

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: Sales Transaction Process

Actor: Cashier

Preconditions:

- The cashier has access to the point-of-sale (POS) system.
- The customer intends to purchase items.

Main Flow:

1. The cashier starts a new transaction in the POS system.
2. For each item being purchased, the following steps occur:
 - A. The cashier scans the item's barcode.
 - B. The system retrieves the item's details from the backend catalog.
 - C. The system updates the stock levels by communicating with the inventory management system.
 - D. The item is added to the current transaction in the POS system.
3. The POS system displays the current total amount.
4. The cashier informs the customer of the total amount due.
5. The customer selects their preferred payment method (cash, credit card, or check).
6. A. If the customer has a coupon, the cashier applies it to the transaction.
 - B. The POS system recalculates and updates the total amount.
7. The cashier processes the payment.
8. The POS system confirms the payment's validity.
9. A receipt is generated by the POS system.
10. The cashier prints the receipt for the customer.
11. The transaction is finalized in the POS system.

Alternate Flows:

- 2B. If an item is not found in the catalog, the cashier manually inputs the item details.
- 7A. If a credit card payment fails, the customer can choose another payment method.
- 7B. If payment is by check, the cashier verifies the check's authenticity.

Postconditions:

- The inventory system reflects updated stock levels.
- The sale transaction is recorded in the POS system.
- A printed receipt is provided to the customer.

Use Case: Handle Return

Actor: Cashier

Preconditions:

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

Main Flow:

1. The cashier initiates the return process.
2. The customer provides receipts or transaction details.
3. The cashier verifies eligibility for a refund.
4. For the item being returned:
 - A. The POS system retrieves item details from the original transaction.
 - B. The cashier scans the item's barcode.
 - C. The POS system updates the inventory by communicating with the inventory system.
 - D. The item is added to the current return transaction in the POS system.
5. The POS system calculates the total refund amount.
6. The cashier confirms the return items and refund amount with the customer.
7. The cashier processes the refund using the original payment method.
8. The POS system generates return receipts.
9. The cashier prints the return receipt for the customer.
10. The return transaction is finalized in the POS system.

Alternate Flows:

- 2A. If the customer lacks a receipt, the cashier looks up the transaction in the POS system.
- 3A. If the item is not eligible for return, the cashier informs the customer and completes the process.
- 7A. If a credit card was used for the initial payment but the card is unavailable, an alternative reimbursement method is applied.

Postconditions:

- The POS system records the return transaction.
- The inventory system is updated accordingly.
- The refund is processed.
- A return receipt is printed for the customer.

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

- Sale
- Item
- Payment
- Coupon
- User
- Inventory
- Catalog

Boundary Objects:

- LoginScreen
- POSInterface
- PaymentInterface
- ReceiptPrinter
- BarcodeScanner

