

BUS USERS SUPPORT SYSTEM

SOFTWARE REQUIREMENT SPECIFICATION

**Project Code: BUSS**

**Document Code: BUSS\_ Software requirement specification\_v1.0\_EN**

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**SIGNATURE PAGE**

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## Introduction

### Purposes

This document is created for better understanding about our Capstone project – Bus User Interactive Network. In this document, we will provide an overview of all the functions and use cases of our system, and a brief description of our solution for designing the system. This document is based on thorough analysis of user requirements and other requirements.

### Definition and Acronyms

This section describes the definitions, terms, and acronyms that are used in software requirements specification.

|  |  |
| --- | --- |
| Acronym & Abbreviation | Definition |
| BUSS | Bus User Support System |
| FU | FPT University |
| BU | Bus User |
| IN | Interactive Network |
| Q&A | Question and Answer |
|  |  |

**Table 1-1: Definition and Acronyms**

## System Purpose

The system is developed to make using buses easier and more convenient. It is hoped to create a habit of using public transportation in young people by making it more interesting and fun.

## Scope

This project will consist of creating an usable Android application that is connected to an .NET web service and runs smoothly on Android 4.4 and above devices. The project will be completed by August 28st, 2015. Main modules of the app will include Bus-Searching, Path-Finding and Schedule-Reminding.

## Overall Description

### System overview

Nowadays, there are quite many apps and websites which support finding and making use of buses. All of them have been created for the purpose of making users easier to catch a bus or to travel from places to places using buses. However, we found disadvantages while trying each of them. Some have confusing UI, some are better yet only not functionally focused on bus services and have not much to offer to users. Therefore, our project BUSS offers almost everything a bus user in Vietnam, especially “everyday-bus-users” would need. Not only support users finding buses, setting routes, notifying upcoming trips… BUSS also renders a world of interactions with bus, makes each bus trip more interesting and meaning than just transportation. BUSS also support connecting and sharing on social network like Facebook, as well as ranking user base on their achievements. All of this would be done through a smartphone application which synchronized to the cloud service. Completely free of charge.

### Product Features

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case No.** | **Group of functions** | **Functions** | **Glossary** |
| **BUSS USER MODULES** | | | |
| **Account Management Module** | | | |
|  |  | Sign in | Đăng nhập |
|  | Sign up | Đăng ký |
|  | Sign out | Đăng xuất |
|  | Forgot Password | Quên mật khẩu |
|  | Change account info | Chỉnh sửa thông tin cá nhân |
| **Common Module** | | | |
|  |  | View dashboard | Xem bảng tin |
|  | Change app settings | Thay đổi cài đặt |
| **Bus Module** | | | |
|  |  | View bus list | Xem danh sách buýt |
|  | Search bus in list | Tìm kiếm trong danh sách buýt |
|  | View bus info | Xem thông tin của xe buýt |
|  | View bus route | Xem lộ trình của xe buýt |
|  | View nearest bus | Xem xe buýt gần nhất thuộc tuyến đã chọn |
|  | View bus map | Xem đường đi của xe buýt trên bản đồ |
|  | View bus near me | Xem tất cả các xe buýt ở gần |
| **Path Finder Module** | | | |
|  |  | Find path | Tìm đường |
|  | View paths found | Xem kết quả tìm được |
|  | View path detail | Xem chi tiết đường đi |
|  | View direction | Nghe hội thoại |
| **Reminder module** | | | |
|  |  | View bus reminder | Xem tất cả nhắc nhở |
|  | Add reminder | Thêm nhắc nhở |
|  | Edit reminder | Sửa nhắc nhở |
|  | Delete reminder | Xoá nhắc nhở |
|  | Suspend/Unsuspend all reminder | Hoãn/Ngừng hoãn tất cả nhắc nhở |
|  | Suspend/Unsuspend a chosen reminder | Hoãn/Ngừng hoãn một nhắc nhở đã chọn |
| **Track module** | | | |
|  |  | Set track | Theo dõi |
|  | Cancel tracker | Ngừng theo dõi |
| **Favorite Module** | | | |
|  |  | View favorite places | Xem địa điểm yêu thích |
|  | Add favorite place | Thêm địa điểm yêu thích |
|  | Edit favorite place | Sửa địa điểm yêu thích |
|  | Delete favorite place | Xoá địa điểm yêu thích |
|  | Search favorite places | Tìm kiếm địa điểm yêu thích |
|  | View favorite buses | Xem xe buýt yêu thích |
|  | Add favorite bus | Thêm xe buýt yêu thích |
|  | Delete favorite bus | Xoá xe buýt yêu thích |
|  | Search favorite buses | Tìm kiếm xe buýt yêu thích |

### User Characteristics

This application is developed towards young people who are using bus every day or have the need to use bus as their main transportation vehicle. The system requires users to have an Android smartphone with an active internet connection and GPS enabled. Users can freely use all functions without any limitation but to save their usage data and interactive progress, they must log in – which requires only a minimum number of information and steps.

### User Documentation

List of document when delivering this application is in the table below:

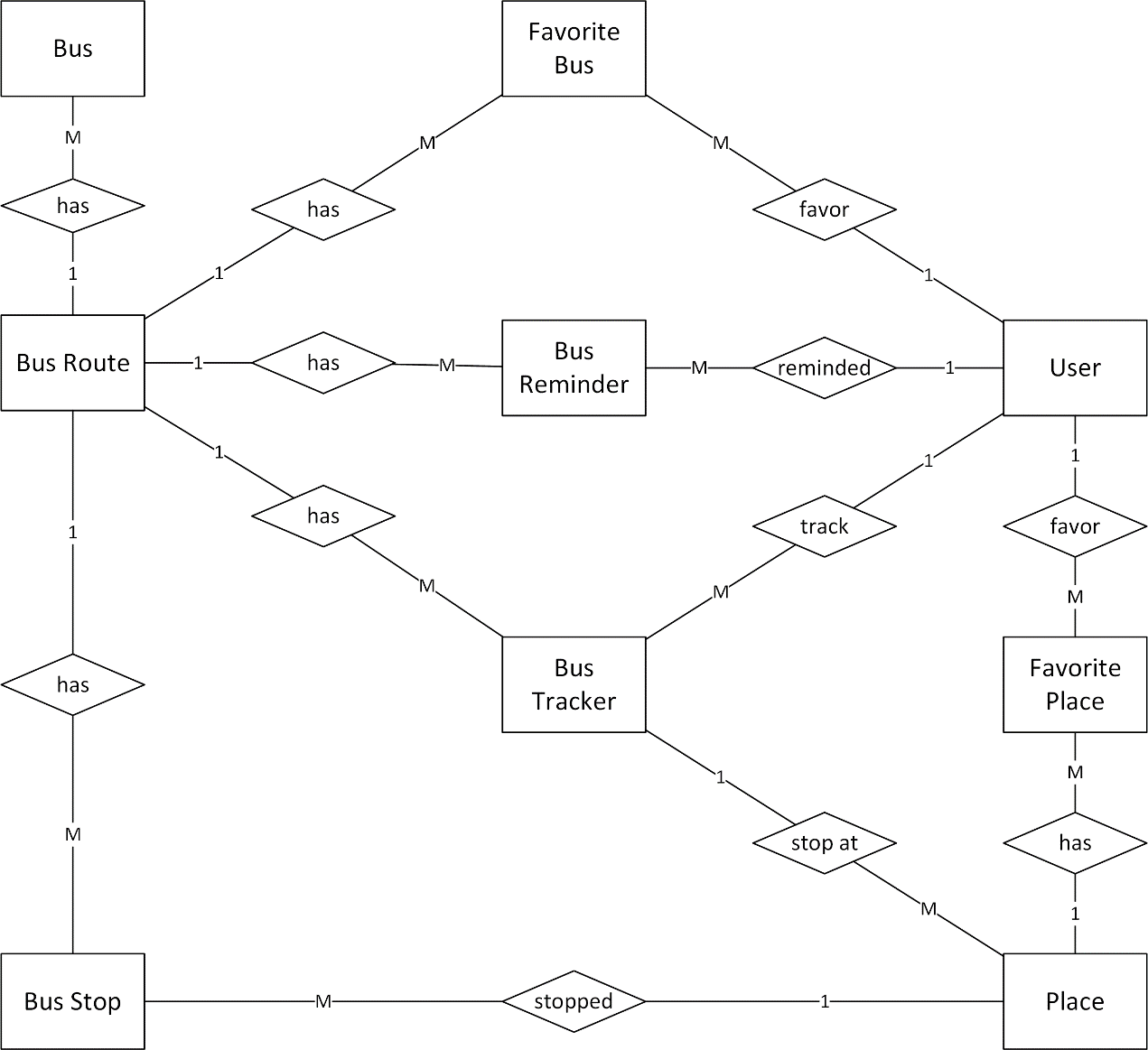
|  |  |
| --- | --- |
| **Name** | **Description** |
| User Manual | Provide detailed explanation about the system, screens and guide users how to use all features of BUSS system. |

### Assumption

* On each bus, there is a GPS device which is able to submit JSON over 3G network.
* Reviewers will have seven days to approve a milestone document. If no comments were received within this time period, the documents would be considered approved.
* There is a distinct QR-Code for each bus number, which is used to fill users’ Collection.

