



IT 314 - Lab Assignment

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

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1. Use Case Textual Descriptions:

Use case : Process sale

Actor:

- Cashier

Precondition:

- The cashier is logged into the POS system.
- The POS system is connected to the inventory and catalog system.
- The customer has selected items for purchase.

Main Flow:

1. The cashier initiates a new sale transaction.
2. The cashier scans the barcode of each item.
3. The POS system retrieves the name and price of each item from the catalog.
4. The inventory system updates the stock by deducting the quantity of each item sold.
5. The cashier completes the item scan and reviews the total price.
6. The customer applies any coupons or discounts, if available.
7. The customer selects a payment method (cash, credit card, or check).
8. The cashier processes the payment through the POS system.
9. Upon successful payment, a receipt is printed and handed to the customer.

Postcondition:

- The sale transaction is recorded in the system.
- The inventory is updated to reflect the sale.
- The receipt is printed, and the payment is processed.

Use case : Handle Return

Actor:

- Cashier

Precondition:

- The cashier is logged into the POS system.
- The customer has a receipt or details of the original sale transaction.
- The item is eligible for return based on store policy.

Main Flow:

1. The cashier initiates a return transaction in the POS system.
2. The cashier scans or selects the item to be returned.
3. The POS system retrieves the original sale information (price, transaction ID, and receipt details).
4. The inventory system updates the stock by adding the returned item back to inventory.
5. The cashier processes the refund via the original payment method (cash, credit card, or store credit).
6. The system prints a return receipt, and the cashier hands it to the customer.

Postcondition:

- The return transaction is recorded in the system.
- The inventory is updated to reflect the returned item.
- The customer receives a refund, and a return receipt is printed.

2. Identify Entity/Boundary Control Objects :

Process Sale :

Entity Objects:

- **Product:** Represents the items being purchased, containing details like name, price, and stock quantity.
- **Inventory:** Tracks stock levels and updates the available quantity when a sale is made.
- **Sale Transaction:** Captures all details related to the sale (items, prices, discounts, and payment).
- **Payment:** Represents the payment made by the customer (cash, credit card, or check).
- **Customer:** The person purchasing the goods.

Boundary Objects:

- **Barcode Scanner:** Used by the cashier to scan the product's barcode.
- **POS Screen:** Interface that the cashier interacts with to initiate the sale, display products, and process payments.
- **Payment Terminal:** Device that handles the customer's payment (e.g., for credit card payments).
- **Receipt Printer:** Prints the receipt after the transaction is complete.

Control Objects:

- **Sale Processor:** Manages the overall sale transaction, including item scanning, discount application, and total calculation.
- **Payment Handler:** Ensures the customer's payment is processed correctly (cash, credit card, or check).
- **Discount/Coupon Manager:** Applies discounts or promotions based on the customer's coupons.
- **Inventory Manager:** Updates inventory levels by deducting the quantities of items sold.

Handle Return :

Entity Objects:

- **Product:** The item being returned, with information about its name, price, and quantity.
- **Inventory:** Tracks stock levels and updates when an item is returned and added back to inventory.
- **Return Transaction:** Stores information about the return, including the item(s) returned and the refund processed.
- **Refund:** Represents the amount of money being refunded to the customer via the original payment method.
- **Customer:** The person returning the product.

Boundary Objects:

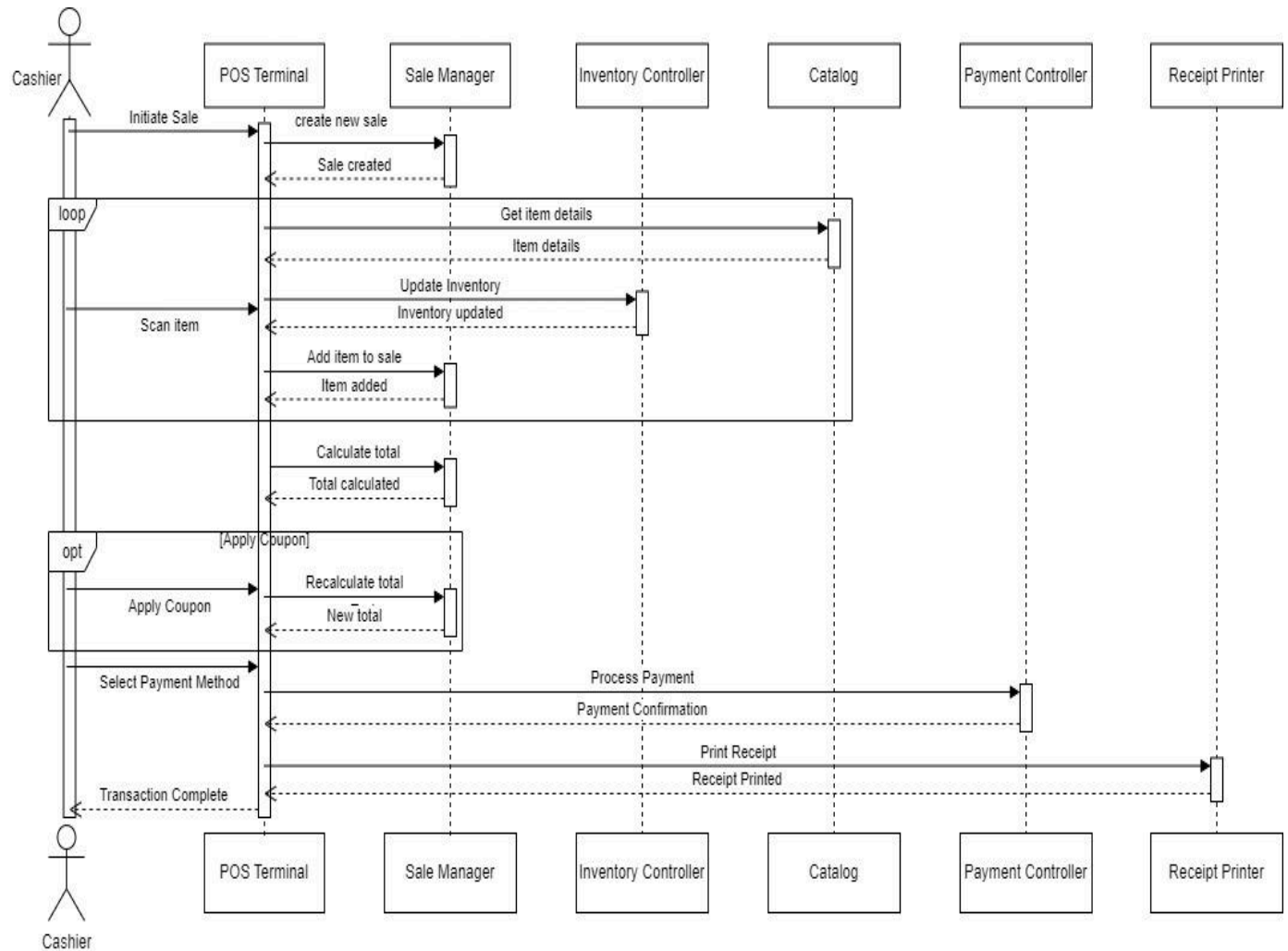
- **Barcode Scanner:** Used by the cashier to scan the returned product.
- **POS Screen:** Interface used by the cashier to initiate and complete the return process.
- **Payment Terminal:** Handles refunds for credit card payments.
- **Receipt Printer:** Prints the return receipt for the customer.

Control Objects:

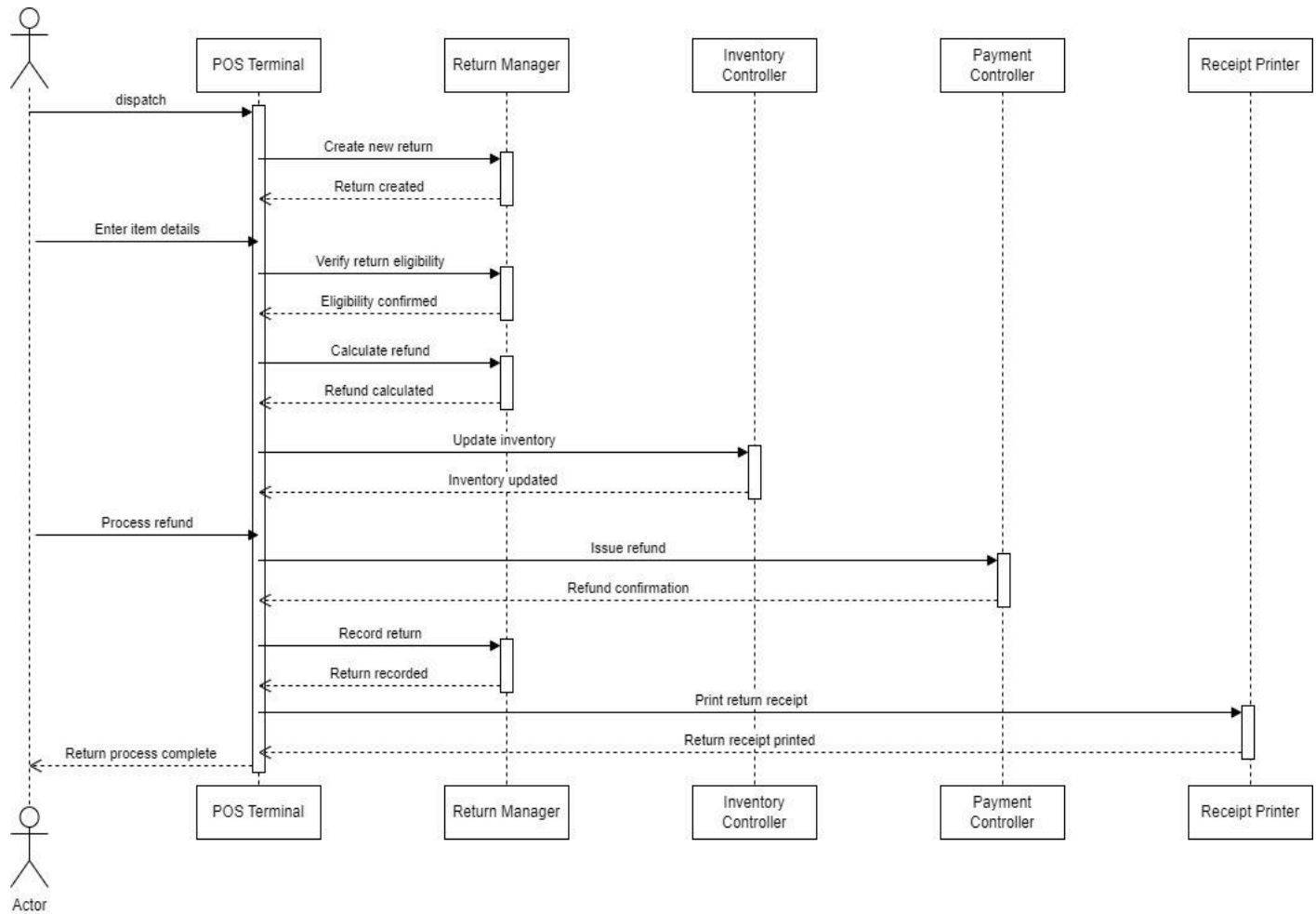
- **Return Processor:** Manages the return transaction, including item verification and refund calculation.
- **Refund Handler:** Ensures the correct refund amount is processed via the appropriate payment method.
- **Inventory Manager:** Updates the inventory to reflect the returned item being added back into stock.

Sequence Diagrams :

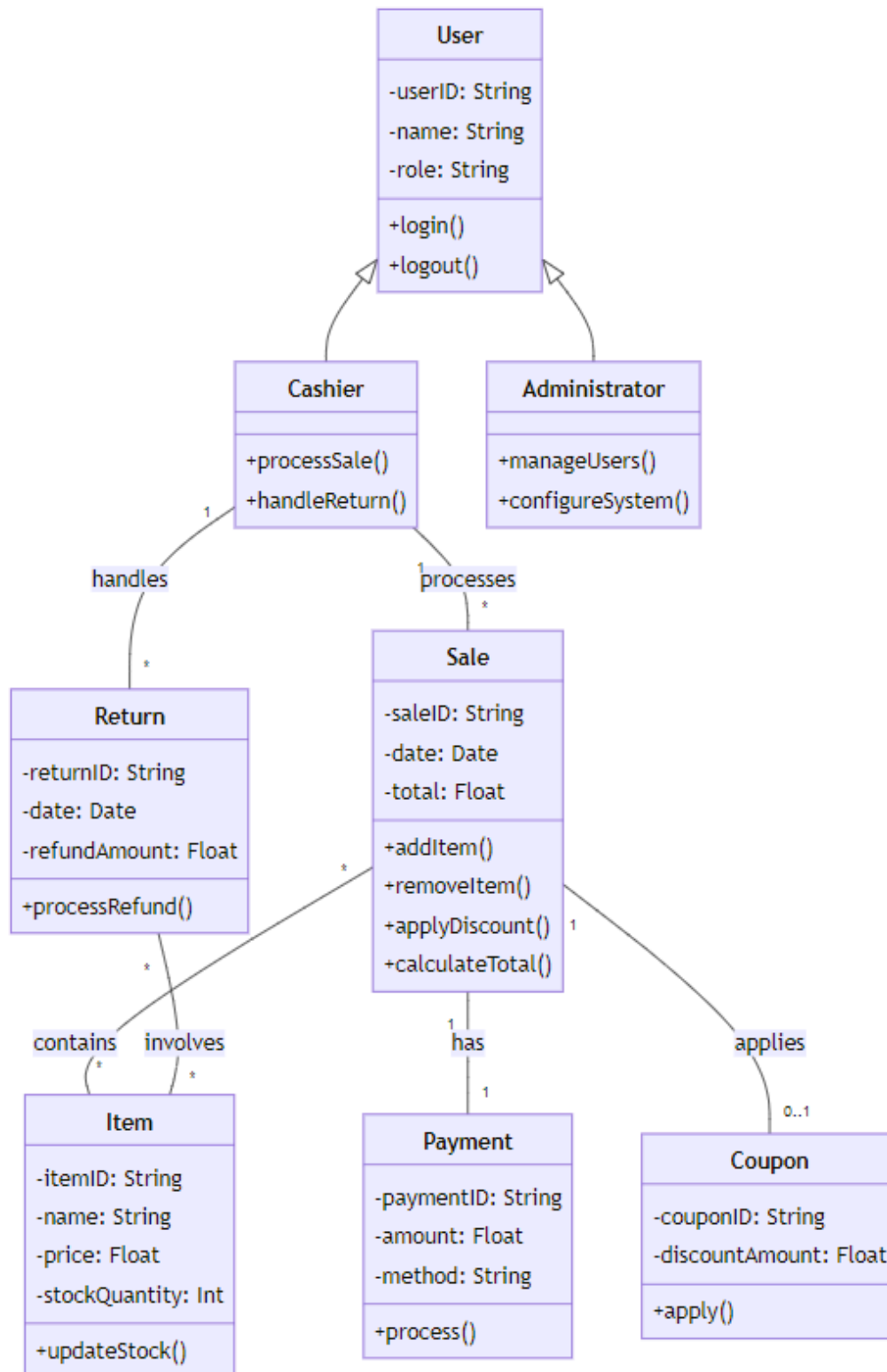
1. Process Sale :



