IT - 314

Software Engineering

Lab - 6

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

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

Use Case Name: Process Sale

Primary Actor: Cashier

Secondary Actor: Customer, Inventory System, Payment System

Trigger: A customer brings items to the checkout for purchase.

Preconditions:

- The cashier must be authenticated and logged into the POS system.
- The POS system must be connected to the store’s inventory and catalog databases.

Main Flow:

1. The cashier starts a new sale transaction.
2. The cashier scans the barcode of each good.
3. The POS system retrieves the good's name and price from the catalog system.
4. The POS system communicates with the inventory system to reduce the stock of the sold goods.
5. The cashier completes the transaction by choosing the payment method (cash, credit card, check).

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6. The payment system processes the customer's payment.
7. The POS system prints a receipt.

Postconditions:

- The sale transaction is recorded in the system.
- The inventory levels are adjusted accordingly.
- A transaction receipt is issued.

Extensions (Alternative Flows):

1. If the customer uses a gift coupon, the coupon is applied for a discount.
2. If the payment fails, the cashier can retry or cancel the transaction.

Use Case Name: Handle Return

Primary Actor: Cashier

Secondary Actor: Customer, Inventory System

Trigger: A customer brings items for return

Preconditions:

- The cashier must be logged into the POS system.
- The item(s) being returned must be within the store’s return policy guidelines.

Main Flow:

1. The cashier starts a return transaction.
2. The cashier scans the barcode of the returned goods.
3. The POS system retrieves the good's name and price from the catalog system.
4. The POS system updates the inventory system to restock the returned goods.
5. The cashier processes the refund or store credit for the customer.
6. The POS system prints a return receipt.

Postconditions:

- The return is recorded, and the customer is refunded or given store credit.
- Inventory is updated to reflect the returned items.

Extensions (Alternative Flows):

1. If the returned goods are damaged or do not meet return policy, the return can be denied.
2. If the customer does not have the original receipt, the cashier may offer store credit.

