IT 314 - Software Engineering
Lab-06
Modeling Class Diagram and Activity Diagram (Point of Sale System)

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

Use Case: Process Sale

Actor: Cashier, Customer, Payment System

Preconditions:

- The cashier is logged into the POS system.
- The POS system is linked to both the inventory and catalog systems.
- The customer has selected items for purchase.

Basic Flow:

- The cashier begins a new transaction.
- The cashier scans the barcode for each item.
- The POS system fetches the name and price of each item from the catalog database.
- The inventory system adjusts the stock levels by subtracting the quantity of each sold item.
- After all items are scanned, the cashier checks the total amount due.
- The customer can apply any available coupons or discounts.
- The customer chooses a payment method, such as cash, credit card, or check.
- The cashier processes the payment using the POS system.
- Once the payment is confirmed, a receipt is printed and given to the customer.

Postconditions:

- The transaction is recorded in the system.
- The inventory reflects the updated stock levels.
- A printed receipt is issued, confirming the payment.

Use Case: Handle Return

Actor: Cashier, Customer, Payment System

Preconditions:

- The cashier is logged into the POS system.
- The customer presents a receipt or provides details of the original purchase.
- The item is eligible for return according to store policy.

Basic Flow:

- The cashier begins a return transaction in the POS system.
- The cashier scans or selects the item that the customer wishes to return.
- The POS system retrieves the original transaction details, including price, transaction ID, and receipt information.
- The inventory system updates to reflect the addition of the returned item back into stock.
- The cashier processes the refund using the original payment method (cash, credit card, or store credit).
- A return receipt is generated by the system, which the cashier then provides to the customer.

Postconditions:

- The return transaction is logged in the system.
- The inventory reflects the updated status of the returned item.
- The customer receives their refund along with a printed return receipt.

2 . Identify Entity/Boundary/Control Objects.

Process Sale

Entity Objects:

- **Product**: Represents the items for sale, including attributes like name, price, and available stock.
- **Sale Transaction**: Records all details related to the sale, such as items purchased, prices, discounts applied, and payment information.
- **Inventory**: Monitors stock levels and adjusts the quantity available following each sale.
- **Customer**: The individual who is making the purchase.
- **Payment**: Represents the method of payment chosen by the customer, which can be cash, credit card, or check.

Boundary Objects:

- **Barcode Scanner**: A device used by cashiers to scan the barcodes of products.
- **POS Screen**: The interface through which cashiers initiate sales, view products, and process payments.
- **Payment Terminal**: The device that processes customer payments, particularly for credit card transactions.
- **Receipt Printer**: Prints a receipt to confirm the transaction once it is complete.

Control Objects:

- **Sale Processor**: Oversees the entire sale process, including scanning items, applying discounts, and calculating totals.
- **Payment Handler**: Manages the processing of customer payments, ensuring accuracy for cash, credit, or check transactions.
- **Discount/Coupon Manager**: Applies any applicable discounts or promotions based on customer-provided coupons.
- **Inventory Manager**: Responsible for updating the inventory levels to reflect sold items.

Handle Return

Entity Objects:

- **Product**: The item being returned, including its name, price, and eligibility for return.
- **Inventory**: Monitors stock levels and updates them when an item is returned to the inventory.
- **Return Transaction**: Records details about the return, including the item(s) being returned and the refund issued.
- **Refund**: The amount refunded to the customer, indicating the original payment method used.
- **Customer**: The individual returning the product.

Boundary Objects:

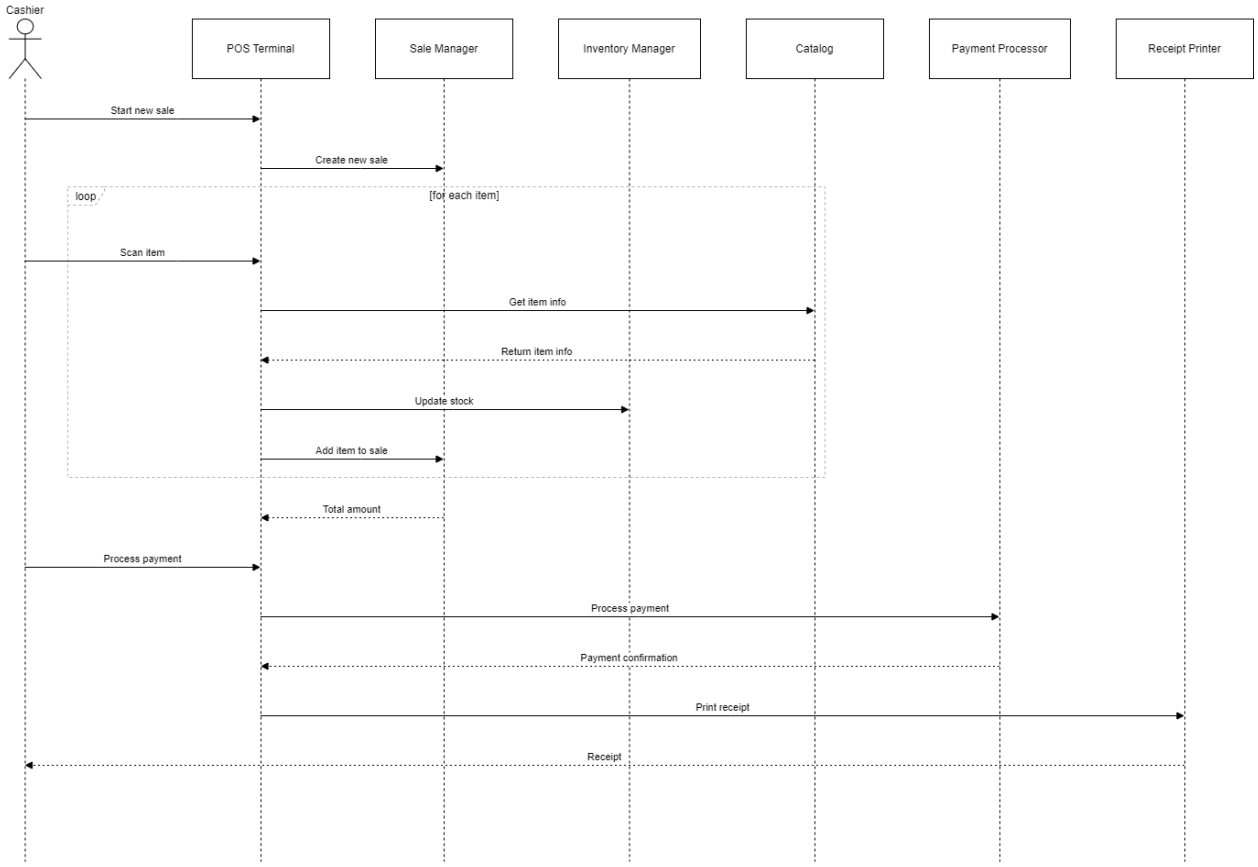
- **Barcode Scanner**: Used by cashiers to scan the barcode of the product being returned.
- **POS Screen**: The interface used to initiate and finalize the return process.
- **Payment Terminal**: Processes refunds for transactions made with credit cards.
- **Receipt Printer**: Prints the return receipt for the customer to confirm the return and refund details.

Control Objects:

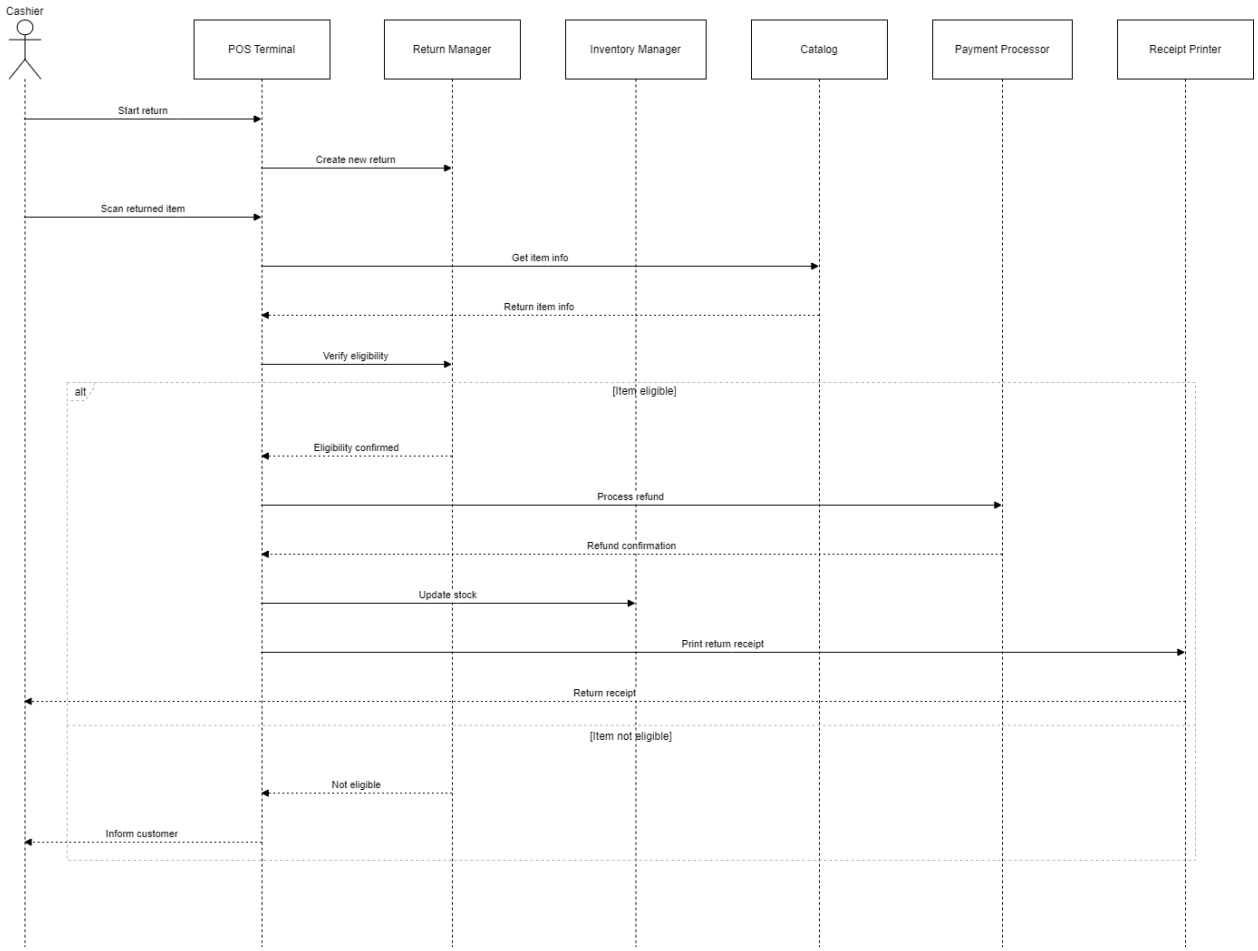
- **Return Processor**: Manages the return transaction process, including item verification and calculating the refund.
- **Refund Handler**: Ensures that the correct amount is refunded through the original payment method.
- **Inventory Manager**: Updates the inventory system to reflect the addition of returned items back into stock.

