

**Lab Assignment**  
**IT-314 : Software Engineering**  
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1) Develop Use Case Textual Description for "Process Sale" and "Handle Return" use cases.

## **Use Case: Process Sale**

### **Actor**

- Cashier

### **Preconditions**

- Cashier is logged into the POS system
- Customer has items to purchase

### **Main Flow**

1. Cashier starts a new sale transaction
2. For each item:
  - a. Cashier scans item barcode
  - b. POS system retrieves item details (name, price) from backend catalog system
  - c. POS system interacts with inventory system to update stock amount
  - d. POS system adds item to current transaction

3. POS system displays running total
4. Cashier informs customer of total amount
5. Customer chooses payment method (cash, credit card, or check)
6. If customer has coupon:
  - a. Cashier applies coupon to transaction
  - b. POS system recalculates total
7. Cashier processes payment
8. POS system confirms payment
9. POS system generates receipt
10. Cashier prints receipt

## **Alternate Flows**

- 2b. If item not found in catalog system, cashier manually enters item details
- 7a. If payment by 1 method fails, the customer chooses an alternative payment method.

## **Postconditions**

- Sale is recorded in the POS system
- Inventory system is updated
- Receipt is printed

## **Use Case: Handle Return**

### **Actor**

- Cashier

### **Preconditions**

- Cashier is logged into the POS system
- Customer has item(s) to return

## **Main Flow**

1. Cashier initiates return process
2. Customer provides receipt or transaction details
3. Cashier verifies the return eligibility
4. For each item being returned:
  - a. Cashier scans item barcode
  - b. POS system retrieves item details from the original transaction
  - c. POS system interacts with inventory system to update stock
  - d. POS system adds item to current return amount
5. POS system calculates total refund amount
6. Cashier confirms return items and amount with customer
7. Cashier processes refund using original payment method
8. POS system generates return receipt
9. Cashier prints return receipt

## **Alternate Flows**

- 2a. If customer doesn't have receipt, cashier searches for transaction in POS system or ends process
- 3a. If item is not eligible for return, cashier informs customer and ends process
- 7a. If original payment was by credit card and card is not present, alternative refund method is used

## **Postconditions**

- Return is recorded in the POS system
- Inventory system is updated
- Refund is processed
- Return receipt is printed

## **2) Identify Entity/Boundary Control Objects**

### **Entity Objects:**

- **Sale**
- **Item**
- **Payment**
- **Coupon**
- **User (Cashier/Admin)**

### **Boundary Objects:**

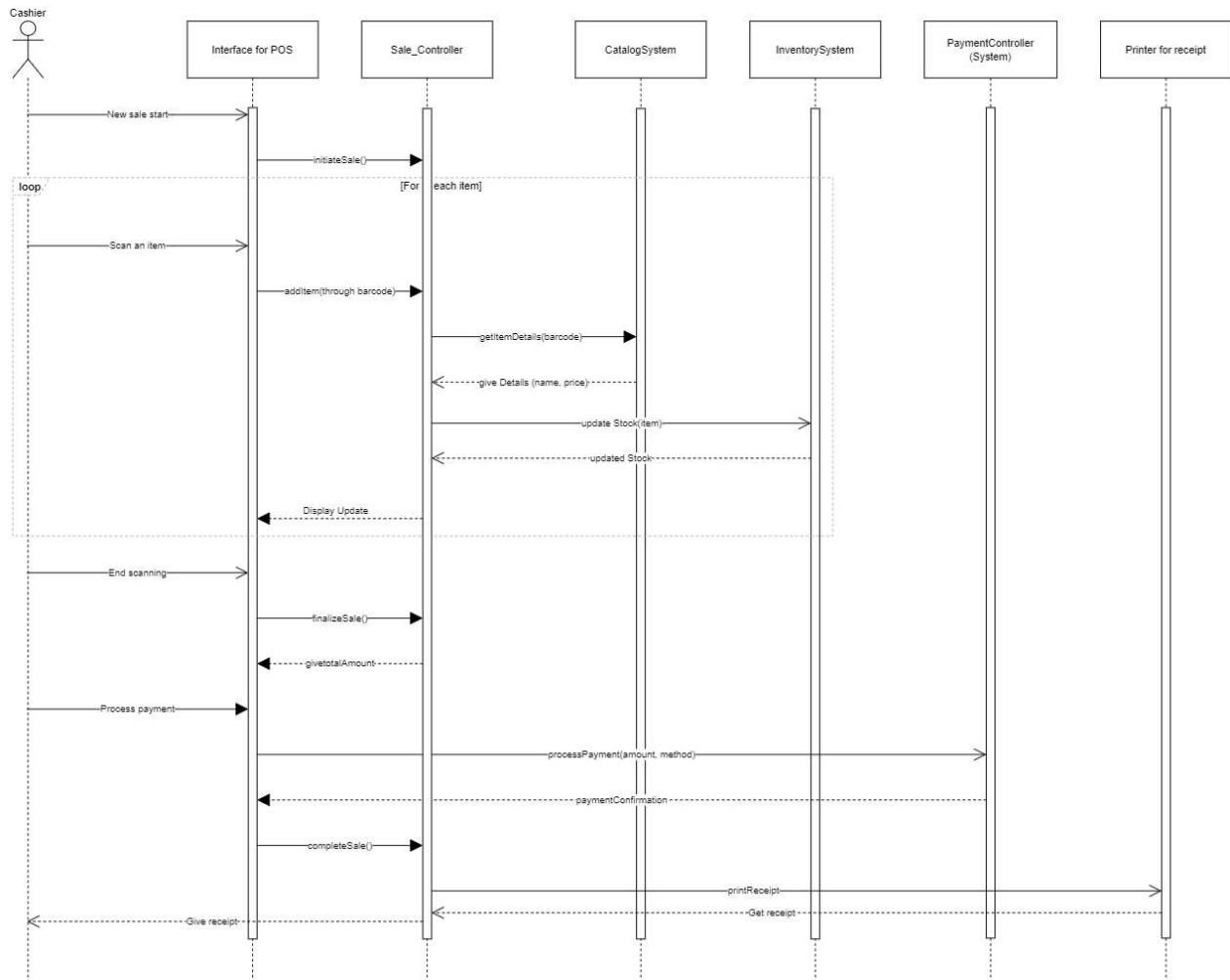
- **LoginScreen**
- **POSInterface**
- **PaymentInterface**
- **Printer**
- **BarcodeScanner**

### **Control Objects:**

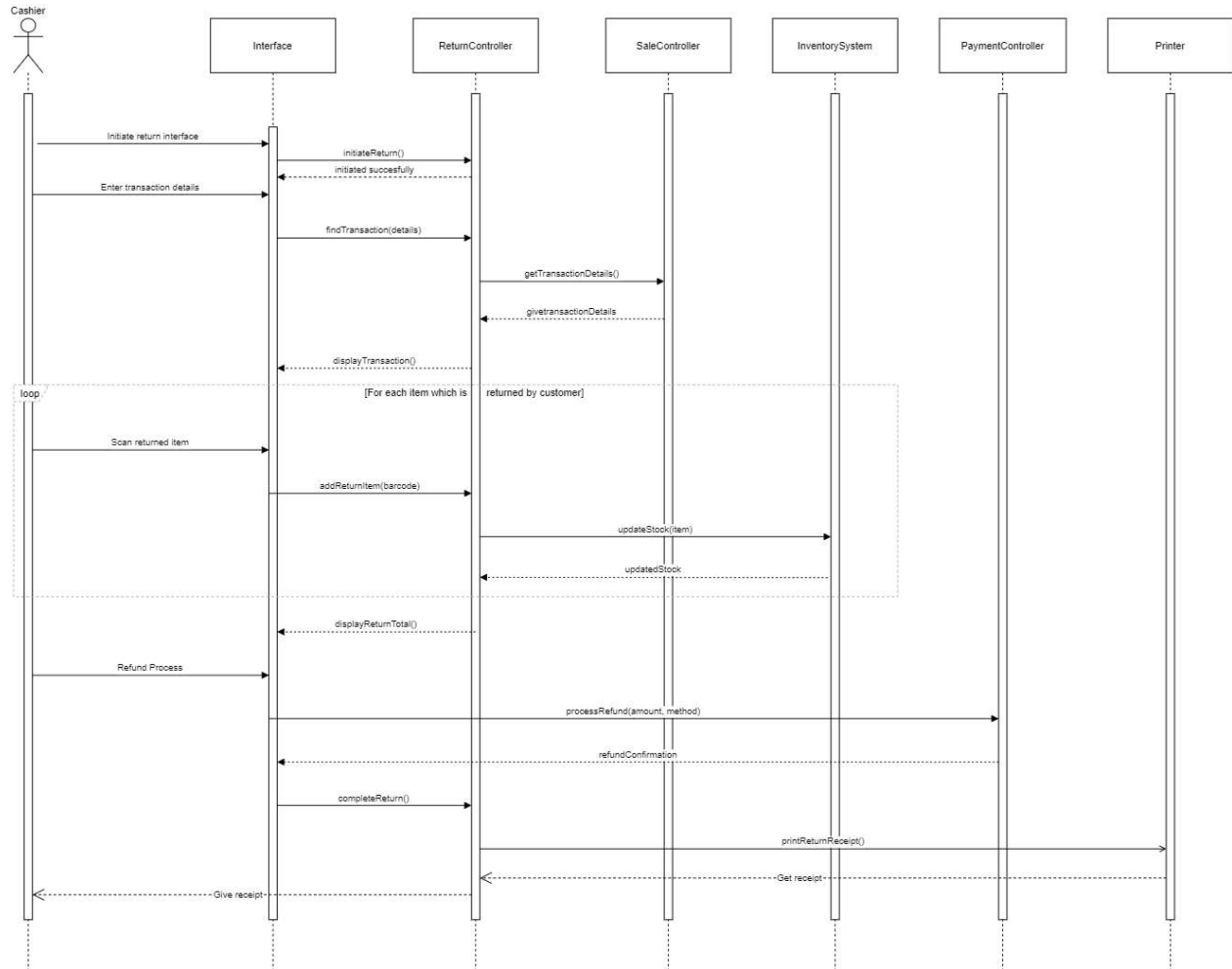
- **SaleController**
- **PaymentController**
- **InventorySystem**
- **CatalogSystem**
- **UserAuthenticationController**
- **ReturnController**

