IT-314

Lab6 - Modeling Class Diagram and Activity Diagram (Point of Sale System)

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Task-1

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

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1. Process Sale

Use Case : Process Sale

Actors : Cashier

Preconditions :

- The customer has selected a product to purchase.
- The cashier must be logged into the POS system.
- The POS system must be connected to the inventory and payment systems.

Main Flow :

1. The customer brings the items or goods to the POS counter to purchase.
2. The cashier initiates a new sale in the POS system.
3. The cashier uses a barcode scanner to scan the item and scans each item's barcode.
4. The POS system retrieves item details like prices,item name etc… from the catalog system.
5. The system applies promotions, discounts or gift coupons if available.
6. The system displays the bill including item details and total amount on the display.
7. The cashier requests payment and asks the customer to select the payment method like cash, credit/debit card or check etc…
8. The cashier processes the payment and communicates with the payment gateway to verify the successful transaction.
9. After a successful transaction, the pos system updates the stock of the purchased items in the inventory system.

10. The pos system generates the receipt and the cashier gives it to the customer with their purchased items.
11. The system can also issue gift coupons for future purchase.

Extension :

4a. If the details of the item are not found then the cashier either manually fills the details of the item or asks assistance from the administrator to update the catalog system.

5a. If the coupon or discount is found invalid or expired then the cashier either continues payment without applying discount by informing that to the customer or takes the help of the manager for his/her approval.

8a. If the payment fails then the cashier asks the customer to select another method for payment.

8b. If the customer tries to pay by credit/debit card and the balance is insufficient for payment then the cashier informs the customer and suggests paying by money or else the transaction can not be completed and the customer cannot buy the items.

10a. If the system doesn't generate the receipt after a successful transaction then the cashier may restart the printer or provide the digital receipt to the customer.

Postconditions:

- The inventory is updated with reduced stock levels for the purchased items.
- The sale transaction is recorded in the POS system.
- Receipt is generated and given to the customer.

2. Handle Return

Use Case : Handle Return

Actors : Cashier

Preconditions :

- The customer wishes to return an item(s).
- The cashier must be logged into the POS system.
- The customer must have a valid receipt of the purchased product.

Main Flow:

1. The customer presents the item and the original receipt to the cashier for a return.
2. The cashier retrieves the original sale by entering the transaction ID or scanning the receipt into the POS system.
3. The system checks the item’s eligibility for return based on the store's return policy (e.g., return window, item condition).
4. If the item qualifies, the system begins the return process.
5. The system offers the customer a choice between a refund or exchange, as per store policy.
6. If a refund is chosen, the customer selects the refund method (cash, card, or store credit), and the payment gateway processes it.
7. If an exchange is selected, the cashier scans the new item, and the system calculates any price difference to be paid or refunded.
8. The POS system updates the inventory by returning the item to stock.
9. The system generates a return receipt, which the cashier hands to the customer.
10. The return or exchange is finalized, and the cashier provides the receipt or any applicable refund to the customer.

Extension :

1a. If the customer doesn’t have a receipt then the cashier can find details of purchase by checking the customer's account details or transaction details in the record of sale.

2a. If the record of the item(s) is not found then the cashier returns the product to the customer and informs the customer that the item(s) has not been sold from their store.

3a. If the item does not meet the return criteria like if the item’s last return date is expired or the item is damaged then the cashier informs the customer that the item can not be returned and returns the item to the customer.

6a. If the refund process fails then the cashier suggests alternative solutions to the customer or find other methods for refund.

Postconditions:

- The inventory is updated with the returned items.
- The return transaction is recorded in the POS system.
- The refund is processed and returned to the customer via the chosen method.

Task-2

Identify Entity/Boundary Control Objects

Entity Objects:

1. Inventory
2. Customer
3. Cashier
4. Receipt
5. Gift / Coupon
6. Item

Boundary Objects:

1. POS Interface
2. Barcode Scanner
3. Payment Terminal
4. Receipt Printer
5. Admin Interface

Control Objects:

1. Sale Controller
2. Return Controller
3. Inventory Controller
4. Payment Controller
5. Catalog Controller

Task-3

Develop Sequence Diagrams

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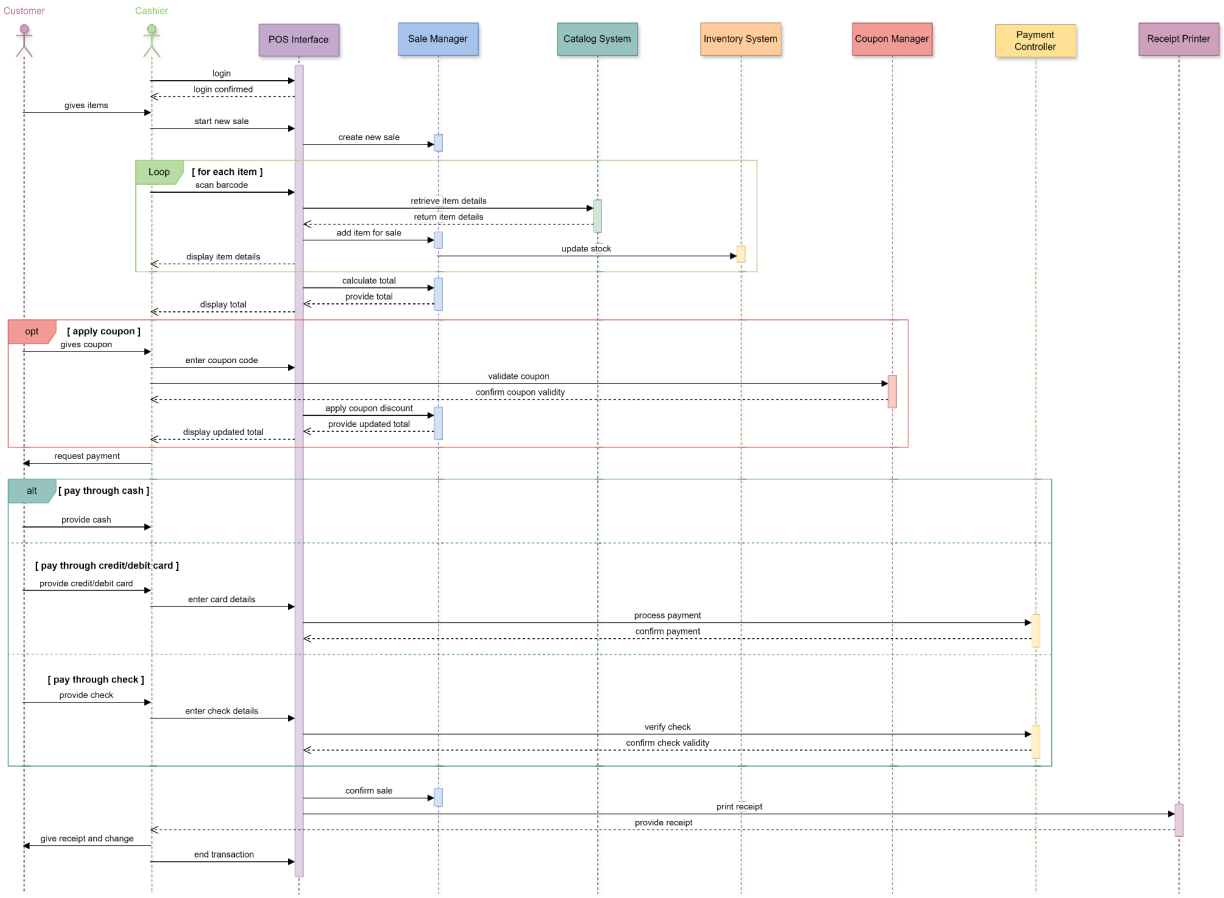
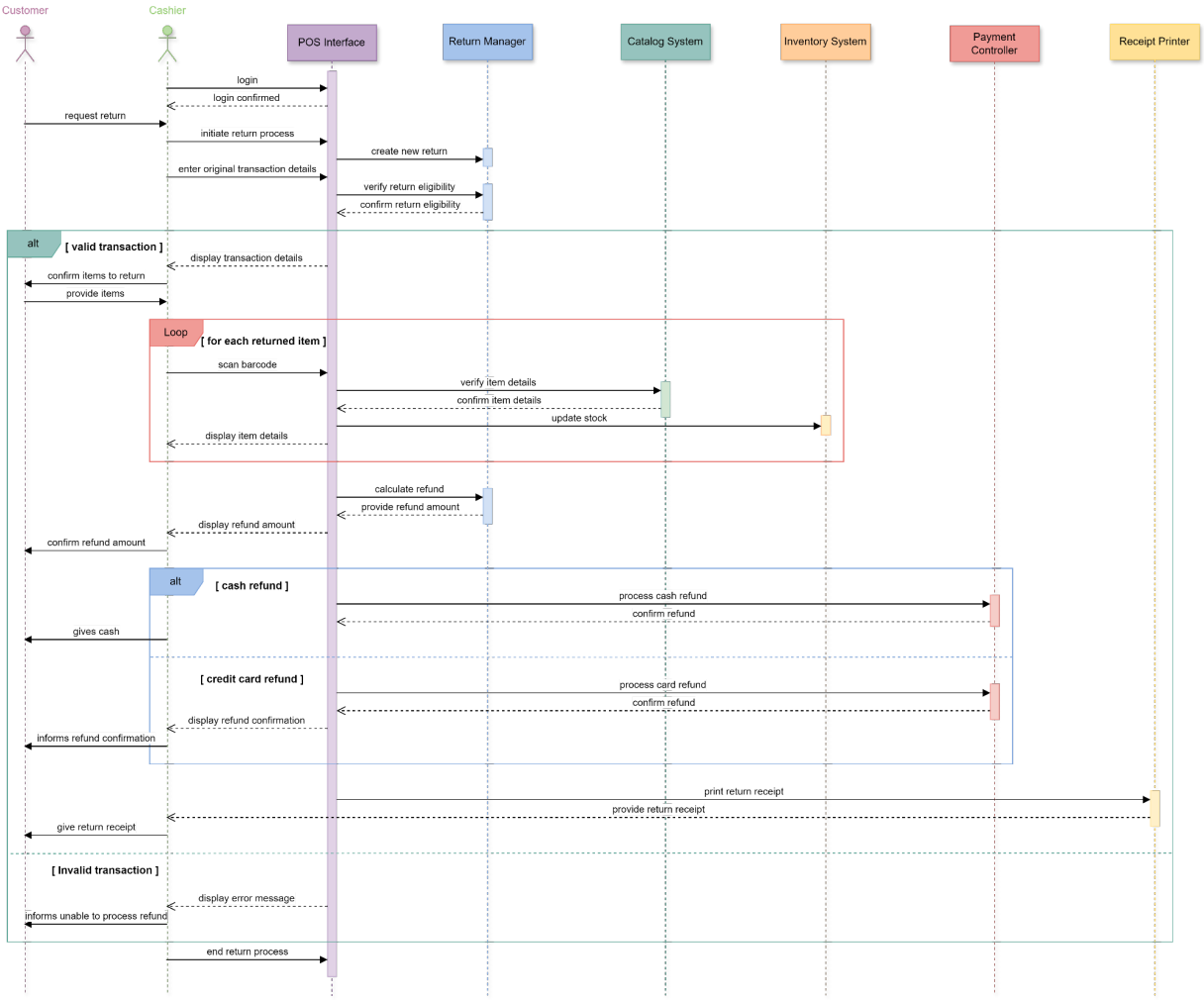
1. Process Sale

