



Sri Lanka Institute of Information Technology

## Park and Go Management System Project Report

Information Technology Project 2021

Project ID: - ITP2021\_S2\_B01\_G03  
Group – 1.1 (Weekday)

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13.10.2021

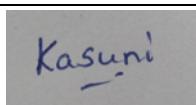
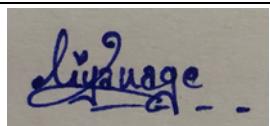
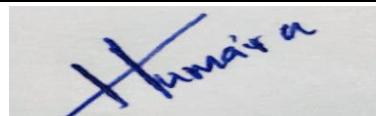
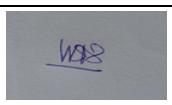
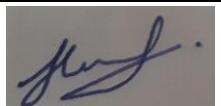
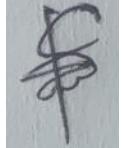
# Declaration

We declare that this project report or part of it was not a copy of a document done by any organization, university any other institute or a previous student project group at SLIIT and was not copied from the Internet or other sources.

## Project Details

Project Title	Park and Go Management System
Project ID	ITP2021_S2_B01_G03

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# **Abstract**

Through this project we have designed an automated park and go management system. The hassle people have to face every day at parking lots in order to get their ticket and make the payment and to find a mode of transport from the parking lot to the destination, was the main reason behind designing such a system. Also, we can ease the traffic congestion experienced on roads during the morning and evening peak hours throughout the week from this system. That is also a main advantage we can gain from this system. Therefore, by developing this project under seven different functions, we have automated the processes of booking a parking lot, making the payment and also booking a shuttle beforehand.

The seven functions are as follows;

1. Parking slot management
2. Booking management
3. Shuttle and route management (Transport Management)
4. Employee management
5. Salary management
6. Registration of users, login and user profiles
7. Ticketing system for unregistered, walk-in customers

This automated park and go system over comes the issue of time consuming queues at parking lot toll booths to get a parking slot and make the payment, and having to wait a long time for a bus to reach your destination.

In order to develop this system, the MERN technology was used while providing necessary access control to the administrators of the system as well as user friendly and simple interfaces

## **Acknowledgement**

This project would not have been possible without the exceptional support of our instructor for the Information Technology Project, Ms Archchana Kugathasan. Her knowledge, enthusiasm and willingness to help us whenever needed has been an inspiration to us and has kept us on the right track during the time of developing this project.

We would also like to express our special thanks to Ms Thilini Jayasekera who also gave us valuable advice on different ways that we could improve our project.

Last but not least, we would also like to extend our thanks and gratitude to all instructors and lecturers that offered us their help and direction, promptly resulting in us completing this project as a great triumph. This project is a result of all of the help and advice they provided us with.

# Table of Contents

<b>Abstract.....</b>	i
<b>Acknowledgement.....</b>	iv
<b>Declaration.....</b>	i
<b>Table of Contents .....</b>	v
<b>List of Figures.....</b>	vi
<b>List of Tables .....</b>	viii
<b>List of Acronyms and Abbreviations .....</b>	viii
<b>1. Introduction.....</b>	1
1.1    Problem Statement.....	1
1.2    Product Scope.....	2
1.3    Project Report Structure .....	3
<b>2. Methodology .....</b>	4
2.1    Requirements and Analysis .....	4
2.2    Design.....	Error! Bookmark not defined.
2.3    Implementation.....	89
2.4    Testing .....	Error! Bookmark not defined.
<b>3. Conclusion .....</b>	3
<b>4. References .....</b>	4
<b>Appendix A: Design Diagrams .....</b>	5

# List of Figures

<b>Figure Number</b>	<b>Name of the figure</b>	<b>Page</b>
Figure 2.1.1 - 1	Use Case Diagram – User Management	4
Figure 2.1.1 - 2	Use Case Diagram – Booking Management	5
Figure 2.1.1 - 3	Use Case Diagram – Parking Slot Management	6
Figure 2.1.1 - 4	Use Case Diagram – Transport Management	7
Figure 2.1.1 - 5	Use Case Diagram – Employee Management	8
Figure 2.1.1 - 6	Use Case Diagram – Salary Management	9
Figure 2.1.1 - 7	Use Case Diagram – Ticket Management	10
Figure 2.1.2 - 1	Activity Diagram – User Management	11
Figure 2.1.2 - 2	Activity Diagram – Customer - Booking Management	12
Figure 2.1.2 - 3	Activity Diagram – Admin - Parking Slot Management	13
Figure 2.1.2 - 4	Activity Diagram – Transport Management	14
Figure 2.1.2 - 5	Activity Diagram – Employee Management	15
Figure 2.1.2 - 6	Activity Diagram – Salary Management	16
Figure 2.1.2 - 7	Activity Diagram – Ticket Management	17
Figure 2.2.1 - 1	Entity Relationship Diagram	18
Figure 2.2.2 - 1	Class Diagram	19
Figure 2.2.3 - 1	High level Architecture Diagram	20
Figure 2.2.4 - 1	Sequence Diagram – User Management	21
Figure 2.2.4 - 2	Sequence Diagram – Customer – Booking Management	22
Figure 2.2.4 - 3	Sequence Diagram – Admin – Parking Slot Management	23
Figure 2.2.4 - 4	Sequence Diagram – Transport Management	24
Figure 2.2.4 - 5	Sequence Diagram – Employee Management	25
Figure 2.2.4 - 6	Sequence Diagram – Salary Management	26
Figure 2.2.4 - 7	Sequence Diagram – Ticketing Management	27
Figure 2.2.4 - 8	Sequence Diagram - Login	28
Figure 2.2.5 - 1	Communication Diagram – User Management	29
Figure 2.2.5 – 2	Communication Diagram – Booking Management	30
Figure 2.2.5 – 3	Communication Diagram – Parking Slot Management	31
Figure 2.2.5 – 4	Communication Diagram – Transport Management	32
Figure 2.2.5 – 5	Communication Diagram – Employee Management	33
Figure 2.2.5 – 6	Communication Diagram – Salary Management	34
Figure 2.2.5 – 7	Communication Diagram – Ticketing Management	35
Figure 2.2.6 - 1	State Chart Diagram – Admin-User Management	36
Figure 2.2.6 – 1.1	State Chart Diagram – Generate Report- User Management	37
Figure 2.2.6 - 2	State Chart Diagram – Customer - Booking Management	38

Figure 2.2.6 - 3	State Chart Diagram – Admin – Parking Slot Management	39
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Figure 2.2.6 - 4	State Chart Diagram – Transport Management	40
Figure 2.2.6 - 5	State Chart Diagram – Employee Management	41
Figure 2.2.6 - 6	State Chart Diagram – Salary Management	42
Figure 2.2.6 - 7	State Chart Diagram – Ticketing Management	43
Figure 2.2.7 - 0 - 1.1	Interface – Login – User Management	44
Figure 2.2.7 - 0 - 1	Interface – Add – User Management	45
Figure 2.2.7 - 0 - 2	Interface – Edit – User Management	46
Figure 2.2.7 - 0 - 3	Interface – Delete – User Management	47
Figure 2.2.7 - 0 - 4	Interface – View – User Management	47
Figure 2.2.7 - 0 - 5	Interface – Search – User Management	47
Figure 2.2.7 - 0 - 6	Interface – Report – User Management	48
Figure 2.2.8 - 0 - 7	Interface – Add – Booking Management	49
Figure 2.2.8 - 0 - 8	Interface – Edit – Booking Management	50
Figure 2.2.8 - 0 - 9	Interface – Delete – Booking Management	51
Figure 2.2.8 - 0 - 10	Interface – View – Booking Management	52, 53
Figure 2.2.8 - 0 - 11	Interface – Search – Booking Management	54
Figure 2.2.8 - 0 - 12	Interface – Report – Booking Management	55
Figure 2.2.9 - 0 - 13	Interface – Add – Parking Slot Management	56
Figure 2.2.9 - 0 - 14	Interface – Edit – Parking Slot Management	56
Figure 2.2.9 - 0 - 15	Interface – View – Parking Slot Management	57
Figure 2.2.9 - 0 - 16	Interface – Delete – Parking Slot Management	57
Figure 2.2.9 - 0 - 17	Interface – Search – Parking Slot Management	58
Figure 2.2.9 - 0 - 18	Interface – Report – Parking Slot Management	58
Figure 2.2.9 - 0 - 19	Interface – Add – Transport Management	59, 60, 61
Figure 2.2.9 - 0 - 20	Interface – Edit – Transport Management	62, 63, 64
Figure 2.2.9 - 0 - 22	Interface – View/Search Busses – Transport Management	67
Figure 2.2.9 - 0 - 21	Interface – Delete – Transport Management	65, 66
Figure 2.2.9 - 0 - 23	Interface – View/Search Routes – Transport Management	68
Figure 2.2.9 - 0 - 24	Interface – View/Search Staff – Transport Management	69
Figure 2.2.9 - 0 - 25	Interface – Add – Employee Management	70
Figure 2.2.9 - 0 - 26	Interface – Edit – Employee Management	71, 72
Figure 2.2.9 - 0 - 27	Interface – View – Employee Management	73
Figure 2.2.9 - 0 - 28	Interface – Delete – Employee Management	73
Figure 2.2.9 - 0 - 29	Interface – Search – Employee Management	74
Figure 2.2.9 - 0 - 30	Interface – Report – Employee Management	75
Figure 2.2.9 - 0 - 31	Interface – Add – Salary Management	76, 77
Figure 2.2.9 - 0 - 32	Interface – Edit – Salary Management	78
Figure 2.2.9 - 0 - 33	Interface – View – Salary Management	79
Figure 2.2.9 - 0 - 34	Interface – Delete – Salary Management	80
Figure 2.2.9 - 0 - 35	Interface – Search – Salary Management	81, 82
Figure 2.2.9 - 0 - 36	Interface – Report – Salary Management	83
Figure 2.2.9 - 0 - 37	Interface – Pay Slip – Salary Management	84, 85

Figure 2.2.9 - 0 - 38	Interface – Add – Ticketing Management	86
Figure 2.2.9 - 0 - 39	Interface – Edit – Ticketing Management	87
Figure 2.2.9 - 0 - 40	Interface - View – Ticketing Management	87
Figure 2.2.9 - 0 - 41	Interface – Delete – Ticketing Management	87
Figure 2.2.9 - 0 - 42	Interface – Search – Ticketing Management	87
Figure 2.2.9 - 0 - 43	Interface – Report – Ticketing Management	88

## List of Tables

Table Number	Name of the table	Page
Table 2.4 - 1	Table – Employee Management	90
Table 2.4 - 2	Table – Employee Management	
Table 2.4 - 3	Table – Employee Management	
Table 2.4 - 4	Table –Parking Slot Management	95
Table 2.4 - 5	Table – Parking Slot Management	
Table 2.4 - 6	Table – Parking Slot Management	
Table 2.4 - 7	Table – Salary Management	98
Table 2.4 - 8	Table – Salary Management	
Table 2.4 - 9	Table – Salary Management	
Table 2.4 - 10	Table – Booking Management	101
Table 2.4 - 11	Table – Booking Management	
Table 2.4 - 12	Table – Booking Management	
Table 2.4 - 13	Table – User Management	106
Table 2.4 - 14	Table – User Management	
Table 2.4 - 15	Table – User Management	
Table 2.4 - 16	Table – Ticketing Management	110
Table 2.4 - 17	Table – Ticketing Management	
Table 2.4 - 18	Table – Ticketing Management	
Table 2.4 - 19	Table – Transport Management	113
Table 2.4 - 20	Table – Transport Management	
Table 2.4 - 21	Table – Transport Management	

## List of Acronyms and Abbreviations

Abbreviation	Meaning
ER	Entity Relationship

# 1. Introduction

## 1.1 Problem Statement

In the modern society where every person is busy and fighting for time, it was brought to our attention that people spend a long time waiting for a spot in a parking lot, to pay for a parking slot ticket and to wait for the bus to arrive, so that they can reach their relevant destination.

When researching the issue, we found out through a study done by the INRIX that an average American driver spends 17 hours a year looking for a parking spot. That searching time cost the driver \$345 in wasted time, gas and emission. It was later revealed that these data take even higher values in Sri Lanka because of the high number of vehicles proportionate to the very low number of available parking spots. In Sri Lanka, the number of vehicles rise over one million in numbers per year while the number of available parking lots remain the same. In addition to the large number of vehicles already owned by residents in Colombo, over 500,000 more vehicles enter Colombo every day. This will lead to heavy traffic congestion on roads during the morning and evening peak hours throughout the week. All of these vehicles struggle to find a parking space.

By developing the park and go management system, we can ease the traffic congestion on roads by making it possible not only for registered users to book a parking slot beforehand, but for registered users to also book a shuttle previously to reach the desired location after they have parked their cars in the parking lot, we hope to achieve the following:

- **Faster processes:** Having to stand at the gate and wait for the human guard to finish dealing with one person before going ahead can be daunting and time-wasting. One of the advantages of a parking management system is that you can do this very quickly. Once a registered user has booked a parking slot beforehand, all he/she has to do is provide the electronic bill given at the time of the booking at the parking lot booth, and go right in and park their car. No more waiting in a long line of cars every morning.
- **Providing options to unregistered Customers:** Walk in customers can also use the services of the Parking system by making a payment at the toll booth. They can buy the ticket when entering to the parking lot and the price will be calculated using the duration that the vehicle is occupying the slot. The ticketing system is applied only for Walk in customers (unregistered customers) as they are the only ones purchasing a ticket at the booth by paying via cash or card.
- **Reports:** The modern automated parking management system also involves reporting. Not only does it make things easier for users, but managers also have a reduced workload when it comes to monitoring and managing parking spaces. They can generate reports on the vehicles in the building, as well as the time of access, all employees, all users, all shuttles and routes etc. The need for paper and pencil way of recording is no longer necessary when things are automated.
- **Decrease in cost:** The packages provided for users through this park and go system, makes it possible for users to spend less money than they would if they were parking at a public parking slot, for an hourly charge.

## 1.2 Product Scope

By developing this project, we will be developing a park and go system that can be used at any parking lot. The project was developed on the following capacities:

**Manage all Employees in the system** - Has the right to Add new employees, remove employees, Update employee Details and when needed he should be able to retrieve the information of employees. (Search the needed employee and retrieve information about that employee) In addition a separate report will be handled to store the relevant employee details. Also, the server role should be able to view his/her profile from the system and should be able to edit his details when needed. To do the above task he/she should login to the system with their login credentials.

**Manage Parking Slots** – This function manages all parking slots in the system (For both Booking system and Ticketing System). Assigning of the parking space can be done by giving parking space type, parking slot number, car number, entry date and time. After assigning the relevant space the slot status will be occupied, otherwise it will be an available space. We can update the parking slot and if we want to release the slot, we can delete it accordingly. Furthermore, we can get a full detailed report regarding the slots which are available, and which are occupied.

**Manages Salary of all employees.** This function manages the salaries of all employees in the system. This would include details of employee's salaries, bonuses, deductions, net pay, and other factors. This can monitor absences, leaves, hours worked, overtime and calculate the amount an employee should be paid for the pay period. This will also generate a salary statement report.

**Manage Customer booking** - Manage bookings of the customer. The booking is done by getting customer name (registered), contact number, vehicle model, number plate details, payment amount, date from, date to and other details. The system (parking slot management system) will assign a slot for the customer according to the availability of slots. The customer can update the dates that they have booked and delete the booking if they want. Once the customer logs into his/her account they can view their booking details. The regular customers can obtain promotions and special seasonal offers as well. This function also allocates a bus to the customer to reach his/her destination and this fee will be included to the booking fee as well.

**Manage the Registered Customers in the system.** Customers are advised to register with the system especially if they plan to use the services regularly. For the customer to make the monthly payment for the parking space, he/she should login to the system with the credentials he/she provided when registering. The details provided at registration and the arrival and departure times can be view once the customer logs into his/her account.

**Manage the ticketing system in the company.** This function is related only for walk-in customers. The tickets are issued only for the customers who are not registered with the system (walk-in customers) The walk-in customer should buy a ticket and the price will be calculated to the duration time the customer spent again to take his/her own vehicle from the parking slot. When entering the vehicle, system will give a specific time to take his/her vehicle. If the customer needs to extend the given time by the system, he/she should inform the system admin otherwise an additional amount will be charged from the customer. Once the walk-in customer leaves the parking lot with his/her vehicle, the system can delete his/her record.

**Manage the transportation of customers.** For this we use private buses. Once the customer parks the vehicle in the parking lot, he/she can use a private bus to reach the destination from there. Here there is a separate driver and a conductor for each bus. Transportation management includes keeping track of bus drivers, conductors and details of the busses. This also includes managing all available routes for the relevant buses. Any Customer can also view the route details through the web application.

**By the assortment of all the above capacities, this system provides user friendliness, simple and attractive interfaces that user can easily understand as well as effective report generation.**

## **1.3 Project Report Structure**

### **Chapter 1:**

This section is mainly focused on the reasons why we implemented this system and the advantages we can gain from our system. Also, this includes the overall project plan, problem statement and product scope in detail.

### **Chapter 2:**

This section is consisting with Methodology which include the explanations of Requirement Analysis, Design, Implementation and Testing. Requirement Analysis is covered along with Use Case Diagrams and Activity Diagrams. Design part is explained using the aid of ER Diagram, Sequence Diagrams, State Chart Diagrams and Communication Diagrams. Module structure is explained in the Implementation part. Testing phrases and the testing results are included in the Testing section.

### **Chapter 3:**

This section is consisting with the information of the completion of the project and evaluation.

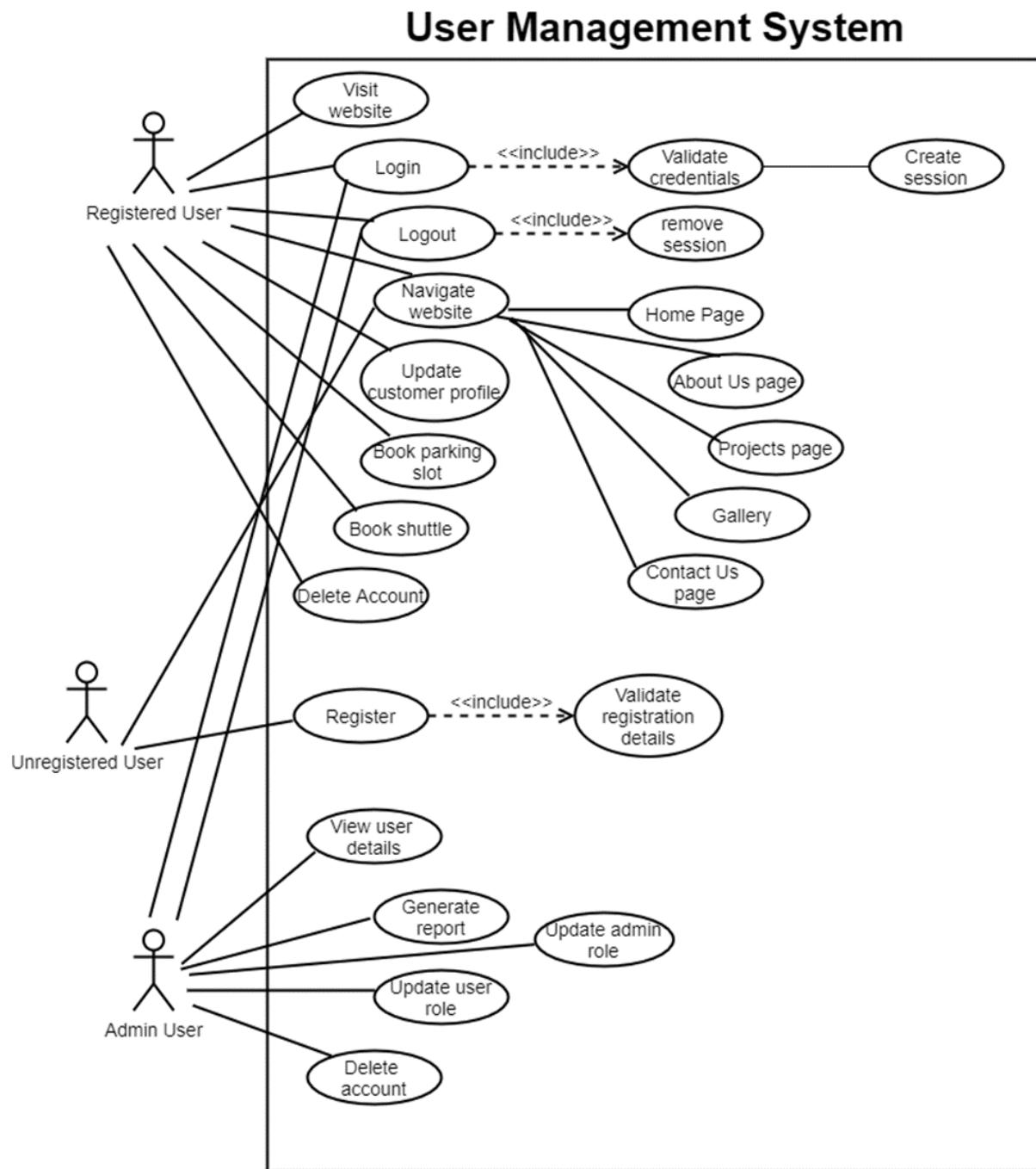
### **Chapter 4:**

Includes the references used for the creation of the project report.

