Travel Booking System

Project Report

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IT2080 Information Technology Project

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May 2023

Declaration

This project report is our original work, and the content is not plagiarized from any other resource. References for all the content taken from external resources are correctly cited. To the best of our knowledge, this report does not contain any material published or written by third parties, except as acknowledged in the text.

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Date …19/05/2023….

Abstract

This project is a web application for the Travel management system. Earlier the system was followed by a manual processing system using paperwork and it was a separate process. Through the developed computerized Travel Management System, users can be eased to manage and run all the operations. To make the system more productive, the system has been divided into eight main functions to implement a complete system. Flight Management, Hotel Management, Car Rental System, Payment Management, Package Management, Itinerary Management, User Management, Employee Management and generating relevant reports are done with the help of the developed system. All the database records are maintained in a very secure way. Human errors can be avoided by using developed systems in many ways such as calculation and other sensitive details. As this system is a web-based application the users can be able to access the system anywhere at any time through the internet. The system was developed using React Js, Node js, Mongo Database, to provide an efficient product.

Acknowledgement

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Introduction

Background

The travel booking system is a tool that helps people plan and book their trips. It allows users to find and compare different options like flights, hotels, rental cars, and activities. The app is easy to use and has a user-friendly interface, making it simple to book the options they want. The system uses a powerful database to store information about travel options and user data such as preferences and past bookings. It also has a strong search engine that allows users to look for options based on things like price, date, and location. To keep payments safe, the system has payment processing capabilities. In addition to these basic features, the travel booking system also has extra features like user accounts, the ability to track and manage bookings, and security measures. These features are designed with security, performance, and scalability in mind. The goal of the travel booking system is to provide a convenient and enjoyable experience for users. It makes it easy for them to plan and book their trips. The app has everything they need to find and book the travel options they want.

Problem and motivation

1.**Problem**: Cancelled, delayed, or unreliable transportation

   Motivation:

   The use of travel management systems can automate the travel booking process, which can save time, reduce errors, and access real-time travel information, such as flight delays or cancellations, which can help travellers adjust their plans accordingly.

2. **Problem**: Finance managing problems

   Motivation:

   As the use of computer-based system is very efficient and accurate than that of manual, it is easy to manage the finance functions such as payment management, income and expense report generation, calculation of loss and profits etc.

3. **Problem**: Lack of marketing functionalities for service providers

   Motivation:

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As there are many newly started businesses of service providers, they must compete with other people in the relevant fields. So, for those people this system will be a great platform to market their services and goods.

Literature review

There are several different types of travel management systems (TMS), each with its own unique approach to helping individuals or organizations manage their travel needs. There are several methods available to implement a TMS, including website method, mobile application method, and paperwork method etc.

1. Website method:

The website method involves using a web-based application to manage travel-related activities. According to Liu et al. (2019), the website method provides a centralized platform for managing travel-related activities, allowing users to book flights, hotels, and rental cars from a single platform. A web-based travel management system has several advantages and disadvantages, which are listed below:

Pros:

- Accessibility: A web-based travel management system can be accessed from anywhere with an internet connection, which means that users can access it from their computers or mobile devices.
- Real-time updates: Users can receive real-time updates on flight schedules, hotel bookings, and other travel-related information, making it easier to manage their itinerary.
- Centralized data: All travel-related data is stored in a centralized location, making it easier for users to access and manage their travel arrangements.
- Cost savings: A web-based travel management system can help businesses save money by consolidating their travel arrangements and negotiating better rates with travel vendors.
- Improved efficiency: The automation of travel-related tasks, such as booking flights and hotels, can help businesses save time and improve their overall efficiency.

Cons:

- Dependence on technology: A web-based travel management system requires a reliable internet connection and may be vulnerable to technical issues, which can disrupt travel plans.
- Data security: Travel-related data is sensitive and needs to be protected from unauthorized access. A web-based system can be vulnerable to cyber-attacks, which can compromise the security of users' personal information.
- Limited customization: Some web-based travel management systems may have limited customization options, which may not meet the specific needs of all users or businesses.

2. Mobile application method:

The mobile application method involves using a mobile application to manage travel-related activities. According to Chen and Wu (2018), the mobile application method provides on-the-go access to travel-related information and services, improving the user experience.

Pros:

- Accessibility: Mobile applications for travel management systems can be accessed anywhere and anytime, making it easier for travellers to manage their itineraries on the go.
- Real-time updates: Mobile applications can provide real-time updates on travel information, such as flight delays or cancellations, enabling travellers to make informed decisions.
- Personalization: Mobile applications can personalize travel recommendations and suggestions based on a traveller's preferences and past behaviour.
- Improved communication: Mobile applications allow for direct communication between travellers and travel service providers, making it easier to resolve any issues or concerns.

Cons:

- Reliance on technology: Mobile applications are dependent on technology and may not work properly if there are issues with the device or network connectivity.
- Security risks: Mobile applications may be vulnerable to security risks, such as hacking or identity theft, if they do not have adequate security measures in place.
- User adoption: Not all travellers may be comfortable or willing to use mobile applications, which could limit the effectiveness of the travel management system.
- Limited functionality: Mobile applications may have limited functionality compared to a full-fledged travel management system, which could be a disadvantage for travellers who require more comprehensive features.
- Cost: Developing and maintaining a mobile application can be costly, which may not be feasible for all travel management companies

3. Paperwork method:

The paperwork method involves using traditional paper-based methods to manage travel-related activities. While this method may seem outdated, it is still prevalent in many organizations. According to Wang et al.

(2017), the paperwork method can lead to inefficiencies and errors, such as lost receipts and duplicate expenses.

Pros:

- Easy to Use: Paper-based travel management systems are easy to use and require little training. Anyone can fill out a paper form or document and follow the process with minimal effort.
- Familiarity: Paper-based travel management systems have been in use for a long time and are familiar to many people. This makes it easy for employees to understand the process and follow the rules.
- Low Cost: Paper-based travel management systems are inexpensive compared to other systems. They do not require any special equipment or software and can be implemented quickly.
- Accessibility: Paper-based travel management systems are accessible to everyone, regardless of their technical proficiency. Employees who do not have access to a computer or mobile device can still use a paper-based system.

Cons:

- Time Consuming: Paper-based travel management systems can be time-consuming, particularly when it comes to approvals and processing. Employees must manually complete forms and wait for approvals, which can delay travel arrangements.
- Risk of Loss: Paper-based travel management systems are susceptible to loss or damage, which can result in lost or delayed travel documents. This can be particularly problematic when employees are traveling internationally.
- Limited Reporting Capabilities: Paper-based travel management systems offer limited reporting capabilities, making it difficult to track travel expenses and identify trends or patterns.
- Environmental Impact: Paper-based travel management systems have a negative environmental impact due to the use of paper and printing resources. This can be mitigated by using recycled paper, but it still has a carbon footprint.

It is possible that there are additional methods for implementing a travel management system, such as cloud-based, desktop-based approaches etc.

Aim and objectives.

1. **Convenience**.

   Offering users, a simple and convenient method to reserve travel-related services is one of the main goals of a travel booking system. Users should be able to quickly search, compare, and book services using the system's variety of options.

2. **Timesaving.**

   By providing all the required information in one location and enabling users to book their travel-related services quickly and easily without the need to visit multiple websites, a travel booking system should save users' time.

3. **User-friendly.**

   A booking system for travel should be simple to use and navigate, with feedback given to the user at each stage of the booking process and easy to understand directions.

4. **Secure.**

   A travel booking system should be safe, with safeguards in place to safeguard user information and increase the users' online payment security.

5. **Cost-effective.**

   By providing users with competitive pricing, exclusive offers, and discounts, a travel booking system should enable users to save money. Users should be able to compare prices from multiple services and select the most economical choice for their requirements.

6. **Comprehensive**.

   To satisfy the various requirements of different users, a travel booking system should provide a wide range of services, including flights, hotels, rental cars, and packages.

Solution Overview
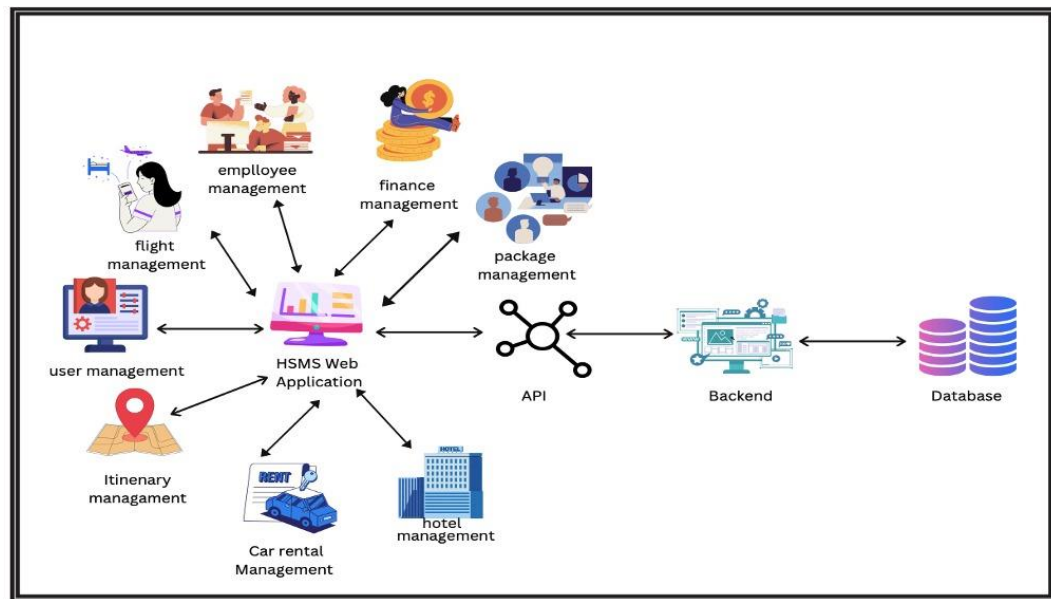
Figure 1.5.1:Solution Overview

Methodology

1. Identify the requirements:

   The first step in developing a travel management system is to identify the requirements of the users. This involves understanding the needs of travellers, travel managers, and the company. This includes identifying the types of travel, the destinations, the budget, and the policies and procedures that need to be followed.

2. Develop a system design:

   After the requirements have been identified, the next step is to develop a system design. This involves designing the architecture of the system, including the user interface, database, and software components. It is important to ensure that the design is scalable and flexible enough to accommodate changes in the future.

3. Select the appropriate technology:

   The next step is to select the appropriate technology for developing the system. This includes selecting the programming language, the database management system, and the development tools. It is important to choose technology that is scalable, reliable, and easy to maintain.
   - Web-based system
   - Back end - Node JS
   - Front end - React
   - Database – Mongo

4. Develop the system:

   Once the design and technology have been selected, the next step is to develop the system. This involves writing the code, creating the database schema, and integrating the various

components of the system. It is important to test the system thoroughly at this stage to ensure that it meets the requirements and is free of bugs.

5. Implement the system:

> After the system has been developed and tested, the next step is to implement the system. This involves deploying the system on the production servers and providing training to the users. It is important to ensure that the system is integrated with other systems used by the company, such as the accounting system and HR system.

6. Maintain the system:

> After the system has been implemented, the final step is to maintain the system. This involves monitoring the system for errors and performance issues, updating the software components, and making modifications to the system to accommodate changes in the requirements. It is important to ensure that the system is kept up-to-date and secure.

In conclusion, developing a travel management system involves identifying the requirements, designing the system, selecting the appropriate technology, developing the system, implementing the system, and maintaining the system. It is important to follow a structured methodology to ensure that the system meets the needs of the users and is easy to maintain in the long term.

The structure of the report

> Section 1: Requirement analysis for all the functions in the system
> Section 2: Designing of class diagram and ER diagram.
> Section 3: Testing the functional requirements.
> Section 4: References used as a support to complete the project report.

Git repository

> https://github.com/SLIITITP/ITP_WD_B02_2_T27

Requirements

Stakeholder analysis

Figure 2.1.1:Stakeholder Analysis

Requirements analysis

Functional Requirements

User Management

Main stakeholder of this function is the user. User must log in to the system by entering the valid email and password. If they are not registered yet, they can click "sign up" button and fill the form according to their personal details. Then only they are eligible to use the system. Once the user logged in to the system; user will be redirected to "user profile page" In this page user can see their booking history and the reviews added by them. And there are tabs to update, logout and view all the reviews. Once the user clicks update profile, he will redirect to the update profile page, where user can modify their profile with valid information or delete their account. Also, the users can view all the review details by navigating to "All reviews" page. User can add feedback to the reviews list by filling the feedback form with valid details. Moreover, user can search for feedback by entering the location.

Use Case Diagram for User Management
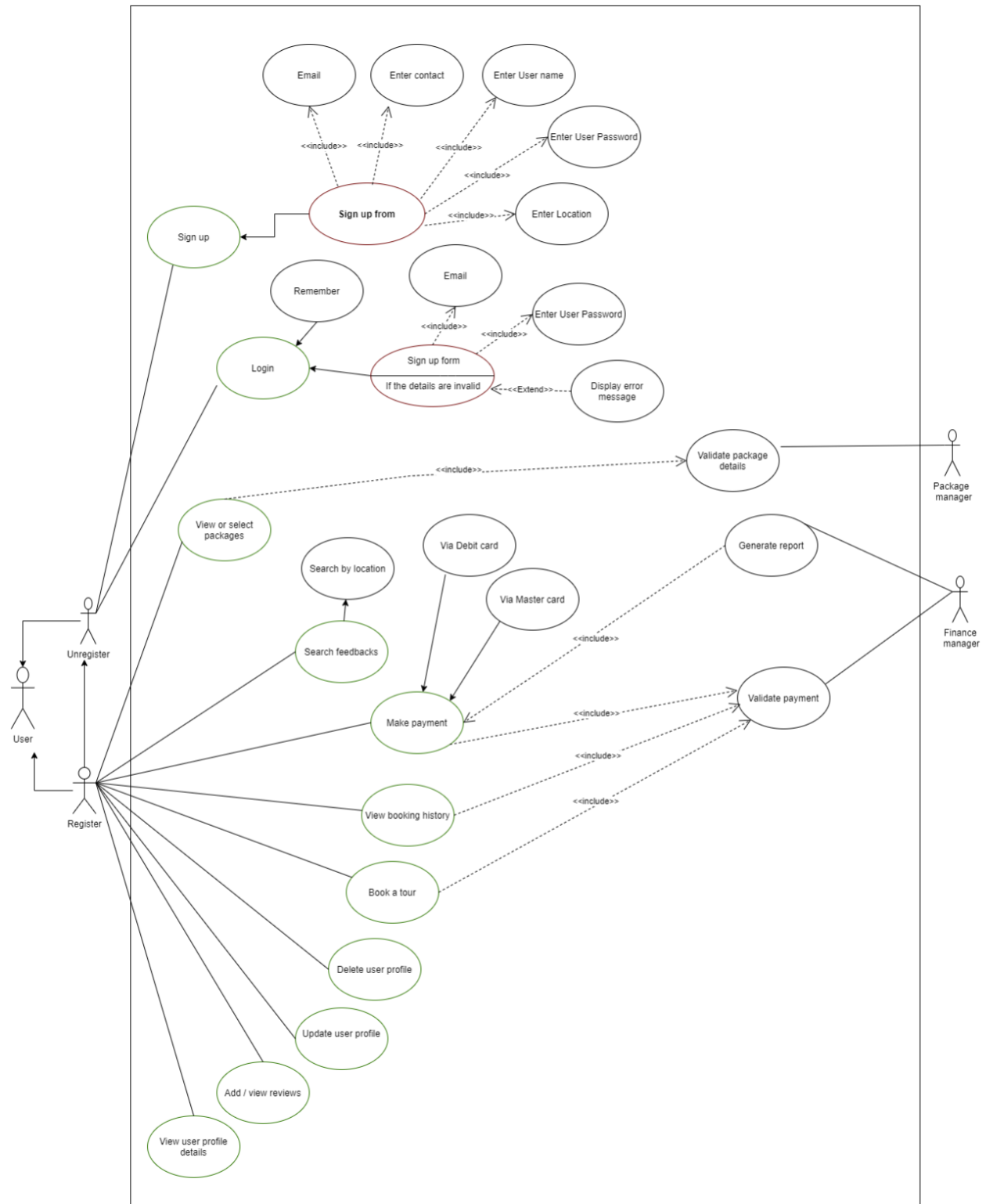
Figure 2.2.1.1 :Use Case Diagram for User Management