## Entity Relation Model

### Entity-Relationship Diagram



### Entity Detail

#### Bus

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Field Name | Type | Mandatory | Description |
|  | bus\_id | String | Y | Bus’s id |
|  | bus\_route\_id | Number | Y | Bus route’s number |

#### Bus Route

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Field Name | Type | Mandatory | Description |
|  | bus\_route\_id | Number | Y | Bus route’s id |
|  | bus\_route\_away | String | Y | Bus away route |
|  | bus\_route\_back | String | Y | Bus back route |
|  | bus\_route\_start\_time | Time | Y | Bus route start time |
|  | bus\_route\_end\_time | Time | Y | Bus route end time |
|  | bus\_route\_time\_each | Time | Y | Bus route time between two bus |

#### Bus Reminder

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Field Name | Type | Mandatory | Description |
|  | user\_id | Number | Y | User’s id |
|  | bus\_route\_id | Number | Y | Bus route’s id |
|  | bus\_reminder\_route\_direction | String | Y | Bus reminder’s route direction |
|  | bus\_reminder\_time | Time | Y | Bus reminder’s time |
|  | bus\_reminder\_location\_name | String | Y | Bus reminder’s location name |
|  | bus\_reminder\_locationX | Number | Y | Bus reminder’s location X |
|  | bus\_reminder\_locationY | Number | Y | Bus reminder’s location Y |
|  | bus\_reminder\_is\_monday | Boolean | Y | Bus reminder is on Monday? |
|  | bus\_reminder\_is\_tuesday | Boolean | Y | Bus reminder is on Tuesday? |
|  | bus\_reminder\_is\_wednesday | Boolean | Y | Bus reminder is on Wednesday? |
|  | bus\_reminder\_is\_thursday | Boolean | Y | Bus reminder is on Thursday? |
|  | bus\_reminder\_is\_friday | Boolean | Y | Bus reminder is on Friday? |
|  | bus\_reminder\_is\_saturday | Boolean | Y | Bus reminder is on Saturday? |
|  | bus\_reminder\_is\_sunday | Boolean | Y | Bus reminder is on Sunday? |
|  | bus\_reminder\_repeat | Number | Y | Bus reminder is repeated? |
|  | bus\_reminder\_distane | Number | Y | Bus reminder’s distance from bus to bus stop |
|  | bus\_reminder\_repeat\_time | Time | Y | Bus reminder’s repeat time |

#### Favorite Bus

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Field Name | Type | Mandatory | Description |
|  | user\_id | Number | Y | User’s id |
|  | bus\_route\_id | Number | Y | Bus route’s id |

#### Bus Tracker

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Field Name | Type | Mandatory | Description |
| 1 | user\_id | Number | Y | User’s id |
| 2 | bus\_route\_id | Number | Y | Bus route’s id |
| 3 | place\_id | Number | Y | Place’s id |

#### Bus stop

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Field Name | Type | Mandatory | Description |
| 1 | bus\_route\_id | Number | Y | Bus route’s id |
| 2 | bus\_stop\_order | Number | Y | Bus route stop’s order |
| 3 | bus\_route\_direction | String | Y | Bus route’s direction |
| 4 | place\_id | Number | Y | Place’s id |

#### User

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Field Name | Type | Mandatory | Description |
| 1. 11 | user\_id | Number | Y | User’s id |
|  | user\_email | String | Y | User’s email |
|  | user\_password | String | Y | User’s password |

#### Place

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Field Name | Type | Mandatory | Description |
|  | place\_id | Number | Y | Place’s id |
|  | place\_name | String | Y | Place’s name |
|  | place\_locationX | Number | Y | Place’s location X |
|  | place\_locationY | Number | Y | Place’s location Y |

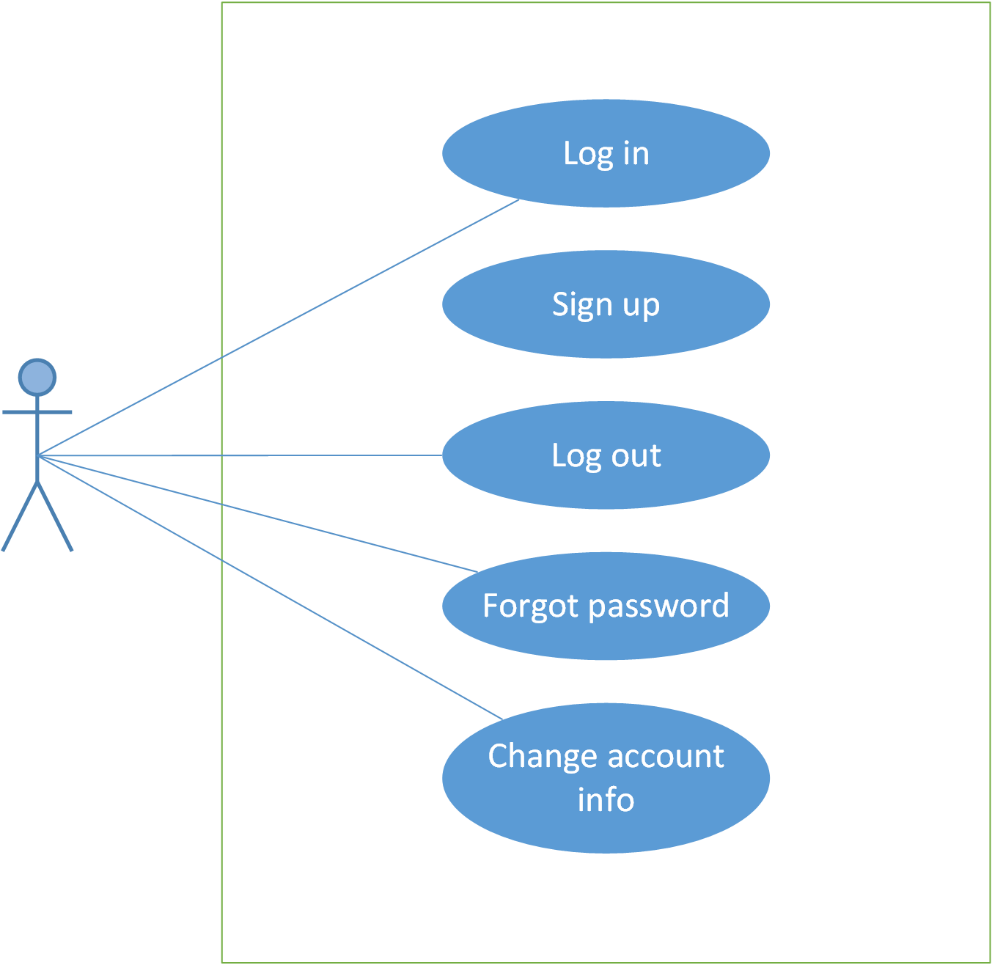
#### Favorite Place

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Field Name | Type | Mandatory | Description |
|  | user\_id | Number | Y | User’s id |
|  | place\_id | String | Y | Place’s id |
|  | favorite\_place\_name | String | Y | Favorite place’s name |

## Functional Specification

### Account management module

#### Use case diagram



#### UC0001: Sign in

##### Screen definition



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field name** | **Field name in Vietnamese** | **Type** | **Require** | **Mandatory** | **Length** | **Description** |
| 1 | Email | Email | Text field | Text | Y | 100 | User inputs email |
| 2 | Password | Mật khẩu | Text field | Text | Y | 50 | User inputs password |
| 3 | Sign in | Đăng nhập | Button | Click | Y |  | User taps on Sign in button |
| 4 | Sign up now | Đăng ký | Button | Click | Y |  | User taps on Sign up now button |

