

**Supermarket Management Using Barcode Scanning**

**Mini Capstone Project Document**

| Group Member | Tran Thien Loc - SE160275 - Leader  Lo Hung Khanh - SE160242 Phan Nhat Tan - SE 160117  Huynh Nhat Thien Hoang - SE160248  Nguyen Chanh Nhat Minh - SE160473 |
| --- | --- |
| Supervisor | Truong Long |
| Class | SE1602 |

– Ho Chi Minh, February 2023 –

**TABLE OF CONTENT**

[**I. INTRODUCTION**](#_e63tr198juot) **2**

[1. Introduction](#_3ya1b6vulmn) 2

[2. Definitions, Acronyms, and Abbreviations](#_gz26qz9272lz) 3

[2.1.Definitions, Acronyms, and Abbreviations](#_xfn3jmoam9jx) 3

[2.2.Product Overview](#_3lee16uwwsly) 3

[2.2.1.Guest](#_s4l13rim19kq) 3

[2.2.2.Member (Login required)](#_xi4peiuqse4d) 3

[2.2.3.Member-Administration (Login required)](#_e4h6z6mj1dc0) 4

[2.2.4.Storage Employees (Login required)](#_bjbtssl8083f) 4

[2.2.5.Shipper (Login required)](#_erqeu645zztj) 4

[**II. OVERALL DESCRIPTION**](#_9y947rrkoibj) **4**

[1. Overview](#_oam6d8j6330) 4

[1.1.Business Rules](#_1l8qo6f5rgr2) 5

[2. Configuration Management](#_s5nud12epe45) 5

[2.1.Document Management](#_yrqxj1qrc280) 5

[2.2.Source Code Management](#_3ajjz4w9ycv3) 5

[2.3.Tools and Infrastructure](#_7czr4fpko8lx) 6

[3. Functional Requirements](#_ppp5rm7soo41) 6

[3.1.Use Case Diagram](#_j3oheluyjej6) 6

[3.2.Use Case List](#_nzpnh2kzsq8v) 6

[3.3.Use Case Detail](#_8yxy3tto4m44) 8

[UC-01: Register](#_iuudm7ezr6ej) 8

[UC-02: Scan barcode to view product detail.](#_w1ffqz4bgszw) 9

[UC-03: Log in](#_ct3ik9aee5ve) 10

[UC-04: Log out](#_z6y22uhc4mgf) 12

[UC-05: Forgot Password](#_3ydlsfbx597t) 12

[UC-06: Add product to cart using scan barcode](#_hy1n4hfbb0h4) 13

[UC-07: Show cart](#_9anzuh9abn9v) 15

[UC-08: Update existing cart](#_5edsg9psopzc) 16

[UC-09: Delete product in cart](#_oijdjaodxb3m) 17

[UC-10: Payment](#_5z26b2myjjfh) 18

[UC-11: View product process](#_x388sskazkhf) 19

[UC-12: Recommend Product](#_g3jymt3hke85) 20

[UC-13: View Profile](#_p9ww5uufgywc) 21

[UC-14: Update Profile](#_h3onb8r9ydvt) 22

[UC-15: View Order History](#_892h29lxgwlt) 23

[UC-16: Add new product](#_yuduwh59hcjt) 24

[UC-17: Update existing product](#_ykh1ujb88330) 25

[UC-18: Remove product](#_sah792a1hz6w) 26

[UC-19: Search product](#_gs2t2ohlyx4i) 27

[UC-20: Add new employee](#_ls9d3z4d0zzc) 28

[UC-21: Update employee](#_1nxdeo7d2kbr) 29

[UC-22: Delete employee](#_5b9i8pdzv8a) 30

[UC-23: Search employee](#_osulxire6ong) 31

[UC-24: Summarizing report](#_c6loly8idu80) 32

[UC-25: View order](#_kxpttw6aisk1) 33

[UC-26: Modify order](#_4v1jajrl38nv) 34

[UC-27: Reset password](#_630wk4715cgx) 35

[UC-28: Scan QR code for confirmation of the package](#_uj2b9dptyrr5) 35

[UC-29: Scan QR code for confirmation of the package has been delivered.](#_8kquke7atm62) 36

[3. Non-functional Requirements](#_f6wyovrqr12e) 38

[3.1.Performance](#_yxs7kqkuyn6o) 38

[3.2.Reliability](#_5g3tndeqfjgn) 38

[3.3.Security](#_zgomcak7nkx) 38

[3.4.Usability](#_yr35czbqf5gy) 38

[3.5.Maintainability](#_96wspjxw84li) 38

[3.6.Compatibility](#_9fld6j4mdz09) 38

[4. Data & Database Design](#_a3tjwxl4svk4) 38

[5.1.Entity Relationship Diagram](#_scl97y8ewu57) 39

[5.2.Entities Description](#_yxbf7l19rq4k) 39

# **I. INTRODUCTION**

## **1. Introduction**

The focus of this mini capstone project is the development of a Supermarket Management system with barcode scanning capabilities. The system will be designed to address the challenges faced by supermarkets in managing their operations effectively and efficiently. The product will be used in a dynamic and fast-paced environment, where the ability to quickly scan and process large volumes of information is essential. The users of the product will include supermarket employees, managers, shippers and customers, all of whom will have specific needs and expectations that must be considered during the development process. The constraints, assumptions, and dependencies associated with the product and its environment will also be taken into account to ensure its successful implementation.

Our app is based on the model of convenience stores or mini supermarkets. These stores mostly sell only dry or prepackaged items. In the future, we will develop a barcode generator for the purpose of paying for fresh items.

To provide a comprehensive understanding of the product's context, a context diagram will be created. The context diagram will present the boundary and connections between the Supermarket Management system and the various external entities that interface with it. The context diagram will also highlight the data, control, and material flows between the external entities and the system, which will allow for a better understanding of the interactions and relationships between the different components involved. With the guidance and support of mentor, Mr. Truong Long, this mini capstone project is poised to deliver a highly effective and efficient Supermarket Management system.

Best regards,

Mini Capstone project team.

## **2. Definitions, Acronyms, and Abbreviations**

### 2.1.Definitions, Acronyms, and Abbreviations

| **Acronyms** | **Description** |
| --- | --- |
| Guest | This actor has not joined the system but can scan barcodes to see product detail. |
| Member | Members are registered to the system and can use almost all web applications except the administration screen and employee screen. |
| Administration | Admin manages product, account and barcode. |
| Storage Employee | This employee waiting for an order request will be packed and handed over to the shipper. |
| Shipper | Get packages from storage employees and delivery to customers. |

### 2.2.Product Overview

##### 2.2.1.Guest

Guests are people who have not been authenticated to the system. They only have limited access following function(s):

* Scan barcode to view product.
* Sign up, sign in.