Activity diagram for User Management.
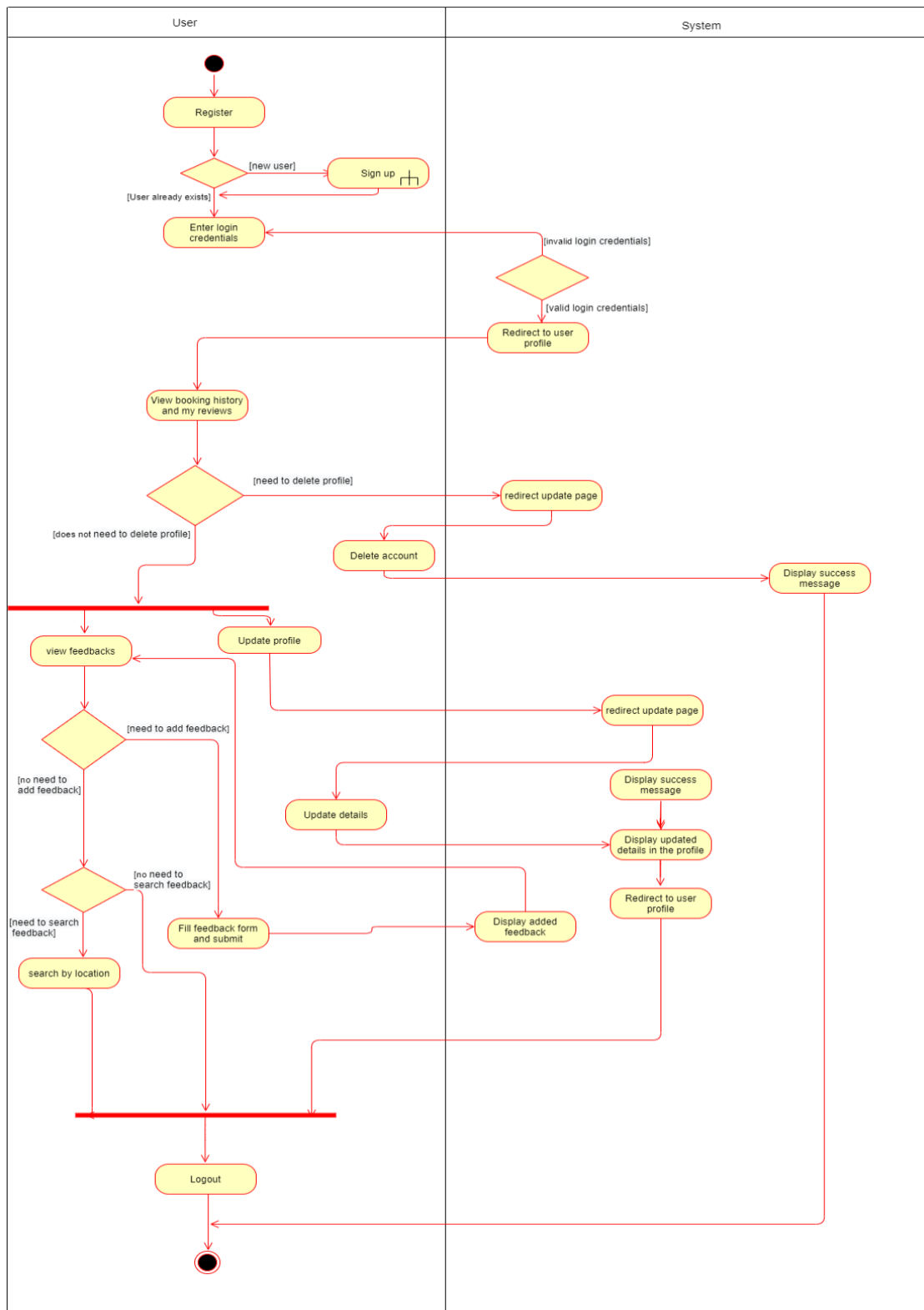
Figure 2.2.1.2 :Activity diagram for User Management

Sub activity diagram for "Sign up".
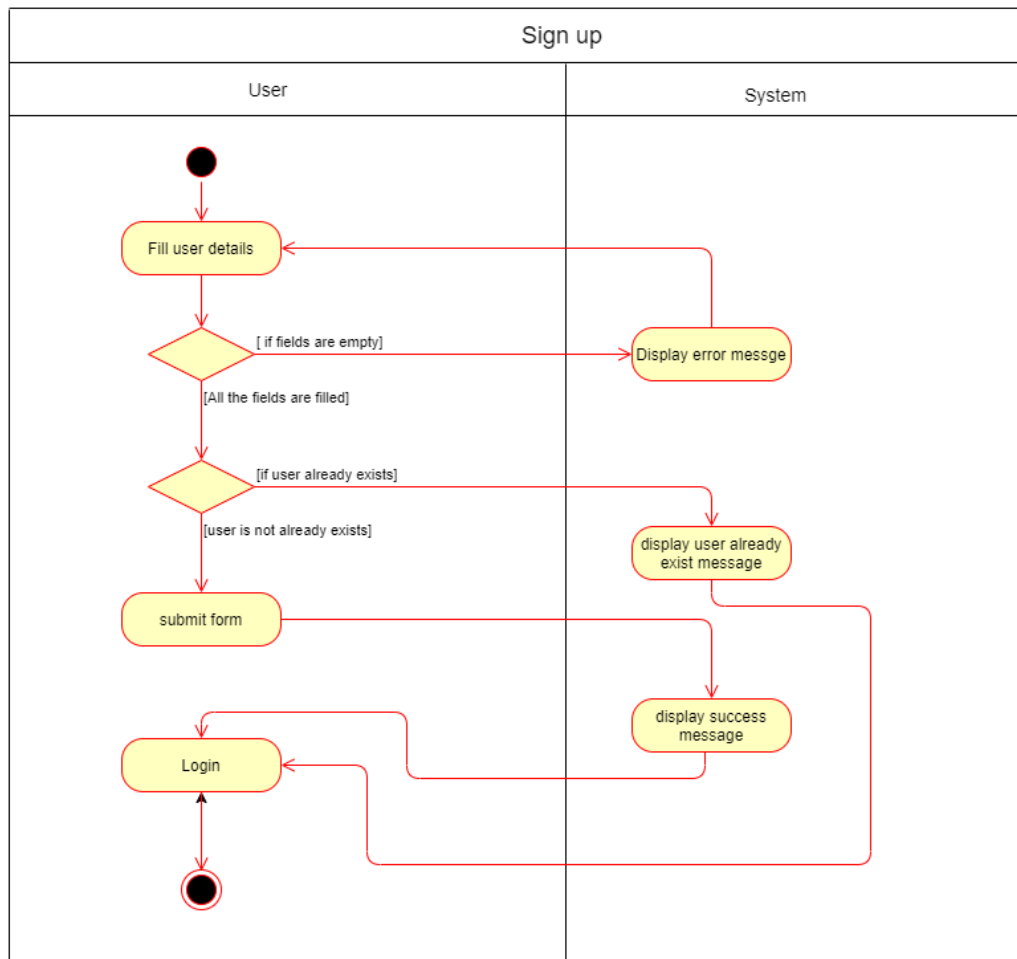
Figure 2.2.1.3:Sub Activity Diagram for "Sign up"

Employee Management

An employee management system is a tool that helps improve employee satisfaction and productivity to help a company achieve their overall goals. HR Manager and Employee are the main stakeholders of this system. HR Manager can add Employee and Payroll details. And if needed he can update the relevant details and delete unnecessary rows from the list. Then the database will be automatically updated. Employee Management system records employees' Name, NIC, Address, Mobile Number, Email and Remarks. Also, the details of the payroll of the employees are also added to the system. HR Manager and Employees can view Employee details by navigating to "Employee Details" tab and they can view payroll details by navigating to "Payroll Details" tab. Moreover, they can search those details by entering NIC. Report of the Employee list and Payroll details can be download by clicking the "Generate Report" button and it will save in the device automatically.

Use Case Diagram for Employee Management

Figure 2.2.2.1:Use Case Diagram for Employee Management

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Activity Diagram for Employee Management
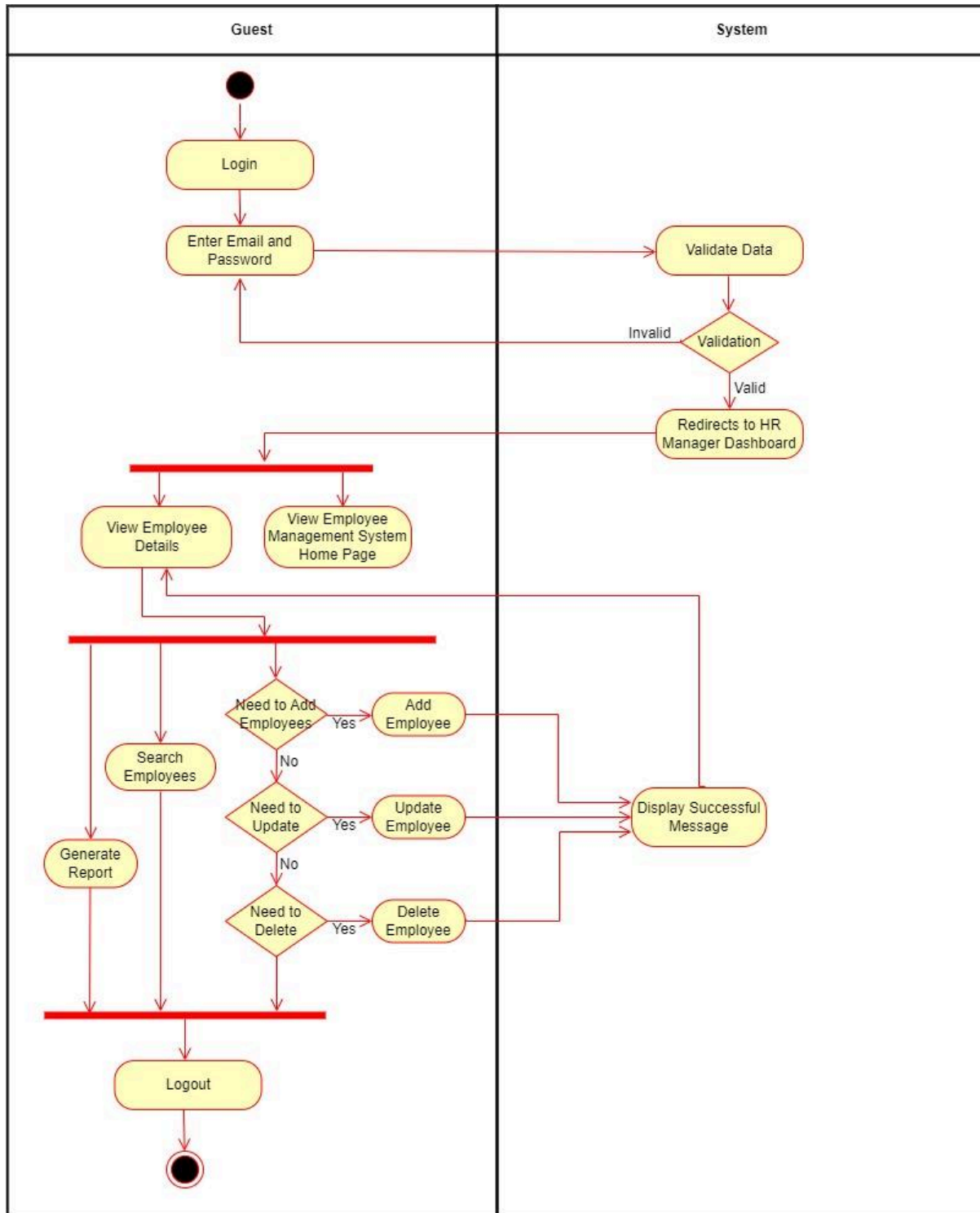
Figure 2.2.2.2:Activity Diagram for Employee Management

Hotel Management

From client side, the process of searching for, selecting, and booking hotels on a hotel booking website or platform. It involves the client accessing the website, entering their desired location, check-in and check-out dates, and the number of guests. The system then presents a list of available hotels matching the provided criteria. The client can browse through the search results, view hotel details including amenities, room types, prices, and customer reviews. They can then choose a specific hotel and proceed with the booking by selecting a room type and entering guest details. The client completes the booking by making the payment and receives a booking confirmation with a confirmation number.

From admin side, it involves managing the hotel bookings and reservations on a hotel booking management system. Admins have access to the backend dashboard, where they can view and manage the bookings made by clients. This includes actions such as modifying bookings, updating guest information, or cancelling bookings if necessary. The admin can also generate reports on hotel bookings for specific time periods, providing insights into total bookings, revenue, occupancy rate, and other relevant metrics. The admin side of the hotel booking function focuses on maintaining accurate records, ensuring smooth operations, and providing necessary support to clients when needed.

Use Case Diagram for Hotel Management

Figure 2.2.3.1:Use Case Diagram for Hotel Managemen

Activity Diagram for Hotel Management (Admin)

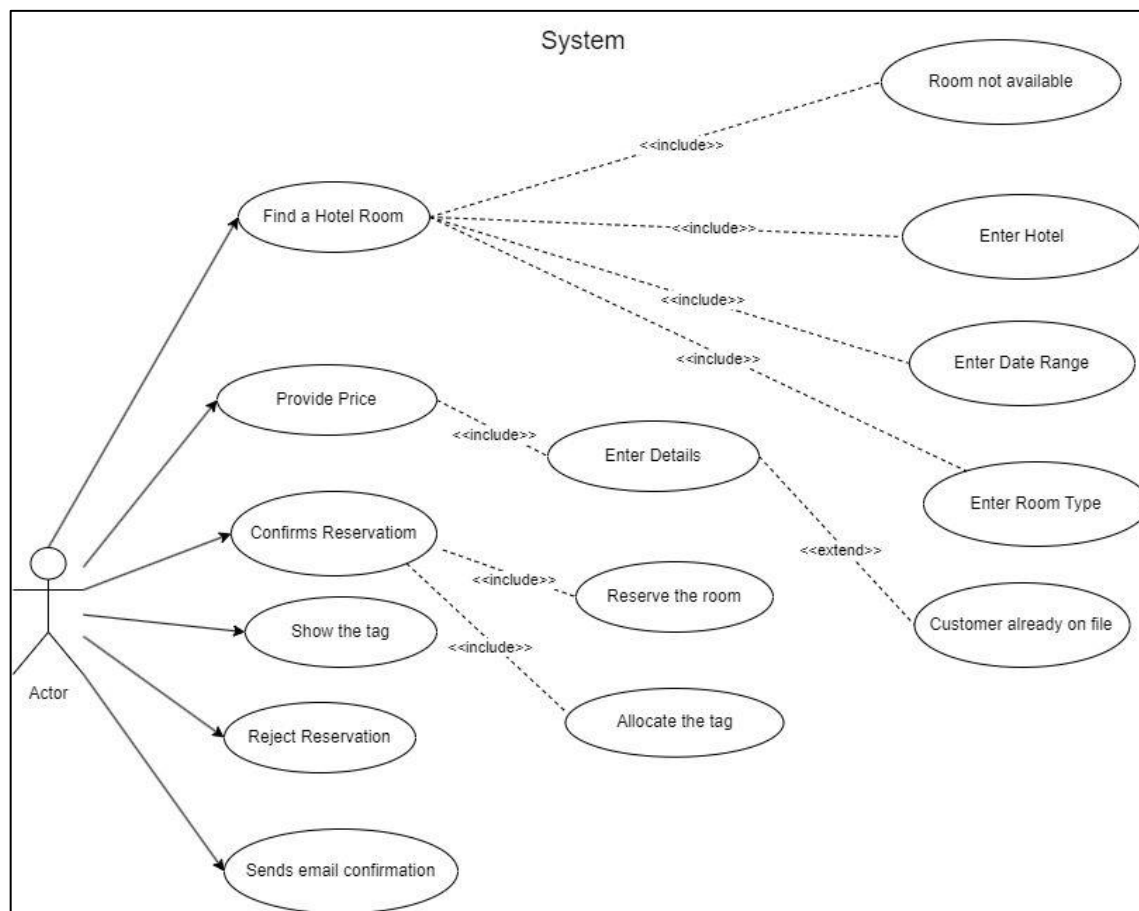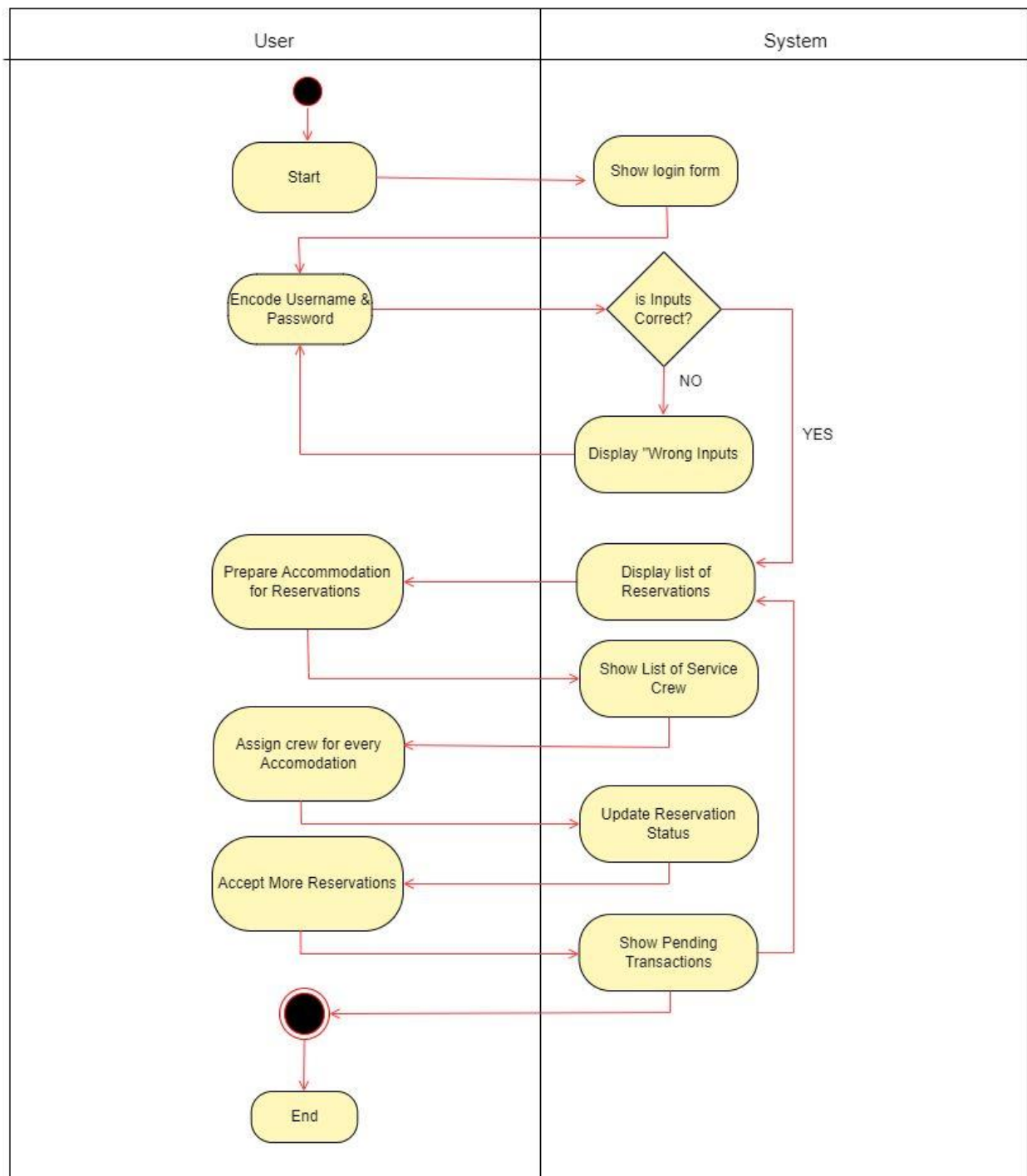*Figure 2.2.3.2:Activity Diagram for Hotel Management_Admin*

