Software Engineering IT-314
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Use Case: Process Sale

Primary Actor: Cashier.

Preconditions:

- The cashier must be logged into the POS system.
- The product catalog and inventory systems must be available.

Main Flow:

1. The cashier starts a new sale in the POS system.
2. The cashier scans the barcodes of the goods.
3. The POS system retrieves the product names and prices from the catalog system.
4. The system deducts the stock amounts from the inventory system for the scanned items.
5. The cashier offers the customer any applicable promotions or gift coupons.
6. The cashier finalises the total amount due and requests payment from the customer.
7. The customer provides payment (cash, credit card, or check).
8. The POS system verifies the payment.

9. The POS system prints a receipt and completes the transaction.

Extensions (Alternate Flows):

- **Product Not Found:** If a barcode is not recognized, the cashier may manually enter the product details or seek assistance.
- **Inventory Discrepancy:** If the inventory system indicates insufficient stock, the cashier may cancel the sale or offer alternatives.
- **Payment Failure:** If payment is unsuccessful, the customer can provide another form of payment.

Postconditions:

- The sale is recorded, inventory is updated, and the customer has paid for the goods.
- A receipt is printed for the customer.

Use Case: Processing a Return

Primary Actor: Cashier.

Preconditions:

- The cashier must be logged into the POS system.
- The original purchase must be recorded in the POS system.

Main Flow:

1. The customer requests to return an item.
2. The cashier locates the original purchase in the POS system using a receipt or customer details.
3. The cashier scans the item being returned.
4. The POS system verifies the return eligibility (e.g., within the return period, item condition).
5. The cashier processes the return and updates the inventory.
6. The customer is refunded via the original payment method or offered store credit.
7. The POS system prints a return receipt.

Extensions (Alternate Flows):

- **No Receipt:** If the customer does not have a receipt, the cashier may search for the transaction using other methods (e.g., customer account).
- **Ineligible Return:** If the return does not meet the store's return policy, the cashier may offer store credit or refuse the return.
- **Partial Return:** If only part of the original purchase is being returned, the POS system adjusts the refund accordingly.

Postconditions:

- The return is recorded, the inventory is updated, and the customer receives a refund or store credit.

Identify Entity/Boundary Control Objects

1. Entity Objects:

- Product
- Inventory
- Sale Transaction
- Payment
- Customer
- Receipt
- Return Transaction
- Promotion/Coupon
- User

2. Boundary Objects:

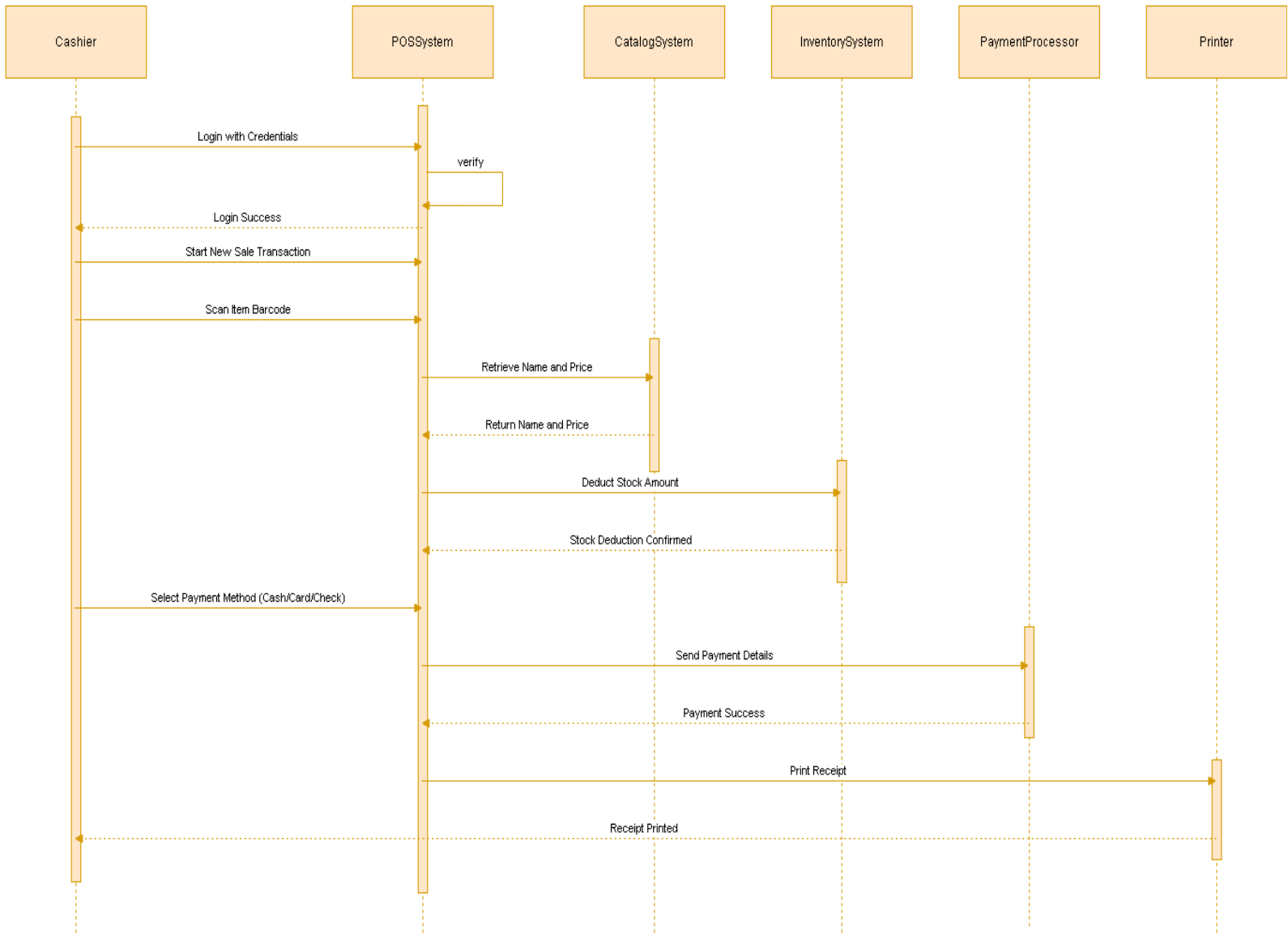
- POS Screen
- Barcode Scanner
- Payment Interface
- Receipt Printer
- Login Screen
- Return Screen
- Coupon Entry Screen

