

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

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Q1. Use Case Textual Description :

- Process Sale –

<u>Identifier</u>	UC01
<u>Name</u>	Handle Sales
<u>Actors</u>	Cashier, Catalog system, Inventory system
<u>Preconditions</u>	<ol style="list-style-type: none">1. The cashier must be logged in to the POS system.2. The POS system must be connected to the catalog and inventory system.3. The product to be purchased must have a barcode that can be scanned.
<u>Trigger</u>	The barcode of the product to be purchased is scanned by the POS system.
<u>Main Flow</u>	<ol style="list-style-type: none">1. The cashier starts a new sale transaction in the POS system upon scanning the barcode of the product.2. The POS system interacts with the inventory system for the availability of the product and deduct the stock amount of the product.3. The POS system retrieves the name and price of the product from the catalog system.4. If the customer provides any gift coupons then the POS system applies the coupon and adjusts the total price accordingly.5. The POS system displays the total price of the products to the cashier.6. The cashier shows the total price to the customer and verifies it.7. The cashier asks the customer for their payment method which is then processed by the POS system :<ul style="list-style-type: none">– If cash is used, the cashier enters the amount received and the POS system calculates the change.– If a credit card is used, the POS system connects the payment system for authorization.– If a check is used, the cashier follows the store's check-processing procedure.

	<ol style="list-style-type: none"> 8. After the payment is successful, the POS system displays the message of successful payment and prints the receipt for the customer which includes the details of the transaction. 9. The cashier concludes the transaction.
<u>Postconditions</u>	<ol style="list-style-type: none"> 1. The sale is completed and the system updates the inventory and sales records. 2. The payment is processed and recorded. 3. The POS system is ready for the next transaction.
<u>Alternate Flow</u>	<ol style="list-style-type: none"> 1a. The barcode is not recognizable and hence the cashier has to search the product manually in the system. 2a. The stock is insufficient for the product and hence the cashier informs the customer about it and the product is removed from the transaction. 4a. The coupon provided by the customer is not valid and hence no discounts are granted. 6a. The customer disapproves of the total price displayed and hence the cashier rechecks the total price of the purchased products. 7a. If the payment is failed then the customer may retry or use a different payment method.

- Handle Return –

<u>Identifier</u>	UC02
<u>Name</u>	Handle Returns
<u>Actors</u>	Cashier, Catalog system, Inventory system
<u>Preconditions</u>	<ol style="list-style-type: none"> 1. The cashier must be logged in to the POS system. 2. The customer must provide the receipt of the products to be returned. 3. The product to be purchased must have a barcode that can be scanned.
<u>Trigger</u>	The barcode of the product to be returned is scanned by the POS system
<u>Main Flow</u>	<ol style="list-style-type: none"> 1. The cashier initiates the return transaction in the POS system. 2. Upon reading the barcode the POS system verifies the product against the original sale transaction based on the receipt. 3. The POS system retrieves the name and price of the product from the catalog system. 4. The POS system checks if the products are eligible for returning based on the store policy. 5. The cashier inspects the product for any possible damage or condition issues. 6. Upon approval from the cashier and the POS system, the refund is

	<p>processed in the same method as the original payment :</p> <ul style="list-style-type: none"> – If cash was used then the cashier gives cash back. – If a credit card was used, the refund is processed back to the customer's card. – If a check was used, the store's check-refund policy is followed. <p>7. The POS system, upon successful refund payment, prints the return receipt for the customer which includes all the details of the transaction.</p> <p>8. The cashier concludes the return transaction.</p>
<u>Postconditions</u>	<p>1. The return process is completed and the system updates the inventory and sales records.</p> <p>2. The refund is processed and recorded.</p> <p>3. The POS system is ready for the next transaction.</p>
<u>Alternate Flow</u>	<p>1a. The barcode is not recognizable and hence the cashier has to search the product manually in the system</p> <p>2a. If the customer does not have a receipt, store policy is followed.</p> <p>4a. If the goods do not meet return criteria the cashier informs the customer, and no refund is given.</p> <p>5a. If the goods are damaged and not eligible for a full refund, the cashier follows store procedures</p>

Q2. Identifying Entity, Boundary and Control Objects :

Entity Objects —

- Sale Transaction
- Product (Good)
- Customer
- Inventory
- Catalog
- Coupon
- Cashier
- Receipt

Boundary Objects —

- Login Interface
- POS Terminal
- Barcode Scanner
- Payment Gateway
- Receipt Printer
- Inventory System

