IT-314

Lab: Modelling class diagram & Activity Diagram Point of Sale system

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Q1) Develop Use Case Textual Description for Process Sale and Handle Return use cases.

Use Description for Process sale:
Actor:Cashier.
Goal:Customer purchase goods and complete a sale transaction.

Precondition

- The cashier is already logged into the POS system
- The customer should pick up the goods he want to purchase.

Main Flow:

- The customer picks up the goods he want to buy and gives it to the cashier.
- The cashier starts a new transaction sale and scans the barcode of the product that was given by the customer.
- After scanning the bar code the POS system retrieves the item details like price and name from the catalog system and updates the stock in the inventory system.
- The POS system then calculates the total price of the goods.
- If the customer has a coupon, the cashier processes the coupon through the POS, which adjusts the price accordingly.

- The cashier ask customer to choose the payment method like credit card,debit card etc to pay the total amount of goods which he wants to purchase.
- Once the payment is confirmed by the customer, the POS prints a receipt.
- The sale is completed, and the stock for the purchased items is reduced in the inventory system.

Postconditions:

- The receipt is printed.
- Customer receives the goods.
- The stock in the inventory system is updated.

Alternative Flow:

- The barcode of the product is unreadable.
- The payment was declined by the customer.

Use Description for Handle Return:

Actor:Cashier
Goal**:** To process a return for goods that a customer wishes to return for a refund or exchange.

Preconditions:

- The customer must present the original receipt and the products he/she has purchased.
- The cashier must be logged into the POS system.

Main Flow:

- The customer gives the product to the cashier that he wants to return.
- The cashier scans the barcode of the returned item or enters the transaction details based on the receipt.
- The cashier scans the barcode of the returned item or enters the transaction details based on the receipt.
- The cashier selects the reason for the return like damaged item, customer dissatisfaction, etc.
- If a refund is issued, the system calculates and provides the exact amount to be refunded.

- The cahiers ask customer to choose the refund method like cash refund or bank account refund.
- The refund is processed back to the customer's bank account or gets the cash.
- The POS system prints a return receipt, if applicable.
- The inventory system is updated to reflect the return of the product.

Postcondition:

- The customer receives a refund or exchange.
- The inventory system is updated with the returned item.
- The transaction history is updated to reflect the return.

Alternative Flow:

- If the receipt is missing, the POS can process the return based on alternative proof of purchase or store policy.
- If the return is not accepted, the transaction is aborted.

Q2) Identify Entity/Boundary Control Objects

Entity Objects:

- Item
- Inventory
- Payment
- Receipt

Boundary Objects:

- POS Interface
- Scanner Interface
- Payment Interface
- Receipt Printer Interface