Activity Diagram for Hotel Management (Customer)

Figure 2.2.3.3:Activity Diagram for Hotel Management_Customer

Itinerary Management

Tour locations management is a crucial component of a travel booking system, offering essential functions to efficiently handle tour destinations. This includes the ability to add, update, and delete locations, as well as generate reports and provide a search feature. The "Add Locations" function allows travel agencies to expand their database by including new tour destinations. This function enables the input of vital information such as location details, descriptions, images, and logistical data. By adding locations, the system ensures a comprehensive and up-to-date collection of tour destinations. The "Update Locations" function empowers agencies to make modifications to existing tour destinations. They can edit details, update attractions, revise logistical information, and upload new images. This function ensures that travellers have access to accurate and current information about the tour locations. With the "Delete Locations" function, outdated or irrelevant destinations can be removed from the system. This feature helps maintain data integrity and prevents users from accessing outdated or incorrect information, ensuring a streamlined and reliable booking experience. he "Report Generate" function provides valuable insights for travel agencies. It enables the generation of reports based on tour location data, offering analytics on popular destinations, booking trends, customer preferences, and more. These reports assist agencies in making informed decisions, optimizing their offerings, and enhancing their overall business strategies. Additionally, the search function allows users to easily find specific places within the tour locations database. By entering keywords, filters, or criteria, users can swiftly locate desired destinations based on their preferences or specific requirements. This feature simplifies the process of finding and selecting tour destinations, improving the user experience.

Use Case Diagram for Itinerary Management

Figure 2.2.4.1:Use Case Diagram for Itinerary Management

Activity Diagram for Itinerary Management

Figure 2.2.4.2:Activity Diagram for Itinerary Management

Package Management

A package management system is an online platform that enables customers to view and search for travel packages based on their destination preferences. They can browse through various package details and select a package of their choice. Upon clicking a package, customers can choose a hotel from a list of options. Once they click the "Book Now" button, they are directed to a secure payment page where they can enter their card details.

On the administrative side, the system allows admins to manage packages and hotels. Admins can add, update, and delete packages, as well as add, update, and delete hotels associated with those packages. The admin dashboard provides a comprehensive overview of all package details, including the total number of packages available. Admins can also download reports that contain detailed information about all the packages offered. This system streamlines the package booking process for customers and provides efficient management tools for administrators.

Use Case Diagram for Package Management

Figure 2.2.5.1 : Use Case Diagram for Package Management

Activity Diagram for Package Management (Admin)

Figure 2.2.5.2:Activity Diagram for Package Management_Admin

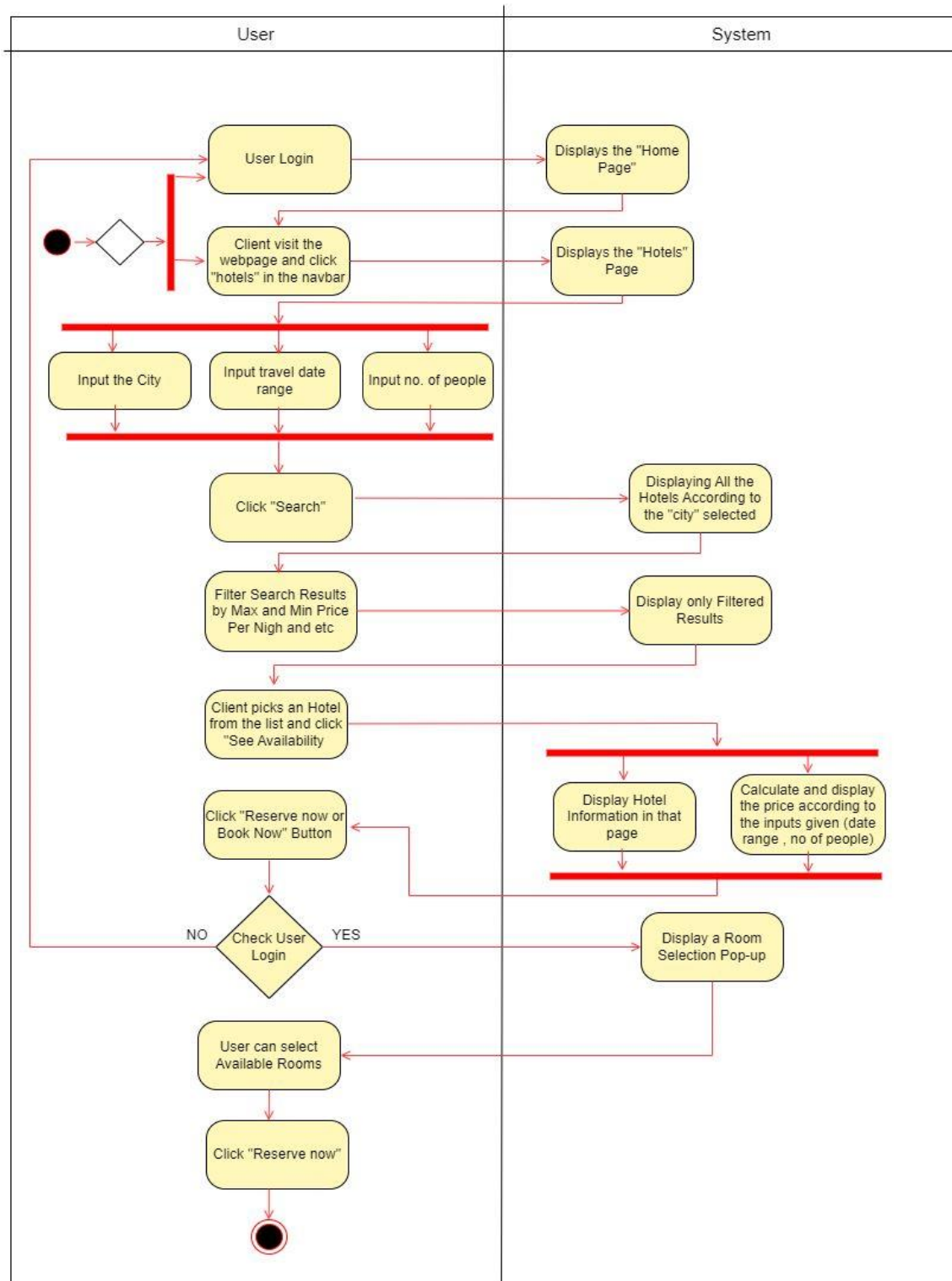Activity Diagram for Package management (Customer)
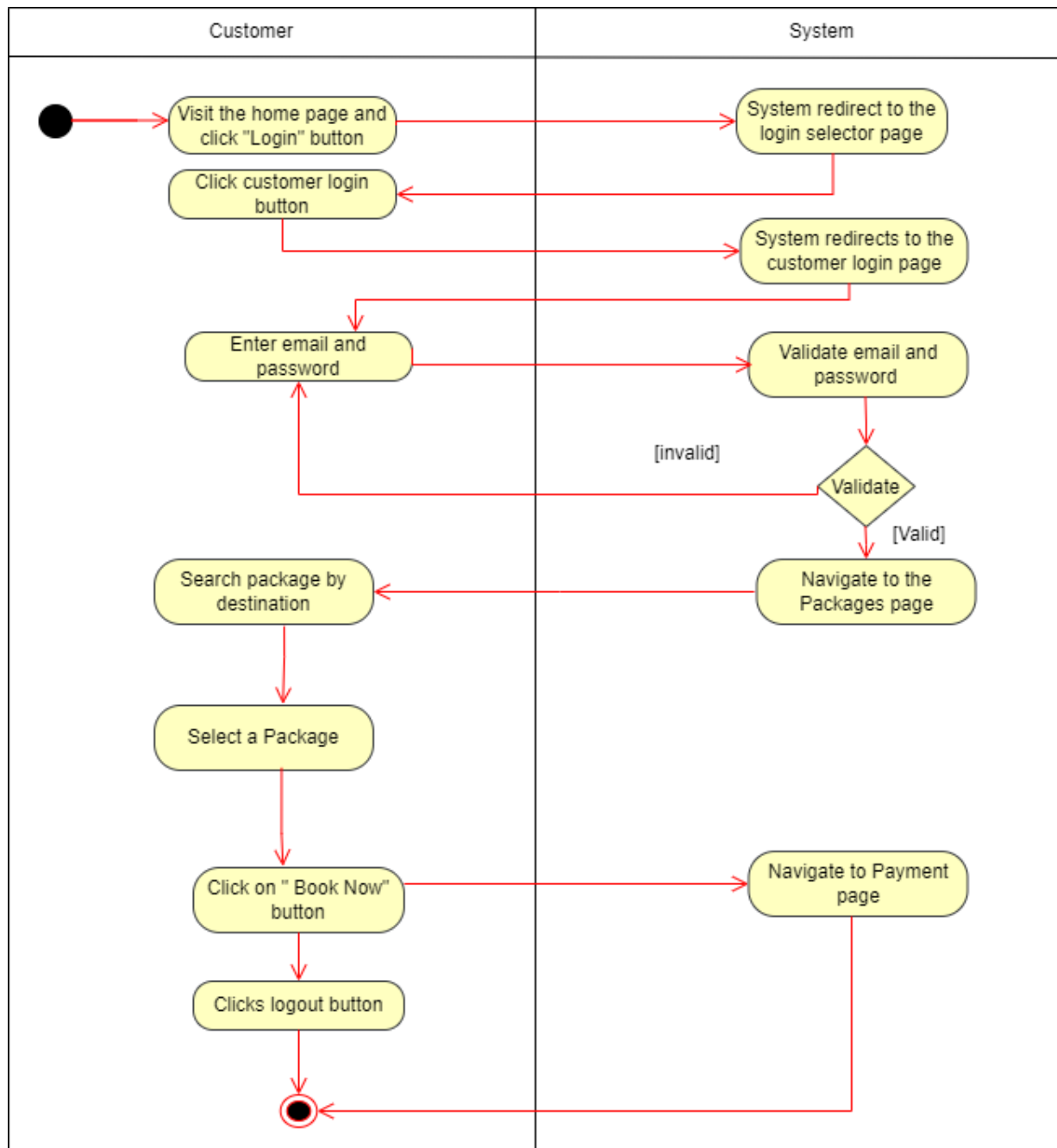
Figure 2.2.5.3:Activity Diagram for Package Management_Customer

Sub activity diagram for "Add Package"

Figure 2.5.4:Sub Activity Diagram for "Add Package

Finance Management

This function is used by the customer and admin. A customer can make a payment by filling out a form. Customers must fill personal details as well as card details. By clicking the submit button, he will navigate to another page with the payment details. After checking his payment details, if the customer wants to edit his payment details, he can do that by clicking edit button. After successfully entering payment details, the payment details will be stored in the database and added to the admin's all transaction page. Admin can update status of the payment using updating form. And if the admin wants to delete payment records from the database, he can do that by clicking the delete icon. After the admin updates the status of the payment, which updated data will be visible in all transaction page. And there is another option to search for payments by entering the status. Pdf of the transaction list can be printed by clicking the "download pdf" button and it will save in the device automatically.

Use Case Diagram for Finance Management

Figure 2.2.6.1:Use Case Diagram for Finance Management

Activity Diagram for Finance Management (Admin)
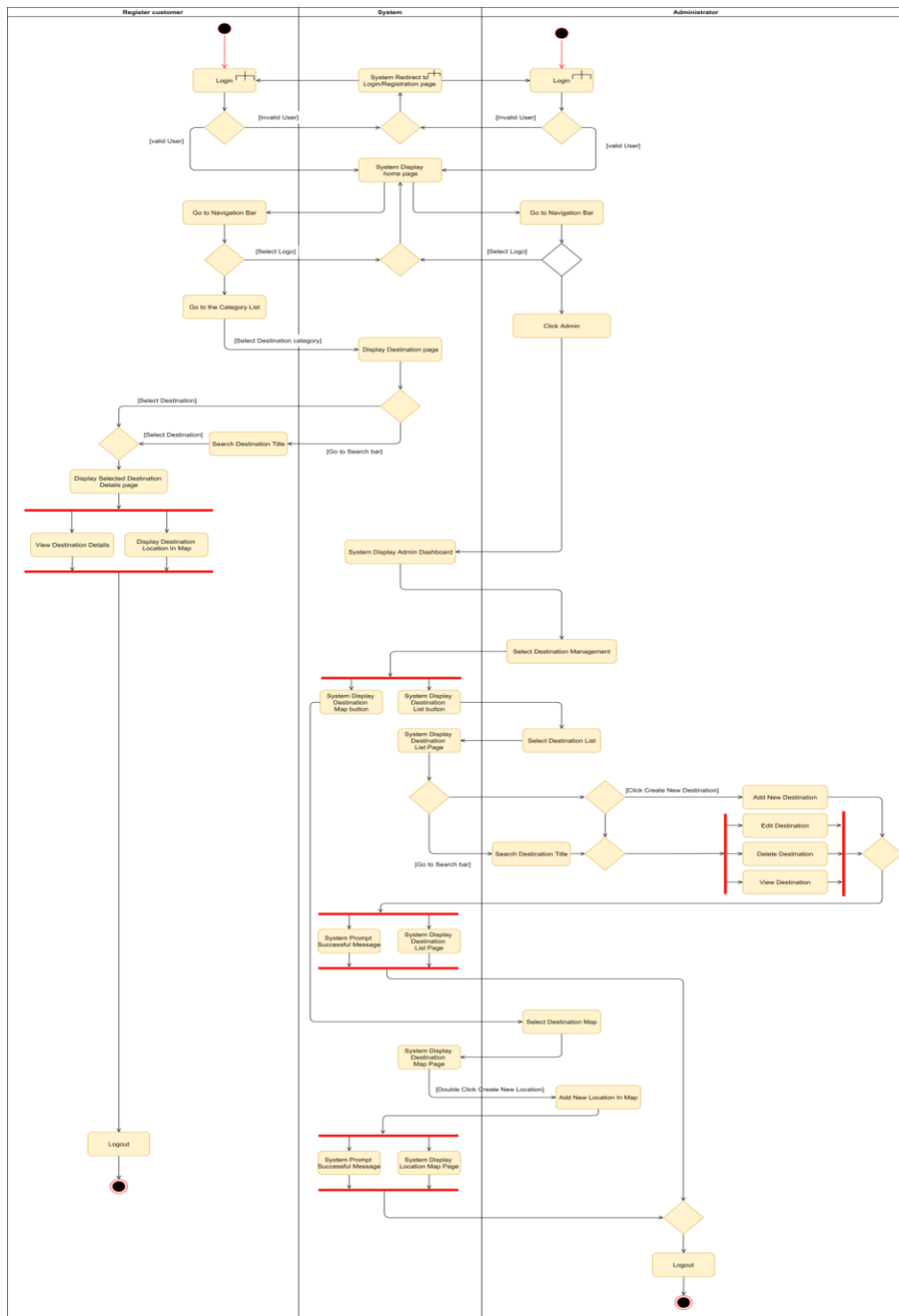

Figure 2.2.6.2:Activity Diagram for Finance Management_Admin

Activity Diagram for Finance Management (Customer)

Figure 2.2.6.3:Activity Diagram for Finance Management_Customer

Sub activity diagram for "Fill the payment page".
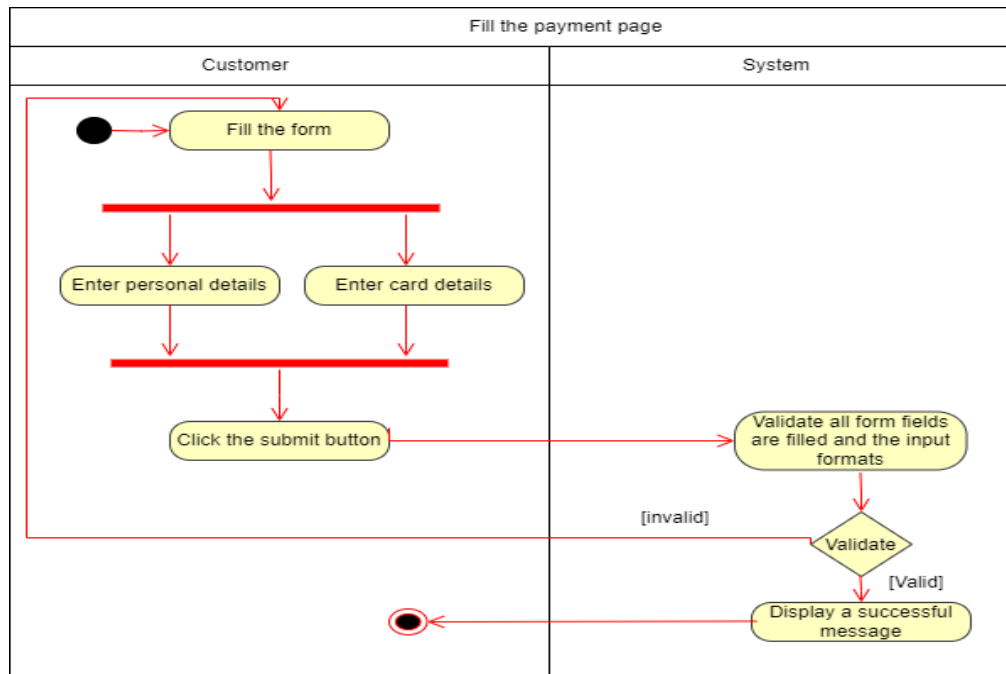
Figure 2.2.6.4:Sub Activity Diagram for "Fill the payment page"

Car Rental Management

Main stakeholders of this functions are admin and the customer. Admin's responsibility is to add new cars to the system. From the customer or user's viewpoint first, he will be prompted for a login. After logging in the user will be directed to the cars page where he/she can view all the available cars and a sub menu consisting of "Car", "Add Reservations", "Reservations" in order. After selecting a car, the desired car, the user can then choose the "Book Now" button to reserve the car. Then the user will be redirected to the reservations page where he/she is required to fill out his/her personal details to complete the reservation. On complete a success message will be shown as "Reservation added successfully". The user can view all the reservations made by navigating through the sub menu to the "Reservations" page. The user can update or delete the reservations he/she made and, he can search through the reservations. If the user desires to get a softcopy of the reservation he/she then can do so by saving the reservations as a pdf using "save to pdf" button, where the pdf will be downloaded and saved to the device.