## 2. Methodology

### 2.1 Requirements and Analysis

#### 2.1.1 – 1 Use Case Diagrams



## Booking Management

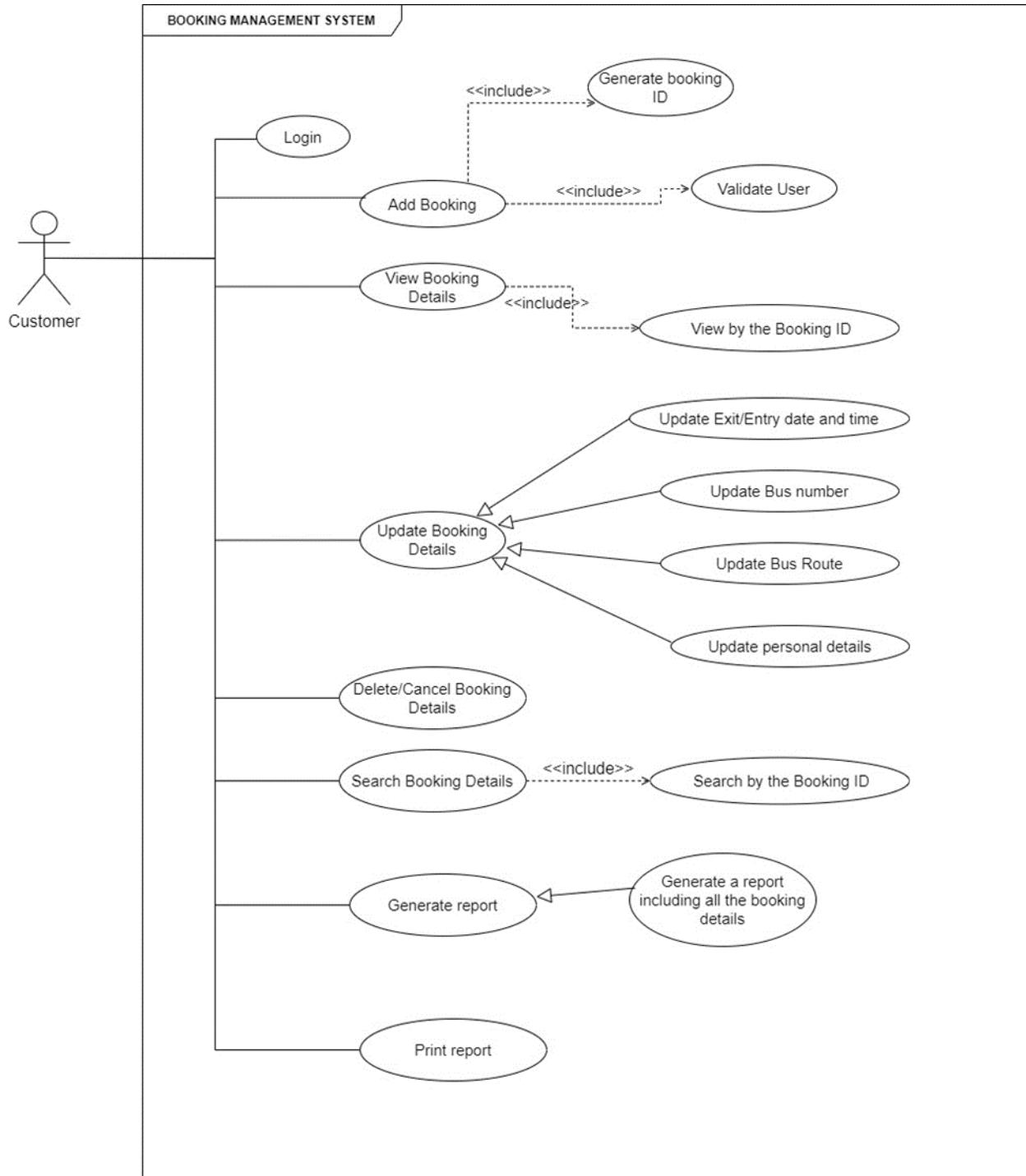


Figure 2.1.1 – 2: Use Case Diagram – Parking Slot

## Parking Slot Management

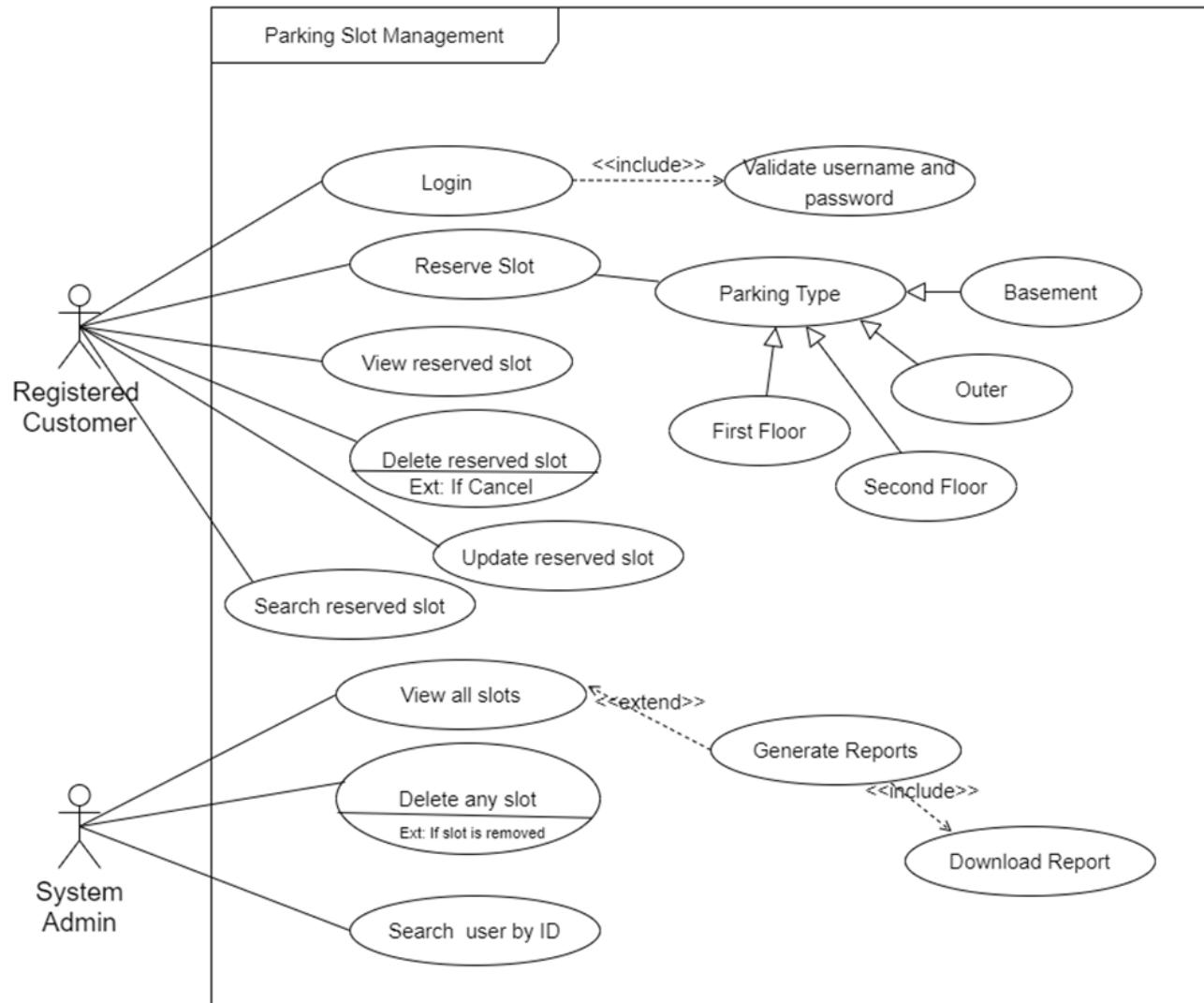


Figure 2.1.1 – 3: Use Case Diagram – Parking Slot

# Transport Management System

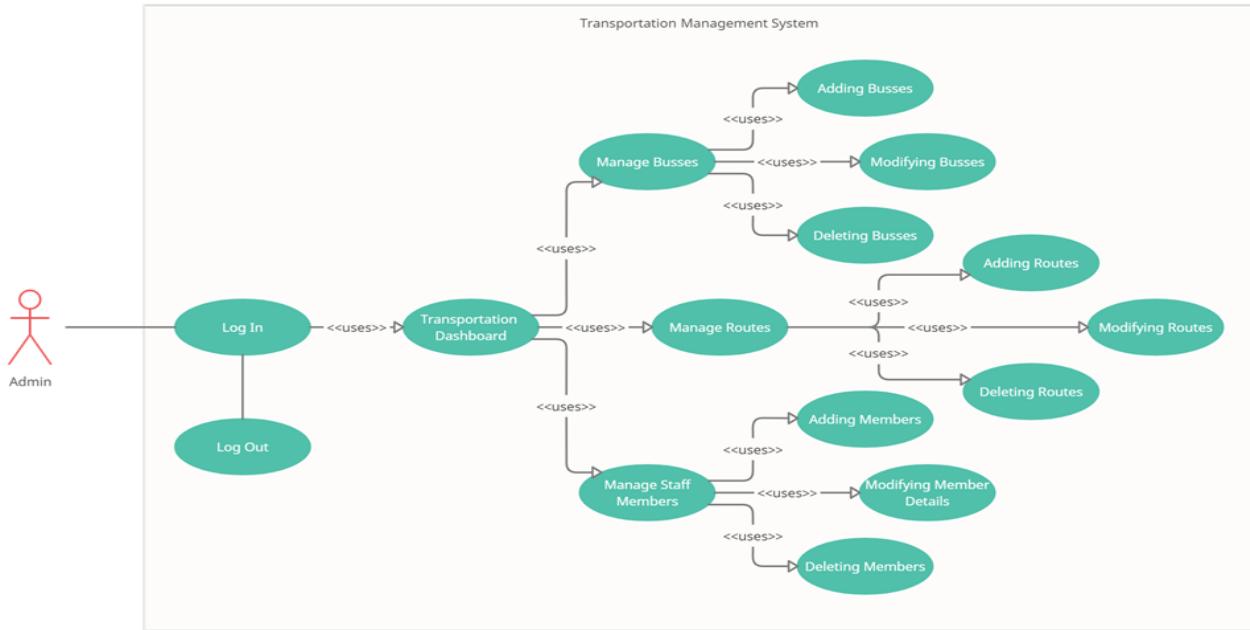


Figure 2.1.1 – 4: Use Case Diagram – Parking Slot

## Employee Management

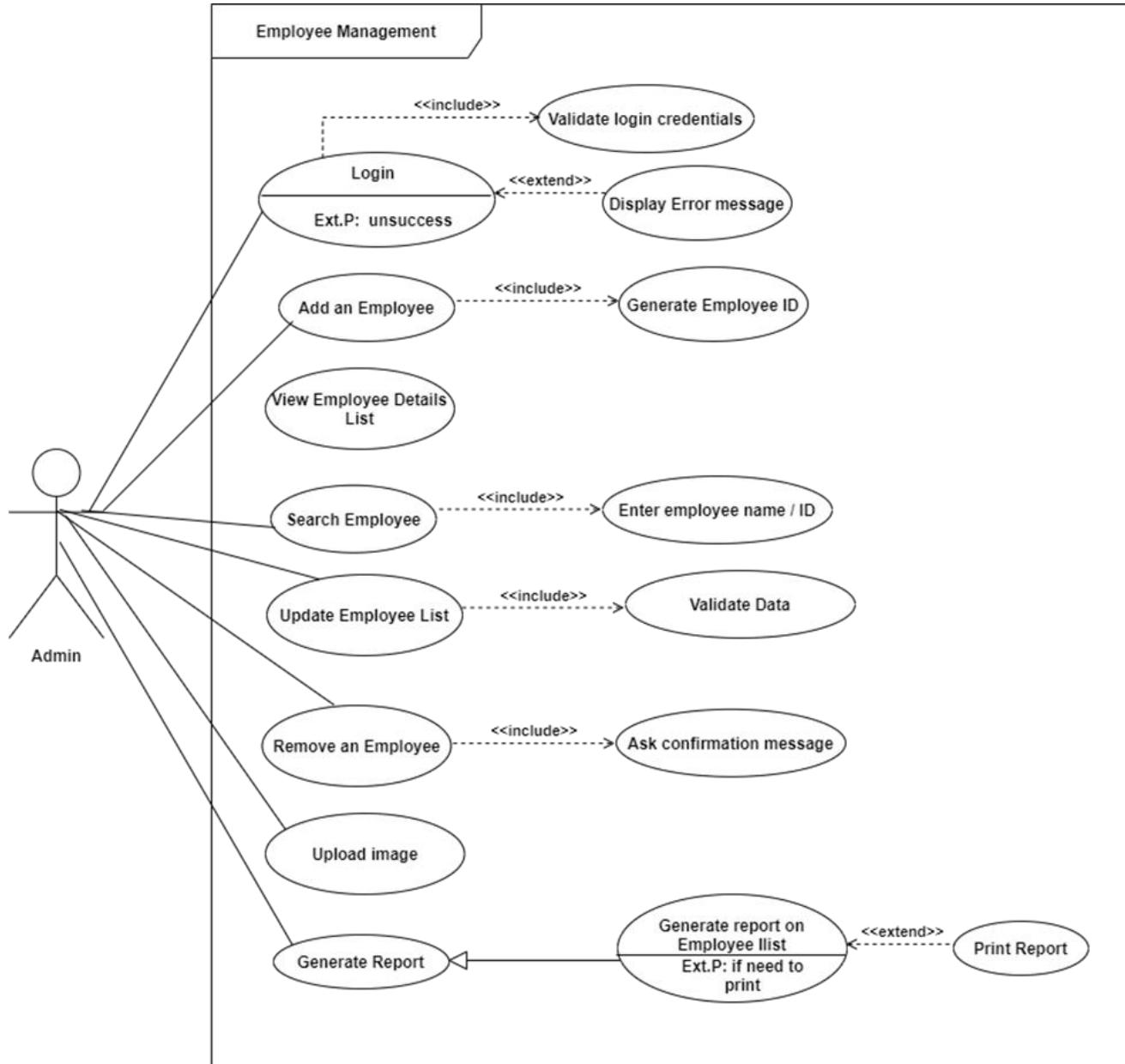


Figure 2.1.1 – 5: Use Case Diagram – Parking Slot

## Employee Salary Management

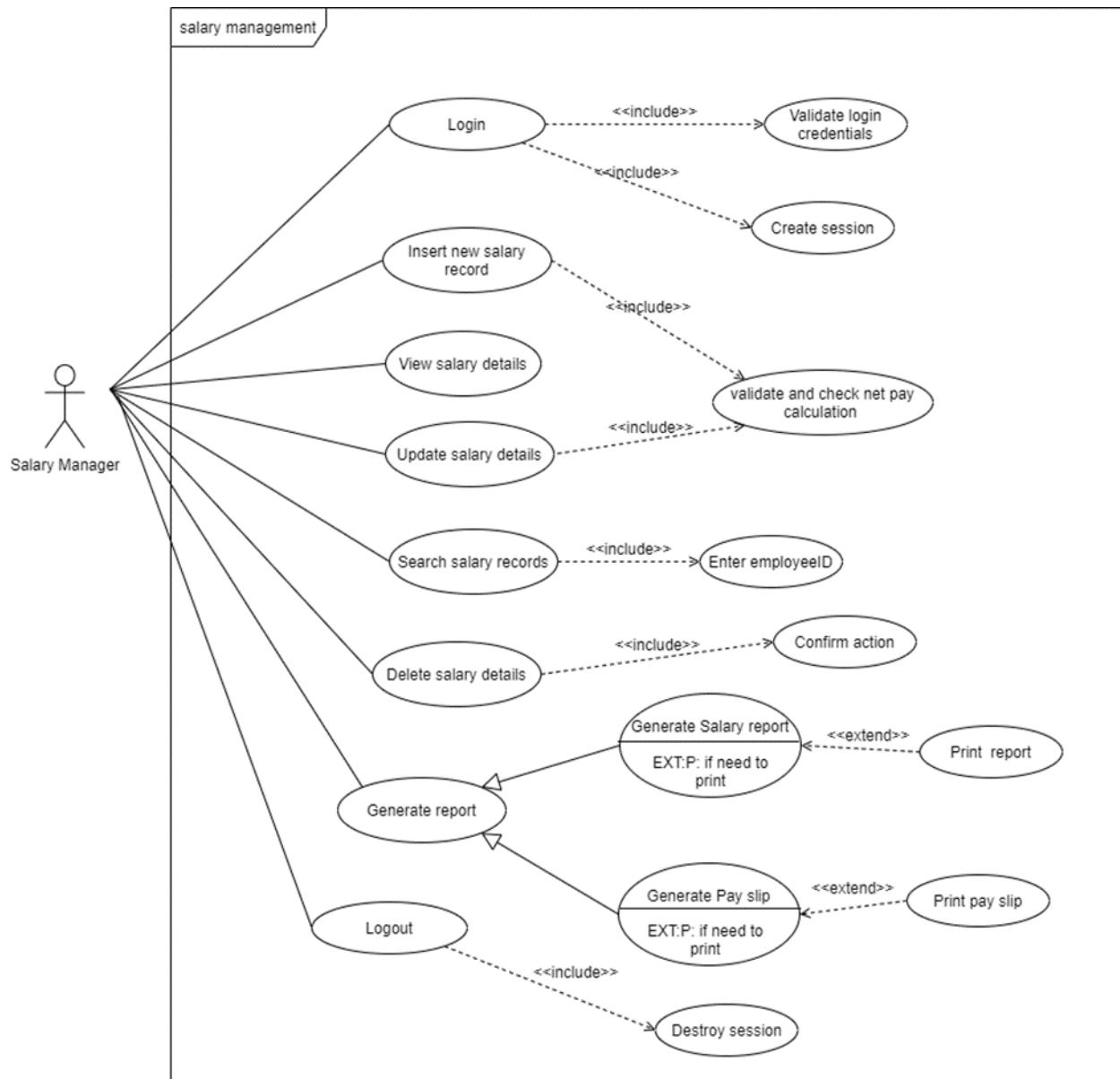


Figure 2.1.1 – 6: Use Case Diagram – Parking Slot

## Ticket Management

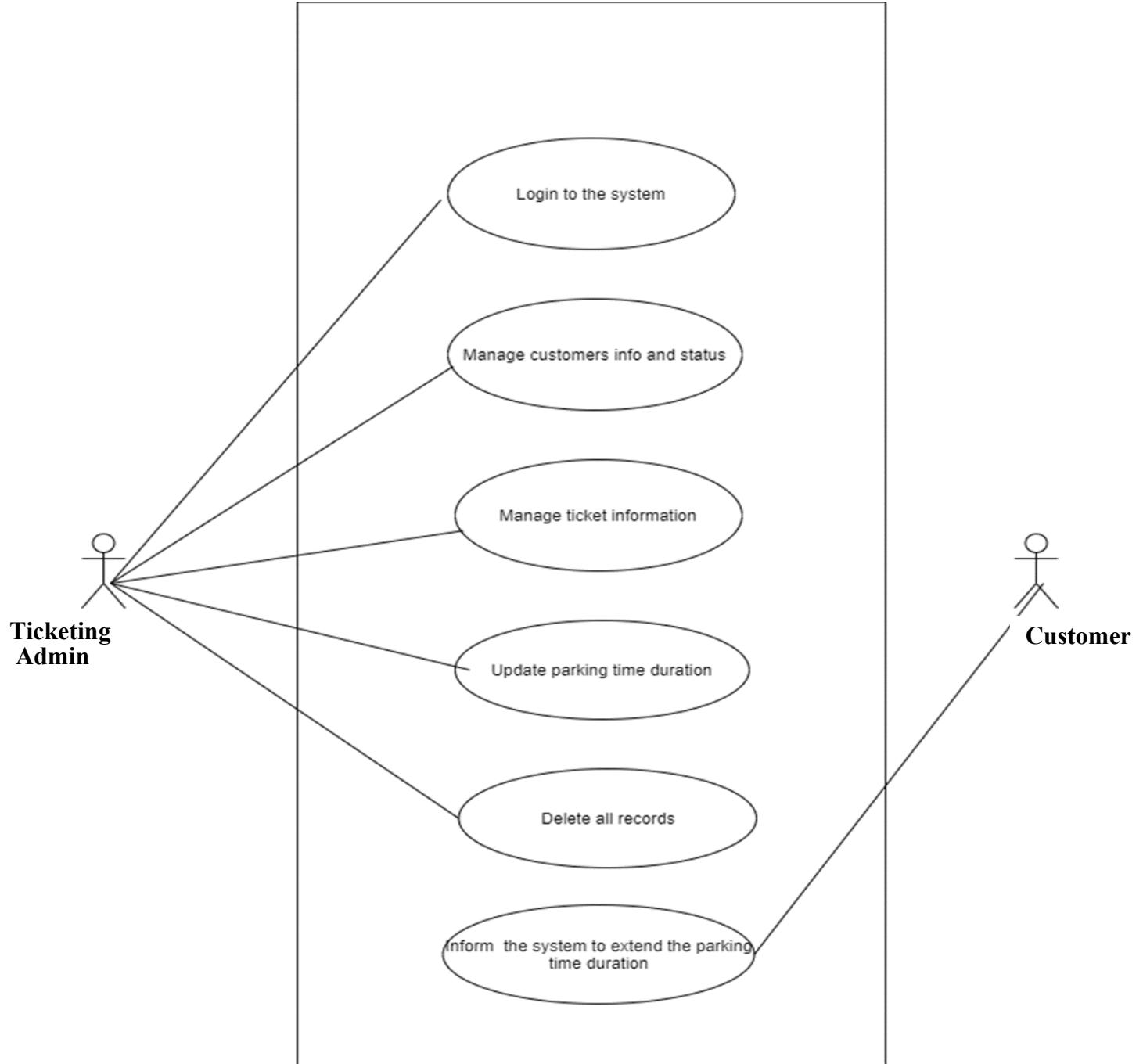


Figure 2.1.1 – 7: Use Case Diagram – Parking Slot

## 2.1.2 Activity Diagrams

### User Management

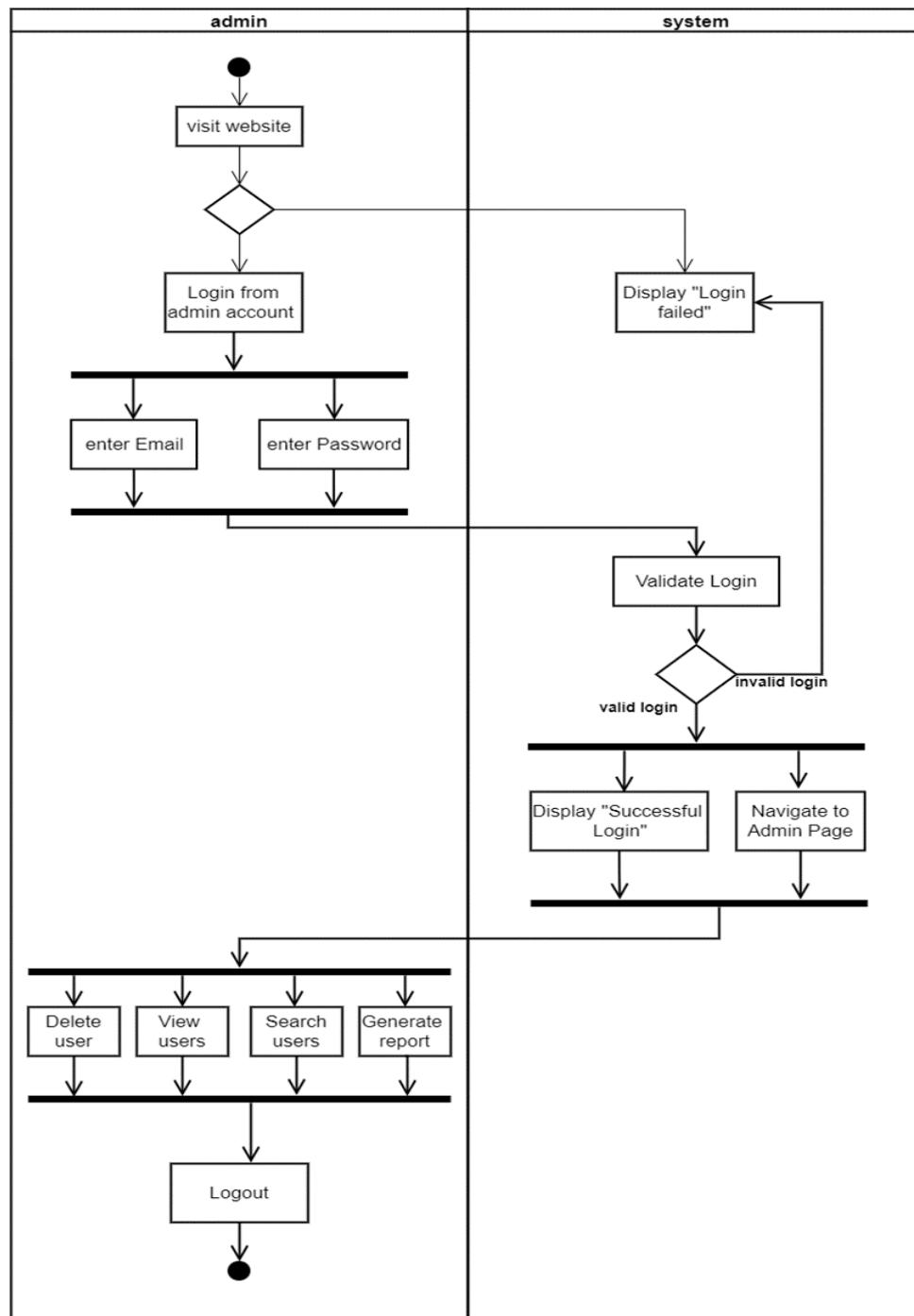


Figure 2.1.2 – 1: Activity Diagram – User Management

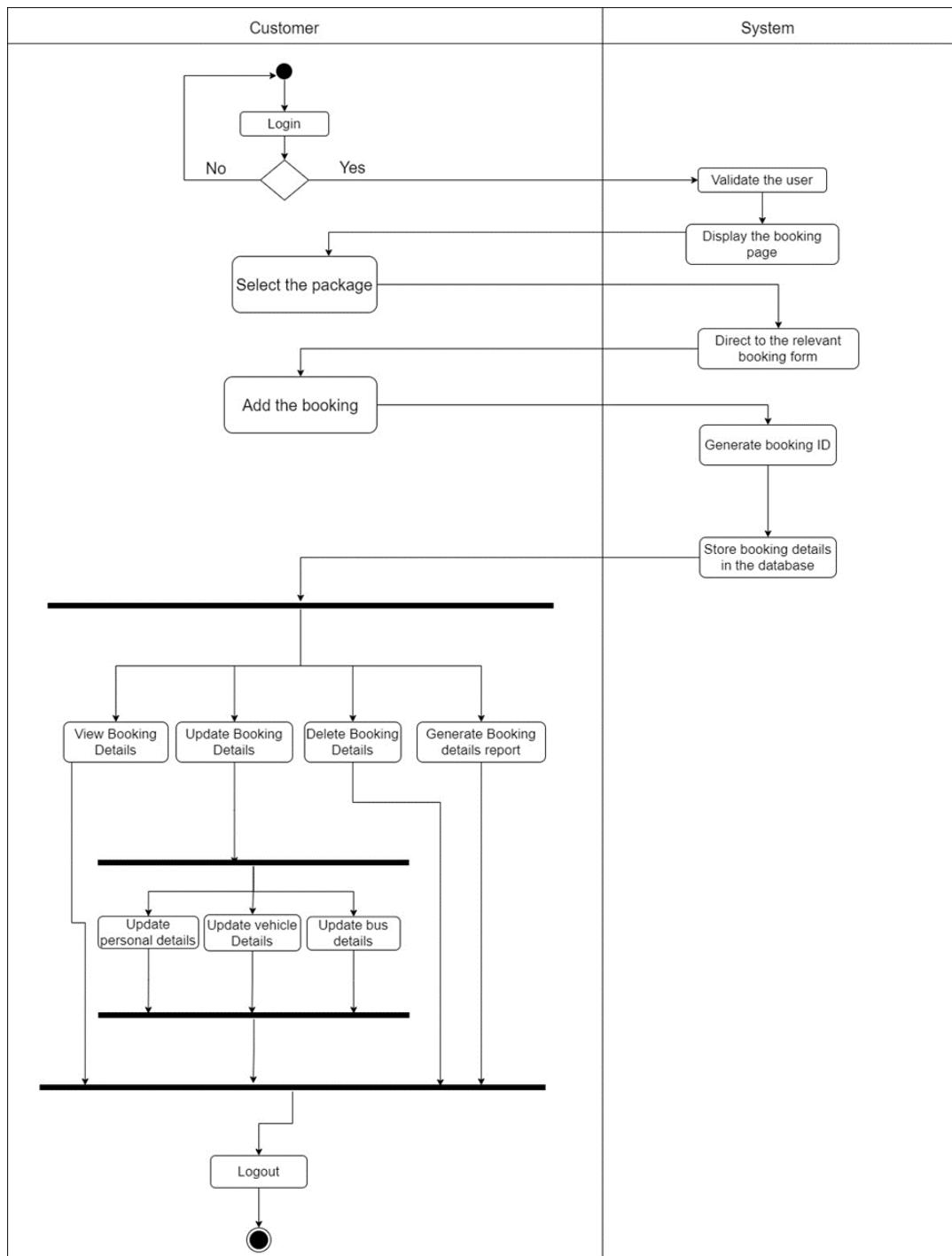
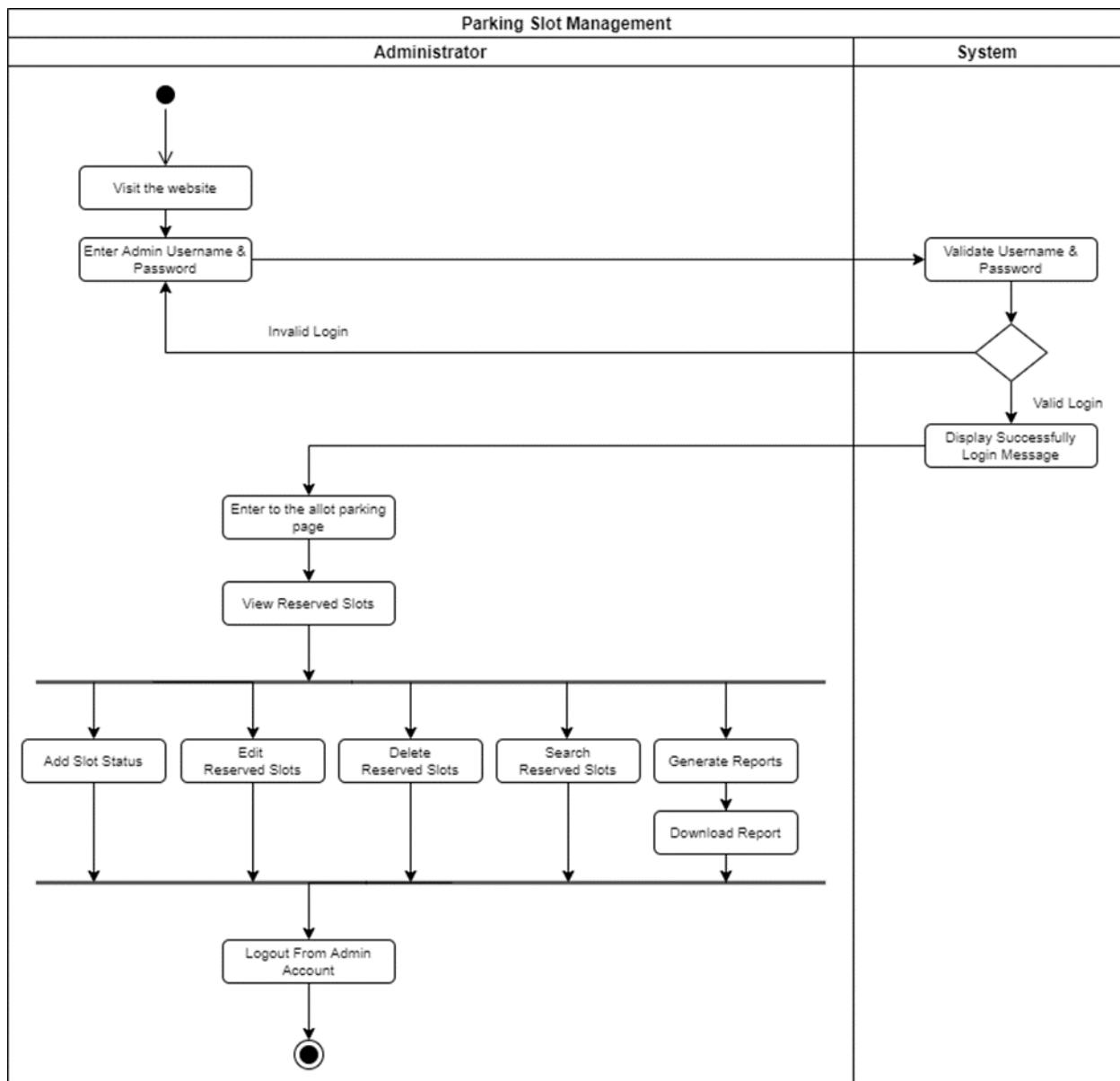