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0001 | **Version** | 1.0 |
| **Use Name** | | Log in | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to log in. | | |
| **Precondition** | | User has registered account but not log in yet | | |
| **Trigger** | | User taps “Sign in” button | | |
| **Post-Condition** | | “Dashboard” screen is shown | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Opens the Bus lover app | | |
| 2 | BUSS | Displays “Sign in” screen | | |
| 3 | BUSS User | Inputs “email” and “password” field, then taps “Sign in” button | | |
| 4 | BUSS | Validates information and logs user into app then moves to Dashboard screen. | | |
|  | | | | |

**Exception**

|  |  |  |
| --- | --- | --- |
| **E1** | At step 3 in the main flows**,** if BUSS User leaves either “email” or “password” field blank then taps “Sign in” button | |
| **Step** | **Actor** | **Action** |
| 4.1 | BUSS | Returns Error message “Email/Password is required” |

|  |  |  |
| --- | --- | --- |
| **E2** | At step 4 in the main flows**,** if BUSS fails to validate email & password | |
| **Step** | **Actor** | **Action** |
| 4.2 | BUSS | Returns Error message “Please enter a correct email and password” |

#### UC0002: Sign up

##### Screen definition



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field name** | **Field name in Vietnamese** | **Type** | **Require** | **Mandatory** | **Length** | **Description** |
| 1 | Avatar | Ảnh đại diện | Button | Click | Y |  | User taps Avatar button to add use’s avatar. |
| 1 | Email | Email | Text field | Text | Y | 255 | User inputs email |
| 2 | Password | Mật khẩu | Text field | Password | Y | 50 | User inputs password that only contains number and character |
| 3 | Confirm password | Xác nhận mật khẩu | Text field | Text | Y | 50 | User inputs password again |
| 4 | Accept | Chấp nhận | Button | Click | Y |  | User taps on Accept button |

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0002 | **Version** | 1.0 |
| **Use Name** | | Sign up | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to sign up an account in order to sign in. | | |
| **Precondition** | | User doesn’t have account | | |
| **Trigger** | | User taps “Sign up now” button | | |
| **Post-Condition** | | “Dashboard” screen is shown | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Opens the Bus lover app and tap “Sign up now” button | | |
| 2 | BUSS | Displays “Sign up” screen | | |
| 3 | BUSS User | Inputs “email”, “password” and “confirm password” field, then taps “Accept” button | | |
| 4 | BUSS | Validates information and logs user into app then moves to “Dashboard” screen and notify user that “Sign up was completed”. | | |
|  | | | | |

**Exception**

|  |  |  |
| --- | --- | --- |
| **E1** | At step 3 in the main flows**,** if BUSS User leaves either “email” or “password” or “confirm password” blank then taps “Sign in” button | |
| **Step** | **Actor** | **Action** |
| 4.1 | BUSS | Returns Error message “Email/ Password/ Confirm password is required” |

|  |  |  |
| --- | --- | --- |
| **E2** | At step 4 in the main flows**,** if BUSS fails to validate email & password | |
| **Step** | **Actor** | **Action** |
| 4.2 | BUSS | Returns Error message “Please enter a valid email and password” |

|  |  |  |
| --- | --- | --- |
| **E3** | At step 3 in the main flows**,** if BUSS User inputs “password” and “confirm password” field that are not matched, then taps “Sign in” button. | |
| **Step** | **Actor** | **Action** |
| 4.2 | BUSS | Returns Error message “Confirm password is not matched with password” |

#### UC0003: Sign out

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0003 | **Version** | 1.0 |
| **Use Name** | | Sign out | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to sign up an account in order to sign in. | | |
| **Precondition** | | User has logged in | | |
| **Trigger** | | User taps “Sign out” button | | |
| **Post-Condition** | | “Sign in” screen is shown | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps “Sign out” button | | |
| 2 | BUSS | Signs user out and displays “Sign in” screen | | |
|  | | | | |

#### UC0004: Forgot password

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0004 | **Version** | 1.0 |
| **Use Name** | | Forgot password | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to receive their password if they forgot. | | |
| **Precondition** | | User hasn’t logged in | | |
| **Trigger** | | User taps “forgot password” button | | |
| **Post-Condition** | | Displays “Sign in” screen and password is sent to email | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Enters Bus lover app | | |
| 2 | BUSS | Displays “Sign in” screen | | |
| 3 | BUSS User | Inputs “email” and taps “forgot password” button | | |
| 4 | BUSS | Validates email and sends password to the inputted email | | |
|  | | | | |

**Exception**

|  |  |  |
| --- | --- | --- |
| **E1** | At step 3 in the main flows**,** if BUSS User leaves email blank | |
| **Step** | **Actor** | **Action** |
| 4.1 | BUSS | Returns Error message “Email is required” |

|  |  |  |
| --- | --- | --- |
| **E2** | At step 4 in the main flows**,** if BUSS failed to validate email | |
| **Step** | **Actor** | **Action** |
| 4.2 | BUSS | Returns popup with Error message “Please enter a correct email” |

#### UC0005: Change account info

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0005 | **Version** | 1.0 |
| **Use Name** | | Change account info | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to change his/her account profile info | | |
| **Precondition** | | User has logged in | | |
| **Trigger** | | User taps Change account info item | | |
| **Post-Condition** | | Changes account info popup is shown | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Enters Bus lover app | | |
| 2 | BUSS | Displays Dashboard screen | | |
| 3 | BUSS User | Taps menu button | | |
| 4 | BUSS | Displays Menu | | |
| 5 | BUSS User | Taps Change account info item | | |
| 6 | BUSS | Displays Change account info popup | | |
| 7 | BUSS User | Edits “Password”, “Confirm password” field and “Avatar” then taps Save button | | |
| 8 | BUSS | System will validate and save the changes, then move to Dashboard screen with Menu shown | | |
|  | | | | |

**Exception**

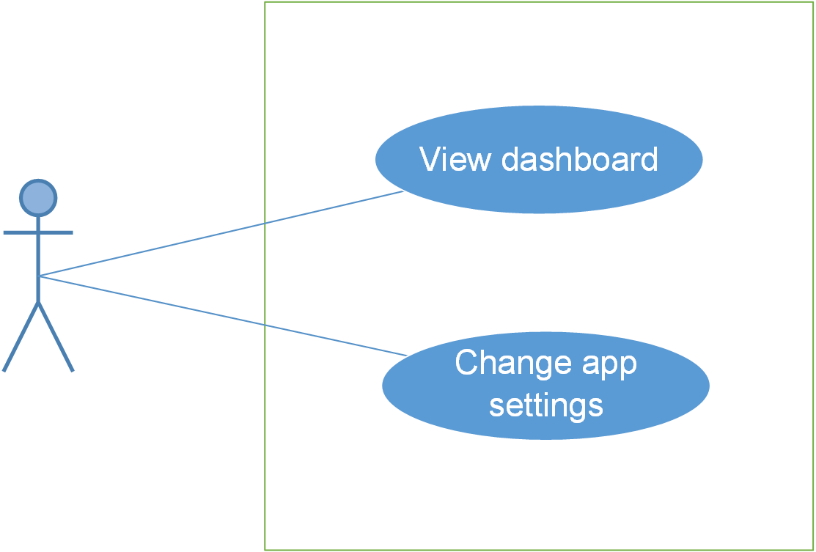
|  |  |  |
| --- | --- | --- |
| **E1** | At step 7 in the main flows**,** if BUSS User leaves “password” and “confirm password” field blank, then taps “Save” button | |
| **Step** | **Actor** | **Action** |
| 8.1 | BUSS | Returns Error message “Password/ Confirm password is required” |

|  |  |  |
| --- | --- | --- |
| **E2** | At step 8 in the main flows, if BUSS fails to validate password, then taps “Save” button | |
| **Step** | **Actor** | Action |
| 8.2 | BUSS | Returns popup with Error message “Please enter a valid password” |

|  |  |  |
| --- | --- | --- |
| **E3** | At step 7 in the main flows**,** if BUSS User inputs “password” and “confirm password” field that are not matched, then taps “Save” button. | |
| **Step** | **Actor** | **Action** |
| 4.2 | BUSS | Returns Error message “Confirm password is not matched with password” |

### Common module

#### Use case diagram



#### UC0006: View dashboard

##### Screen definition

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field name** | **Field name in Vietnamese** | **Type** | **Require** | **Mandatory** | **Length** | **Description** |
| 1 | Reminders | Nhắc nhở | Button | Click | Y |  | User taps on REMINDERS button |
| 2 | Path Finder | Tìm đường | Button | Click | Y |  | User taps on Path Finder button |
| 3 | Menu | Danh sách | Button | Click | Y |  | User taps on Menu button |
| 4 | Notification | Thông báo | Button | Click | Y |  | User taps on Notification button |
| 5 | Bus near me | Buýt gần đây | Button | Click | Y |  | User taps on Bus near me button |