3. Control Objects:

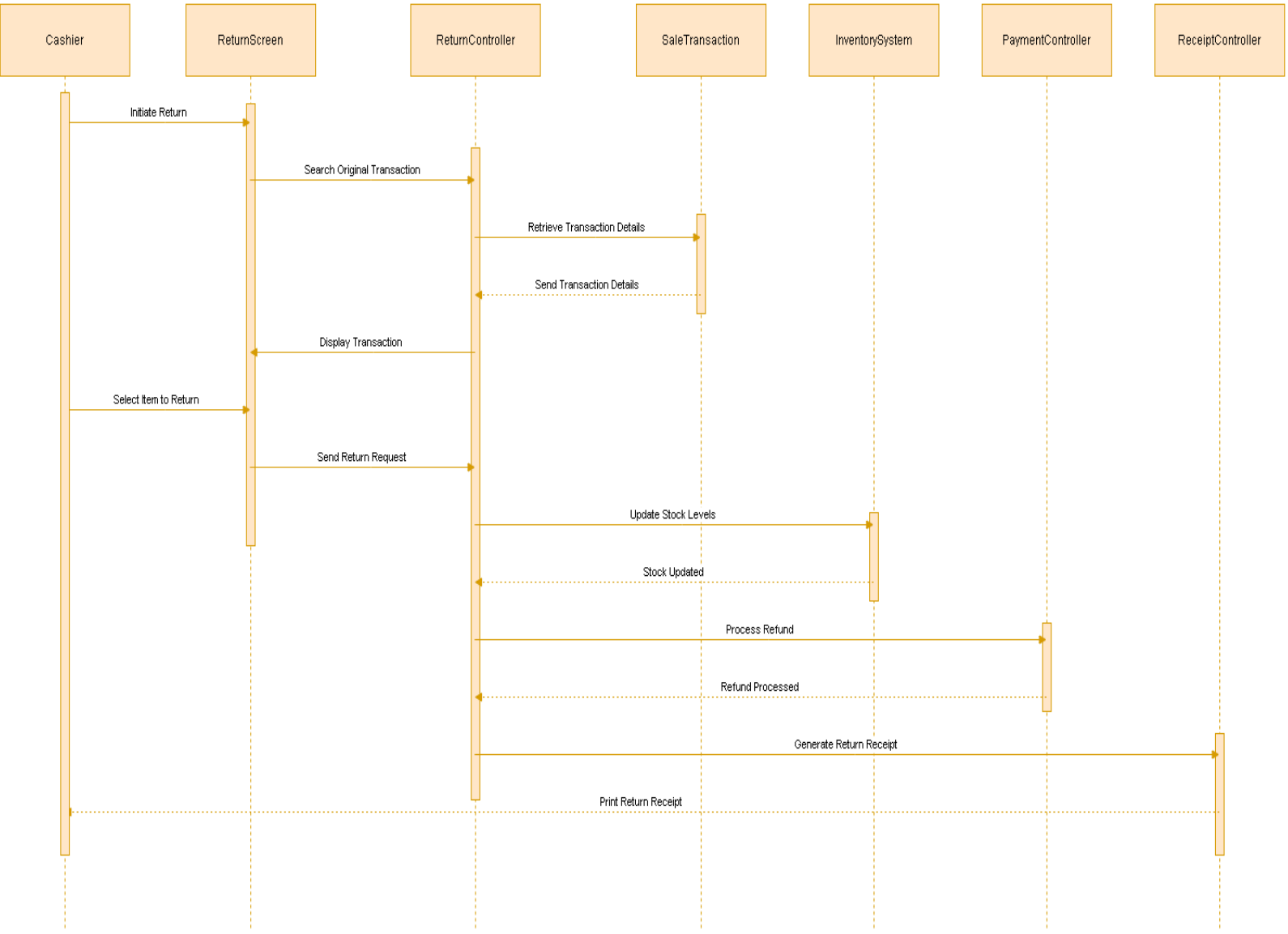
- Sale Controller
- Payment Controller
- Return Controller
- Inventory Controller