Figure 2.1.2 – 2: Activity Diagram – Customer - Booking Management



*Figure 2.1.2 – 3: Activity Diagram – Parking Slot Management*

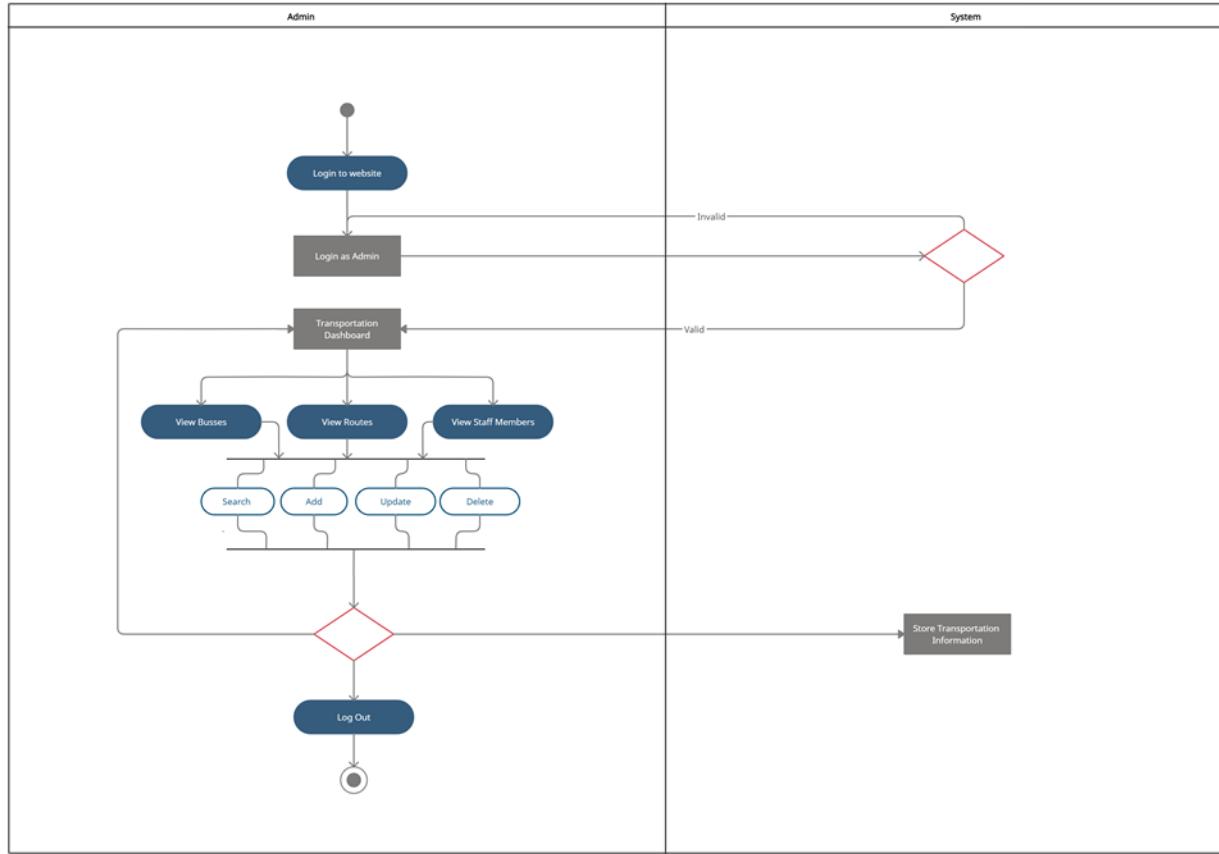


Figure 2.1.2 – 4: Activity Diagram – Transport Management

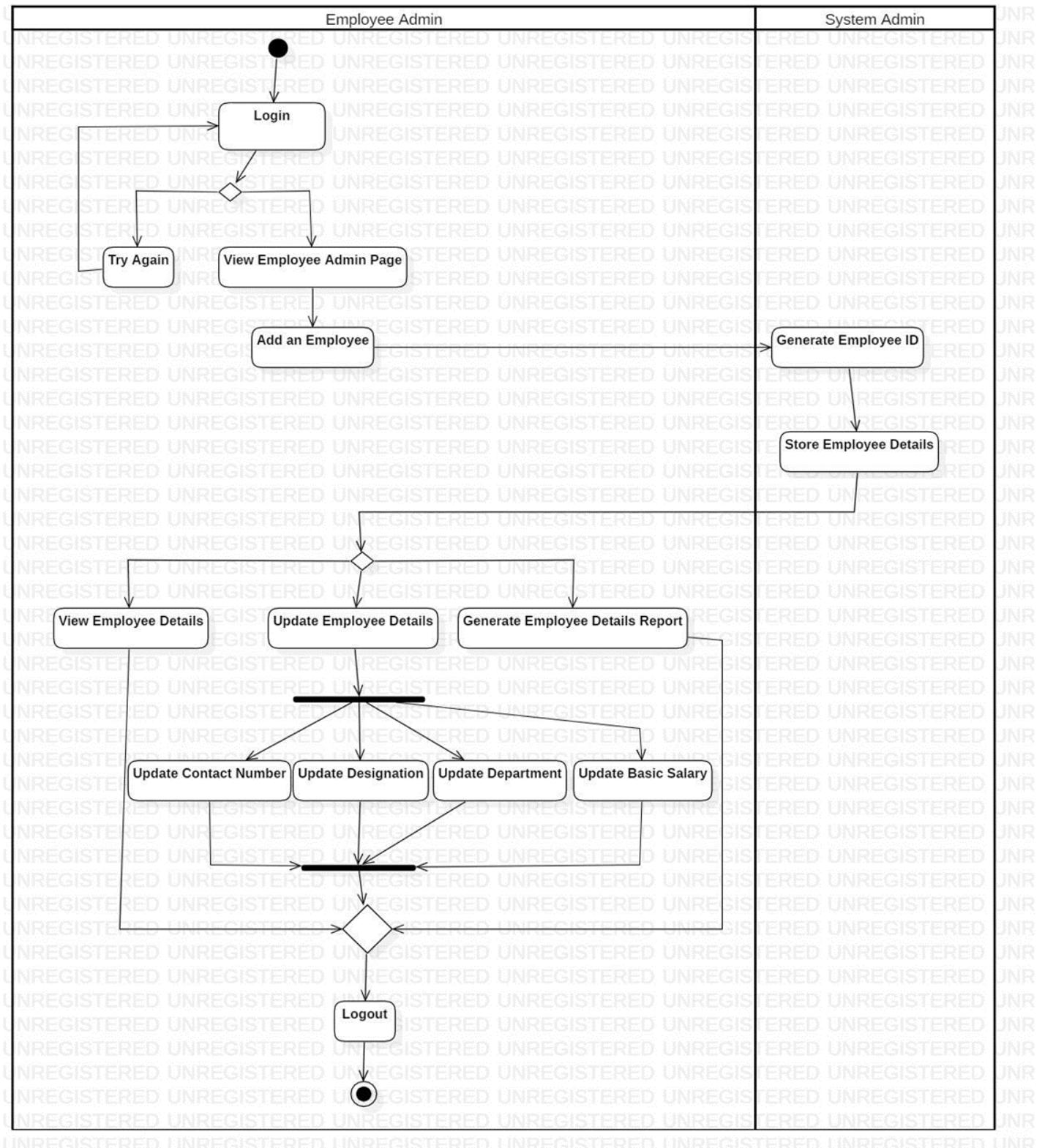


Figure 2.1.2 – 5: Activity Diagram – Employee Management

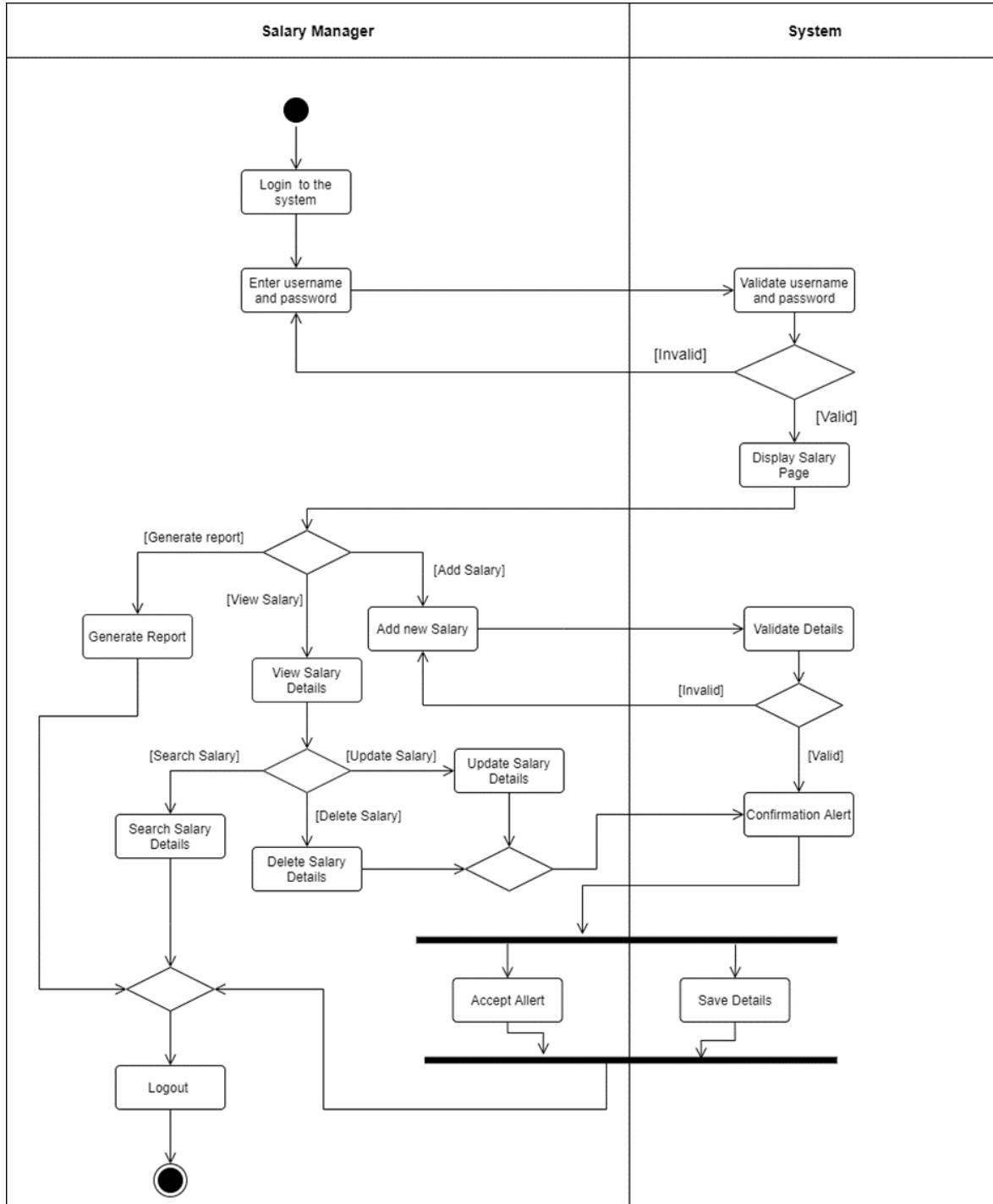


Figure 2.1.2 – 6: Activity Diagram – Salary Management

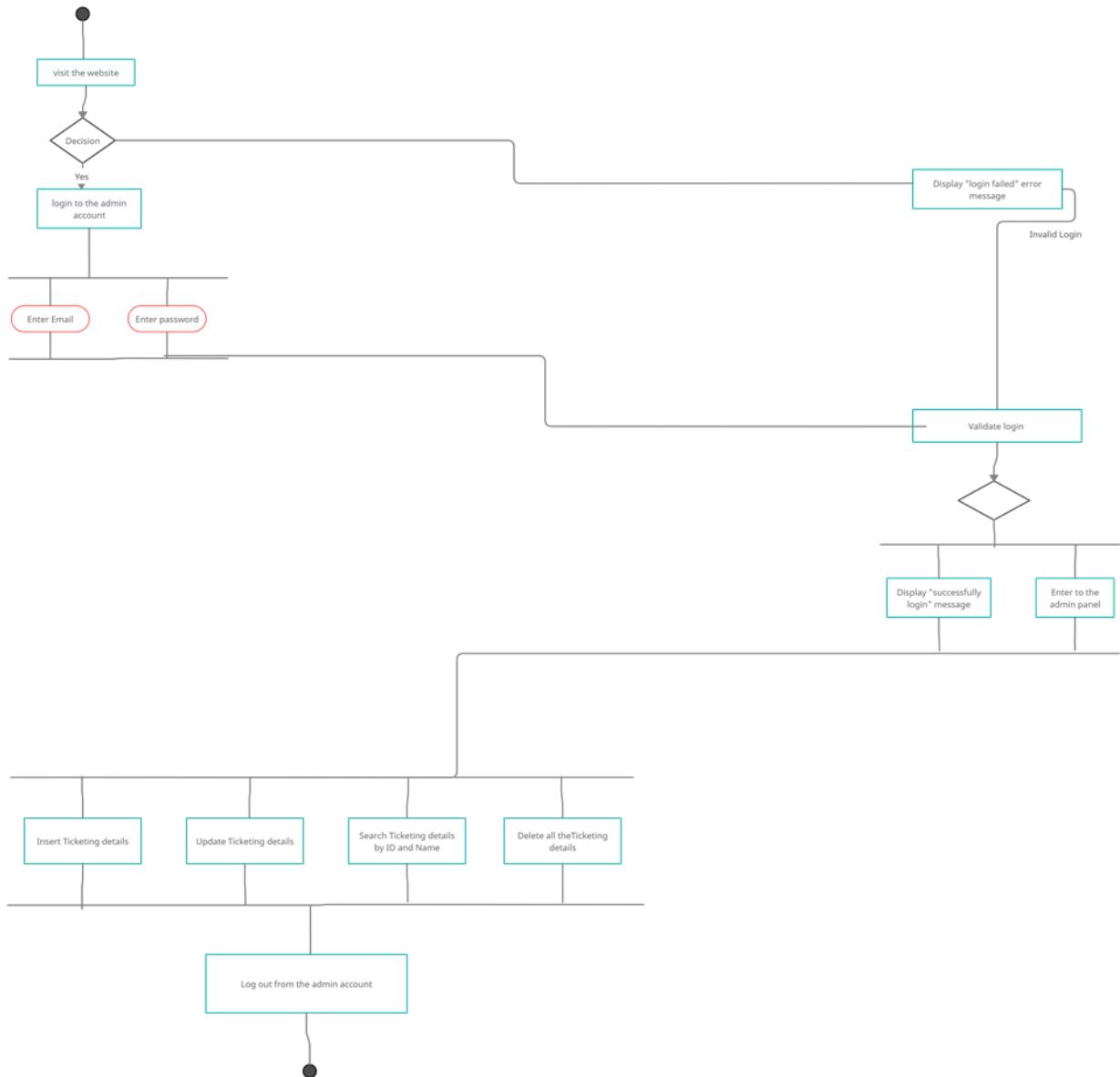


Figure 2.1.2 – 7: Activity Diagram – Ticket Management

## 2.2 Design

Figure 2.2.1 - 1

**Entity Relationship Diagram**

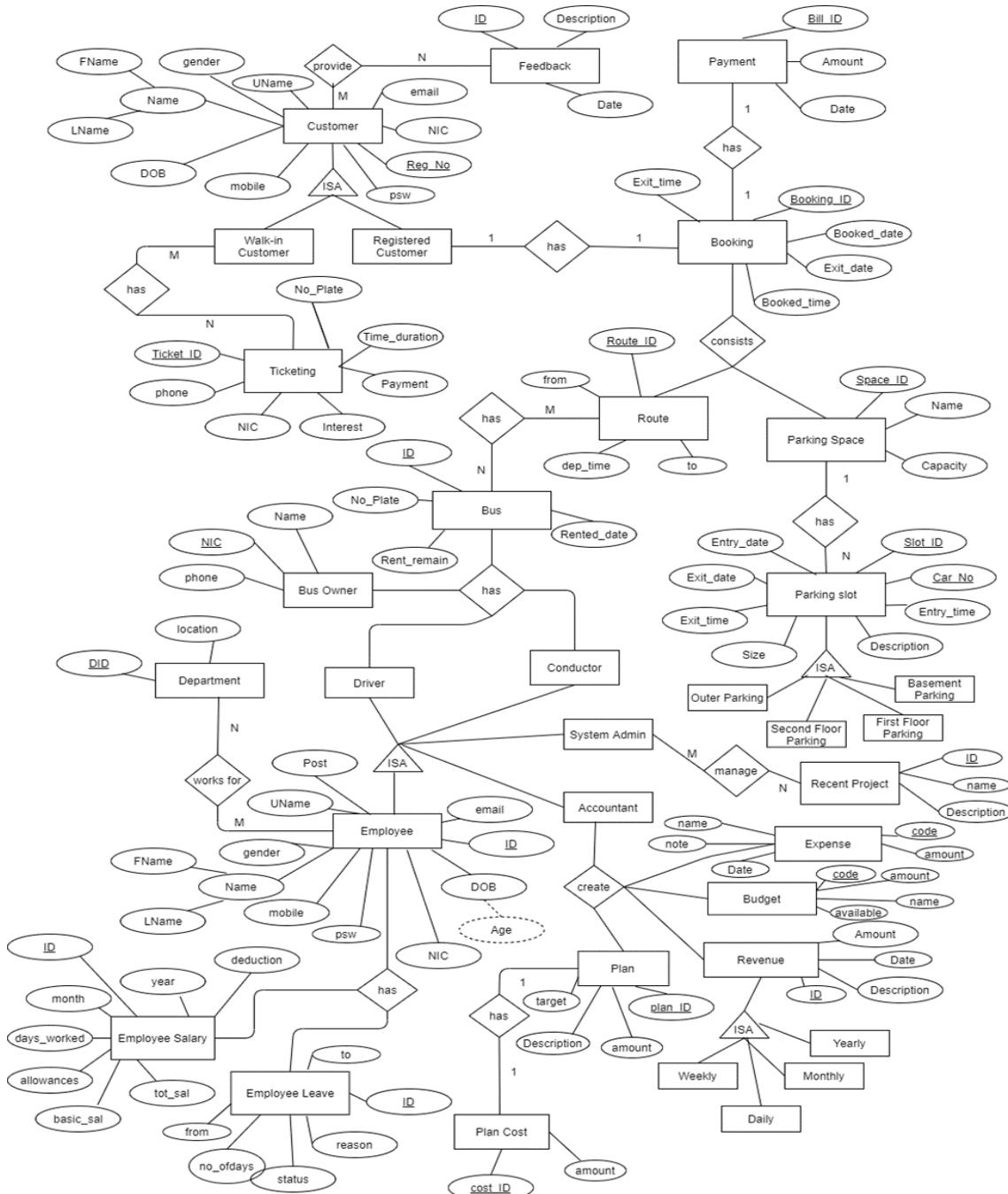


Figure 2.2.1 - 1: ER Diagram for whole system

## 2.2.2 - 1:

## Class Diagram

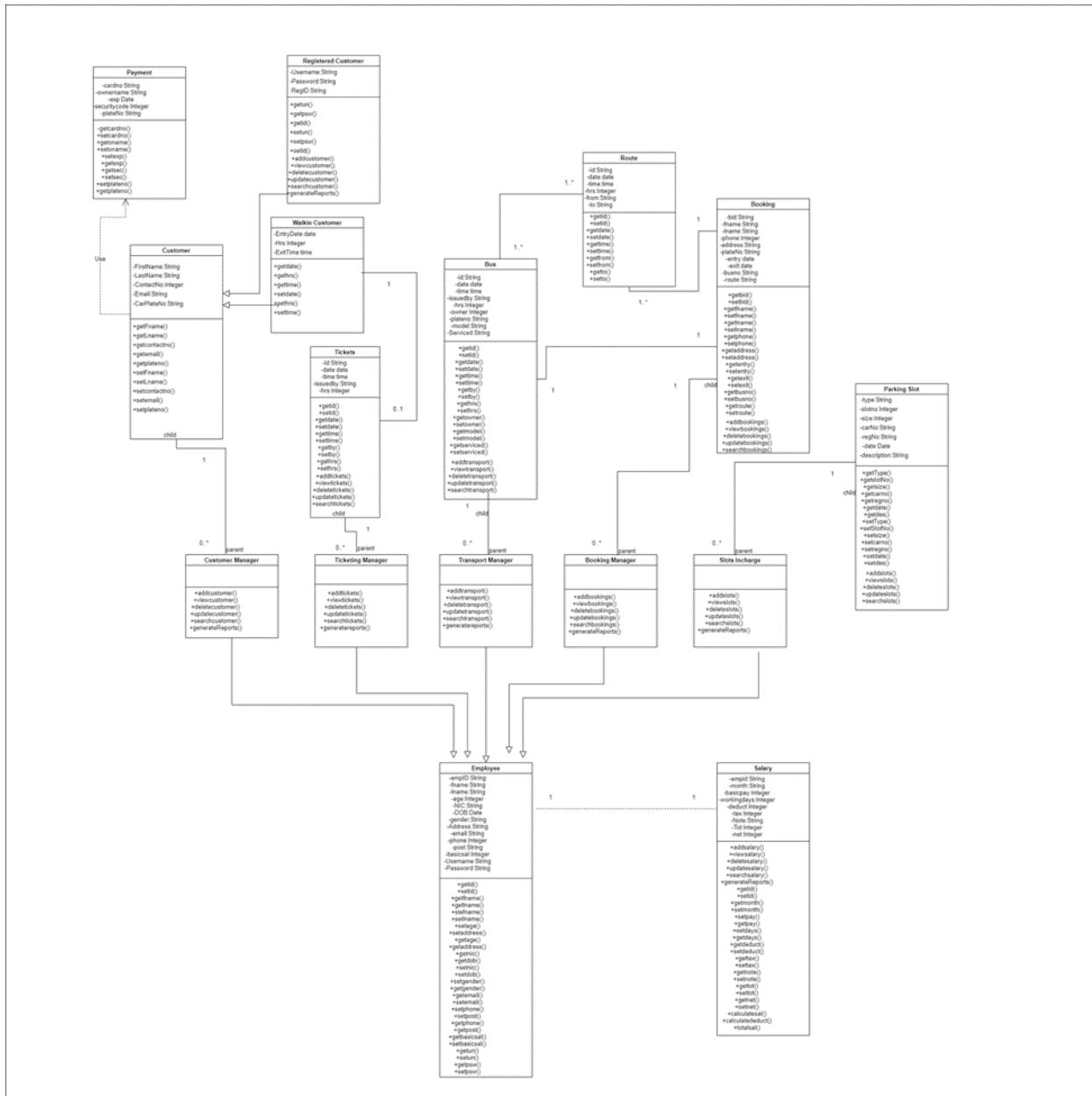


Figure 2.2.2 - 1: Class Diagram for whole system

## High level Architecture Diagram

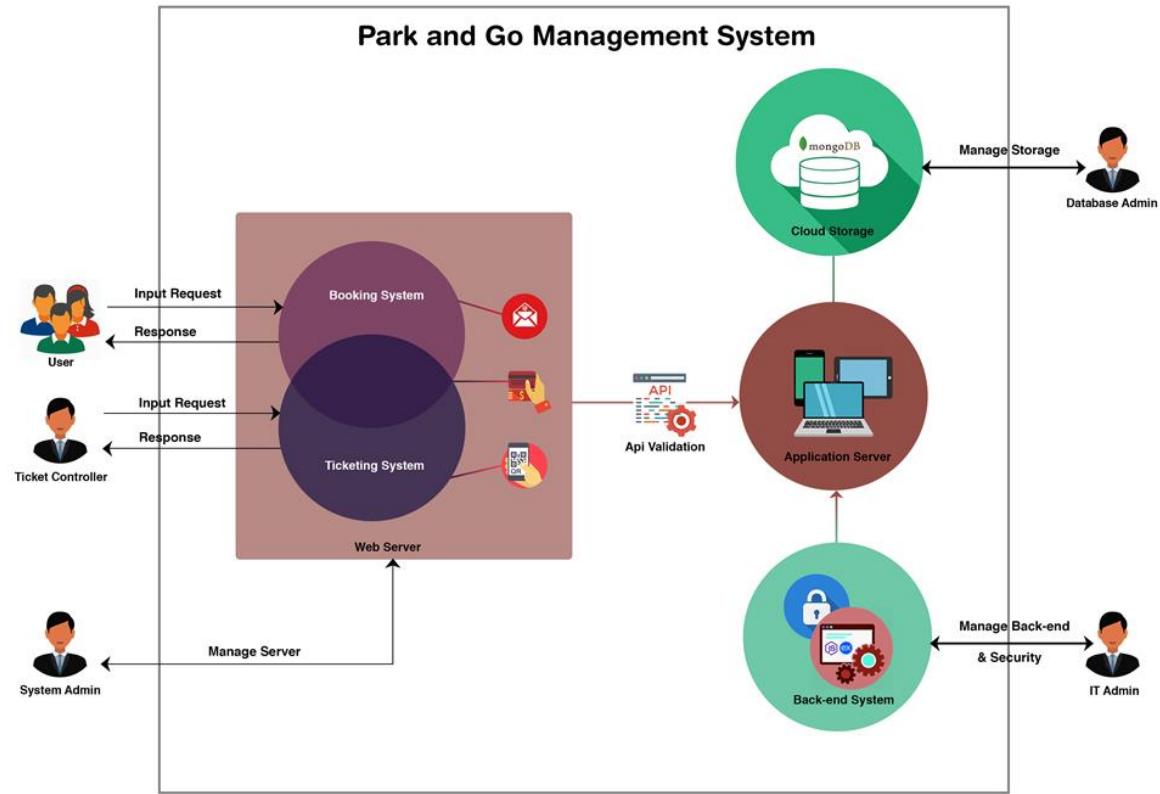


Figure 2.2.3 - 1

## 2.2.4: Sequence Diagrams

### Sequence Diagram – User Management

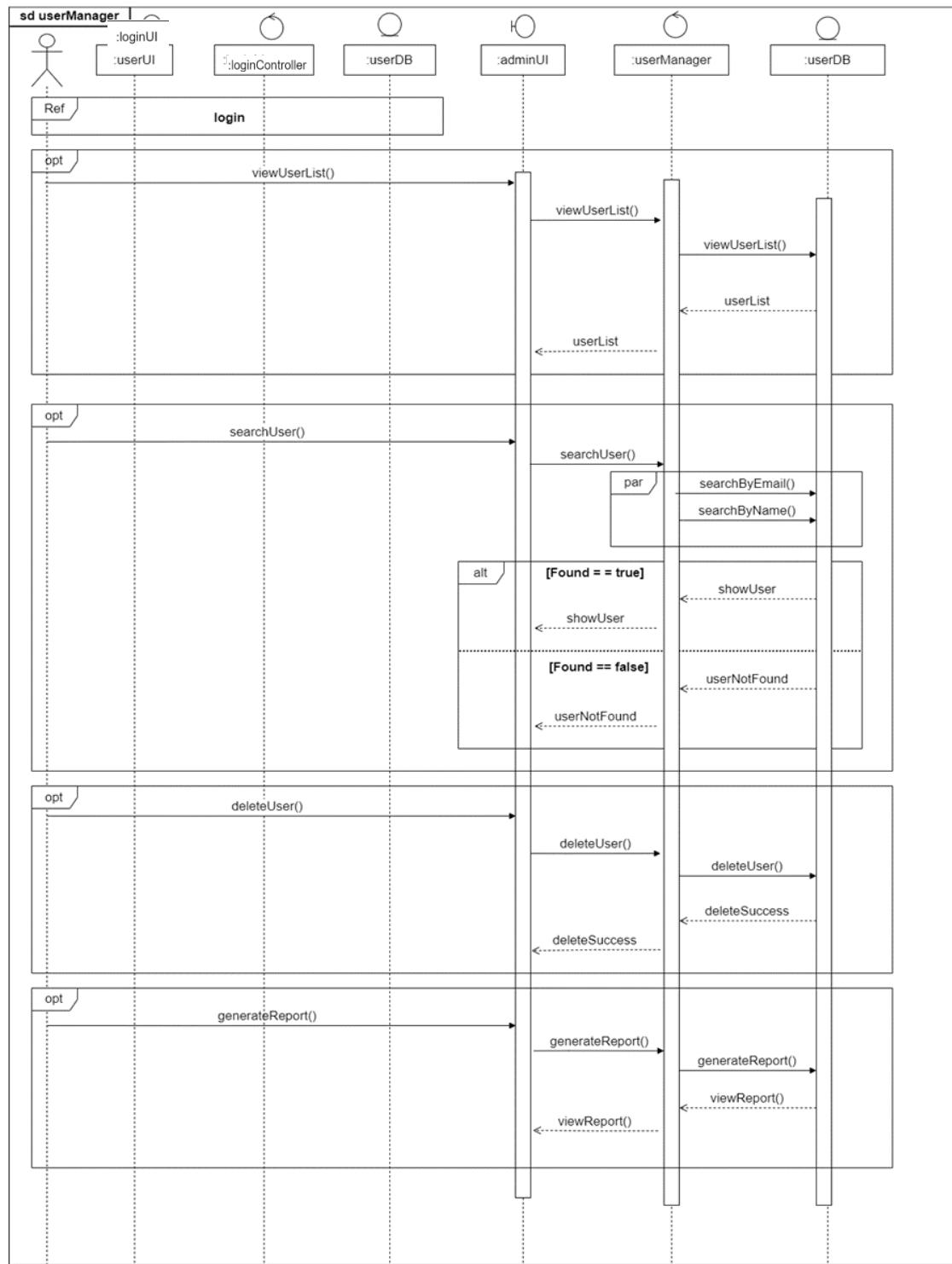


Figure 2.2.4 - 1

## Sequence Diagram – Customer – Booking Management

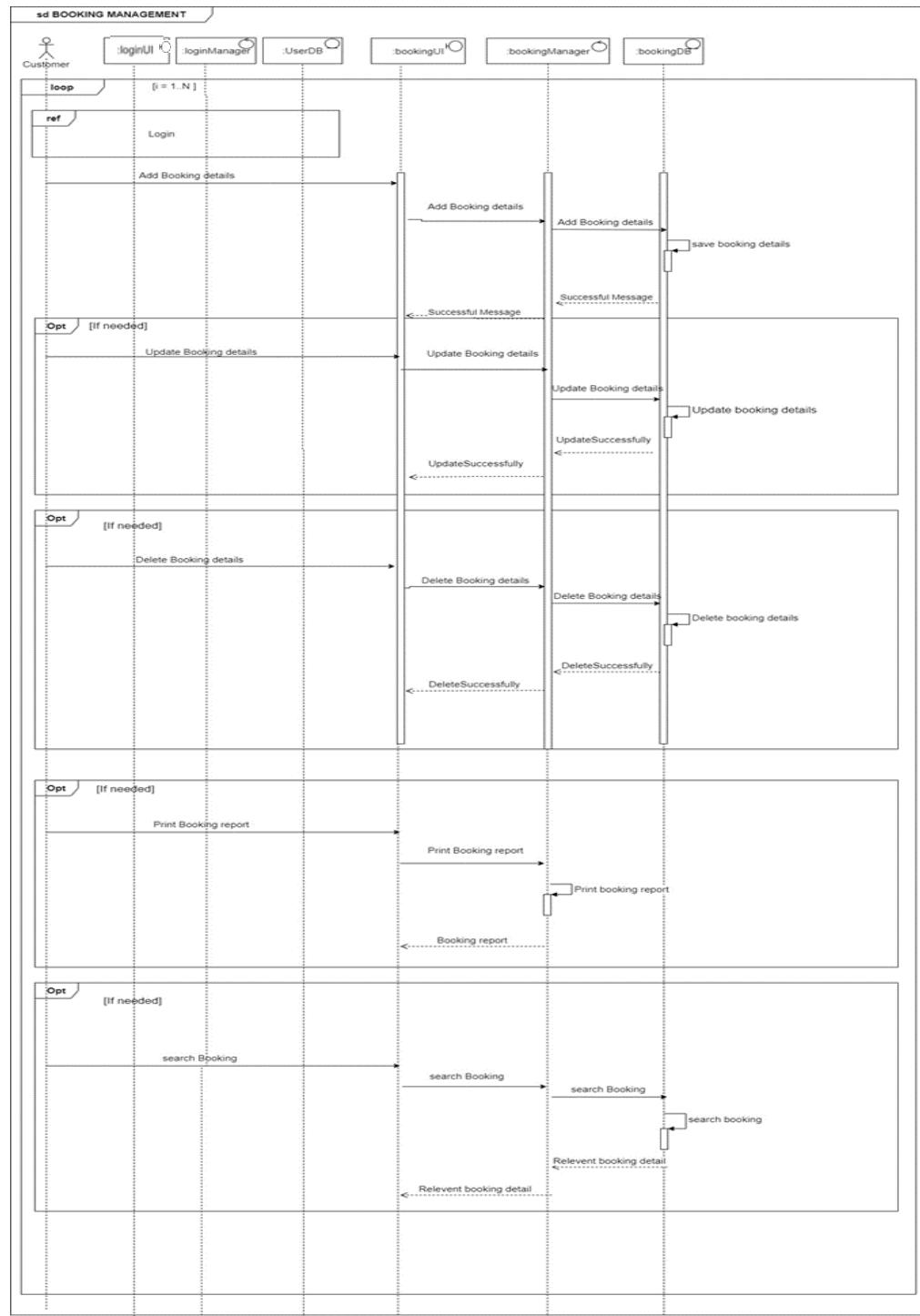


Figure 2.2.4 - 2

## Sequence Diagram – Admin – Parking Slot Management

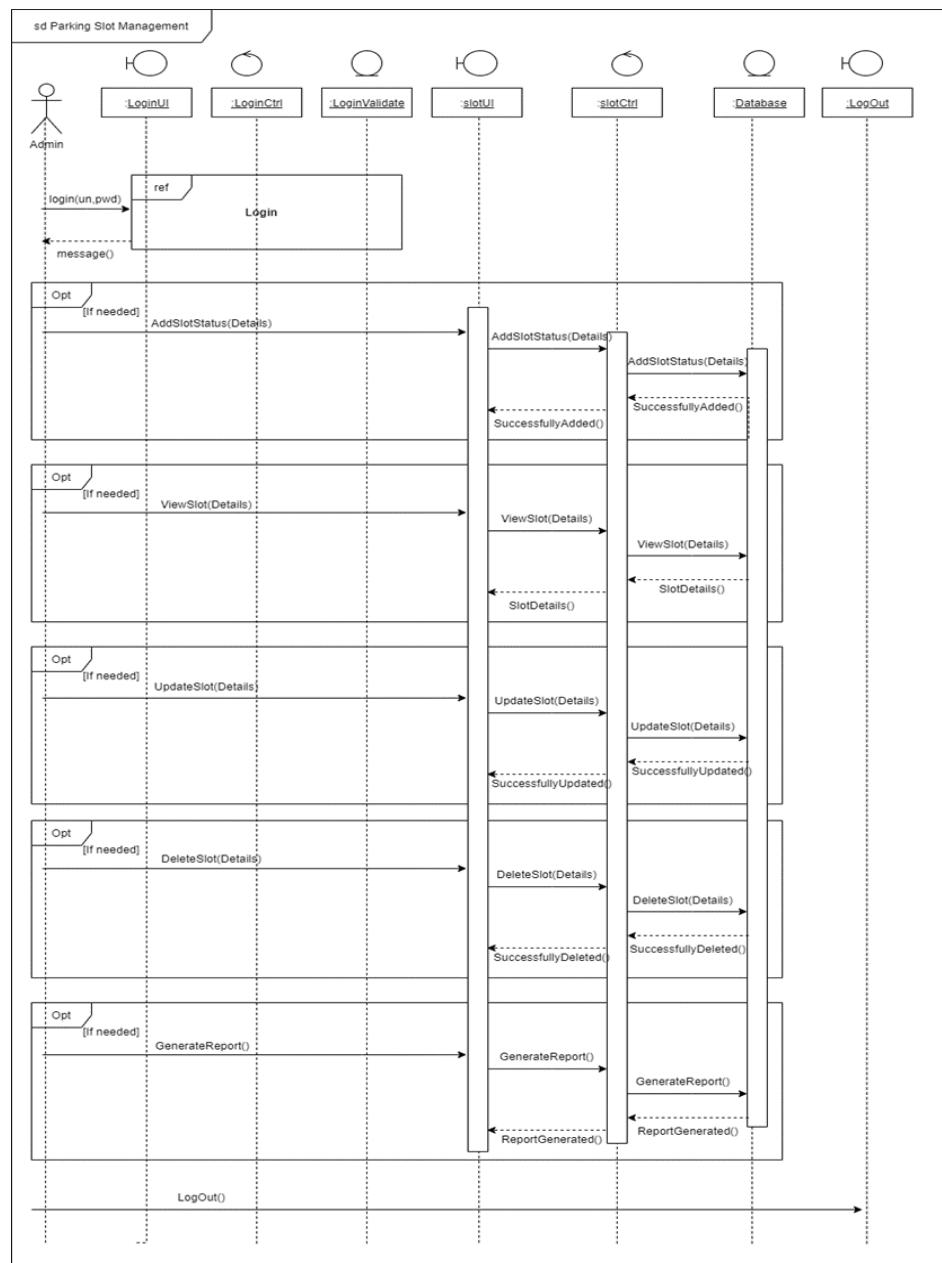


Figure 2.2.4 – 3

## Sequence Diagram – Transport Management

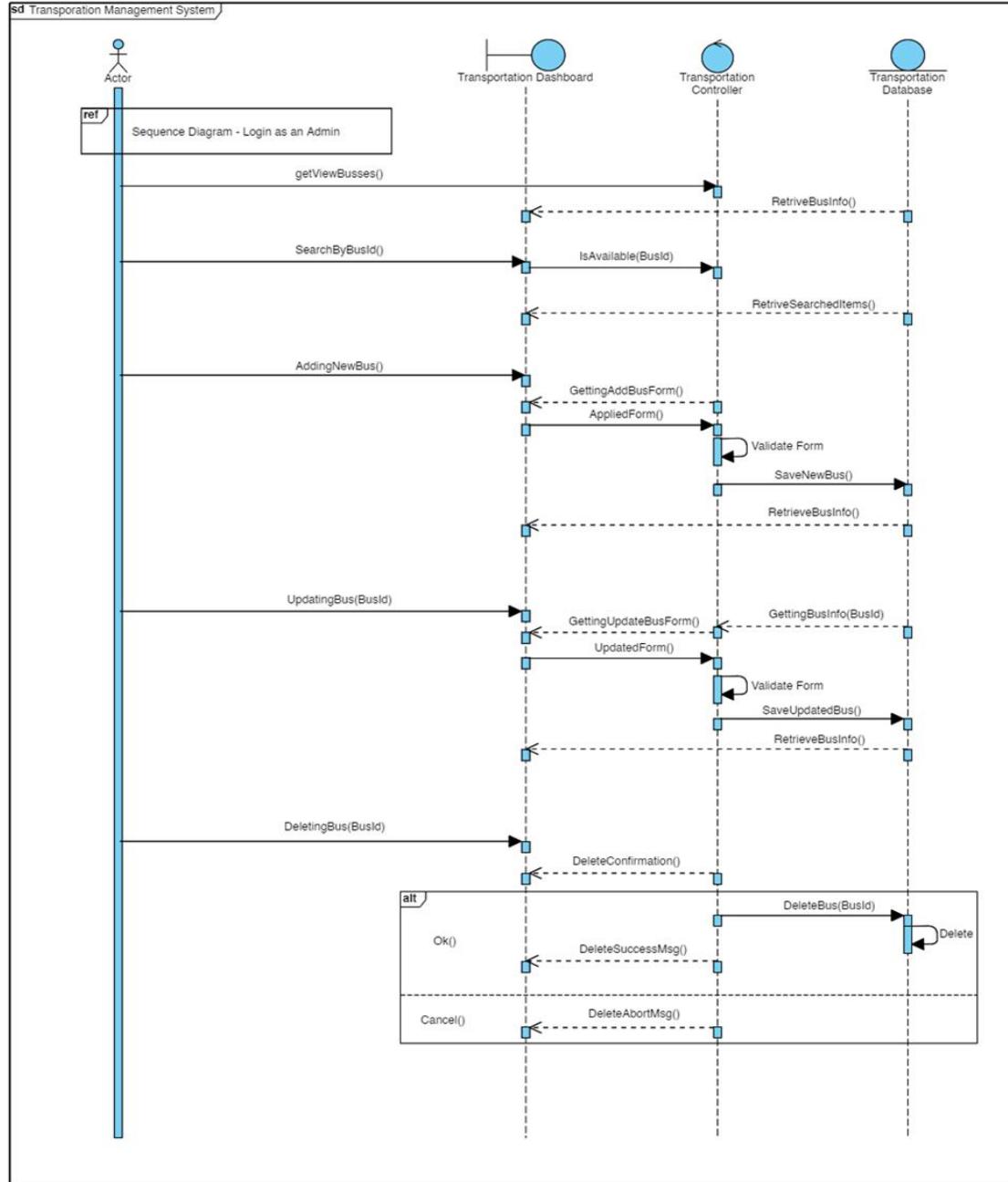


Figure 2.2.4 - 4

## Sequence Diagram – Employee Management

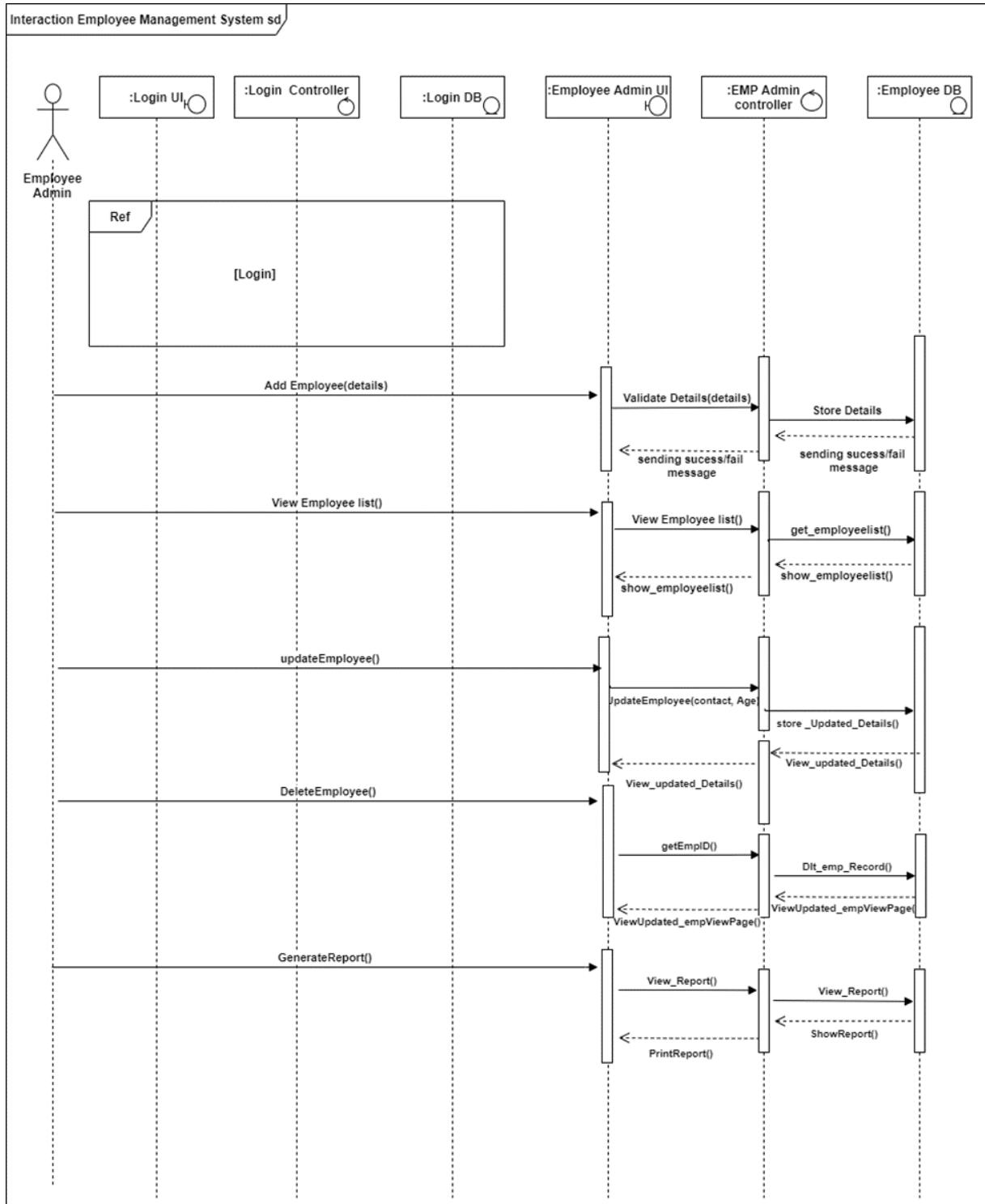


Figure 2.2.4 - 5

## Sequence Diagram – Salary Management

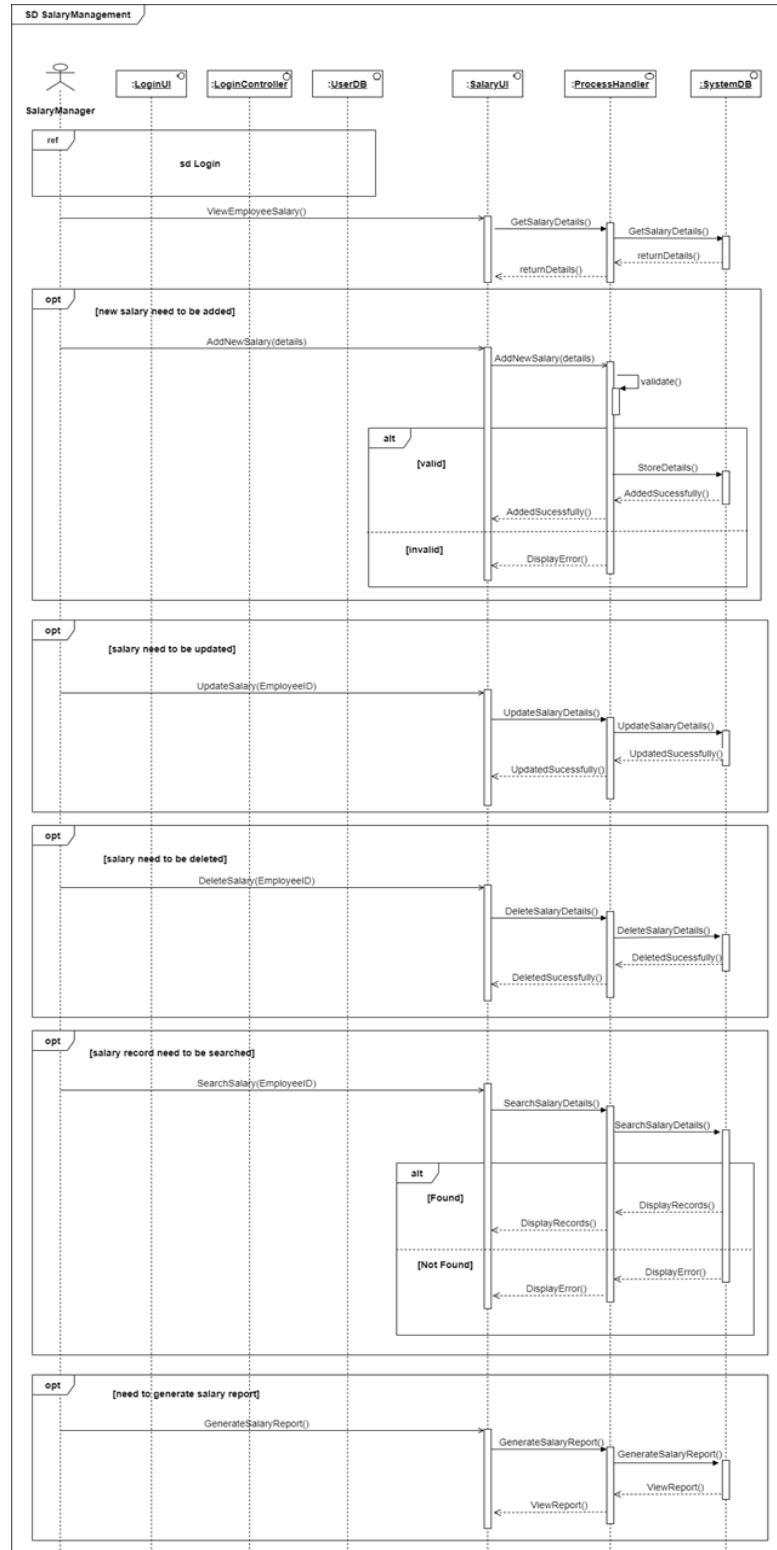


Figure 2.2.4 - 6

## Sequence Diagram – Ticketing Management

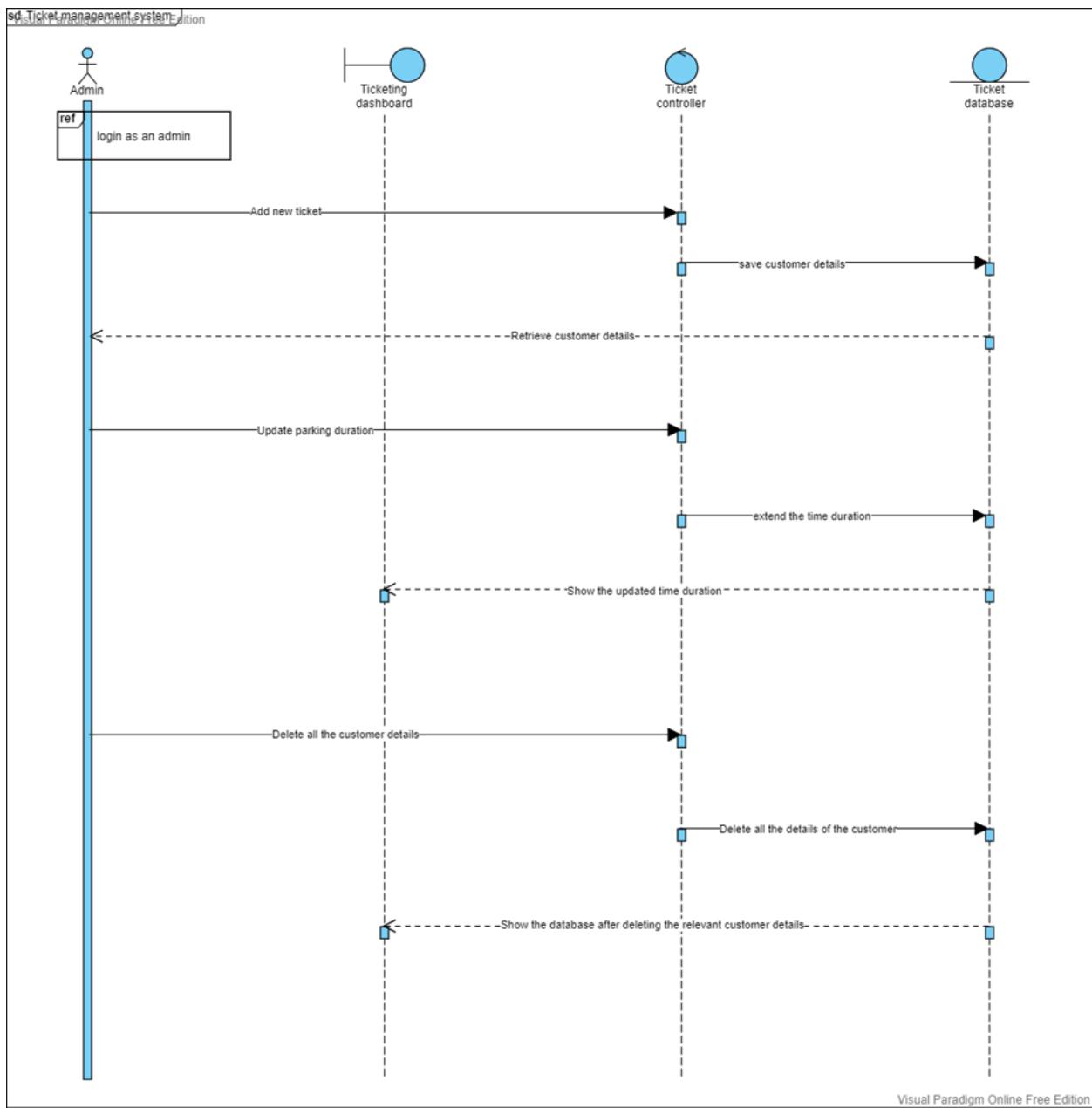


Figure 2.2.4 - 7

## Login - Sequence Diagram

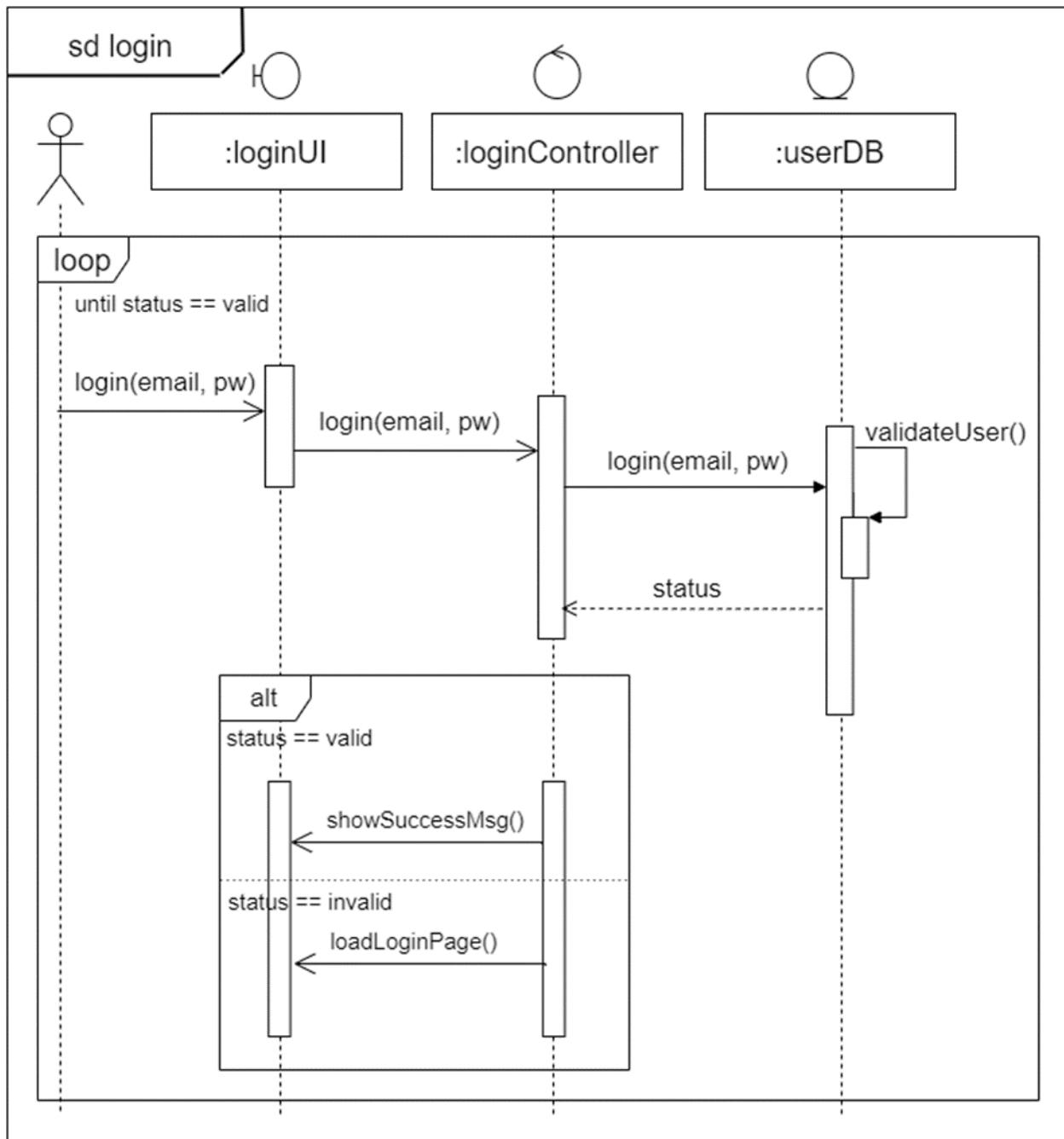


Figure 2.2.4 - 8

## 2.2.5: Communication Diagrams

### Communication Diagram – User Management

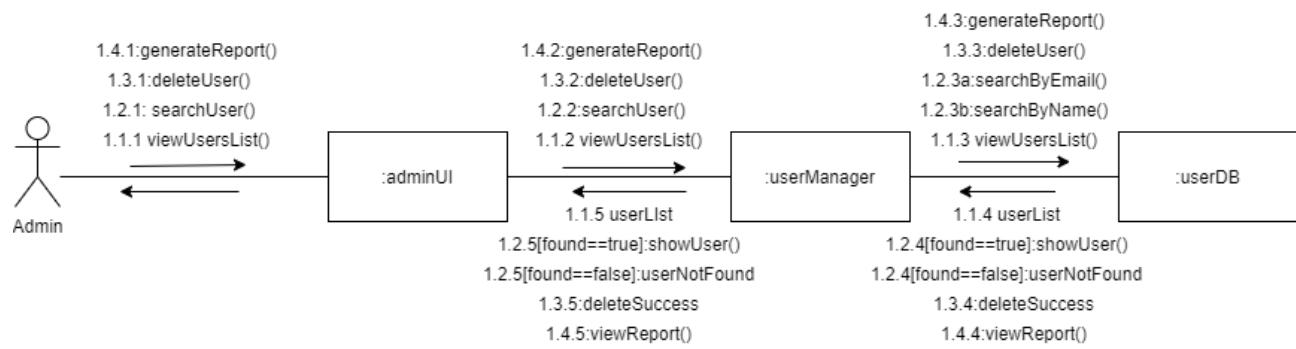


Figure 2.2.5 - 1

## Communication Diagram – Booking Management

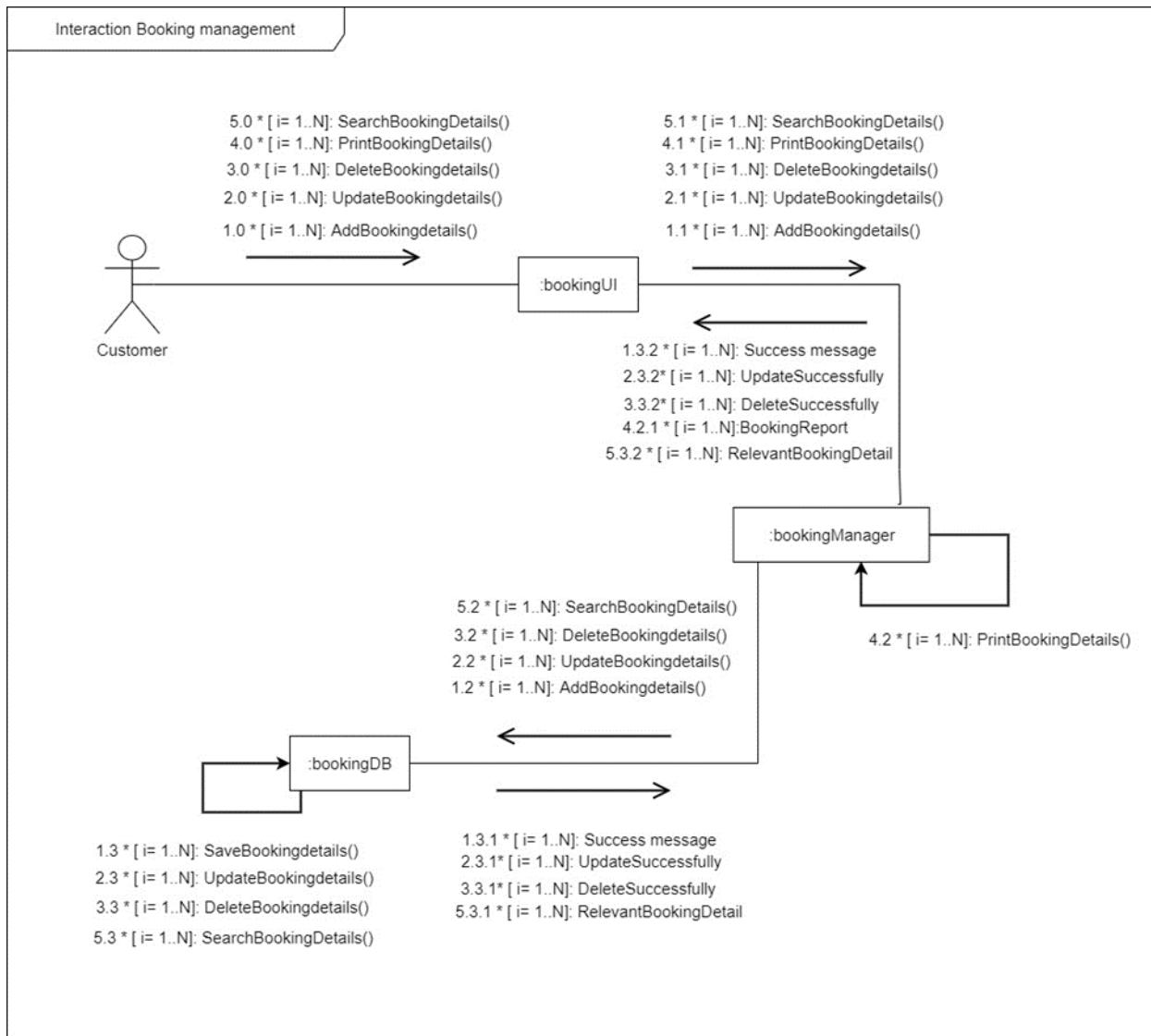


Figure 2.2.5 – 2

## Communication Diagram – Parking Slot Management

Figure 2.2.5 – 3

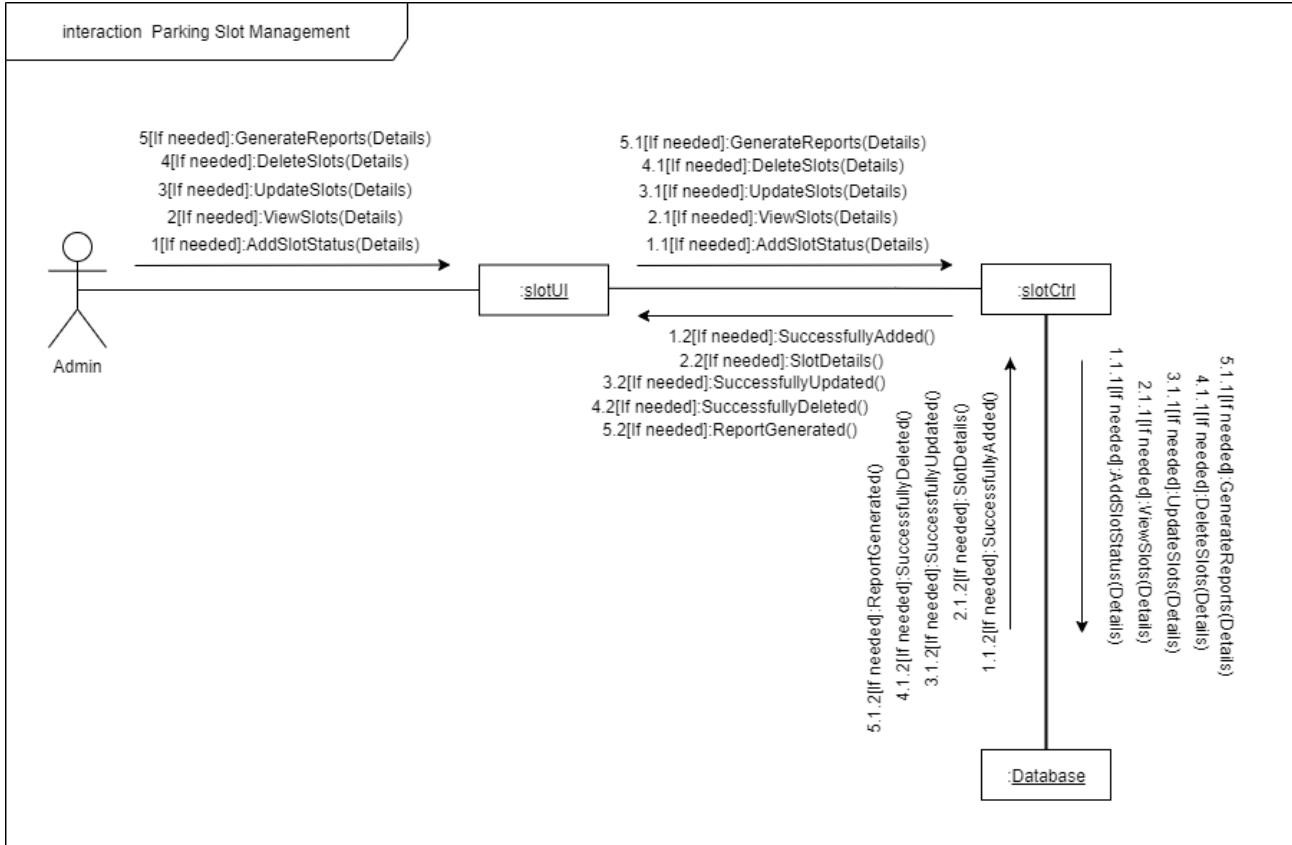


Figure 2.2.5 – 3: Communication Diagram – Parking Slot Management