##### 2.2.2.Member (Login required)

Guests registered to the system and authorized to “Customer”. Beside some functions of guests, they can access more following function(s):

* Manage cart.

○ Add a new product by scanning the barcode.

○ Update existing product.

○ Delete product.

* Check out.
* Update profile.
* Log in, forget password.
* Payment.
* View package process.

##### 2.2.3.Member-Administration (Login required)

Some employees of supermarket will be provided an account with role “Admin” can access to dashboard of application and they can access following function(s):

* Log in, log out, forget password.
* Manage product.

○ Add a new product by scanning the barcode.

○ Update existing product.

○ Delete product.

* Manage employee.
* Dashboard.

##### 2.2.4.Storage Employee (Login required)

Once a member has the necessary documents, he or she can be granted an account with the role of warehouse staff. This role can access more function(s) than member and inherit some functions of member:

* Log in, log out, forget password.
* Receive orders from customers and prepare for that orders.
* Scan QR code for confirmation of the package.

##### 2.2.5.Shipper (Login required)

Member log in to the system with role “shipper” can access following function:

* Receive the package from the storage employee.
* Scan QR code for confirmation of the package has been delivered.

# **II. OVERALL DESCRIPTION**

## **1. Overview**

### 1.1.Business Rules

| **Business Rules ID** | **Business Rules Description** |
| --- | --- |
| BR-01 | When a customer checks out at the register, the system must accurately calculate the total cost of all items purchased. |
| BR-02 | When items are sold, the system must update the inventory levels to reflect the number of items sold. If inventory levels fall below a certain threshold, the system should trigger an alert to notify the inventory manager to update the number of items. |
| BR-03 | The system must provide managers with real-time reports and analytics on sales, inventory levels, employee performance, and other key metrics, to help them make data-driven decisions and optimize store operations. |
| BR-04 | Barcode of the product must be unique. If there is a duplicate case, please check it carefully to avoid scanning the wrong product. |
| BR-05 | Must be able to ensure that the staff is reasonably arranged, with enough manpower in every shift to best serve customers. |

## **2. Configuration Management**

### 2.1.Document Management

We use Google Drive for storing documents, diagrams and relevant files. Beside that, we use Google Docs to write Software Requirements Specification for the purpose team members can modify, give comments. Our group uses Trello to manage tasks, upload necessary files of projects and use daily scrum with dynamic times to have the opportunity to talk about each other's work progress and the obstacles facing work.

### 2.2.Source Code Management

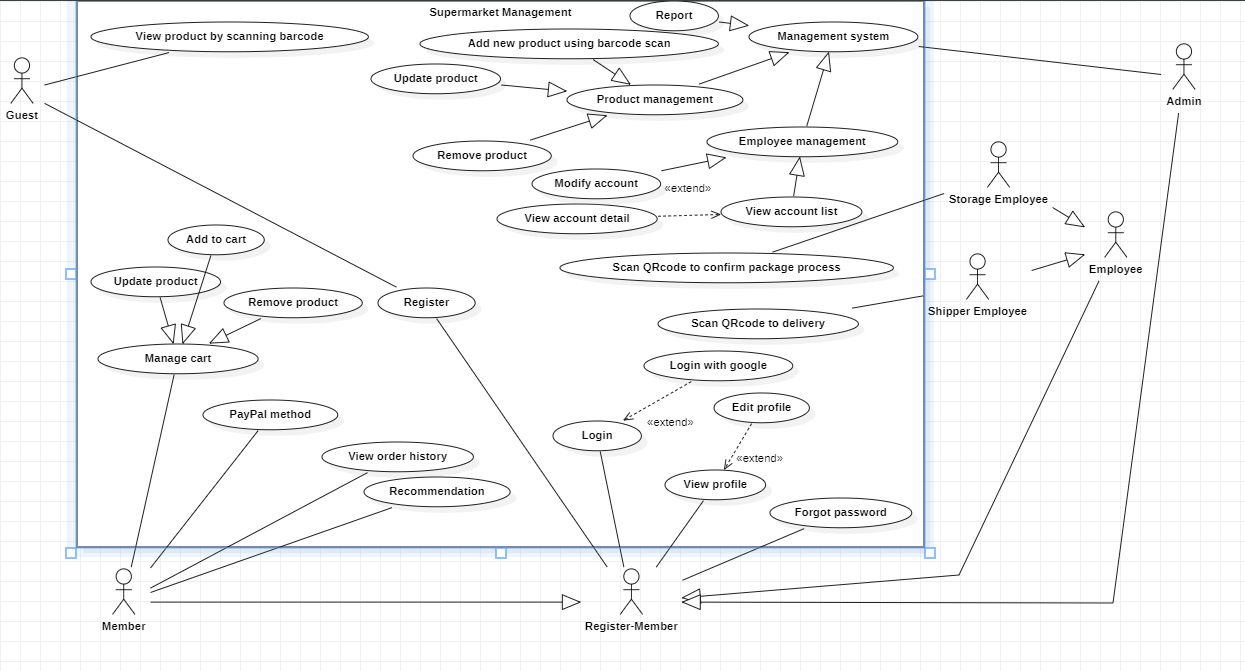
We use the GitHub server to store code and relevant files.

### 2.3.Tools and Infrastructure

| **Category** | **Tools and Infrastructure** |
| --- | --- |
| **Technology** | Spring Boot 2.7.7(Backend), Bootstrap 4 (Frontend) |
| **Database** | Microsoft SQL Server Management Studio 18 |
| **IDEs/Editor** | Netbean 12.3, Visual Studio Code |
| **Diagram** | StarUML, Lucidchart |
| **Documentation** | Google Docs/Sheets/Slides, Microsoft Word |
| **Version Control** | GitHub (Source Code) |
| **Project Management** | Trello (Task Tracking) |

