**NONG LAM UNIVERSITY HO CHI MINH CITY**

**FACULTY OF INFORMATION TECHNOLOGY**



**Mobile Device Programming**

**PROJECT: TICKETS BOOKING SYSTEM**

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Ho Chi Minh City, May 2021

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| --- | --- | --- |
| **SCHEDULE AND EVALUATION OF WORK BY MEMBERS** | | |
| **Member** | **Perform functions** | **Work evaluating** |
| Trương Văn Xinh | Registration | 100% |
| Checked baggage allowance |
| Promotion |
|  | | |
| Lâm Hà Yến | Login | 100% |
| Profit statistics |
| Statistics of frequency |
|  | | |
| Nguyễn Trần Minh Hiếu | Booking | 100% |
| Payment |
| Detailed trip information |
|  | | |
| Nguyễn Hoàng Vinh | Health declaration | 100% |
| Promotion program |
| Check ticket |
|  | | |
| Nguyễn Ngọc Thanh Xuân | Trip Search | 100% |
| Trip management |
|  |

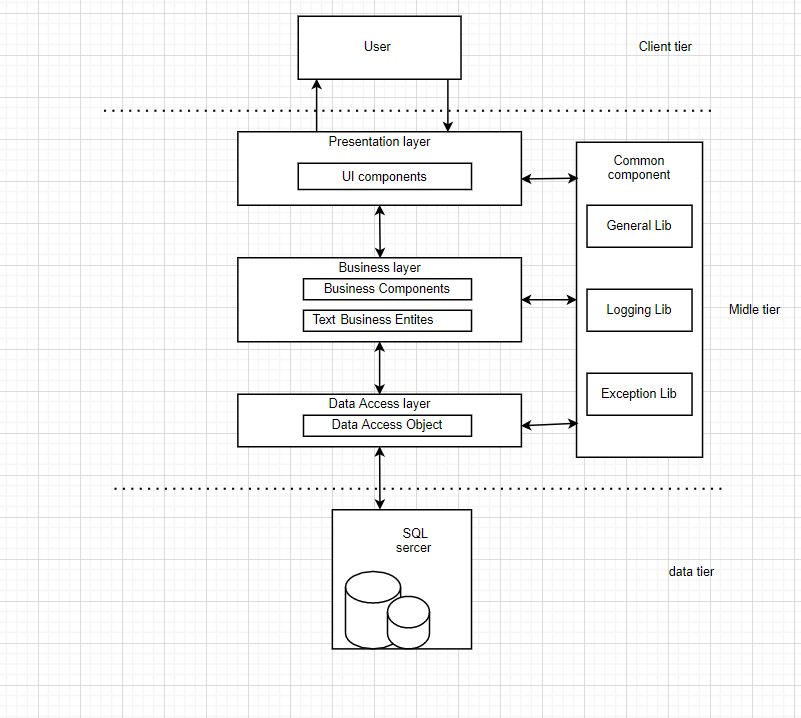
**Problem statement.**

Currently, in the era of industrialization and modernization, applications are born and developed strongly, and human requirements are also rich. The car booking application is built based on the needs of people to move, helping people to use it easily in booking tickets, without crowding around at bus stations, especially in the stressful epidemic situation. like nowadays.

The ticket booking application we built includes the following benefits:

* Convenient in booking tickets.
* Payment via bank account.
* Easy and cheap consignment.
* There are many promotions.
* There is a transparent medical declaration for customers taking part in the move.
* Easy to choose a seat without fear of duplicating places like a traditional car reservation.
* Tickets can be canceled within the specified time.
* Book multiple tickets at the same time when traveling with relatives…..