## Communication Diagram – Transport Management

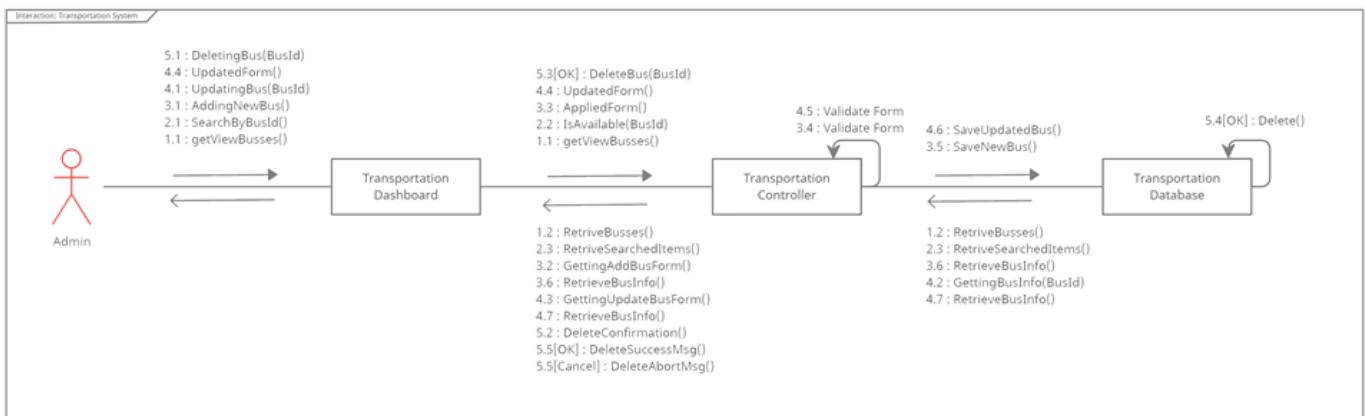


Figure 2.2.5 – 4

## Communication Diagram – Employee Management

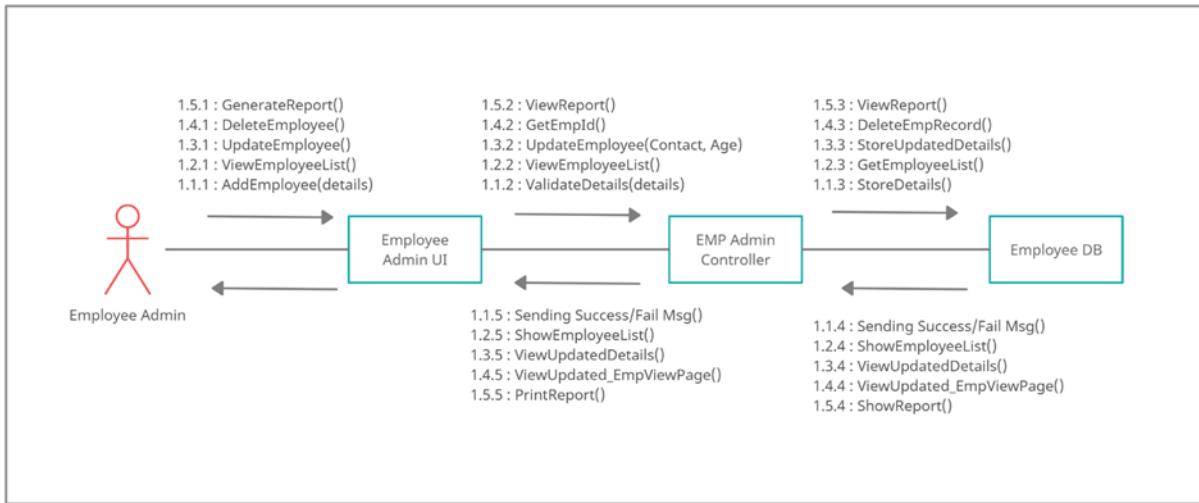


Figure 2.2.5 – 5

## Communication Diagram – Salary Management

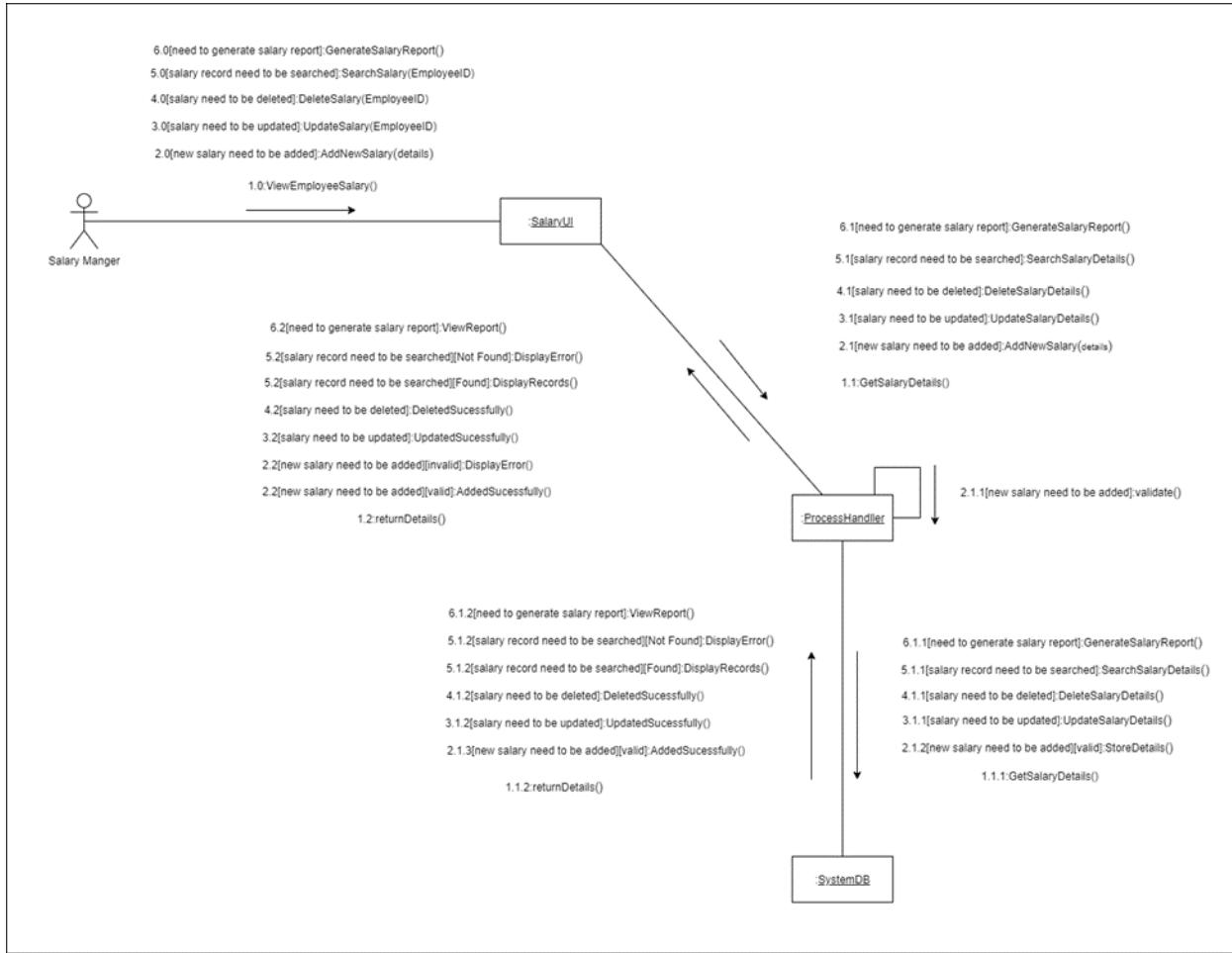


Figure 2.2.5 – 6

## Communication Diagram – Ticketing Management

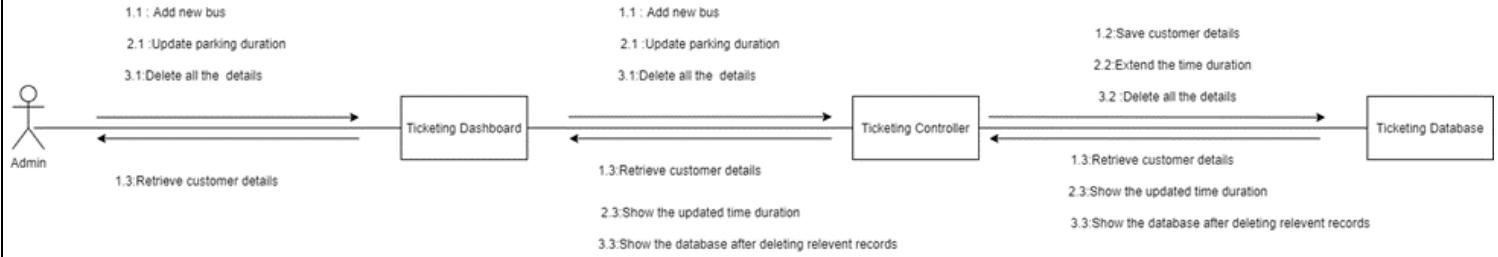


Figure 2.2.5 - 7

## 2.2.6: State Chart Diagrams

Admin user State Chart Diagram

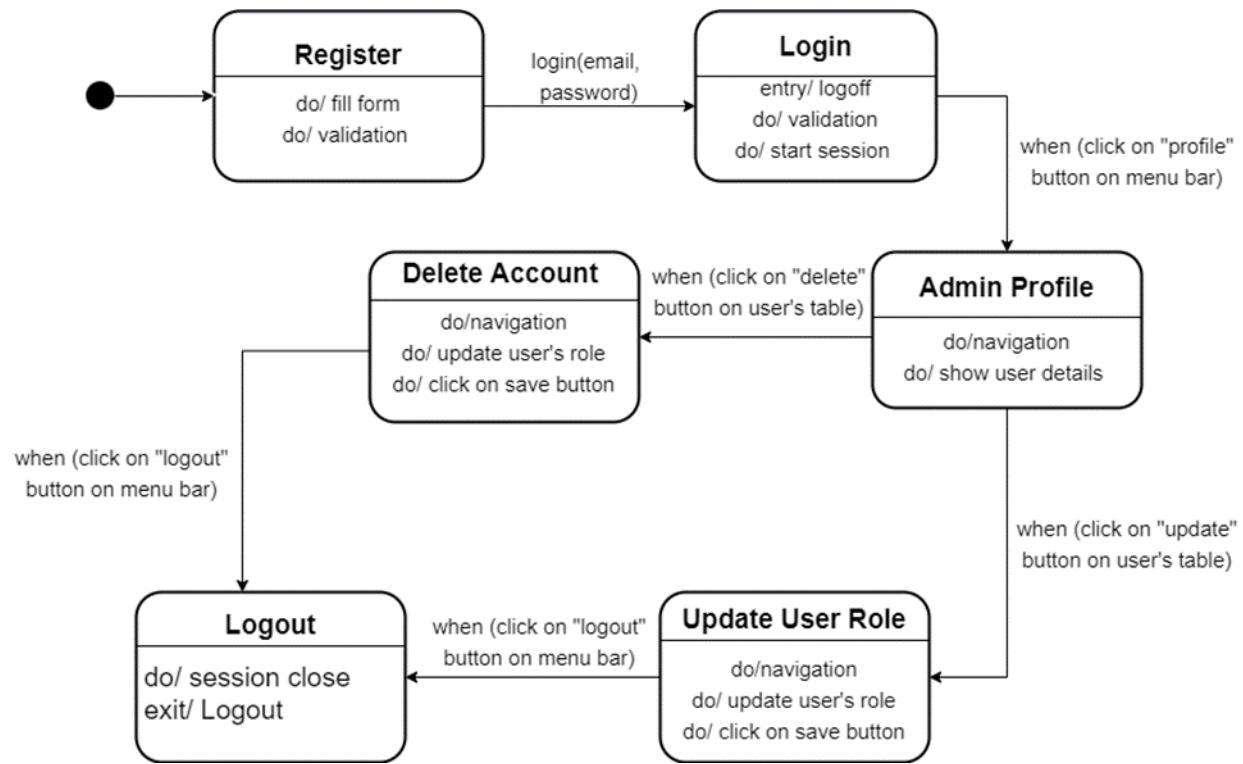


Figure 2.2.6 - 1

## Generate Report State Chart Diagram

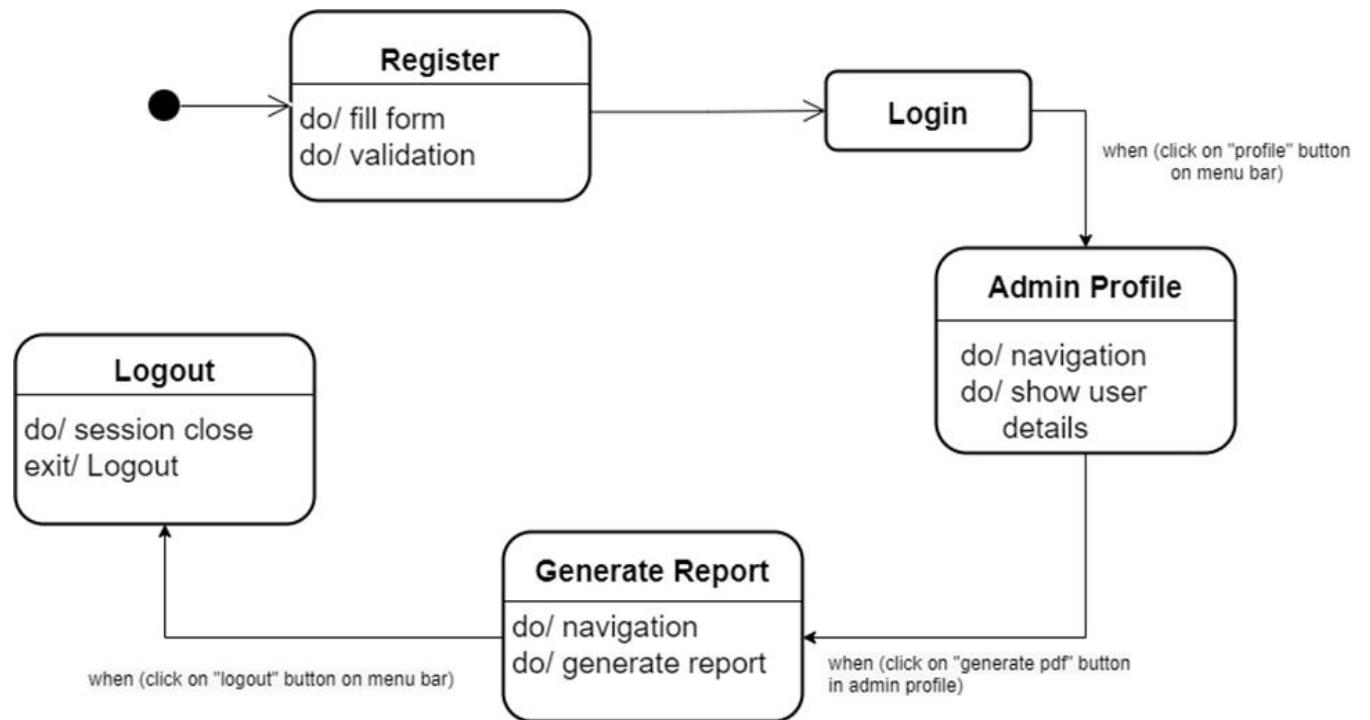


Figure 2.2.6 – 1.1

## State Chart Diagram – Booking Management

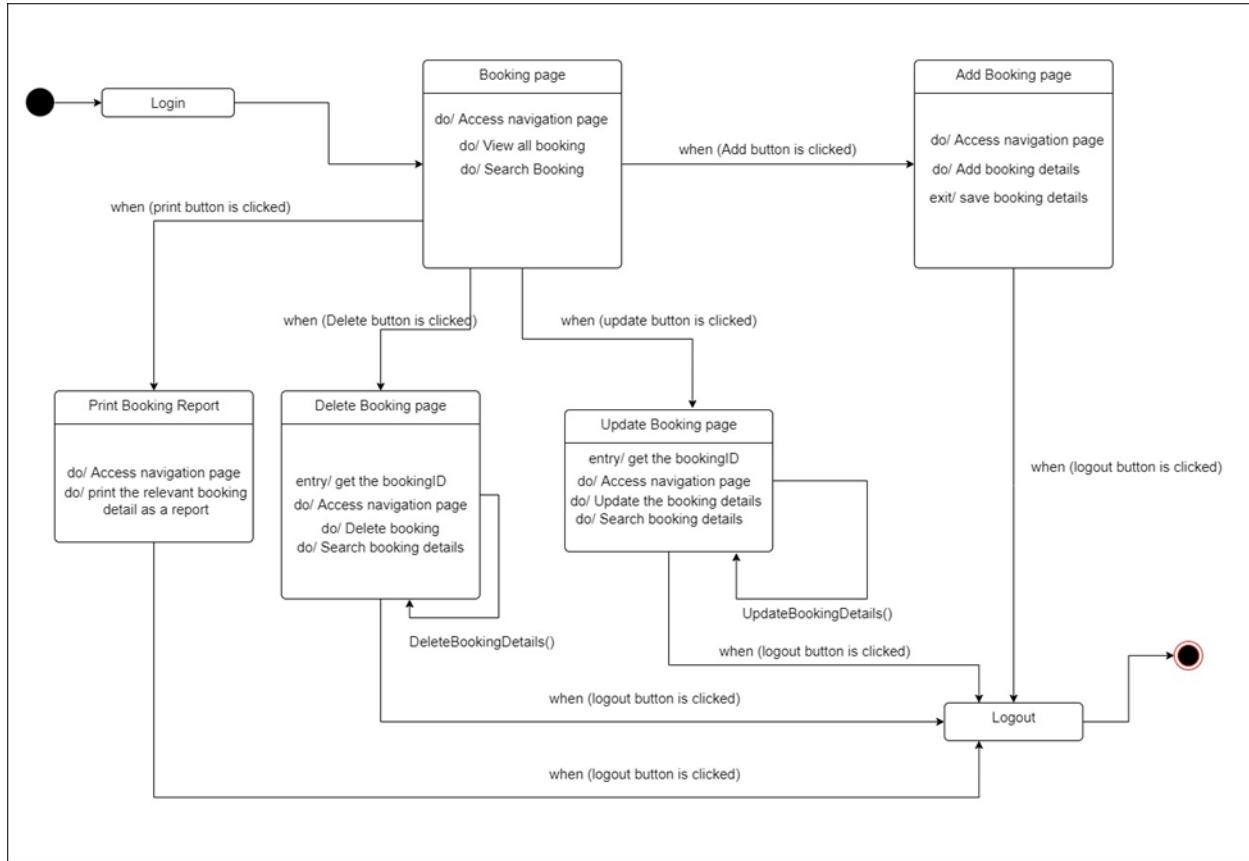


Figure 2.2.6 - 2

## State Chart Diagram – Parking Slot Management

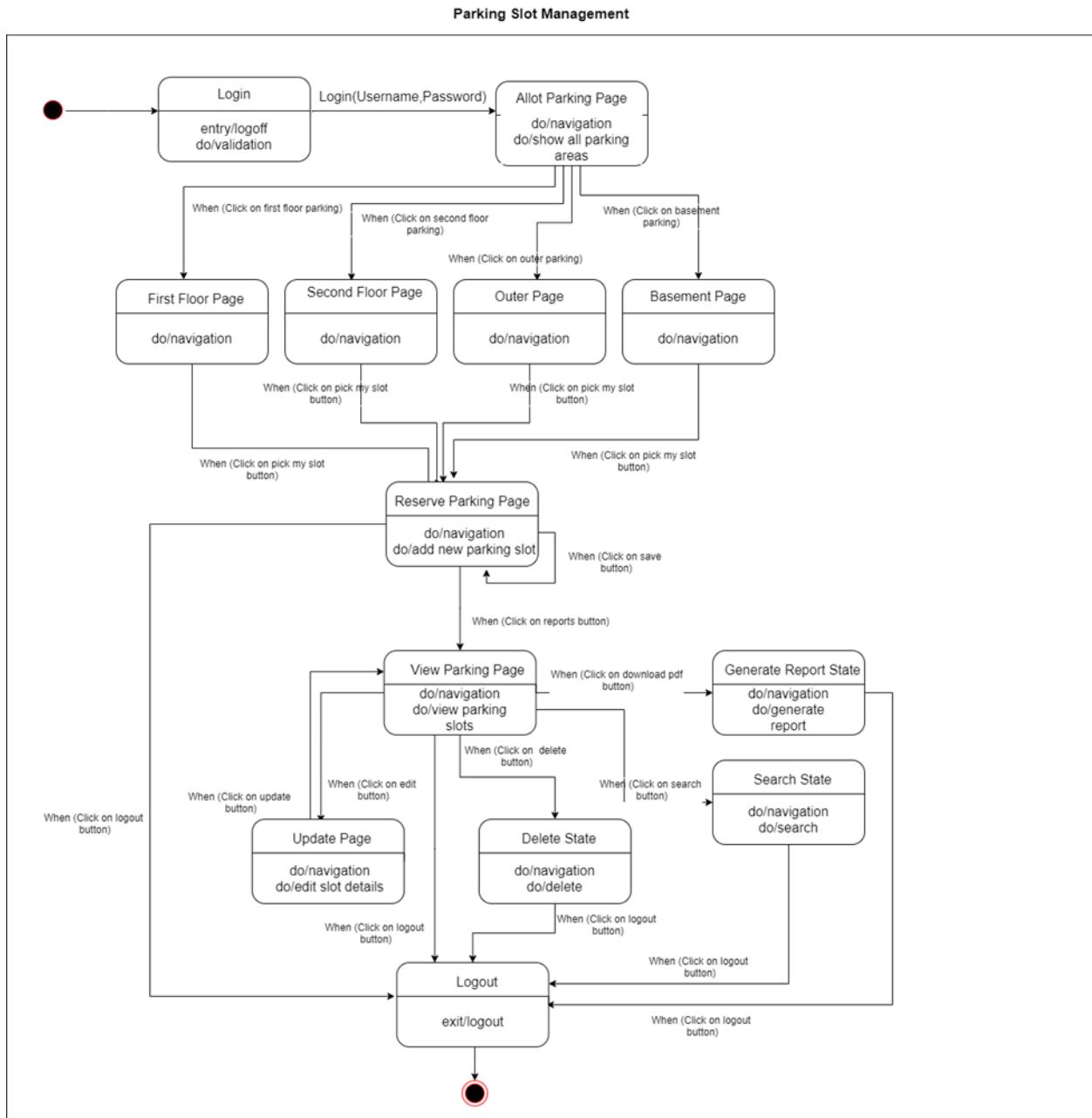


Figure 2.2.6 - 3

## State Chart Diagram – Transport Management

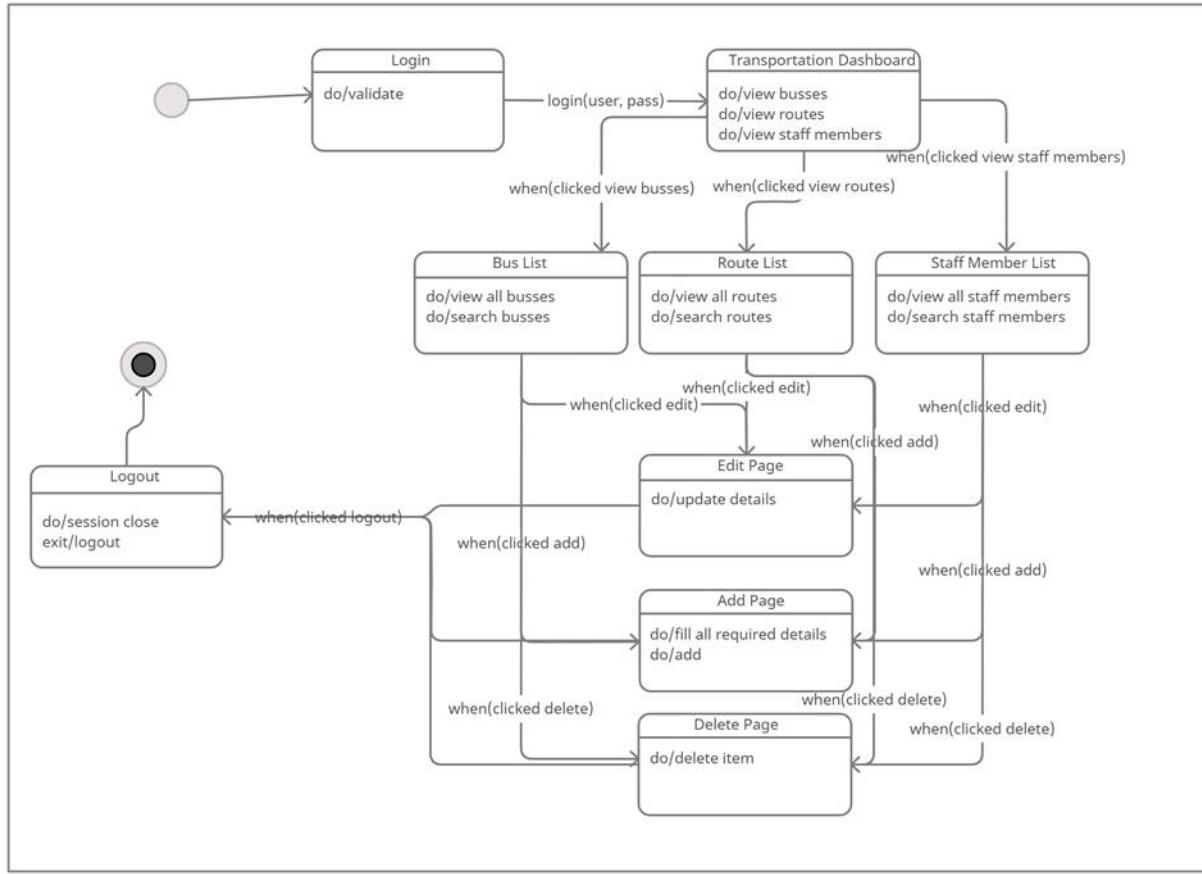


Figure 2.2.6 - 4

## State Chart Diagram – Employee Management

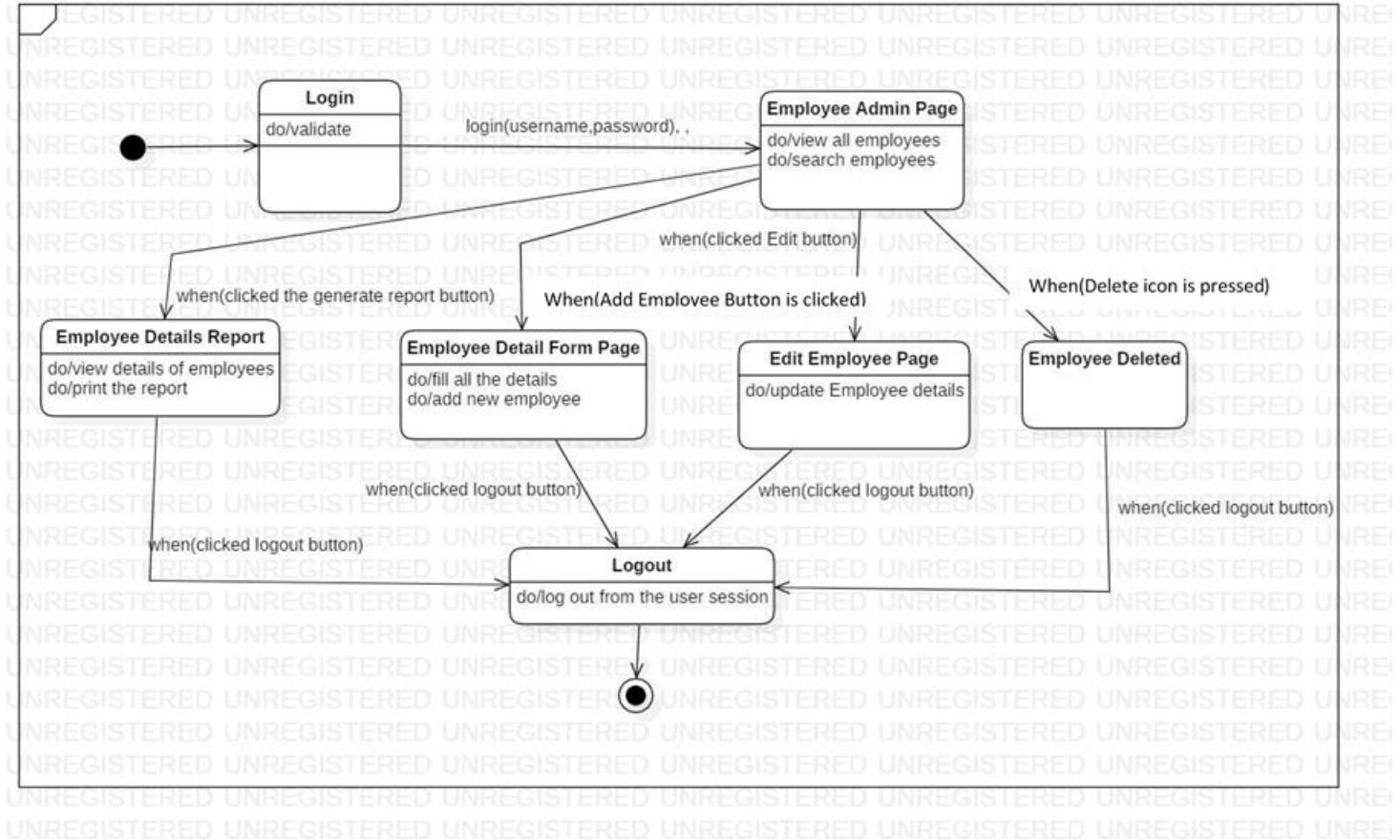


Figure 2.2.6 - 5

## State Chart Diagram – Employee Salary Management

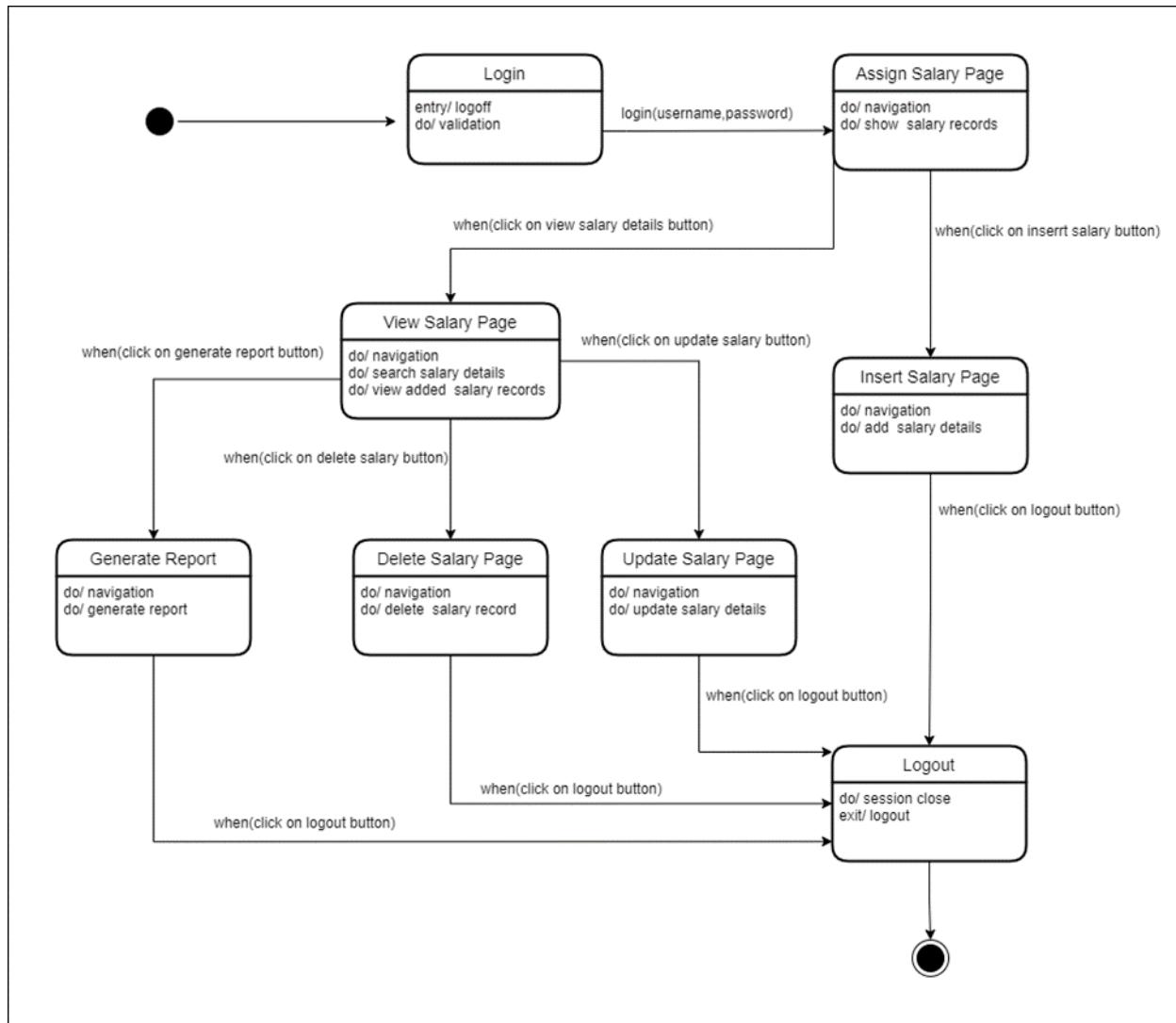


Figure 2.2.6 - 6

## State Chart Diagram – Ticketing Management

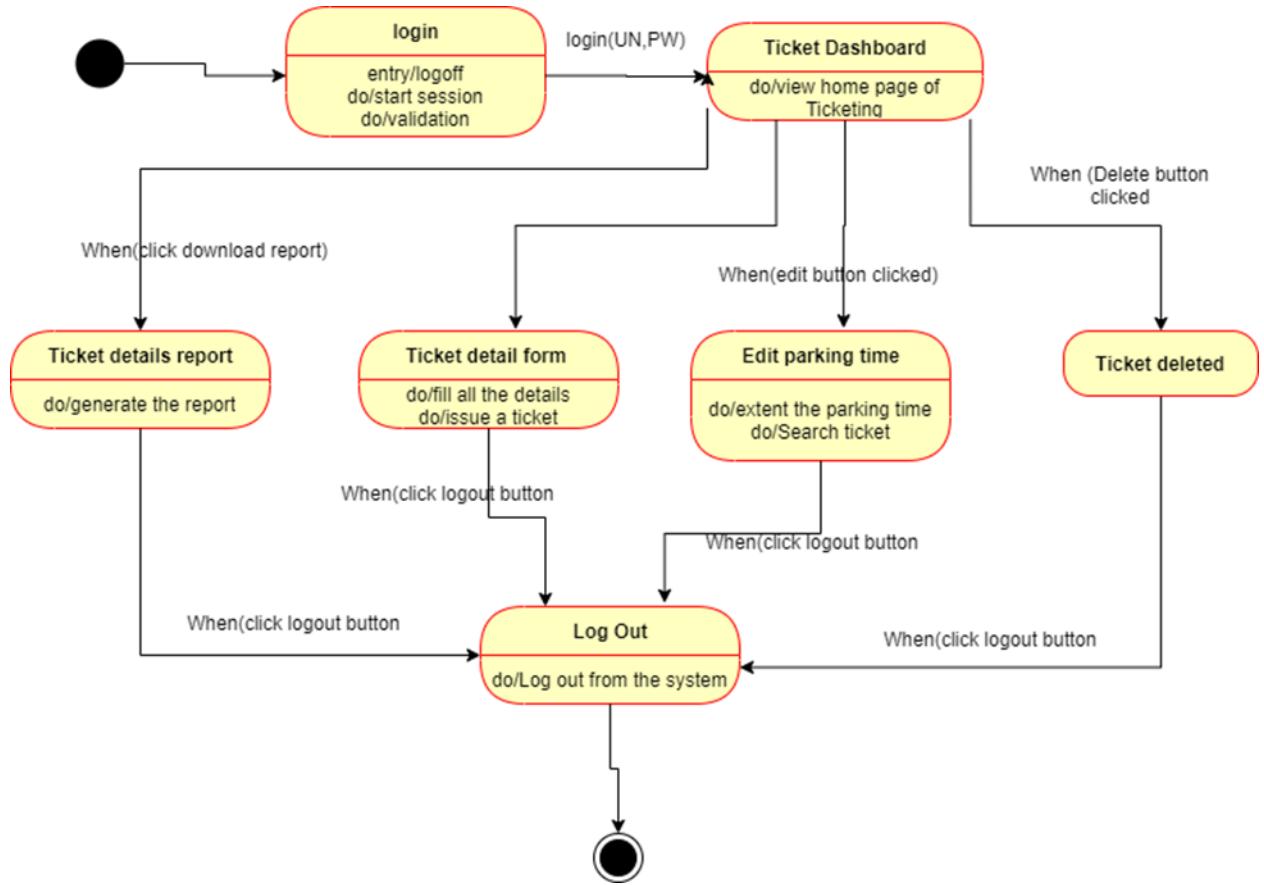
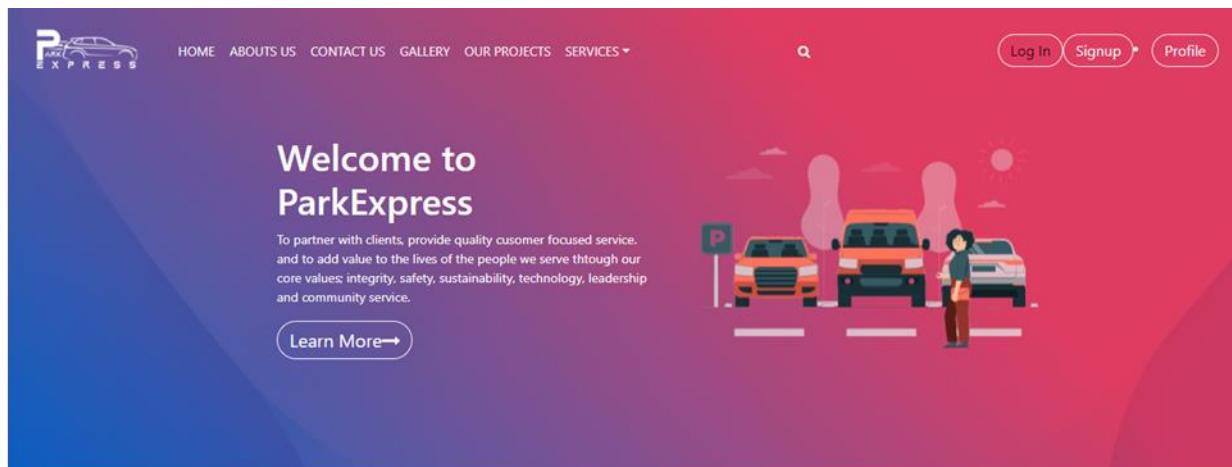


Figure 2.2.6 - 7

## 2.2.7: Interfaces

### Login - Interface



### LOGIN

Email Address

Password

[Forgot your password ?](#)

[LOGIN](#)

Not a member yet? [Register Now](#)

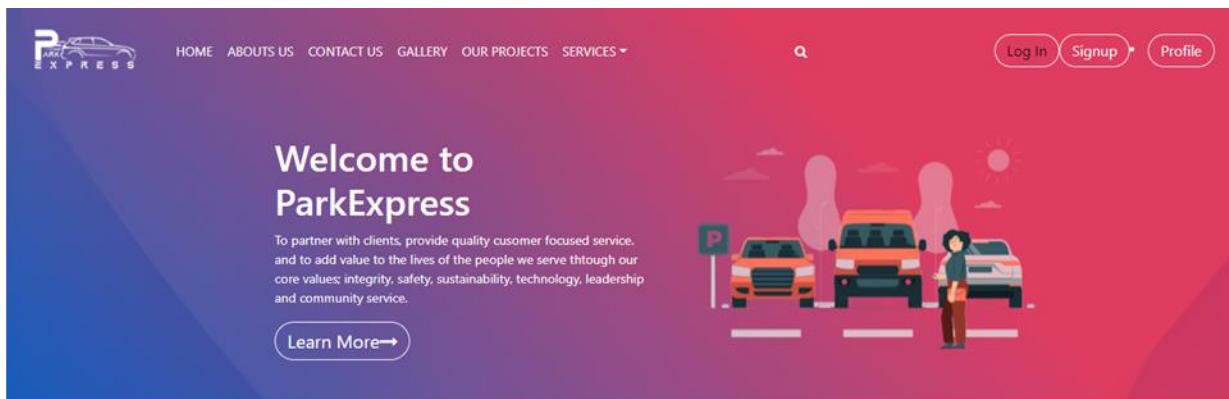
The image shows the footer section of the ParkExpress website. It features a dark blue-to-red gradient background. On the left, there is a "PARKEPRESS" logo. Below it, the company's address is listed: "22/A HOMES ROAD, KALUTARA, 12000, Sri Lanka". Contact information is provided: "Phone: +94 34 2264535" and "Email: admin@parkexpress.com". In the center, there are two columns of "Useful Links" and "Our Services". The "Useful Links" column includes Home, About us, Contact us, Gallery, Our Projects, Terms of service, and Privacy policy. The "Our Services" column includes Booking, Allot