## **3. Functional Requirements**

### 3.1.Use Case Diagram



### 3.2.Use Case List

| **ID** | **Use Case** | **Primary Actor** | **Secondary Actor** |
| --- | --- | --- | --- |
| **UC-01** | Register | Guest | Member |
| **UC-02** | Scan barcode to view product detail. | Member | Guest |
| **UC-03** | Log in | Member | Guest |
| **UC-04** | Log out | Member |  |
| **UC-05** | Forgot password | Member |  |
| **UC-06** | Add product to cart using barcode scan | Member |  |
| **UC-07** | Show cart | Member |  |
| **UC-08** | Update existing cart | Member |  |
| **UC-09** | Delete product in cart | Member |  |
| **UC-10** | Payment | Member |  |
| **UC-11** | View product process | Member |  |
| **UC-12** | Recommend product | Member |  |
| **UC-13** | View profile | Member |  |
| **UC-14** | Update profile | Member |  |
| **UC-15** | View order history | Member |  |
| **UC-16** | Add new product | Admin |  |
| **UC-17** | Update existing product | Admin |  |
| **UC-18** | Remove product | Admin |  |
| **UC-19** | Search product | Admin |  |
| **UC-20** | Add new employee | Admin |  |
| **UC-21** | Update employee | Admin |  |
| **UC-22** | Delete employee | Admin |  |
| **UC-23** | Search employee | Admin |  |
| **UC-24** | Summarizing report | Admin |  |
| **UC-25** | View order history | Admin |  |
| **UC-26** | Modify order | Admin |  |
| **UC-27** | Reset password | Admin |  |
| **UC-28** | Scan QR code for confirmation of the package | Storage employee |  |
| **UC-29** | Scan QR code for confirmation of the package has been delivered. | Shipper |  |

### 3.3.Use Case Detail

##### UC-01: Register

| **ID and Name:** | **UC-01: Register** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 27/02/2023 |
| Primary Actor: | Guest | Secondary Actors: | Member |
| Priority: | High | Frequency of Use: | Usually |
| Trigger: | The actor wants to sign in for purpose access to the system. | | |
| Description: | Register feature will allow for guest registration to the system. | | |
| Preconditions: | Actors do not have an account or want to create a new account. | | |
| Post-conditions: | Success: Redirect to home page  Fail: The system shows error message corresponding to error code | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | In sign in page, Actor inputs username and passwords and their information sequences:  +Username  +Họ và tên  +Email  +Mật khẩu và nhập lại  +Số điện thoại  +Địa chỉ |  | | 2 | Actor clicks “Đăng kí” | System redirects to the home page | | | |
| Alternative Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | In register page, actor click “Google” icon | System redirects to the Google interface. | | 2 | Actor choose their account and click “Sign In” | System redirects to the home page | | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | The email or password is not correct format | System informs error message to remind user inputs correct format | | 2 | The phone number is not enough | System informs “Hãy nhập đúng định dạng” | | | |
| Business Rules: | * Email must fit with this pattern “x@top-level-domain” with x is the nickname of an actor ( actor can choose any nickname they like ) and top-level-domain such as gmail.com or yahoo.com… * Phone number must have 10 digits * Password and re-enter password must be matched. | | |
| Assumptions: | * Actor’s internet connection is available | | |

##### UC-02: Scan barcode to view product detail.

| **ID and Name:** | **UC-02: Scan barcode to view product detail.** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 17/01/2023 |
| Primary Actor: | Member | Secondary Actors: | Guest |
| Priority: | High | Frequency of Use: | Usually |
| Trigger: | The actor will enter or scan a barcode of the product. | | |
| Description: | When an actor adds a barcode to the system, the system will recognize the barcode. | | |
| Preconditions: | Actors need to have barcodes. | | |
| Post-conditions: | Success: Redirect to product details.  Fail: The system shows error message corresponding to error code | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | On the homepage, system has button “Yêu cầu quyền truy cập camera” | System trigger browser asked permission. | | 2 | Actor permits the browser to trigger the camera. | System lets the actor choose the camera. | | 3 | Actor clicks “Đang bắt đầu quét”. | System trigger barcode scanner for actor. | | 4 | Actor scans the product's barcode. | System recognize barcode, if valid, product detail will display. | | | |
| Alternative Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | On the home page, the system has a “Quét bằng hình ảnh”. | System display button for actor input barcode picture. | | 2 | Actors scan barcode pictures. | System recognize barcode, if valid, product detail will display. | | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Barcode is invalid. | System informs error message to remind user inputs correct barcode of product. | | 2 | Barcode is valid but the supermarket does not have that product. | System informs messages to remind users that the product may not be in stock. | | | |
| Business Rules: | * Barcode must be the same as on the product. | | |
| Assumptions: | * Actor’s internet connection is available. * Make sure the camera is working. * Recommended to use the phone's camera for better performance. | | |

##### UC-03: Log in

| **ID and Name:** | **UC-03: Login** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 27/02/2023 |
| Primary Actor: | Member | Secondary Actors: | Guest |
| Priority: | High | Frequency of Use: | Usually |
| Trigger: | The actor click “Đăng nhập” button. | | |
| Description: | Actor when login can access more function | | |
| Preconditions: | Actors must have an account that has been authorized ( username, password is registered or gmail account ) . | | |
| Post-conditions: | Success: Redirect to home page.  Fail: The system shows an error message corresponding to error code. | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor clicks “Đăng nhập” | System redirects to the login page. | | 2 | Actor enter their username and password. |  | | 3 | Actor click “Đăng nhập” button. | System check username and password of member. If their information is right, redirect to the home page. | | | |
| Alternative Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor clicks “Google” icon in login screen | System redirects to the Google interface | | 2 | Actor chooses one of their google account | System redirects to the home page. | | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Username or password is invalid | System informs error message to remind user inputs correct username or password. | | 2 | Username or password is not exist | System informs messages to remind users that they need to register or check username and password again. | | 3 | Google Exception | Google API will respond to the error for users. | | 4 | Email of account hasn’t verified yet | Send a verification mail  Redirect to verification page to enter verification code | | | |
| Business Rules: | * N/A | | |
| Assumptions: | * Actor’s internet connection is available. * Actor has a Google account. | | |

##### UC-04: Log out

| **ID and Name:** | **UC-04: Log out** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 27/02/2023 |
| Primary Actor: | Member | Secondary Actors: | N/A |
| Priority: | Medium | Frequency of Use: | Usually |
| Trigger: | The actor click “Đăng xuất” button | | |
| Description: | When the user has completed the purchase or temporarily runs out of demand or wants to change another account. | | |
| Preconditions: | Actors must sign in as “Customer/Member”. | | |
| Post-conditions: | Success: User will redirect to home page with guest role.  Fail: The system shows an error message corresponding to error code. | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor clicks “Đăng xuất” | System redirects to the home page. | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Unexpected error | System informs error messages to the user to try again. | | | |
| Business Rules: | * N/A | | |
| Assumptions: | * Actor’s internet connection is available. | | |