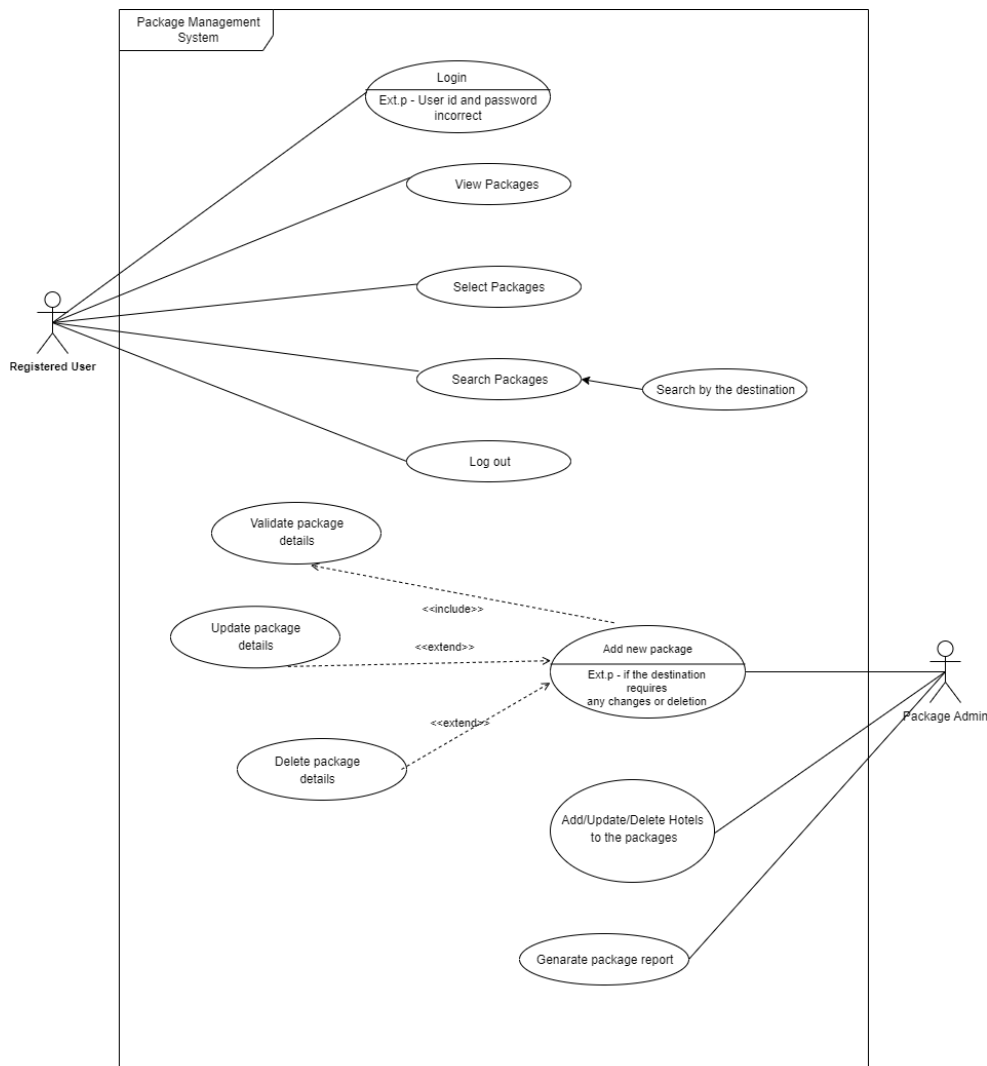Use Case Diagram for Car Rental Management
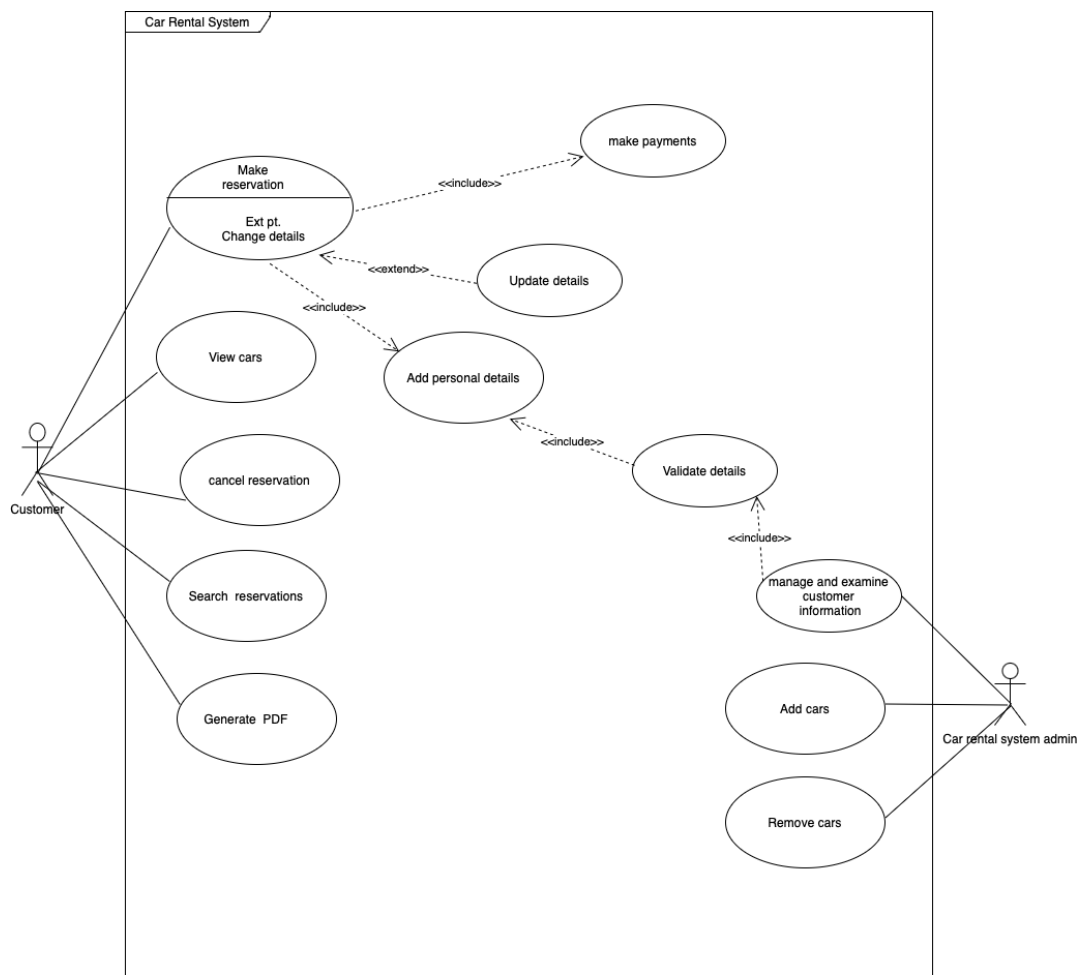
Figure 2.2.7.1:Use Case Diagram for Car Rental Management

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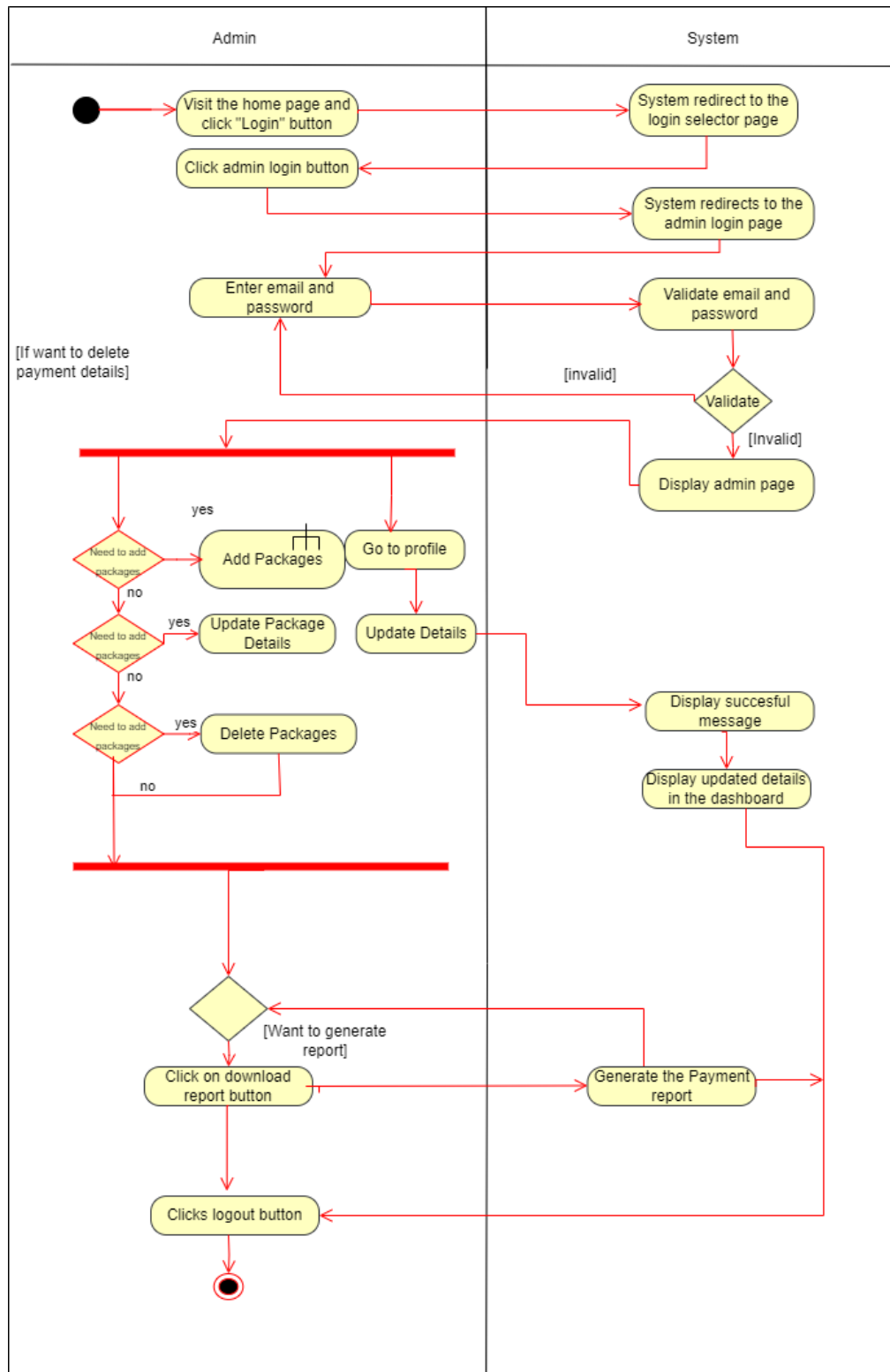Activity Diagram for Car Rental Management (Admin)
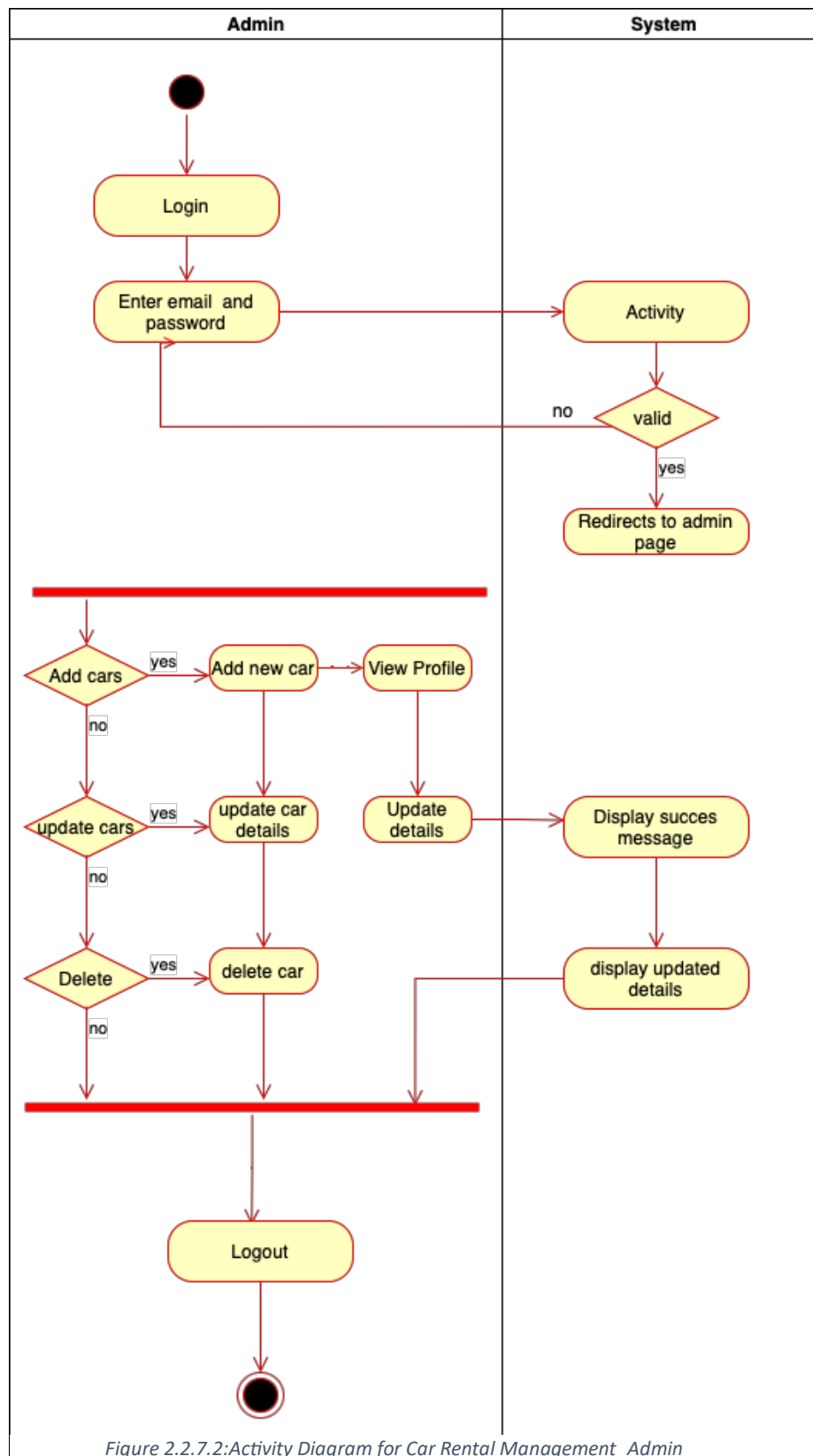
Figure 2.2.7.2:Activity Diagram for Car Rental Management_Admin

