



Dhirubhai Ambani Institute of Information and Communication Technology

Gandhinagar, Gujarat

IT-314

## Software Engineering

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Lab Group – 4

**Task 1:** Develop Use Case Textual Description for "Process Sale" and "Handle Return" use cases for the Point of Sale (POS) System.

### **Use Case: Process Sale**

**Use Case ID:** UC-01

**Use Case Name:** Process Sale

**Actor:** Cashier

**Trigger:** When cashier initiates a new sale transaction

#### **Preconditions:**

- The cashier is logged into the POS system.
- The customer is ready to make a purchase.

#### **Main Flow:**

1. The cashier starts a new sale transaction.
2. The cashier scans the barcode of the first item.
3. The POS system retrieves the name and price of the item from the catalog.
4. The system updates the inventory to reflect the deduction of the item's stock.
5. The cashier continues to scan all the items purchased by the customer.
6. The system displays a summary of all the items purchased along with the total amount due including taxes already calculated.
7. The customer chooses a payment method (cash, card).
8. The cashier processes the payment through the appropriate method.
9. The system confirms the payment is successful.
10. The system generates a receipt.
11. The cashier provides the receipt to the customer and completes the transaction.

#### **Alternative Flow:**

- **3A: Item Not Found**  
If the barcode is not found in the catalog, the system alerts the cashier and prompts for manual entry or verification.
- **9A: Payment Unsuccessful**  
If the payment is unsuccessful (for card payment), the system notifies the cashier and prompts for an alternative payment method and the receipt is not generated in unsuccessful payment.

#### **Postconditions:**

- A sale transaction is completed.
- Inventory is updated.
- A receipt is printed and provided to the customer.

### **Use Case: Handle Return**

**Use Case ID:** UC-02

**Use Case Name:** Handle Return

**Actor:** Cashier

**Trigger:** When cashier requests for a return transaction

**Preconditions:**

- The cashier is logged into the POS system.
- The customer has items to return along with an original receipt.

**Main Flow:**

1. The cashier starts a new return transaction.
2. The cashier requests the receipt from the customer.
3. The cashier scans the barcode of the returned item(s) from the receipt.
4. The system verifies the item(s) against the original sale.
5. The system calculates the amount to be refunded.
6. The cashier processes the return and initiates the refund (cash, credit card reversal, etc.).
7. The system updates the inventory to reflect the return.
8. The system generates a return receipt.
9. The cashier provides the return receipt to the customer and completes the transaction.

**Alternative Flows:**

- **2B: Receipt Not Available**  
If the customer doesn't have the original receipt, then the user is not eligible to return the items.
- **4B: Item Not Eligible for Return**  
If the item is not eligible for return (e.g., outside return window, not in original condition), the system alerts the cashier, and the return is denied.
- **6B: Refund Processing Error**  
If there's an error during the refund process, the system notifies the cashier, and the transaction may be escalated to the administrator for resolution.

**Postconditions:**

- The return transaction is completed.
- Inventory is updated to reflect the returned items.
- A receipt for the return is printed and provided to the customer.

