IT314 - Software Engineering

Lab - 6

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

Use Case: Process Sale
Actor: Cashier

Preconditions:

- The cashier has access to the POS system.
- The client needs to buy things.

Main flow:

1. The cashier initiates a new transaction.
2. The following steps are taken for each item:
   a. The cashier scans the barcode.
   b. The POS system obtains the item's details (name, price) from the backend catalog system.
   c. The POS system communicates with the inventory system to update the stock amount.
   d. POS system adds items to current transaction.
3. The POS system shows running total.
4. The cashier tells the customer the entire amount.
5. The client chooses the mode of payment (check, credit card, or cash).
   a) A. If the client has a coupon, the cashier inserts the coupon into the transaction.
   b) The POS system updates the total.

6. The cashier handles payments.
7. POS system verifies payment.
8. The POS system creates receipts.
9. The cashier prints the invoice.
10. The POS system completes the purchase.

Alternate Flows:

2b. If the item is not in the system's catalog, the cashier enters it manually.

7a. If a credit card payment is declined, the customer selects an alternate payment option.

7b. If a check is made, the cashier checks the check.

Postconditions:

- The inventory system is updated.
- The sale is entered into the POS system, A receipt is printed.

Use Case: Handle return
Actor: Cashier

Preconditions:

- The cashier is logged in to the POS system.
- The client has item(s) to return.

Main flow:

1. Cashier starts the return procedure.
2. The client supplies receipts or transaction details.
3. Cashier confirms the eligibility for refund.
4. The thing being forehanded back:
   A. The POS system obtains item details from the original transaction.

B. The cashier scans the barcode.
C. The POS system communicates with the inventory system to update the stock amount.
D. The item is added by the POS system to the ongoing return transaction.

5. The POS system determines the total amount of refund.
6. Cashier verifies return items and amount with client 7. Cashier applies the original payment method to the refund.
8. The POS system creates return receipts
9. The cashier prints the return receipt.
10. Finalizes return transaction via POS system.

Alternate Flows:

2a. If the customer does not have a receipt, the cashier looks up the transaction in the point-of-sale system.

3a. If the item is not returnable, the cashier notifies the customer and completes the transaction.

7a. If the credit card was used for the initial payment and the card is missing, a different method of reimbursement is applied.

Postconditions:

- The POS system records the return.
- The inventory system is updated.
- The refund is handled.
- Return receipt is printed.

Q2) Identify Entity/Boundary Control Objects from the POS system.

Entity Objects:

- Sale
- Item
- Payment
- Coupon
- User (Cashier/Administrator)
- Inventory
- Catalog

Boundary Objects:

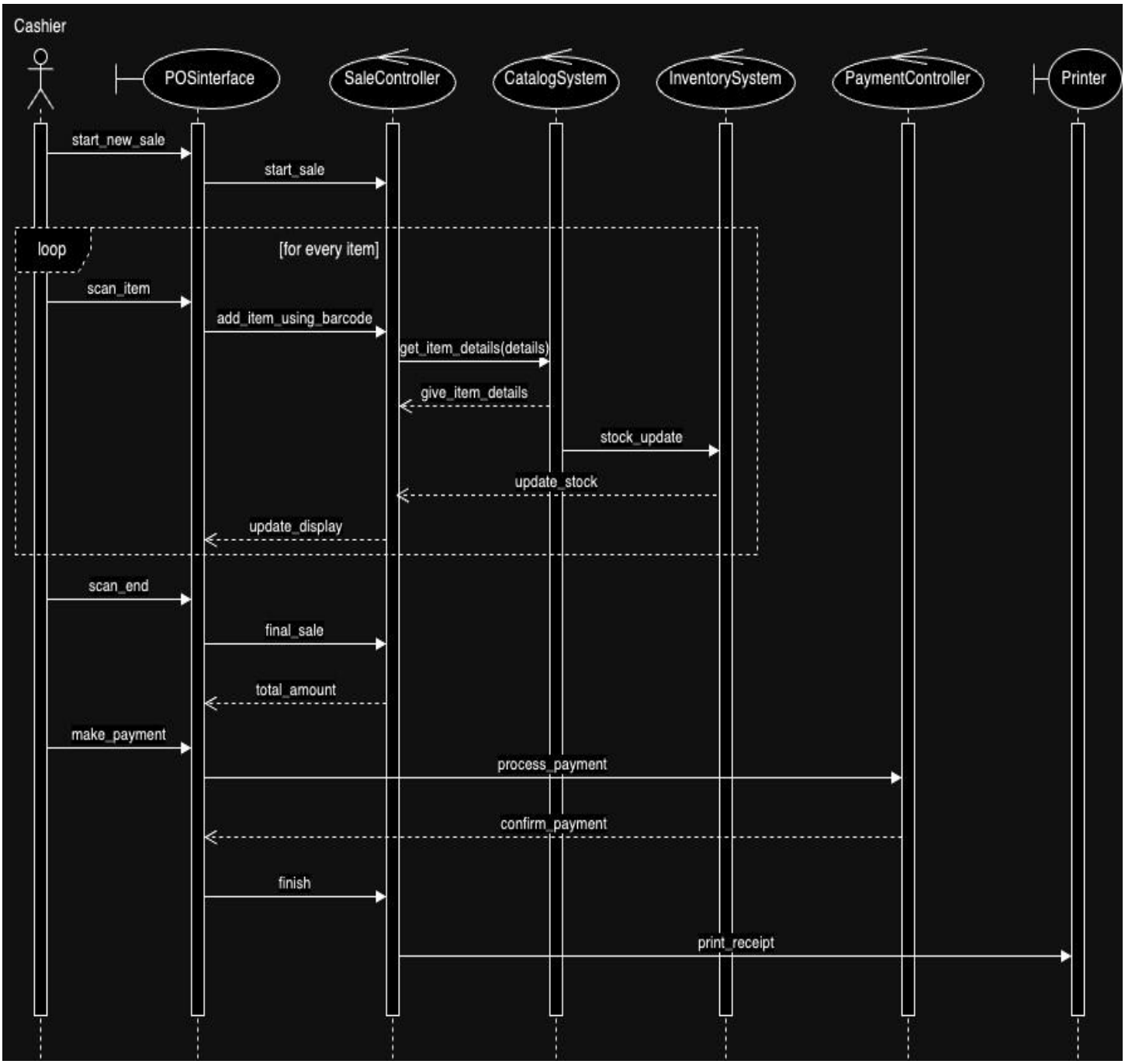
- LoginScreen
- POSInterface
- PaymentInterface
- ReceiptPrinter
- BarcodeScanner