**Application Logical Architectures.**

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**Database design.**

**Qr code

Description automatically generated**

**Functional analysis**

**1.Login**

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| **Ticketing System** | **Requirement** | **Created** | **Approved** | **Updated** | **Approved** |
| Login | Lam Ha Yen |  |  |  |

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| --- | --- | --- | --- |
| **Use case name** | | Login ID: login\_001/ loginAD-001/loginStaff-001 | |
| **Actor(s)** | | Customer, Employee. Admin | |
| **Description** | | * Login is used when the user wants to use the functionality of the application, corresponding to each type of account. * The system checks the correct or wrong login information, sends a new password, if the user forgets the old password. | |
| **Trigger event** | | * Customer entered correct information. | |
| **Trigger type** | | x Extenal | Temporal (Timing) |
| **Precondition** | | * Registered | |
| **Step performed** | | | Information per steps. |
| **1** | Enter the name registered earlier. | |  |
| **2** | Enter the password. | |  |
| **3** | If the account is valid. | | Go to next use case |
| **4** | If it is wrong, re-enter the information. | |  |
| **5** | If you forgot your password, click forget password on the screen. | | Go to next use case |
| **Post condition** | | * Logged in successfully | |
| **Assumptions** | | * If you forget your account name, the system will send a password, after the user performs the steps in the forgotten password section. | |
| **Requirement met** | | * In order to log in, users need to register for an account successfully. | |
| **Outstanding issues** | |  | |
| **Priority** | |  | |
| **Risk** | |  | |

**2. Profit statistics.**

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| --- | --- | --- | --- | --- | --- |
| **Ticketing System** | **Requirement** | **Created** | **Approved** | **Updated** | **Approved** |
| Scenario - Profit statistics | Lam Ha Yen |  |  |  |

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| --- | --- | --- | --- |
| **Use case name** | | Scenario - Profit statistics | |
| **Actor(s)** | | Admin. | |
| **Description** | | * Profit statistics function makes it easy for the garage to manage revenue over a predetermined time. | |
| **Trigger event** | | * Admin conducts profit statistics. | |
| **Trigger type** | | x Extenal | Temporal (Timing) |
| **Precondition** | | * The customer has successfully paid. | |
| **Step performed** | | | Information per steps. |
| **1** | Choose the time item for the statistic. | | * If the administrator chooses statistics by day, month, year or quota, the system will find the corresponding information (day, month, year) from the customer's invoice in the database and total all invoices. |
| **Post condition** | | * Complete profit statistics. | |
| **Assumptions** | | * If the admin does not choose the statistic time, the system will not be able to do the statistics. | |
| **Requirement met** | | * Invoice information exists in the database, with date, month and year, as part of the statistical request. | |
| **Outstanding issues** | |  | |
| **Priority** | |  | |
| **Risk** | |  | |

**3.Statistics of frequency.**

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| **Ticketing System** | **Requirement** | **Created** | **Approved** | **Updated** | **Approved** |
| Statistics of frequency | Lam Ha Yen |  |  |  |

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| --- | --- | --- | --- |
| **Use case name** | | Statistics of frequency ID: frequency-001 | |
| **Actor(s)** | | Admin. | |
| **Description** | | * The function of booking frequency statistics helps to easily manage passengers who book more or less, so the garage can easily allocate the shuttle reasonably, contributing to increased profits. | |
| **Trigger event** | | * Admin conducts frequency statistics | |
| **Trigger type** | | x Extenal | Temporal (Timing) |
| **Precondition** | | * When customers successfully book tickets. | |
| **Step performed** | | | Information per steps. |
| **1** | Click the frequency statistics function. | | * The system based on the customer's successful booking will find out which trip is selected by many passengers, sorted in descending order and displayed on the screen. |
| **Post condition** | | * Complete frequency statistics. | |
| **Assumptions** | | * Without the customer booking tickets will not be able to do statistics. | |
| **Requirement met** | | * There must be successful booking information in the database for the system to perform more to less booked trip statistics. | |
| **Outstanding issues** | |  | |
| **Priority** | |  | |
| **Risk** | |  | |

**4. Registration.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ticketing System** | **Requirement** | **Created** | **Approved** | **Updated** | **Approved** |
| Registration | Truong Van Xinh |  |  |  |

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| --- | --- | --- |
| **Use case name** | Registration | |
| **Actor(s)** | Staff, customer | |
| **Description** | * For customers who register as a member to have more functions for booking tickets, or new employees can register here and are granted user rights to use by the admin. | |
| **Trigger event** | * Staff and customers register. | |
| **Trigger type** | x Extenal | Temporal (Timing) |
| **Precondition** | * Staff, customers registered successfully. | |
| **Step performed** | Information per steps.  1. Click register on the login form.  2. Fill out information marked with (\*)  + Username  + Password  + Full name  + Email  + Address  + Phone number  3. Click registration | |
| **Post condition** | * The account registered will not be identical with the existing accounts. | |
| **Assumptions** | * No new account registration customers will not have any new accounts added to the database. | |
| **Requirement met** | * In the database, there must be customer information that has just been registered and must be clearly authorized. | |
| **Outstanding issues** | * When registering a new account, if you have the same username, you will not be registered and must change your username again. | |
| **Priority** |  | |
| **Risk** |  | |