### **Task 2:** Identify Entity/Boundary Control Objects

#### **Entity Objects:**

1. Product
2. Transaction
3. Cashier/Administrator
4. Receipt
5. Coupon
6. Inventory

#### **Boundary Objects:**

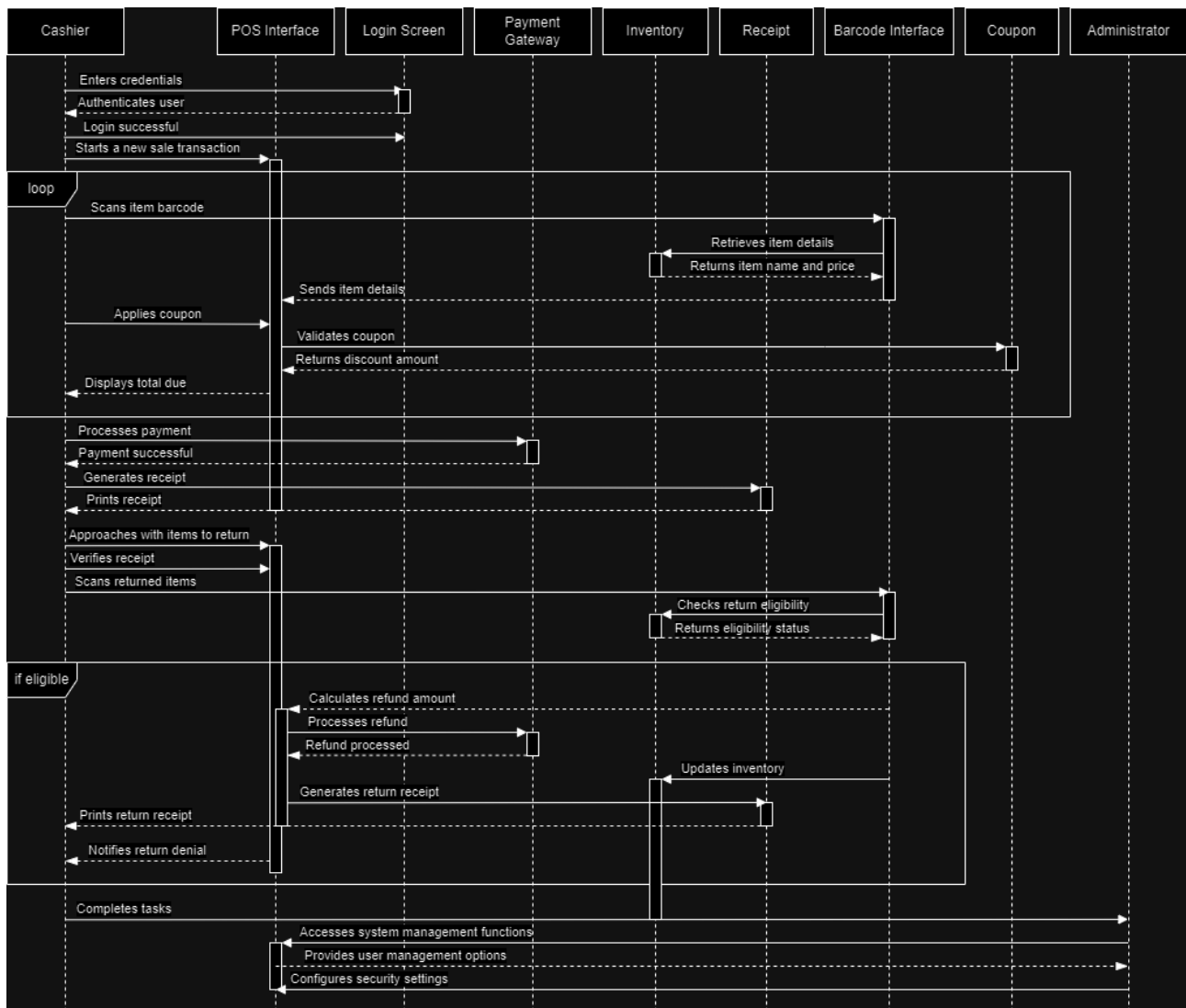
1. POS Interface
2. Login Screen
3. Barcode Scanner
4. Payment Gateway
5. Printer Interface
6. Admin Management