3. Develop Sequence Diagrams.

1.Process Sale:-

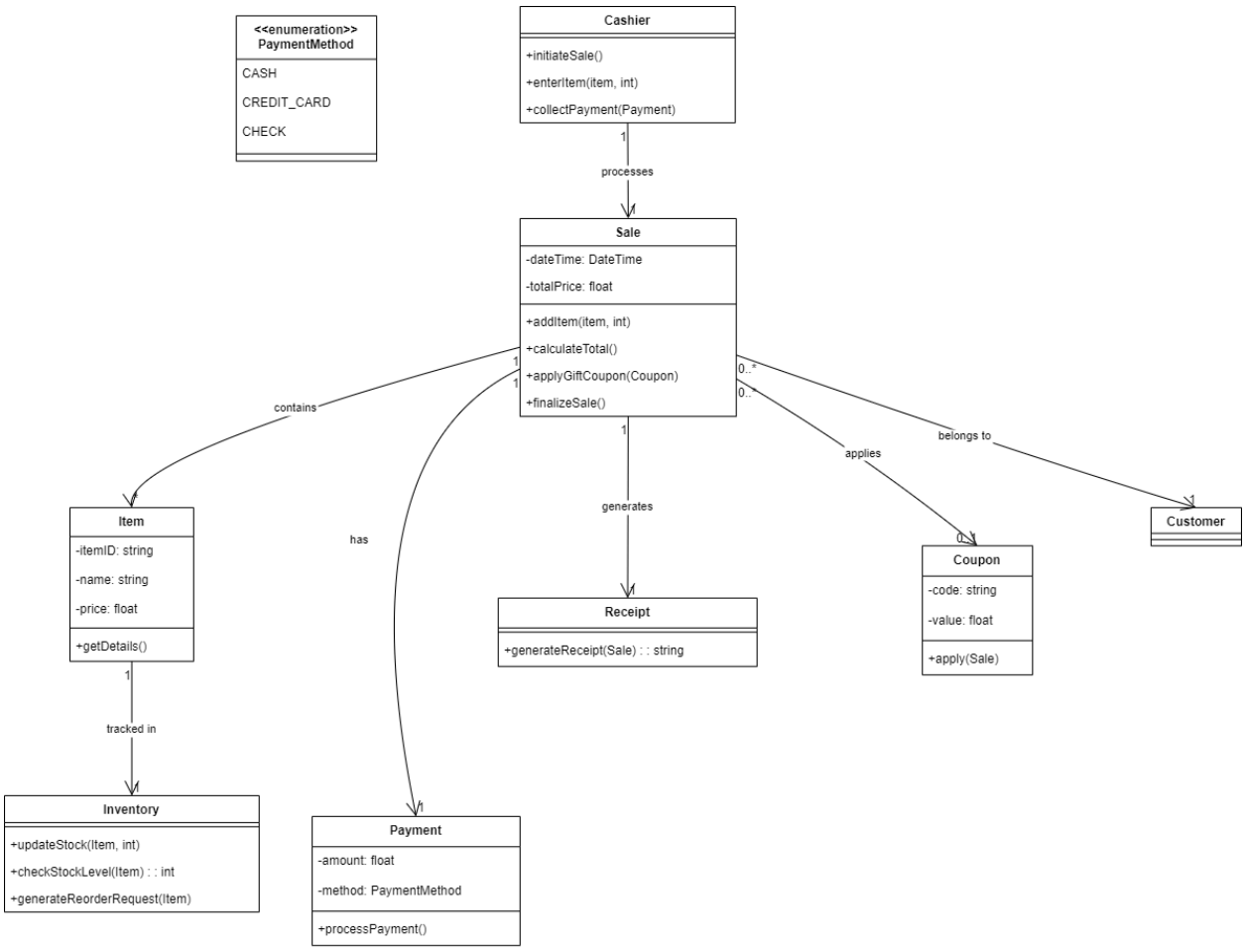


2. Handle return :-

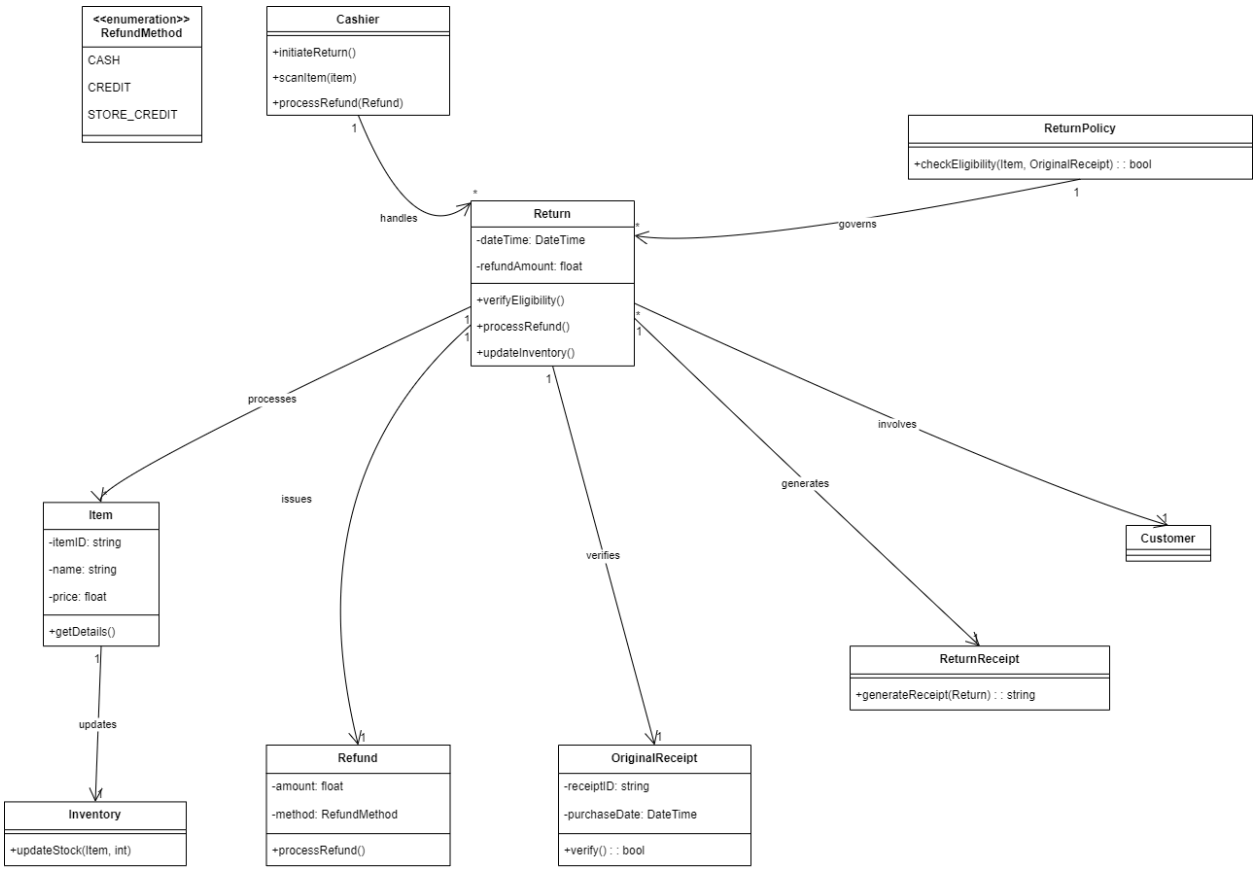


4. Develop Analysis Domain Models

