IT-314 Software Engineering

Lab-06 – Modelling Class Diagram and Activity Diagram

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Lab Group - 3

(1)Textual description for "Process Sale" and "Handle Return" use cases.

Use Case: Process Sale

Actor:

- Cashier

Preconditions:

- The cashier has successfully logged into the POS system.
- The customer presents items for purchase.

Main Flow:

1. The cashier initiates a new sale process.
2. For each item the customer is buying:
   a. The cashier scans the barcode of the item.
   b. The POS system retrieves the product info, including price, from the catalog database.
   c. The system checks and reduces the stock count of the item in the I inventory.
   d. The POS system includes the item in the current transaction list.
3. The system provides an updated total of all items in the cart.
4. The cashier communicates the final total cost to the customer.
5. The customer decides on the payment method (e.g., cash, credit, or check).
6. If the customer presents a coupon:
   a. The cashier applies the coupon discount to the transaction.
   b. The POS recalculates the updated total after the coupon is applied.
7. The cashier processes the customer' s chosen payment method.
8. The system verifies and approves the payment.
9. The POS system generates a detailed receipt of the sale.
10. The cashier prints the receipt and hands it to the customer.

Alternate Flows:

-2b. If the item is not found in the catalog, the cashier manually enters the item information (e.g., price, description).

- 7a. In case the payment attempt fails, the customer selects another method of payment.

Postconditions:

- The sale transaction is finalized and saved in the POS system.
- The inventory reflects the updated stock levels.
- The printed receipt is given to the customer**.**

Use Case: Handle Return

Actor:

Cashier

Preconditions:

1. The cashier has logged into the POS system.
2. The customer has brought items for return.

Main Flow:

1. The cashier begins the return transaction process.
2. The customer provides either the receipt or details of the original transaction.
3. The cashier reviews whether the item(s) meet the criteria for return (e.g., within the return window, item condition

4. For each item being returned:
    a. The cashier scans the item's barcode.
    b. The system retrieves details about the item from the original sale record.
    c. The POS updates the inventory to reflect that the item is being restocked.
    d. The system adds the item to the current return transaction.
5. The system calculates the total refund due to the customer.
6. The cashier confirms the refund amount with the customer and the items being returned.
7. The cashier initiates the refund, typically processed using the original payment method.
8. The system generates a return receipt with details of the transaction.
9. The cashier prints and provides the return receipt to the customer.

Alternate Flows:

1. 2a. If the customer cannot provide a receipt, the cashier searches for the original transaction in the POS. If it can't be found, the process is terminated.
2. 3a. If the item is not eligible for return (e.g., outside return policy or damaged), the cashier informs the customer, and the process is discontinued.
3. 7a. If the original payment method (such as a credit card) is unavailable, an alternate refund method is applied (e.g., store credit).

Postconditions:

1. The return is successfully recorded in the POS system.
2. The inventory levels reflect the returned items.
3. The refund is completed and provided to the customer.
4. The return receipt is printed and given to the customer.

(2) Entity/Boundary Control Objects :

Entity Objects:

- Sale
- Item
- Payment
- Discount_coupon
- User (Cashier/Admin)

Boundary Objects:

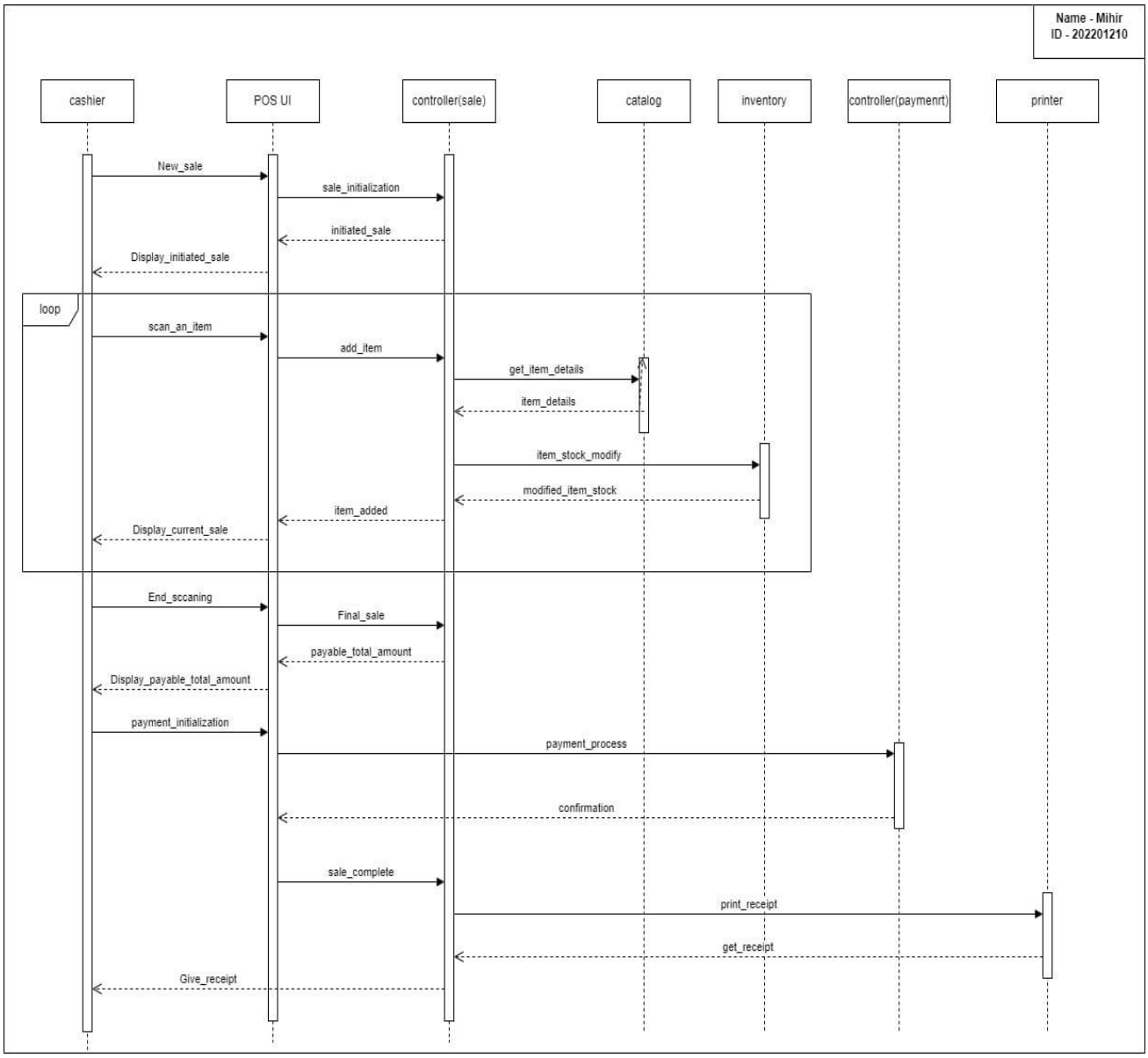
- POS_UI
- Payment_gateway
- Printer
- Scanner

Control Objects:

- SaleController
- PaymentController
- Inventory
- Catalog
- UserAuthentication
- ReturnController

(3) Sequence Diagrams:

Process Sell :



Handle Return :