Activity Diagram for Car Rental Management (Customer)
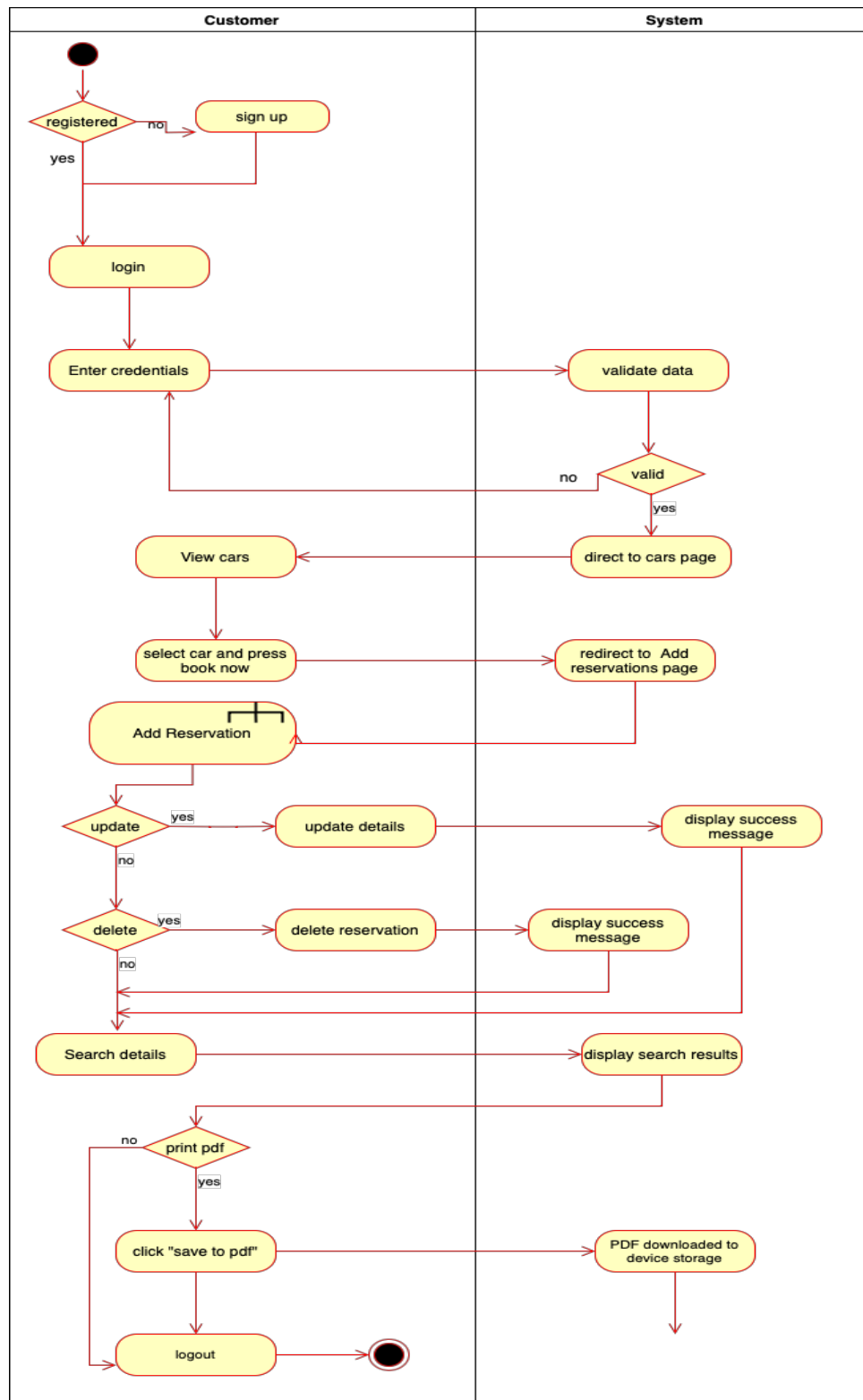
Figure 2.2.7.3:Activity Diagram for Car Rental Management_Customer
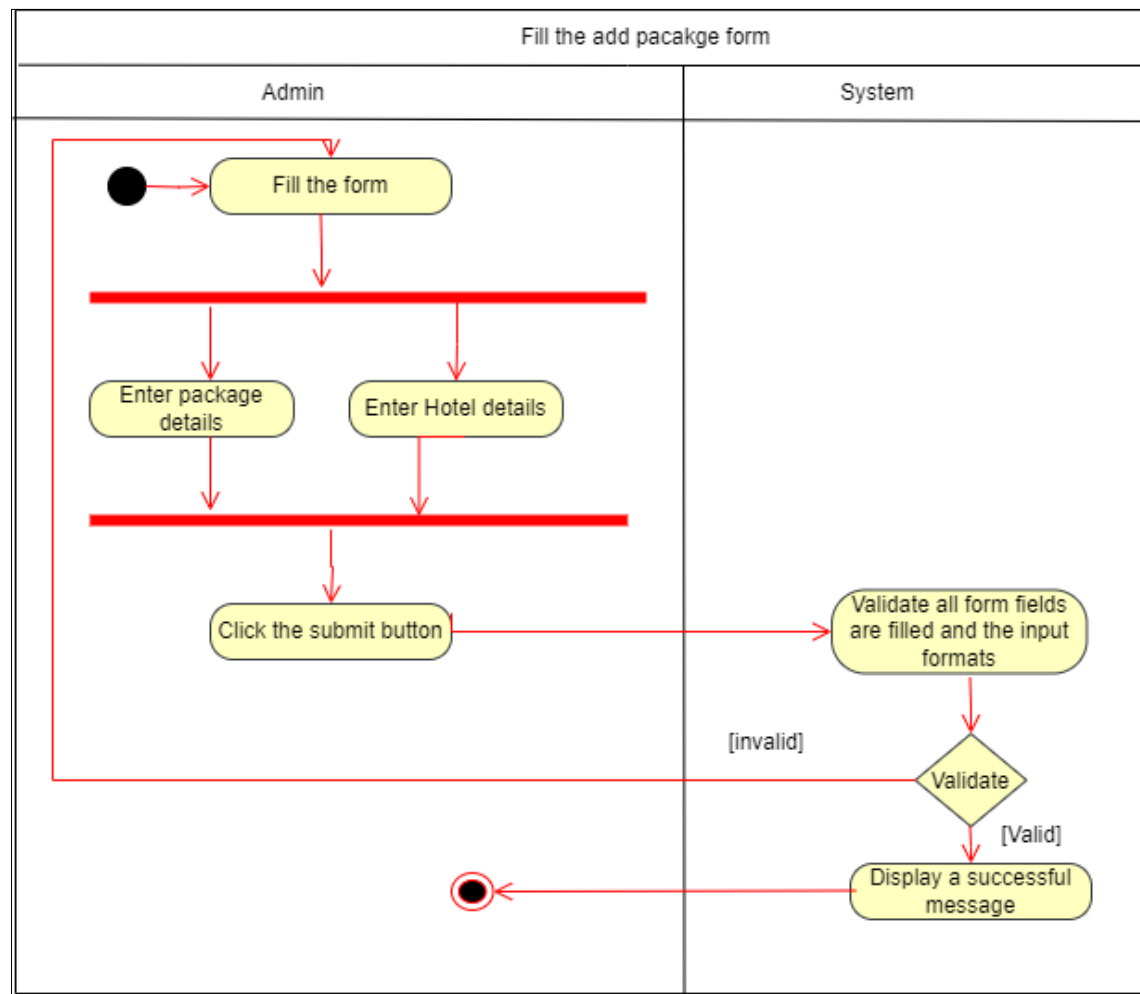
Sub activity diagram for "Add Car Reservations."
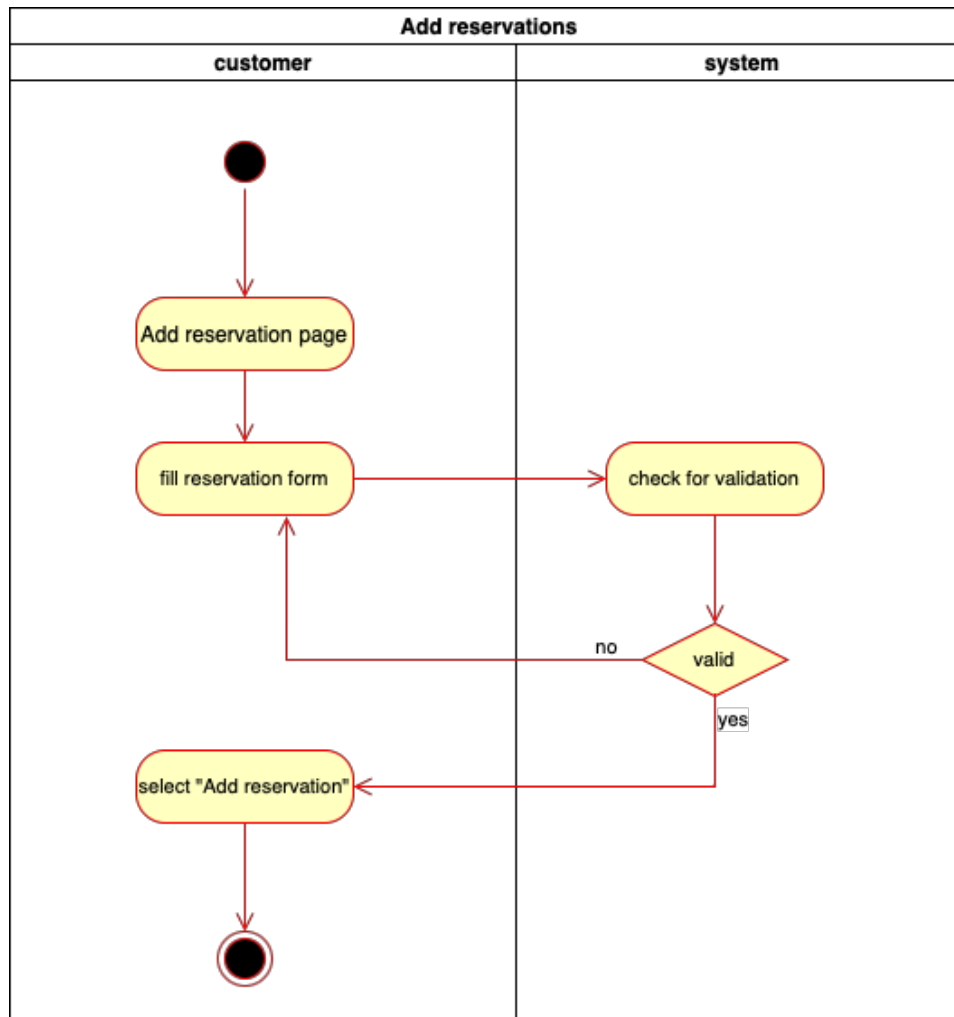
Figure 2.2.7.4:Sub Activity Diagram for "Add Car Reservations"

Flight Management

Main stakeholders of this function are admin and the customer. Admin is the one who is responsible for adding new flights. And if needed he can update the relevant details and delete unnecessary rows from the list. Then the database will be automatically updated. For the customers, first they must log in to the system. If they are not registered yet, they can click "sign up" button and fill the form according to their personal details. Then only they are eligible to use the system. One he logged in to the system; he will be redirected to "reservations page" which consists of a table of reservation details that he already booked before. In this table customer can use some actions such as update and delete, to modify his reservations. And there is another option to pay for the reservations. Once he clicks it, he will see a form which is to fill with the card details. Also, the customers can view flight details by navigating to "flights" tab. Moreover, they can search