**5. Checked Baggage.**

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| --- | --- | --- | --- | --- | --- |
| **Ticketing System** | **Requirement** | **Created** | **Approved** | **Updated** | **Approved** |
| Checked Baggage | Truong Van Xinh |  |  |  |

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| --- | --- | --- |
| **Use case name** | Checked Baggage | |
| **Actor(s)** | Customer, staff | |
| **Description** | * Help customers transport goods to where they need to ship. | |
| **Trigger event** | * The customer conducts a system request to transport goods. | |
| **Trigger type** | x Extenal | Temporal (Timing) |
| **Precondition** | * When customers request to deposit goods successfully. | |
| **Step performed** | Information per steps.  1. Customers click on Checked Baggage.  2. Customers enter information marked with (\*)  + Full name of the recipient  + Address  + Phone number  + Quantity of goods  + Weight of goods  + Size of goods  3. Customers click to send the goods, then the staff will reply to the customer later. | |
| **Post condition** | * Checked Baggage consignment has been successfully deposited | |
| **Assumptions** | * Without the customer consignment data will not be available in the database. | |
| **Requirement met** | * Customers must log in to the system to send goods. | |
| **Outstanding issues** | * The goods were not identified. | |
| **Priority** | * Priority is given to customers who deposit their goods in advance from time to time | |
| **Risk** | * Goods could not be delivered to receiver | |

**6. Promotion.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ticketing System** | **Requirement** | **Created** | **Approved** | **Updated** | **Approved** |
| Promotion | Truong Van Xinh |  |  |  |

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| --- | --- | --- |
| **Use case name** | Promotion | |
| **Actor(s)** | Admin | |
| **Description** | * The tickets will be discounted during the promotion period, and the tickets will be reduced from 20% to 30%. | |
| **Trigger event** | * Admin proceeds to open a promotion. | |
| **Trigger type** | x Extenal | Temporal (Timing) |
| **Precondition** | * When the promotion is opened successfully. | |
| **Step performed** | Information per steps.  1. Admin click Promotion in the system  2. Admin enter promotional price (how much%) according to each type of promotional ticket.  3. Admin click Submit to open a new promotion. | |
| **Post condition** | * The promotional price does not exceed 30%. | |
| **Assumptions** | * If there are no promotions, the fare is still the same | |
| **Requirement met** | * Admin must login to the system to open promotions. | |
| **Outstanding issues** | No | |
| **Priority** | No | |
| **Risk** | No | |

**7. Health Declaration**

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| **Ticketing System** | **Requirement** | **Created** | **Approved** | **Updated** | **Approved** |
| Health declaration | NguyenHoangVinh |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Use case name** | | Health declaration | |
| **Actor(s)** | | User (Customers who book tickets) | |
| **Description** | | User must fill in medical declaration information prior to booking payment confirmation. | |
| **Trigger event** | | The user presses the button "Medical Declaration". | |
| **Trigger type** | |  | |
| **Precondition** | | -User successfully logged into the system. And complete the booking process.  -Make sure the device is connected to the Internet. | |
| Actor actions | | | System actions |
| **1** | The user presses the button " Health declaration ". | |  |
| **2** |  | | The system displays the form with the following information:  -User name  -Year of Birth  -Gender  -Passport number / ID card number  -Address  -Phone number  -Email  -The places that went through the past 14 days.  -Are signs of Covid-related illness appearing?  -Have you been in contact with someone with nCoV-related respiratory infections?  -Confirm that the above declaration is true. |
| **3** | The user completes the information on the form and then presses the Submit button. | |  |
| **4** |  | | The system saves the declaration form in the database. |
| **5** |  | | The system displays the message Declare successful. |
| **Post condition** | | Successful medical report. The declaration form will be saved in the database. | |
| **Assumptions** | |  | |
| **Requirement met** | | Users must fill out all the information in the form. | |
| **Outstanding issues** | |  | |
| **Priority** | |  | |
| **Risk** | | The system cannot verify whether the declared information is correct or not. | |