Parking, Shuttle Routes, GPS Tracker, and Ticketing. On the right, there is a "Join Our Newsletter" section with a text input field and a "Submit" button. Below this, there is a quote by Billy Wilder: "Trust your own instinct. Your mistakes might as well be your own, instead of someone else's." - Billy Wilder. At the bottom, there are social media icons for Twitter, Facebook, Instagram, Google+, and LinkedIn. The footer also includes copyright information: "© Copyright Techie. All Rights Reserved" and "Designed by Clovers".

## Add – User Management

The screenshot displays the ParkExpress website's registration page. At the top, there is a navigation bar with links for HOME, ABOUTS US, CONTACT US, GALLERY, OUR PROJECTS, and SERVICES. On the right side of the header are buttons for Log In, Signup, and Profile. Below the header, a banner features the text "Welcome to ParkExpress" and a subtext about partnering with clients and providing quality service. A "Learn More" button is also present. To the right of the banner is a cartoon illustration of a person standing next to two cars under a sun. The main content area is titled "REGISTER". It contains fields for First Name, Last Name, Email Address, Telephone, Password, and Confirm Password, each with a placeholder message. A "REGISTER" button is located at the bottom of these fields. Below the registration form, a link says "Already have an account? Login Now". At the bottom of the page, there is a footer section for PARKEXPRESS, which includes address details (22/A HOMIES ROAD, KALUTARA, 12000, Sri Lanka), contact information (Phone: +94 34 2264535, Email: admin@parkxpress.com), and useful links like Home, About us, Contact us, Gallery, Our Projects, Terms of service, and Privacy policy. The footer also features sections for "Our Services" (Booking, Allot Parking, Shuttle Routes, GPS Tracker, Ticketing) and "Join Our Newsletter" with a quote by Billy Wilder: "Trust your own instinct. Your mistakes might as well be your own, instead of someone else's." - Billy Wilder. There is a newsletter sign-up form with a "Submit" button, and social media icons for Twitter, Facebook, Instagram, Google+, and LinkedIn.