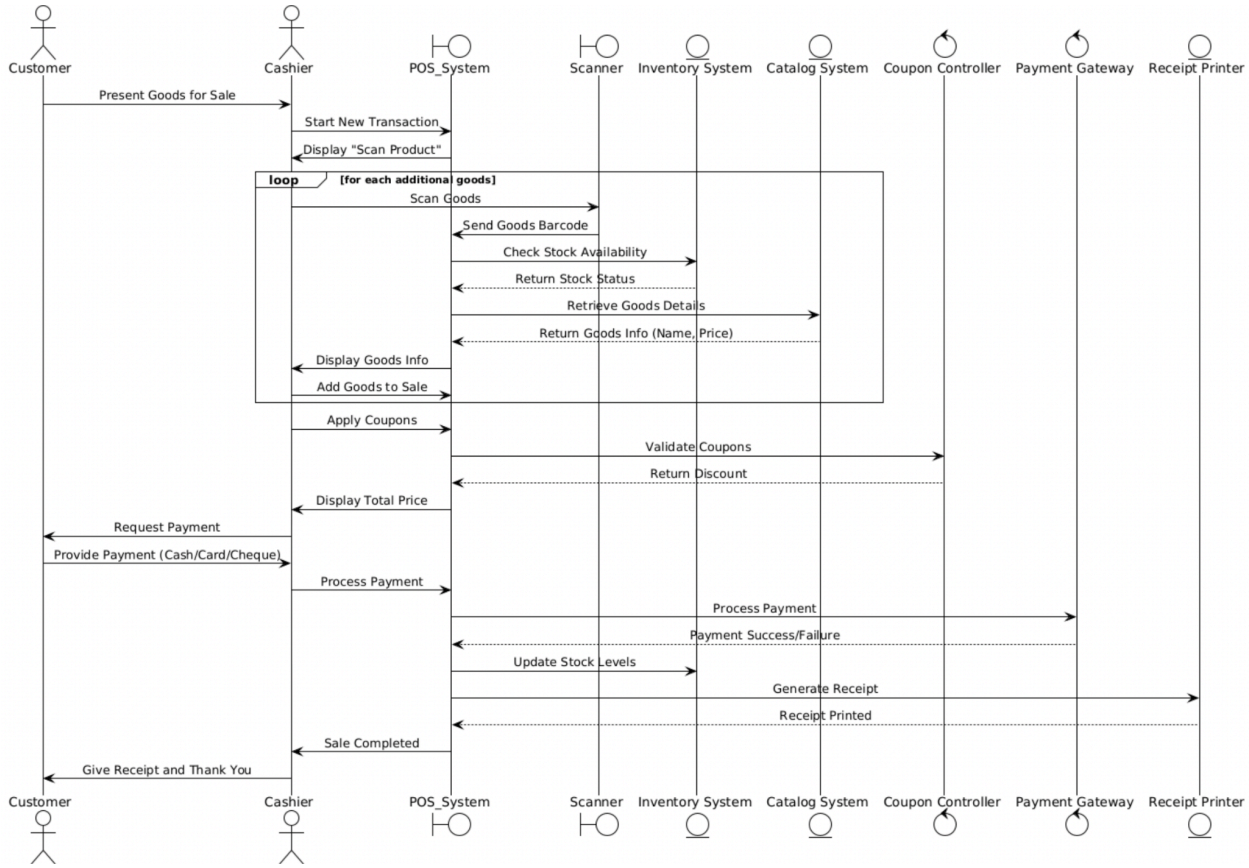
Control Objects:

- Sale Controller.
- Return Controller.
- Inventory Controller.

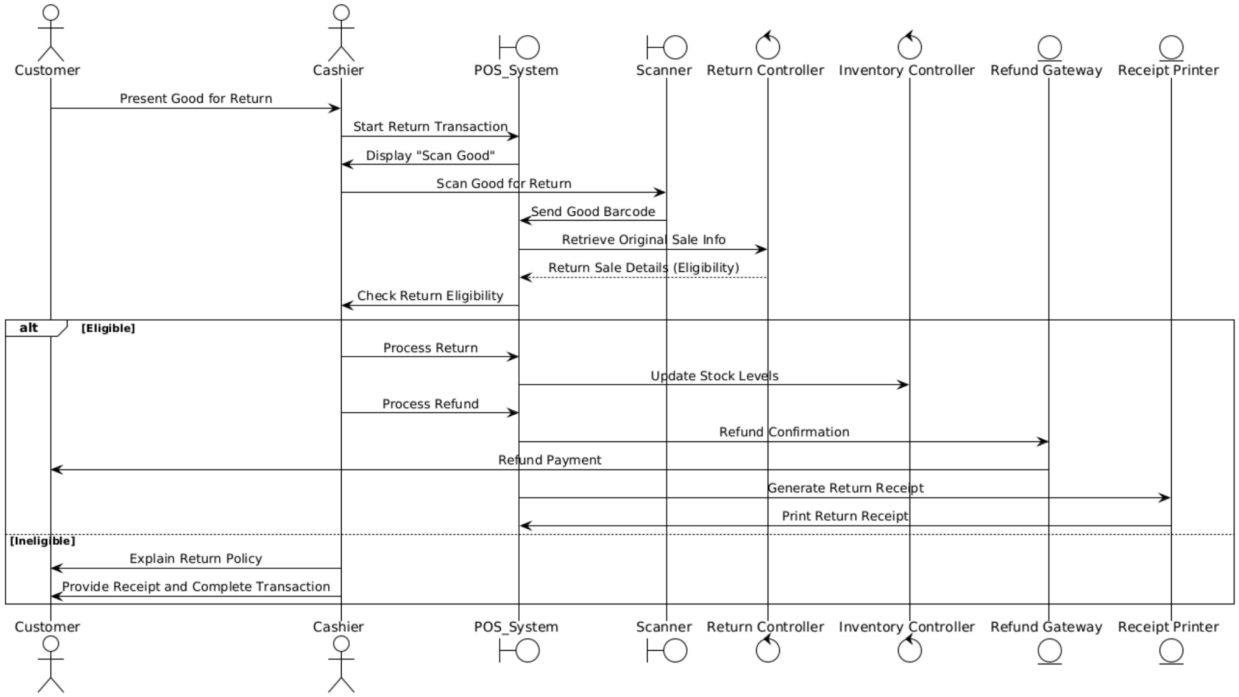
- Payment Controller.