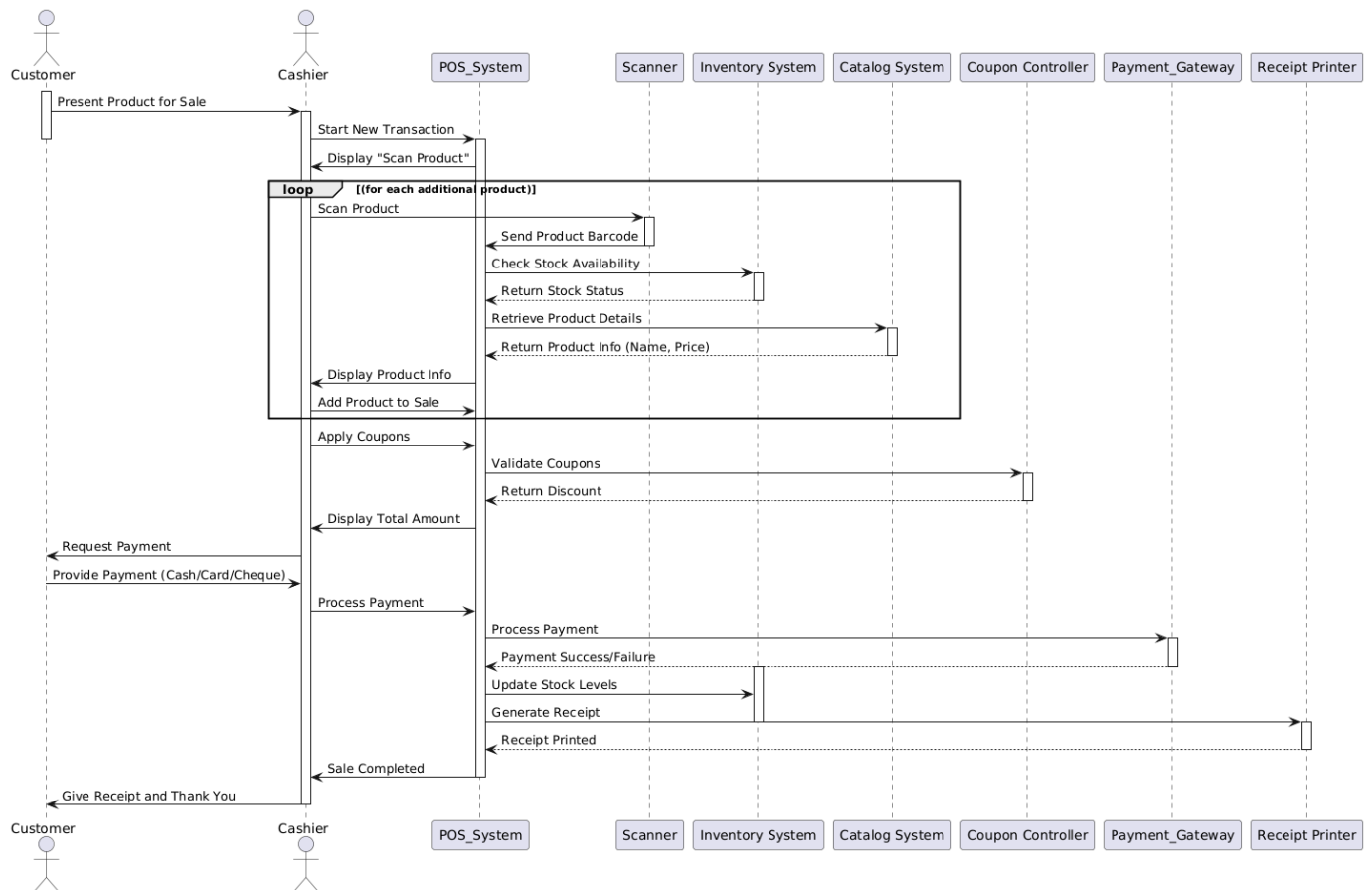
- Catalog System

Control Objects —

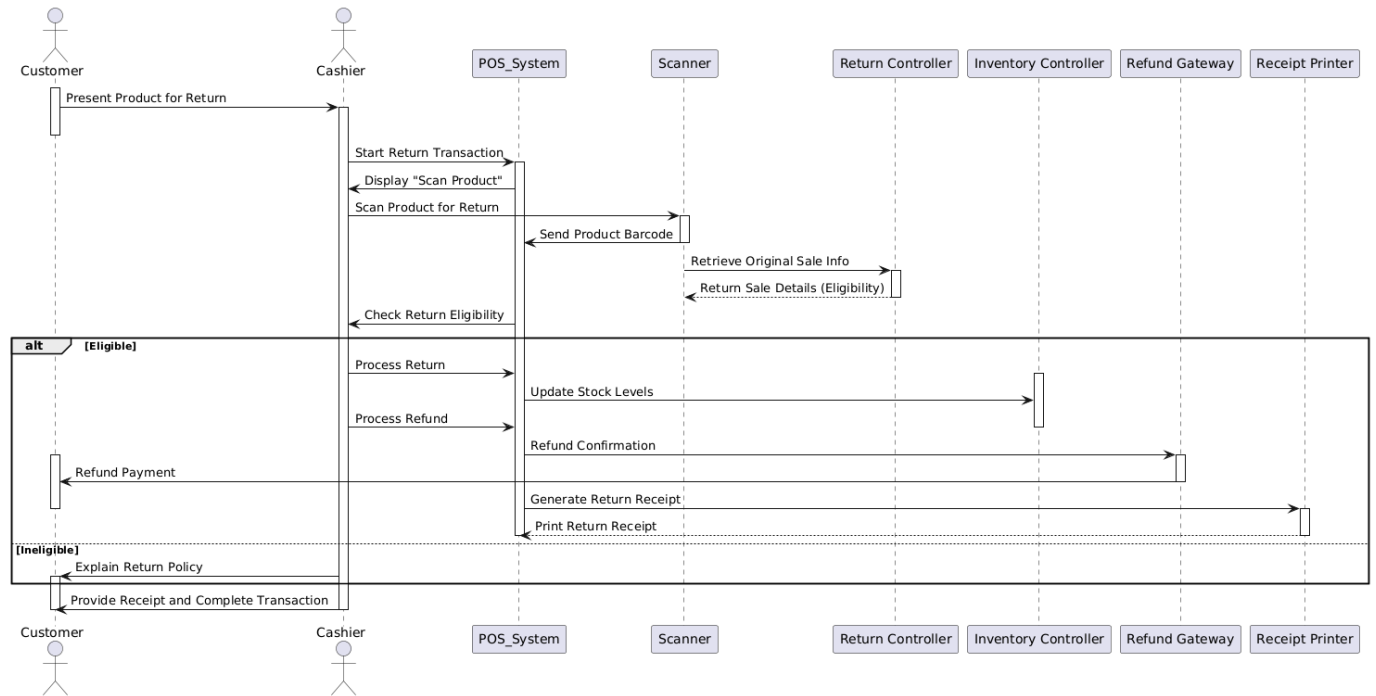
- Login Controller
- Sale Controller
- Discount Controller
- Inventory Controller
- Return Controller
- Receipt Controller
- Security Configuration

Q3. Develop Sequence Diagrams :