##### UC-05: Forgot Password

| **ID and Name:** | **UC-05: Forgot Password** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 12/03/2023 |
| Primary Actor: | Member | Secondary Actors: | N/A |
| Priority: | Low | Frequency of Use: | Seldom |
| Trigger: | The actor click “Quên mật khẩu” under login form | | |
| Description: | When the user cannot remember their password. | | |
| Preconditions: | Actors must sign in as “Customer/Member”. | | |
| Post-conditions: | Success: User will redirect to home page with guest role.  Fail: The system shows an error message corresponding to error code. | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor clicks “Quên mật khẩu” | System display a textbox for actor enter their username. | | 2 | Actor enters their username. |  | | 3 | Actor hits “Quên mật khẩu” button. | System follows the actor's email and sends a code for the actor to change a new password. | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Unexpected error | System informs error messages to the user to try again. | | 2 | Cannot send email | System informs the user to try again. | | | |
| Business Rules: | * Reset password code has 6 characters. * User need to check gmail for this code. | | |
| Assumptions: | * Actor’s internet connection is available. | | |

##### UC-06: Add product to cart using scan barcode

| **ID and Name:** | **UC-06: Add product to cart using scan barcode** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 02/02/2023 |
| Primary Actor: | Member | Secondary Actors: | N/A |
| Priority: | High | Frequency of Use: | Usually |
| Trigger: | The actor click “Scan barcode” | | |
| Description: | Users use their device ( such as phone ) to scan the barcode of a product. | | |
| Preconditions: | Barcode must exist .  Actors must sign in as “Customer”. | | |
| Post-conditions: | Success: Product summarizing will appear on cart .  Fail: The system shows an error message corresponding to error code. | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor clicks “Đang bắt đầu quét” | System trigger barcode scanning for user scan barcode of a product. | | 2 | Actor scans product’s barcode. | If barcode exist in data of stock, system will display product detail. | | 3 | Actor can continue if they want. |  | | | |
| Alternative Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor clicks “Quét bằng hình ảnh”. | System trigger a field for user input barcode image of a product. | | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Barcode not exist | System informs error message to user try again. | | 2 | Barcode scanning does not work. | System informs the user of an error message to check internet connection or refresh page. | | 3 | System cannot recognize barcode | Users need to scan again. | | | |
| Business Rules: | * Barcode must exist or available on product. * The food must have a record in the storage and still be available. * Foods that have been expired will be hidden. | | |
| Assumptions: | * Actor’s internet connection is available. * Using the camera's phone for best performance. | | |

##### UC-07: Show cart

| **ID and Name:** | **UC-07: Show cart** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 02/02/2023 |
| Primary Actor: | Member | Secondary Actors: | N/A |
| Priority: | High | Frequency of Use: | Usually |
| Trigger: | The actor click “Xem thêm trong giỏ hàng”. | | |
| Description: | After adding the product to the cart, the user clicks “See more in cart” to view the details of the cart. | | |
| Preconditions: | Actors must sign in as “Customer/Member”. | | |
| Post-conditions: | Success: System will redirect user to cart detail screen.  Fail: The system shows an error message corresponding to error code. | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor clicks “Xem thêm trong giỏ hàng”. | System redirects user to cart detail screen. | | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor clicks the “Cart” icon in the header. | System redirects user to cart detail screen. | | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Cannot show cart | System informs error message to user try again. | | | |
| Business Rules: | * If the user scans the same product twice, the item will accumulate to 2 | | |
| Assumptions: | * Actor’s internet connection is available. | | |

##### UC-08: Update existing cart

| **ID and Name:** | **UC-08: Update existing cart** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 02/02/2023 |
| Primary Actor: | Member | Secondary Actors: | N/A |
| Priority: | High | Frequency of Use: | Usually |
| Trigger: | After the actor clicks “Xem thêm trong giỏ hàng”, the system redirects to the cart screen. Users can change the number of the product and choose number of product if they want. | | |
| Description: | Users can change the number of products when they want. | | |
| Preconditions: | Actors must sign in as “Customer/Member”. | | |
| Post-conditions: | Success: After changing, the system will update the user cart .  Fail: The system shows an error message corresponding to error code. | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor enter “number of product” need to buy | System will update the number of product | | | |
| Alternative Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor scan that product more than once | System recognizes requests and increases the number of products. | | 2 | After click “Thanh toán” button, actor click “Thêm sản phẩm vào giỏ hàng” to update cart | System redirects user to update page. | | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Out of scale | System will return the limit of scale can enter is the number of products in stock. | | 2 | Unexpected Error | System informs the user of an error message. | | 3 | System cannot recognize barcode | Users need to scan again. | | | |
| Business Rules: | * Barcode must exist or available on product. * Need at least 1 product in the cart for update. * Total price will be updated when the number of products update. | | |
| Assumptions: | * Actor’s internet connection is available. * Using the camera's phone for best performance. | | |

##### UC-09: Delete product in cart

| **ID and Name:** | **UC-09: Delete product in cart** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 02/02/2023 |
| Primary Actor: | Member | Secondary Actors: | N/A |
| Priority: | High | Frequency of Use: | Usually |
| Trigger: | After the actor clicks “Xem thêm trong giỏ hàng”, the system redirects to the cart screen. Users can delete the product that they do not need. | | |
| Description: | User can remove products they do not want to buy or scan wrong. | | |
| Preconditions: | Actors must sign in as “Customer/Member”. | | |
| Post-conditions: | Success: After changing, the system will delete the user cart .  Fail: The system shows an error message corresponding to error code. | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor enter button “Xóa” | System will delete that product. | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Cannot delete | System informs error message to remind user to try delete again | | 2 | Unexpected Error | System informs the user of an error message. | | 3 | System cannot recognize barcode | Users need to scan again. | | | |
| Business Rules: | * Barcode must exist or available on product. * Need at least 1 product in the cart for delete | | |
| Assumptions: | * Actor’s internet connection is available. * Using the camera's phone for best performance. | | |

##### UC-10: Payment

| **ID and Name:** | **UC-10: Payment** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 06/02/2023 |
| Primary Actor: | Member | Secondary Actors: | N/A |
| Priority: | High | Frequency of Use: | Usually |
| Trigger: | The actor clicks “Thanh toán” on the screen. | | |
| Description: | Users can see the total of money they need to buy. | | |
| Preconditions: | N/A | | |
| Post-conditions: | Success: System will redirect to pay information pages.  Fail: The system shows an error message corresponding to error code. | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor enter “Thanh toán” when access to “Xem thêm trong giỏ hàng”. | System redirects user to pay information pages. | | 2 | Actor enters email address, home address, phone number and chooses a method for paying. | System will save user information for shipper can ship orders. | | | |
| Alternative Flow: | N/AA | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Email is invalid or wrong format. | System informs a message for user to check again. | | 2 | Unexpected Error | System informs the user of an error message. | | 3 | Phone is not enough | System informs a message to remind user enter again. | | | |
| Business Rules: | * Phone number must fit 10 digits. * Email must follow format. | | |
| Assumptions: | * Actor’s internet connection is available. | | |

