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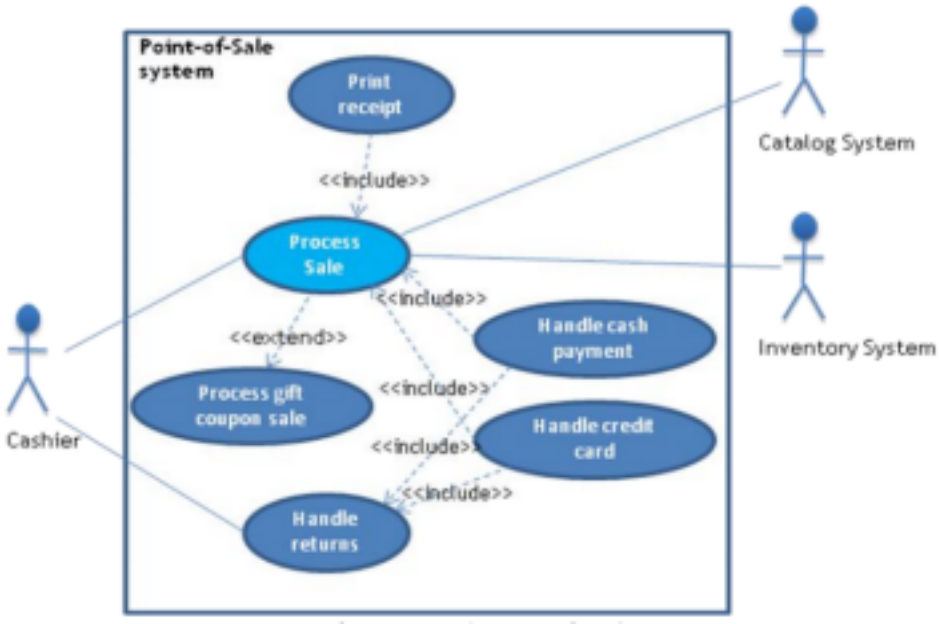
IT314 - Lab 6

Q1. A Problem Description A POS (Point-Of-Sale) system is a computer system typically used to manage the sales in retail stores. It includes hardware components such as a computer, a bar code scanner, a printer and also software to manage the operation of the store. The most basic function of a POS system is to handle sales. When a customer arrives at a POS counter with goods to purchase, the cashier will start a new sale transaction. When the barcode of a good is read by the POS system, it will retrieve the name and price of this good from the backend catalog system and interact with the inventory system to deduce the stock amount of this good. When the sale transaction is over, the customer can pay in cash, credit card or even check. After the payment is successful, a receipt will be printed. Note that for promotion, the store frequently issues gift coupons. The customer can use the coupons for a better price when

purchasing goods. Another function of a POS system is to handle returns…. [The details of which are not given here] A user must log in to use the POS. The users of a POS system are the employees of the store including cashiers and the administrator. The administrator can access the system management functions of the POS system including user management and security configuration that cashiers can't do



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

Use Case 1 : Process Sale

- **Actor(s) :**

- Cashier
- Catalog System (external actor)
- Inventory System(external actor)

- **Precondition :**
  - The cashier must be logged into the system.
  - The items must exist in the catalog and inventory system.
- **Main Flow :**

1. The cashier starts a new sale.
2. The cashier scans the item.
3. The system retrieves the item information from the inventory.
4. The system deducts the stock of the item from the inventory.
5. The cashier repeats the steps 1-4 for all items.
6. The customer chooses a payment method.(cash,credit card or cheque)
7. The system processes the payment.
8. Once payment has been confirmed , the system generates a receipt.

- **Alternate Flow :**

  3a. If an item is not found in the catalog, the cashier gets a notification.

  3b. If there is insufficient stock , the cashier is notified to inform the customer.

  7b. If the payment fails , the cashier retries the payment or cancels the sale.

- **Post condition :**

  The sale is completed and recorded in the system.

The stock is updated in the inventory system.
The receipt is printed for the customer.