Q3) Develop Sequence Diagrams

Sale Sequence Diagram:

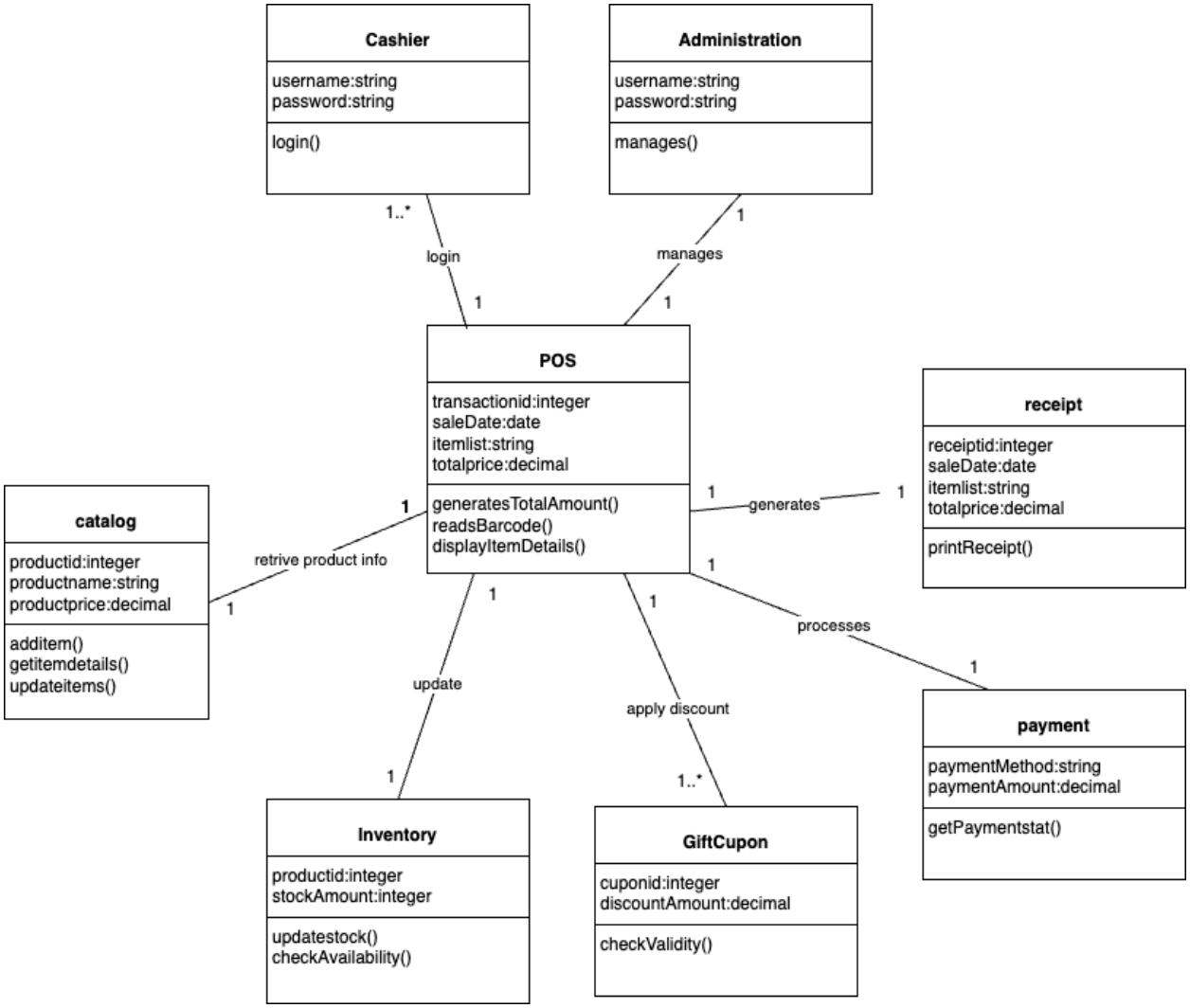


Return Sequence Diagram:

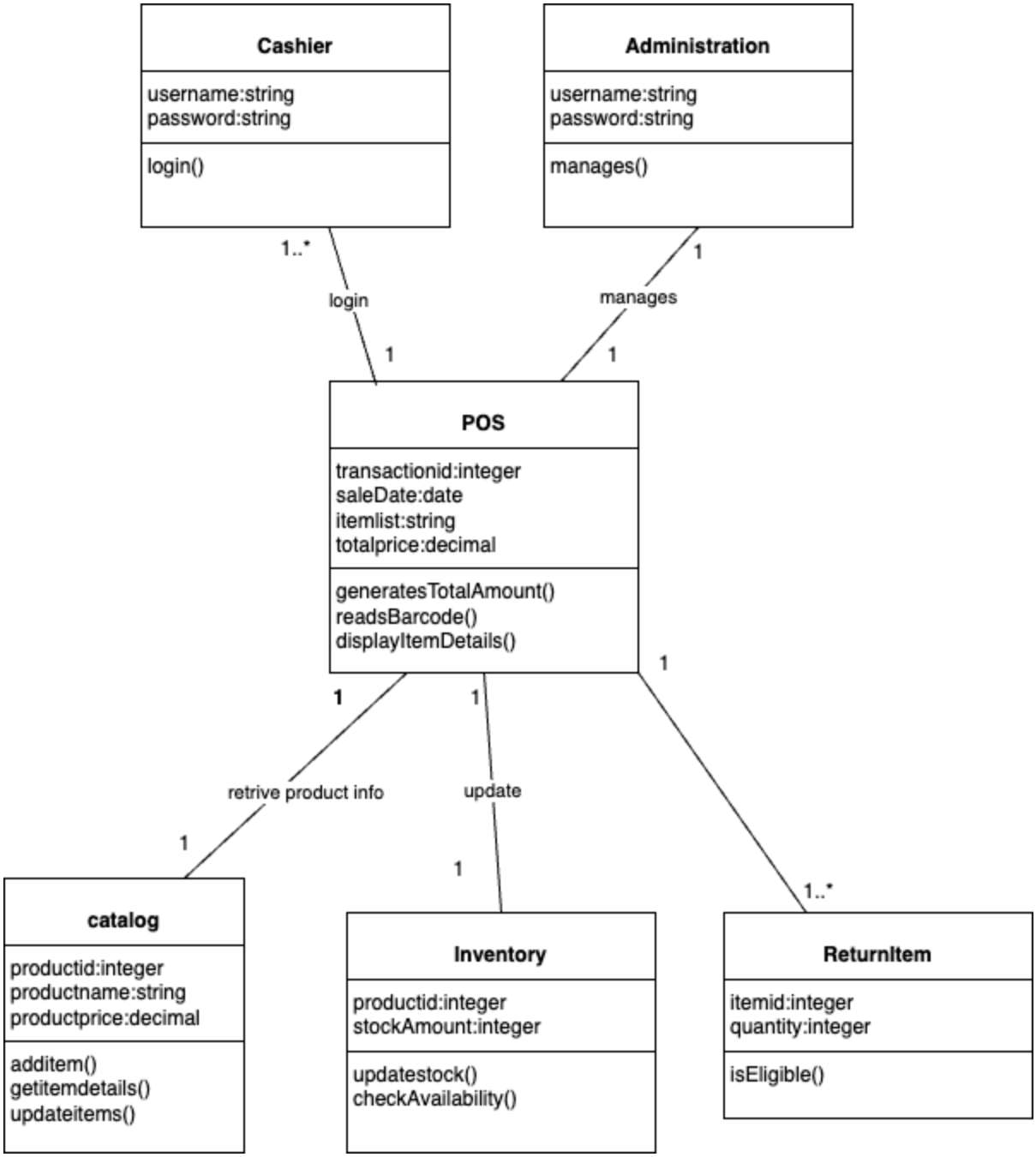


Q4) Develop Analysis Domain Models