##### UC-11: View product process

| **ID and Name:** | **UC-11: View product process** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 06/02/2023 |
| Primary Actor: | Member | Secondary Actors: | N/A |
| Priority: | High | Frequency of Use: | Usually |
| Trigger: | After the user clicks “Thanh toán”, the system will redirect the user to the process page. | | |
| Description: | Users can see their order process to follow their order. | | |
| Precondition: | Actors must sign in as “Customer/Member”.  Need a PayPal account. | | |
| Post-conditions: | Success: System will redirect user to process page  Fail: The system shows an error message corresponding to error code. | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor enter “Thanh toán” | System redirect user to paypal page. | | 2 | Actor enters the email and password of paypal. | Paypal follows the user to choose the card the user wants to pay. | | 3 | When finish, actor clicks “Continue to Review Order”. | Paypal will complete paying and return process page. | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Cannot update process | System informs error message to remind user to click refresh button | | 2 | Unexpected Error | System informs the user of an error message. | | | |
| Business Rules: | N/A | | |
| Assumptions: | * Actor’s internet connection is available. | | |

##### UC-12: Recommend Product

| **ID and Name:** | **UC-12: Recommend Product** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 06/03/2023 |
| Primary Actor: | Member | Secondary Actors: | N/A |
| Priority: | Low | Frequency of Use: | Seldom |
| Trigger: | After the user scans a product but does not exist in storage, the system will redirect the user to “Sản phẩm không tồn tại trong siêu thị” and have a note “Bạn có thể đề xuất cho chúng tôi!!!”. | | |
| Description: | Users can recommend products they like for supermarkets. | | |
| Precondition: | Actors must sign in as “Customer/Member”. | | |
| Post-conditions: | Success: System will return to home page.  Fail: The system shows an error message corresponding to error code. | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor enter “Bạn có thể đề xuất cho chúng tôi!!!” . | System will pull a textbox for the user and leave a comment or product for the user. | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Unexpected Error | System informs the user of an error message. | | | |
| Business Rules: | N/A | | |
| Assumptions: | * Actor’s internet connection is available. | | |

##### UC-13: View Profile

| **ID and Name:** | **UC-13: View profile** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 12/03/2023 |
| Primary Actor: | Member | Secondary Actors: | N/A |
| Priority: | Medium | Frequency of Use: | Usually |
| Trigger: | Actor clicks “Thông tin cá nhân”. | | |
| Description: | This feature allows actor view information. | | |
| Preconditions: | Actors must sign in as “Customer/Member”. | | |
| Post-conditions: | Success: Redirect to information page.  Fail: The system shows error message corresponding to error code | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor click avatar, dropdown with list and click “Thông tin cá nhân”. | System redirects the actor to the information page and shows all the information of the customer. | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | The email or password is not correct format | System informs error message to remind user inputs correct format | | 2 | The phone number is not enough | System informs “Your number phone is not enough” | | | |
| Business Rules: | N/A | | |
| Assumptions: | * Actor’s internet connection is available | | |

##### UC-14: Update Profile

| **ID and Name:** | **UC-01: Update Profile** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 12/03/2023 |
| Primary Actor: | Member | Secondary Actors: | N/A |
| Priority: | Medium | Frequency of Use: | Often |
| Trigger: | Actor clicks “Update information” | | |
| Description: | This feature will allow user modify their information. | | |
| Preconditions: | Actors must sign in as “Customer/Member”. | | |
| Post-conditions: | Success: System update new information of actor.  Fail: The system shows error message corresponding to error code | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | In the information page, the user fills in the field that needs to be updated. |  | | 2 | Actor clicks “Update” | System update new information of actor. | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | The email or password is not correct format | System informs error message to remind user inputs correct format | | 2 | The phone number is not enough | System informs “Your number phone is not enough” | | | |
| Business Rules: | * Email must fit with this pattern “x@domain” with x is the nickname of an actor ( actor can choose any nickname they like ) and domain such as gmail.com or yahoo.com… * Phone number must have 10 digits * Password and re-enter password must be matched. | | |
| Assumptions: | * Actor’s internet connection is available | | |

##### UC-15: View Order History

| **ID and Name:** | **UC-01: Register** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 27/02/2023 |
| Primary Actor: | Member | Secondary Actors: | N/A |
| Priority: | High | Frequency of Use: | Usually |
| Trigger: | When an actor needs to view order history. | | |
| Description: | System displays all the order history of the actor. | | |
| Preconditions: | Actors must sign in as “Customer/Member”. | | |
| Post-conditions: | Success: Redirect to Order History Page  Fail: The system shows error message corresponding to error code | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | In the main page, the actor clicks the avatar and the client will list all options. |  | | 2 | Actor clicks “Order History” | System redirects to the history page. | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Cannot loading order history | System informs error message to remind user to check connection or refresh page. | | 2 | Unexpected Error | System informs error message to remind user try again | | | |
| Business Rules: | N/A | | |
| Assumptions: | * Actor’s internet connection is available | | |

##### UC-16: Add new product

| **ID and Name:** | **UC-16: Add new product** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 06/02/2023 |
| Primary Actor: | Admin | Secondary Actors: | N/A |
| Priority: | High | Frequency of Use: | Often |
| Trigger: | The actor click “Thêm sản phẩm mới” button | | |
| Description: | Admin can add new product for supermarket to increase the variety of products and designs for supermarket. | | |
| Preconditions: | Must login with account have role “Admin” | | |
| Post-conditions: | Success: System will add new product in storage.  Fail: The system shows error message corresponding to error code | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor click “Thêm sản phẩm mới”. | System display barcode scanner for actor scan barcode of new product | | 2 | Actor enters information about the product and the barcode is the product’s barcode. |  | | 3 | Actor click “Thêm” | System will add new product | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Duplicate barcode | System informs error messages to remind user inputs of different barcodes. | | 2 | Empty field when add new product | System informs error message to remind user inputs product information or cancel. | | | |
| Business Rules: | * Barcode is unique and cannot duplicate or update. * When the manufacturer changes the barcode, the application will update the barcode. * Image input to the barcode scanner must be a barcode image. | | |
| Assumptions: | * Actor’s internet connection is available. * The added product is a new product or a reissue of an existing version. | | |