Use Case 1 : Handle Returns

- **Actor(s) :**
  - Cashier
  - Inventory System(external actor)

- **Precondition :**

  The cashier must be logged into the system.
  The item to be returned must be a part of a previous sale.
- **Main Flow :**
  1. The cashier starts a new return transaction.
  2. The cashier scans the returned item(s) and verifies the original sale.
  3. The system retrieves the item information from the inventory.
  4. The cashier confirms that the return is within the return policy.
  5. The system updates the stock in the inventory by adding the item.
  6. The system issues a refund or a store credit to the customer.
- **Alternate Flow :**

  4a. If the return period has expired, the system notifies the cashier to reject the return.

4b. If the item is damaged or missing, the return is rejected.

- **Post condition :**
  The return is processed and updated in the inventory system.
  The customer is compensated with appropriate refund or credit.

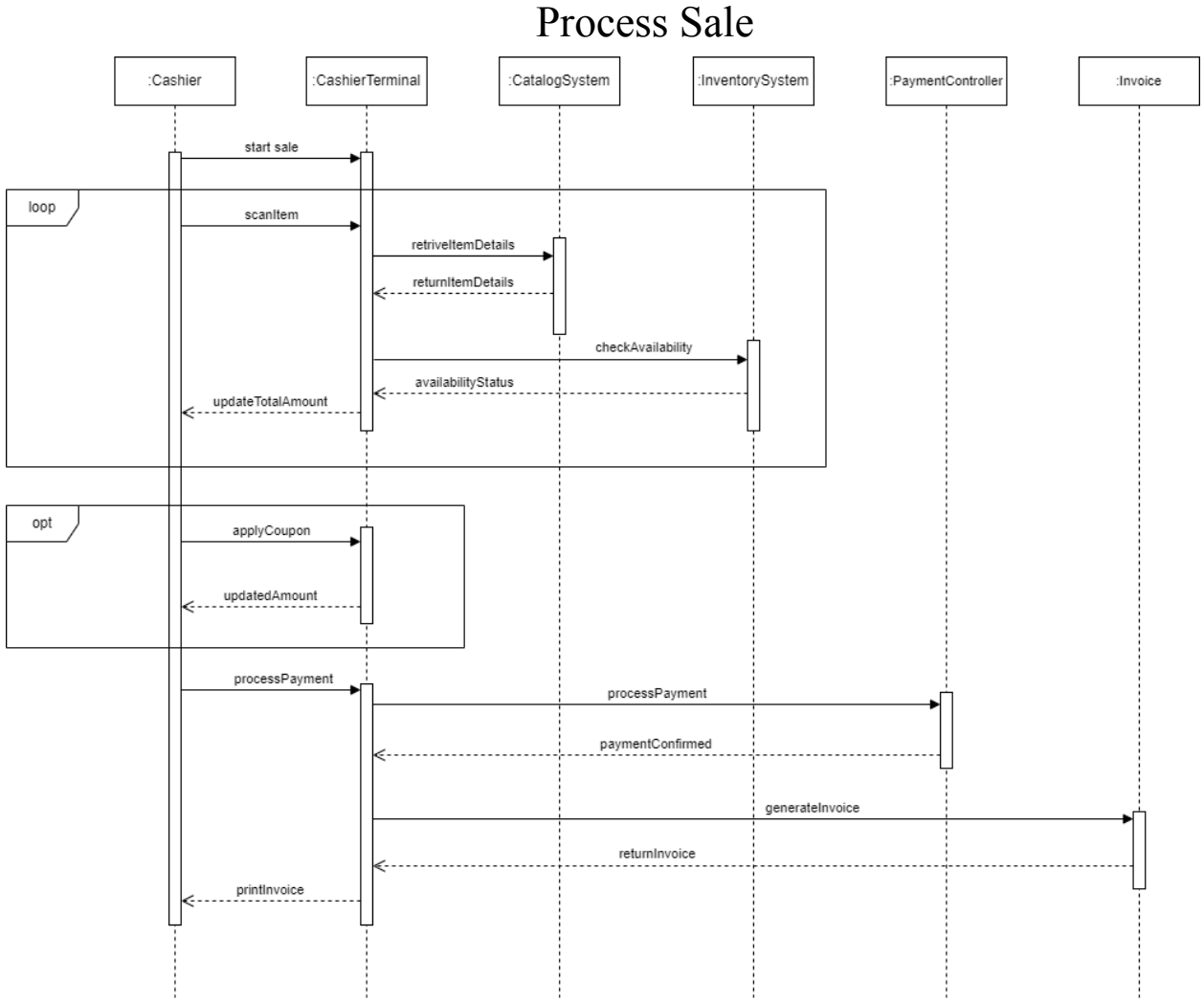
2). Identify Entity/Boundary Control Objects