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0006 | **Version** | 1.0 |
| **Use Name** | | View dashboard | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to view dashboard | | |
| **Precondition** | | User have logged in | | |
| **Trigger** | | User opens app | | |
| **Post-Condition** | | “Dashboard” screen is shown | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Enters Bus lover app | | |
| 2 | BUSS | Displays “Dashboard” screen | | |
|  | | | | |

#### UC0007: Change app setting

##### Screen definition

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0007 | **Version** | 1.0 |
| **Use Name** | | Change app setting | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to change app setting | | |
| **Precondition** | | Dashboard screen displayed | | |
| **Trigger** | | User taps Menu then taps Setting item | | |
| **Post-Condition** | | Setting screen is shown | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps “Menu” button then tap “Settings” button | | |
| 2 | BUSS | Displays Settings screen | | |
| 3 | BUSS User | Taps Language dropdown then chooses any item in list | | |
| 4 | BUSS | The information of Language field is changed | | |
| 5 | BUSS User | Taps Done button | | |
| 6 | BUSS | Saves all edited information and moves to Dashboard screen | | |
|  | | | | |

**Alternative scenario**

|  |  |  |
| --- | --- | --- |
| **AT1** | At step 3 in the main flows**,** if BUSS User doesn’t change anything and taps Done button | |
| **Step** | **Actor** | **Action** |
| 4.1 | BUSS | Nothing is changed and moves to Dashboard screen |

### Bus module

#### Use case diagram



#### UC0009: View bus list

##### Screen definition



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field name** | **Field name in Vietnamese** | **Type** | **Require** | **Mandatory** | **Length** | **Description** |
| 1 | Bus route | Tuyến xe buýt | List item | Click | Y |  | User taps on Skip button |
| 2 | Search | Tìm kiếm | Button | Click | Y |  | User taps on Search button |
| 3 | Menu | Danh sách | Button | Click | Y |  | User taps on Menu button |

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0009 | **Version** | 1.0 |
| **Use Name** | | View bus list | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows a user to view bus list. | | |
| **Precondition** | | Dashboard screen displayed | | |
| **Trigger** | | User taps Menu then taps Bus List item | | |
| **Post-Condition** | | Bus List screen is displayed | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps on Menu then taps on “Bus list” item | | |
| 2 | BUSS | Displays “Bus list” screen | | |
|  | | | | |

#### UC0010: Search bus in list

##### Screen definition



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field name** | **Field name in Vietnamese** | **Type** | **Require** | **Mandatory** | **Length** | **Description** |
| 1 | Bus route | Tuyến xe buýt | List item | Click | Y |  | User taps on Skip button |
| 2 | Search | Tìm kiếm | Button | Click | Y |  | User taps on Search button |
| 3 | Search Text Field | Khung tìm kiếm | Text field | Text | Y | 255 | User inputs their key word they want to search with length less than 255 characters |
| 4 | Back | Quay lại | Button | Click | Y |  | User taps on Back button |

##### Use Case Specification

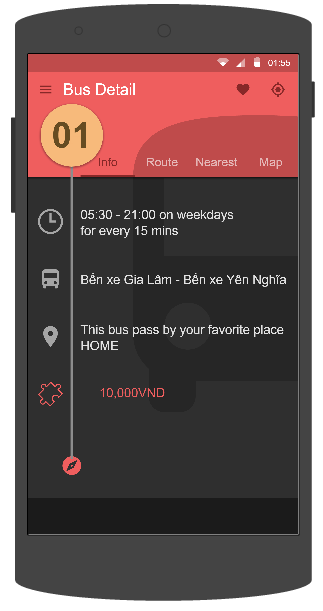
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0010 | **Version** | 1.0 |
| **Use Name** | | Search bus in list | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows a user to search bus in the bus list. | | |
| **Precondition** | | Bus List screen displayed | | |
| **Trigger** | | User taps Search button | | |
| **Post-Condition** | | Displays the bus results | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps on Search button on the top of screen | | |
| 2 | BUSS | Displays Search form on Search bar | | |
| 3 | BUSS User | Inputs search keyword | | |
| 4 | BUSS | Searches and displays results | | |
|  | | | | |

**Exception**

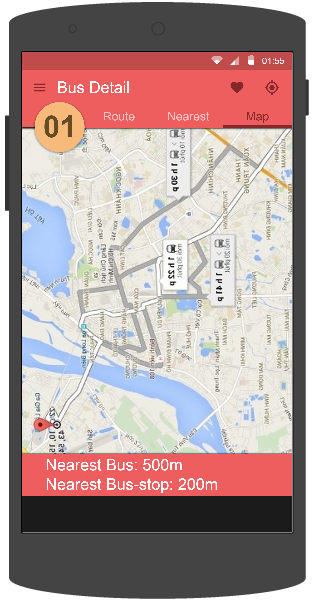
|  |  |  |
| --- | --- | --- |
| **E1** | At step 4 in the main flows**,** if BUSS doesn’t find any item that is matched with search keyword | |
| **Step** | **Actor** | **Action** |
| 4.1 | BUSS | Returns message “Sorry, no search result for”...” ” |

#### UC0011: View bus info

##### Screen definition



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field name** | **Field name in Vietnamese** | **Type** | **Require** | **Mandatory** | **Length** | **Description** |
| 1 | Info | Thông tin | Tab | Click | Y |  | User taps on Info tab |
| 2 | Route | Tuyến đường | Tab | Click | Y |  | User taps on Route tab |
| 3 | Nearest | Gần nhất | Tab | Click | Y |  | User taps on Nearest tab |
| 4 | Map | Bản đồ | Tab | Click | Y |  | User taps on Map button |
| 5 | Favorite | Yêu thích | Button | Click | Y |  | User taps on Favorite button |
| 6 | Tracker | Theo dõi | Button | Click | Y |  | User taps on Track button |
| 7 | Menu | Danh sách | Button | Click | Y |  | User taps on Menu button |



##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0011 | **Version** | 1.0 |
| **Use Name** | | View bus info | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows a user to view all information of a bus. | | |
| **Precondition** | | Bus List screen displayed | | |
| **Trigger** | | User taps on one bus | | |
| **Post-Condition** | | Bus Detail screen displayed | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps on a bus item. | | |
| 2 | BUSS | Displays Bus Detail screen – Info tab. | | |
|  | | | | |

#### UC0012: View bus route

##### Screen definition



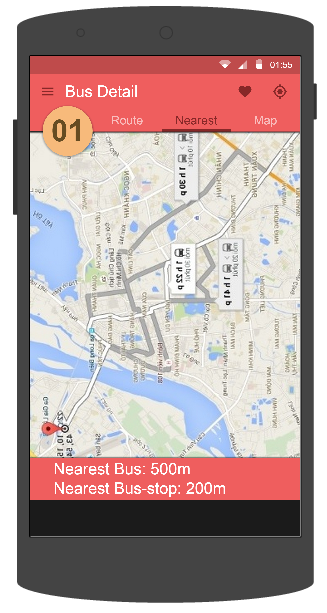
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field name** | **Field name in Vietnamese** | **Type** | **Require** | **Mandatory** | **Length** | **Description** |
| 1 | Info | Thông tin | Tab | Click | Y |  | User taps on Info tab |
| 2 | Route | Tuyến đường | Tab | Click | Y |  | User taps on Route tab |
| 3 | Nearest | Gần nhất | Tab | Click | Y |  | User taps on Nearest tab |
| 4 | Map | Bản đồ | Tab | Click | Y |  | User taps on Map button |
| 5 | Favorite | Yêu thích | Button | Click | Y |  | User taps on Favorite button |
| 6 | Tracker | Theo dõi | Button | Click | Y |  | User taps on Track button |
| 7 | Menu | Danh sách | Button | Click | Y |  | User taps on Menu button |

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0012 | **Version** | 1.0 |
| **Use Name** | | View bus route | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows a user to view route of a chosen bus. | | |
| **Precondition** | | Bus Detail screen displayed | | |
| **Trigger** | | User taps on Route tab | | |
| **Post-Condition** | | Bus Detail tab Route displayed | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps on Route tab on the Bus Detail screen. | | |
| 2 | BUSS | Displays Bus Detail screen with the Route tab. | | |
|  | | | | |