- Process Sale —

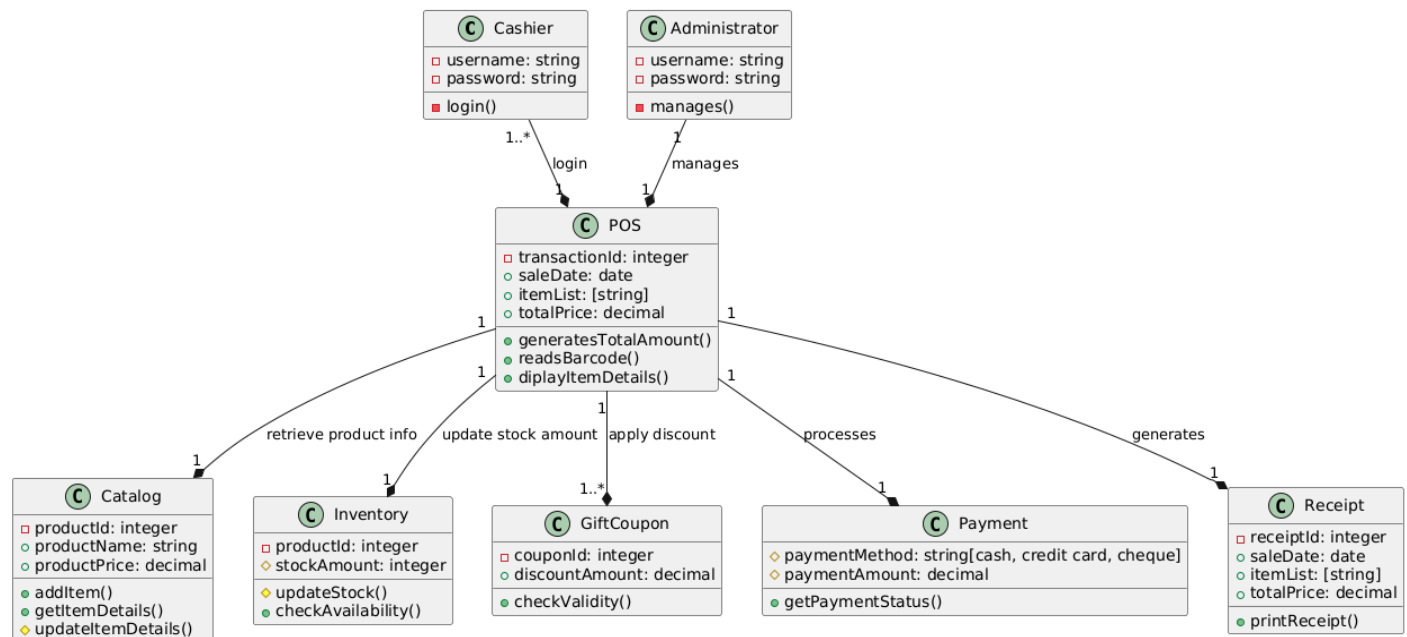


- Handle Return –

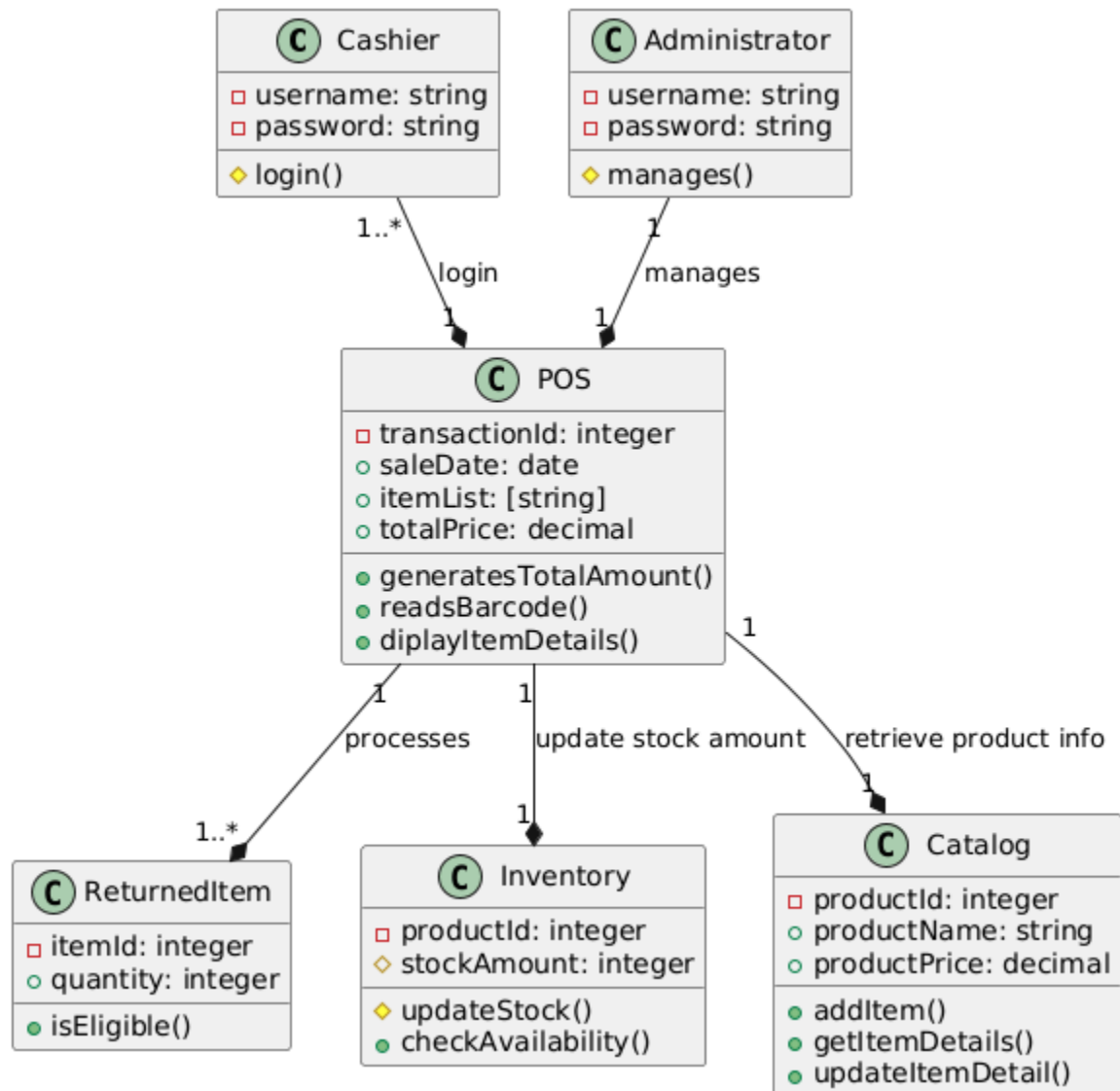


Q4. Develop Analysis Domain Models :

- Process Sale –



- Handle Return –



Q5. Develop activity diagrams for "Process Sale" and "Handle Return" use cases :

(Added in repository due to space constraint)