- Entity Objects:
  - Cashier
  - Catalog System
  - Inventory System
  - Invoice
  - Return Invoice

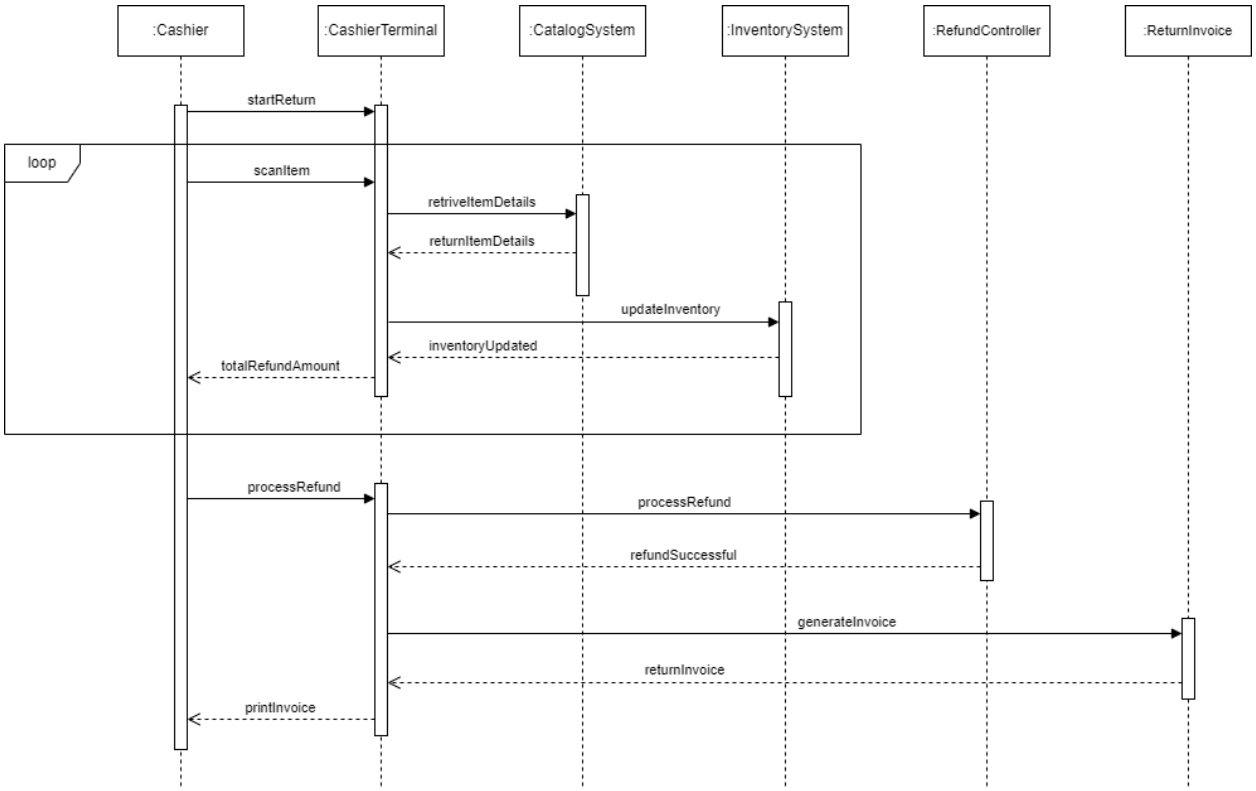
- Boundary Objects:
  - Cashier
  - Scanner