- Promotion Controller
- User Controller
- Receipt Controller
- Transaction History Controller

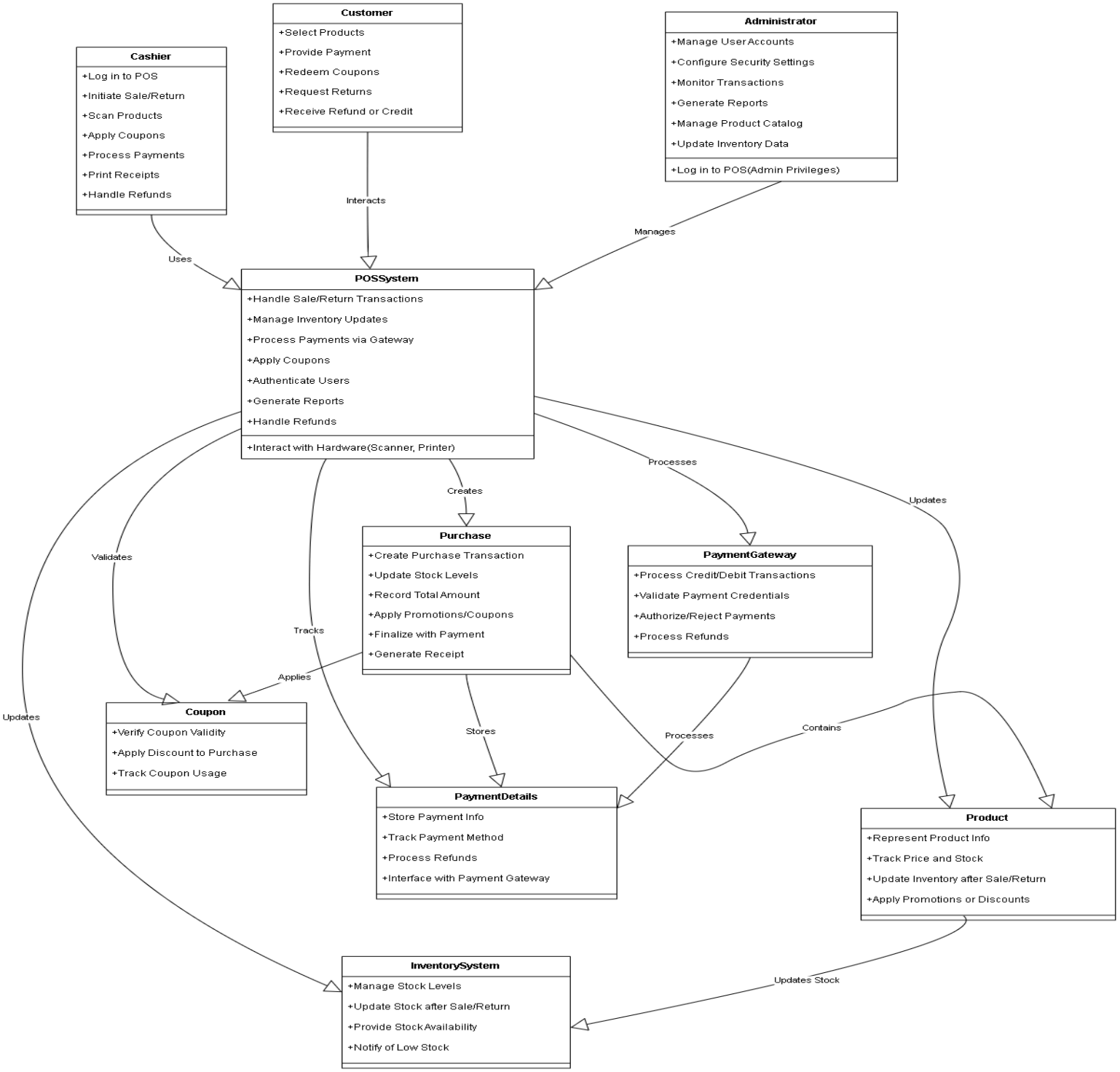