1.Process Sale:-

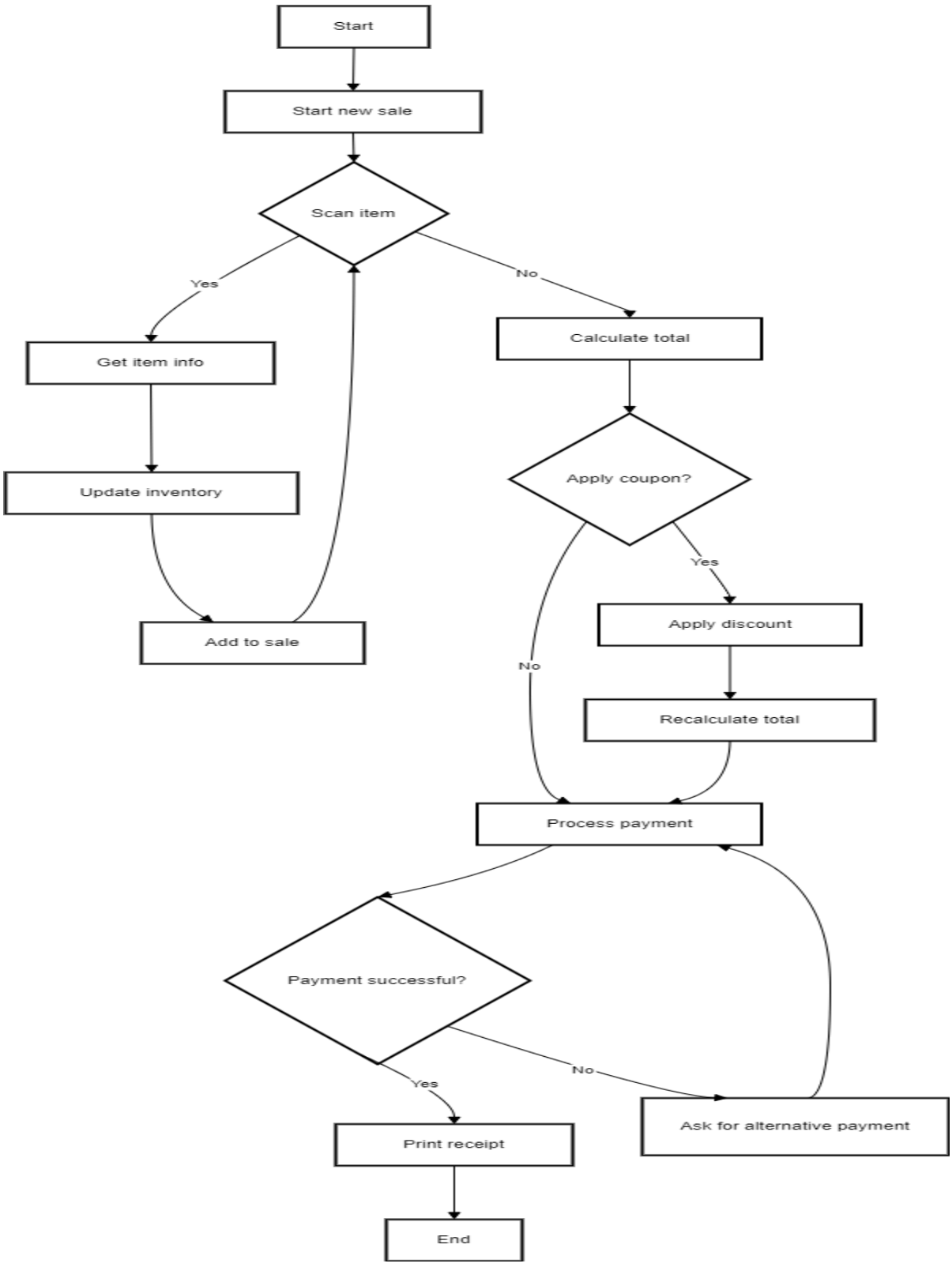


2.Handle Return:-



5. Develop activity diagram for "Process Sale" and "Handle Return" use cases

1.Process Sale:-



2.Handle Return:-