- Control Objects:
  - Payment Controller
  - Refund Controller

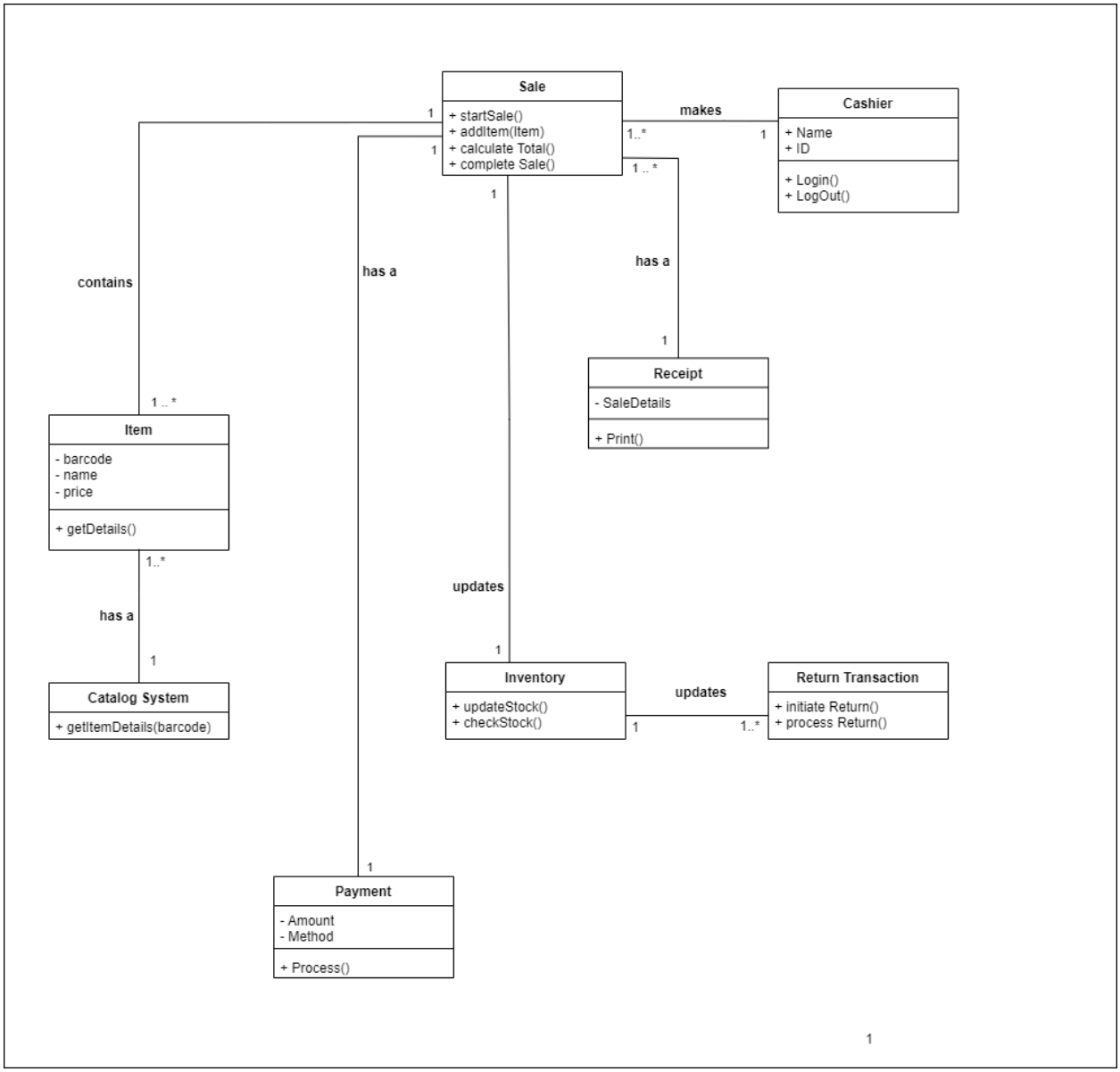
Sequence Diagram :