Control Objects:

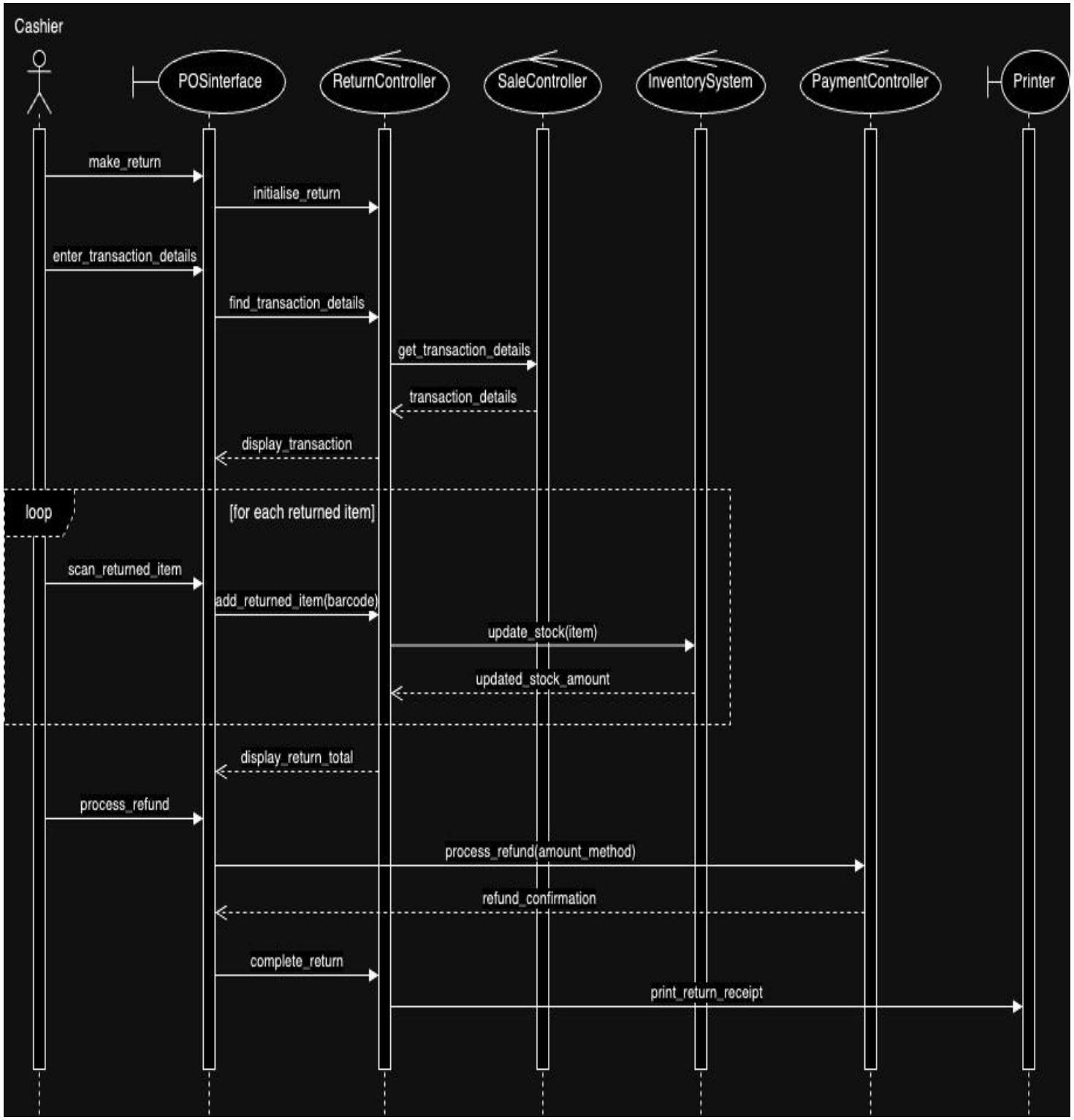
- SaleController
- PaymentController
- InventorySystem
- CatalogSystem
- UserAuthenticationController
- ReturnController

