Software Engineering

Lab-6

SID: 202201165

1. **Use Case Textual Description**

   (i) Process Sale

   Use Case Name: Process Sale
   Actors: Cashier, Customer
   Preconditions:
   - The cashier is logged into the POS system.
   - Each item purchased should have its own barcode.
   - Each item's stock should be stored in the catalog system.
   - All modes of payment should be acceptable.

   Postconditions:
   - The sale transaction is recorded in the system.
   - The inventory is updated to reflect the sale.
   - A receipt is printed for the customer.

   Main Flow:
   (i) When the customer arrives with all the purchased items, the cashier starts a new transaction.
   (ii) The cashier scans the barcode of all the items.
   (iii) The POS system retrieves the name and price of all the items from the catalog system.
   (iv) The POS device displays the name of the items, number of items purchased and price of all the items.
   (v) The POS system will then deduce the appropriate amount of items from the inventory system.
   (vi) The cashier asks the customer if he/she wants to apply for any gift coupons.
   (vii) The cashier then asks the customer to pay in any mode he/she wishes.
   (viii) The customer pays the final amount shown by the POS after applying the gift coupons if applicable.
   (ix) After the customer successfully pays the amount, receipt is generated by the POS system.

   Alternative Flows:
   (vi).(a) If the coupon given by the customer is invalid, then it is not accounted for in the final amount.

(viii).(a) If the payment is unsuccessful, the cashier asks the customer to again do the payment or choose another mode payment.

(ii) Handle Return

Use Case Name: Handle Return
Actors: Cashier, Customer
Precondition:

- The cashier is logged into the POS system.
- The customer has a valid receipt for the returned item(s).

Postcondition:

- The return transaction is recorded in the system.
- The inventory is updated to reflect the return.
- A receipt for the return is printed, if applicable.

Main Flow:
(i) The customer approaches the POS counter with items to return and presents the receipt.
(ii) The cashier starts a new return transaction in the POS system.
(iii) The cashier scans the barcode of the item being returned.
(iv) The system retrieves the original sale price of the item.
(v) The cashier processes the return.
(vi) The system updates the inventory to add the returned item back into stock.
(vii) The cashier informs the customer of the refund amount as informed by the POS system.
(viii) The customer chooses to receive the refund through which mode.
(ix) The cashier processes the refund.
(x) The system confirms the refund and prints a return receipt for the customer.

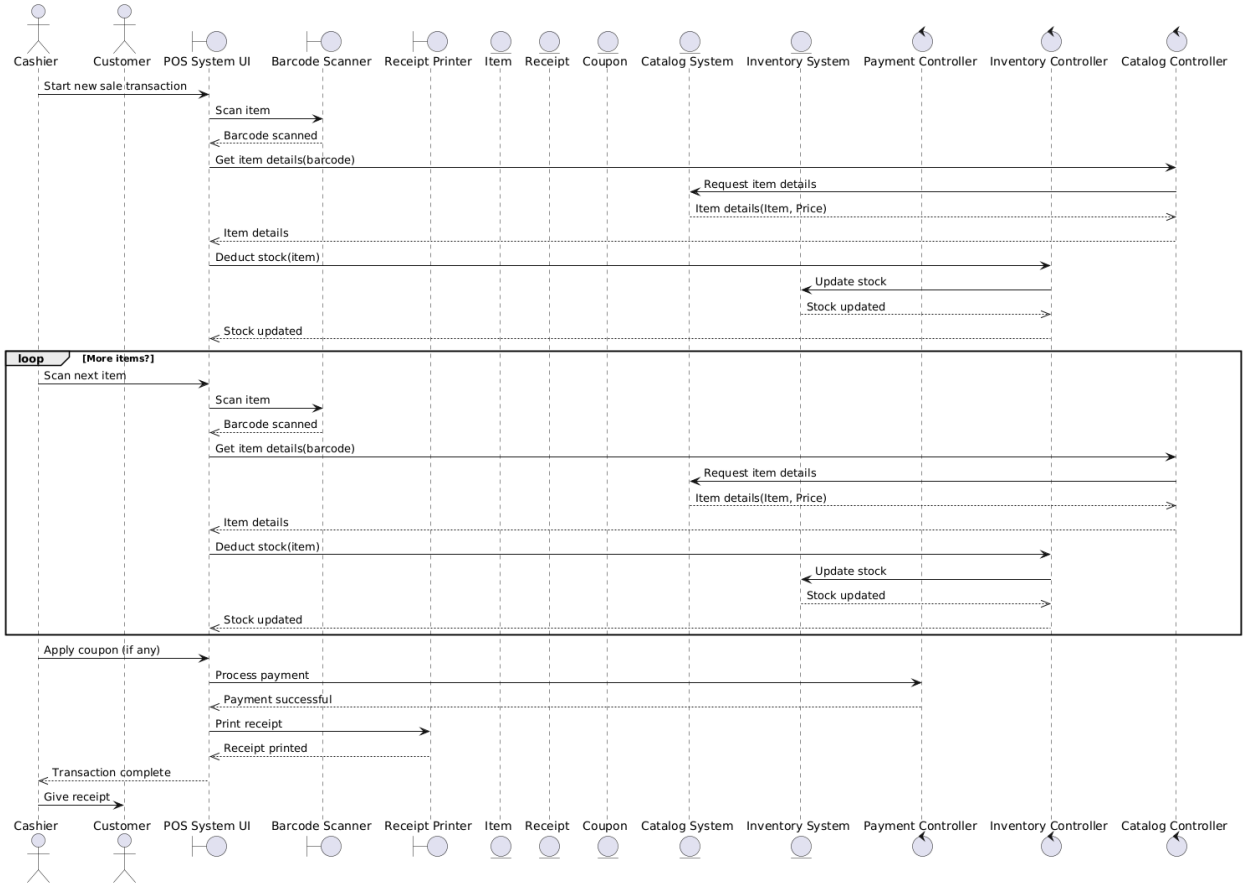
Alternative Flows:
(v).(a) If the item is not valid for return, the cashier informs the customer about it.