Handle Return

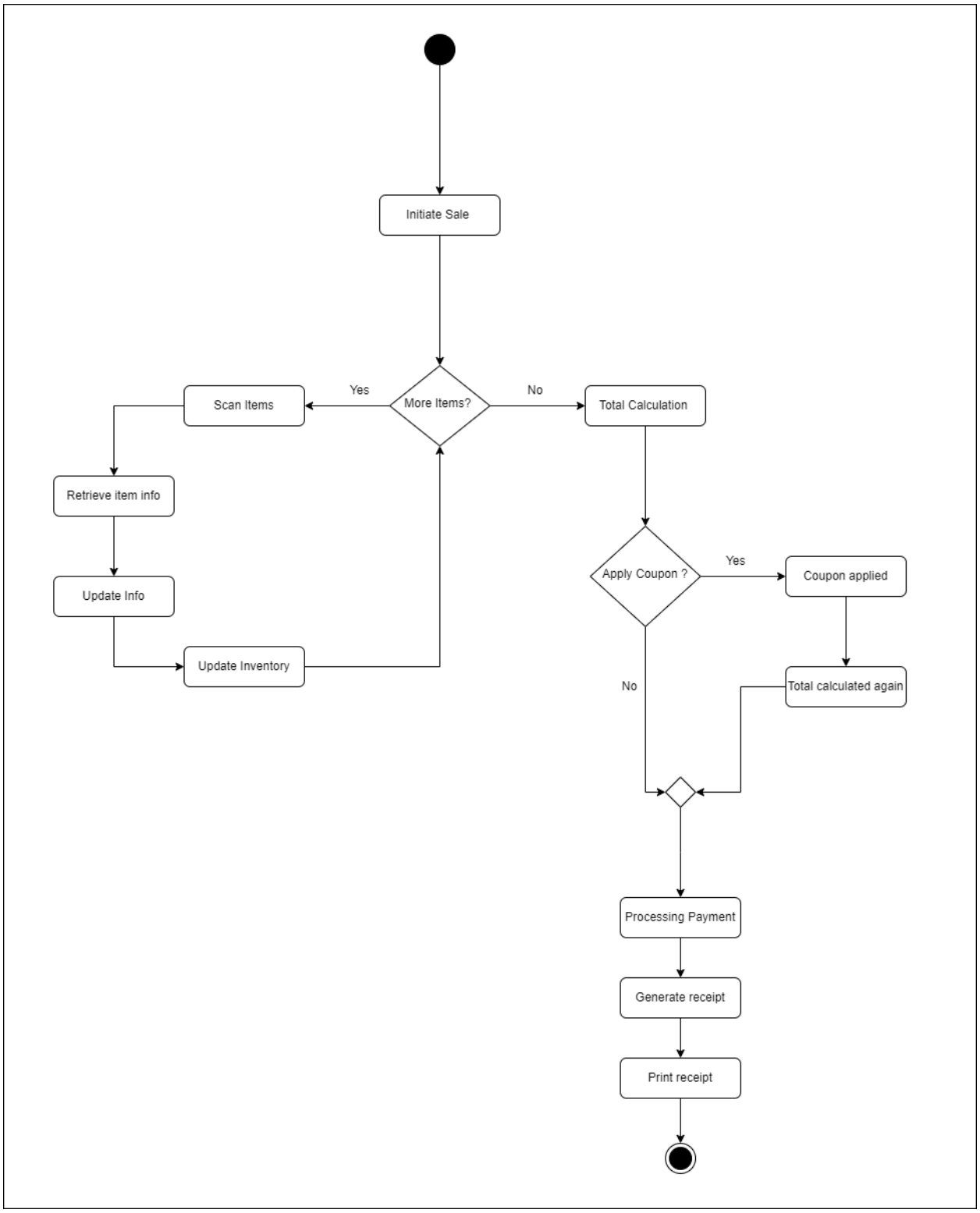


Class Diagram :