Figure 2.2.7-0-1 – Add User– User Management

## Edit – User Management



◀ Go Back

### EDIT USER

First Name

Sam

Last Name

James

Telephone

987654321

Email

samjames120900@gmail.com

isAdmin

UPDATE

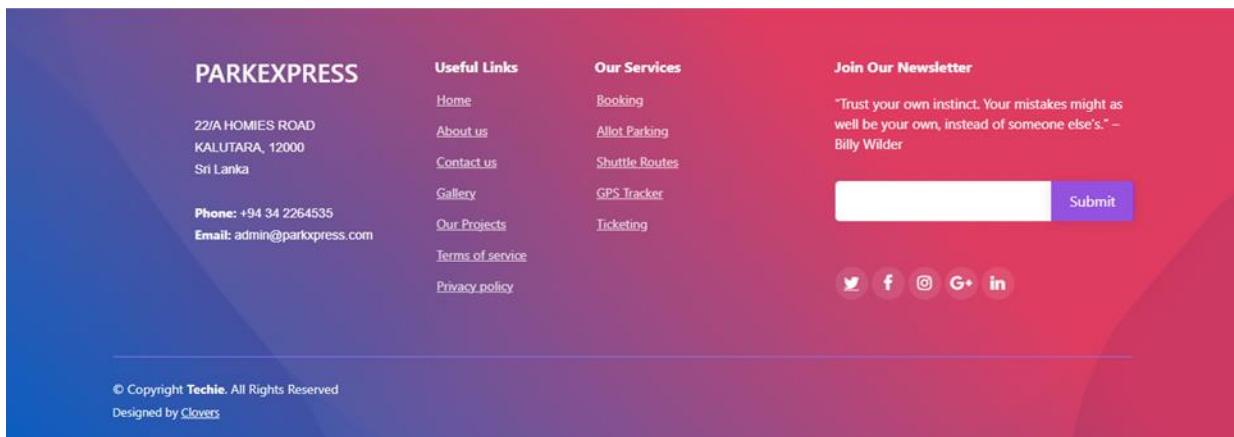
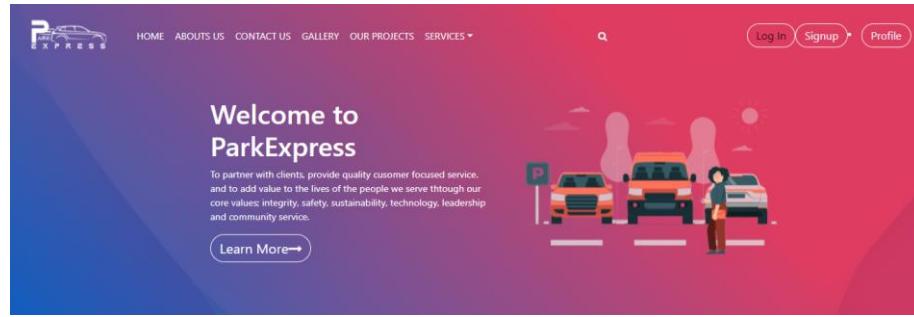


Figure 2.2.7-0-2 – Edit User– User Management



### ADMIN PROFILE



First Name

Last Name

Email

Telephone

New Password

Confirm New Password

**UPDATE**

### ALL USERS

ID	First Name	Last Name	Email	Telephone	Role	Action
61399e123b248b672fd65c12	Sam	James	samjames120900@gmail.com	987654321	X User	<input checked="" type="checkbox"/> <input type="checkbox"/>
6139a7a73b248b672fd65c1b	Kasuni	Jayasekera	it20198572@my.sliit.lk	43542694	✓ Admin	<input checked="" type="checkbox"/> <input type="checkbox"/>
613cb1ac19aa360b408c0b9	Kaveesha	Perera	kavipera0109@gmail.com	771821926	X User	<input checked="" type="checkbox"/> <input type="checkbox"/>
615a734658a3148a002d224e	John	St Clair	samindwanigasekera00@gmail.com	1234567890	X User	<input checked="" type="checkbox"/> <input type="checkbox"/>
615bdd9d692306657c765d5a	Ranika	Wanigasekera	samindi1209@gmail.com	716896368	✓ Admin	<input checked="" type="checkbox"/> <input type="checkbox"/>

**EXPORT PDF**

**EXPORT CSV**

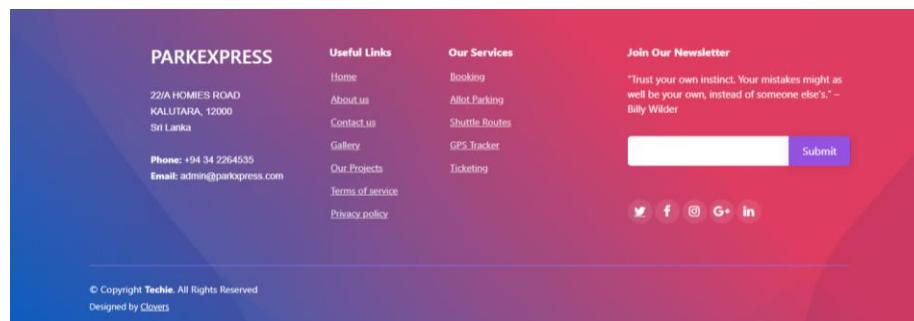


Figure 2.2.7-0-3 – View User – User Management  
 Figure 2.2.7-0-4 – Delete User – User Management  
 Figure 2.2.7-0-5 – Search User – User Management

## ALL REGISTERED USERS

ID	First Name	Last Name	Email	Telephone	Role	Action
61399e123b248b67	Sam	James	samjames120900@gmail.com	987654321	User	X
6139a7a73b248b67	Kasuni	Jayasekera	it20198572@my.slit.lk	43542694	Admin	X
613cb8ac19aa360b4068c8b9	Kaveesha	Perera	kaviperera0109@gmail.com	771821926	User	X
615a734658a3148a002d224e	John	St Clair	samindiwaniwanigasekera00@gmail.com	1234567890	User	X
615bdd9d69230665	Ranika	Wanigasekera	samindi1209@gmail.com	716896368	Admin	X

← X RegisteredUsers (2).xls

	A	B	C	D	E	F	G
1	ID	First Name	Last Name	Email	Telephone	Role	Action
2	61399e123b248b67	Sam	James	samjames120900@gmail.com	987654321	User	X
3	6139a7a73b248b67	Kasuni	Jayasekera	it20198572@my.slit.lk	43542694	Admin	X
4	613cb8ac19aa360b4068c8b9	Kaveesha	Perera	kaviperera0109@gmail.com	771821926	User	X
5	615a734658a3148a002d224e	John	St Clair	samindiwaniwanigasekera00@gmail.com	1234567890	User	X
6	615bdd9d69230665	Ranika	Wanigasekera	samindi1209@gmail.com	716896368	Admin	X

Snoozed to Kasuni, me ▾

Important

Figure 2.2.7-0-6 – Report – User Management

Figure 2.2.8 - 0 – 7

## Add Booking Management

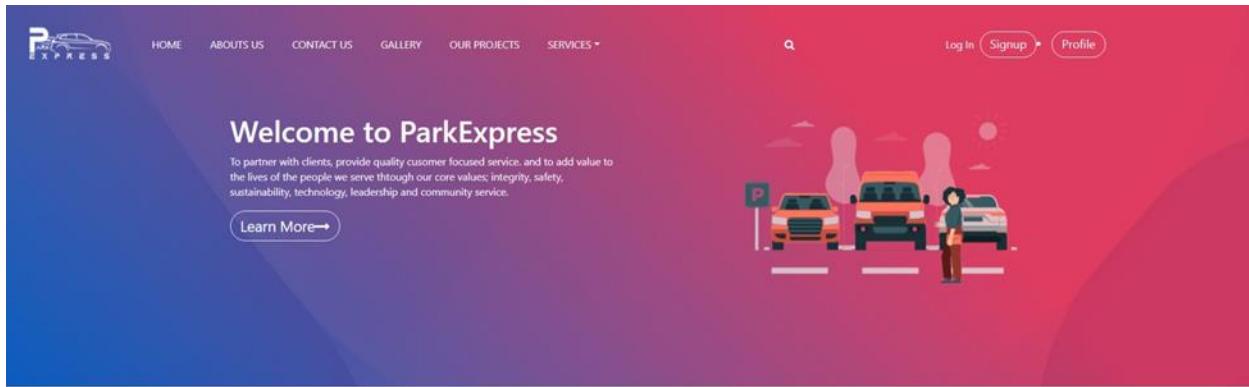
The screenshot displays the ParkExpress website's booking management interface. At the top, there is a navigation bar with links to HOME, ABOUT US, CONTACT US, GALLERY, OUR PROJECTS, SERVICES, and a sign-in/sign-up/profile section. Below the navigation is a banner titled "Welcome to ParkExpress" featuring a red-to-blue gradient background with a small illustration of cars and people.

The main content area has a purple header "Economy Parking". Below it, a text block describes the service: "Start and finish your trip relaxed knowing your car is safe, secure and makes travel the perfect option for you. We offer a range of parking options for the airport or a memorable drive. Economy parking is low cost parking on its best. All the parks are secure and if you choose to Park & Ride there are shuttle every 20 minutes to and from the domestic terminal making it a great choice for short or long trips away."

The central part of the page is titled "Parking with ease" and features three sections: "Economical convenience" (with a photo of a car interior), a map of the parking facility, and "Secure and monitored" (with a photo of a parking garage). Below these sections is a large form titled "YOUR PARKING DETAILS" for booking a parking slot. The form includes fields for Booking ID (0001), First Name (Ann), Last Name (Mary), Contact Number (0123456789), Address (Simple rd, Colombo 04), Vehicle Details (License Plate Number DSA 1122, Vehicle Model Toyota), Entry/Exit Date and Time Details (Entry Date/Time 10/05/2021 1:48 PM, Exit Date 10/05/2021 1:48 PM), Shuttle Bus Tickets (Bus Number 192, Bus Route Colombo - Horana), Payment Details (Card Number 0123456789, Card Holder Name Ann Mary, Expiry Date 10/05/2021 1:48 PM, Security Code 1234), and two buttons: "Click Here" and "Go Back".

At the bottom of the page, there is a footer section with links to PARKEXPRESS (address: 20A/1000/1 ROAD, KALUTARA, SRI LANKA, phone: +94 14 2404505, email: info@parkexpress.lk), Useful Links (Home, About us, Contact us, Gallery, Our Projects, Terms of service, Privacy policy), Our Services (Booking, Asia Parking, Shuttle Service, GPS Tracker, Shuttling), and a "Join Our Newsletter" form with a "Subscribe" button. The footer also includes social media icons for Facebook, Google+, and LinkedIn.

Figure 2.2.8 - 0 – 7: Interface – Insert Function



## Update Booking

BookingID:  
B550

Firstname:  
Nimal

Lastname:  
Perera

Contactnumber:  
712457845

Address:  
89/k, Temple rd, Kandy

PlateNumber:  
YUI-8956

VehicleModel:  
Toyota

EntryDate:  
Sun Oct 03 2021 23:40:07 GMT+0530 (India Standard Time)

ExitDate:  
Sun Oct 03 2021 23:40:07 GMT+0530 (India Standard Time)

BusNo:  
8

BusRoute:  
Pettah

[Update Booking](#)

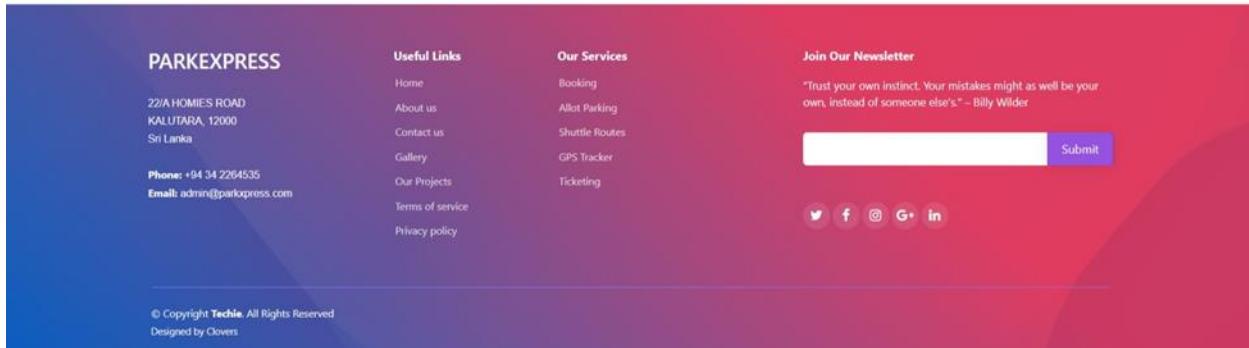


Figure 2.2.8 - 0 – 8: Interface – Edit Function

Booking ID	First name	Lastname	Contact number	Address	Plate Number	Vehicle Model	Entry Date	Exit Date	BusNo	BusRoute	Update	Delete	Print Booking Details
B550	Nimal	Perera	712457845	89/k, Temple rd, Kandy	YUI-8956	Toyota	Sun Oct 03 2021 23:40:07 GMT+0530 (India Standard Time)	Sun Oct 03 2021 23:40:07 GMT+0530 (India Standard Time)	8	Pettah	<button>Edit</button>	<button>Delete</button>	<button>Booking Slip</button>
B571	Nimal	Perera	712457845	89/k, Temple rd, Kandy	YUI-8956	Nisan	Mon Oct 04 2021 06:27:09 GMT+0530 (India Standard Time)	Mon Oct 04 2021 06:27:09 GMT+0530 (India Standard Time)	120	Horana	<button>Edit</button>	<button>Delete</button>	<button>Booking Slip</button>
B621	Nimal	Perera	715482541	89/k, Temple rd, Kandy	DRF-8956	Nisan	Tue Oct 05 2021 06:18:31 GMT+0530 (India Standard Time)	Tue Oct 05 2021 06:18:31 GMT+0530 (India Standard Time)	39	Kohowala	<button>Edit</button>	<button>Delete</button>	<button>Booking Slip</button>
B650	Nimal	Perera	712457845	89/k, Temple	JIK-5623	Nisan	Tue Oct 05 2021	Tue Oct 05 2021	120	Pettah	<button>Edit</button>	<button>Delete</button>	<button>Booking Slip</button>

Figure 2.2.8 - 0 – 9: Interface – Delete – Booking Management



### PARK AND GO COLOMBO WESTERN PROVINCE

Parking Slot Booking

BookingID	:	8571
First name	:	Nimal
Last Name	:	Perera
Contact Number	:	712457845
Address	:	89/k, Temple rd, Kandy
Plate Number	:	YUI-8956
Vehicle Model	:	Nisan
Entry Date	:	Mon Oct 04 2021 06:27:09 GMT+0530 (India Standard Time)
Exit Date	:	Mon Oct 04 2021 06:27:09 GMT+0530 (India Standard Time)
Bus No	:	120
Bus Route	:	Horana

[Print Booking slip](#)  
[Back](#)

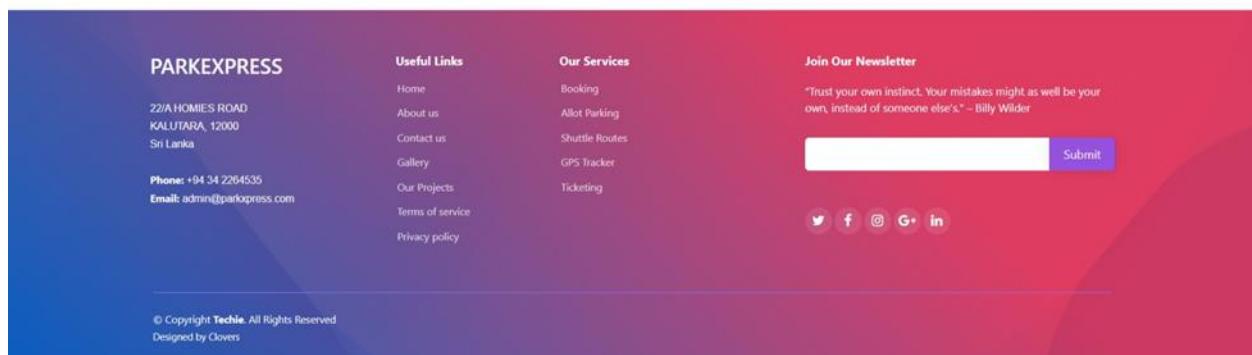


Figure 2.2.8 - 0 - 10 Interface – View – Booking Management



## All Booking Details

Booking ID	First name	Lastname	Contact number	Address	Plate Number	Vehicle Model	Entry Date	Exit Date	BusNo	BusRoute	Update	Delete	Print Booking Details
B550	Nimal	Perera	712457845	89/k, Temple rd, Kandy	YUL-8956	Toyota	Sun Oct 03 2021 23:40:07 GMT +0530 (India Standard Time)	Sun Oct 03 2021 23:40:07 GMT +0530 (India Standard Time)	8	Pettah	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	<input type="button" value="Booking Slip"/>
B571	Nimal	Perera	712457845	89/k, Temple rd, Kandy	YUL-8956	Nisan	Mon Oct 04 2021 06:27:09 GMT +0530 (India Standard Time)	Mon Oct 04 2021 06:27:09 GMT +0530 (India Standard Time)	120	Horana	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	<input type="button" value="Booking Slip"/>
B621	Nimal	Perera	715482541	89/k, Temple rd, Kandy	DRF-8956	Nisan	Tue Oct 05 2021 06:18:31 GMT +0530 (India Standard Time)	Tue Oct 05 2021 06:18:31 GMT +0530 (India Standard Time)	39	Kohowala	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	<input type="button" value="Booking Slip"/>
B650	Nimal	Perera	712457845	89/k, Temple rd, Kandy	JIK-5623	Nisan	Tue Oct 05 2021 06:20:44 GMT +0530 (India Standard Time)	Tue Oct 05 2021 06:20:44 GMT +0530 (India Standard Time)	120	Pettah	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	<input type="button" value="Booking Slip"/>
B721	Nimal	Perera	714578451	89/k, Temple rd, Kandy	PPP-5252	Nisan	Tue Oct 05 2021 06:22:12 GMT +0530 (India Standard Time)	Tue Oct 05 2021 06:22:12 GMT +0530 (India Standard Time)	150	Colombo	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	<input type="button" value="Booking Slip"/>

**PARKEXPRESS**

22/A HOMIES ROAD  
KALUTARA, 12000  
Sri Lanka

Phone: +94 34 2284535  
Email: admin@parkexpress.com

Useful Links

- [Home](#)
- [About us](#)
- [Contact us](#)
- [Gallery](#)
- [Our Projects](#)
- [Terms of service](#)
- [Privacy policy](#)

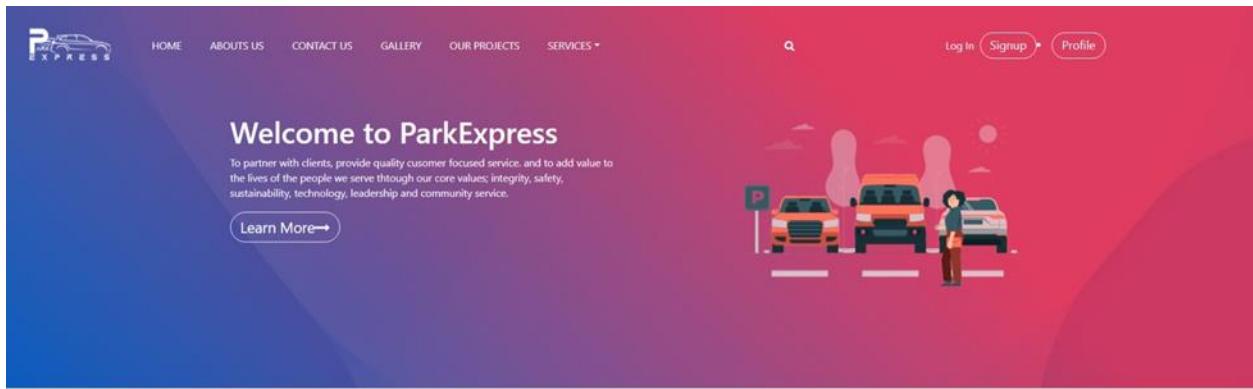
Our Services

- [Booking](#)
- [Alloc Parking](#)
- [Shuttle Routes](#)
- [GPS Tracker](#)
- [Ticketing](#)

Join Our Newsletter

"Trust your own instinct. Your mistakes might as well be your own, instead of someone else's." – Billy Wilder

**Figure 2.2.8 - 0 - 10 Interface – View – Booking Management**



## All Booking Details

Booking ID	First name	Lastname	Contact number	Address	Plate Number	Vehicle Model	Entry Date	Exit Date	BusNo	BusRoute	Update	Delete	Print Booking Details
B550	Nimal	Perera	712457845	89/k, Temple rd, Kandy	YUI- 8956	Toyota	Sun Oct 03 2021 23:40:07 GMT+0530 (India Standard Time)	Sun Oct 03 2021 23:40:07 GMT+0530 (India Standard Time)	8	Pettah	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	<input type="button" value="Booking Slip"/>

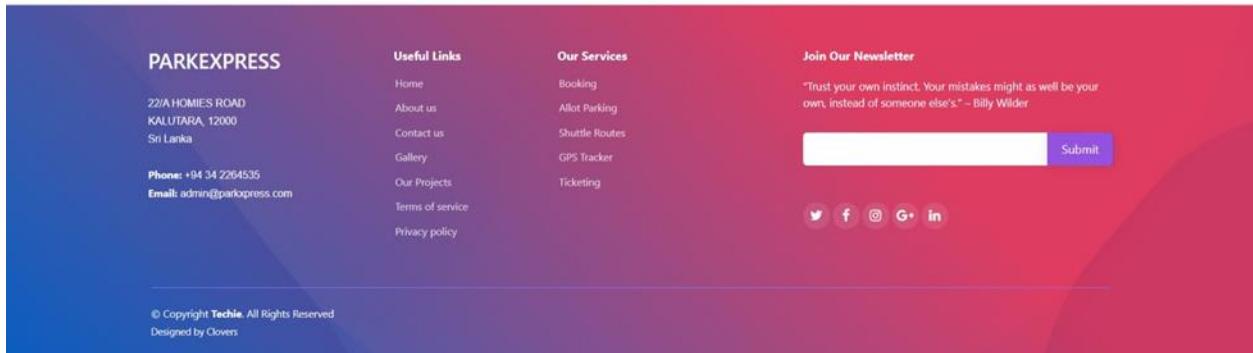


Figure 2.2.8 - 0 – 11 Interface – Search – Booking Management



## Slot Booking Report

### Monthly Slot Booking Report for Month of October 2021

Booking ID	First name	Contact number	Plate Number	Vehicle Model	Entry Date	BusNo	BusRoute
B550	Nimal	712457845	YUI-8956	Toyota	Sun Oct 03 2021 23:40:07 GMT+0530 (India Standard Time)	8	Pettah
B621	Nimal	715482541	DRF-8956	Nisan	Tue Oct 05 2021 06:18:31 GMT+0530 (India Standard Time)	39	Kohowala
B650	Nimal	712457845	JIK-5623	Nisan	Tue Oct 05 2021 06:20:44 GMT+0530 (India Standard Time)	120	Pettah
B721	Nimal	714578451	PPP-5252	Nisan	Tue Oct 05 2021 06:22:12 GMT+0530 (India Standard Time)	150	Colombo 14

Figure 2.2.8 - 0 - 12      Interface – Report – Booking Management

BookingID :	B550
First name :	Nimal
Last Name :	Perera
Contact Number :	712457845
Address :	89/k, Temple rd, Kandy
Plate Number :	YUI-8956
Vehicle Model :	Toyota

Figure 2.2.8 - 0 - 12      Interface – Report – Booking Management

## Interfaces – Parking Slot Management

The screenshot shows the ParkExpress website's homepage with a blue-to-red gradient header. Below the header, there's a 'Welcome to ParkExpress' section with a sub-section titled 'Reserve Your Slot'. This section contains a form for adding a new parking slot. The form fields include:

- Car Parking Type: Basement Parking
- Parking Slot No.: 20
- Parking Slot Size (in inches): 5000
- Car Plate No.: GJ1-5007
- Customer Registration ID: C5007
- Entry Date: Sat Sep 18 2021 20:07:12 GMT+05:30 (India Standard Time)
- Description: Login

At the bottom of the form are two buttons: 'Save Parking' and 'Back To Parking'.

Figure 2.2.9-0-19 – Add parking Slot – Parking Slot Management

The screenshot shows the ParkExpress website's homepage with a blue-to-red gradient header. Below the header, there's a 'Welcome to ParkExpress' section with a sub-section titled 'Edit Parking Slot'. This section contains a form for editing an existing parking slot. The form fields are identical to the 'Add New Slot' form:

- Car Parking Type: Basement Parking
- Parking Slot No.: 20
- Parking Slot Size (in inches): 5000
- Car Plate No.: GJ1-5007
- Customer Registration ID: C5007
- Entry Date: Sat Sep 18 2021 20:07:12 GMT+05:30 (India Standard Time)
- Description: Login

At the bottom of the form is a single button: 'Update Parking'.

Figure 2.2.9-0-20 – Edit parking Slot – Parking Slot Management

Welcome to ParkExpress

To park with peace, please park in secured service, and be well-serve to the love of people car serve through our own value, integrity, customer satisfaction, security through community service.

[Learn More](#)

Allocated Slots Report

Type	Slot No.	Slot Size	Plate No.	Customer Reg ID	Entry Date and Time	Description	Action
Basement Parking	89	16008	KD-5887	C3897	Sat Sep 18 2021 20:47:52 GMT+05:30 (India Standard Time)	Login	<a href="#">Edit</a> <a href="#">Delete</a>
Basement Parking	86	16008	WKL-5730	C38975	Wed Sep 22 2021 17:05:13 GMT+05:30 (India Standard Time)	Entering	<a href="#">Edit</a> <a href="#">Delete</a>
Outer Parking	25	16008	KD-5887	C38980	Wed Sep 22 2021 20:09:40 GMT+05:30 (India Standard Time)	My booking	<a href="#">Edit</a> <a href="#">Delete</a>
Outer Parking	78	16008	FH-5889	C37374	Wed Sep 22 2021 20:10:32 GMT+05:30 (India Standard Time)	Login	<a href="#">Edit</a> <a href="#">Delete</a>
First Floor Parking	45	T549	KD-5887	C38945	Fri Oct 01 2021 00:14:53 GMT+05:30 (India Standard Time)	Work Done	<a href="#">Edit</a> <a href="#">Delete</a>
First Floor Parking	56	16008	WKL-5730	C38946	Fri Oct 01 2021 00:15:04 GMT+05:30 (India Standard Time)	Work Done	<a href="#">Edit</a> <a href="#">Delete</a>
Second Floor Parking	2	16008	NKL-2569	C37374	Mon Oct 04 2021 12:54:49 GMT+05:30 (India Standard Time)	Payment Done	<a href="#">Edit</a> <a href="#">Delete</a>

[Back To Allocated Parking](#)

PARKEXPRESS  
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MALLORGA, 00000  
Srilanka  
Phone: +94 24 020202  
Email: [book@parkexpress.com](mailto:book@parkexpress.com)

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Figure 2.2.9-0-21- View parking Slot – Parking Slot Management

localhost:3000 says

Parking Slot Successfully Deleted!!

[OK](#)

Allocated Slots Report

Type	Slot No.	Slot Size	Plate No.	Customer Reg ID	Entry Date and Time	Description	Action
Basement Parking	89	16008	KD-5887	C3897	Sat Sep 18 2021 20:47:52 GMT+05:30 (India Standard Time)	Login	<a href="#">Edit</a> <a href="#">Delete</a>
Basement Parking	86	16008	WKL-5730	C38975	Wed Sep 22 2021 17:05:13 GMT+05:30 (India Standard Time)	Entering	<a href="#">Edit</a> <a href="#">Delete</a>
Outer Parking	25	16008	KD-5887	C38980	Wed Sep 22 2021 20:09:40 GMT+05:30 (India Standard Time)	My booking	<a href="#">Edit</a> <a href="#">Delete</a>
Outer Parking	78	16008	FH-5889	C37374	Wed Sep 22 2021 20:10:32 GMT+05:30 (India Standard Time)	Login	<a href="#">Edit</a> <a href="#">Delete</a>
First Floor Parking	45	T549	KD-5887	C38945	Fri Oct 01 2021 00:14:53 GMT+05:30 (India Standard Time)	Work Done	<a href="#">Edit</a> <a href="#">Delete</a>
First Floor Parking	56	16008	WKL-5730	C38946	Fri Oct 01 2021 00:15:04 GMT+05:30 (India Standard Time)	Work Done	<a href="#">Edit</a> <a href="#">Delete</a>
Second Floor Parking	2	16008	NKL-2569	C37374	Mon Oct 04 2021 12:54:49 GMT+05:30 (India Standard Time)	Payment Done	<a href="#">Edit</a> <a href="#">Delete</a>

[Back To Allocated Parking](#)

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Figure 2.2.9-0-22 – Delete parking Slot – Parking Slot Management

The screenshot shows the ParkExpress website's homepage with a blue-to-red gradient background. At the top, there's a navigation bar with links for HOME, ABOUT US, CONTACT US, GALLERY, OUR PROJECTS, SERVICES, and a search bar. To the right are buttons for Log in, Signup, and Profile. Below the header is a section titled "Welcome to ParkExpress" with a sub-section about their core values: integrity, safety, sustainability, technology, leadership, and community service. A "Learn More" button is present. To the right is a cartoon illustration of a parking lot with cars and people. The main content area is titled "Allocated Slots Report" and contains a table with the following data:

Type	Slot No	Slot Size	Plate No	Customer Reg ID	Entry Date and Time	Description	Action
First Floor Parking	58	5698	WR-5730	C9874	Sun Oct 03 2021 00:23:54 GMT+0530 (India Standard Time)	Work Done	<a href="#">Edit</a> <a href="#">Delete</a>

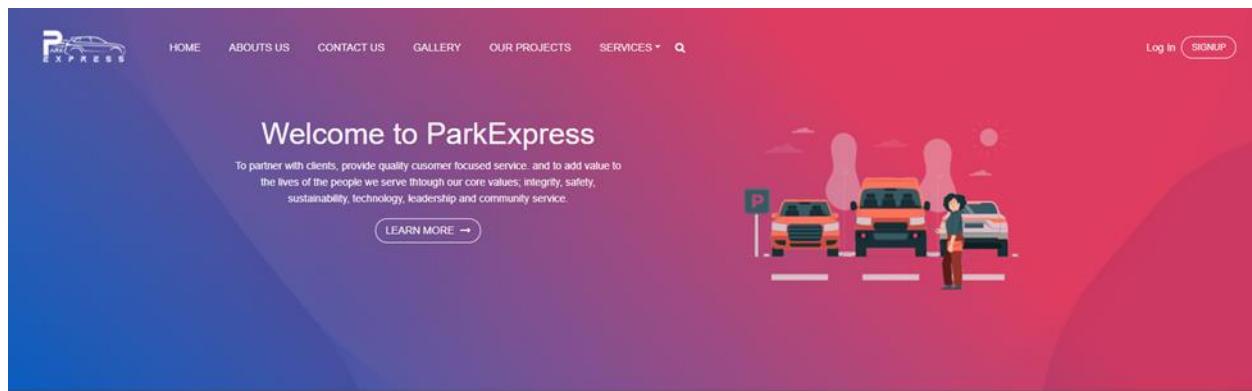
Below the table is a "Back To Allot Parking" button. At the bottom of the page is a footer with the company name "PARKEXPRESS", address "23/A HOMES ROAD KALUTARA, 13000 Sri Lanka", and links for Home, About us, Contact us, and Gallery. It also includes "Our Services" (Booking, Allot Parking, Shuttle routes, GPS Tracker), "Join Our Newsletter", and a "Submit" button.

Figure 2.2.9-0-23 – Search parking Slot – Parking Slot Management

## Park And Go Management System Car Parking Report Monthly Parking Report for Month of October 2021

Type	Slot No	Slot Size	Plate No	Customer Reg ID	Description
Basement Parking	89	5698	GU-5897	C5897	Login
Basement Parking	56	5698	WR-5730	C8975	Entering
Outer Parking	25	5698	GU-5897	C5689	My booking
Outer Parking	78	5698	FR-5896	C2252	Login
First Floor Parking	45	1569	KQ-0598	C5645	Work Done
First Floor Parking	58	5698	WR-5730	C9874	Work Done
Second Floor Parking	2	7895	NK-2569	C3214	Payment Done

Figure 2.2.9-0-24 – Report – Parking Slot Management



### Adding a new bus

Bus ID	Date Rented
<input style="width: 100%; height: 25px; border: 1px solid #ccc; padding: 5px;" type="text"/>	<input style="width: 100%; height: 25px; border: 1px solid #ccc; padding: 5px;" type="text"/> mm/dd/yyyy <input style="width: 25px; height: 25px; border: none;" type="button" value="..."/>
Bus Name	Rental Remaining
<input style="width: 100%; height: 25px; border: 1px solid #ccc; padding: 5px;" type="text"/>	<input style="width: 100%; height: 25px; border: 1px solid #ccc; padding: 5px;" type="text"/> mm/dd/yyyy <input style="width: 25px; height: 25px; border: none;" type="button" value="..."/>
No. Plate	Contact Number
<input style="width: 100%; height: 25px; border: 1px solid #ccc; padding: 5px;" type="text"/>	<input style="width: 100%; height: 25px; border: 1px solid #ccc; padding: 5px;" type="text"/> Ex: 773675637
Owner's Name	
<input style="width: 100%; height: 25px; border: 1px solid #ccc; padding: 5px;" type="text"/>	<input style="width: 100px; height: 30px; background-color: #0072BD; color: white; border: 1px solid #0072BD; border-radius: 10px; font-weight: bold; font-size: 10px;" type="button" value="Add"/>

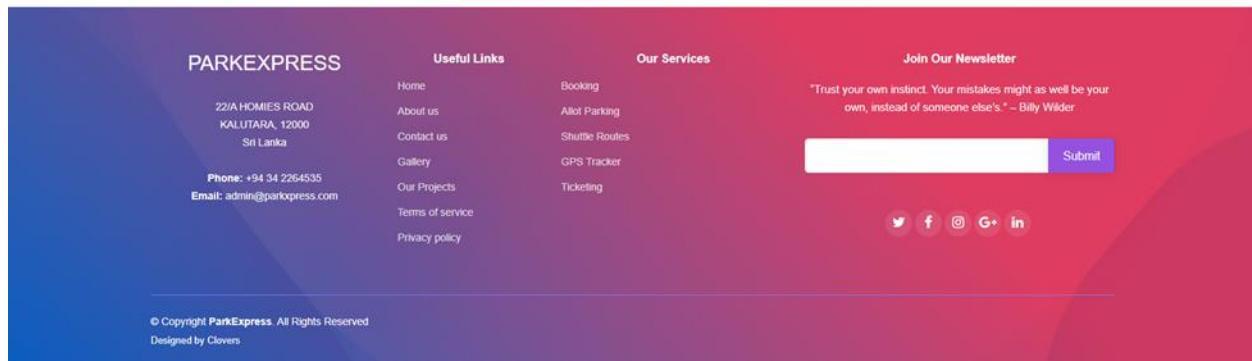
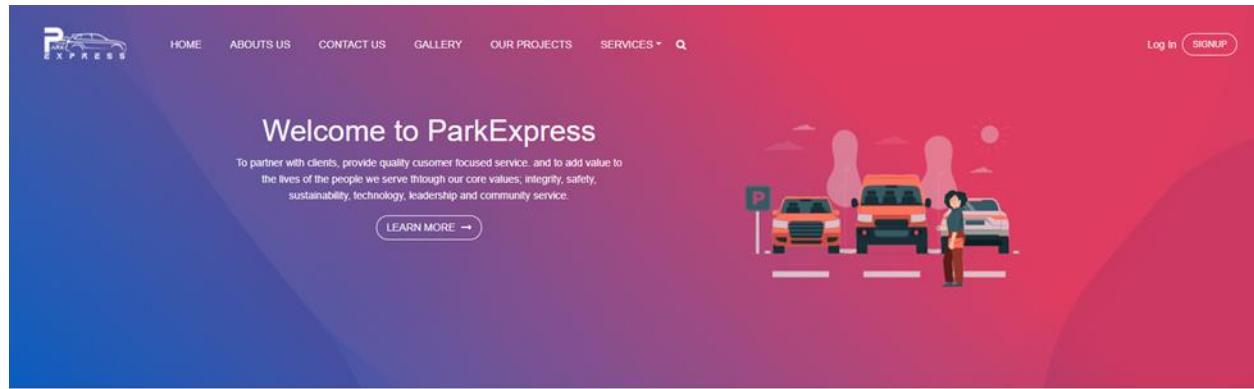


Figure 2.2.9 - 0 - 19

Interface – Add New Bus – Transport Management



### Adding a new route

The way we use to transport our customers.