Q3) Develop Sequence Diagrams for the given POS system.

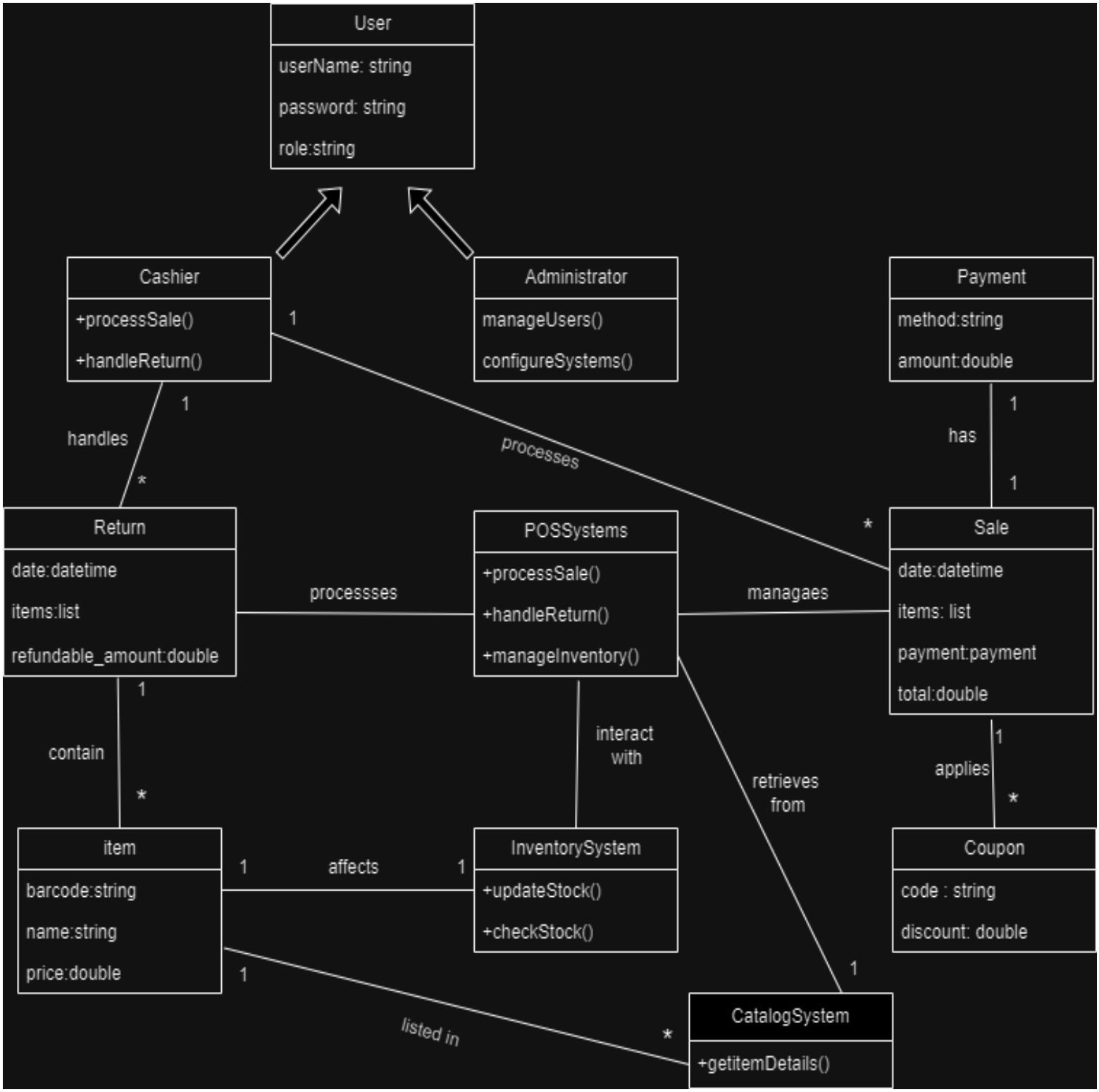
(1) “Process Sale” Sequence Diagram :-



(2) “Handle Return” Sequence Diagram :-

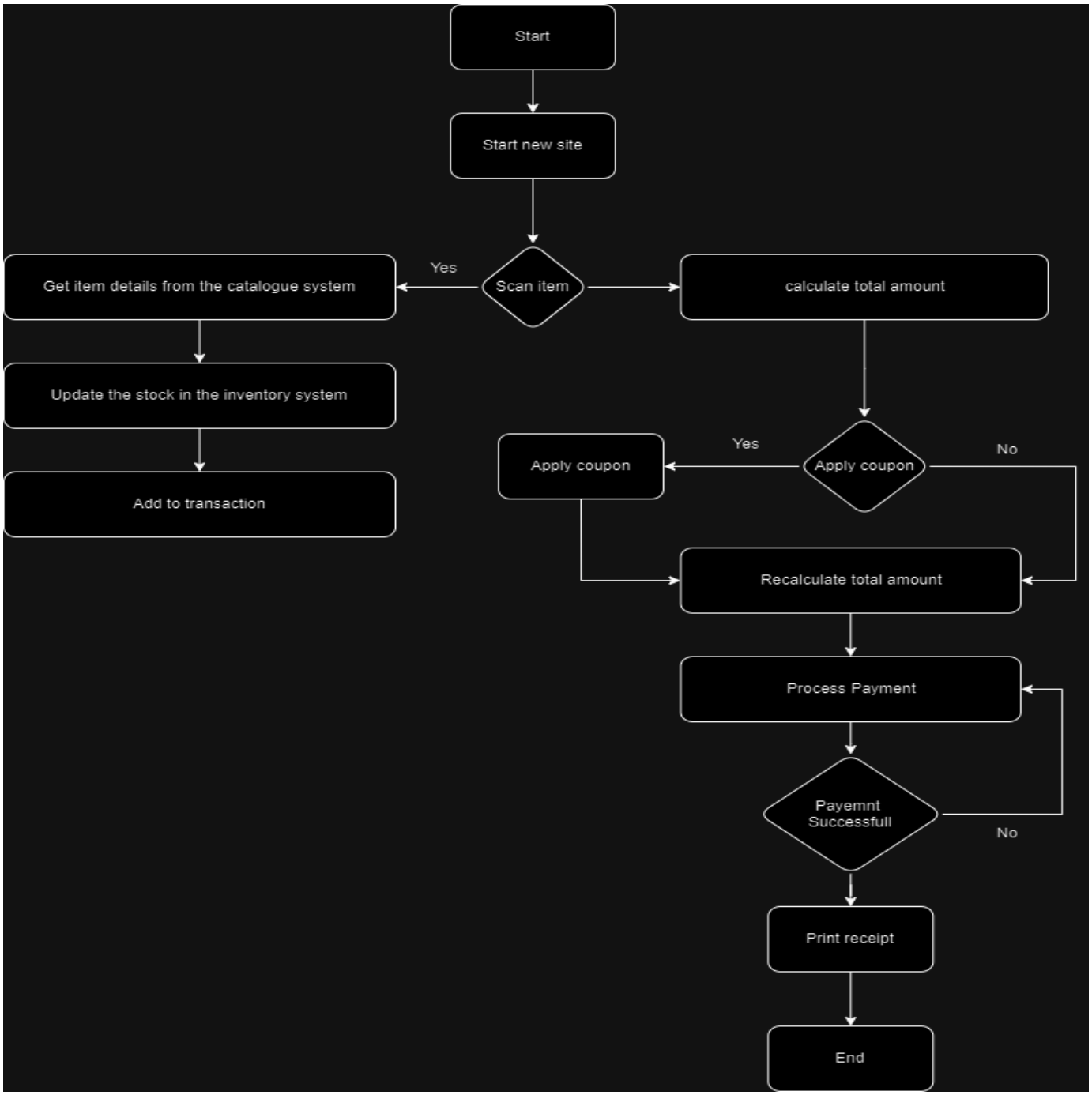


Q4) Develop Analysis Domain Models for the given POS system.



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

(1) “Process Sale” Activity Diagram :-



(2) **“Handle Return” Activity Diagram :**