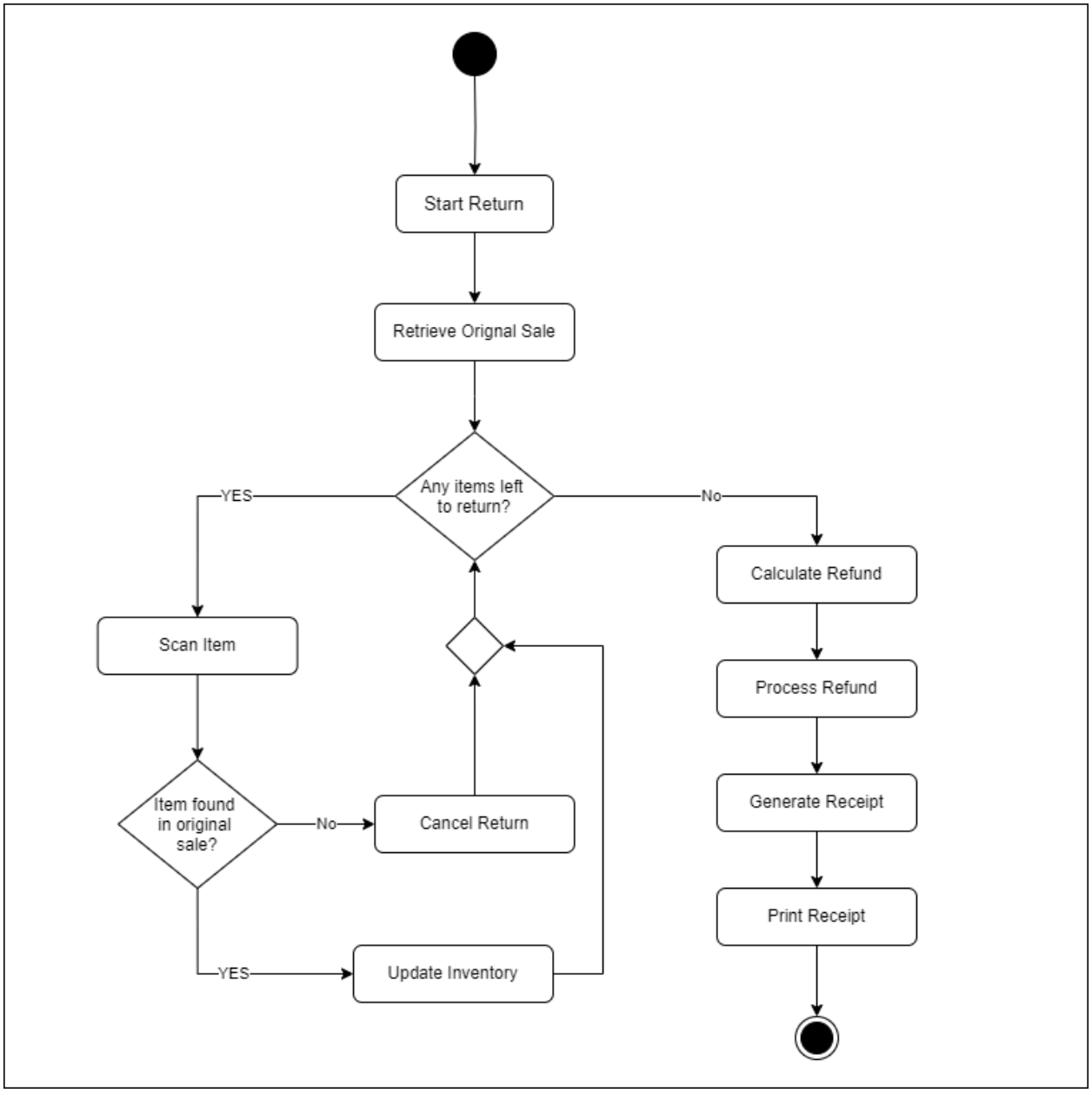


Activity Diagram :

For Process Sale



Handle Return


Start Return
Retrieve Orignal Sale
Any items left to return?
YES
No
Scan Item
Item found in original sale?
No
Cancel Return
YES
Update Inventory
Calculate Refund
Process Refund
Generate Receipt
Print Receipt