1. Scenario

a. Customer register as a member

Use case	Customer register as a member
Actor	Customer
Pre-condition	
Post-condition	Customer registered an account in the system
Main event	1. Customer open the supermarket website 2. The system display the main interface, with the register button 3. The customer click the register button 4. The system display a register interface, with text field to enter name, phone number, address, email and 2 password field for password Customer Register Name: Phone Number: Address: Email: Password: Confirm password: Register 5. The customer enter their name, phone number, address, email and password twice and click register 6. The system display a success message
Exception	6. The system display an “Email already in use” error message 6.1 The customer either check their email or type a different email in the box and click Register again

b. Management staff views customer statistics

Use case	Management staff views customer statistics
Actor	Management staff
Pre-condition	The staff has a management account
Post-condition	The staff can view the customer statistics
Main event	1. The staff open the web 2. The system display the main interface 3. The management staff enter their username and password and click login 4. The system display the main employee interface 5. The staff click view statistics

<table>
<tr><td></td><td>6. The system display the view statistic function, with an option to view customer statistics
7. The staff clicks view customer statistics
8. The system show an interface with 2 box to enter start and end date
9. The staff enter start date, end date and click enter
10 The system display the list of all customer and their generated revenue in the given time period
<table>
<tr><td>Start date:</td><td>11/09/2025</td><td>End date:</td><td>12/09/2025</td><td>Search</td></tr>
<tr><td>No</td><td>Name</td><td>Revenue</td><td></td><td></td></tr>
<tr><td>1</td><td>Nguyen Van A</td><td>5.000.000</td><td></td><td></td></tr>
<tr><td>2</td><td>Nguyen Van Anh</td><td>3.500.00</td><td></td><td></td></tr>
<tr><td>3</td><td>Tran Thi B</td><td>20.000</td><td></td><td></td></tr>
</table>
11. The staff click a customer
12. The system show all the transaction made by that customer in that time period
<table>
<tr><td>Customer:</td><td>Nguyen Van A</td><td></td><td></td><td></td></tr>
<tr><td>No</td><td>Invoice</td><td>Date</td><td>Grand Total</td><td></td></tr>
<tr><td>1</td><td>1</td><td>11/09/2025</td><td>4.200.000</td><td></td></tr>
<tr><td>2</td><td>3</td><td>12/09/2025</td><td>800.000</td><td></td></tr>
</table>
13. The staff click on a specific transaction
14. The system show the detail of that transaction, including date, time, list of item in the transaction, number of each item and total</td></tr>
<tr><td>Exception</td><td>4. The system display “Username or password incorrect” message
4.1. The staff type their credential correctly and click Login button
10. The system display no customer in the period
10.1 The staff enter a different time period and click search again</td></tr>
</table>

2. Entity class diagram

a. Step 1: Describe the system

The system is a web-based platform that supports the management and operation of an online supermarket and it’s user. Customers can register as members by selecting the registration menu, entering their personal information, and submitting it to be saved into the database. After registration, customers are able to search for items, place online orders, and also purchase products directly at the counter. Salers are able to sell items to customers directly at the counter. Warehouse staff can import items from

suppliers, manage item and supplier information by adding, editing, or deleting records, browse online orders, and export them to delivery staff for delivery. Management staff can access statistical reports, with the option to view item, supplier or customer statistics by selecting a start and end date to review the list of customers along with their detailed transaction history or item with their related transactions or suppliers with their invoice in the given time period.

b. Step 2: Noun extraction

- Actor related noun:
    - Customer
    - Saler
    - Warehouse staff
    - Supplier
    - Delivery staff
    - Management staff
    - User
    - Staff
- Object related noun
    - Item
    - Order
    - Invoice
    - Supermarket
    - System
    - Menu
    - Report

c. Step 3: Noun evaluation

- System: too abstract
- Menu: too abstract
- Report: too abstract
- User -> Class User: name, password, address, email, phoneNumber, role
- Customer -> Class Customer(inherit from User)
- Staff -> Class Staff(inherit from User)
- Saler -> Class Saler(inherit from Staff)
- Warehouse staff -> Class WarehosueStaff(inherit from Staff)
- Management staff -> Class ManagerStaff(inherit from Staff)
- Delivery staff -> Class DeliveryStaff(inherit from Staff)
- Supplier -> Class Supplier: name, phoneNumber, email
- Item -> Class Item: name, price, description
- Order -> Class Order: date, status, totalAmount
- Online order -> Class OnlineOrder(inherit from Order): deliverAddress, deliverFee

- Direct order -> Class DirectOrder(inherit from Order)
- Invoice -> Class Invoice: billingAddress, grandTotal, discount, paymentMethod
- Supermarket -> Class Supermarket: address, phoneNumber, email

d. Step 4: Determine quantity relationship between entity

- Supermarket – Item: n - n -> Class ItemStorage: quantity
- Order – Item: n – n -> Class ItemOrder: quantity, price
- Order – Invoice: 1 – 1
- Customer – Invoice: 1 – n
- Saler – DirectOrder: 1 – n
- DeliveryStaff – OnlineOrder: 1 – n

e. Step 5: Determine object relationship between entity