**8. Promotion Program**

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| **Ticketing System** | **Requirement** | **Created** | **Approved** | **Updated** | **Approved** |
| Promotion program | NguyenHoangVinh |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Use case name** | | Promotion program | |
| **Actor(s)** | | User (Customers who book tickets) | |
| **Description** | | Users want to see all the ongoing deals and upcoming deals. Users want to use their points to redeem discount tickets or receive gifts. | |
| **Trigger event** | | Users click on the Promotion item in the main screen. | |
| **Trigger type** | |  | |
| **Precondition** | | -User successfully logged into the system.  - Make sure the device is connected to the Internet. | |
| Actor actions | | | System actions |
| **1** | User selects Promotion item. | |  |
| **2** |  | | Display a list of ongoing and upcoming events. |
| **3** | The user clicks on any of the promotions takes place. | |  |
| **4** |  | | The system will display detailed information about the selected program:  - Name of the program  - Time  - List of gift |
| **5** | The user presses the Get button. | |  |
| **6** |  | | The system will display a Gift code so that users can use it when they book tickets. |
|  |  | |  |
| **Post condition** | | Users receive a QR code to redeem gifts from accumulated points. | |
| **Assumptions** | |  | |
| **Requirement met** | | User must have the required number of points to redeem the gift. | |
| **Outstanding issues** | |  | |
| **Priority** | |  | |
| **Risk** | |  | |

**9. Check ticket**

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| **Ticketing System** | **Requirement** | **Created** | **Approved** | **Updated** | **Approved** |
| Check ticket | NguyenHoangVinh |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Use case name** | | Check ticket | |
| **Actor(s)** | | User (Customers who book tickets) | |
| **Description** | | Users want to check the information of the tickets booked. | |
| **Trigger event** | | User selects Check ticket in main screen. | |
| **Trigger type** | |  | |
| **Precondition** | | -User successfully logged into the system.  - Make sure the device is connected to the Internet. | |
| Actor actions | | | System actions |
| **1** | User selects Check Ticket item. | |  |
| **2** |  | | The system displays a list of booked tickets with the following information: Ticket code, number amount of tickets, price of money. And the View Details button at the end of the line. |
| **3** | The user presses the View details. | |  |
| **4** |  | | The system will display detailed trip information: Ticket number, ticket\_id, price, vehicle number, date of departure\_time of departure, point of departure\_ destination, seat\_number. |
|  |  | |  |
| **Post condition** | | The user will see the booking information and can cancel the ticket within the specified time. | |
| **Assumptions** | |  | |
| **Requirement met** | | User has booked ticket before to view  tickets. | |
| **Outstanding issues** | |  | |
| **Priority** | |  | |
| **Risk** | |  | |