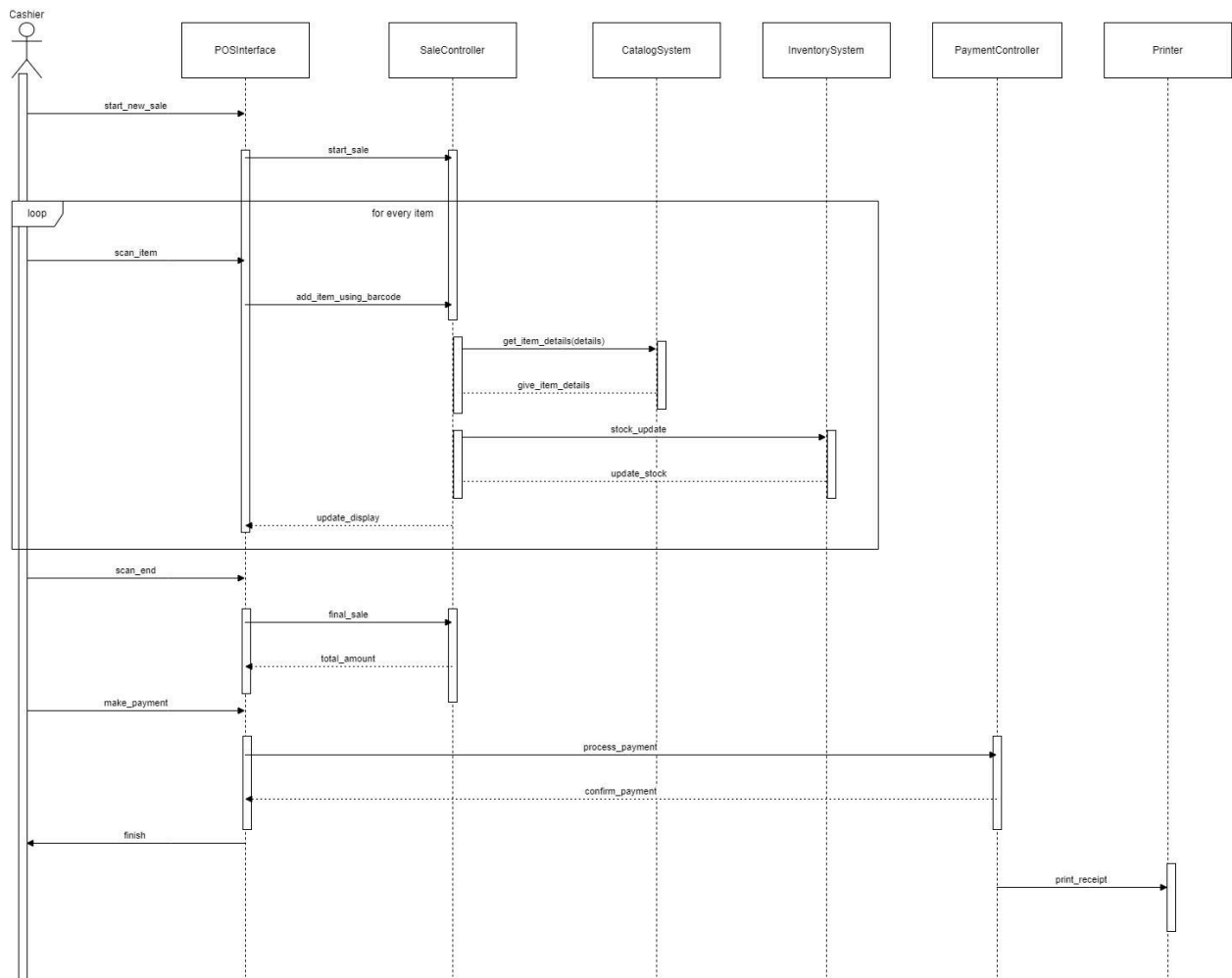
Control Objects:

- SaleController
- PaymentController
- InventorySystem

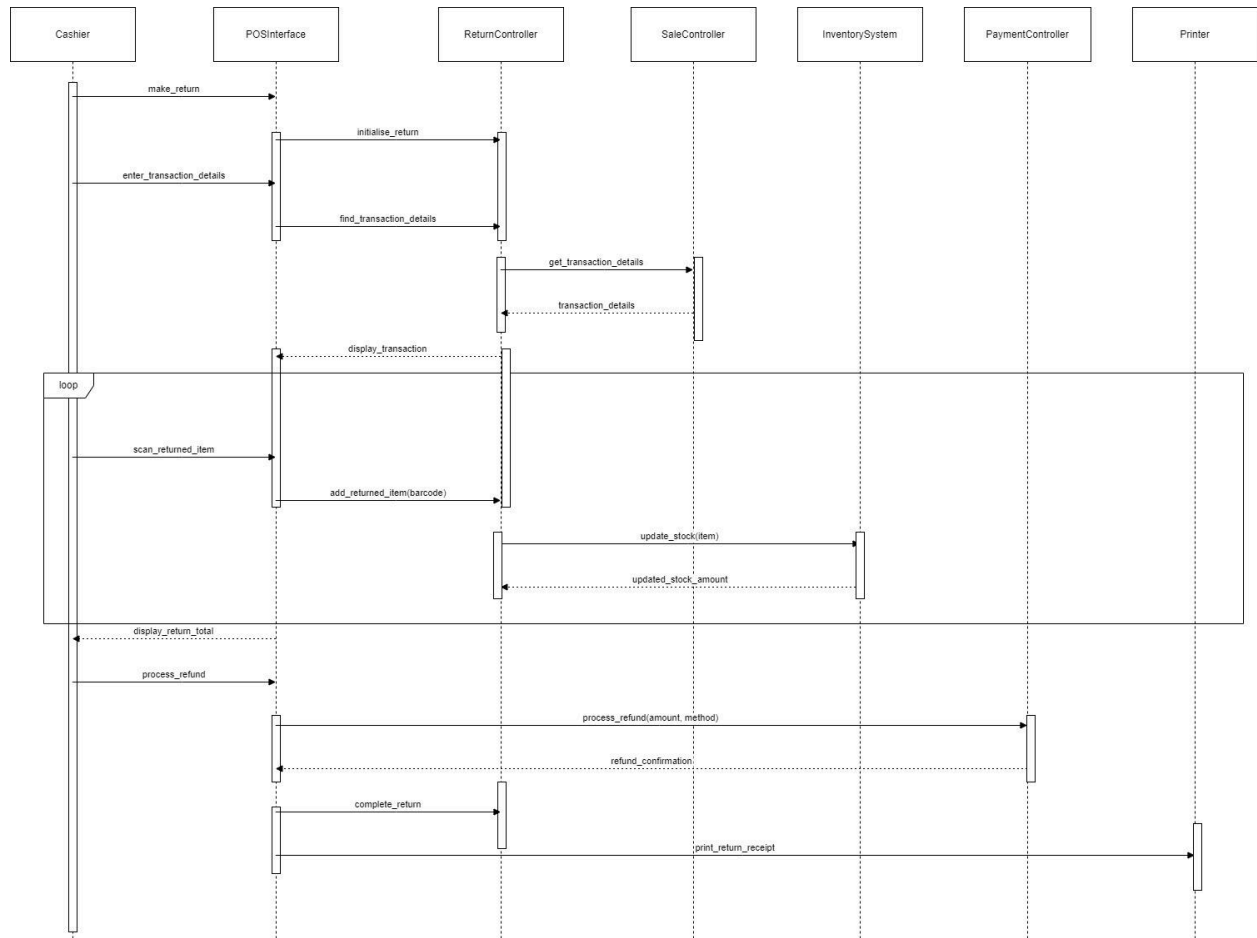
- CatalogSystem
- UserAuthenticationController
- ReturnControl