Sequence Diagram: Process Sale



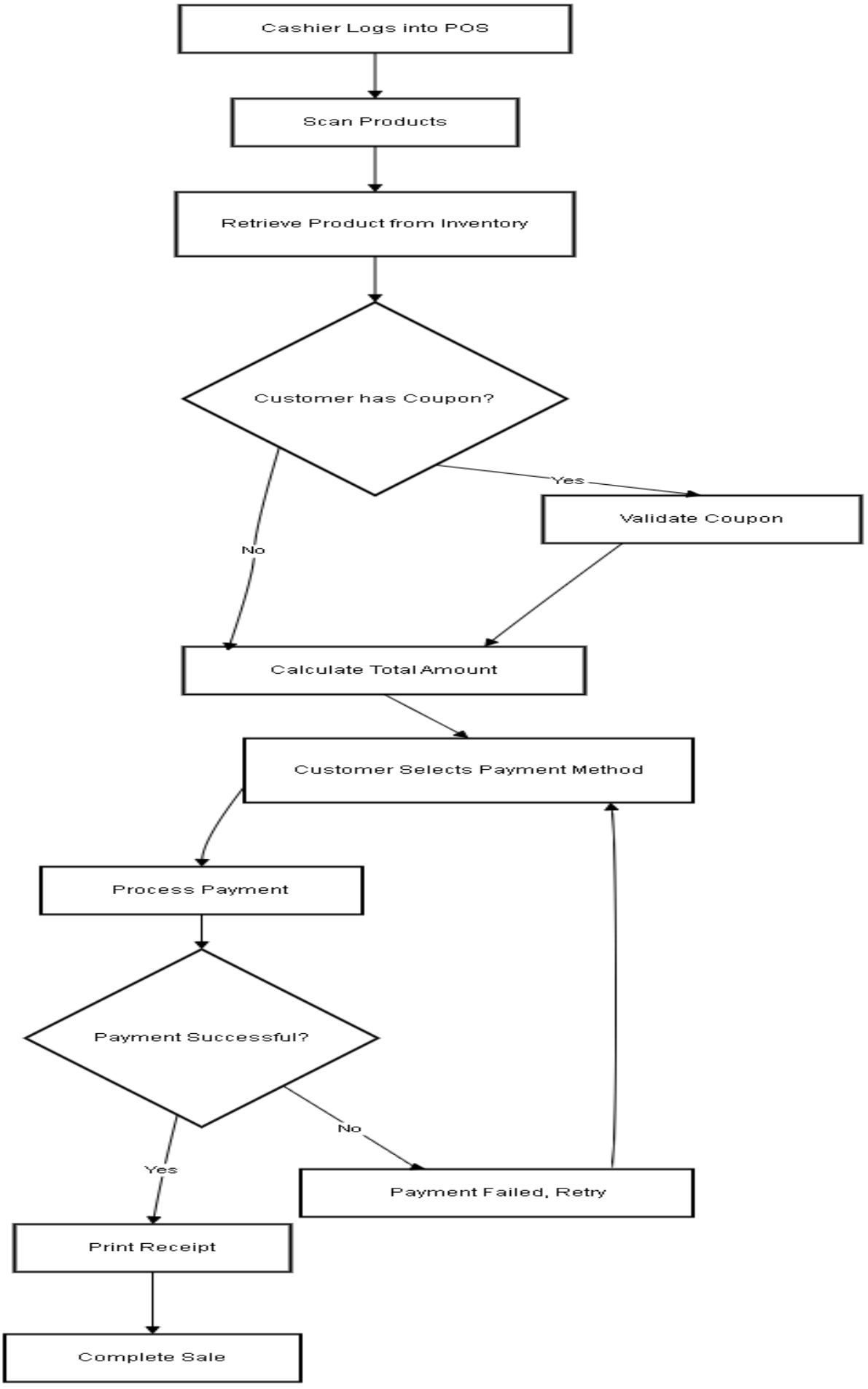
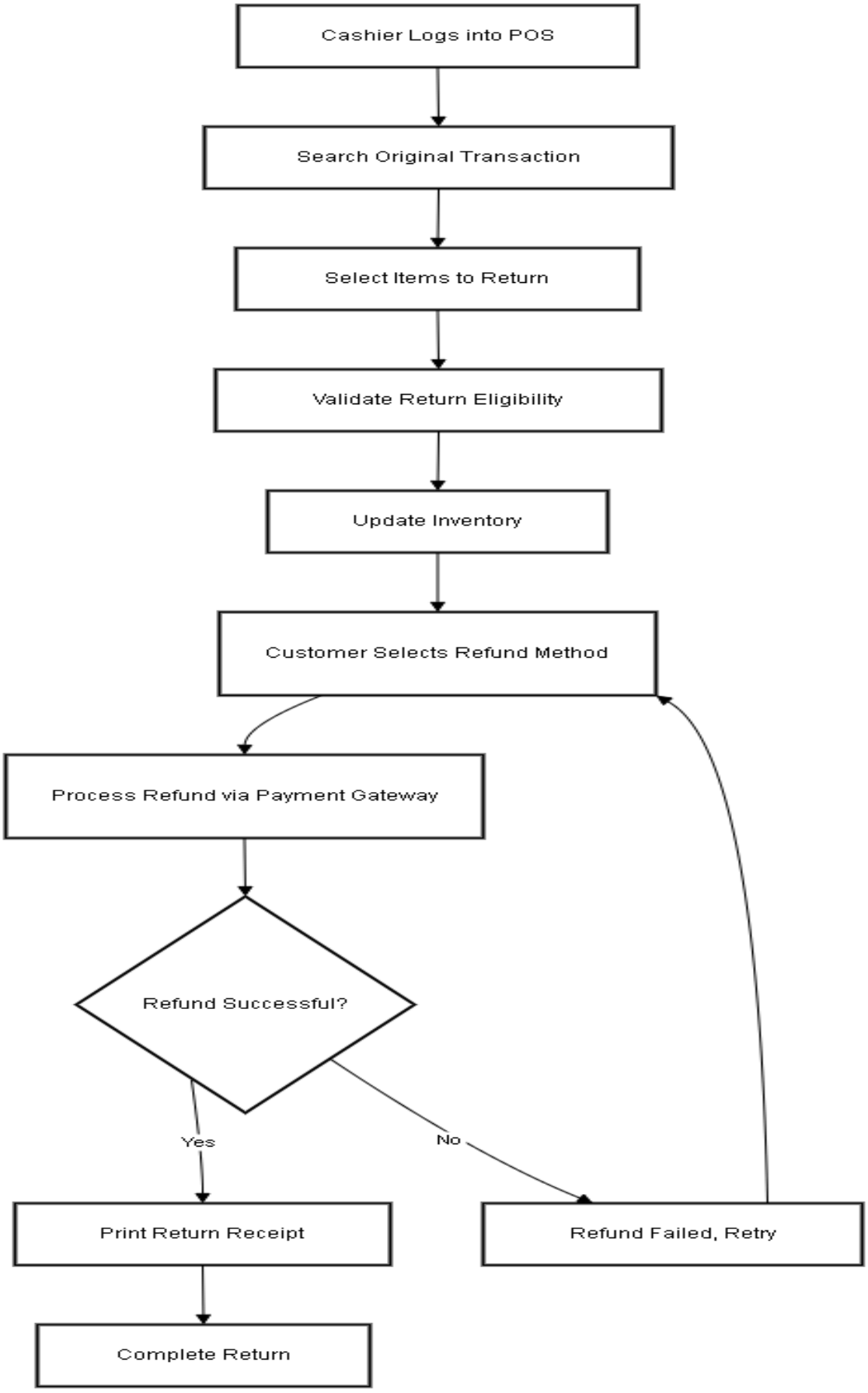
Sequence Diagram: Handle Return



Analysis Domain Model



Activity Diagram: Process Sale



Activity Diagram: Handle Return