#### UC0013: View nearest bus

##### Screen definition



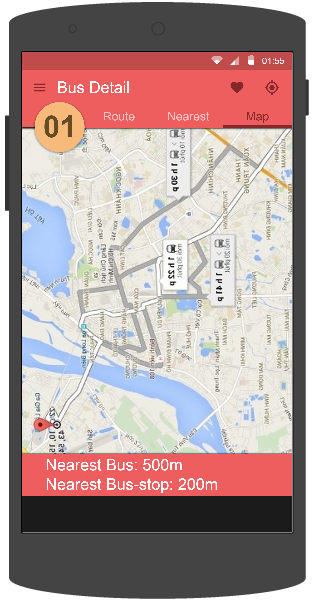
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field name** | **Field name in Vietnamese** | **Type** | **Require** | **Mandatory** | **Length** | **Description** |
| 1 | Info | Thông tin | Tab | Click | Y |  | User taps on Info tab |
| 2 | Route | Tuyến đường | Tab | Click | Y |  | User taps on Route tab |
| 3 | Nearest | Gần nhất | Tab | Click | Y |  | User taps on Nearest tab |
| 4 | Map | Bản đồ | Tab | Click | Y |  | User taps on Map button |
| 5 | Favorite | Yêu thích | Button | Click | Y |  | User taps on Favorite button |
| 6 | Tracker | Theo dõi | Button | Click | Y |  | User taps on Track button |
| 7 | Menu | Danh sách | Button | Click | Y |  | User taps on Menu button |

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0013 | **Version** | 1.0 |
| **Use Name** | | View nearest bus | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows a user to view all nearest bus of the chosen bus route. | | |
| **Precondition** | | Bus Detail screen displayed | | |
| **Trigger** | | User taps on Nearest tab | | |
| **Post-Condition** | | Bus Detail tab Nearest displayed | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps on Nearest tab on the Bus Detail screen. | | |
| 2 | BUSS | Displays Bus Detail screen with the Nearest tab. | | |
|  | | | | |

#### UC0014: View bus map

##### Screen definition



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field name** | **Field name in Vietnamese** | **Type** | **Require** | **Mandatory** | **Length** | **Description** |
| 1 | Info | Thông tin | Tab | Click | Y |  | User taps on Info tab |
| 2 | Route | Tuyến đường | Tab | Click | Y |  | User taps on Route tab |
| 3 | Nearest | Gần nhất | Tab | Click | Y |  | User taps on Nearest tab |
| 4 | Map | Bản đồ | Tab | Click | Y |  | User taps on Map button |
| 5 | Favorite | Yêu thích | Button | Click | Y |  | User taps on Favorite button |
| 6 | Tracker | Theo dõi | Button | Click | Y |  | User taps on Track button |
| 7 | Menu | Danh sách | Button | Click | Y |  | User taps on Menu button |

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0014 | **Version** | 1.0 |
| **Use Name** | | View bus map | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows a user to view route of a chosen bus on the map. | | |
| **Precondition** | | Bus Detail screen displayed | | |
| **Trigger** | | User taps on Map tab | | |
| **Post-Condition** | | Bus Detail tab Map displayed | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps on Map tab on the Bus Detail screen. | | |
| 2 | BUSS | Displays Bus Detail screen with the Map tab. | | |
|  | | | | |

#### UC0015: View bus near me

##### Screen definition

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0015 | **Version** | 1.0 |
| **Use Name** | | View bus near me | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows a user to view all buses near his/her current location. | | |
| **Precondition** | | Dashboard screen displayed | | |
| **Trigger** | | User taps Bus near me button | | |
| **Post-Condition** | | Bus near me screen displayed | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps on Bus near me button. | | |
| 2 | BUSS | Displays Bus near me screen. | | |
|  | | | | |

### Path finder module

#### Use case diagram



#### UC0016: Find path

##### Screen definition



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field name** | **Field name in Vietnamese** | **Type** | **Require** | **Mandatory** | **Length** | **Description** |
| 1 | From | Từ | Text field | Text | Y | 255 | User inputs their position or the place they start to go with less than 255 characters. |
| 2 | To | Đến | Text field | Text | Y | 255 | User inputs the place they want to go with less than 255 characters. |
| 3 | Reverse | Đảo chiều | Button | Click | Y |  | User taps on Reverse button |
| 4 | Search | Tìm kiếm | Button | Click | Y |  | User taps on Search button |
| 5 | Get current location | Lấy vị trí hiện tại | Button | Click | Y |  | User taps on Get current location button |
| 6 | Map | Bản đồ | Tab | Click | Y |  | User taps on Map tab |
| 7 | History | Lịch sử | Tab | Click | Y |  | User taps on History tab |
| 8 | Favorite | Yêu thích | Tab | Click | Y |  | User taps on Favorite tab |
| 9 | Menu | Danh sách | Button | Click | Y |  | User taps on Menu button |

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0016 | **Version** | 1.0 |
| **Use Name** | | Find path | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to find path | | |
| **Precondition** | | Dashboard screen displayed | | |
| **Trigger** | | User taps “Path finder” item on Menu | | |
| **Post-Condition** | | “Path finder” screen is shown | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Enters Bus lover app | | |
| 2 | BUSS | Displays “Dashboard” screen | | |
| 3 | BUSS User | Taps “Path finder” item on menu | | |
| 4 | BUSS | Display “Path finder” screen | | |
| 5 | BUSS User | In “Map” tab, inputs departure into “from” text field and destination into “to” text field then taps Search button | | |
| 6 | BUSS | Searches and displays found paths | | |
|  | | | | |

**Alternative scenario**

|  |  |  |
| --- | --- | --- |
| **AT1** | At step 3 in the main flows**,** in “Dashboard” screen, if BUSS User taps Search button | |
| **Step** | **Actor** | **Action** |
| 4.1 | BUSS | Display “Path finder” screen |

|  |  |  |
| --- | --- | --- |
| **AT2** | At step 5 in the main flows**,** if BUSS User inputs “from” and “to” text field then taps Revert direction button then taps Search button | |
| **Step** | **Actor** | **Action** |
| 6.2 | BUSS | Swaps 2 locations then searches and displays found paths |

|  |  |  |
| --- | --- | --- |
| **AT3** | At step 5 in the main flows**,** in “Map” tab, if BUSS User taps “Get current location” button in order to input “from”or “to” text field and inputs the other text field then taps Search button | |
| **Step** | **Actor** | **Action** |
| 6.3 | BUSS | Returns user’s current location into that text field then searches and displays found paths |

|  |  |  |
| --- | --- | --- |
| **AT4** | At step 5 in the main flows**,** in “Map” tab, if BUSS User chooses locations on map in order to input “from” and “to” text field then taps Search button | |
| **Step** | **Actor** | **Action** |
| 6.4 | BUSS | Returns locations into “from” and “to” text field then searches and displays found paths |

|  |  |  |
| --- | --- | --- |
| **AT5** | At step 5 in the main flows**,** if BUSS User taps “History” tab then chooses places for “from”/ “to” text field then taps Search button | |
| **Step** | **Actor** | **Action** |
| 6.5 | BUSS | Displays places which were found before then searches and displays found paths |

|  |  |  |
| --- | --- | --- |
| **AT6** | At step 5 in the main flows**,** if BUSS User taps “Favorite” tab then chooses places for “from”/ “to” text field then taps Search button | |
| **Step** | **Actor** | **Action** |
| 6.6 | BUSS | Displays favorite places which were set before then searches and displays found paths |

**Exception**

|  |  |  |
| --- | --- | --- |
| **E1** | At step 5 in the main flows**,** if BUSS User inputs a place, which doesn’t exist, into “from”/ “to” text field then taps Search button | |
| **Step** | **Actor** | **Action** |
| 6.1 | BUSS | Returns popup with Error message “from/ to không tồn tại” |

|  |  |  |
| --- | --- | --- |
| **E2** | At step 5 in the main flows**,** if BUSS User leaves “from”/ “to” text field blank then taps Search button | |
| **Step** | **Actor** | **Action** |
| 6.2 | BUSS | Returns popup with Error message “Vui lòng nhập đầy đủ thông tin” |

|  |  |  |
| --- | --- | --- |
| **E3** | At step 5 in the main flows**,** if BUSS User inputs “from” and “to” text field then taps Search button without Internet | |
| **Step** | **Actor** | **Action** |
| 6.3 | BUSS | Returns popup with Error message “Thiết bị không kết nối mạng” |

#### UC0017: View paths found

##### Screen definition



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field name** | **Field name in Vietnamese** | **Type** | **Require** | **Mandatory** | **Length** | **Description** |
| 1 | Reverse | Đảo chiều | Button | Click | Y |  | User taps on Reverse button |
| 2 | Shortest | Quãng đường ngắn nhất | Tab | Click | Y |  | User taps on Shortest tab |
| 3 | Least Exc | Chuyển tuyến ít nhất | Tab | Click | Y |  | User taps on Least Exc tab |
| 4 | Least Walk | Đi bộ ít nhất | Tab | Click | Y |  | User taps on Least Walk tab |
| 5 | Menu | Danh sách | Button | Click | Y |  | User taps on Menu button |