Route ID rou-xxx	Departure Time <input type="button" value="..."/>
From City Name	Bus ID bid-xxx
To City Name	Driver ID did-xxx
Conductor ID cid-xxx	

[Add](#)

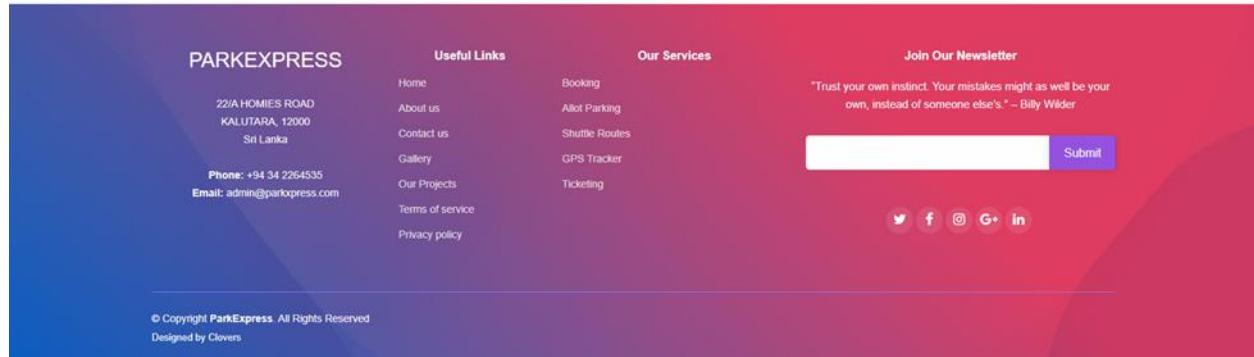
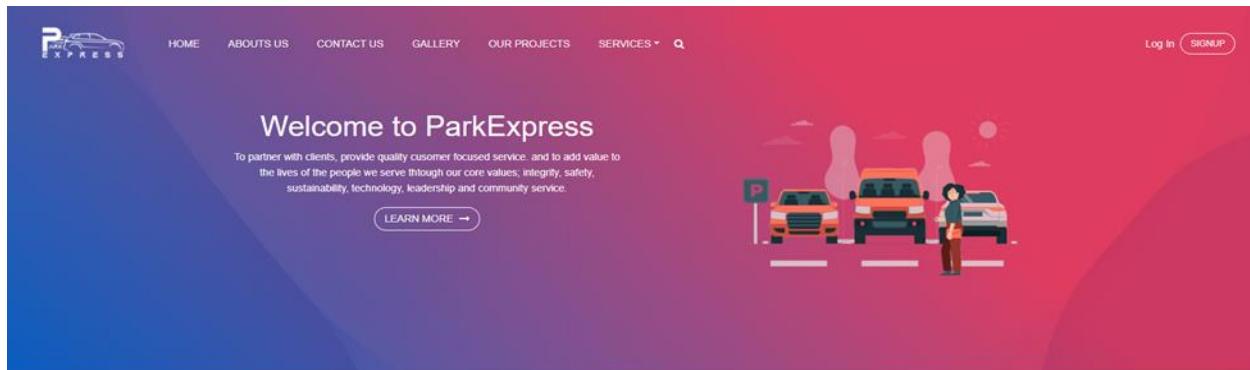


Figure 2.2.9 - 0 - 19 Interface – Add New route – Transport Management



### Adding a new staff member

Staff Member ID
Registering Date

Member Name
Type

Phone No

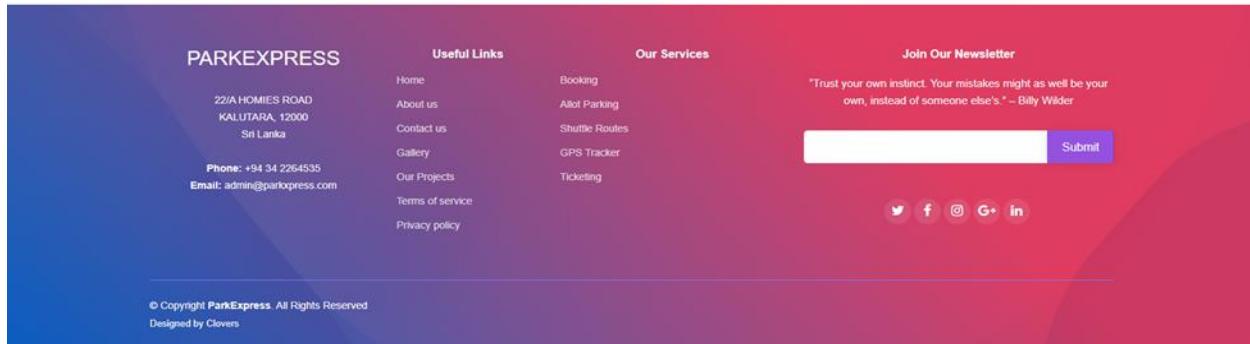
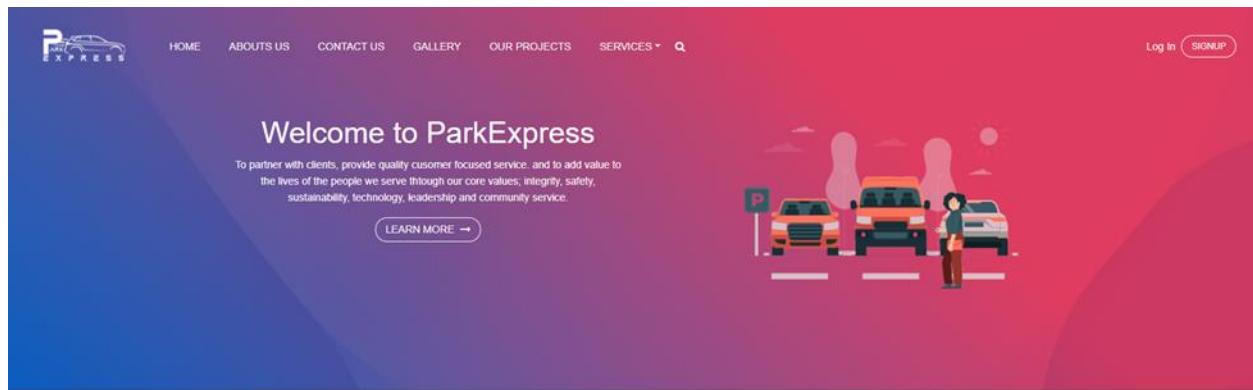


Figure 2.2.9 - 0 - 19 Interface – Add New Staff Member – Transport Management



### Updating Bus : bid001

**Busses**

The shuttles we use to transport our employees

Bus ID	Previously Rented Date: 2021-10-05T00:00:00.000Z
<input type="text" value="bid001"/>	<input type="text"/> mm/dd/yyyy
Bus Name	Previous Rent Remain: 2021-10-05T00:00:00.000Z
<input type="text" value="Bus 01"/>	<input type="text"/> mm/dd/yyyy
No. Plate	Contact Number
<input type="text" value="NF-1199"/>	<input type="text" value="252222222222"/>
Owner's Name	
<input type="text" value="Nuwan Kulasekara-Test"/>	<input type="button" value="Update"/>

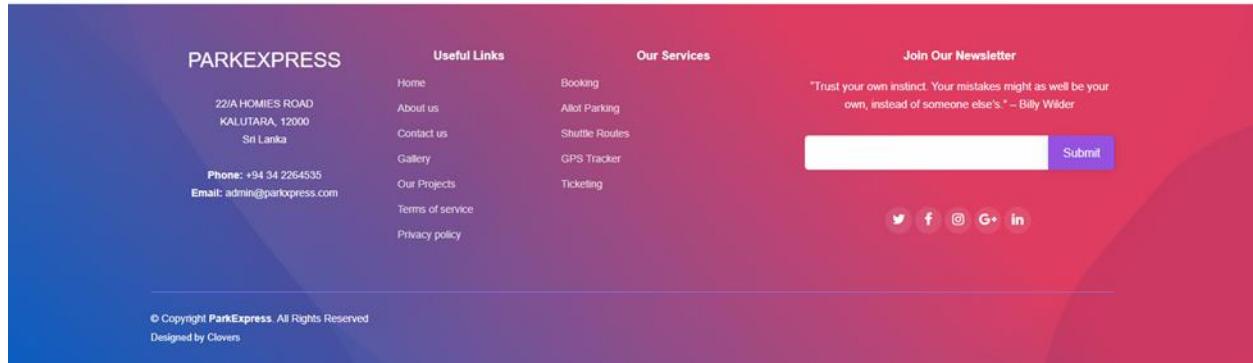
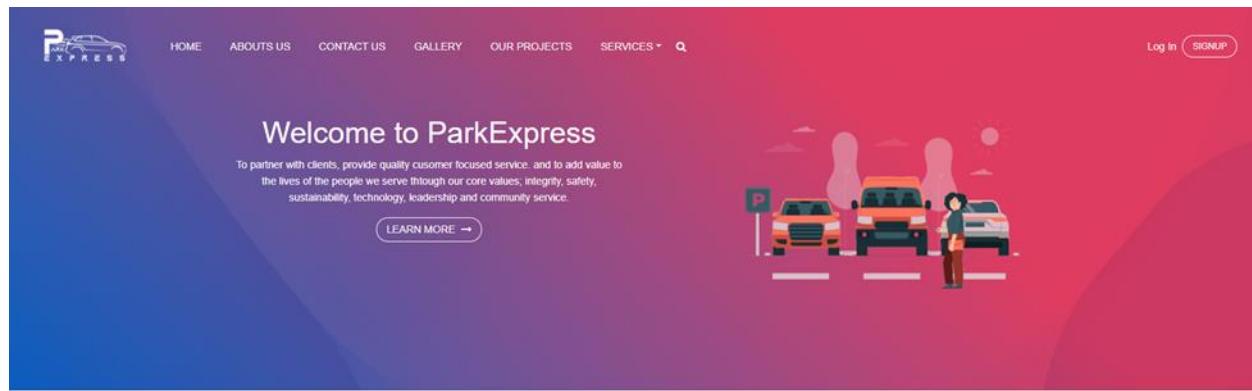


Figure 2.2.9 - 0 – 20 - Interface - Edit Bus– Transport Management



A modal window titled "Updating Route : rou-001" containing fields for Route ID (rou-001), Departure Time (10:30 AM), From (Malabe), Bus ID (bid-003), To (Panadura), Driver ID (did-005), Conductor ID (cid-005), and an "Update" button.

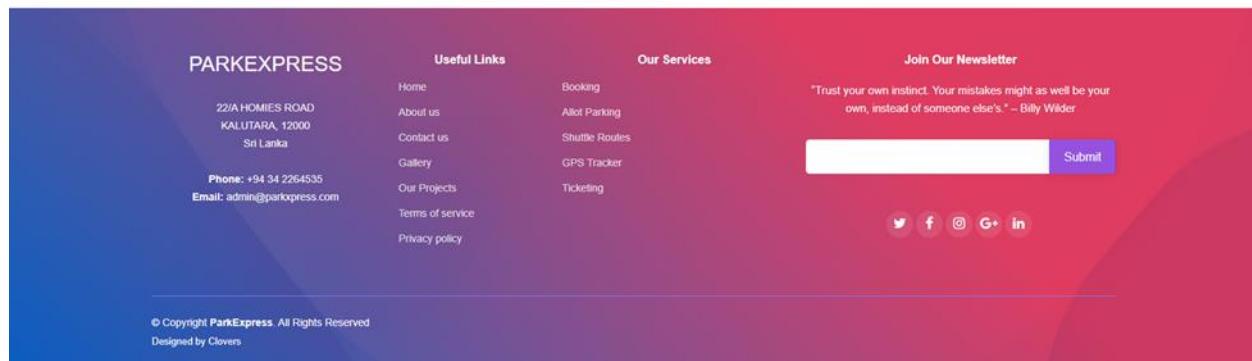
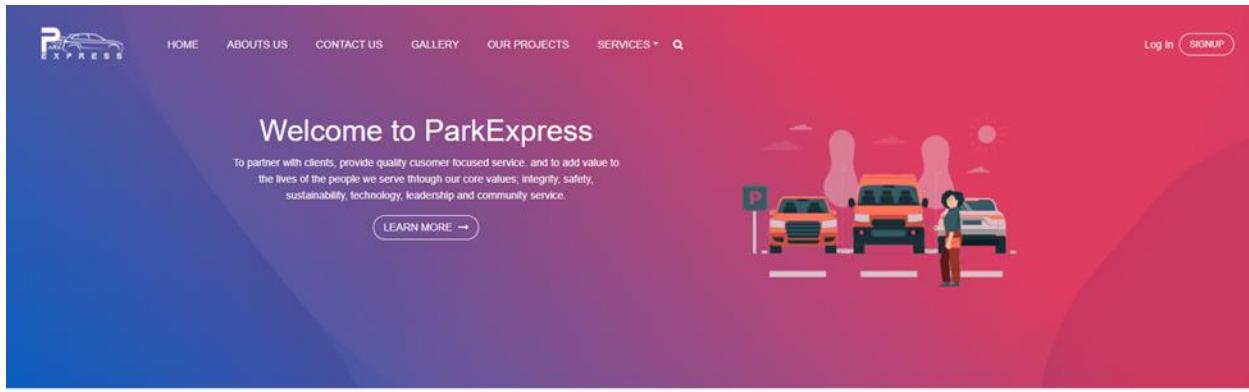


Figure 2.2.9 - 0 – 20 - Interface - Edit Route – Transport Management



Updating member: did001

Staff Member ID
Previous Reg Date: 2021-10-04T00:00:00Z

Member Name

Type

Phone No

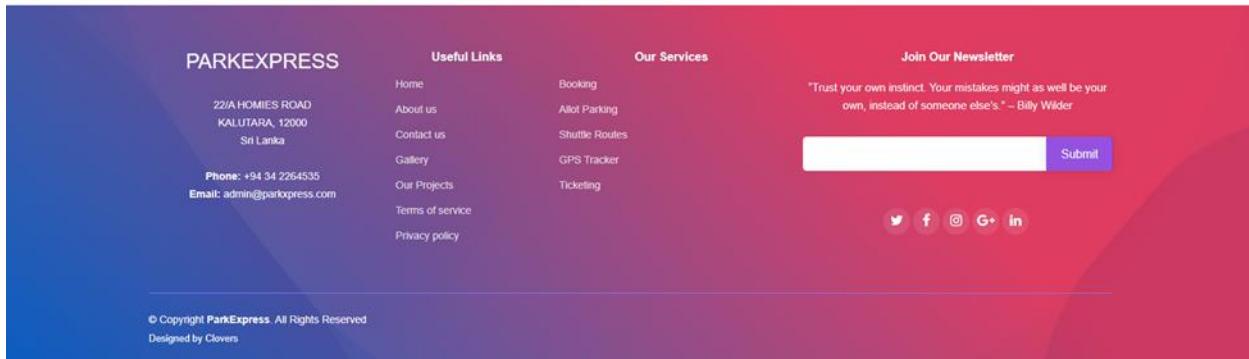


Figure 2.2.9 - 0 – 20 - Interface - Edit Staff– Transport Management

<localhost:3000/viewbuses>

Current Shuttles: 3  
View

Drivers: 3  
View

Vehicles: 2  
View

Daily Revenue: \$ null  
View

Recently Added Busses

Bus ID	Name	No Plate	Owner's Name	Date Rented	Rental Remaining	Phone No.	Action
bid001	Bus 01	NF-1199	Nuwan Kulasekara-Test	2021-10-05T00:00:00.000Z	2021-10-05T00:00:00.000Z	2522222222	
bid002	Auto Bot	GG-999	Optimus Prime	2021-10-07T00:00:00.000Z	2026-10-19T00:00:00.000Z	773044663	
bid003	Dusk	DG-384	Kumar Sangakkara	2021-10-05T00:00:00.000Z	2026-10-26T00:00:00.000Z	3333333533	

<localhost:3000/viewroutes>

Current Shuttles: 3  
View

Drivers: 2  
View

Vehicles: 2  
View

Daily Revenue: \$ null  
View

Recently Added Routes

Route ID	From	To	Departure Time	Bus ID	Driver ID	Conductor ID	Action
rou-001	Malabe	Panadura	10:30	bid-003	did-005	cid-005	
rou-002	Panadura	Malabe	09:30	bid001	did002	cid001	
rou-005	Panadura	Colombo	00:00	bid001	did002	cid003	

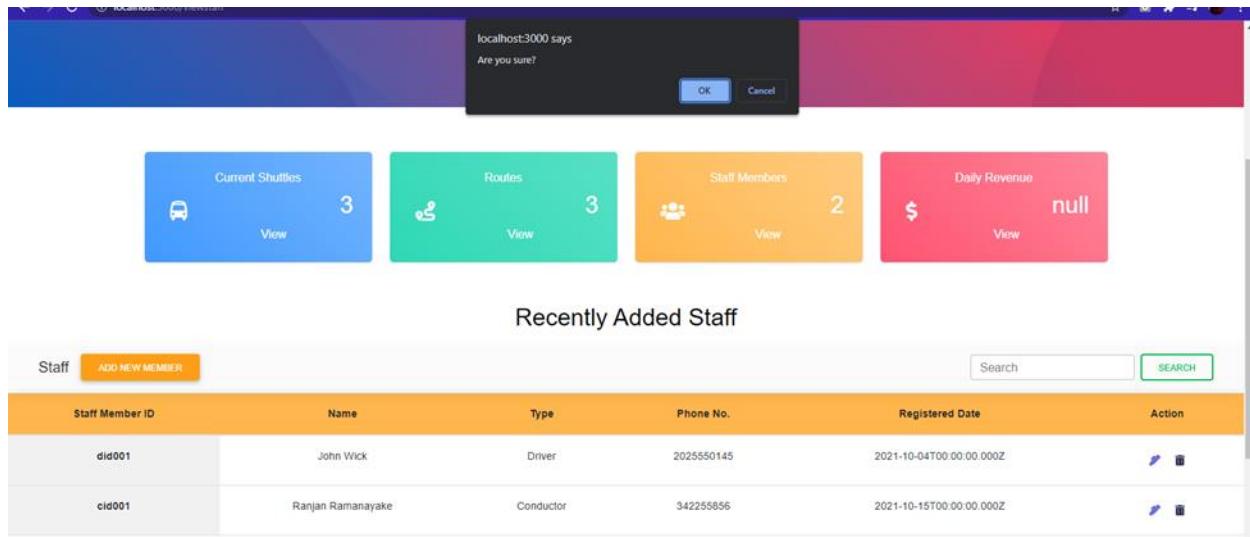
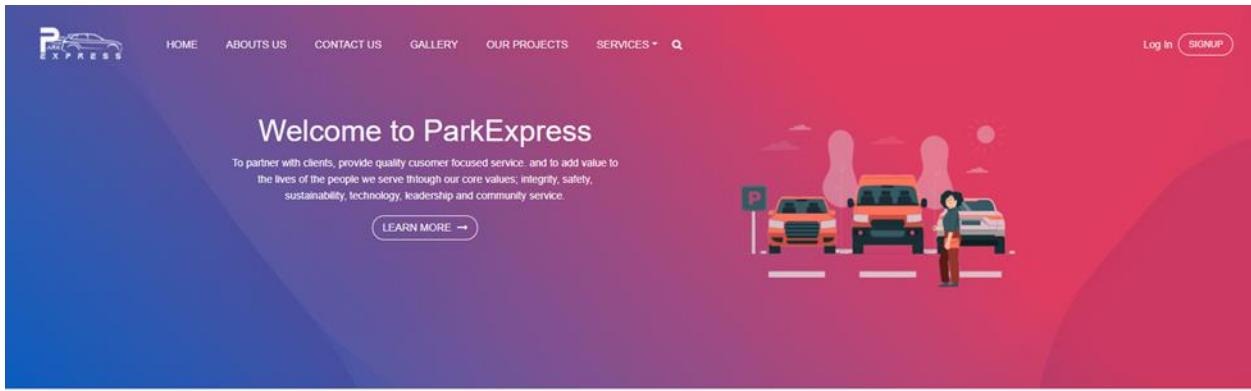


Figure 2.2.9 - 0 – 21 - Interface - Delete Staff – Transport Management



### Recently Added Busses

Busses		<a href="#">ADD NEW BUS</a>						Search <input type="text"/> <a href="#">SEARCH</a>	
Bus ID	Name	No Plate	Owner's Name	Date Rented	Rental Remaining	Phone No.	Action		
bid001	Bus 01	NF-1199	Nuwan Kulasekara-Test	2021-10-05T00:00:00.000Z	2021-10-05T00:00:00.000Z	2522222222			
bid002	Auto Bot	GG-999	Optimus Prime	2021-10-07T00:00:00.000Z	2026-10-19T00:00:00.000Z	773044663			
bid003	Dusk	DG-384	Kumar Sangakkara	2021-10-05T00:00:00.000Z	2026-10-26T00:00:00.000Z	3333333533			

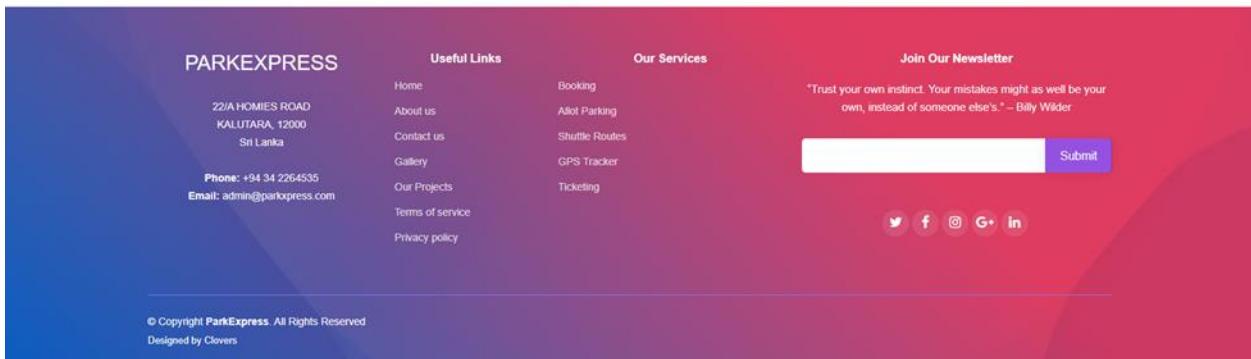
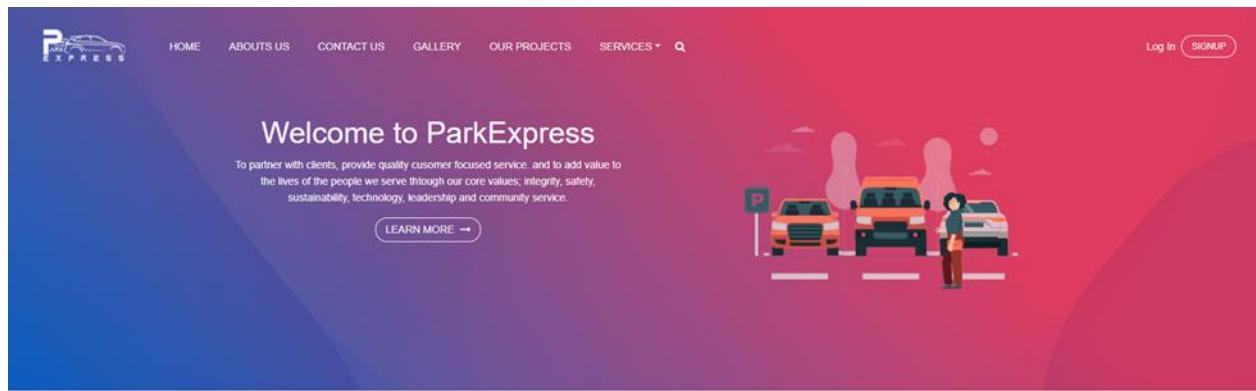


Figure 2.2.9 - 0 – 22 - Interface – View/ Search Busses – Transport Management



### Recently Added Routes

Routes	ADD NEW ROUTE						
Route ID	From	To	Departure Time	Bus ID	Driver ID	Conductor ID	Action
rou-001	Malabe	Panadura	10:30	bld-003	did-005	cid-005	
rou-002	Panadura	Malabe	09:30	bld001	did002	cid001	
rou-005	Panadura	Colombo	00:00	bld001	did002	cid003	

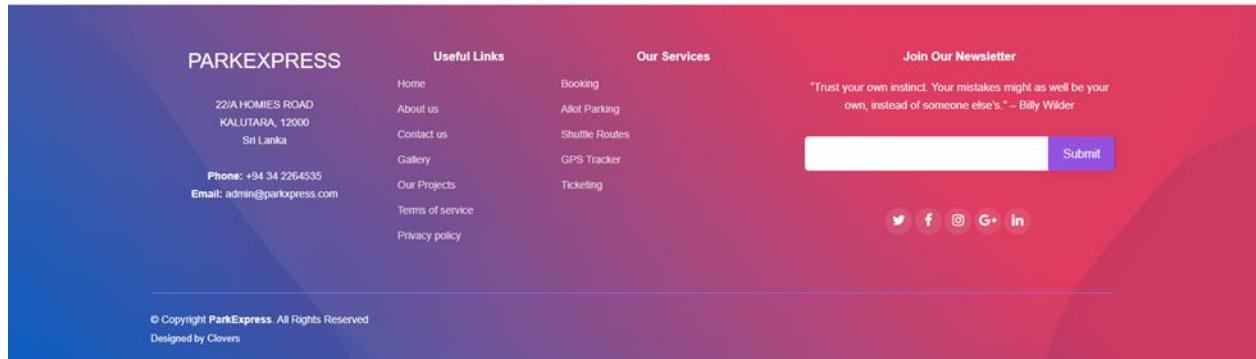
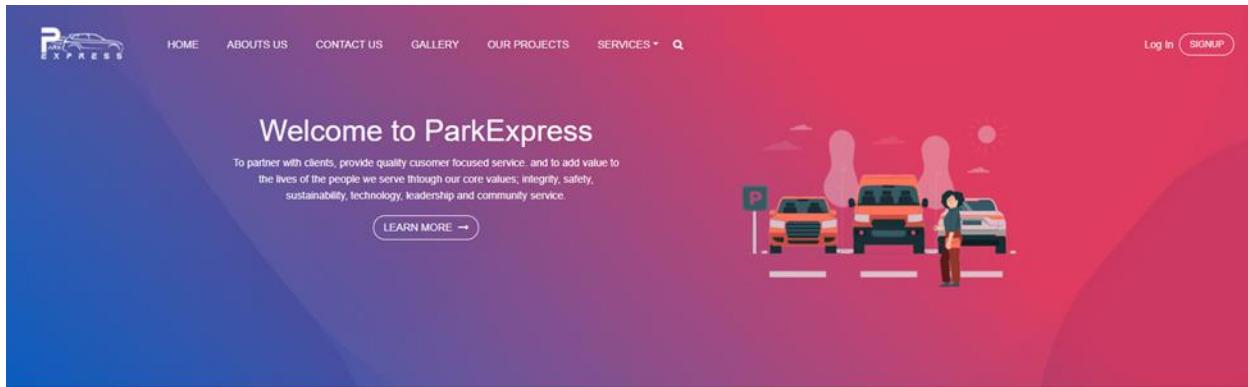


Figure 2.2.9 - 0 – 23 - Interface – View/ Search Routes – Transport Management



### Recently Added Staff

Staff		ADD NEW MEMBER			
Staff Member ID	Name	Type	Phone No.	Registered Date	Action
did001	John Wick	Driver	2025550145	2021-10-04T00:00:00.000Z	
cid001	Ranjan Ramanayake	Conductor	342255856	2021-10-15T00:00:00.000Z	

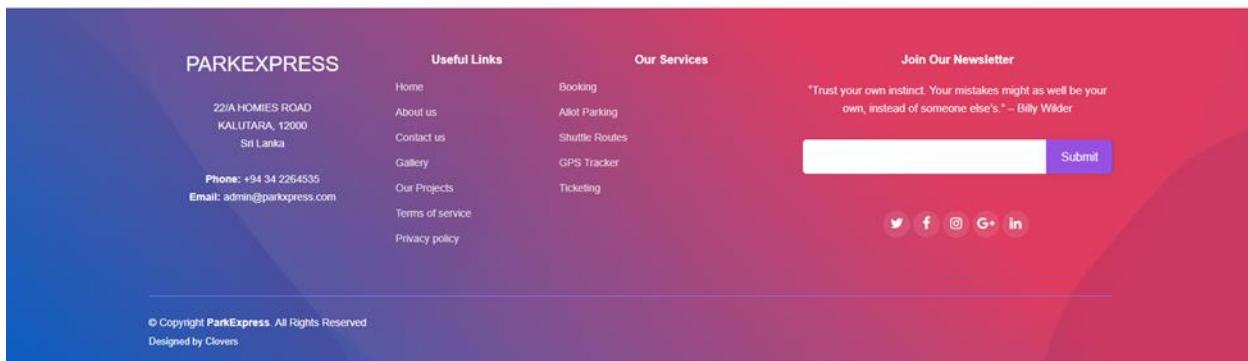
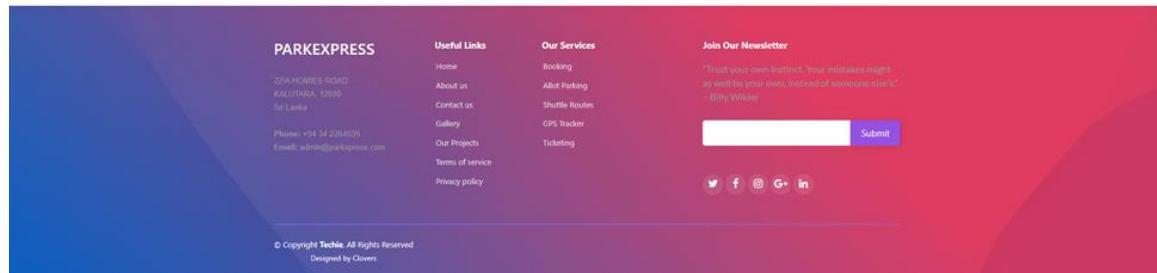
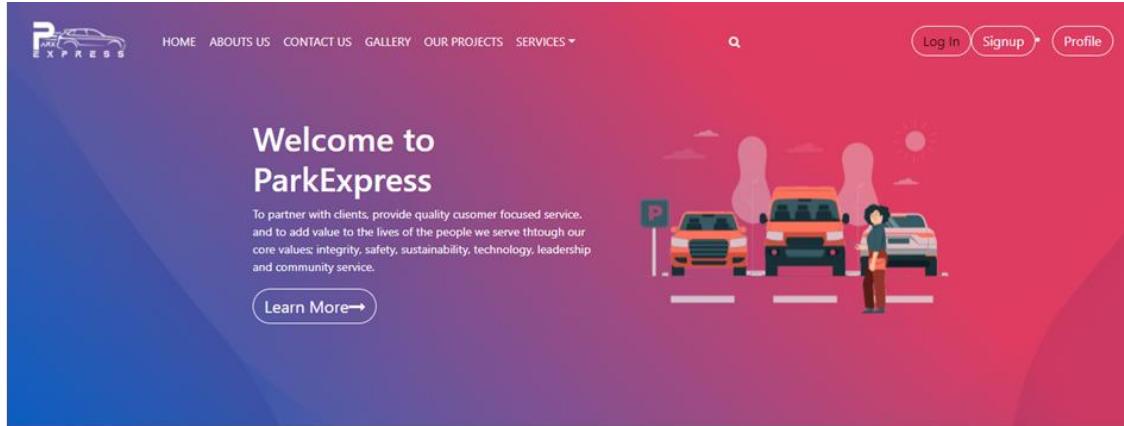


Figure 2.2.9 - 0 – 24 - Interface – View/ Search staff – Transport Management

*Figure 2.2.9 - 0 – 25 Interface – Add Employee – Employee Management*





#### Edit Kasuni Jayasekara's Details

Employee ID: EMP-001

Name:	Kasuni	Jayasekara
Age:	22	
NIC:	200068602798	
Date of Birth:	07-Oct-2000	
Gender:	<input checked="" type="radio"/> Female	
Address:	Bikundara	
Email:	kasuni@gmail.com	
Mobile No:	0715318168	
Post:	System Admin	
Basic Salary:	30000	
User Name:	Kasu	
Password:	test123	
Confirm Password:	test123	

[Update Employee Details](#)

[Go Back](#)

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22/A HOMIES ROAD  
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"Trust your own instinct. Your mistakes might as well be your own, instead of someone else's." – Billy Wilder

Submit

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Figure 2.2.9 - 0 – 26 Interface – Edit Employee – Employee Management



Upload Employee Image

Images

Choose File No file chosen

Upload Image

Go Back

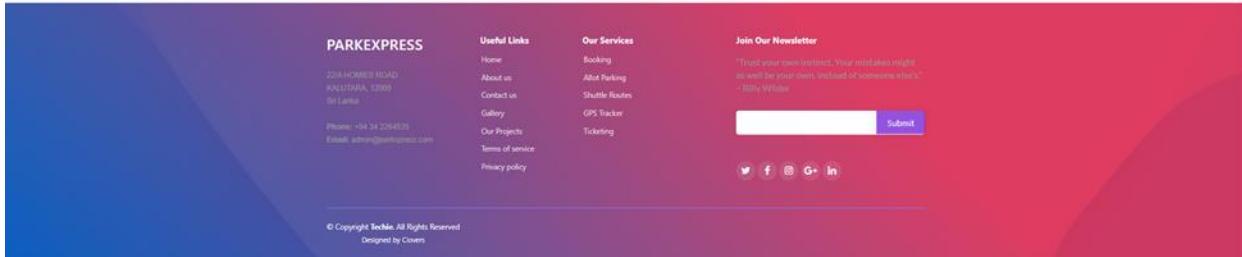


Figure 2.2.9 - 0 – 26 Interface – Update Image – Employee Management

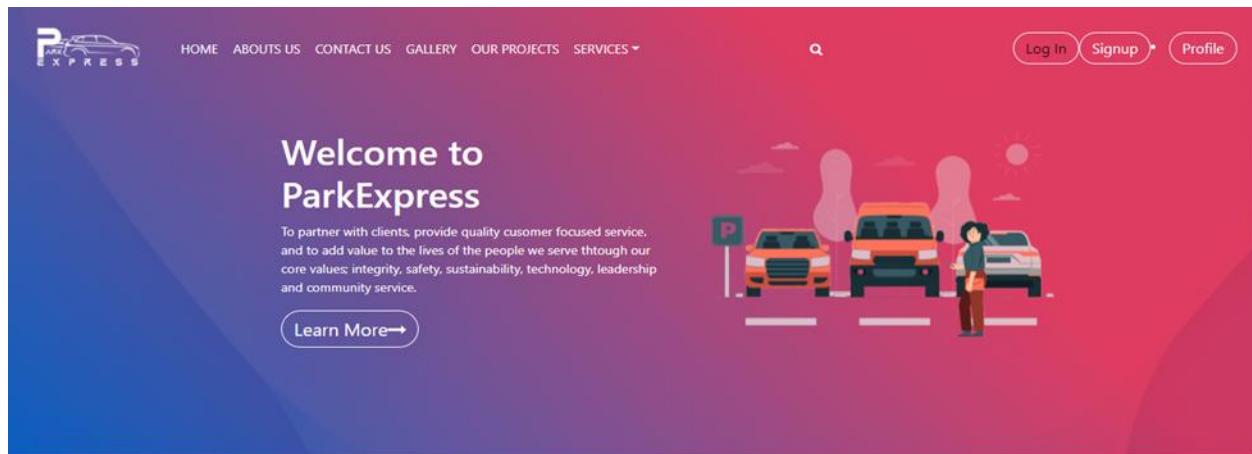
The screenshot shows the ParkExpress website's employee management section. A modal dialog box is centered over the page, asking "Do you want to delete this employee?". The dialog has "OK" and "Cancel" buttons. In the background, there is a banner with the text "Welcome to ParkExpress" and a "Learn More" button. Below the banner is a table titled "Employee List Table" containing six rows of employee data. At the bottom of the page is a footer with links to Useful Links, Our Services, and a Join Our Newsletter form.

