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Modeling Class Diagram and Activity Diagram

Point of Sale System

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

Process Sale

Use Case Name	Process Sale
Actors	Cashier, Catalog System, Inventory System
Description	This use case handles the process of selling goods to customers. When a cashier initiates a sale, the system will retrieve the information of the goods, interact with the inventory system to update stock, handle the payment process, and print a receipt.
Precondition	1. The cashier must be logged in. 2. The customer has selected items for purchase. 3. The system is connected to both the Catalog Inventory systems.
Postconditions	1. The sale is completed and recorded. 2. The inventory is updated. 3. A receipt is printed for the customer.
Main Flow	1. The cashier scans items, and the system retrieves the product details from the Catalog System. 2. The system interacts with the Inventory System to update the stock levels. 3. The system calculates the total sale

	price, including discounts and taxes. 4. The cashier selects a payment method (cash, credit card, etc.). 5. The system processes the payment. 6. After successful payment, a receipt is printed.
Alternate Flow	**Payment Failure**: If payment is declined, the system prompts the cashier to retry or choose another payment method. **Gift Coupon Sale**: If the customer has a gift coupon, the system applies the discount before processing payment.

Handle Return

Use Case Name	Handle Return
Actors	Cashier, Inventory System
Description	This use case manages the process of returning purchased goods. A customer can return items, and the system will update the inventory and process any refunds if necessary.
Precondition	1. The cashier must be logged in. 2. The customer has the item and valid proof of purchase (e.g., receipt).
Postconditions	1. The item is returned to stock or removed (based on condition). 2. A refund or exchange is processed.
Main Flow	1. The cashier initiates the return process and verifies the receipt and purchased item(s). 2. The system interacts with the Inventory System to add the item back to stock. 3. The cashier selects whether the customer receives a refund or exchange. 4. The system processes the refund to the original payment method or processes the exchange.

Alternate Flow	**Item Not Eligible for Return**: If the item does not meet the return criteria (e.g., damaged, outside return period), the system notifies the cashier, and the return is rejected.

- **Identify Entity/Boundary Control Objects**

1. Entity Objects:

These represent objects that model data or objects within the system. They contain the business logic and represent things that exist in the system's domain.

2. Boundary Objects:

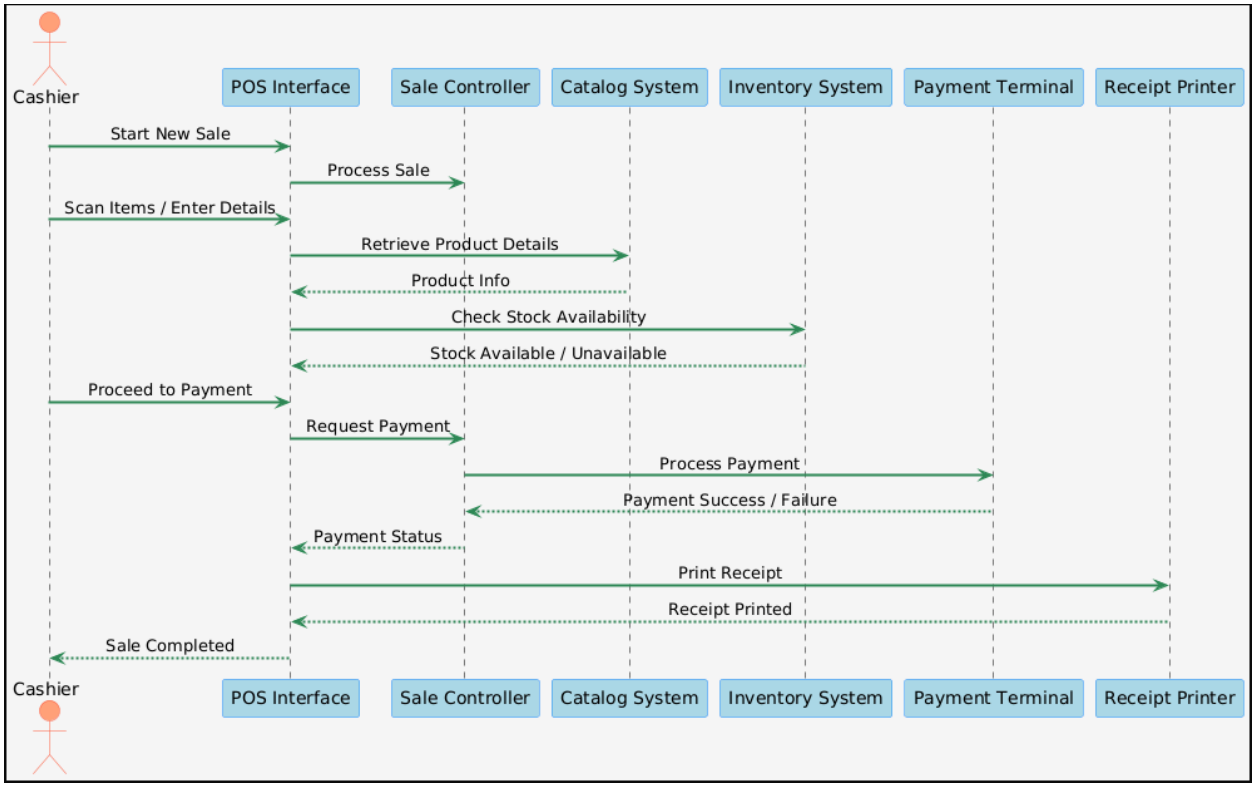
These objects are used to model interactions between actors (users and external systems) and the system. They are often UI components or external system interfaces.