##### UC-17: Update existing product

| **ID and Name:** | **UC-17: Update existing product** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 06/02/2023 |
| Primary Actor: | Admin | Secondary Actors: | N/A |
| Priority: | High | Frequency of Use: | Often |
| Trigger: | The actor click “Cập nhật” button | | |
| Description: | Admin can update product information when there is a discount or new name. | | |
| Preconditions: | Must login with account have role “Admin” | | |
| Post-conditions: | Success: System will update new product in storage.  Fail: The system shows error message corresponding to error code | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor click “Cập nhật” in dropdown list. | System displays a box for actor to enter an updated name or price of a product. | | 2 | Actor enter information of product |  | | 3 | Actor click “Cập nhật” button. | System will update information about that product. | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Duplicate name | System informs error message to remind user inputs difference barcode. | | 2 | Empty field when add new product | System informs error message to remind user inputs product information or cancel. | | | |
| Business Rules: | * When the manufacturer changes the barcode, the application will update the barcode. | | |
| Assumptions: | * Actor’s internet connection is available. * Want to accelerate the sales of the product. | | |

##### UC-18: Remove product

| **ID and Name:** | **UC-1818: Remove product** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 06/02/2023 |
| Primary Actor: | Admin | Secondary Actors: | N/A |
| Priority: | Normal | Frequency of Use: | Often |
| Trigger: | The actor clicks “Xóa” button to remove a product | | |
| Description: | This feature allows actor to remove product out of date or out of stock. | | |
| Preconditions: | Must login with account have role “Admin” | | |
| Post-conditions: | Success: System will remove product  Fail: The system shows error message corresponding to error code | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor click “Xóa” | System remove that product | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Unexpected Error | System informs the user to try removing it again. | | | |
| Business Rules: | * Delete only in the client, database does not delete. | | |
| Assumptions: | * Actor’s internet connection is available. | | |

##### UC-19: Search product

| **ID and Name:** | **UC-19: Search product** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 06/02/2023 |
| Primary Actor: | Admin | Secondary Actors: | N/A |
| Priority: | High | Frequency of Use: | Usually |
| Trigger: | The actor clicks “Tìm kiếm” button | | |
| Description: | When an actor wants to find a product for a purpose such as view, update, delete. | | |
| Preconditions: | Must login with account have role “Admin” | | |
| Post-conditions: | Success: System returns a list of products.  Fail: The system shows error message corresponding to error code | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor clicks the dropdown list to choose product information. |  | | 2 | Actor clicks “Search” | System returns a list of products the user finds with a dropdown attribute user selected. | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | ProductId does not exist or invalid | System informs error message “Không tìm thấy kết quả!” | | 2 | Category does not exist or invalid | System informs error message “Không tìm thấy kết quả!” | | 3 | Name does not exist or invalid | System informs error message “Không tìm thấy kết quả!” | | | |
| Business Rules: | * “ID Sản phẩm” is the default of the dropdown list. * If searched without content, the system returns all of the products that exist. | | |
| Assumptions: | * Actor’s internet connection is available. * Actors want to search for a product without scrolling to find. | | |

##### UC-20: Add new employee

| **ID and Name:** | **UC-20: Add new employee** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 15/03/2023 |
| Primary Actor: | Admin | Secondary Actors: | N/A |
| Priority: | Medium | Frequency of Use: | Usually |
| Trigger: | The actor will add a new employee to the system. | | |
| Description: | This feature allow user add new employee | | |
| Preconditions: | Must login with account have role “Admin” | | |
| Post-conditions: | Success: System adds new employee to the system.  Fail: The system shows error message corresponding to error code | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor click “Quản lý nhân viên” button in admin page. | System redirects to “Quản lý nhân viên” pages. | | 2 | Actor enter sequences   * RoleID * username * Họ và tên * Số điện thoại * Email * Địa chỉ * Mức lương |  | | 3 | Actor clicks “Thêm” | System pop-up a message “Thêm nhân viên mới thành công” | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Wrong email format | System informs error message to remind user inputs correct type of email. | | 2 | Phone number is not enough | System informs messages to remind users to re-enter phone number. | | | |
| Business Rules: | * Email must fit with this pattern “x@domain” with x is the nickname of an actor ( actor can choose any nickname they like ) and domain such as gmail.com or yahoo.com… * Phone number must have 10 digits * New password must be 123456. | | |
| Assumptions: | * Actor’s internet connection is available. | | |

##### UC-21: Update employee

| **ID and Name:** | **UC-02: Scan barcode to view product detail.** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 15/03/2023 |
| Primary Actor: | Admin | Secondary Actors: | N/A |
| Priority: | Medium | Frequency of Use: | Often |
| Trigger: | The actor updates the information of an employee. | | |
| Description: | When an actor needs to change information of an employee. | | |
| Preconditions: | Must login with account have role “Admin” | | |
| Post-conditions: | Success: System will update new information of an employee.  Fail: The system shows error message corresponding to error code | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor clicks “Cập nhật thông tin” button. |  | | 2 | Actor fills new information to the field that needs to be updated. |  | | 3 | Actor click “Cập nhật” | System informs message “Cập nhật thành công” | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Wrong email format | System informs error message to remind user inputs correct type of email. | | 2 | Phone number is not enough | System informs messages to remind users to re-enter phone number. | | | |
| Business Rules: | * Email must fit with this pattern “x@domain” with x is the nickname of an actor ( actor can choose any nickname they like ) and domain such as gmail.com or yahoo.com… * Phone number must have 10 digits * Password and re-enter password must be matched. | | |
| Assumptions: | * Actor’s internet connection is available. | | |

##### UC-22: Delete employee

| **ID and Name:** | **UC-02: Scan barcode to view product detail.** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 15/03/2023 |
| Primary Actor: | Guest | Secondary Actors: | N/A |
| Priority: | Medium | Frequency of Use: | Low |
| Trigger: | The actor will delete an employee. | | |
| Description: | This feature allows actors to delete employees when employees discontinue or be fired. | | |
| Preconditions: | Must login with account have role “Admin” | | |
| Post-conditions: | Success: Deleted employee will be removed.  Fail: The system shows error message corresponding to error code. | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor click “Xóa nhân viên” | System will delete that employee. | | | |
| Alternative Flow: | N/AA | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Unexpected error | System informs message to remind the actor to try delete again. | | | |
| Business Rules: | * Delete only in the client, database does not delete. | | |
| Assumptions: | * Actor’s internet connection is available. | | |

##### UC-23: Search employee

| **ID and Name:** | **UC-23: Search employee** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 15/03/2023 |
| Primary Actor: | Admin | Secondary Actors: | N/A |
| Priority: | Medium | Frequency of Use: | Usually |
| Trigger: | The actor wants to find employees. | | |
| Description: | This feature allows actors to find a list of employees or only employee fit with find conditions. | | |
| Preconditions: | Must login with account have role “Admin” | | |
| Post-conditions: | Success: System will return a list of employees or employee fit with find conditions.  .  Fail: The system shows error message corresponding to error code. | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | On admin page, actor clicks “Quản lý nhân viên” in menu on the left hand. |  | | 2 | Actor clicks the dropdown list with 2 attribute:  +Mã số  +Tên  to choose employee information. |  | | 3 | Actor click “Tìm kiếm” | System returns a list of employee or only employee fit conditions. | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | EmployeeID is invalid | System informs a message “Không tìm thấy kết quả” and actor try again. | | 2 | Employee name is invalid | System informs a message “Không tìm thấy kết quả” and actor try again. | | | |
| Business Rules: | N/A | | |
| Assumptions: | * Actor’s internet connection is available. | | |