1. **Payment**

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| **Ticketing System** | **Requirement** | **Created** | **Approved** | **Updated** | **Approved** |
| Use case scenario - Payment | Nguyen Tran Minh Hieu |  |  |  |
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| **Use case name** | | Payment | | | | ID | UC-05 |
| **Actor(s)** | | Customer, Staff at the ticket counter | | | | | |
| **Description:** | | Payment use case allows for users and systems to produce payments and checks. | | | | | |
| **Trigger event:** | | Customer/Staff click the checkout button on the last screen of the booking ticket function | | | | | |
| **Trigger type:** | | x | External | |  | Temporal (Timing) | |
| **Precondition:** | | Customers need to have an account in the system and maintain login status and have selected tickets | | | | | |
| **Step performed:** | | | | | | Information per steps | |
| 1 | The system gathers all possible payments that need to be processed | | |  | | | |
| 2 | The system determines the amount of payment for the claims | | | The system will calculate all the sums payable by the customer including ticket tax and passenger insurance | | | |
| 3 | The system will require passengers to enter necessary information | | | Passengers need to enter the name of the ticket holder, the reservation's name, email phone number (to cancel the ticket), identity card number into the system. | | | |
| 4 | The system checks to verify payment information | | | The system will check the validity of customer input data | | | |
| 5 | The system will ask passengers to confirm that the information provided is completely correct | | |  | | | |
| 6 | The system will ask the passenger to choose the method of payment | | | If the customer chooses to pay by cash, the customer must pay the fare at the ticket counter within 24 hours of booking and go through step 8, otherwise the ticket will be resold after the time is up. | | | |
|  |  | | | If the customer chooses to pay online,the customer needs to choose the appropriate method and go to step 7 | | | |
| 7 | The system requires customers to enter information for online payment | | |  | | | |
| 8 | The system will issue a successful payment notice | | | If the customer pays by cash, the system will issue the message "Successfully booked, awaiting payment" | | | |
|  |  | | | If the customer pays online: | | | |
|  |  | | | If there is no error in the checkout process, the message "Successfully booked" will be output. | | | |
|  |  | | | If there is an error during checkout, the message "Error has occurred, please check again" | | | |
| 9 | The system saves invoice information for revenue statistics | | |  | | | |
| **Post condition** | | Invoices are made, with invoice codes to look up booking information | | | | | |
| **Assumptions** | | Whenever the customer logs out of the system or exits the browser or loses network connection, the payment is canceled. | | | | | |
| **Requirement met** | |  | | | | | |
| **Outstanding issues** | | If the customer account is not enough, the payment will fail | | | | | |
| **Priority** | |  | | | | | |
| **Risk** | |  | | | | | |

1. **Detailed trip information**

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| --- | --- | --- | --- | --- | --- |
| **Ticketing System** | **Requirement** | **Created** | **Approved** | **Updated** | **Approved** |
| Use case scenario - Detailed trip information | Nguyen Tran Minh Hieu |  |  |  |
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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Use case name** | | Detailed trip information | | | | ID | UC-04 |
| **Actor(s)** | | Customer | | | | | |
| **Description:** | | Detailed trip information use case allows customers to find out about the trip, available seats, routes, promotions, refund rules. | | | | | |
| **Trigger event:** | | Customers click on the trip for which they want to see the information on the search results screen | | | | | |
| **Trigger type:** | | x | External | |  | Temporal (Timing) | |
| **Precondition:** | | Customers need to access the website | | | | | |
| **Step performed:** | | | | | | Information per steps | |
| 1 | Customers click on the trip for which they want to see the information | | |  | | | |
| 2 | Customers view and collect necessary information about the trip such as: | | | Customers carefully review the necessary information to decide whether to book a ticket or not | | | |
|  | Customers can know the number of seats booked, the number of available seats and choose the seats they want to book through the seat map on the vehicle. | | |  | | | |
|  | Customers can view the information of stopovers that the car passed, arrival and departure times. | | |  | | | |
|  | Customers can see the fare for each seat. | | |  | | | |
|  | If there are no vacant seats, customers can book tickets departing at the stopovers if the seat is available. | | |  | | | |
|  | Customers can view information about discounts and refund rules | | |  | | | |
| **Post condition** | | The system records the seat code that the customer orders and moves to the checkout step or return the search results screen to view the information of others | | | | | |
|

1. **Booking tickets**

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| **Ticketing System** | **Requirement** | **Created** | **Approved** | **Updated** | **Approved** |
| Booking Ticketing | Nguyen Tran Minh Hieu |  |  |  |

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| --- | --- | --- | --- |
| **Use case name** | | Booking tickets ID: OBS-UCBookingTickets | |
| **Actor(s)** | | Customer | |
| **Description** | | * This use case allow customer to manipulate the ticket booking function on the system interface | |
| **Trigger event** | | * Users choose the option Booking tickets. | |
| **Trigger type** | | x Extenal | Temporal (Timing) |
| **Precondition** | | * Main screen is displayed with options for the user to choose, in which there is an option to book tickets. | |
| **Step performed** | | | Information per steps. |
| **1** | The customer selects the booking icon after selecting the seat position. | |  |
| **2** | The device displays the user information panel. | | Information includes: full name, contact phone number, email address, current residential address. |
| **3** | Customers fill in personal information according to the request form. | |  |
| **4** | Customer selects the icon below the form. | | If the cancel icon is selected, the user will return to the main screen. |
| If a customer clicks on the next icon, the user will go to the next step. |
| **5** | The screen displays trip information again for customers to check again. | | Information includes itinerary, time, number of seats, departure location, ticket number, seat location, total payment. |
| **6** | Customer selects the icon below the form. | | If the customer chooses an icon cancel, the user will return to the main screen of the application. |
| If the user chooses bt booking, the ticket will be booked and saved in the system |
| **7** | The screen displays the information that has been saved to the customer | |  |
| **Post condition** | | * Tickets are booked if customers choose option Booking in step 6. | |
| **Assumptions** | | * At any time, if a customer presses the Cancel button, the operation is cancelled and returned to the Main Menu. | |
| **Requirement met** | | * Customers need to log in to the system and fill in the information requested by the site in order to find a trip and conduct a booking. | |
| **Outstanding issues** | | * When a customer incorrectly enters the travel information resulting in incorrect ticket booking and the customer may lose money. | |
| **Priority** | | * No priority case. | |
| **Risk** | | * When incorrect tickets are made, the system shall not have to refund money to the customers. | |

1. **Trip management**

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| **Ticketing System** | **Requirement** | **Created** | **Approved** | **Updated** | **Approved** |
| Trip management | Thanh Xuan |  |  |  |

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| --- | --- | --- |
| **Use case name** | Trip management | |
| **Actor(s)** | Admin | |
| **Description** | * This use case allows administrators to add, edit, view, and delete trips that customers have booked. | |
| **Trigger event** | * The administrator has the right to add, edit, view, and delete the list of booked trips | |
| **Trigger type** | x Extenal | Temporal (Timing) |
| **Precondition** | * Trips must be booked | |
| **Step performed** | 1. Administrators access the main website with an admin account 2. Admin click on the manage trip item 3. Admin click the "Add" button (if admin wants to add a new trip to the list) =>The system will provide a form for administrators to fill in new trip information that customers have booked 4. Admin click the "Edit" button (if admin wants to edit a trip to the list) => The system will provide a form for administrators to edit the travel information requested by the customer 5. Admin click the "View" button (if admin wants to see a trip to the list) => The system will display full details about the trip that the administrator wants to see 6. Admin click the "Delete" button (if admin wants to delete a trip to the list) =>The system will display a notice about deleting a trip. If sure, choose yes, otherwise choose cancel | |
| **Post condition** | * Can add, edit, delete, view all successful trips. | |
| **Assumptions** | * If you are unable to add a new trip, please double check the property fields to see if you have already filled them up. | |
| **Requirement met** | * Must have a administrator account | |
| **Outstanding issues** |  | |
| **Priority** |  | |
| **Risk** | - Mistake deletion may occur  - Add inaccurate trip information  -Adding incorrect trip information (wrong date, time, location, ...) easily leads to loss of passengers | |

1. **Trip Search.**

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| **Ticketing System** | **Requirement** | **Created** | **Approved** | **Updated** | **Approved** |
| Trip Search | Thanh Xuan |  |  |  |

|  |  |  |
| --- | --- | --- |
| **Use case name** | Trip Search | |
| **Actor(s)** | Customer | |
| **Description** | * This use case allow customer to search for outbound and return trips | |
| **Trigger event** | * The user chooses the option to search for the ride | |
| **Trigger type** | x Extenal | Temporal (Timing) |
| **Precondition** | * The main screen displays with options for users to search and select the suitable trip | |
| **Step performed** | 1. Customers choose the type of ticket (one way or round trip) 2. Customers choose the departure point 3. Customers choose a travel date 4. Customers select return date (for round-trip ticket) 5. Customer clicks on the search icon to search for a suitable ride 6. The system provides customers with necessary information so that customers can choose a suitable trip   If Message did not find the trip you selected,Come back to step 1 | |
| **Post condition** | * Find all the information about the trip you want to take | |
| **Assumptions** |  | |
| **Requirement met** | * Customers must provide complete information about departure date and departure point | |
| **Outstanding issues** | Customers cannot search without departure point and departure date | |
| **Priority** |  | |
| **Risk** | - The trip may start a few hours later than the scheduled time  - The customer may not be able to find a suitable trip | |