3. Control Objects:

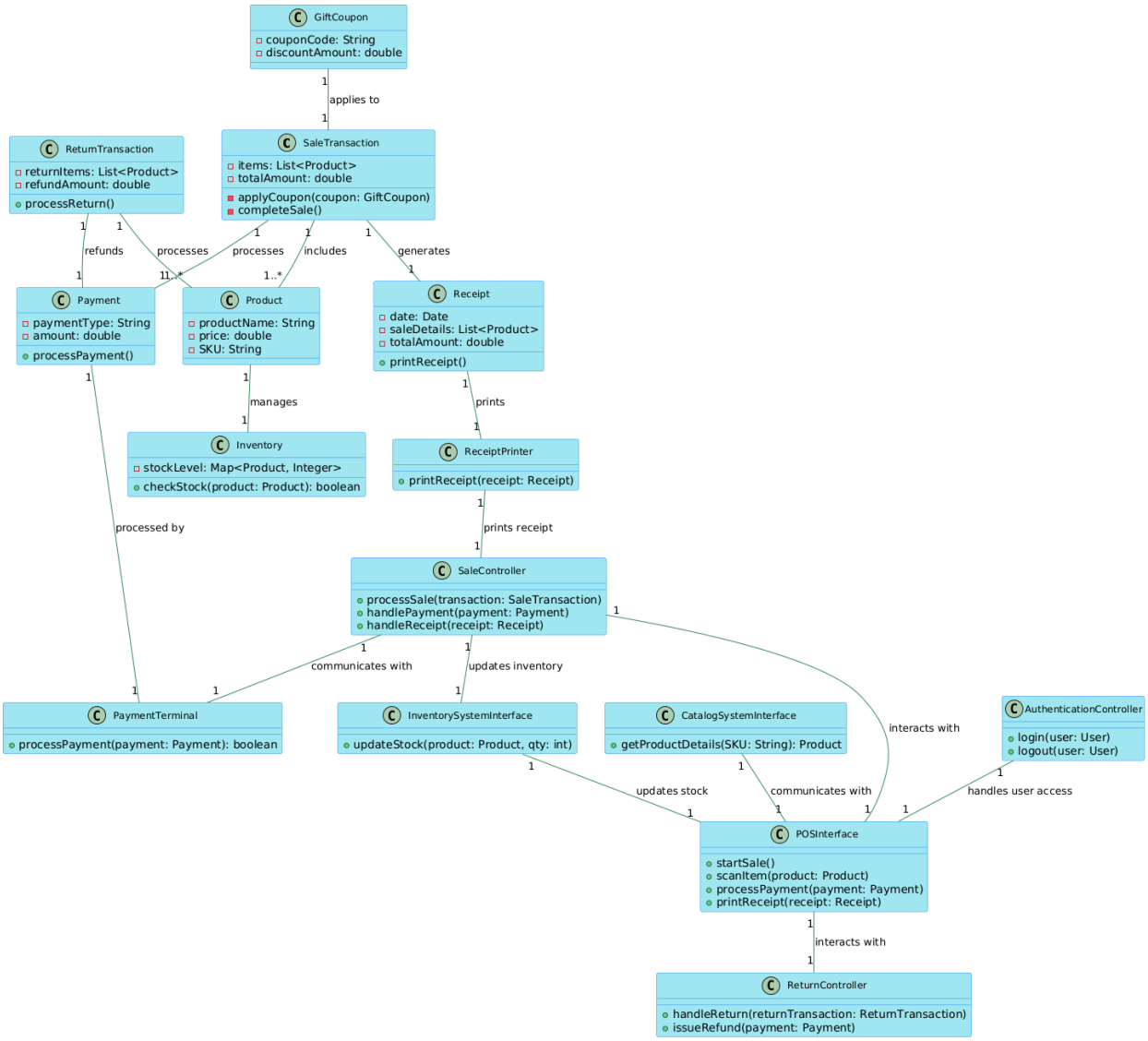
Control objects handle the logic of use case scenarios and direct the flow of information between the entity and boundary objects.