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0017 | **Version** | 1.0 |
| **Use Name** | | View path found | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to view path found | | |
| **Precondition** | | “Path Finder” screen displayed | | |
| **Trigger** | | User taps Search button | | |
| **Post-Condition** | | “Paths Found” screen is shown | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Enters “Path Finder” screen, inputs informations and taps Search button | | |
| 2 | BUSS | * Searches and displays list of found paths in “Paths found” screen. * “from”/ “to” text field and Revert direction button will be disable. * A path will show the following information: total distance , walking distance, the number of exchange | | |
| 3 | BUSS User | Taps “Shortest” tab | | |
| 4 | BUSS | Displays list paths found by filter: shortest | | |
|  | | | | |

**Alternative scenario**

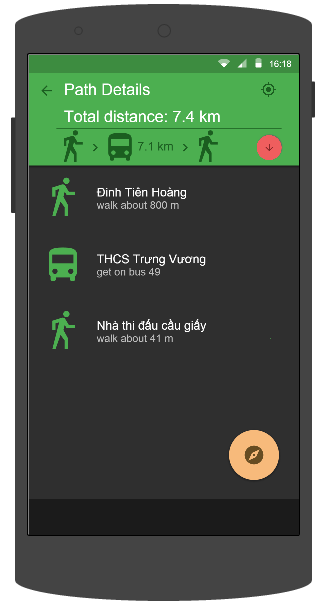
|  |  |  |
| --- | --- | --- |
| **AT1** | At step 3 in the main flows**,** if BUSS User taps “Least Exc ” tab | |
| **Step** | **Actor** | **Action** |
| 4.1 | BUSS | Displays list paths found by filter: least exchange |

|  |  |  |
| --- | --- | --- |
| **AT2** | At step 3 in the main flows**,** in “Map” tab, if BUSS User taps “Least walk” tab | |
| **Step** | **Actor** | **Action** |
| 4.2 | BUSS | Displays list paths found by filter: least walk |

#### UC0018: View path detail

##### Screen definition





|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field name** | **Field name in Vietnamese** | **Type** | **Require** | **Mandatory** | **Length** | **Description** |
| 1 | Track | Theo dõi | Button | Click | Y |  | User taps on Track button |
| 2 | Bus | Buýt | Icon | Click | Y |  | User taps Bus icon displaying on map |
| 3 | Arrow up | Mũi tên đi lên | Button | Click | Y |  | User taps on Arrow up button |
| 4 | Arrow down | Mũi tên đi xuống | Button | Click | Y |  | User taps on Arrow down button |
| 5 | Path detail | Chi tiết đường đi | List item |  |  |  |  |
| 6 | Navigate | Chỉ đường | Button | Click | Y |  | User taps on Navigate button |
| 7 | Back | Quay lại | Button | Click | Y |  | User taps on Back button |

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0018 | **Version** | 1.0 |
| **Use Name** | | View path detail | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to view path detail | | |
| **Precondition** | | “Path Found” screen displayed | | |
| **Trigger** | | User taps one path | | |
| **Post-Condition** | | “Path Detail” screen is shown | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | In “Path Found” screen, chooses a path | | |
| 2 | BUSS | Displays “Path Detail” screen and shows the path chosen on the map. The bus which is nearest from the departure location will also be shown on the path draw | | |
| 3 | BUSS User | Taps on Bus icon | | |
| 4 | BUSS | Shows how far from bus to the nearest bus-stop that is from departure location. | | |
|  | | | | |

**Alternative scenario**

|  |  |  |
| --- | --- | --- |
| **AT1** | After step 4 in the main flows**,** if BUSS User taps “Arrow up” button | |
| **Step** | **Actor** | **Action** |
| 6.1 | BUSS | Displays path details by the list: how far walk, which bus to get on... |

#### UC0019: View direction

##### Screen definition



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field name** | **Field name in Vietnamese** | **Type** | **Require** | **Mandatory** | **Length** | **Description** |
| 1 | Back | Quay lại | Button | Click | Y |  | User taps on Back button |

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0019 | **Version** | 1.0 |
| **Use Name** | | View direction | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to view path direction | | |
| **Precondition** | | “Path Detail” screen displayed | | |
| **Trigger** | | User taps “Navigate” button | | |
| **Post-Condition** | | “Direction” screen is shown | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | In “Path Detail” screen, taps “Arrow up” button | | |
| 2 | BUSS | Displays “Path Detail” screen | | |
| 3 | BUSS User | Taps “Navigate” button | | |
| 4 | BUSS | Shows step-by-step detailed direction according to the user’s current location. | | |
|  | | | | |

### Reminder module

#### Use case diagram



#### UC0020: View bus reminder

##### Screen definition



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field name** | **Field name in Vietnamese** | **Type** | **Require** | **Mandatory** | **Length** | **Description** |
| 1 | Add | Thêm | Button | Click | Y |  | User taps on Add button |
| 2 | Menu | Danh sách | Button | Click | Y |  | User taps on Menu button |
| 3 | Suspend all | Ngừng tất cả | Switch | Click | Y |  | User taps on Suspend all switch |
| 4 | Reminder | Nhắc nhở | List item | Click | Y |  | User taps on Reminder item |
| 5 | Suspend | Ngừng | Switch | Click | Y |  | User taps on Suspend switch |

##### Use Case Specification

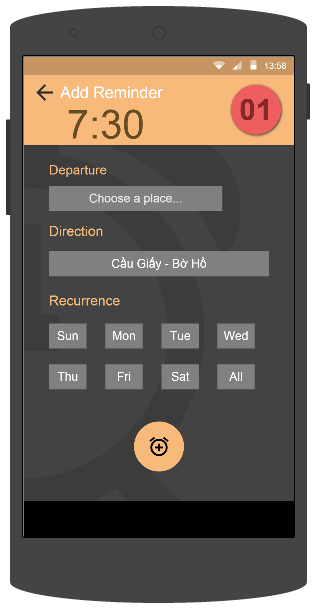
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0020 | **Version** | 1.0 |
| **Use Name** | | View bus reminder | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to view bus reminders | | |
| **Precondition** | | “Dashboard” screen displayed | | |
| **Trigger** | | User taps “Reminders” button | | |
| **Post-Condition** | | “Bus Reminder” screen is shown | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps “Reminders” button | | |
| 2 | BUSS | Displays “Bus Reminder” screen and shows list of reminders and the next reminder. If there isn’t any reminder, system will show message “There aren’t any reminders” | | |
|  | | | | |

**Alternative scenario**

|  |  |  |
| --- | --- | --- |
| **AT1** | At step 1 in the main flows**,** if BUSS User taps Menu and chooses “Bus reminder” item | |
| **Step** | **Actor** | **Action** |
| 2.1 | BUSS | Displays “Bus Reminder” screen and shows list of reminder and the next reminder. If there isn’t any reminder, system will show message “There aren’t any reminders” |

#### UC0021: Add reminder

##### Screen definition





|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field name** | **Field name in Vietnamese** | **Type** | **Require** | **Mandatory** | **Length** | **Description** |
| 1 | Bus route | Tuyến buýt | Button | Click | Y |  | User taps on Bus route button |
| 2 | Clock | Báo thức | Button | Click | Y |  | User taps on Clock button |
| 3 | Departure | Điểm đi | Drop down list | Click | Y |  | User taps Departure text field |
| 4 | Direction | Hướng | Drop down list | Click | Y |  | User taps Direction text field |
| 5 | Recurrence | Lặp lại | Button | Click | Y |  | User taps Recurrece (dates) buttons |
| 6 | Add | Thêm | Button | Click | Y |  | User taps on Add button to add reminder |
| 2 | Back | Quay lại | Button | Click | Y |  | User taps on Back button to go back |

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0021 | **Version** | 1.0 |
| **Use Name** | | Add reminder | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to add reminder | | |
| **Precondition** | | “Bus reminder” screen displayed | | |
| **Trigger** | | User taps “Add” button | | |
| **Post-Condition** | | “Bus reminder” screen is shown | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps “Add” button. | | |
| 2 | BUSS | Displays “Add reminder” screen | | |
| 3 | BUSS User | Inputs “Time”, “departure” and “direction” text field and chooses “recurrence” then taps “Add reminder” button | | |
| 4 | BUSS | Displays “Reminder set done” screen | | |
| 5 | BUSS User | Confirms reminder by tapping “Done” button | | |
| 6 | BUSS | Saves reminder and returns “Bus reminder” screen. | | |
|  | | | | |