for reservations by entering emails. Pdf of the reservations list can be printed by clicking the "generate pdf" button and it will save in the device automatically.
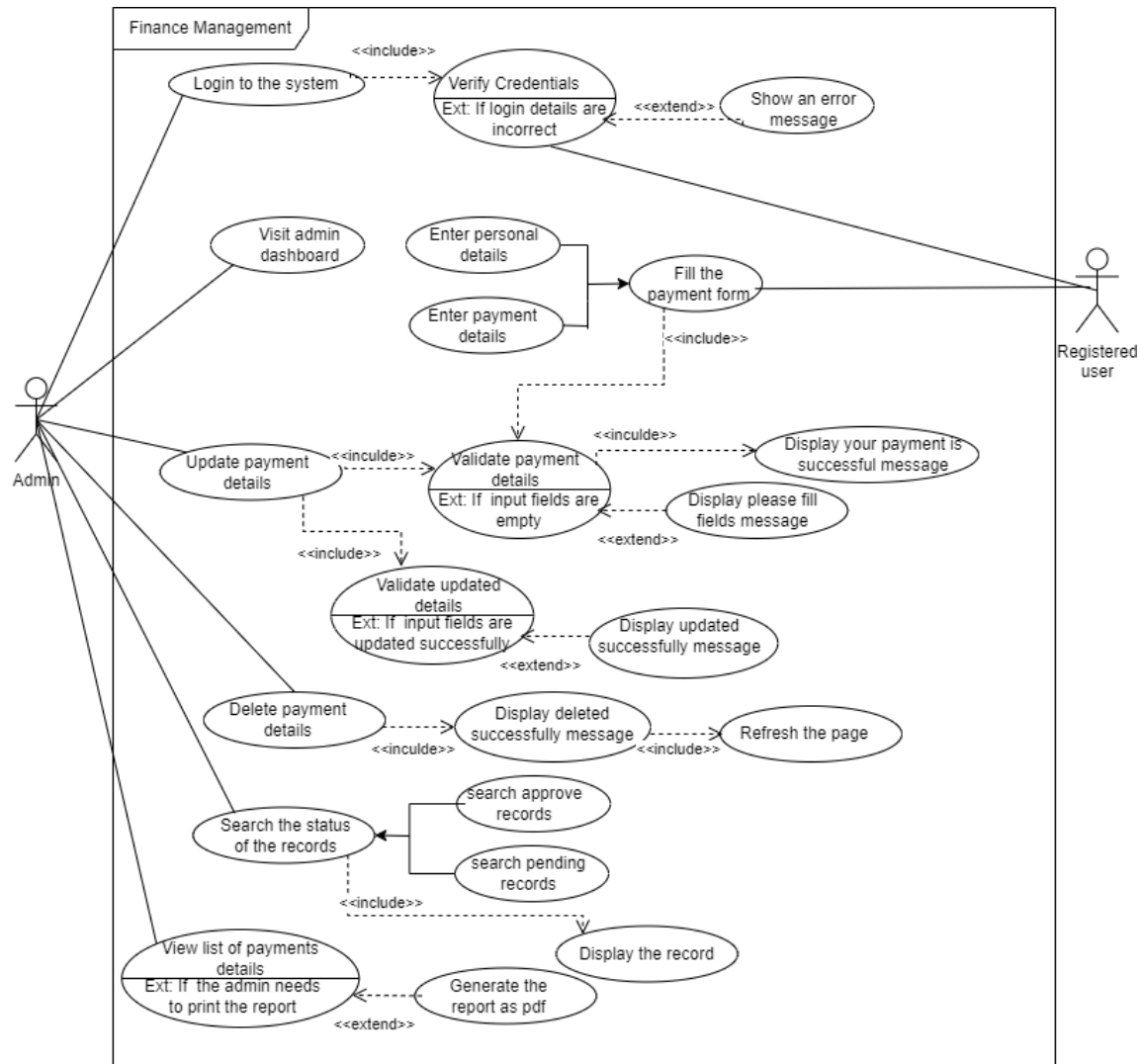
Use Case Diagram for Flight Management
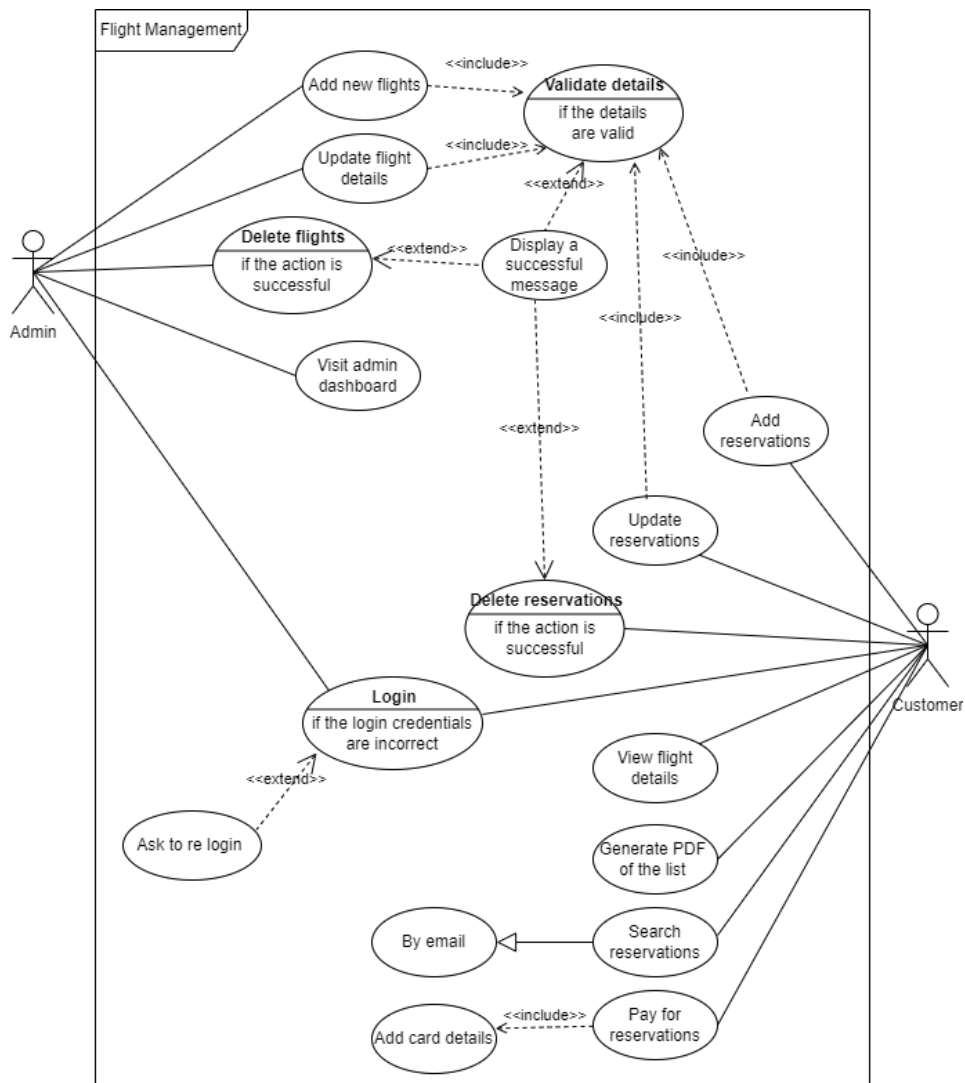
Figure 2.2.8.1:Use Case Diagram for Flight Management
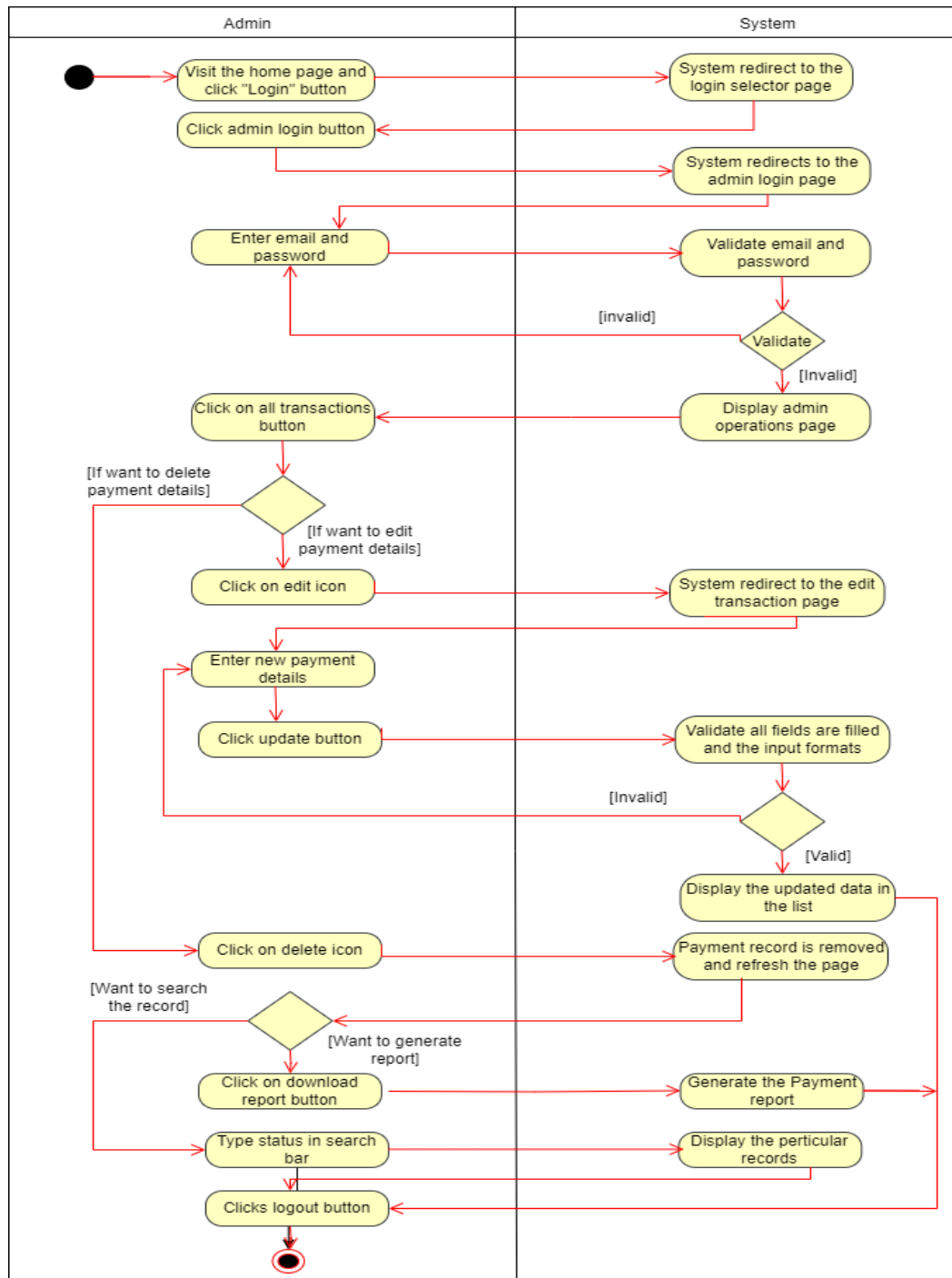
Activity Diagram for Flight Management (Admin)
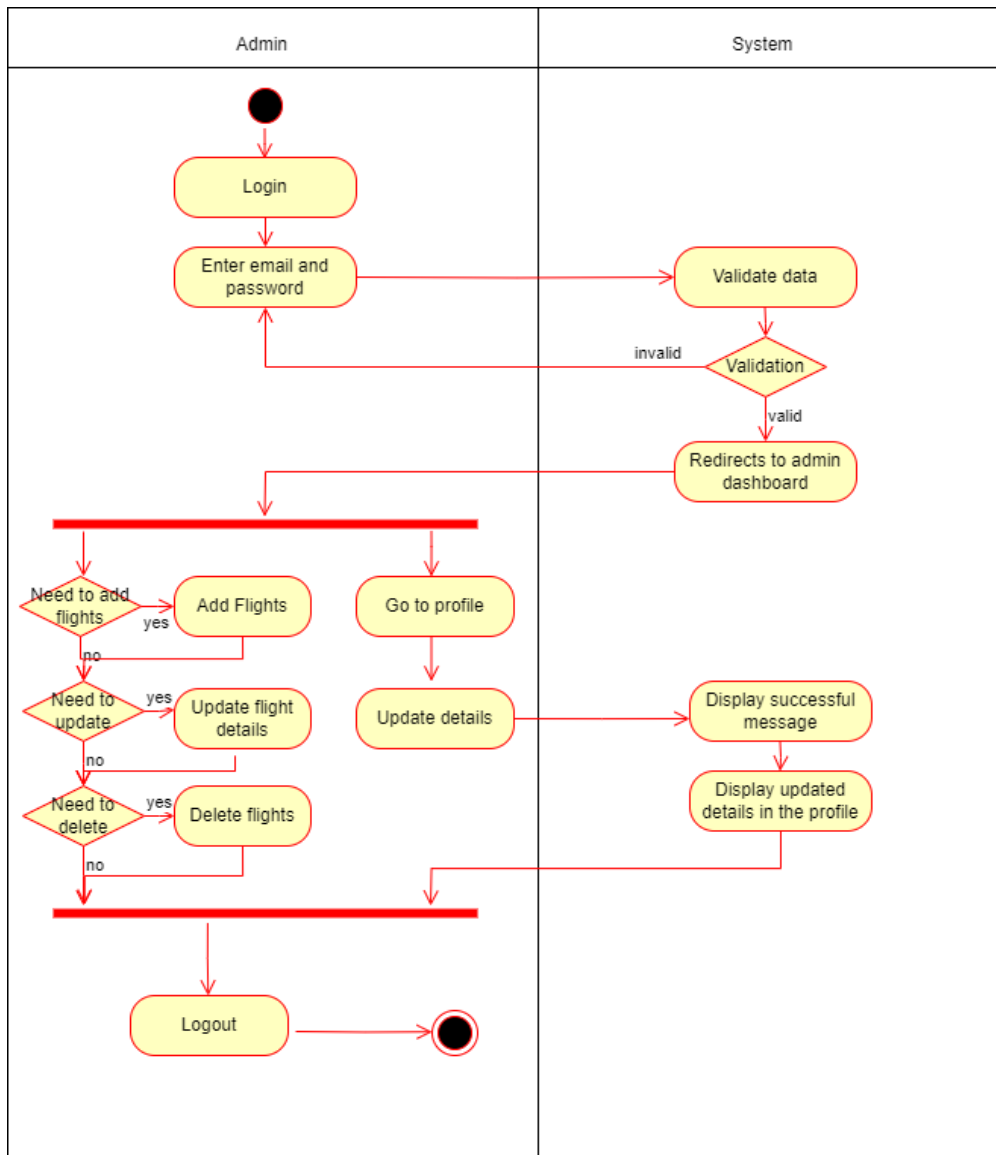
Figure 2.2.8.2:Activity Diagram for Flight Management_Admin
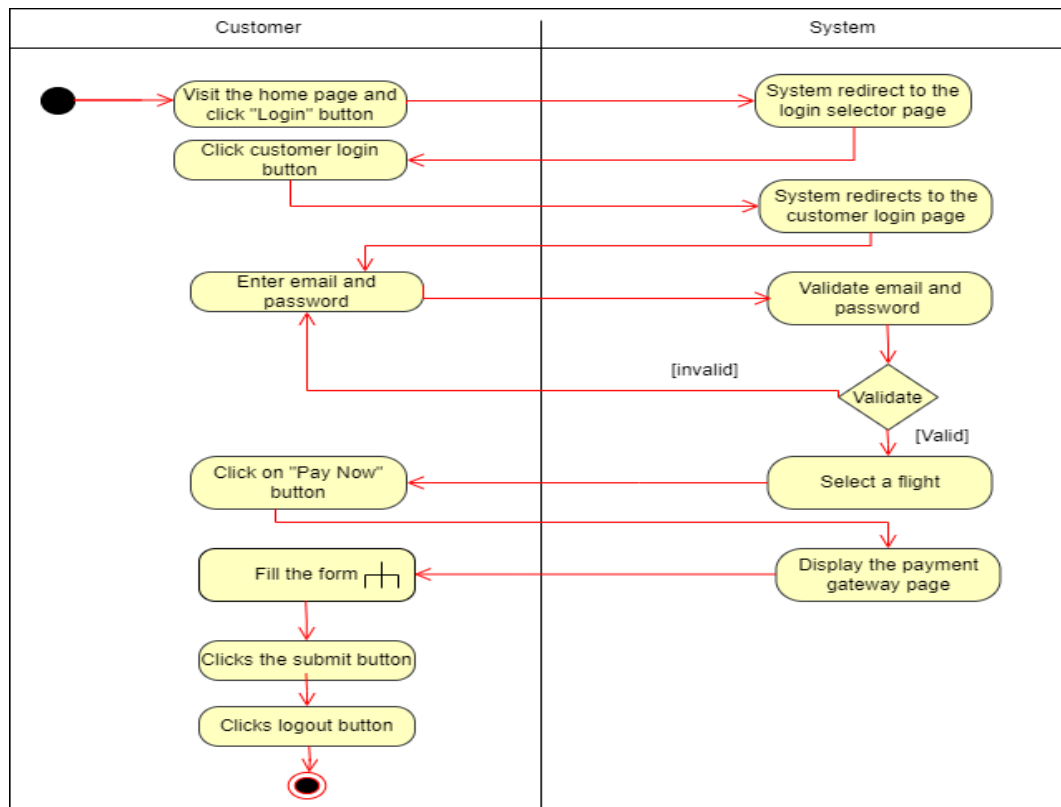
Activity Diagram for Flight Management (Customer)
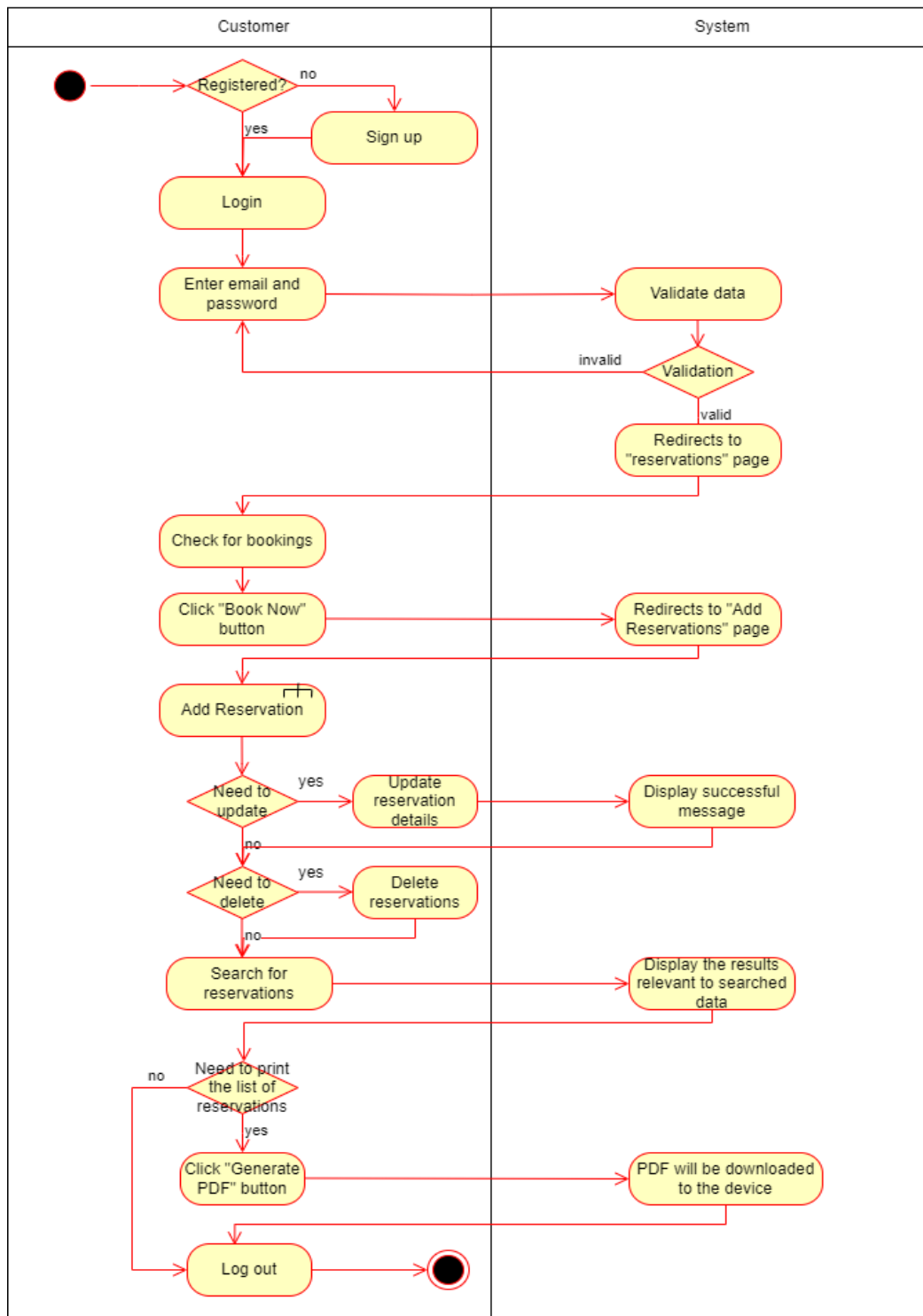
Figure 2.2.8.3:Activity Diagram for Flight Management_Customer

Sub Activity Diagram for "Add Flight Reservation".
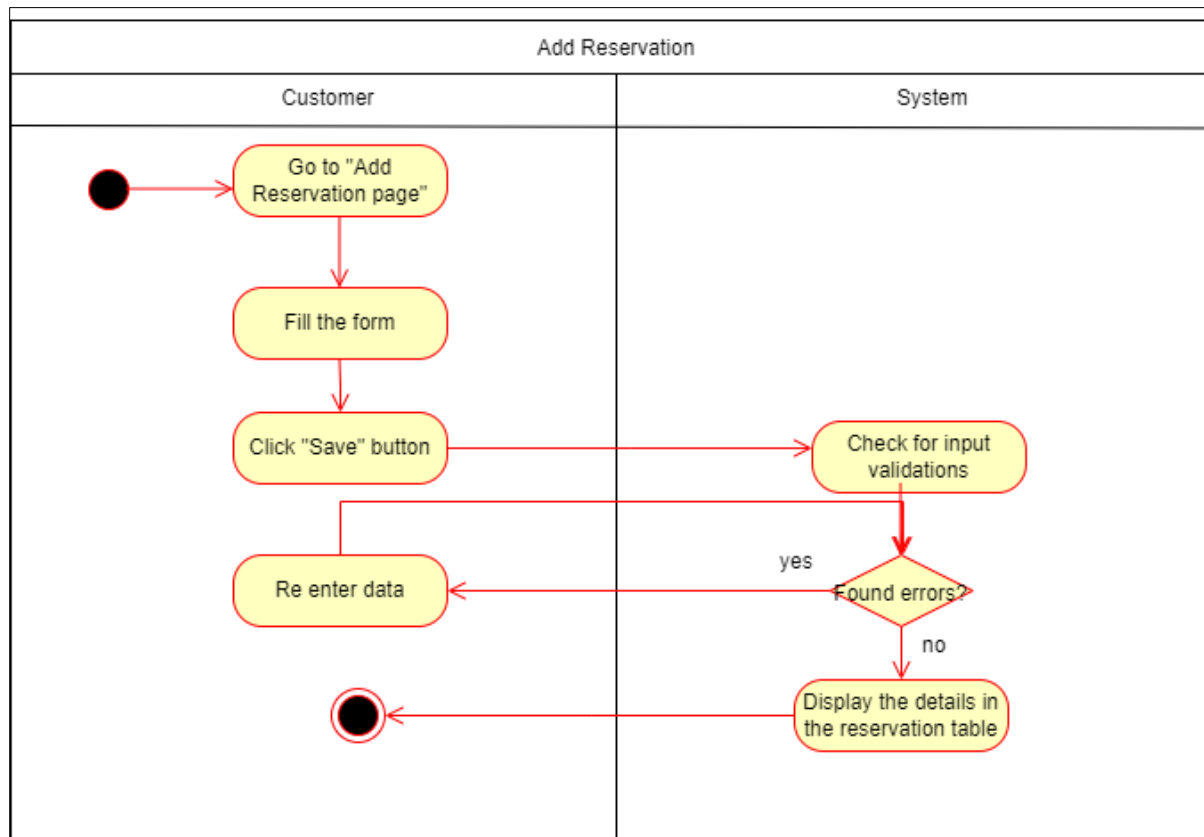
Figure 2.2.8.4:Sub Activity Diagram for "Add Flight Reservation"