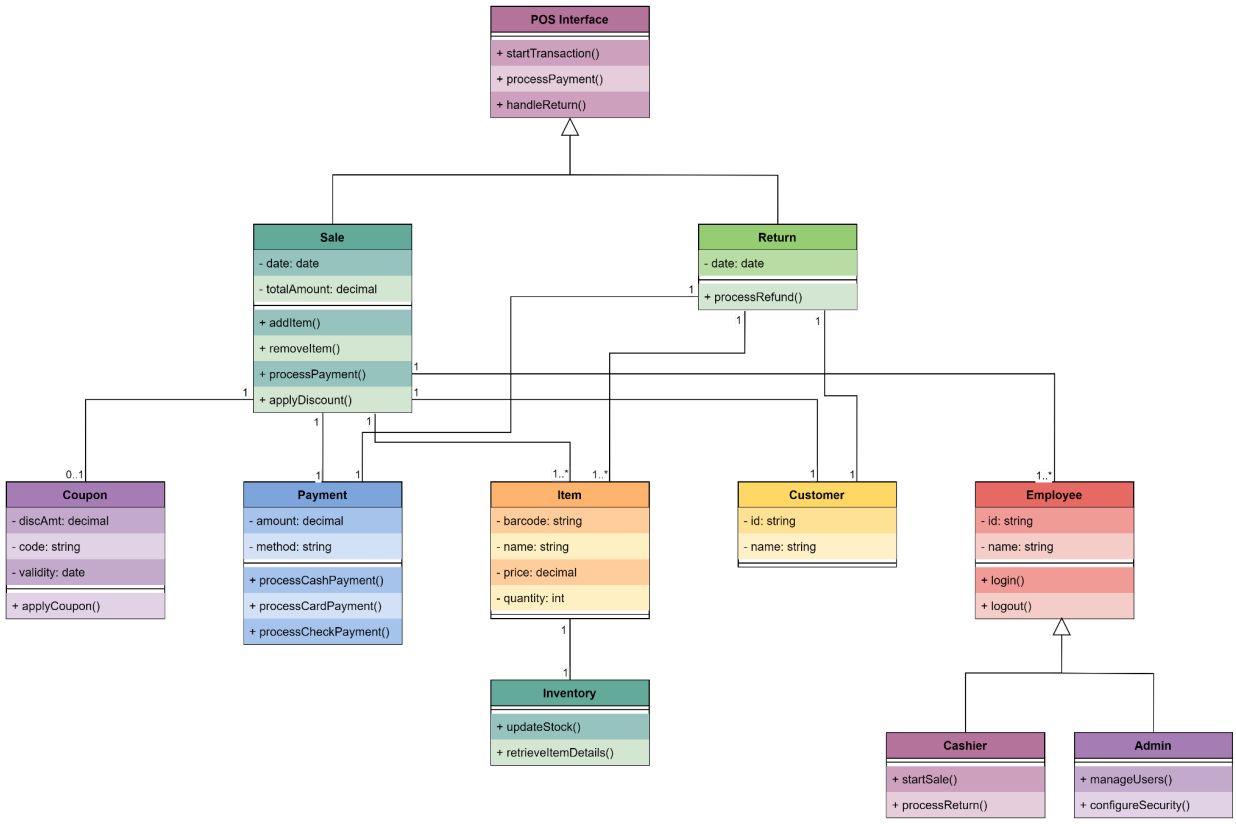


2. Handle Return



Task-4

Develop Analysis Domain Models(Class Diagram)



Task-5 : Develop activity diagram for "Process Sale" and "Handle Return" use cases

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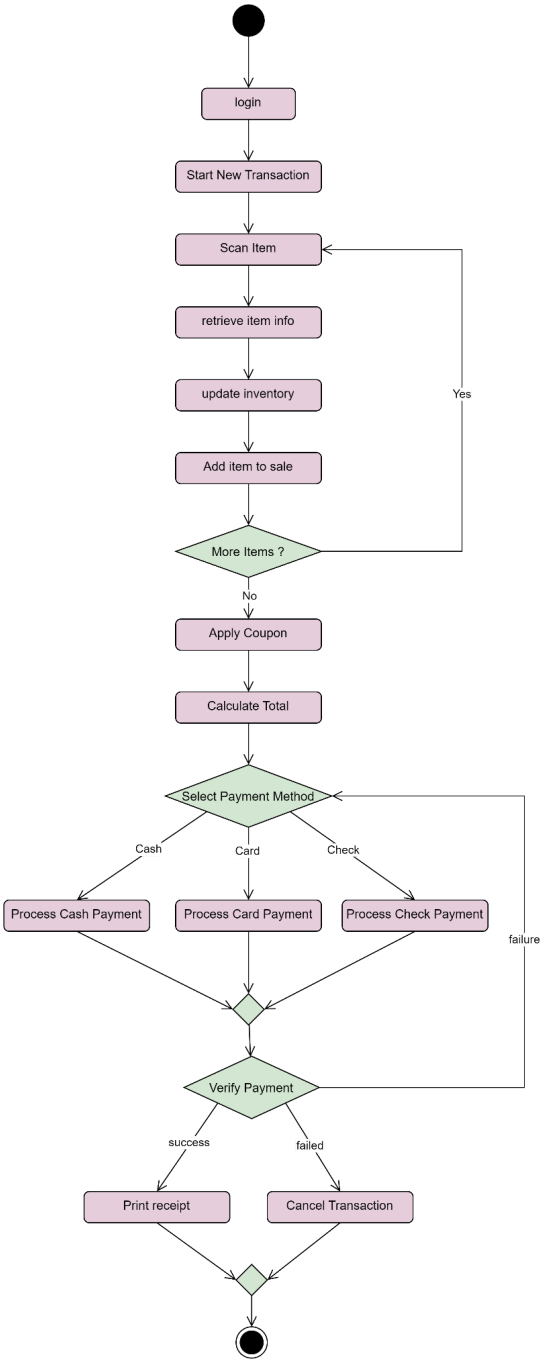
1. Process Sale



2. Handle Return