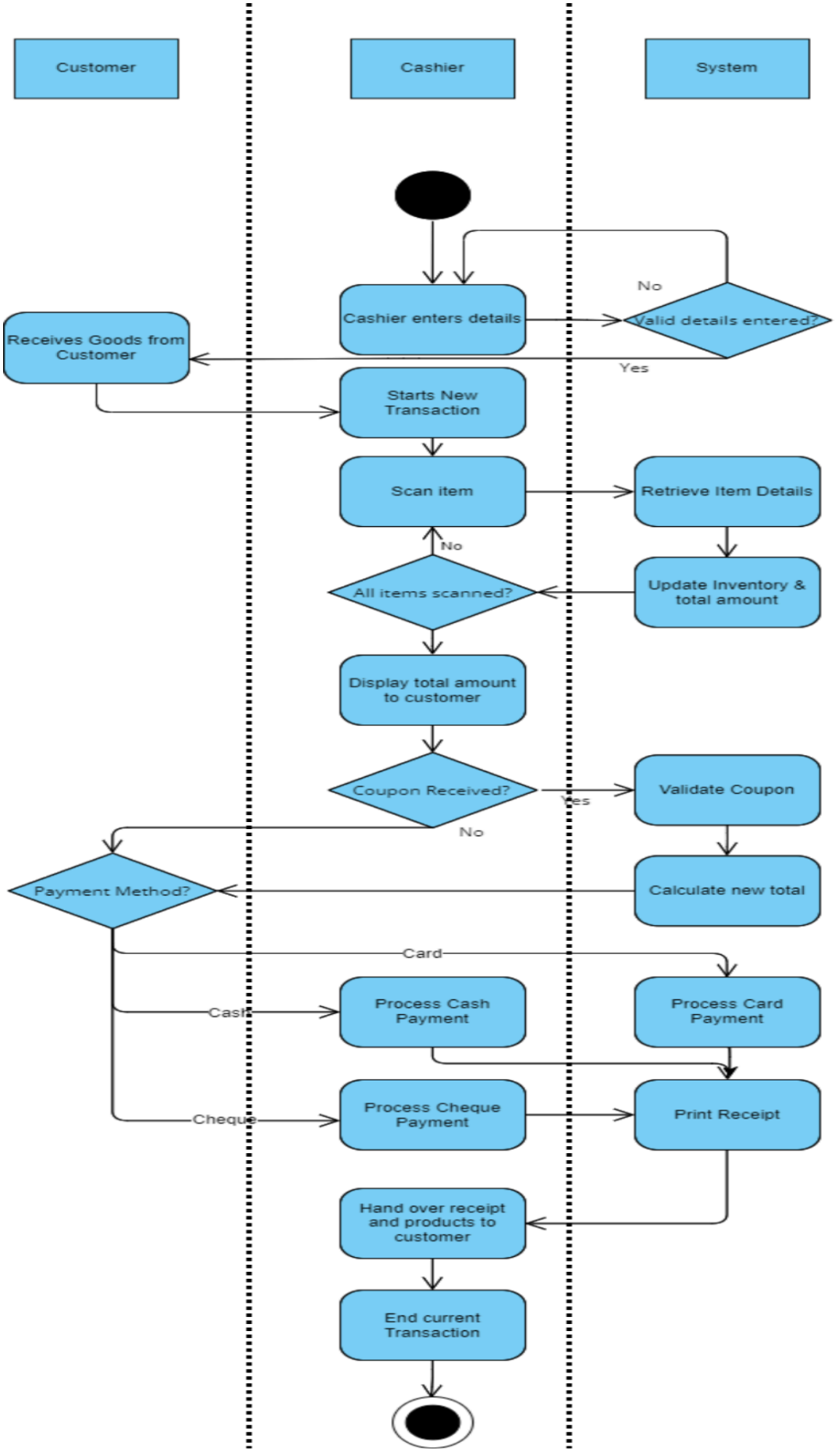
Sale Class Diagram:

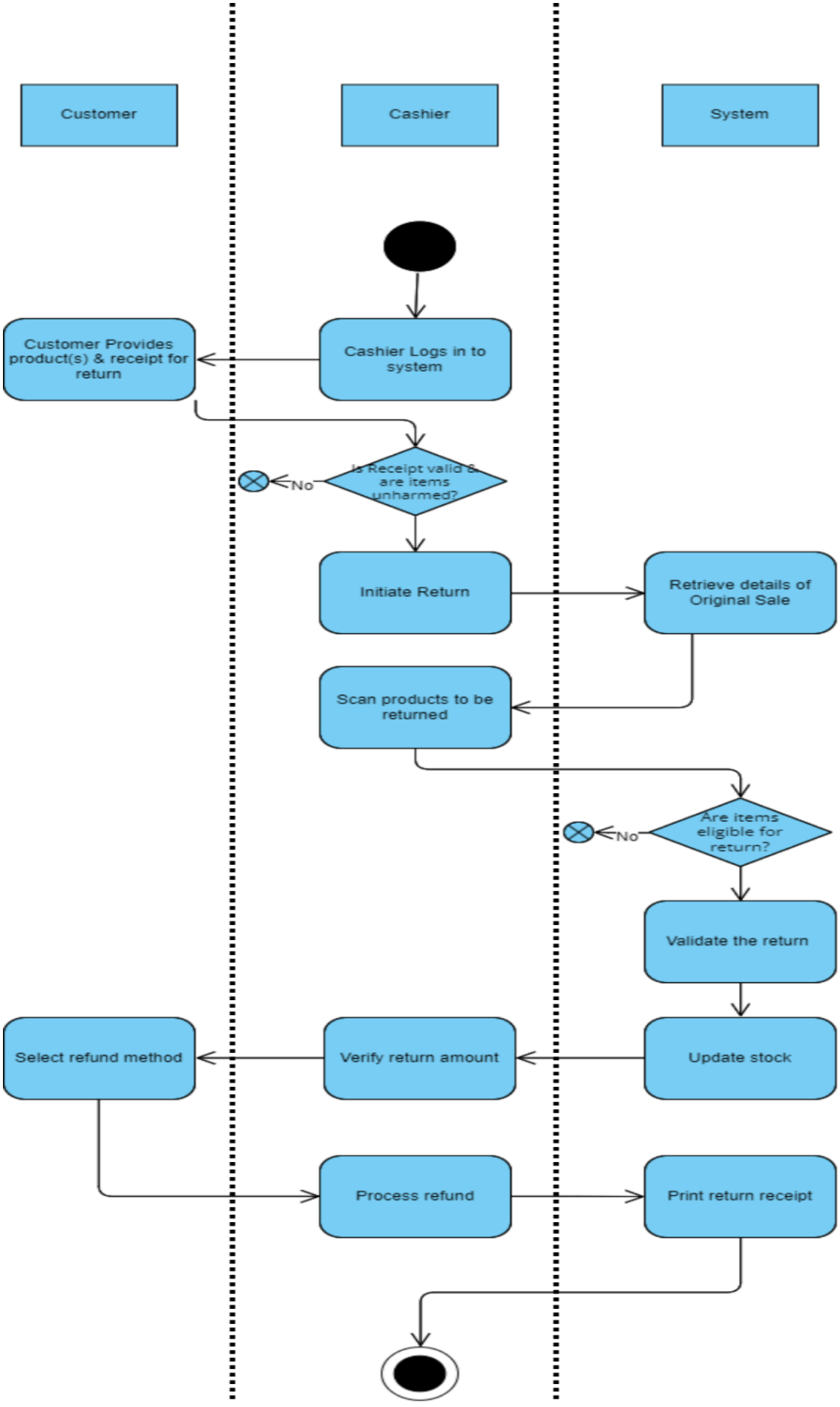


Return Scale Diagram:



Q5) Develop activity diagram for "Process Sale" and "Handle Return" use cases.


Customer
Cashier
System
Cashier enters details
No
Valid details entered?
Yes
Receives Goods from Customer
Starts New Transaction
Scan item
Retrieve Item Details
No
All items scanned?
Update Inventory & total amount
Display total amount to customer
Coupon Received?
Yes
Validate Coupon
No
Payment Method?
Calculate new total
Card
Cash
Process Cash Payment
Process Card Payment
Cheque
Process Cheque Payment
Print Receipt
Hand over receipt and products to customer
End current Transaction


Customer
Cashier
System
Customer Provides product(s) & receipt for return
Cashier Logs in to system
No
Is Receipt valid & are items unharmed?
Initiate Return
Retrieve details of Original Sale
Scan products to be returned
No
Are items eligible for return?
Validate the return
Select refund method
Verify return amount
Update stock
Process refund
Print return receipt