**Alternative scenario**

|  |  |  |
| --- | --- | --- |
| **AT1** | At step 1 in the main flows**,** if BUSS User taps Menu and chooses “Bus reminder” item | |
| **Step** | **Actor** | **Action** |
| 2.1 | BUSS | Displays “Bus reminder” screen and shows list of reminder and the next reminder. If there isn’t any reminder, system will show message “There aren’t any reminders” |

|  |  |  |
| --- | --- | --- |
| **s** | At step 5 in the main flows**,** if BUSS User taps “Add” button | |
| **Step** | **Actor** | **Action** |
| 6.2 | BUSS | Displays “Add Reminder” screen |
| 7.2 | BUSS User | Inputs “Time”, “departure” and “direction” text field and chooses “recurrence” then taps “Add” button |
| 8.2 | BUSS | Displays “Hoàn thành thêm nhắc nhở” screen |
| 9.2 | BUSS User | Confirms reminder by tapping “Done” button |
| 10.2 | BUSS | Saves reminder and returns “Bus Reminder” screen. |

|  |  |  |
| --- | --- | --- |
| **AT3** | At step 1 in the main flows**,** if BUSS User enters “Bus List” screen and chooses a bus from list, then taps “Add Reminder” button | |
| **Step** | **Actor** | **Action** |
| 2.3 | BUSS | Displays “Add Reminder” screen |

**Exception**

|  |  |  |
| --- | --- | --- |
| **E1** | At step 3 in the main flows**,** if BUSS User input a place which doesn’t exit into “departure” text field, then taps “Add” button. | |
| **Step** | **Actor** | **Action** |
| 4.1 | BUSS | Returns Error message “This place doesn’t exit” |

|  |  |  |
| --- | --- | --- |
| **E2** | At step 3 in the main flows**,** if BUSS User leaves “departure” text field blank, then taps Add button | |
| **Step** | **Actor** | **Action** |
| 4.2 | BUSS | Returns Error message “This field is required” |

#### UC0022: Edit reminder

##### Screen definition



##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0022 | **Version** | 1.0 |
| **Use Name** | | Edit reminder | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to edit reminder | | |
| **Precondition** | | “Xem nhắc nhở” screen displayed | | |
| **Trigger** | | User taps on one Reminder | | |
| **Post-Condition** | | “Sửa nhắc nhở” screen is shown | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps on one Reminder | | |
| 2 | BUSS | Displays “Sửa nhắc nhở” screen | | |
| 3 | BUSS User | Edits “Thời gian”, “Điểm đi” và “Lặp lại” text field then taps “Sửa” button | | |
| 4 | BUSS | Displays “Hoàn thành nhắc nhở” screen | | |
| 5 | BUSS User | Confirms reminder by tapping “Xong” button | | |
| 6 | BUSS | Saves reminder and returns “Xem nhắc nhở” screen. | | |
|  | | | | |

**Exception**

|  |  |  |
| --- | --- | --- |
| **E1** | At step 3 in the main flows**,** if BUSS User input a place which doesn’t exit into “Điểm đi” text field, then taps “Thêm” button. | |
| **Step** | **Actor** | **Action** |
| 4.1 | BUSS | Returns popup with Error message “Không tồn tại địa điểm này |

|  |  |  |
| --- | --- | --- |
| **E2** | At step 3 in the main flows**,** if BUSS User leaves “Điểm đi” text field blank, then taps Add Reminder button | |
| **Step** | **Actor** | **Action** |
| 4.2 | BUSS | Returns popup with Error message “Vui lòng nhập đầy đủ thông tin.” |
|  |  |  |

#### UC0023: Delete reminder

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0023 | **Version** | 1.0 |
| **Use Name** | | Delete reminder | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to delete reminder | | |
| **Precondition** | | “Xem nhắc nhở” screen displayed | | |
| **Trigger** | | User taps on one Reminder then taps “Xóa” button | | |
| **Post-Condition** | | “Xác nhận xóa” popup is shown | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps on one Reminder | | |
| 2 | BUSS | Displays “Sửa nhắc nhở” screen | | |
| 3 | BUSS User | Taps “Xóa” button | | |
| 4 | BUSS | Displays “Xác nhận xóa” dialog. | | |
| 5 | BUSS User | Taps “Đồng ý” button | | |
| 6 | BUSS | Deletes this reminder and comes back to Bus Reminder screen. | | |
|  | | | | |

**Exception**

|  |  |  |
| --- | --- | --- |
| **E1** | At step 5 in the main flows**,** if BUSS User taps “Hủy” button. | |
| **Step** | **Actor** | **Action** |
| 4.1 | BUSS | Do not delete anything and returns to Reminder Detail screen |

#### UC0024: Suspend/Unsuspend all reminder

##### Screen definition

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0024 | **Version** | 1.0 |
| **Use Name** | | Suspend/Unsuspend all reminder | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to suspend/unsuspend all reminder | | |
| **Precondition** | | “Xem nhắc nhở” screen displayed, “Gạt để hoãn tất cả nhắc nhở” switch button is OFF | | |
| **Trigger** | | User taps “Gạt để hoãn tất cả nhắc nhở” button | | |
| **Post-Condition** | | “Gạt để hoãn tất cả nhắc nhở” switch button turn from OFF to ON | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps “Gạt để hoãn tất cả nhắc nhở” switch button | | |
| 2 | BUSS | Suspends all reminders and hides them. | | |
| 3 | BUSS User | Taps “Gạt để hoãn tất cả nhắc nhở” switch button again | | |
| 4 | BUSS | Unsuspends all reminders and shows them. | | |
|  | | | | |

#### UC0025: Suspend/Unsuspend a chosen reminder

##### Screen definition

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0025 | **Version** | 1.0 |
| **Use Name** | | Suspend/Unsuspend a chosen reminder | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to suspend/unsuspend a chosen reminder | | |
| **Precondition** | | “Xem nhắc nhở” screen displayed, “Gạt để hoãn tất cả nhắc nhở” switch button is OFF | | |
| **Trigger** | | User taps “Hoãn nhắc nhở” button | | |
| **Post-Condition** | | “Hoãn nhắc nhở” switch button turn from OFF to ON/ON to OFF | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps “Hoãn nhắc nhở” switch button | | |
| 2 | BUSS | Suspends that reminder | | |
| 3 | BUSS User | Taps “Hoãn nhắc nhở” switch button again | | |
| 4 | BUSS | Unsuspends that reminder | | |
|  | | | | |

### Track module

#### Use case diagram



#### UC0026: Set track

##### Screen definition

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0026 | **Version** | 1.0 |
| **Use Name** | | Set track | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to set track | | |
| **Precondition** | | “Thông tin buýt” screen displayed | | |
| **Trigger** | | User taps on “Đặt theo dõi” button then taps on one bus stop | | |
| **Post-Condition** | | “Theo dõi” screen is shown | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps “Đặt theo dõi” button | | |
| 2 | BUSS | Displays “Đặt theo dõi” screen | | |
| 3 | BUSS User | Taps on one bus stop | | |
| 4 | BUSS | Displays “Theo dõi” screen and shows where user is in the journey. When the bus comes near the predefined stop, system will notify the user to leave | | |
|  | | | | |

#### UC0027: Cancel track

##### Screen definition

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0027 | **Version** | 1.0 |
| **Use Name** | | Set track | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows an user to cancel track | | |
| **Precondition** | | “Theo dõi” screen displayed | | |
| **Trigger** | | User taps on “Hủy theo dõi” button | | |
| **Post-Condition** | | “Thông tin buýt” screen is shown | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps “Hủy theo dõi” button | | |
| 2 | BUSS | Cancels track and returns to “Thông tin buýt” screen | | |
|  | | | | |

### Favorite module

#### Use case diagram

#### UC0028: View favorite places

##### Screen definition

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0028 | **Version** | 1.0 |
| **Use Name** | | View favorite place | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows a user to view the favorite place list he/she added before. | | |
| **Precondition** | | Dashboard screen displayed | | |
| **Trigger** | | User taps Menu then taps Favorite item | | |
| **Post-Condition** | | Favorite screen displayed | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps Menu then taps Favorite item | | |
| 2 | BUSS | Displays Favorite screen | | |
|  | | | | |