2. **Identify Entity/Boundary/Control Objects**

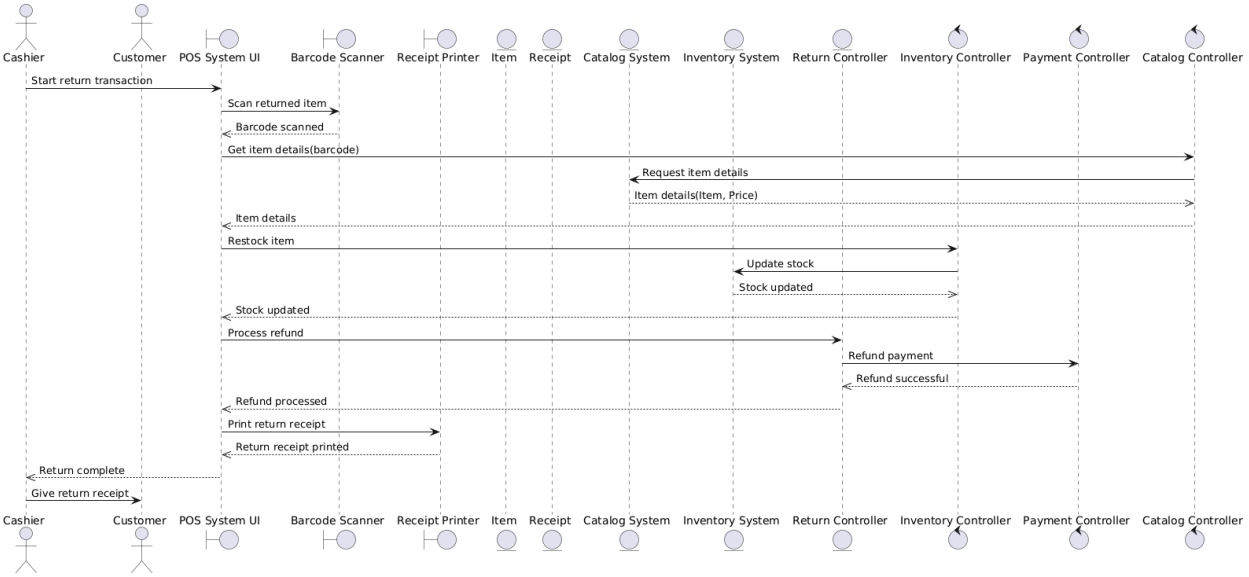
Entity Objects: Item, Receipt, Coupon, Customer, Barcode,Catalog system, Inventory system
Boundary Objects: POS system UI, Barcode Scanner, Receipt Printer
Control Objects: Payment Controller, Inventory Controller, Return Controller, Catalog Controller