Part - 2 Identify Entity/Boundary Control Objects

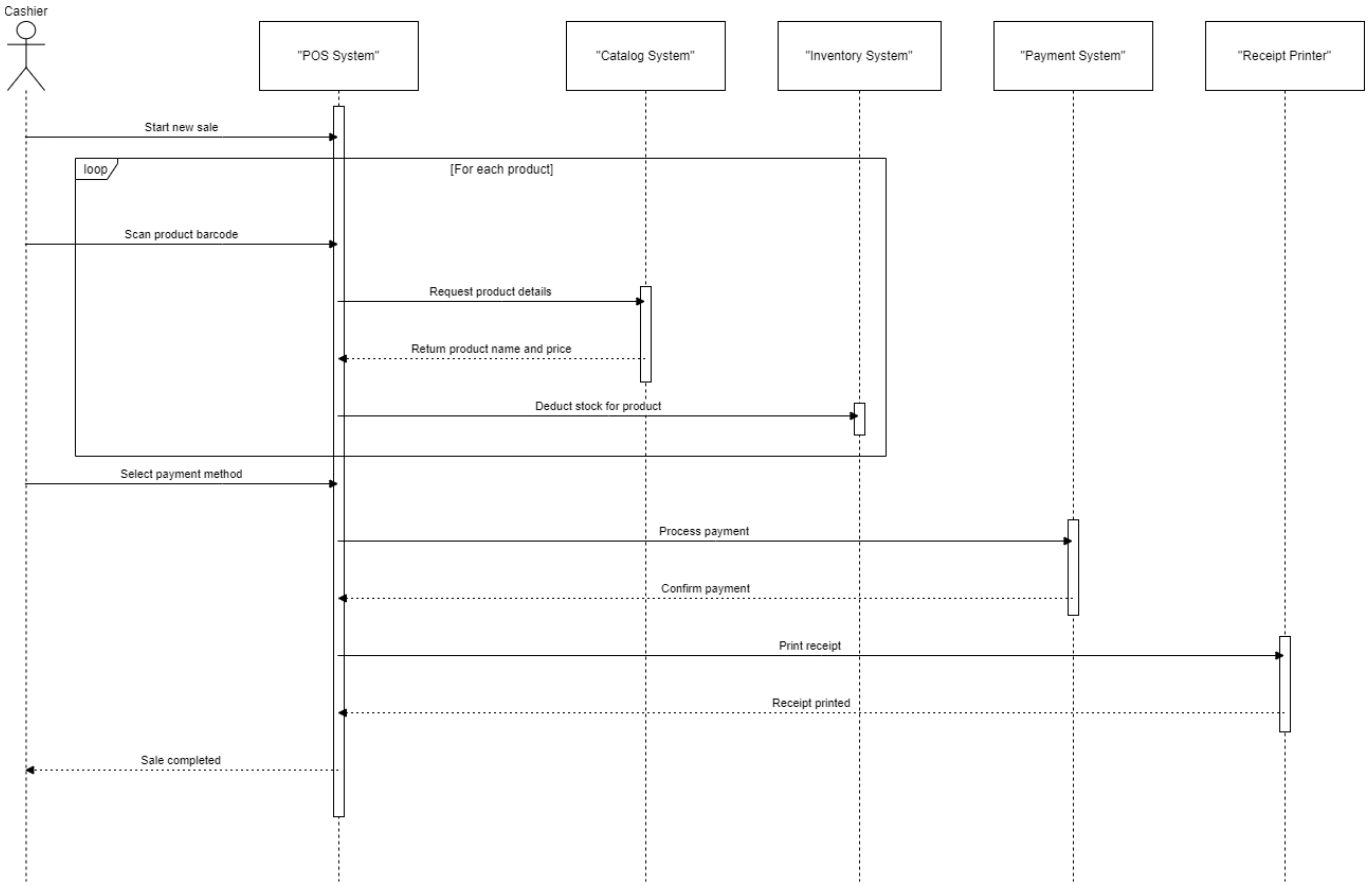
Entity Objects: Product, Sale, Return, Payment, Receipt, Coupon, Inventory

Boundary Objects: POS Interface, Barcode Scanner, Payment Terminal, Receipt Printer.