#### UC0029: Add favorite place

##### Screen definition

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0029 | **Version** | 1.0 |
| **Use Name** | | Add favorite place | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows a user to add the favorite place he/she cares. | | |
| **Precondition** | | Favorite Place screen displayed | | |
| **Trigger** | | User taps on Add button | | |
| **Post-Condition** | | Favorite Place screen displayed (new place added) | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Tap on Add button. | | |
| 2 | BUSS | Display Edit Favorite Place screen with blank info | | |
| 3 | BUSS User | Enter the place he/she want to search into the input form. | | |
| 4 | BUSS | Display a list of place which has name like the key word. | | |
| 5 | BUSS User | Tap on Heart item on this screen. | | |
| 6 | BUSS | The chosen place will be added in the favorite place list. | | |
|  | | | | |

#### UC0030: Edit favorite place

##### Screen definition

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0030 | **Version** | 1.0 |
| **Use Name** | | Edit favorite place | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows a user to edit the favorite place in the list. | | |
| **Precondition** | | Favorite Place screen displayed | | |
| **Trigger** | | User taps on one place then edit info and taps Done button | | |
| **Post-Condition** | | Favorite Place screen displayed (place edited) | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps on a favorite place. | | |
| 2 | BUSS | Displays Edit Favorite Place screen with information about it. | | |
| 3 | BUSS User | Edit favorite place’s name | | |
| 4 | BUSS | Displays edited name | | |
| 5 | BUSS User | Taps on favorite place’s location | | |
| 6 | BUSS | Displays map | | |
| 7 | BUSS User | Taps one location on map | | |
| 8 | BUSS | Gets that location and displays its coordinates | | |
| 9 | BUSS User | Taps Done button | | |
| 10 | BUSS | Displays Favorite Place screen with edited info | | |
|  | | | | |

**Alternative flows**

|  |  |  |
| --- | --- | --- |
| **AT1** | At step 7 on main scenario, if User taps Current location button | |
| **Step** | **Actor** | **Action** |
| 8.2 | BUSS | Gets current location and displays its coordinates |

#### UC0031: Delete favorite place

##### Screen definition

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0031 | **Version** | 1.0 |
| **Use Name** | | Delete favorite place | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows a user to delete the favorite place if he/she does not need anymore. | | |
| **Precondition** | | Favorite Place screen displayed | | |
| **Trigger** | | User taps on Delete button then taps Yes button | | |
| **Post-Condition** | | Displays Favorite Place screen (chosen place deleted) | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps on Delete button | | |
| 2 | BUSS | Displays Delete confirm notice | | |
| 3 | BUSS User | Taps on Yes button | | |
| 4 | BUSS | Deletes this place from database and displays Favorite Place screen | | |
|  | | | | |

#### UC0032: Search favorite place

##### Screen definition

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0032 | **Version** | 1.0 |
| **Use Name** | | Search favorite place | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows a user to search in the favorite place list. | | |
| **Precondition** | | Favorite Place displayed | | |
| **Trigger** | | User taps on Search item then input keyword | | |
| **Post-Condition** | | Favorite Place displayed (place searched) | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps on Search item. | | |
| 2 | BUSS | Displays Search form. | | |
| 3 | BUSS User | Inputs the place he/she want to search into the Search form. | | |
| 4 | BUSS | Displays a list of place which has name like the keyword. | | |
|  | | | | |

#### UC0033: View favorite buses

##### Screen definition

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0033 | **Version** | 1.0 |
| **Use Name** | | View favorite bus | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows a user to view the favorite bus list he/she added before. | | |
| **Precondition** | | Favorite Place screen displayed | | |
| **Trigger** | | User taps on Buses tab | | |
| **Post-Condition** | | Favorite Bus screen displayed | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Tap on Buses tab on the Favorite screen. | | |
| 2 | BUSS | Display Favorite screen with Buses tab. | | |
|  | | | | |

#### UC0034: Add favorite bus

##### Screen definition

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0034 | **Version** | 1.0 |
| **Use Name** | | Add favorite bus | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows a user to add the favorite bus he/she cares. | | |
| **Precondition** | | Favorite Bus screen displayed | | |
| **Trigger** | | User taps Add button then chooses a bus and taps Heart item | | |
| **Post-Condition** | | Favorite Bus screen displayed (new bus added) | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps on Add button | | |
| 2 | BUSS | Displays Bus List screen | | |
| 3 | BUSS User | Chooses a bus he/she want to add and taps on Heart item at the end of this line | | |
| 4 | BUSS | Displays Favorite Bus screen with new bus added | | |
|  | | | | |

#### UC0035: Delete favorite bus

##### Screen definition

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0035 | **Version** | 1.0 |
| **Use Name** | | Delete favorite bus | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows a user to delete the favorite place if he/she does not need anymore. | | |
| **Precondition** | | Favorite Bus screen displayed | | |
| **Trigger** | | User taps on Delete button and taps on Yes button | | |
| **Post-Condition** | | Favorite Bus screen displayed (chosen bus deleted) | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps on Delete button. | | |
| 2 | BUSS | Displays Delete confirm notice. | | |
| 3 | BUSS User | Taps on Yes button. | | |
| 4 | BUSS | Deletes this place from database and displays Favorite screen with Buses tab | | |
|  | | | | |

#### UC0036: Search favorite bus

##### Screen definition

##### Use Case Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case ID** | | UC0036 | **Version** | 1.0 |
| **Use Name** | | Search favorite bus | | |
| **Actor** | | BUSS User | | |
| **Description** | | The function allows a user to search in the favorite bus list. | | |
| **Precondition** | | Favorite Bus displayed | | |
| **Trigger** | | User taps on Search item then input keyword | | |
| **Post-Condition** | | Favorite Bus displayed (bus searched) | | |
| **Main flows** | | | | |
| **Step** | **Actor** | **Action** | | |
| 1 | BUSS User | Taps on Search item. | | |
| 2 | BUSS | Displays Search form. | | |
| 3 | BUSS User | Inputs the place he/she want to search into the Search form. | | |
| 4 | BUSS | Displays a list of bus which has name like the keyword. | | |
|  | | | | |

## Non-functional Specification

### Reliability

* Mean time between failures: The mean time between each failure is expected to be about 480 hours of using.
* Mean time to repair: Immediately when Administrator finds out problem or website is attacked/hacked by someone. Average 1 day.
* The maximum bugs per function are 2 bugs/a function when user uses software within 2 months. The average number of bugs in the software during system testing is about to be around 1 bugs/1000 LOC.
* The database must be backed up daily and can be recovered if necessary

### Performance Requirements

#### Availability

The application must be available 95% of time. Users can access to it everywhere from their

Android smartphones with an active internet connection and GPS enabled.

#### Response time

In term of response time, time for the app to fully load will not exceed 5 seconds. Accessing any function will not takes more than 1 second. Depending on the internet connections and GPS services, waiting time of requesting data will takes no more than 20 seconds in worst case.

### User Interface

* **Color:** The background color will mostly be dark grey by default. The color of text will be white by default. Accent colors is pink/green/yellow by default. These properties can be changed in the Settings menu.
* **Language:** Vietnamese by default. English option can be found in Settings menu.
* **Text:** All texts bases on the default Roboto font and title or label will use upper case in the first letter.
* **Graphics:** Big, bold, clear and colorful to attrack user’s attention.

### Maintainability

* **Coding standards and naming conventions**
  + Output of the project must include coding standards and naming conventions documentations. Implementation code must be easy to maintain.
  + All code must be clearly commented, including class, method documentations.
  + If some components are reused, the documentations of those components must also be included.
* **Design**
  + The design of the system must be loosely coupled that chances on some module will not affect others.
* **Logging**
  + All the errors should be logged, supporting for bug fixing and maintenance.
  + All strange or sensitive situations should also be logged.

### Usability

Usability Requirements support the following from the perspective of its primary users:

● **Efficiency of use:** user can complete each function in less than 8 actions

● **Intuitiveness:** all help/error messages are simple and easy to understand; user can figure out exactly how to use each feature after using it once.

### Security Requirements

In order to avoid unwanted access by strangers, the security implemented in various ways:

* **User layer**: User data will be stored at user’s devices and can be protected by basic security options provided by Android system itself. User data can be synchronized to server after user active this function with distinct username and password. There will also be a option to delete all user data on the current device – which will not affect synchronized data on server.
* **Manage Data Layer**: Only Administrator can modify database system. User data is encrypted by their password and is not accessible by any means.
* **Stored Data**: All synchronized user data will be saved in MSSQL Server and optimized for daily backup.

### Hardware/Software Requirements

● **Hardware requirement:** Android smartphones of all kinds (with active internet connection and GPS enabled)

● **Software requirements:** Android 4.4 or higher.