Object Type	Object
Entity Objects	Sale Transaction, Item/Product, Inventory, Payment, Receipt, Gift Coupon, Return Transaction
Boundary Objects	POS Interface, Catalog System Interface, Inventory System Interface, Payment Terminal, Receipt Printer, Login Interface, Return Interface
Control Objects	Sale Controller, Payment Controller, Receipt Controller, Return Controller, Authentication Controller

- **Develop Sequence Diagrams**

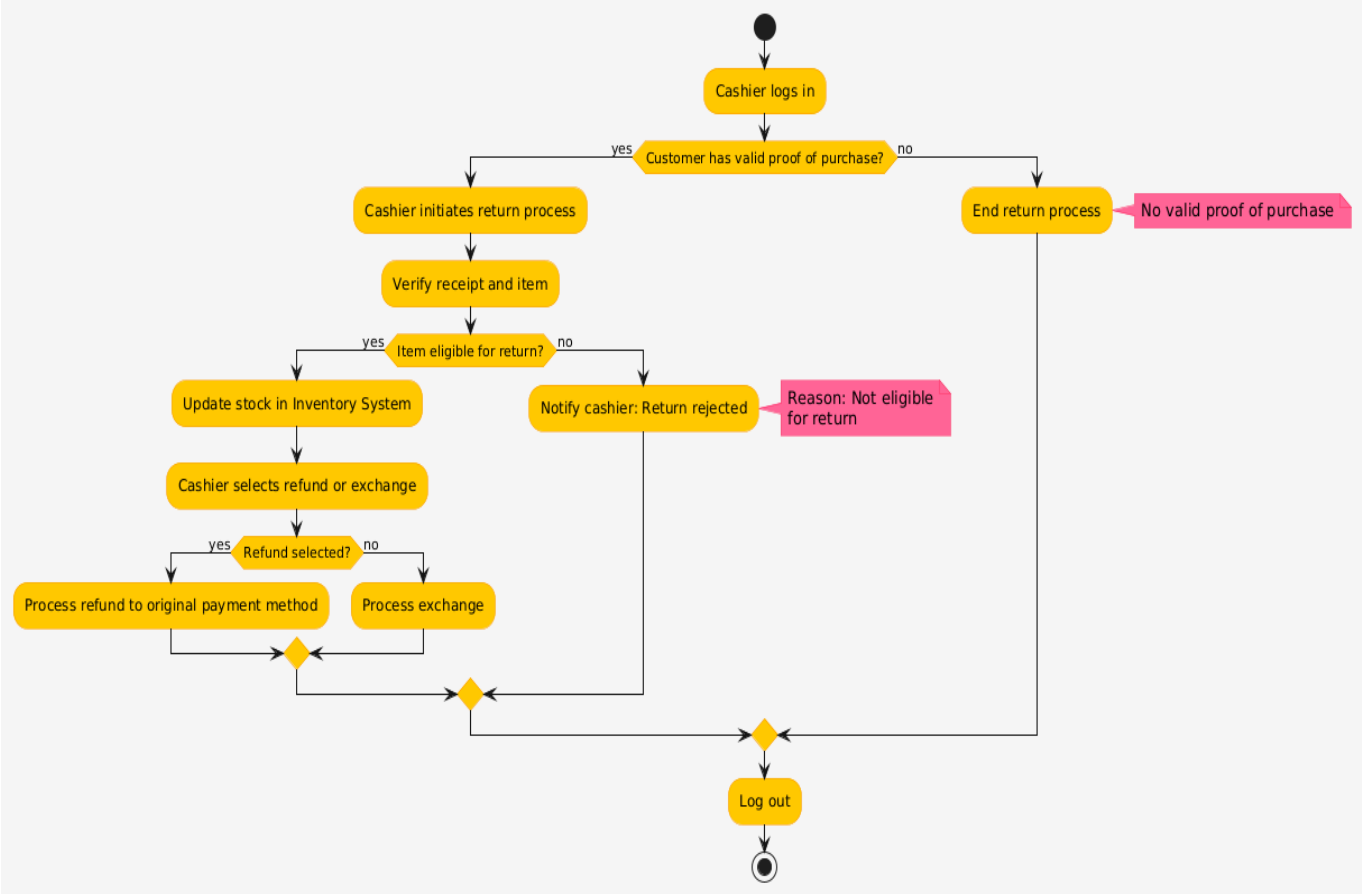


- **Develop Analysis Domain Models**

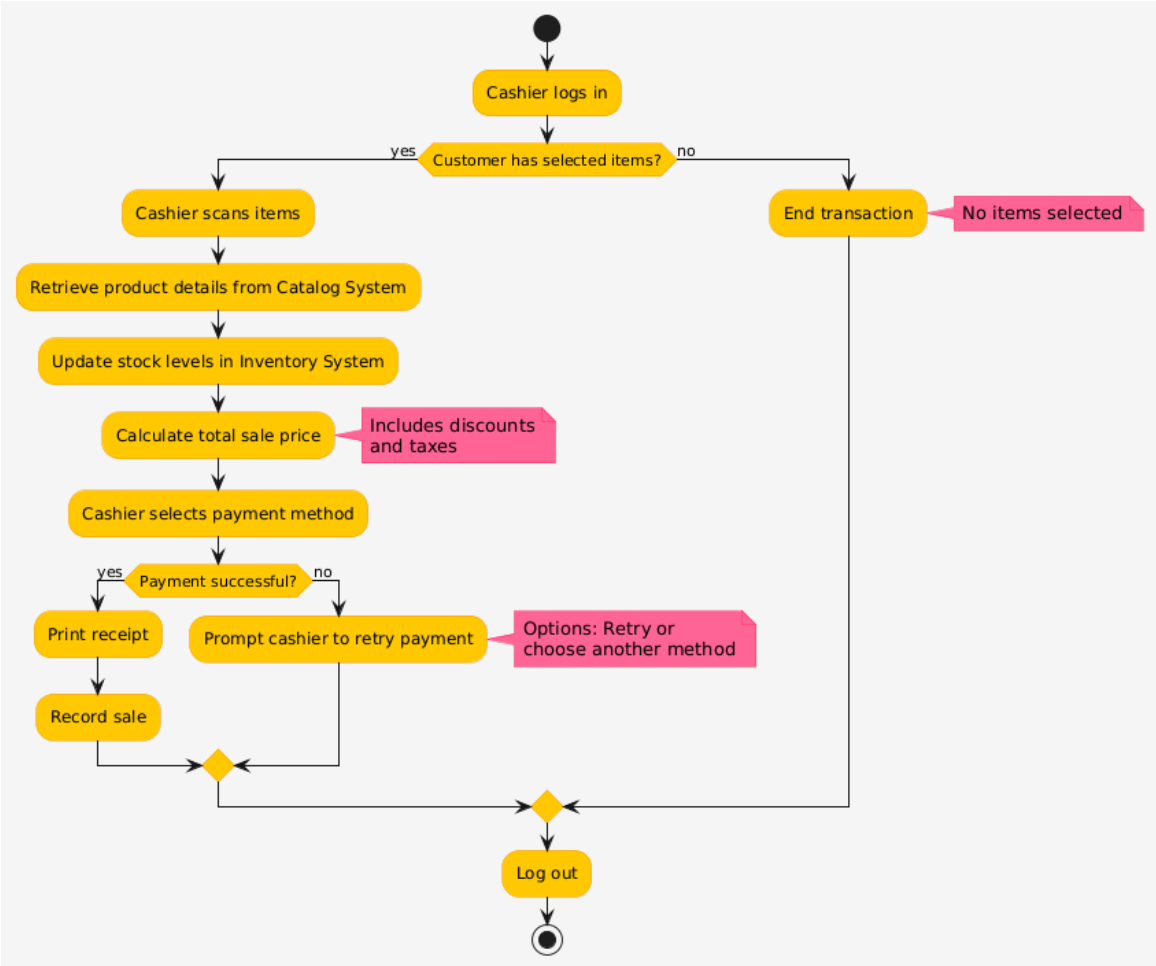


- **Develop activity diagrams for "Process Sale" and "Handle Return" use cases.**

Process Sale



Handle Return



Combined activity diagrams for "Process Sale" and "Handle Return"