3. Sequence Diagram

Process Sales

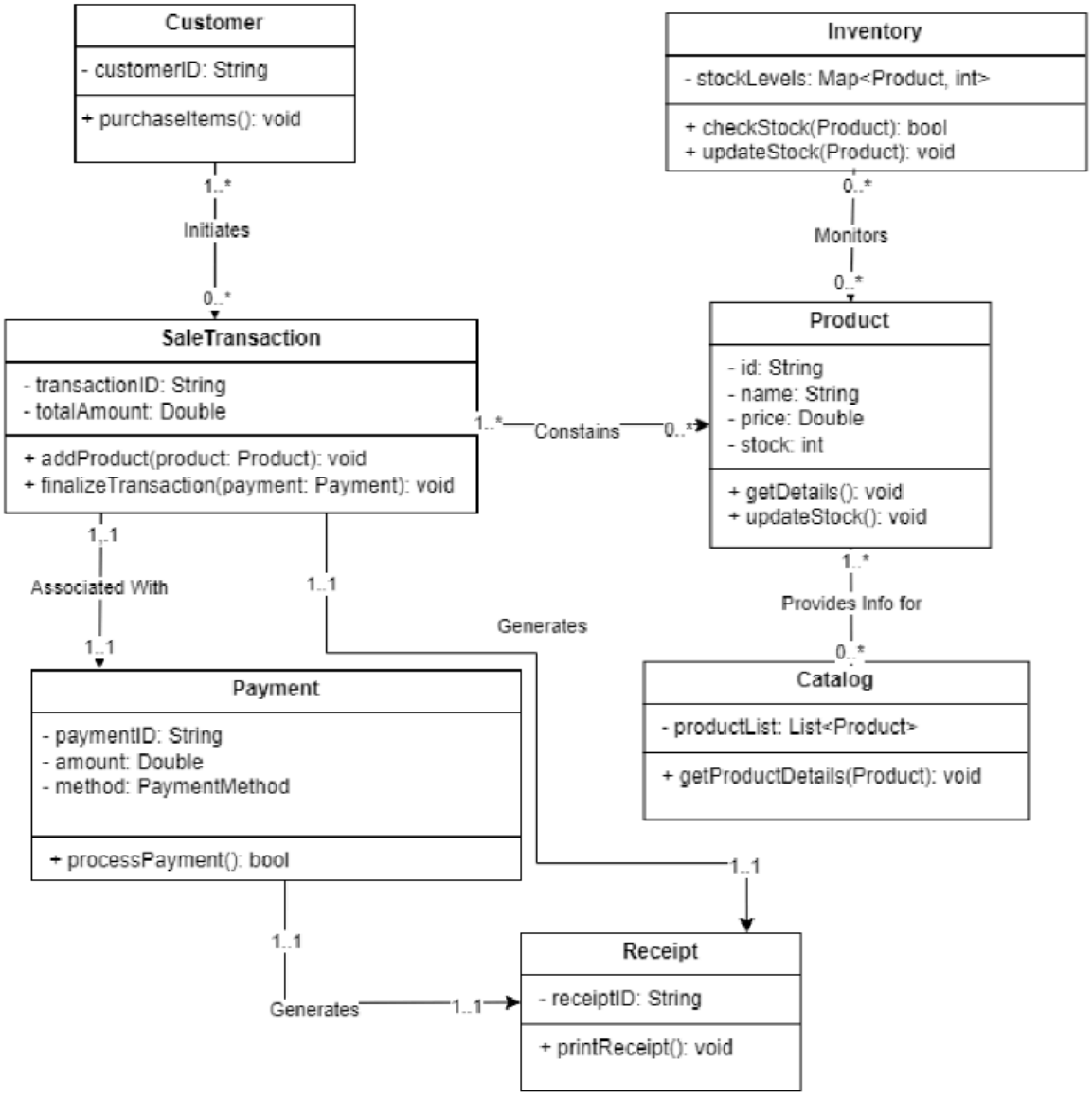


Handle Return

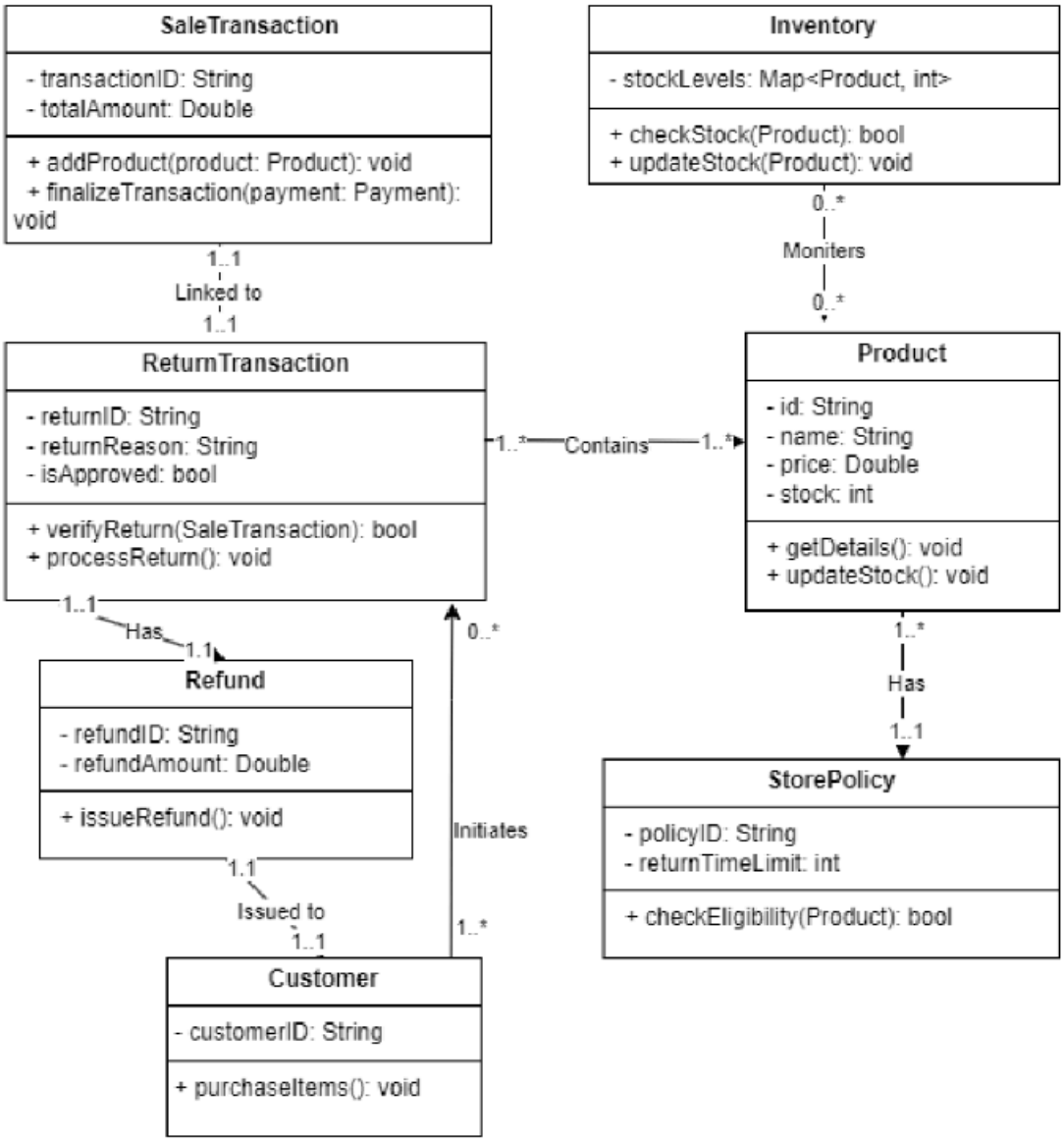


4. Class Diagram

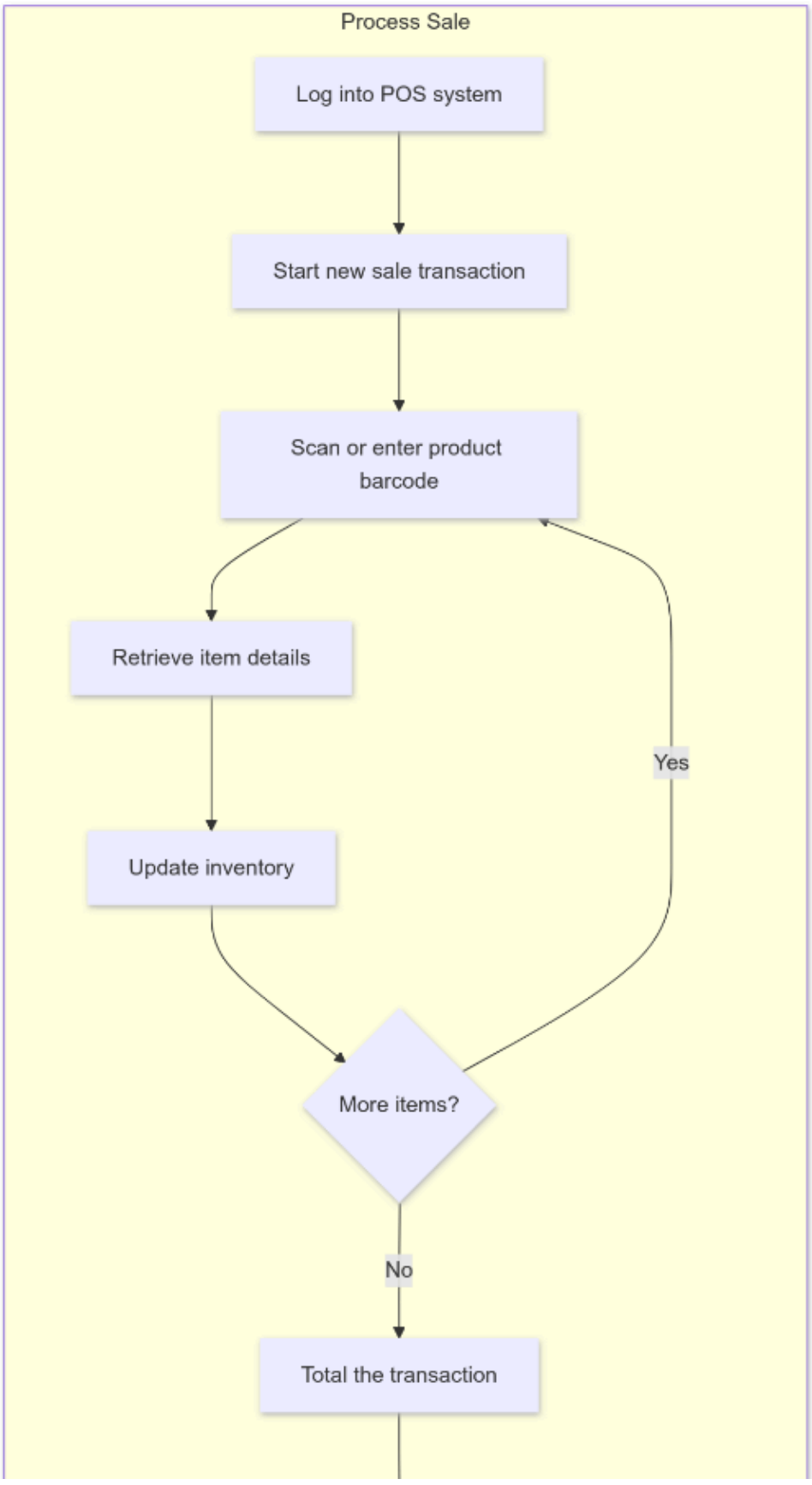
Process Sales