Q3) Develop Sequence Diagrams for the given POS system.

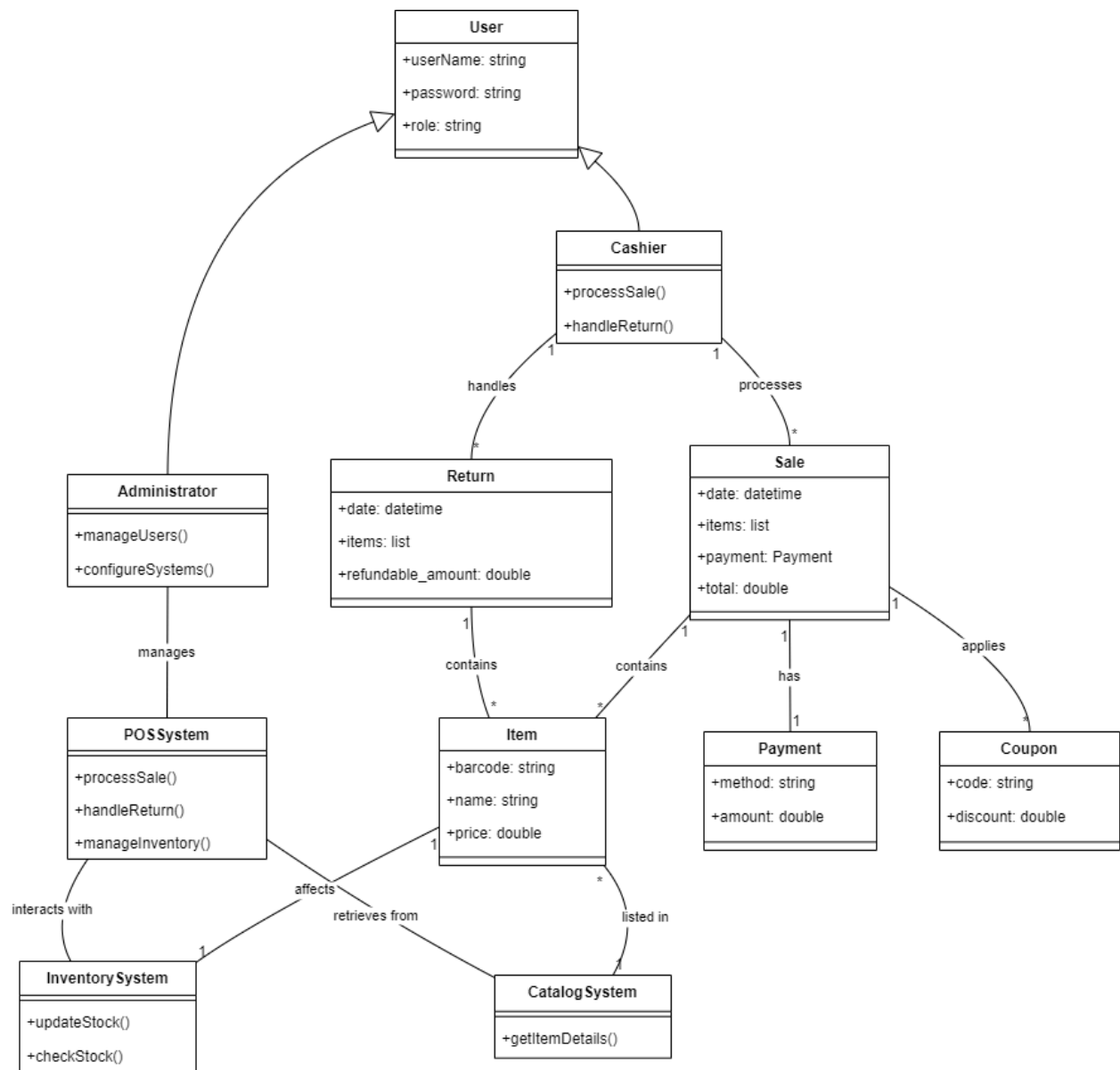
(1) “Process Sale” Sequence Diagram :-



(2) “Handle Return” Sequence Diagram :-

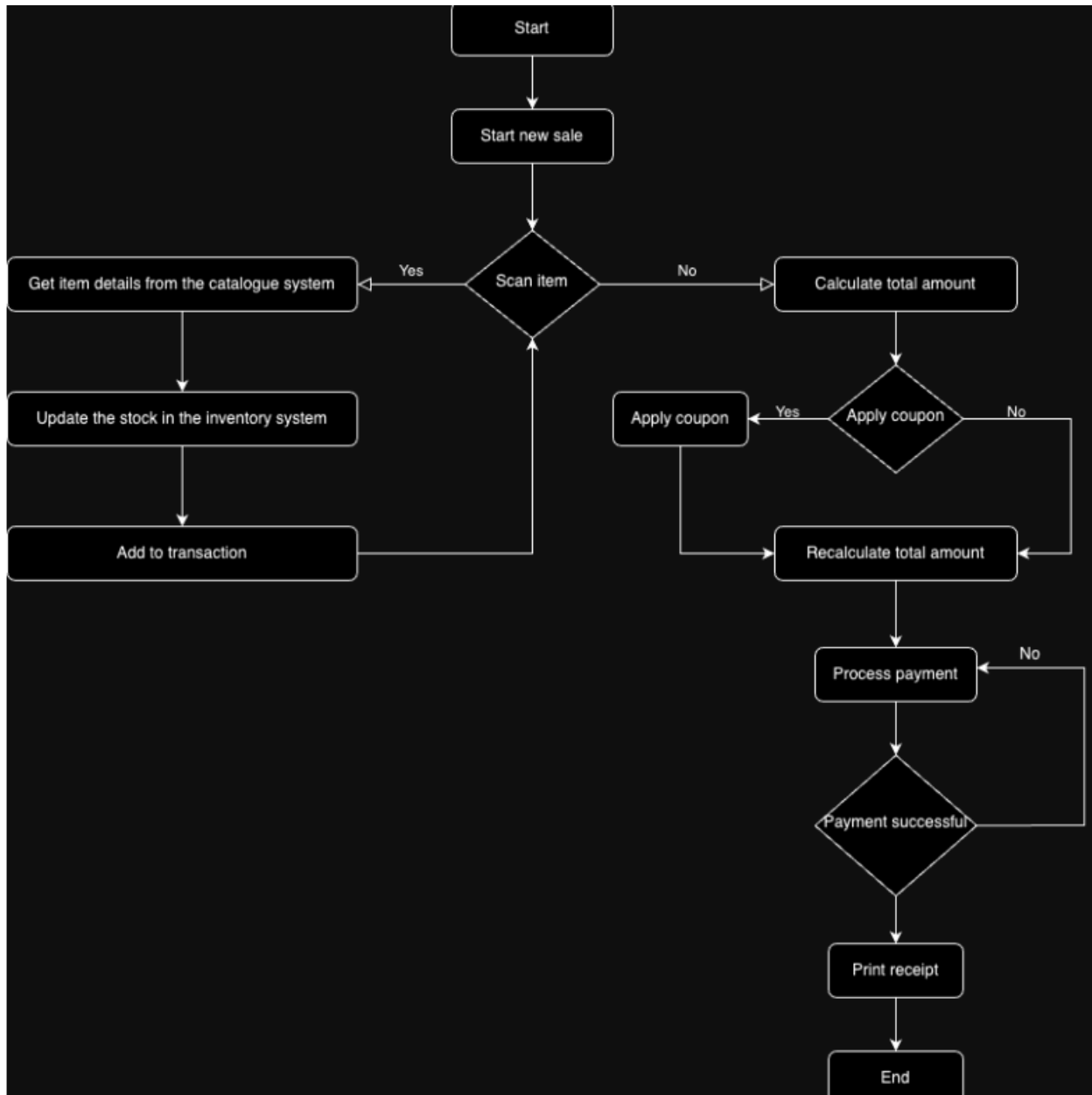


Q4) Develop Analysis Domain Models for the given POS system.



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

(1) "Process Sale" Activity Diagram :-



(2) “Handle Return” Activity Diagram :-