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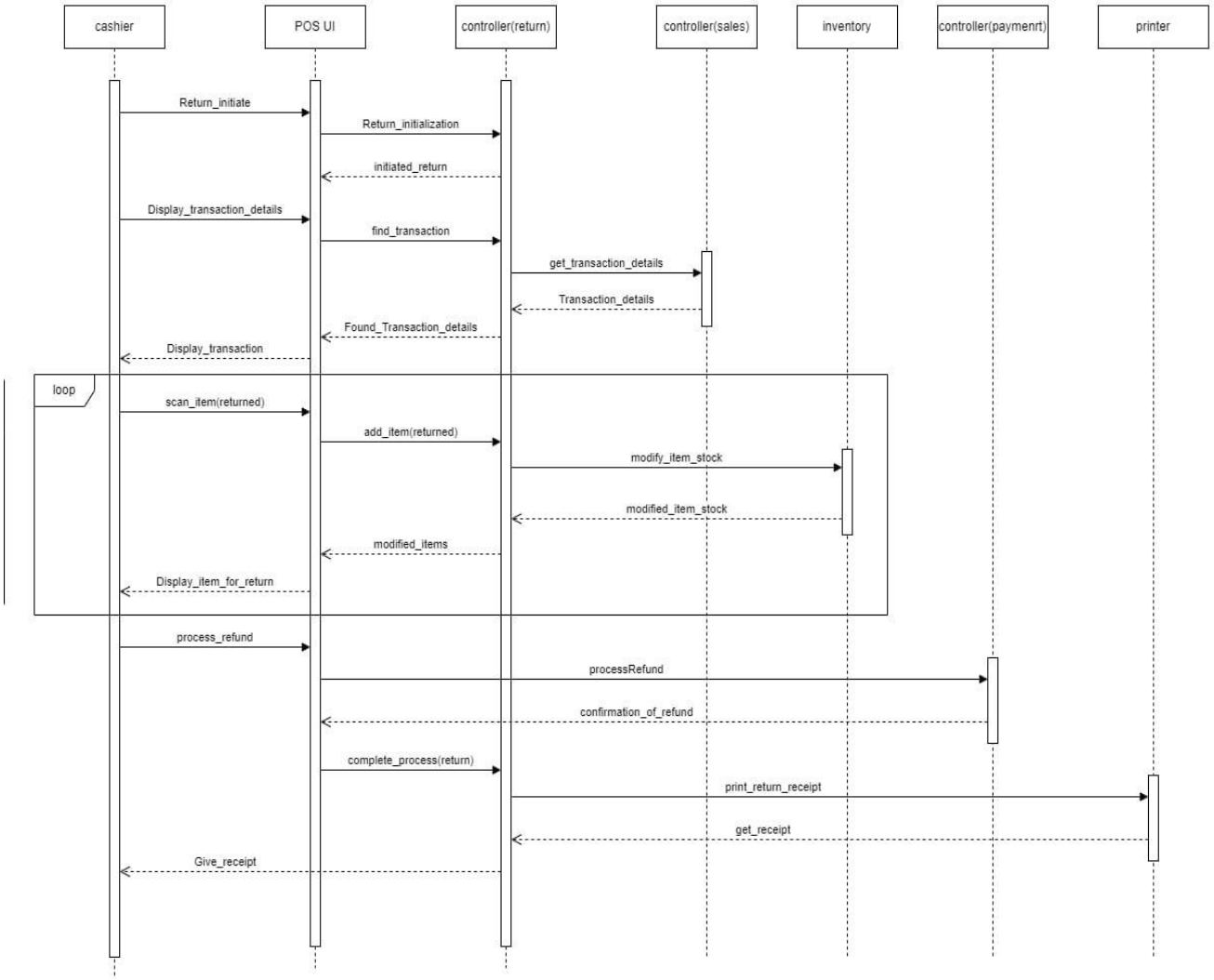
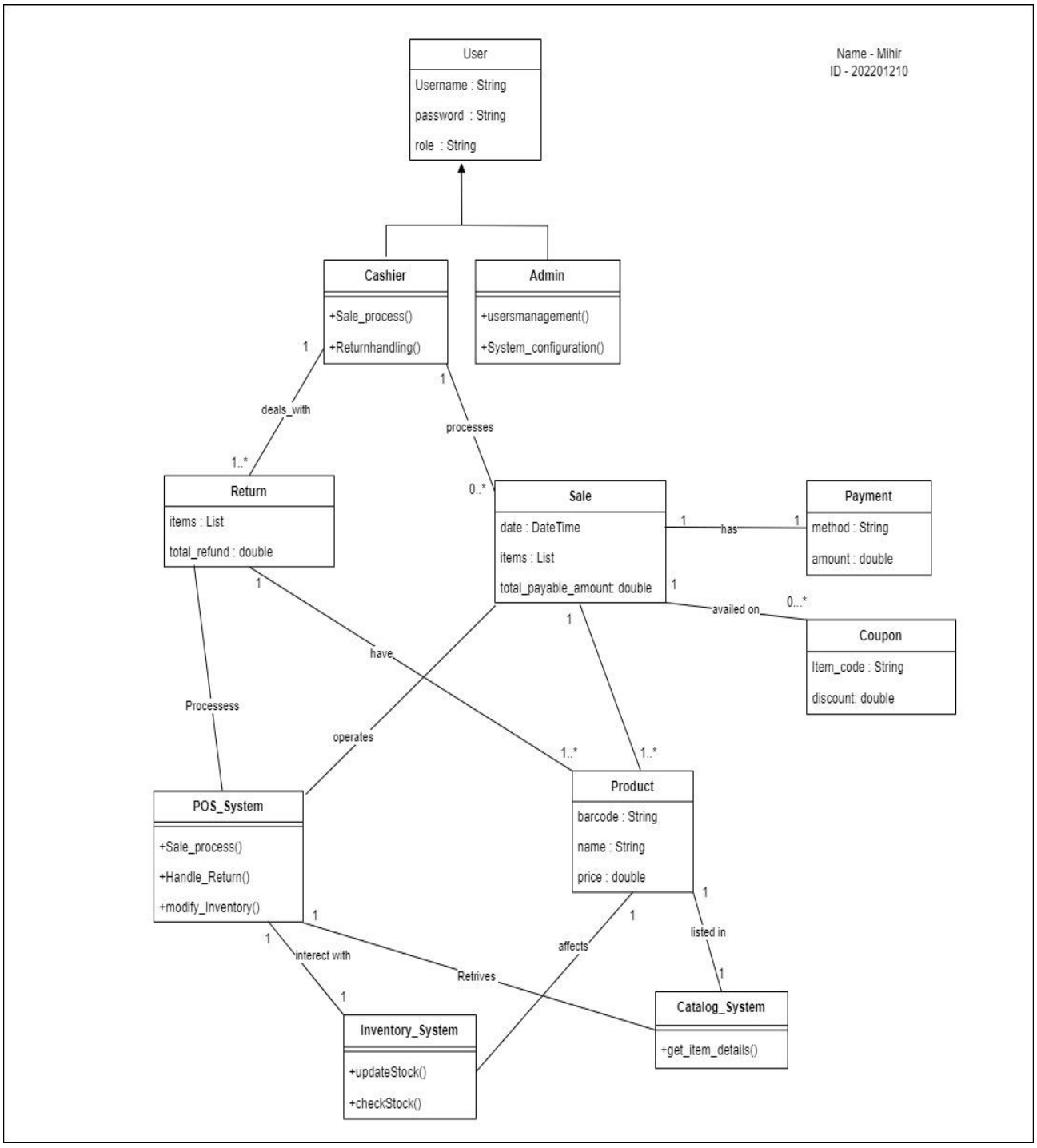
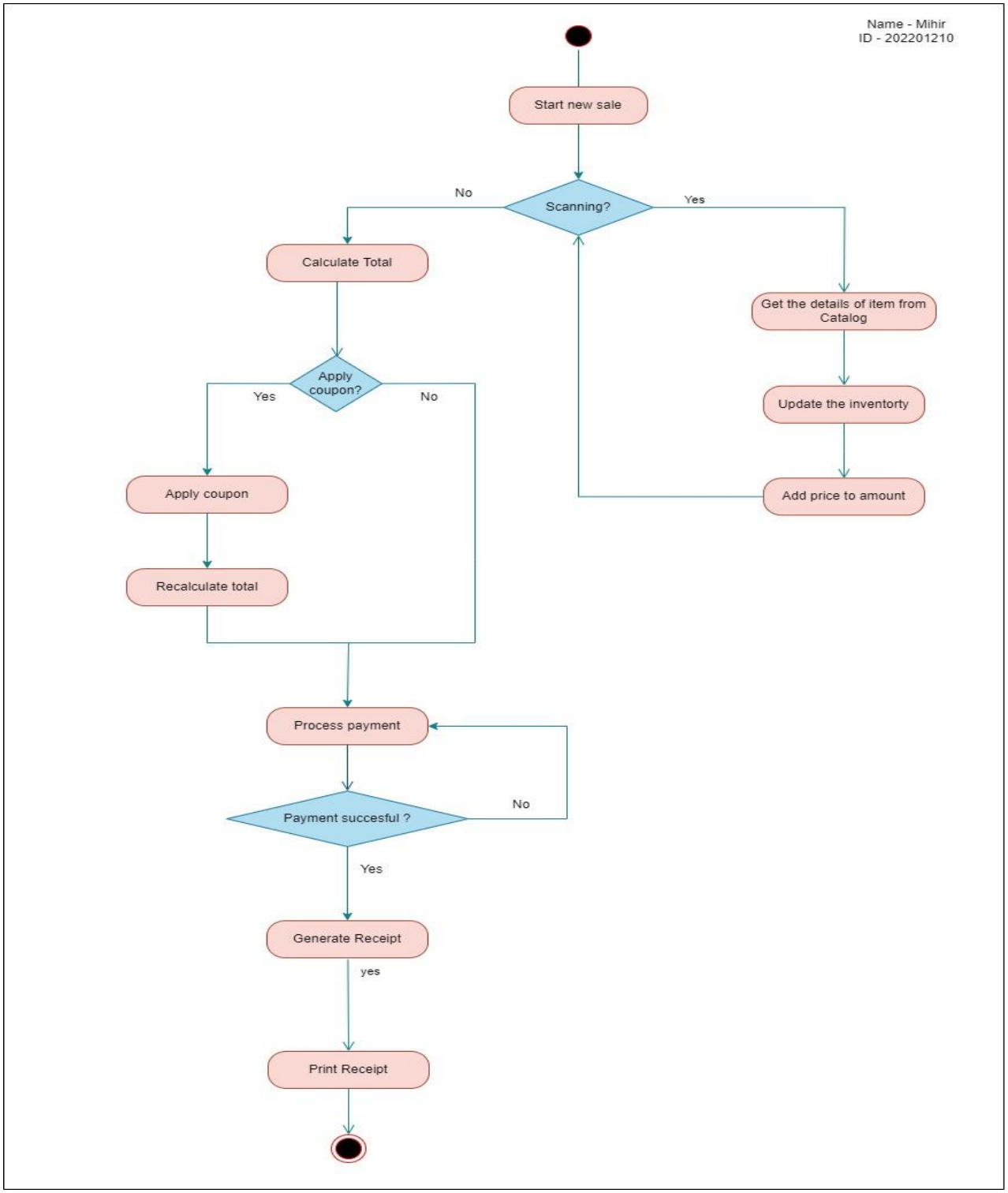


(4) Analysis Domain Models :



(5) Activity diagram for ” Process Sale" and ” Handle Return" use cases.

Process Sell :



Handle Return :