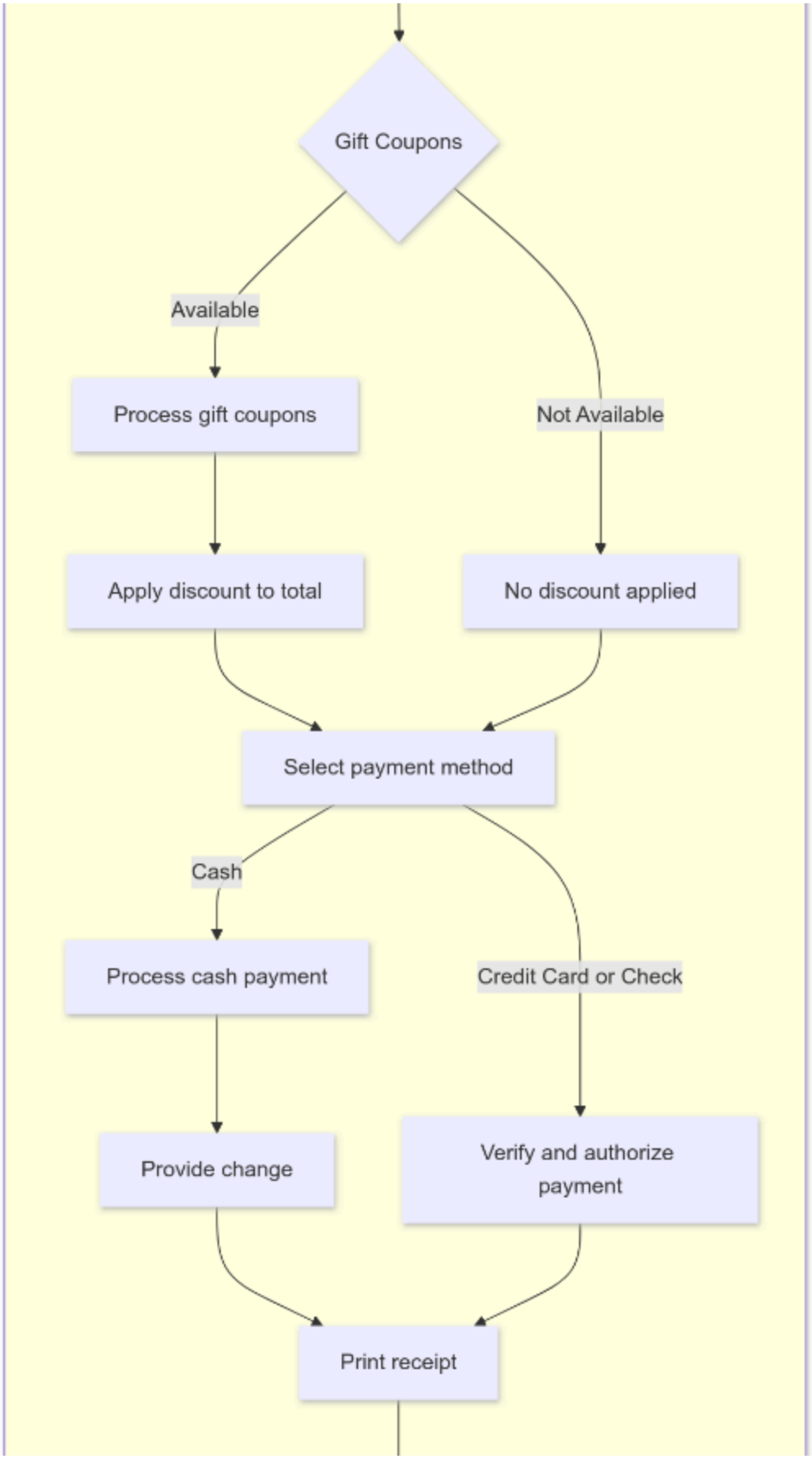


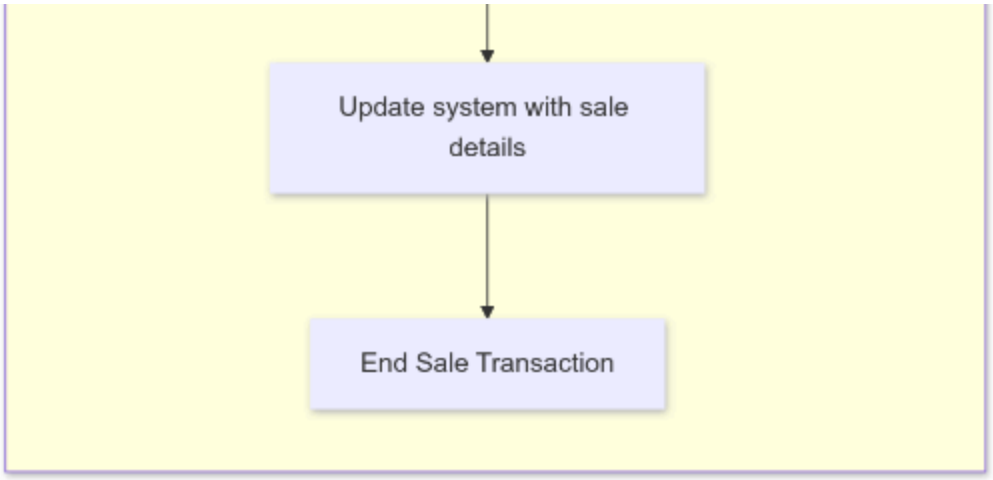
Handle Return

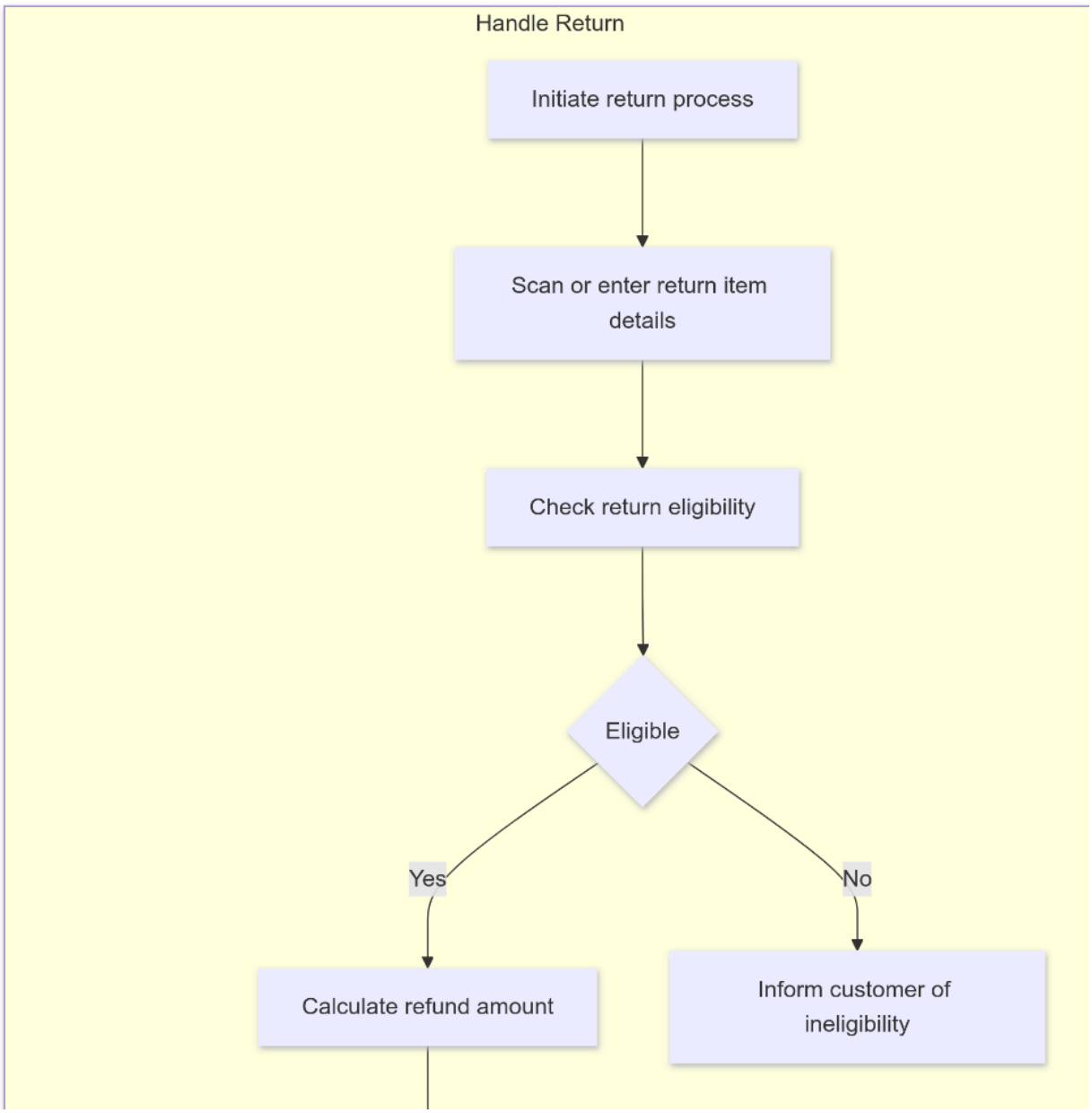


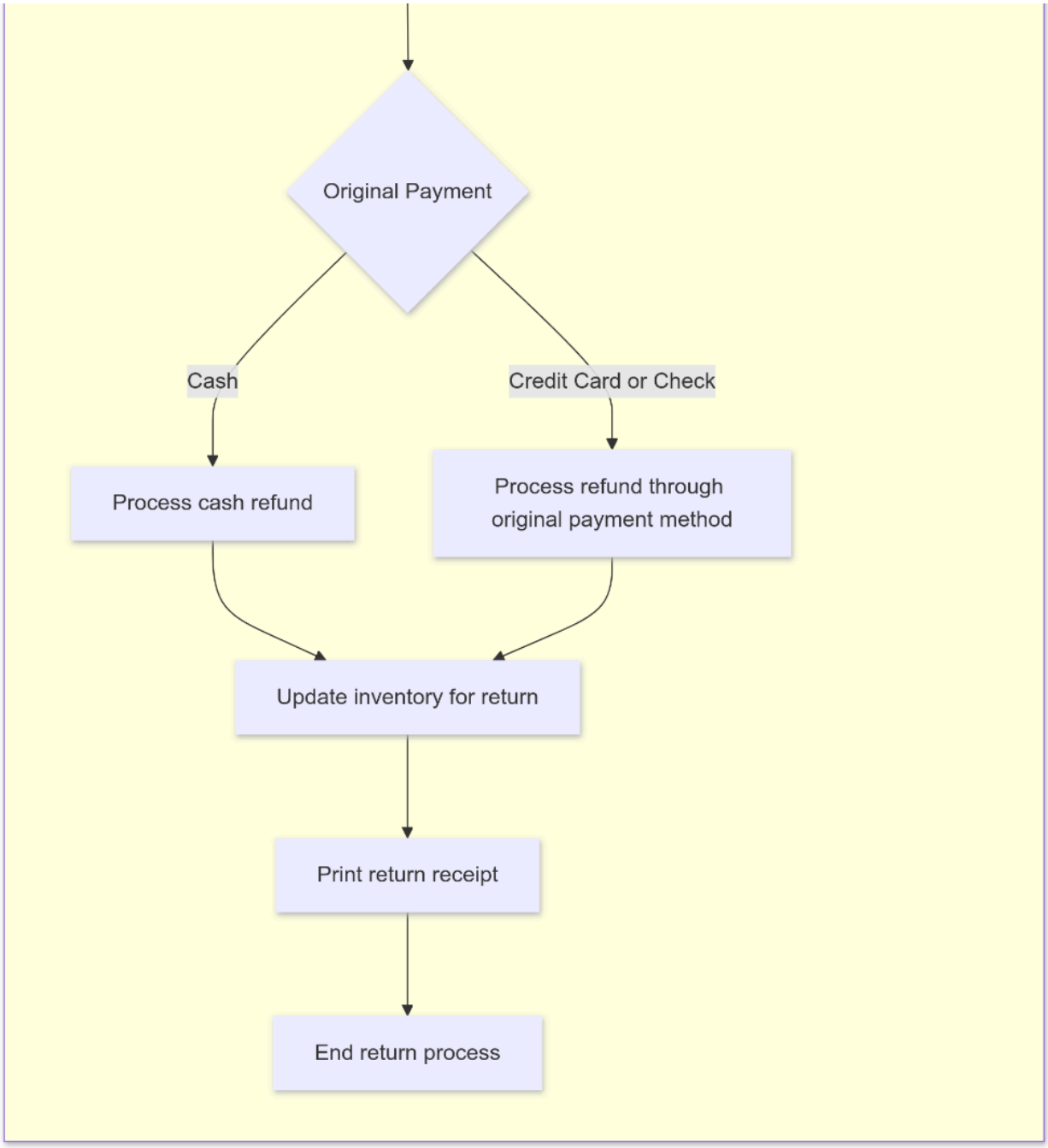
5. Sequence Diagram


Process Sale
Log into POS system
Start new sale transaction
Scan or enter product barcode
Retrieve item details
Update inventory
More items?
Yes
No
Total the transaction


Gift Coupons
Available
Process gift coupons
Apply discount to total
Not Available
No discount applied
Select payment method
Cash
Process cash payment
Provide change
Credit Card or Check
Verify and authorize payment
Print receipt


Update system with sale details
End Sale Transaction


Handle Return
Initiate return process
Scan or enter return item details
Check return eligibility
Eligible
Yes
No
Calculate refund amount
Inform customer of ineligibility


Original Payment
Cash
Credit Card or Check
Process cash refund
Process refund through original payment method
Update inventory for return
Print return receipt
End return process