Non-functional Requirements

1. Usability.
2. Reliability.
3. Efficiency.
4. Maintainability.
5. User friendliness
6. Speed
7. Accuracy
8. Compatibility

Design and Development

Class Diagram
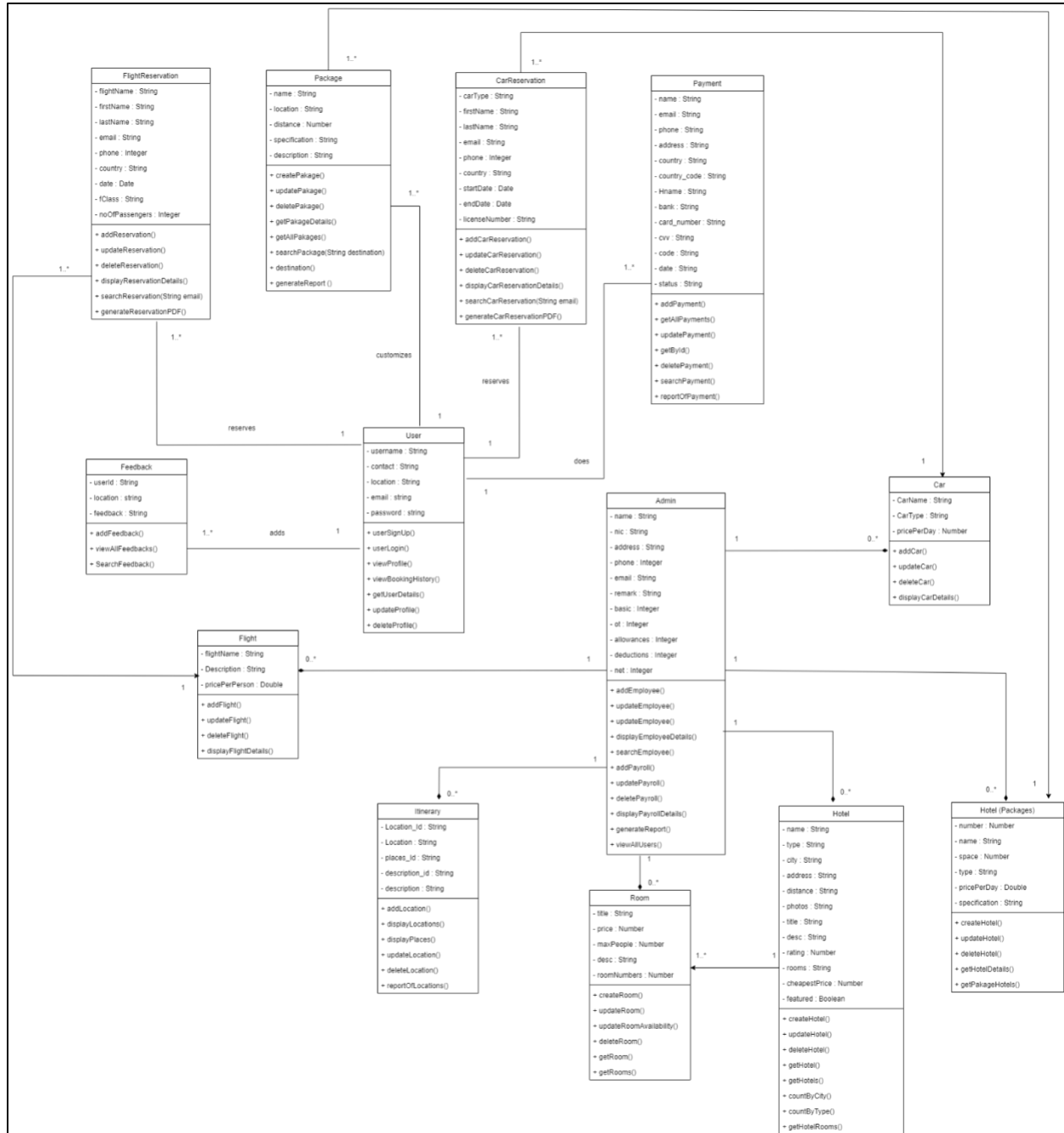
Figure 3.1.1: Class Diagram

ER Diagram
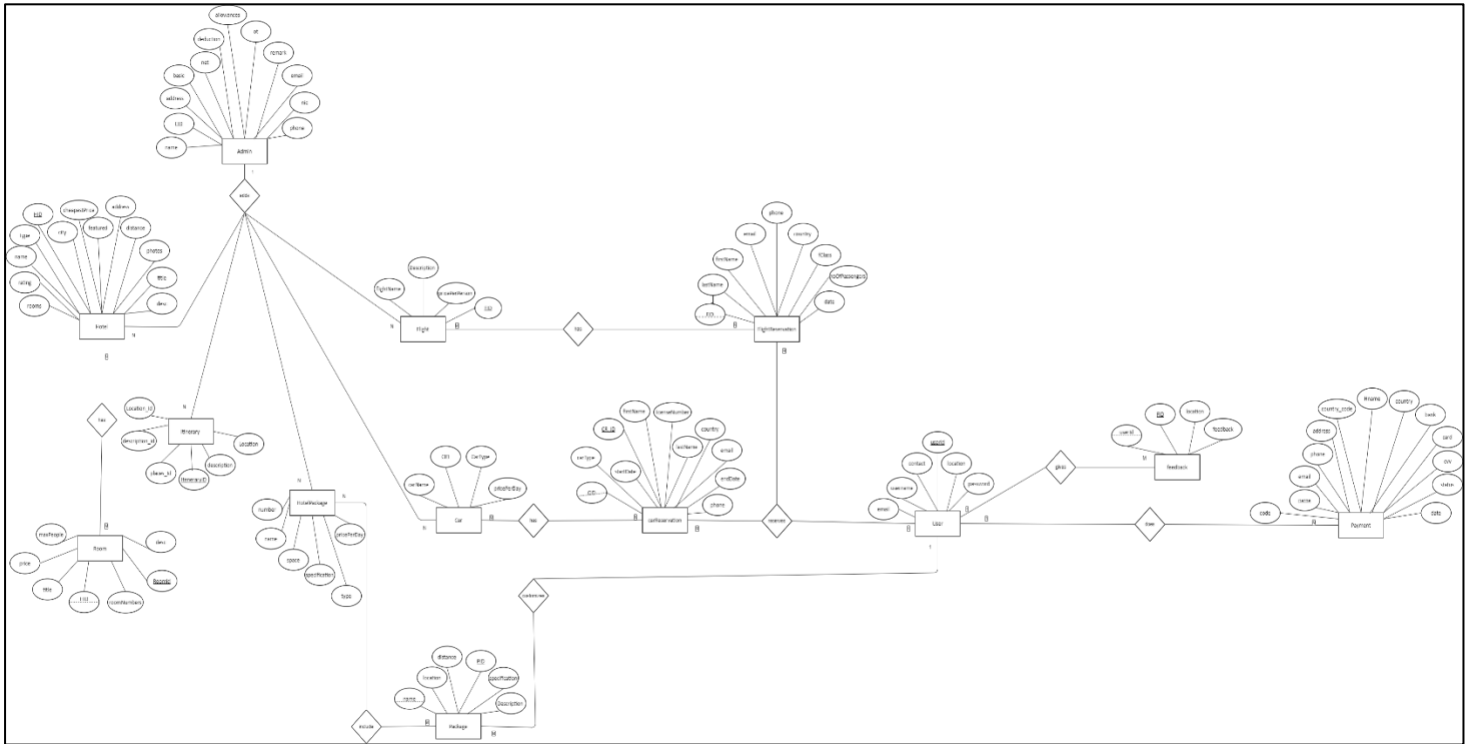
Figure 3.2.1:ER Diagram

Database

test

LOGICAL DATA SIZE: 42.92KB   STORAGE SIZE: 552KB   INDEX SIZE: 700KB   TOTAL COLLECTIONS: 20

Collection Name	Documents	Logical Data Size	Avg Document Size	Storage Size	Indexes	Index Size	Avg Index Size
Vehicle	0	0B	0B	4KB	1	4KB	4KB
addorders	0	0B	0B	32KB	1	32KB	32KB
addpayrolls	0	0B	0B	4KB	1	4KB	4KB
admins	0	0B	0B	4KB	2	12KB	6KB
blogs	4	9.76KB	2.44KB	44KB	1	36KB	36KB
carreservationnews	11	2.74KB	256B	36KB	1	36KB	36KB
carreservations	8	2KB	257B	36KB	1	36KB	36KB
deliveryman_registrations	1	198B	198B	24KB	1	24KB	24KB
eservations	0	0B	0B	4KB	1	4KB	4KB
flights	2	16.04KB	8.02KB	68KB	1	36KB	36KB
hotels	6	1.56KB	266B	36KB	1	36KB	36KB

System Status: All Good

test

LOGICAL DATA SIZE: 42.92KB   STORAGE SIZE: 552KB   INDEX SIZE: 700KB   TOTAL COLLECTIONS: 20

Collection Name	Documents	Logical Data Size	Avg Document Size	Storage Size	Indexes	Index Size	Avg Index Size
flights	2	16.04KB	8.02KB	68KB	1	36KB	36KB
hotels	6	1.56KB	266B	36KB	1	36KB	36KB
payments	5	1.72KB	352B	36KB	4	144KB	36KB
reservations	5	1.09KB	223B	36KB	1	36KB	36KB
rooms	9	2.9KB	330B	36KB	1	36KB	36KB
supplier_registrations	0	0B	0B	4KB	1	4KB	4KB
transections	4	893B	224B	36KB	1	36KB	36KB
usercars	6	1.81KB	310B	36KB	2	72KB	36KB
users	6	2.05KB	350B	36KB	2	72KB	36KB
vehiclereservations	4	196B	49B	36KB	1	36KB	36KB
zs	0	0B	0B	4KB	1	4KB	4KB

System Status: All Good

Testing

User Management

Testing Function: Register a new user.	
Test Case ID: TU001	Test Designed By: Kumarasinghe O.A IT21174308
Test priority (High/Medium/Low): High	
Test Description: This will test if the new user registration is working properly ensuring database creation.	
Preconditions: Customer should select the registration option in the system.	
Test Steps: 1.Fill the form with valid user information and press the submit button. 2. Check if the user is already existing and all the fields are filled. 3. if user already send "user already exist" message.	
Post-condition: After submitting the form, customer will be able to see a successful message.	
Test Executed members details: Prasadi P.G.K. R IT21216732	

Table 4.1.1 :Test case for User Management_ Register a new user

Testing Function: Update and delete user profile	
Test Case ID: TU002	Test Designed By: Kumarasinghe O.A IT21174308
Test priority (High/Medium/Low): High	
Test Description: This will test if the user from the database can be updated and deleted properly and ensuring the relevant parts in the database also modified according to the change done.	
Preconditions: User should be logged in to the system.	
Test Steps: 1. Log in as a registered user and go to "update profile" page.	

2. Change the relevant field with valid details that wants to be update and click update button at the bottom of the.
3. If you click delete button, the user account will be deleted from the database.
4. Check if the modified details are correctly done in the user profile page.

Post-condition: After the action is done, user will be able to see a successful message.

Test Executed members details: Weerathunga W.A.R.N.
IT21216732

Table 4.1.2:Test case for User Management_Update and delete user profile

Testing Function: Add a review	
Test Case ID: TU003	**Test Designed By:** Kumarasinghe O.A IT21174308
Test priority (High/Medium/Low): High	
Test Description: This will test if the add new feedback function is working properly ensuring database creation and retrieving function.	
Preconditions: User should be logged in to the system	
Test Steps: 1. Log in as a user and go to "All reviews" on the page. 2. Fill the form with valid information and press submit button, then you will be able to see the newly added review at the top of the page. 4. Check if the newly added feedback is in the feedback list on the review page.	
Post-condition: After submitting the form, customer will be able to see a successful message.	
Test Executed members details: Weerathunga W.A.R.N. IT21216732	

Table 4.1.3:Test case for User Management_ Add a review

Test ID	Test Inputs	Expected Output	Actual Output	Result (pass/fail)
TU001	**Name:** Oshodi	The newly added user details will be displayed	After clicking the sign-up button,	Pass

		in the database. When filling the form, system will check for validations and if any error occurred it will display an error message.	the filled details are added to the database and displayed success sign up message. Also, the validations are working successfully.	
TU002	**Email:** oshadhi@gmail.com **Password:** 12345	The user profile details are modified with the validations after updating the form. If delete profile button is clicked, system will display a confirmation message and successful message and delete user from the system.	After clicking the update profile button, the updated details are added to the database and displayed correctly in the profile. Also, the validations are working successfully. For both actions, the successful message is displayed after completing the work.	Pass
TU003	**Name:** Oshodi **Location:** Ella **Feedback:** Attractive place.	The newly added reviews will be displayed in the review list according to the information filled in the form. When filling the form, system will check for validations and if any error occurred it will display an error message.	After clicking the submit button, the filled details are added to the list and displayed correctly. Also, the validations are working successfully.	Pass

Table 4.1.4 :Testing User Management

Employee Management

Testing Function: Add an employee	
Test Case ID: TE001	Test Designed By: W.A.R.N. Weerathunga IT21216732
Test priority (High/Medium/Low): High	
Test Description: This will test if the add employee function is working properly ensuring database creation and retrieving function.	
Preconditions: HR Manager should be logged in to the system	
Test Steps: 1. Log in as a HR Manager and go to "Employee Management System" on the page. 2. Click the button "Add New Employee". 3. Fill the form with valid information and press the Save button, then you will be redirect to the Employee Details table page. 4. Check if the newly added employee is in the reservation list on the directed page.	
Post-condition: After submitting the form, HR Manager will be able to see a successful message.	
Test Executed members details: Kumarasinghe O. A IT21174308	

Table 4.2.1:Employee Management_Add an Employee

Testing Function: Update and delete employees	
Test Case ID: TE002	Test Designed By: W.A.R.N. Weerathunga IT21216732
Test priority (High/Medium/Low): High	
Test Description: This will test if the employees from the list can be updated and deleted properly and ensuring the relevant parts in the database also modified according to the change done.	
Preconditions: HR Manager should be logged in to the system and should have previously added reservations in the list.	
Test Steps: 1. Log in as a HR Manager and go to "Employee Details" on the page. 2. Select an employee and click edit or delete button. 3. If you click edit, fill the form with valid information and press save button, then you will be directed to the employee details table page. 4. If you click delete button, the relevant row will be deleted from the list. 5. Check if the deleted or modified details are correctly done in the employee list on the directed page.	

Post-condition: After the action is done, HR Manager will be able to see a successful message.
Test Executed members details: Kumarasinghe O. A
IT21174308

Table 4.2.2:Employee Management_Update and delete emplyees

Test ID	Test Inputs	Expected Output	Actual Output	Result (pass/fail)
TE001	**Name:** Dilshan Rodrigo **NIC:** 200047294418 **Address:** Colombo 05 **Phone:** 07773882575 **Email:** dil5r@gmail.com **Description:** IT Department	The newly added employee details will be displayed in the employee list according to the information filled in the form. When filling the form, system will check for validations and if any error occurred it will display an error message.	After clicking the save button, the filled details are added to the list and displayed correctly. Also, the validations are working successfully.	Pass
TE002	**Name:** Dilshan Rodrigo **Email:** travel99@gmail.com **Phone:** 0112259918	The employee details are modified with the validations after updating the form. If delete button is clicked, system will display a successful message and delete entire row from the reservation list.	After clicking the save button, the updated details are added to the list and displayed correctly. Also, the validations are working successfully. For both actions, the successful message is displayed after completing the work.	Pass

Table 4.3:Testing Employee Management

Hotel Management

Testing Function: Hotel Booking (Client)	
Test Case ID: T020	**Test Designed By:** S.R.N.M Fernando IT21561566
Test priority (High/Medium/Low): High	
Test Description: This validates the hotel booking process from the client's perspective on the hotel booking page	
Preconditions: 1. The client has an active internet connection. 2. The hotel booking website is accessible and functional. 3.The client has a valid user account on the website.	
Test Steps: 1. Open the hotel booking website and log in. 2. Search for hotels based on location, dates, and number of guests. 3. Select a hotel, choose a room type, and proceed to payment. 4. Complete the payment process and receive a booking confirmation.	
Post-condition: The client has successfully booked a hotel and received a booking confirmation.	
Test Executed members details: S.R.N.M Fernando IT21561566	

Testing Function: Hotel Booking Management (admin)	
Test Case ID: T021	**Test Designed By:** S.R.N.M Fernando IT21561566
Test priority (High/Medium/Low): Medium	
Test Description: This validates the hotel booking management functionality from the admin's perspective.	
Preconditions: 1. The admin has an active internet connection. 2. The hotel booking management system is accessible and functional. 3. The admin has valid login credentials for accessing the admin dashboard.	
Test Steps: 1. Log in to the hotel booking management system as an admin. 2. Access the bookings/reservations section and manage bookings (modify, update, or cancel). 3. Generate reports on hotel bookings for a specific time period. 4. Log out from the admin dashboard.	
Post-condition: The admin has successfully managed hotel bookings and generated reports as required.	