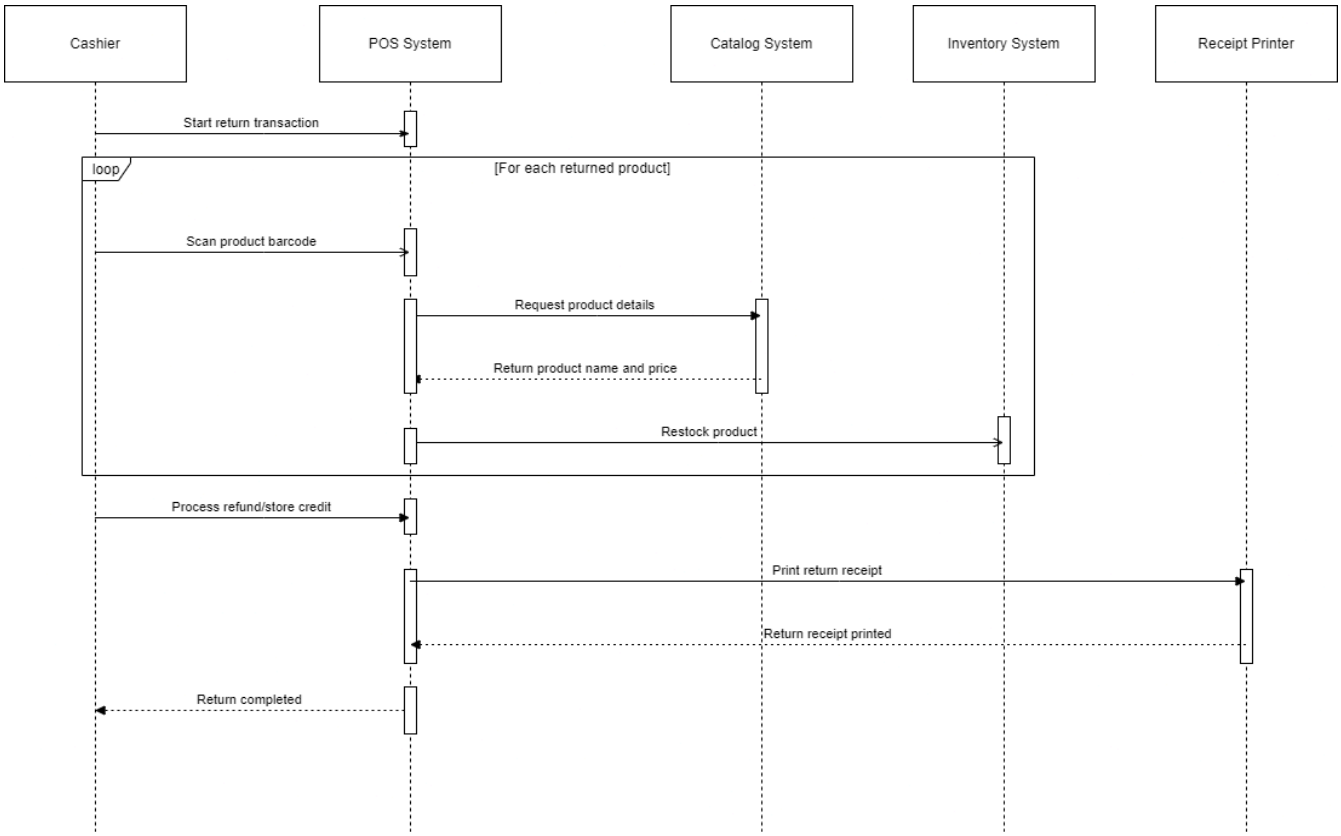
Control Objects: Process Sale Controller, Handle Return Controller, Payment Gateway, Inventory Updater