2. Handle return :

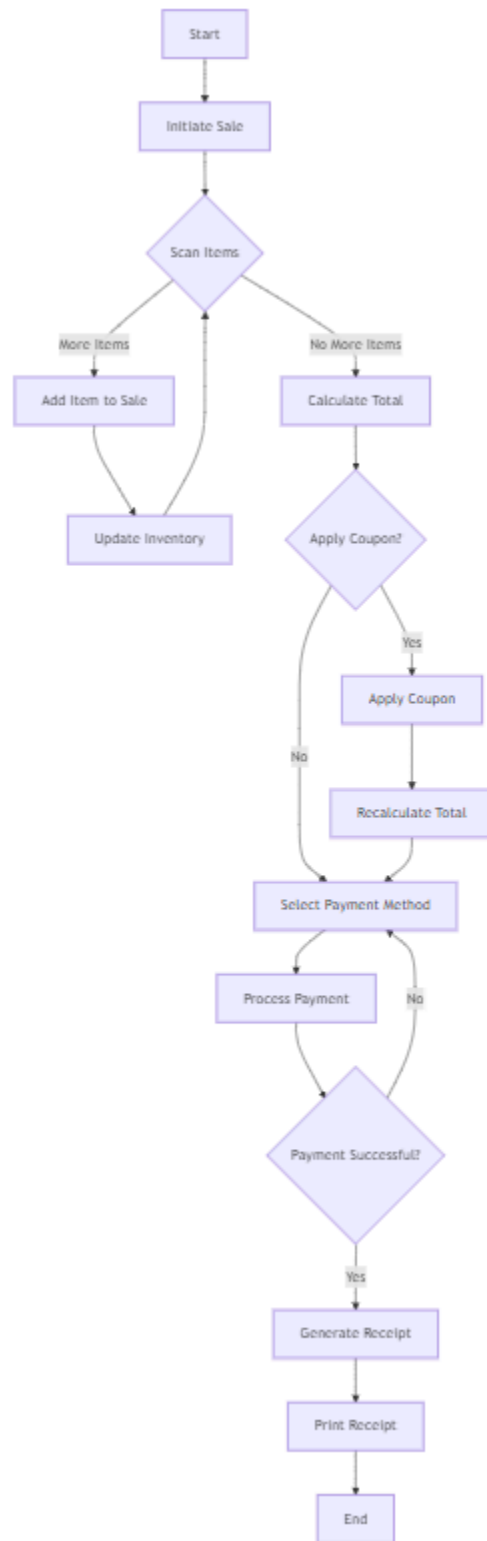


Class Diagram :



Activity Diagrams :

1.Process Sale



2.Handle Return