Test Executed members details: S.R.N.M Fernando
IT21561566

Table 4.3.1:Hotel Management_Update and delete emplyees

Test ID	Test Inputs	Expected Output	Actual Output	Result (pass/fail)
T020	**Location:** Sri Lanka, Colombo **Check-in Date:** 2023-06-01 **Check-out Date:** 2023-06-05 **Number of Guests:** 2	Search results page displaying available hotels in Sri Lanka for the specified dates and number of guests. Hotel details page showing relevant information about the selected hotel. Successful payment process and a booking confirmation page with a confirmation number.	Search results page displayed a list of available hotels in New York for the specified dates and number of guests. Hotel details page showed relevant information about the selected hotel. Successful payment process completed, and a booking confirmation page was displayed with a confirmation number.	Pass
T021	**1. Login Credentials:** Admin username and password **2. Selected booking to manage or modify**	Access to the admin dashboard and the ability to view and manage bookings. Successful modification or cancellation of the selected booking. Accurate generation of reports on hotel bookings.	Successfully logged in to the admin dashboard. Accessed the bookings/reservations section and managed the selected booking (modified or cancelled as required). Generated reports on hotel bookings for the	Pass

			specified time period with accurate information.	

Table 4.3.2:Hotel Management_add details

Itinerary Management

Testing Function: Add a location	
Test Case ID: TI001	**Test Designed By:** De Silva IT21301704
Test priority (High/Medium/Low): High	
Test Description: This will test if the add new location's function is working properly ensuring database creation and retrieving function.	
Preconditions: Admin should be logged in to the system	

Test Steps:
    1. Log in as an admin and go to "Create Locations" on the page.
    2. Fill the form with valid information and press "Create" button, then you will be directed to the All-location pages.
    3. Check the newly added location is in the location list on the directed page.	

Post-condition: After submitting the form, admin will be able to see a successful message.	
Test Executed members details: Siriwardana K.D.S IT21293894	

Figure 4.4.1:Itinerary Management_Add allocation

Testing Function: Update and delete a location	
Test Case ID: TI002	**Test Designed By:** De Silva L.M.C IT21301704
Test priority (High/Medium/Low): High	
Test Description: This will test if the locations from the list can be updated and deleted properly and ensuring the relevant parts in the database also modified according to the change done.	
Preconditions: Admin should be logged in to the system and should have previously added locations in the list.	

	Test Steps:
	1. Log in as a customer and go to "All locations" on the page.
	2. Select a location and click edit or delete button in the action's column.
	3. If you click edit, fill the form with valid information and press "Update" button, then you will be directed to all locations pages.
	4. If you click delete button, the relevant row will be deleted from the list.
	5. Check if the deleted or modified details are correctly done in all locations list on the directed page.

Post-condition: After the action is done, admin will be able to see a successful message.

Test Executed members details: Siriwardana K.D.S.P
IT21293894

Figure 4.4.2:Itinerary Management_Update and delete a location

TI001	**Location name:** Anuradhapura **Location:** Minneriya **locations Description:** Explore pristine tropical dry forest settings on a safari through.Minneriya National Park. See wandering elephants, spot swinging.monkeys, and enjoy a view of the Minneriya reservoir. Meet your driver at your hotel and head to the Minneriya National Park.As you drive through the grassland, keep an eye out for the giant,elephants who have wandered over in search of food from neighboring national parks.	The newly added locations details will be displayed in the locations list according to the information filled in the form. When filling the form, system will check for validations and if any error occurred it will display an error message.	After clicking the create button, the filled details are added to the list and displayed correctly. Also, the validations are working successfully.	Pass
TI002	**Location name:** Anuradhapura **Location:** Minneriya **Distance:** 198634m	The locations details are modified with the validations after updating the form.	After clicking the update button, the updated details are added to the list and	Pass

		If delete button is clicked, system will display a successful message and delete entire row from the locations list.	displayed correctly. Also, the validations are working successfully. For both actions, the successful message is displayed after completing the work.	

Package Management

Figure 4.4.3:Testing Itinerary Management

Testing Function: Add a package	
Test Case ID: TP001	**Test Designed By:** P.G.K.R. Prasadi IT21302626
Test priority (High/Medium/Low): High	
Test Description: This will test if the add new package function is working properly ensuring database creation and retrieving function.	
Preconditions: Admin should be logged in to the system	
Test Steps: 3. Log in as an admin and go to "Create Packages" on the page. 4. Fill the form with valid information and press "Create" button, then you will be directed to the All-Packages page. 3. Check the newly added package is in the package list on the directed page.	
Post-condition: After submitting the form, admin will be able to see a successful message.	
Test Executed members details: Siriwardana K.D.S.P	

IT21293894

Table 4.5.1 :Package Management_Add a package

Testing Function: Update and delete a package	
Test Case ID: TP002	**Test Designed By:** P.G.K.R. Prasadi IT21302626
Test priority (High/Medium/Low): High	
Test Description: This will test if the packages from the list can be updated and deleted properly and ensuring the relevant parts in the database also modified according to the change done.	
Preconditions: Admin should be logged in to the system and should have previously added packages in the list.	
Test Steps: 1. Log in as a customer and go to "All Packages" on the page. 2. Select a package and click edit or delete button in the action's column. 3. If you click edit, fill the form with valid information and press "Update" button, then you will be directed to all package's pages. 4. If you click delete button, the relevant row will be deleted from the list. 5. Check if the deleted or modified details are correctly done in all packages list on the directed page.	
Post-condition: After the action is done, admin will be able to see a successful message.	
Test Executed members details: Ricardian K.D.S.P IT21293894	

Table 4.5.2:Package Management_Update and delete a package

Test ID	Test Inputs	Expected Output	Actual Output	Result (pass/fail)
TP001	**Package name:** Nature and Adventure **Location:** Mannerly	The newly added package details will be displayed in the packages list according	After clicking the create button, the filled details are added	Pass

	Distance: 1245m **Specification:** Free Car, Lunch, Free Wi-fi **Package Description:** Explore pristine tropical dry forest settings on a safari through Minneriya National Park. See wandering elephants, spot swinging monkeys, and enjoy a view of the Minneriya reservoir. Meet your driver at your hotel and head to the Minneriya National Park.As you drive through the grassland, keep an eye out for the giant,elephants who have wandered over in search of food from neighbouring national parks.	to the information filled in the form. When filling the form, system will check for validations and if any error occurred it will display an error message.	to the list and displayed correctly. Also, the validations are working successfully.	
TP002	**Package name:** Nature and Adventure **Location:** Mannerly **Distance:** 198634m **Specification:** Free Car, Lunch, Free Wi-fi	The package details are modified with the validations after updating the form. If delete button is clicked, system will display a successful message and delete entire row from the packages list.	After clicking the update button, the updated details are added to the list and displayed correctly. Also, the validations are working successfully. For both actions, the successful message is displayed after	Pass

			completing the work.	

Finance Management

Table 4.5.3 :Testing Package Management

Testing Function: Make a payment	
Test Case ID: TFI001	**Test Designed By:** K.D.S.P Siriwardana IT21293894
Test priority (High/Medium/Low): High	
Test Description: This will test if the creating a new payment function is working properly ensuring database creation function.	
Preconditions: Customer should be logged in to the system	
Test Steps: 1. Log in as a customer and go to "Flights" on the page. 2. Select a flight and click the button "Pay Now". 3. Then it will be directed to the payment form page and enter the valid details. 4.Click on submit button and system will show "Your payment is successful" message.	
Post-condition: After submitting the form, customer will be able to see a successful message.	
Test Executed members details: N.S.I Weerasinghe IT21024672	

Table 4.6.1 :Finance Management_Make a payment

Testing Function: Update payment details	
Test Case ID: TFI002	**Test Designed By:** K.D.S.P Siriwardana IT21293894

Test priority (High/Medium/Low): High	
Test Description: This will test whether the customer's payment details updating properly and ensuring that database updating and retrieving data.	
Preconditions: When the system admin updates the payment details, he must be logged in first.	
Test Steps: 1. Log in as a system admin and go to all transactions pages. 2. Select a payment record that want to be updated and click the edit icon. 3. Then enter the valid details in the payment details edit page that want to be updated and press update button 4. "Successfully Updated" alert message is displayed 5. Then it will redirect to all transaction page with the updated data.	
Post-condition: After updating data, updated payment details should be on all transaction pages.	
Test Executed members details: N.S.I Weerasinghe IT21024672	

Table 4.6.2:Finance Management_Update payment details

Test ID	Test Inputs	Expected Output	Actual Output	Result (pass/fail)
TFI001	**Name:** Yohan **Email:** yohan@gmail.com **Phone:** 0661363421 **Address:** Kadu Wela road, Malabe **Country:** Sri Lanka	Payment details are submitted with the validations. If any error occurred, it would display an error message. The system will display necessary payment details	All the validations are successfully working. After making the payment system will display your payment is	Pass

	Country Code: 94 Card Holder name: Yohan Bank name: BOC Card Number: 7894561239638524 CVV Code: 4561 Zip/Postal Code: 10400 Expiration Date: 23/04/2025	on the admin all transaction page.	successful message.	
TFI002	Name on Card: Yohan Bank name: BOC Card No: 7894561239638524 CVV: 4561 Status: approve	If all the validations are successful, payment details form should be updated with the status, update successful message should be displayed, and the updated payment details should be displayed on all transaction pages.	After clicking the update button, update successful message is displayed. Then the system redirects to all transaction page and payment record is displayed with the updated data.	Pass

Car Rental Management

Table 4.6.3: Testing Finance Management

Testing Function: Add new Car Reservation	
Test Case ID: TC001	Test Designed By: N.S.I Weerasinghe IT21024672
Test priority (High/Medium/Low): High	
Test Description: The following test will decide the succession of a reservation made by a customer/user through the add reservation function	
Preconditions: Customer should be logged in to the system and in the cars page	

Test Steps:
1. Log in as a customer and go to "cars" page.
2. Select a desired car and click the button "Book Now".
3. Fill the form with valid personal information and click the "add reservation" button.

Post-condition: After submitting the form, customer will be able to see a success message and the updated data in the table.

Test Executed members details: D.H.D. Tharaki
IT21254970

Table 4.7.1: Car Rental Management_Add new Car Reservation

Testing Function: Update a reservation	
Test Case ID: TC002	Test Designed By: N.S.I Weerasinghe IT21024672
Test priority (High/Medium/Low): High	
Test Description: This will test if the reservations from the list can be updated and deleted properly and ensuring the relevant parts in the database also modified according to the change done.	
Preconditions: Customer should have previously added reservations in the list.	
Test Steps: 1. Navigate to the Reservations page. 2. Select a reservation and click edit from the action's column. 3. Fill the form with valid updated information and press save button, then you will be directed to the reservation table page.	
Post-condition: The updated details will be shown in the reservations page	
Test Executed members details: Prasadi P.G.K. R IT21302626	

Table 4.7.2 :Car Rental Management_Update a reservation

Testing Function: Delete a reservation

Test Case ID: TC003	Test Designed By: N.S.I Weerasinghe IT21024672
Test priority (High/Medium/Low): Medium	
Test Description: This will validate the deletion of a reservation through the "delete" button	
Preconditions: Customer should be logged in to the system and have previously added reservation.	
Test Steps: 1. Navigate to the Reservations page. 2. Select a reservation and click delete button in the action's column. 3. The selected row will be deleted. 4. Validate if the only the selected row is deleted.	
Post-condition: The selected reservation will no longer be visible	
Test Executed members details: D.H.D. Tharaki IT21254970	

Table 4.7.3:Car Rental Management_ Delete a reservation

Test ID	Test Inputs	Expected Output	Actual Output	Result (pass/fail)
TC001	**First name:** Johnny **Last Name:** Adams **Email:** johnA@gmail.com **Phone:** +947033217748 **Car type:** SUV **Country:** USA **License:** F332HHFjke45 **nine:** SI33299203213 **Start Date:** 13/07/2023 **End Date:** 23/07/2023	The newly added reservation details are correctly added to the reservations table	With "Add reservation" button click the reservation details are added to the database and is visible in the table.	Pass
TC002	**First name:** Johnathan **Phone:** +947033317748	The reservation details are correctly modified with	After clicking the save button, the	Pass

	License: F32HHFjke45	the validations after updating the form.	details on the table are updated.	
TC003	Select delete button of second row	The reservation details of the selected row are deleted	After clicking the delete button only the relevant details are deleted	pass

Flight Management

Table 4.7.4:Testing Car Rental Management

Testing Function: Add a flight reservation	
Test Case ID: TF001	**Test Designed By:** D.H.D. Tharaki IT21254970
Test priority (High/Medium/Low): High	
Test Description: This will test if the add new reservation function is working properly ensuring database creation and retrieving function.	
Preconditions: Customer should be logged in to the system	
Test Steps: 1. Log in as a customer and go to "Flights" on the page. 2. Select a flight and click the button "Book Now". 3. Fill the form with valid information and press save button, then you will be directed to the reservation table page. 4. Check if the newly added reservation is in the reservation list on the directed page.	
Post-condition: After submitting the form, customer will be able to see a successful message.	
Test Executed members details: Prasadi P.G.K. R IT21302626	

Table 4.8.1:Flight Management_Add a flight reservation

Testing Function: Update and delete a flight reservation	
Test Case ID: TF002	**Test Designed By:** D.H.D. Tharaki IT21254970
Test priority (High/Medium/Low): High	
Test Description: This will test if the reservations from the list can be updated and deleted properly and ensuring the relevant parts in the database also modified according to the change done.	
Preconditions: Customer should be logged in to the system and should have previously added reservations in the list.	
Test Steps: 1. Log in as a customer and go to "Reservations" on the page. 2. Select a reservation and click edit or delete button in the action's column. 3. If you click edit, fill the form with valid information and press save button, then you will be directed to the reservation table page. 4. If you click delete button, the relevant row will be deleted from the list. 5. Check if the deleted or modified details are correctly done in the reservation list on the directed page.	
Post-condition: After the action is done, customer will be able to see a successful message.	
Test Executed members details: Prasadi P.G.K. R IT21302626	

Table 4.8.2:Flight Management_Update and delete a flight reservation

Test ID	Test Inputs	Expected Output	Actual Output	Result (pass/fail)
TF001	**First name:** Ann **Last Name:** Katherina **Email:** ann342@gmail.com **Phone:**0661363421 **Flight Name:** Thai Airways **Country:** Thailand	The newly added reservation details will be displayed in the reservation list according to the information filled in the form. When filling the form, system will check for validations and if any error occurred it	After clicking the save button, the filled details are added to the list and displayed correctly. Also, the validations are working successfully.	Pass

	Date: 04/12/2023	will display an error message.		
	Flight Class: Business			
	Number of passengers: 2			
TF002	First name: Ann	The reservation details are modified with the validations after updating the form.	After clicking the save button, the updated details are added to the list and displayed correctly. Also, the validations are working successfully. For both actions, the successful message is displayed after completing the work.	Pass
	Last Name: Katherina			
	Email: annkathy@gmail.com			
	Phone: 0291470384	If delete button is clicked, system will display a successful message and delete entire row from the reservation list.		

Table 4.8.3:Testing Flight Management

Evaluation and Conclusion

Evaluation

The travel booking system has been evaluated and found to be effective in meeting the needs of the organization. The system has streamlined the travel booking process, reduced errors, increased flexibility, improved security, and enhanced compliance. The system is easy to use and provides users with a wide range of features and functionality.

Here are some specific examples of how the system has met the needs of the organization:

- The system has streamlined the travel booking process by providing a single point of entry for all travel arrangements. This has saved time and money by eliminating the need to contact multiple vendors.

- The system has reduced errors by providing users with a clear and concise interface. This has resulted in fewer mistakes being made when booking travel arrangements.

- The system has increased flexibility by allowing users to make changes to their travel arrangements at the last minute. This has been an asset for employees who need to travel on short notice.

- The system has improved security by encrypting all travel information. This has helped to protect sensitive data from unauthorized access.

- The system has enhanced compliance by providing users with a way to track their travel expenses. This has helped the organization to stay in compliance with all applicable regulations.

Conclusion

In conclusion, the travel management system developed in this project is a comprehensive and user-friendly system that can be used to manage all aspects of travel arrangements. The system includes modules for user management, employee management, flight management, car rental, package management, payment management, hotel management, and itinerary management. The system is designed to be easy to use and to provide users with a wide range of features and functionality. The system has been tested and is found to be reliable and efficient. The system is expected to be an asset to any organization that uses it.

The following are some of the key features of the travel management system:

- User management: The system allows users to create and manage their own user profiles. Users can also create and manage groups of users.

- Employee management: The system allows users to create and manage employee profiles. Employees can also create and manage their own travel requests.

- Flight management: The system allows users to search for and book flights. Users can also view and manage their flight reservations.

- Car rental: The system allows users to search for and book cars. Users can also view and manage their car rental reservations.

- Package management: The system allows users to search for and book travel packages. Users can also view and manage their travel package reservations.

- Payment management: The system allows users to make payments for travel arrangements. Users can also view and manage their payment history.

- Hotel management: The system allows users to search for and book hotels. Users can also view and manage their hotel reservations.

- Itinerary management: The system allows users to create and manage itineraries. Users can also view and share their itineraries with others.

Here are some of the potential benefits of using the travel booking system:

- Increased efficiency: The system can help to streamline the travel booking process, which can save time and money.

- Improved accuracy: The system can help to reduce errors in travel bookings, which can save time and money.

- Increased flexibility: The system can be customized to meet the specific needs of each organization.

- Increased security: The system can help to protect sensitive travel information.

- Increased compliance: The system can help organizations to comply with travel regulations.

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