Part - 3 Sequence Diagram

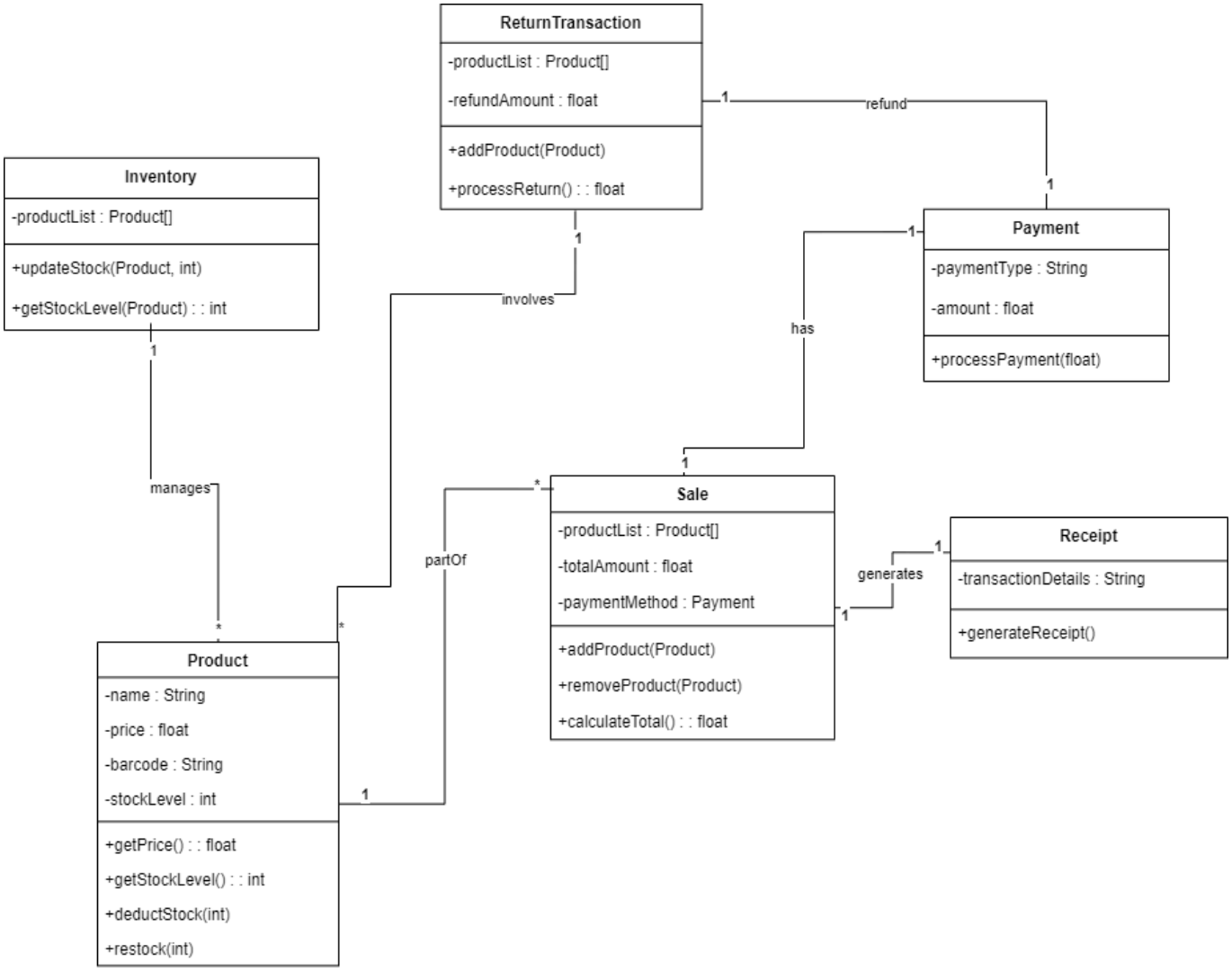
Process Sale



Handle Return

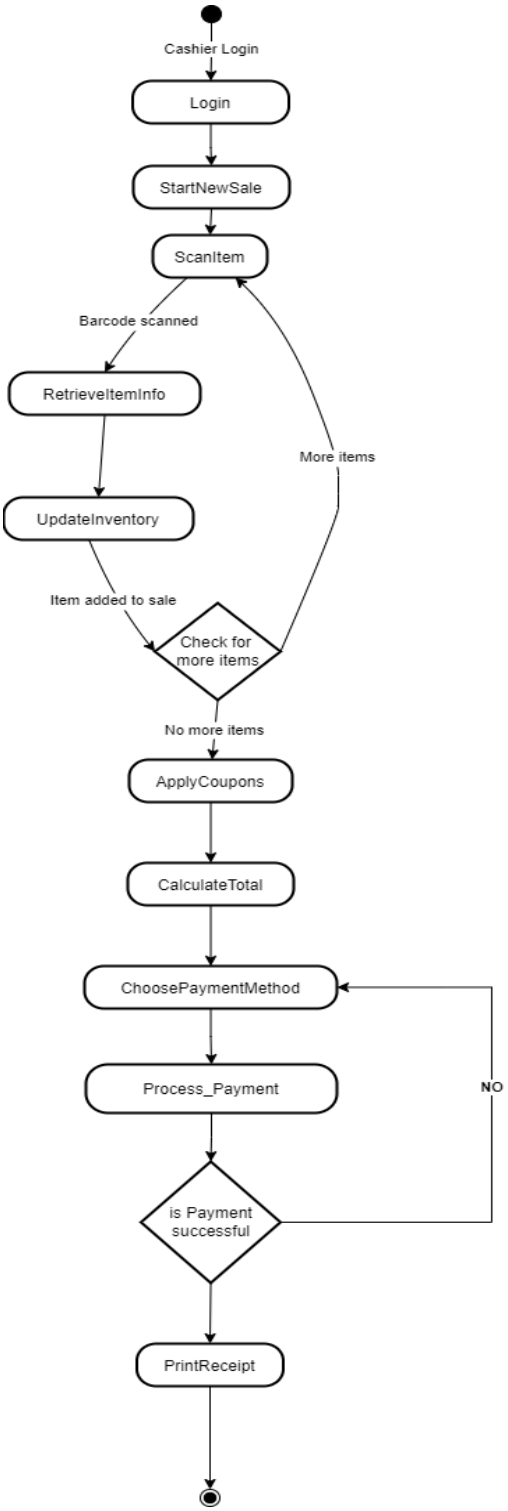