##### UC-24: Summarizing report

| **ID and Name:** | **UC-24: Summarizing report** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 06/03/2023 |
| Primary Actor: | Admin | Secondary Actors: | N/A |
| Priority: | Medium | Frequency of Use: | Often |
| Trigger: | The actor wants to see a summary of sales, number of products sold. | | |
| Description: | This feature allows users to have visualization data in chart type or number. | | |
| Preconditions: | Must login with an account to have the role “Admin”. | | |
| Post-conditions: | Success: System will aggregate and visualize the data  Fail: The system shows error message corresponding to error code | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | In admin page, actor clicks “ “Dashboard” button. | System returns charts and statistics by week and month | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Cannot render chart | System informs error message “ Không thể hiển thị ngay lúc này ” and remind user try again. | | 2 | Statistics is not enough | System informs “ Số liệu không đủ ” and remind user try again. | | | |
| Business Rules: | * Chart will be rendered after 1-2 seconds . * Data must fit with filter. | | |
| Assumptions: | * Actor’s internet connection is available | | |

##### UC-25: View order

| **ID and Name:** | **UC-01: Register** | | |
| --- | --- | --- | --- |
| Created By: | KhanhLH | Date Created: | 24/03/2023 |
| Primary Actor: | Admin | Secondary Actors: | N/A |
| Priority: | High | Frequency of Use: | Usually |
| Trigger: | The actor wants to manage order. | | |
| Description: | This feature allows the admin to view all of the order details. | | |
| Preconditions: | Must login with an account to have the role “Admin”. | | |
| Post-conditions: | Success: System displays all of the order details.  Fail: The system shows error message corresponding to error code | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor clicks “Quản lý đơn hàng” in menu. | System displays all of the order history of the customer. | | | |
| Alternative Flow: | N/A | | |
| Exception: | | No | Cause | System Response | | --- | --- | --- | | 1 | Unexpected Error | System informs the message and reminds the actor to try again. | | | |
| Business Rules: | N/A | | |
| Assumptions: | * Actor’s internet connection is available | | |

##### UC-26: Modify order

| **ID and Name:** | **UC-01: Register** | | |
| --- | --- | --- | --- |
| Created By: | KhanhLH | Date Created: | 24/03/2023 |
| Primary Actor: | Admin | Secondary Actors: | N/A |
| Priority: | High | Frequency of Use: | Seldom |
| Trigger: | The actor wants to modify the order of the customer when there is an error. | | |
| Description: | This feature allows the admin to modify the order details. | | |
| Preconditions: | Must login with an account to have the role “Admin”. | | |
| Post-conditions: | Success: System updates new status of the customer’s order.  Fail: The system shows error message corresponding to error code | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor clicks “Quản lý đơn hàng” in menu. | System displays all of the order history of every customer that they buy something. | | 2 | Actor change order status | System will change the status of order. | | 3 | Actor clicks “Xem thêm” for view order detail. | System displays all the order details of the customer. | | | |
| Alternative Flow: | N/A | | |
| Exception: | | No | Cause | System Response | | --- | --- | --- | | 1 | Cannot update status | System informs the message to remind the actor to try again. | | | |
| Business Rules: | * When there is a problem with the employee's qr code scanning, the admin has the right to update the order status. | | |
| Assumptions: | * Actor’s internet connection is available | | |

##### 

##### UC-27: Reset password

| **ID and Name:** | **UC-01: Register** | | |
| --- | --- | --- | --- |
| Created By: | MinhNCN | Date Created: | 06/03/2023 |
| Primary Actor: | Admin | Secondary Actors: | N/A |
| Priority: | Low | Frequency of Use: | Seldom |
| Trigger: | The actor wants to reset the password for employee when they forget or change periodically. | | |
| Description: | This feature allows the admin to change the password for employee. | | |
| Preconditions: | Must login with an account to have the role “Admin”. | | |
| Post-conditions: | Success: System update new password of employee.  Fail: The system shows error message corresponding to error code | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | Actor clicks “Đổi mật khẩu” |  | | 2 | Actor enter new password |  | | 3 | Actor clicks “Đồng ý” | System return a message “ Đổi thành công ”. | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | N/A | | |
| Business Rules: | * Only the admin role can change the password for an employee. * If password textbox is empty, system return “”Sai mật khẩu”. | | |
| Assumptions: | * Actor’s internet connection is available | | |

##### UC-28: Scan QR code for confirmation of the package

| **ID and Name:** | **UC-26: Scan QR code for confirmation of the package** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 28/02/2023 |
| Primary Actor: | Storage employee | Secondary Actors: | N/A |
| Priority: | High | Frequency of Use: | Usually |
| Trigger: | The actor scan QRcode to confirm orders from customers. | | |
| Description: | This feature allows actor to use a barcode scanner to confirm prepared order and send them to the shipper. | | |
| Preconditions: | Must login with an account to have the role “Storage employee”. | | |
| Post-conditions: | Success: System update status in “payingSuccess” page for user can follow their order.  Fail: The system shows error message corresponding to error code | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | After customer clicks “Thanh toán” | System send order bill with QRcode to device in storage. | | 2 | Storage employee prints that order bill and prepares that order. |  | | 3 | When finished, storage employee scans QRcode on the order bill. | System recognizes QRcode and updates status in the “payingSuccess” page. | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Cannot recognize QRcode | System informs error message “ Không thể nhận diện ” and remind user try again. | | 2 | Statistics is not enough | System informs “ Số liệu không đủ ” and remind user try again. | | | |
| Business Rules: | * The scanning process must be accurate and reliable to prevent incorrect storage or misplacement of packages. * The storage employee should have appropriate training and guidelines for using the scanning process to ensure that it is performed consistently and correctly. | | |
| Assumptions: | * Actor’s internet connection is available. * Recommended to use the phone's camera for better performance. | | |