#### **Control Objects:**

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

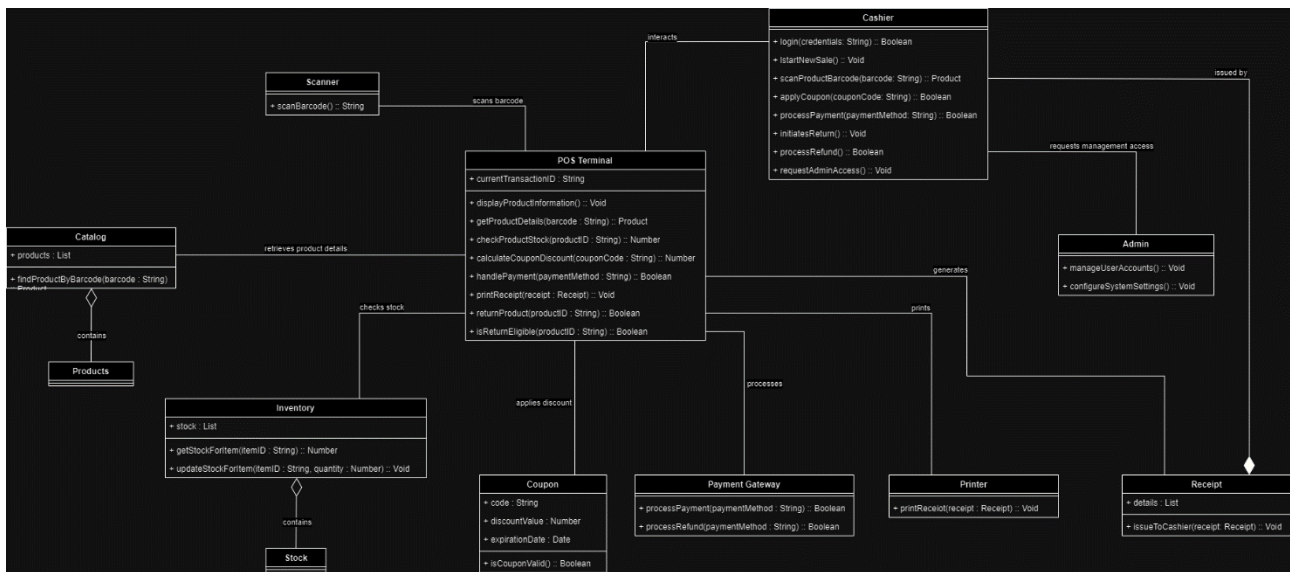
## Lab 6: Modelling Class Diagram and Activity Diagram

### Task 3: Develop Sequence Diagrams



## Lab 6: Modelling Class Diagram and Activity Diagram

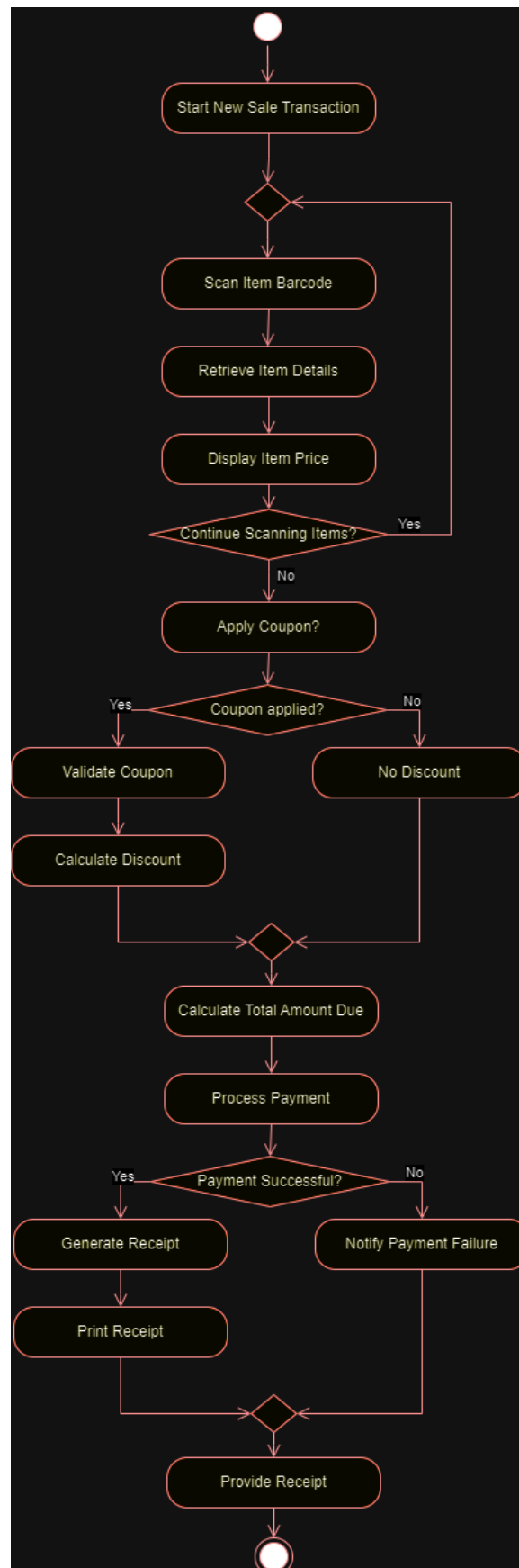
### Task 4: Develop Analysis Domain Models



## Lab 6: Modelling Class Diagram and Activity Diagram

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

**Process Sale:**



### Handle Return:

