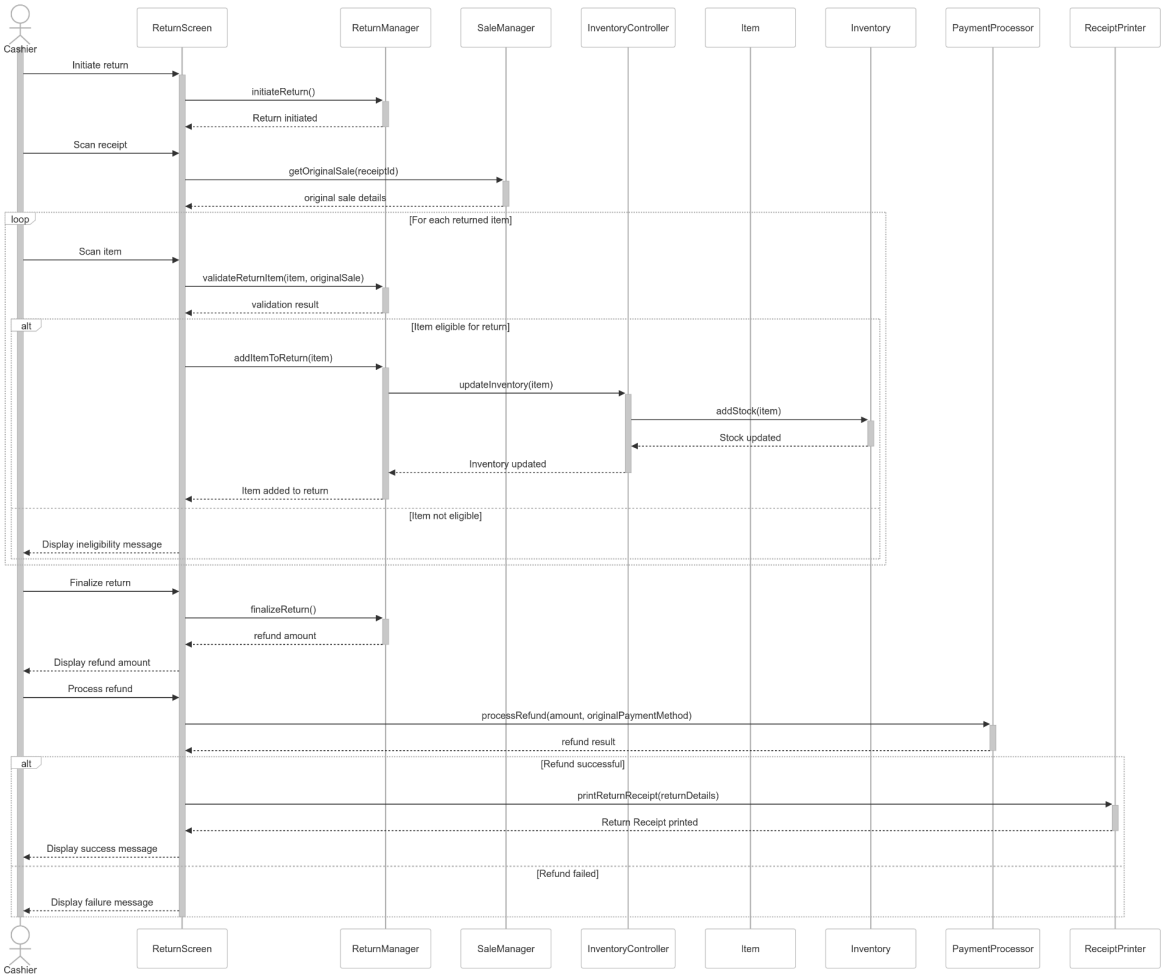
Control Objects:

1. SaleManager
2. ReturnManager
3. InventoryController
4. UserManager
5. PaymentProcessor
6. CouponValidator
7. CatalogController
8. ReportGenerator
9. SecurityManager

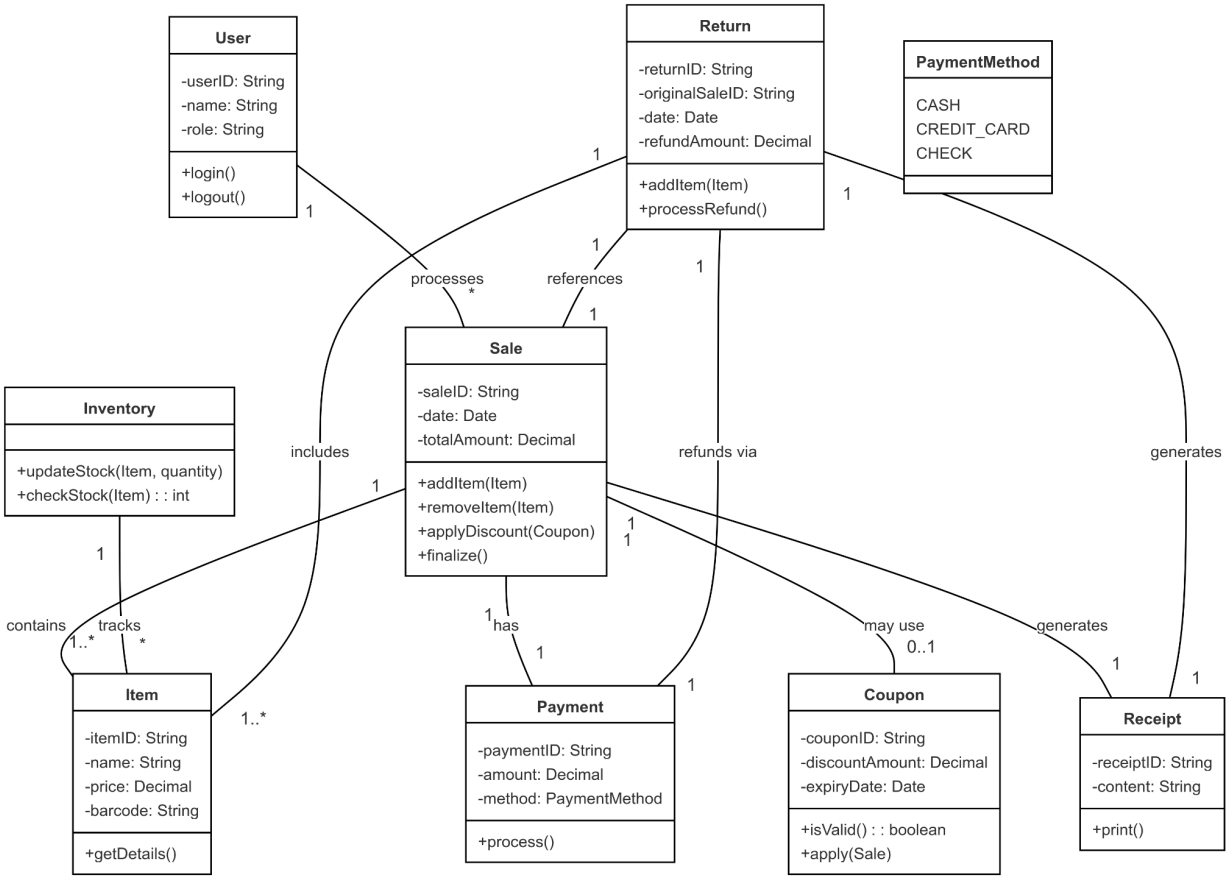
Sequence Diagrams for Process Sale Use Case:



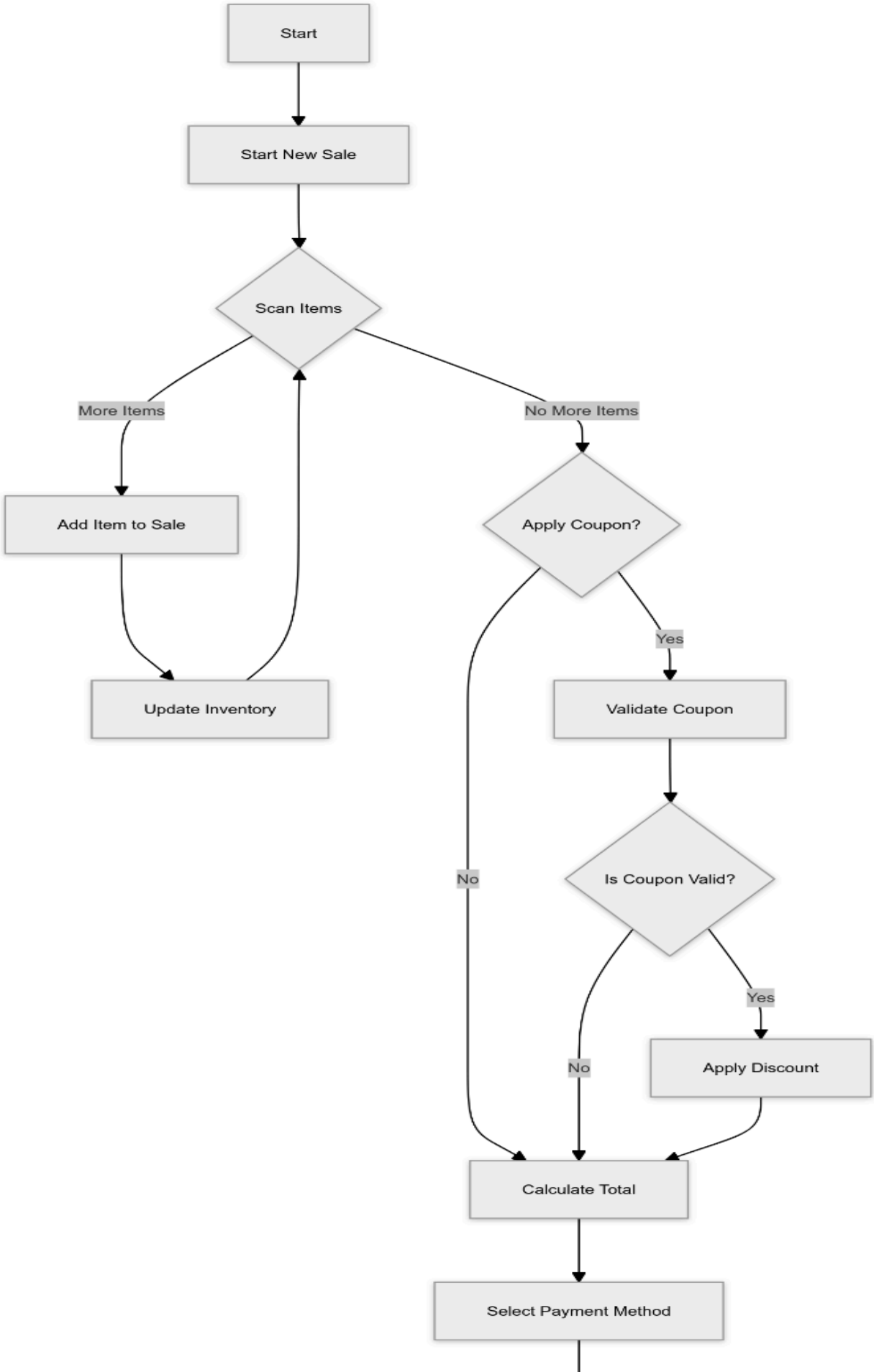
Sequence Diagrams for Handle return Use Case:



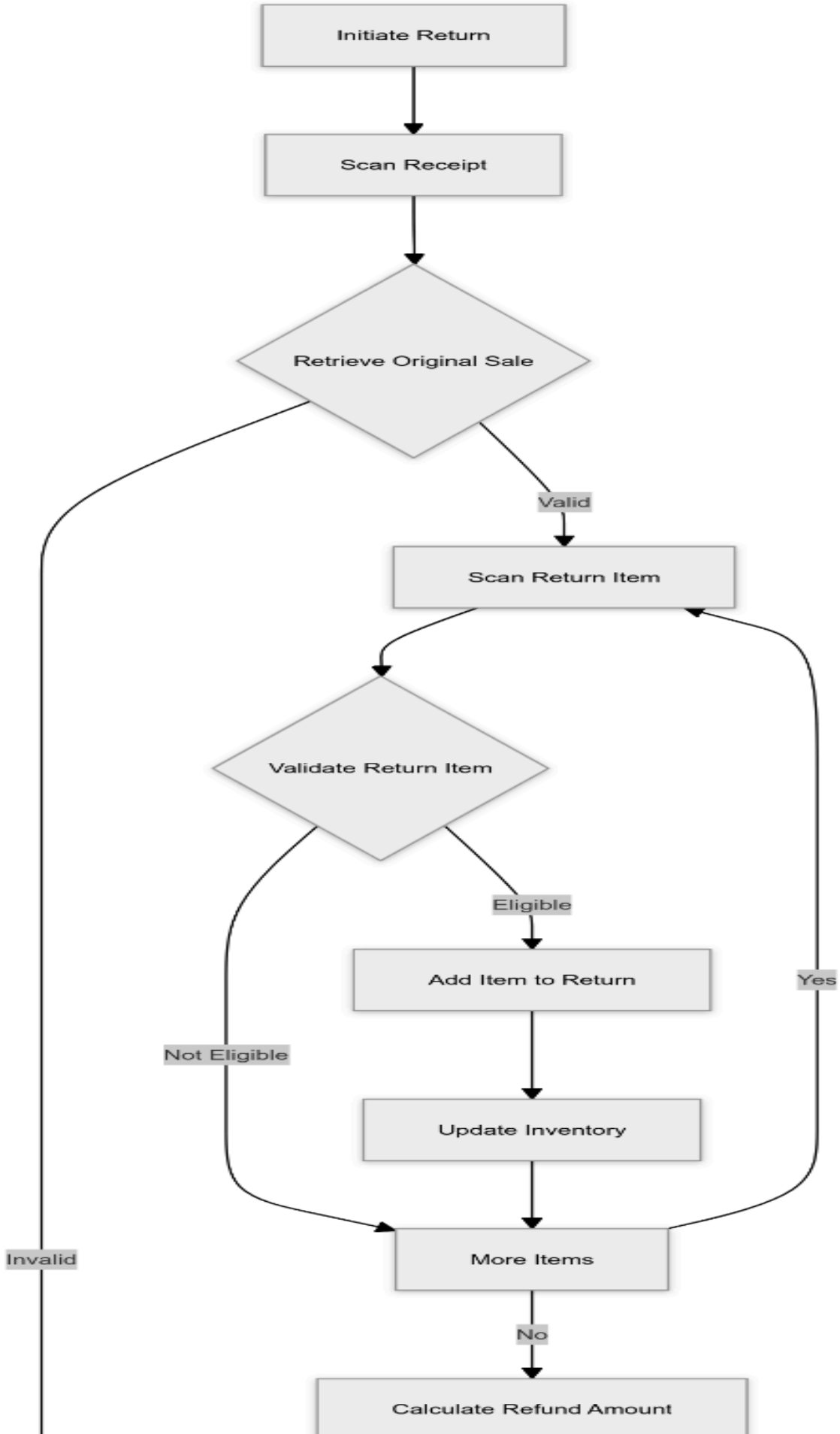
Analysis Domain Model:



Activity Diagram For Process Sale Use Case:


Start
Start New Sale
Scan Items
More Items
No More Items
Add Item to Sale
Update Inventory
Apply Coupon?
Yes
No
Validate Coupon
Is Coupon Valid?
Yes
No
Apply Discount
Calculate Total
Select Payment Method

Activity Diagram For Handle Return Use Case:


Initiate Return
Scan Receipt
Retrieve Original Sale
Valid
Invalid
Scan Return Item
Validate Return Item
Eligible
Not Eligible
Add Item to Return
Update Inventory
Yes
More Items
No
Calculate Refund Amount