##### UC-29: Scan QR code for confirmation of the package has been delivered.

| **ID and Name:** | **UC-26: Scan QR code for confirmation of the package has been delivered.** | | |
| --- | --- | --- | --- |
| Created By: | LocTT | Date Created: | 28/02/2023 |
| Primary Actor: | Shipper | Secondary Actors: | N/A |
| Priority: | High | Frequency of Use: | Usually |
| Trigger: | The actor scan QRcode to ship customer’s order. | | |
| Description: | This feature allows actor can identify which order they need to deliver. | | |
| Preconditions: | Must login with an account to have the role “Shipper”. | | |
| Post-conditions: | Success: System update status in “payingSuccess” page for user can follow their order.  Fail: The system shows error message corresponding to error code | | |
| Normal Flow: | | Step | Actor Action | System Response | | --- | --- | --- | | 1 | The shipper arrives at the place where the order needs to be delivered and scans the QRcode. | System update status in “payingSuccess” | | | |
| Alternative Flow: | N/A | | |
| Exceptions: | | No | Cause | System Response | | --- | --- | --- | | 1 | Cannot recognize QRcode | System informs error message “ Không thể nhận diện ” and remind user try again. | | | |
| Business Rules: | * The scanning process must be accurate and reliable to prevent incorrect storage or misplacement of packages. * If the QR code does not match the item being stored, the shipper must not get that package and should investigate the discrepancy. | | |
| Assumptions: | * Actor’s internet connection is available. * Recommended to use the phone's camera for better performance. * The shipper should have appropriate training and guidelines for using the scanning process to ensure that it is performed consistently and correctly. | | |

## **3. Non-functional Requirements**

##### 3.1.Performance

* The system will return the result within 5 seconds.
* Processing time from 2-6 seconds depending on whether the user is peak or not.

##### 3.2.Reliability

* Ensure that in the event of a system failure, user information will not be lost.
* The system can rollback data to previous versions if there are problems that cannot be fixed.

##### 3.3.Security

* Spring Security is used for authentication and authorization.
* Each role can only access each function.
* Use BCrypt to hash passwords.

##### 3.4.Usability

* Users can understand how to use the app after 25 minutes of experience.
* All text, label and message should be uniformly written in Vietnamese.

##### 3.5.Maintainability

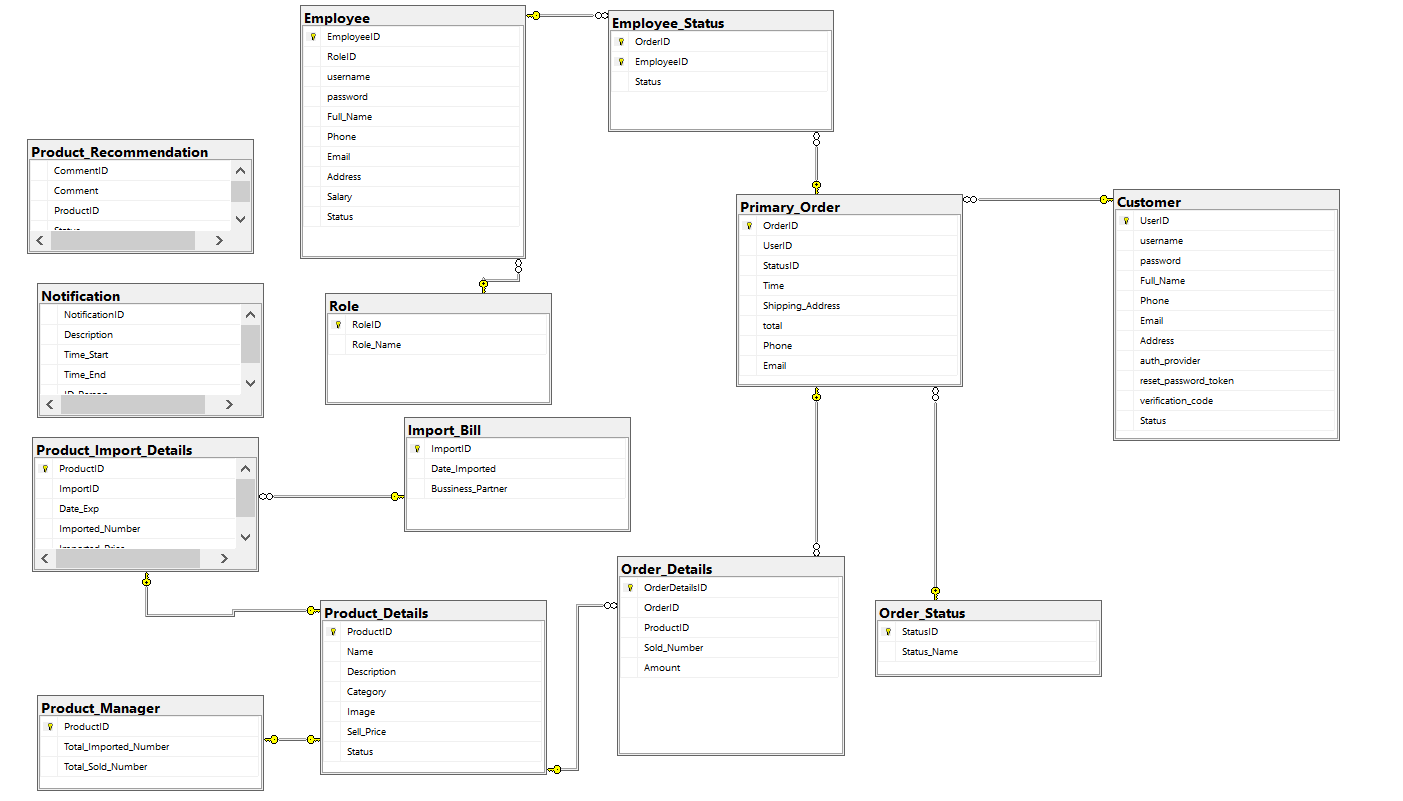
* Always have a patch/update when the system is maintained successfully.

##### 3.6.Compatibility

* Application can fit with almost all devices.

## **4. Data & Database Design**

##### 5.1.Entity Relationship Diagram

**

##### 5.2.Entities Description

| **No.** | **Entity** | **Description** |
| --- | --- | --- |
| 1 | Order | Store Shipping Address, Time and Total price of Orders |
| 2 | OrderDetails | Products and Number of them in an order |
| 3 | ImportBill | Time and Partner Information |
| 4 | Product\_Import\_Details | Price and Number of Product when Import |
| 5 | ProductDetails | Product Details Information |
| 6 | ProductManagement | StoreTotal Import Number and Total Sold Number of Products |
| 7 | Employee\_Status | Map employee in charge of which orders |
| 8 | Order\_Status | Status Name mapping StatusID of Order |
| 9 | Employee | Employee Personal Information |
| 10 | Role | Role Name mapping RoleID of Employee |
| 11 | Notification | Notification contents for Employee, Manager, Customer |
| 12 | Customer | Customer information and authentication provider |
| 13 | Product\_Recommendation | Comment of customer and status of comment. |

##### 