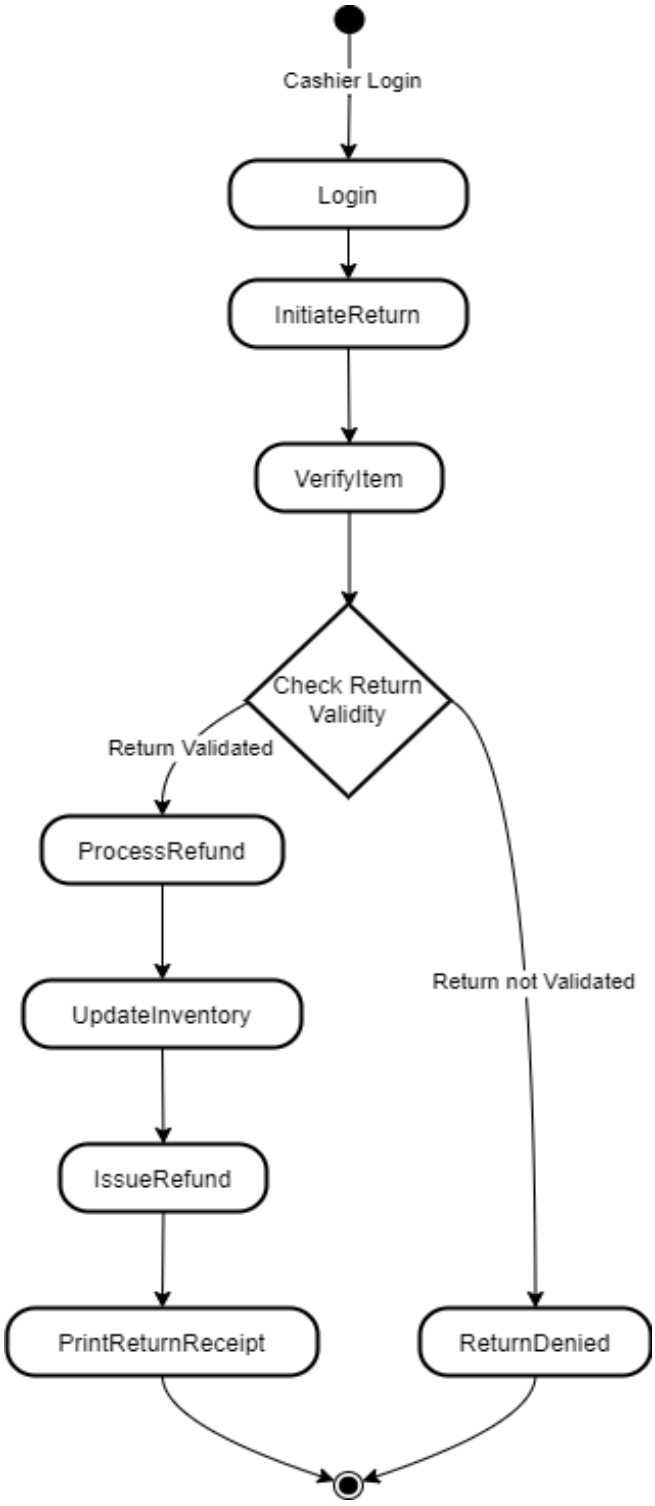


Part - 4 Class Diagram



Part - 5 Activity Diagram

Process Sale



Handle Return