### 3) Develop Sequence Diagrams

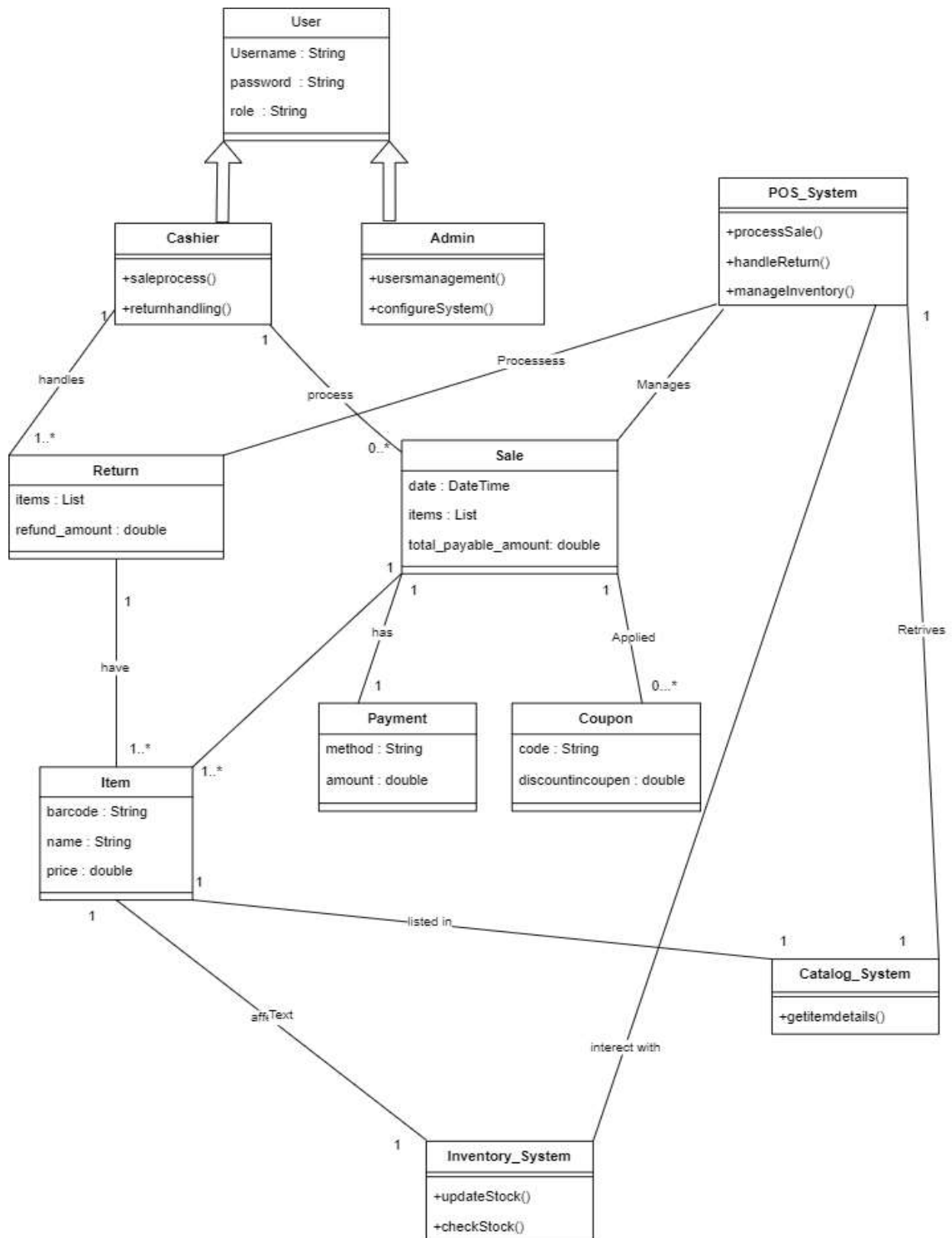
- Process Sell :



## ● Handle Return :

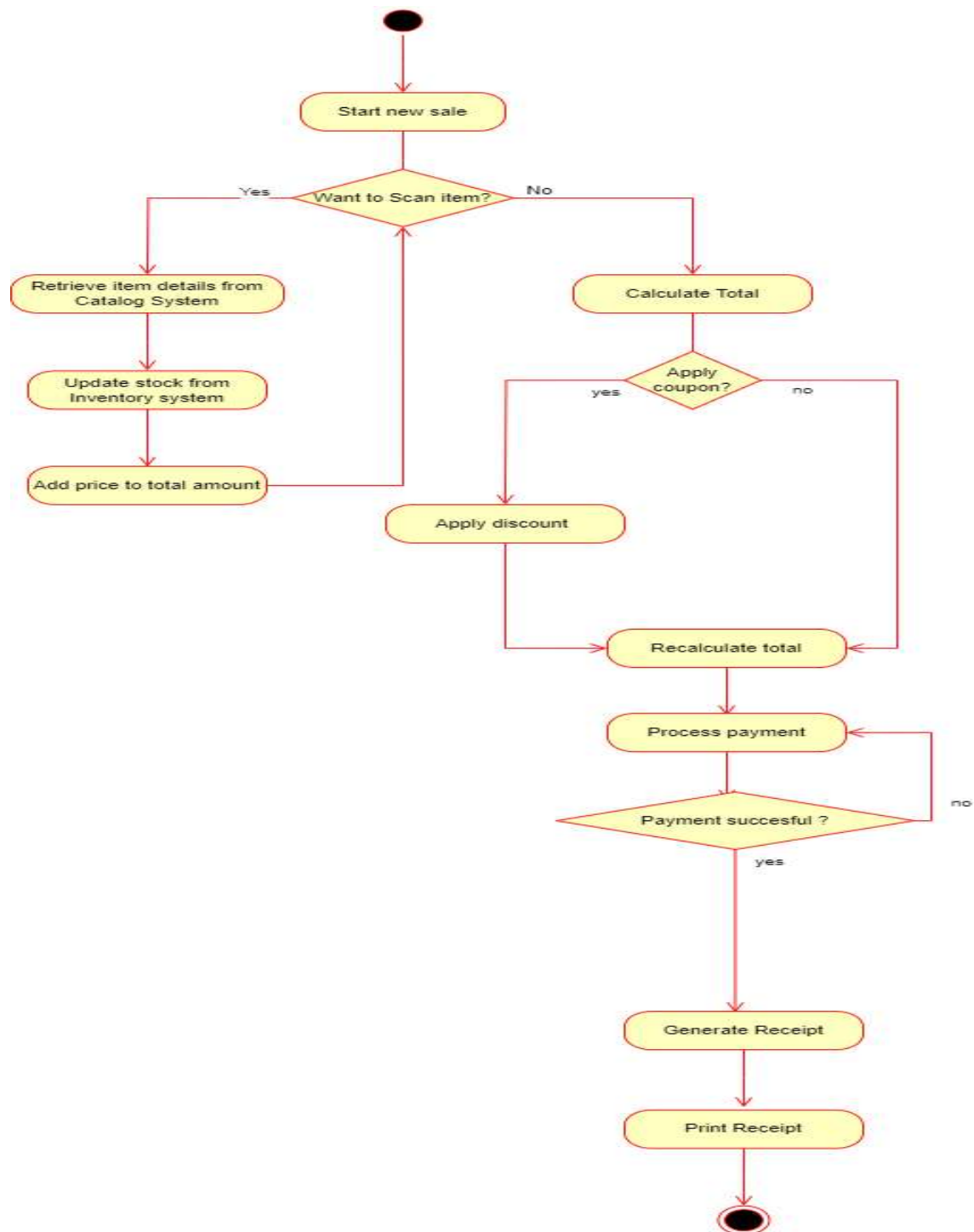


## 4) Develop Analysis Domain Models



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

- Process Sell :





- **Handle Return :**