INDEX	EMPLOYEE ID	PHOTO	EMPLOYEE NAME	AGE	NIC NO	DATE OF BIRTH	GENDER	ADDRESS	EMAIL	PHONE	POST	BASIC SALARY	USER NAME	PASSWORD	MANAGE EMPLOYEES
1	EMP-001		Gihan Magge	21	19960432216	2000-08-29	Female	Bokundara	gihan@gmail.com	0723456216	Manager	30000	gihan	test123	
2	EMP-004		Janith Perera	32	20000705025	2000-09-18	Male	Bokundara	janith@gmail.com	0723456228	Assistant Manager	30000	janith	test123	
3	EMP-005		Nimal Jayekara	18	20010504398	2000-09-09	Female	Piliyambata	nimal@gmail.com	0714483921	Manager	30000	Kusu	test123	
4	EMP-006		Venuri perera	21	20000707054	2000-09-08	Female	Colombo	venuri@gmail.com	011-2754880	HR Manager	30000	venuri	test123	
5	EMP-008		Harith Jayekara	38	19950602228	1995-09-15	Male	Bokundara	harith@gmail.com	07664318167	Manager	30000	Harith	test123	
6	EMP-001		Kasum Jayekara	22	20000602296	2000-10-07	Female	Bokundara	kasum@gmail.com	0715318168	System Admin	30000	Kasum	test123	

Figure 2.2.9 - 0 – 27 Interface – Delete – Employee Management

This screenshot shows the same ParkExpress website interface as the previous one, but it displays the entire "Employee List Table" instead of a modal dialog. The table structure is identical to the one in Figure 2.2.9 - 0 – 27. Below the table is the same footer with links to Useful Links, Our Services, and a Join Our Newsletter form.

Figure 2.2.9 - 0 – 28 Interface – View All Employee List – Employee Management



## Employee List Tabale

[Download Report](#)

INDEX	EMPLOYEE ID	PHOTO	EMPLOYEE NAME	AGE	NIC NO.	DATE OF BIRTH	GENDER	ADDRESS	EMAIL	PHONE	POST	BASIC SALARY	USER NAME	PASSWORD
1	EMP-001		Gimhani Jayasuriya	21	19931452276	2000-08-29	Female	Srilanka	gimhan@gmail.com	073454218	Manager	30000	gimhani	test123
2	EMP-004		Jethi Perera	22	20007178529	2000-08-18	Male	Srilanka	jethi@gmail.com	073454218	Assistant Manager	30000	jethi	test123
3	EMP-005		Nalin Jayasekara	16	200117543298	2000-08-09	Female	Colombo	nalu@gmail.com	0714403821	Manager	30000	Katu	test123
4	EMP-006		Venuri perera	21	20007178654	2000-08-08	Female	Colombo	venuri@gmail.com	011-270460	HR Manager	30000	venuri	test123
5	EMP-008		Harith Jayasekara	30	139768802298	1999-09-15	Male	Srilanka	harith@gmail.com	07644318187	Manager	50000	Harith	test123
6	EMP-001		Kasuni Jayasekara	22	200068802298	2000-10-07	Female	Srilanka	kasuni@gmail.com	0713318168	System Admin	30000	Katu	test123

## PARKEXPRESS

22/A HOMIES ROAD  
KALUTARA, 12000  
Sri Lanka

Phone: +94 34 2264535  
Email: admin@parkexpress.com

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"Trust your own instinct. Your mistakes might as well be your own, instead of someone else's." –  
Billy Wilder



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Figure 2.2.9 - 0 – 29 Interface – Search Employee – Employee Management

### Employee report

#	Employee ID	Employee Name	Age	NIC	DOB	Gender	Address	Email	Phone	Post	Basic Salary
1	EMP-003	Gimhani bhagya	21	19983452276	2000-08-29	Female	Bokundara	gimhani@gmail.com	0723456218	Manager	30000
2	EMP-004	Janith Perera	22	20007678825	2000-09-18	Male	Bokundara	janith@gmail.com	0723456228	Assistant Manager	30000
3	EMP-005	Nisuli Jayasekara	16	200178543398	2000-09-09	Female	Piliyandala	nisu@gmail.com	0714483921	Manager	30000
4	EMP-006	Venuri perera	21	20007876654	2000-09-08	Female	Colombo	venuri@gmail.com	011-2704980	HR Manager	30000
5	EMP-008	Harith Jayasekara	38	139768602298	1999-09-15	Male	Bokundara	harith@gmail.com	07664318167	Manager	50000
6	EMP-001	Kasuni Jayasekara	22	200068602298	2000-10-07	Female	Bokundara	kasuni@gmail.com	0715318168	System Admin	30000

*Figure 2.2.9 - 0 – 30 Interface – Generate Employee Report – Employee Management*



### ADD EMPLOYEE SALARY

Employee No <small>enter employeeNo starting with E and 3 digits</small>	Salary Month <small>*****</small>	Generate Salary																						
Working Days <small>enter working days</small>	<table border="1"> <tr> <td colspan="2">AC</td> <td>DEL</td> <td>SVI</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>*</td> </tr> <tr> <td>4</td> <td>5</td> <td>6</td> <td>+</td> </tr> <tr> <td>7</td> <td>8</td> <td>9</td> <td>-</td> </tr> <tr> <td>.</td> <td>0</td> <td colspan="2">=</td> </tr> </table>				AC		DEL	SVI	1	2	3	*	4	5	6	+	7	8	9	-	.	0	=	
AC		DEL	SVI																					
1	2	3	*																					
4	5	6	+																					
7	8	9	-																					
.	0	=																						
<b>SALARY DEDUCTIONS</b>																								
Leave Deductions Tax for Month Salary Note <small>note..</small>																								
Total salary Deductions Net Pay																								
<input type="button" value="Submit"/> <input type="button" value="Cancel"/>																								

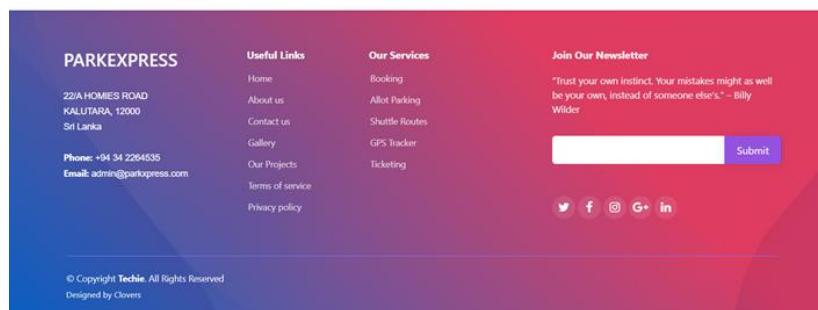
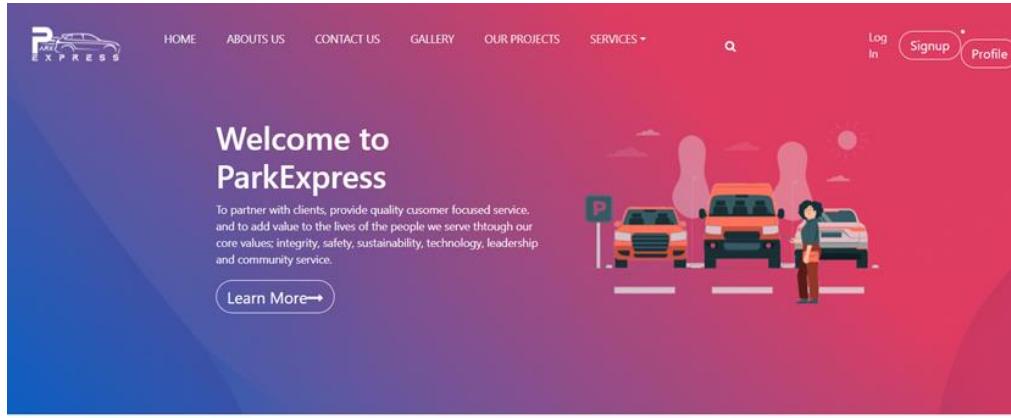


Figure 2.2.9 - 0 – 31 – Interface – Add Salary Details – Salary Management



### APPLY LEAVE

SEPTEMBER 2021						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2

**Employee No** :

**From Date** :

**No Of Days** :

**Reason** :

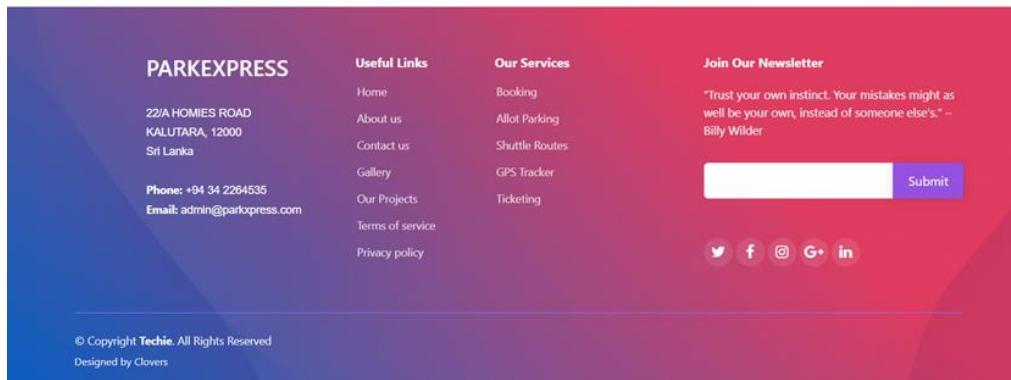
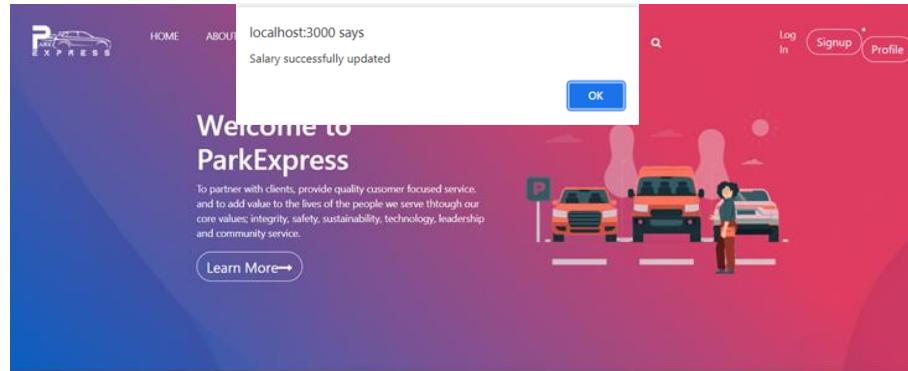


Figure 2.2.9 - 0 – 31 – Interface – Insert -Apply Leave – Salary Management



**UPDATE EMPLOYEE SALARY**

Employee No	E101
Salary Month	2021-09
Basic Pay	7000
Allowances	300

**SALARY DEDUCTIONS**

Working Days	23
Leave Deductions	200
Tax for Month	244

Salary Note  
overtime

Total salary Deductions	200
Net Pay	7100

Generate Salary

		AC	DEL	ST
1	2	3	*	
4	5	6	+	
7	8	9	-	
.	0		=	



**Update Salary**   **Cancel**

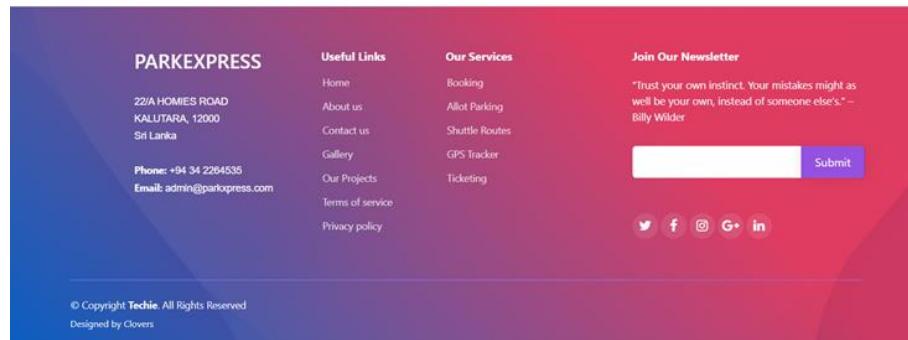
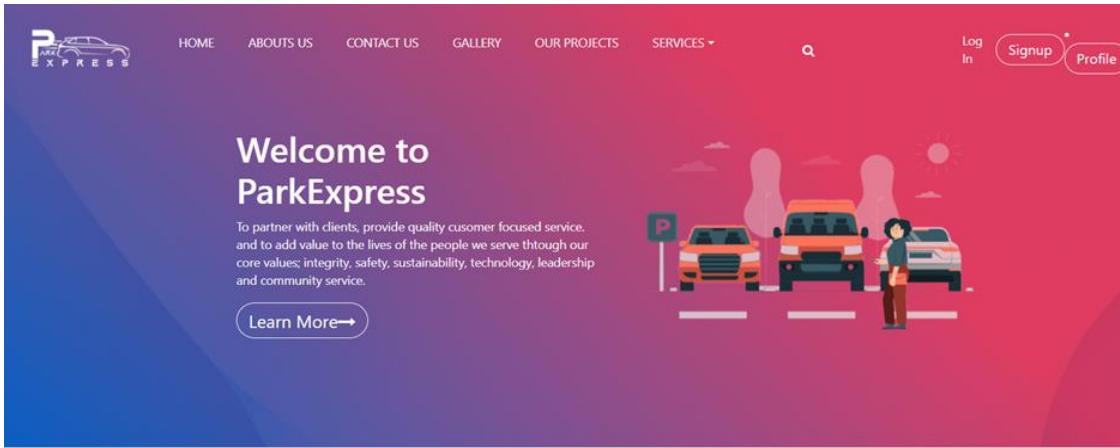


Figure 2.2.9 - 0 - 32 Interface – Edit – Salary Management



### Salary Report

Emaployee No	Salary Month	Working Days	Basic Pay	Allowance	Total Deductions	Net Pay	Action		
E100	2021-09	11	30000	300	5000	25300	<a href="#">Payslip</a>	<a href="#">Edit</a>	<a href="#">Delete</a>
E101	2021-09	23	7000	300	200	7100	<a href="#">Payslip</a>	<a href="#">Edit</a>	<a href="#">Delete</a>
E102	2021-09	25	25000	300	5000	20300	<a href="#">Payslip</a>	<a href="#">Edit</a>	<a href="#">Delete</a>
E103	2021-09	10	20000	400	2000	18400	<a href="#">Payslip</a>	<a href="#">Edit</a>	<a href="#">Delete</a>
E104	2021-09	23	21000	300	2000	19300	<a href="#">Payslip</a>	<a href="#">Edit</a>	<a href="#">Delete</a>

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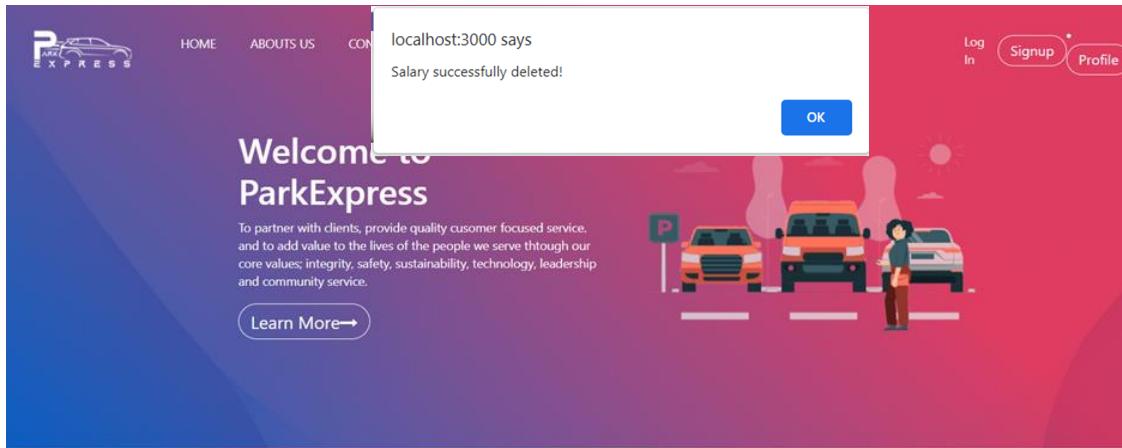
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Figure 2.2.9 - 0 – 33 - Interface – View – Salary Management



Salary Report							
Employee No	Salary Month	Working Days	Basic Pay	Allowance	Total Deductions	Net Pay	Action
E100	2021-09	11	30000	300	5000	25300	<button>Payslip</button> <button>Edit</button> <button>Delete</button>
E101	2021-09	23	7000	300	200	7100	<button>Payslip</button> <button>Edit</button> <button>Delete</button>
E102	2021-09	25	25000	300	5000	20300	<button>Payslip</button> <button>Edit</button> <button>Delete</button>
E103	2021-09	10	20000	400	2000	18400	<button>Payslip</button> <button>Edit</button> <button>Delete</button>
E104	2021-09	23	21000	300	2000	19300	<button>Payslip</button> <button>Edit</button> <button>Delete</button>

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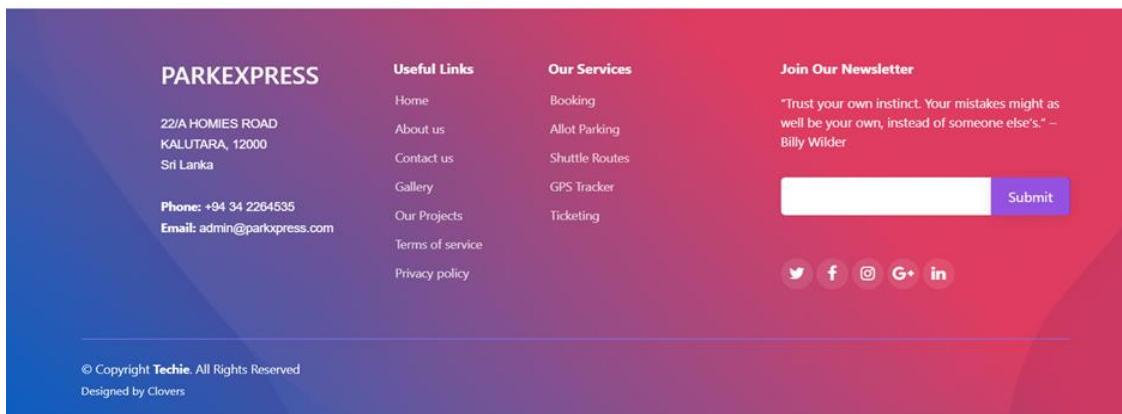
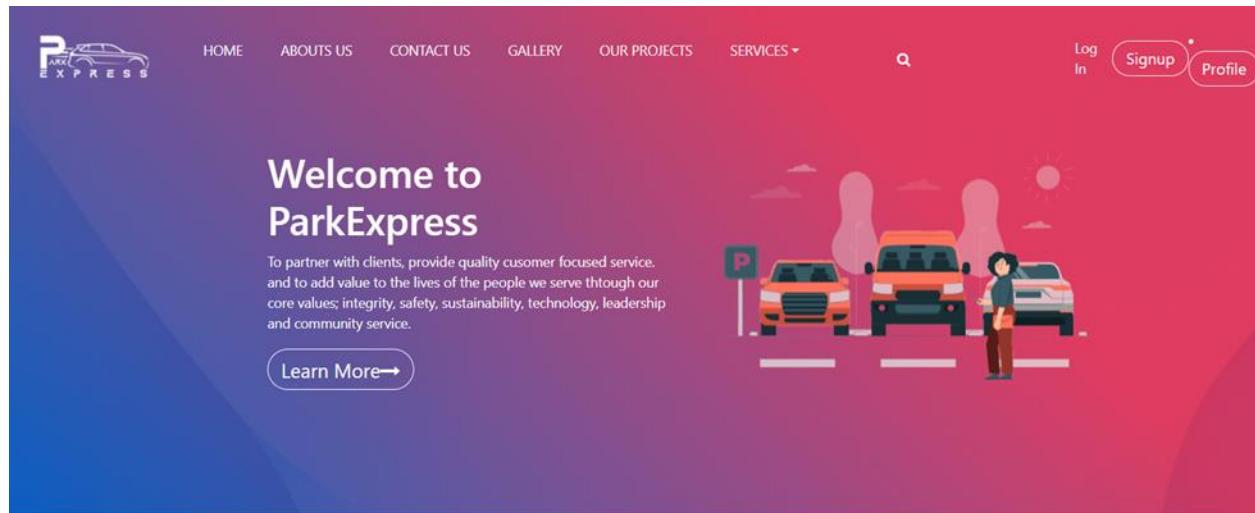


Figure 2.2.9 - 0 – 34 - Interface – Delete – Salary Management



### Salary Report

Employee No	Salary Month	Working Days	Basic Pay	Allowance	Total Deductions	Net Pay	Action
E100	2021-09	11	30000	300	5000	25300	<button>Payslip</button> <button>Edit</button> <button>Delete</button>

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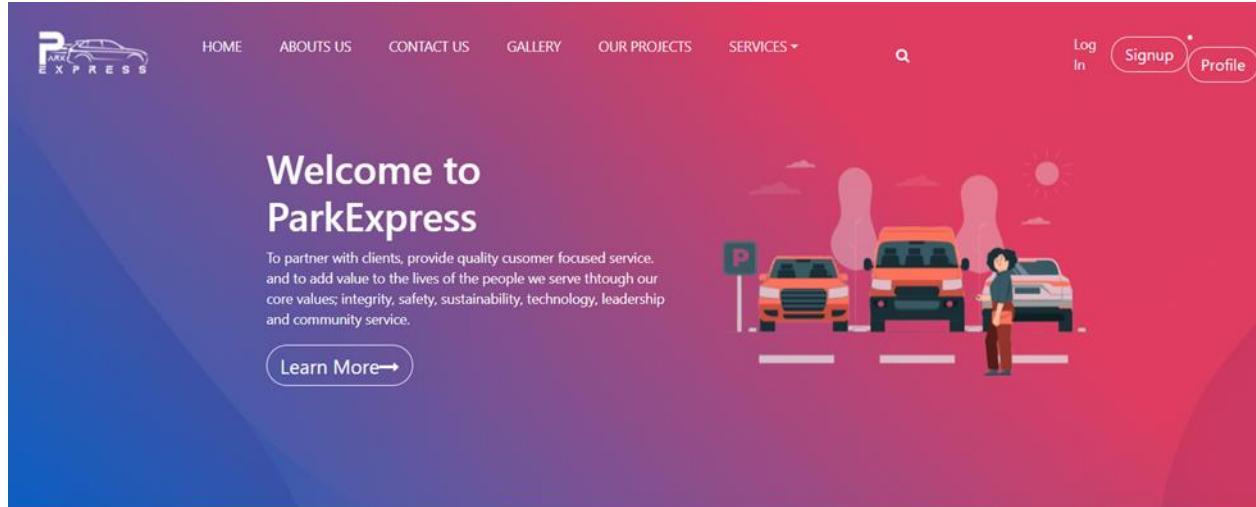
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Figure 2.2.9 - 0 – 35 - Interface – Search – Salary Management



**Leave Report**

E100	Search
------	--------

Employee No	From Date	No Of Days	Reason	Status
E100	2021-09-01	3	Sick leave	Accepted
E100	2021-09-15	7	annual leave	Accepted

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Billy Wilder

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Figure 2.2.9 - 0 – 35 - Interface – Search – Salary Management



Leaves Report  
Monthly Leaves Report for Month of October 2021

Employee No	From Date	No Of Days	Reason
E100	2021-09-01	3	Sick leave
E102	2021-09-15	7	Annual leave
E100	2021-09-15	7	annual leave
E103	2021-09-29	2	personal leave
E104	2021-10-01	2	sick leave
E105	2021-10-21	23	sick leave

Figure 2.2.9 - 0 - 36 Interface – Report – Salary Management



Salary Report  
Monthly Salary Report for Month of September 2021

Employee No	Salary Month	Working Days	Basic Pay	Allowance	Total Deductions	Net Pay
E100	2021-09	11	30000	300	5000	25300
E101	2021-09	23	7000	300	200	7100
E102	2021-09	25	25000	300	5000	20300
E103	2021-09	10	20000	400	2000	18400
E104	2021-09	23	21000	300	2000	19300

Figure 2.2.9 - 0 - 36 Interface – Report – Salary Management

A detailed pay slip for Sara Leymn, Manager, HR Department, Employee No. E100, dated 12 Jan 2020. The pay slip shows basic pay of 30000, allowances of 300, leave deduction of 200, monthly tax of 244, total deductions of 300, and net pay of 25300. It also lists days of working as 11.

Employee No		E100	Employee Name		Sara Leymn
Date of joining	12 Jan 2020		Designation	Manager	
Department	HR Department		Account No	6676767777	
Days of Working	11				
Basic Pay	30000		Leave Deduction	200	
Allowances	300		Monthly Tax	244	
			Total	300	
			Deductions		
			Net Pay	25300	

Download Payslip    Cancel

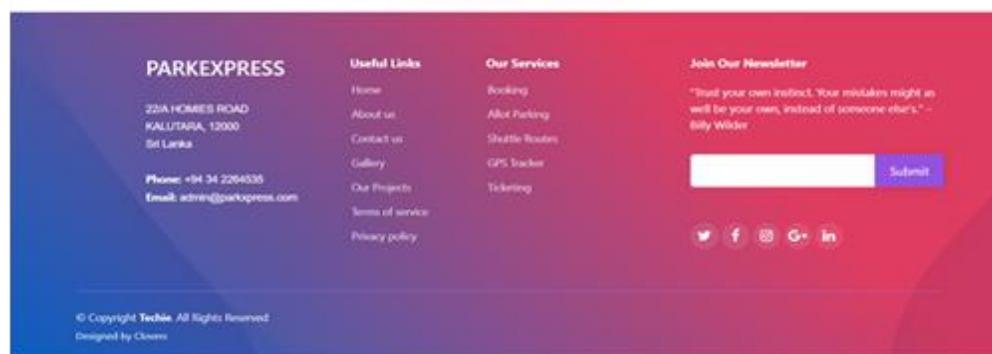
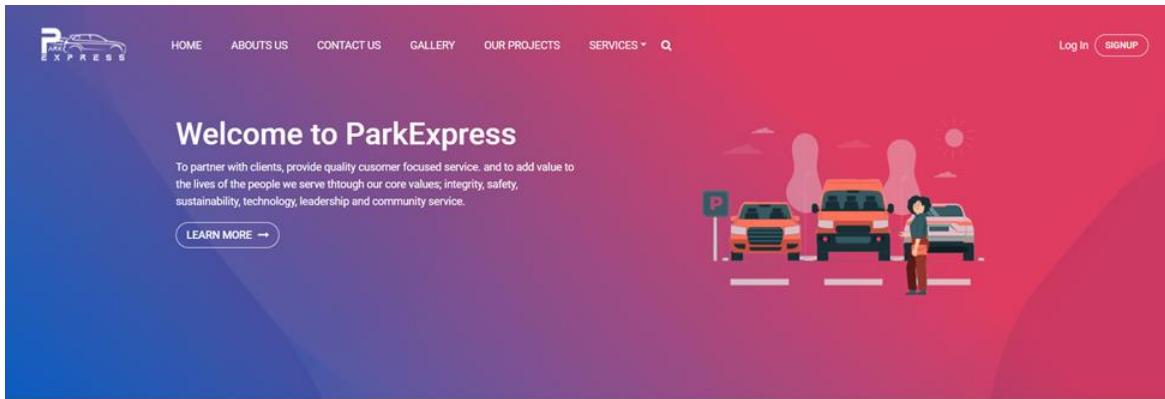


Figure 2.2.9 - 0 - 37 Interface – Pay Slip – Salary Management

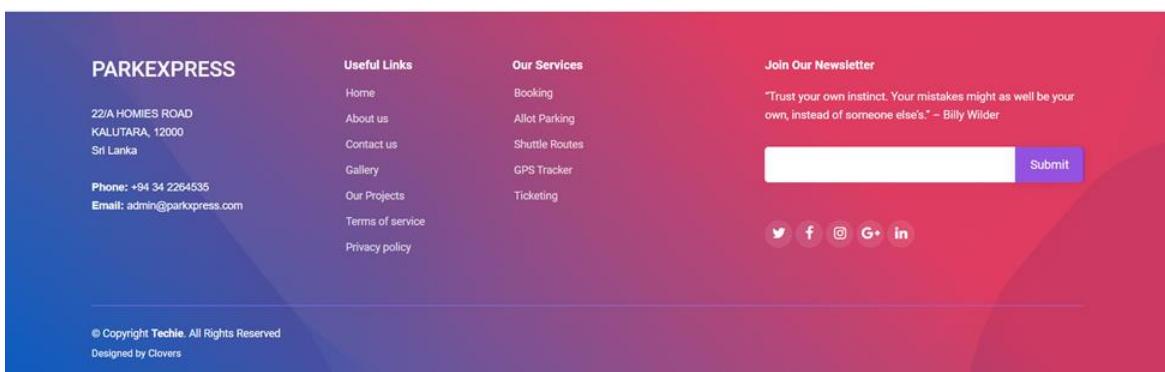


Figure 2.2.9 - 0 - 37 Interface – Pay Slip – Salary Management



### Issuing a Ticket

First Name <input type="text"/>	Last Name <input type="text"/>
Phone <input type="text"/>	Email *Option <input type="text"/>
No Plate <input type="text"/>	Vehicle Model <input type="text"/>
Issued Time <input type="text"/>	Departure Time <input type="text"/>
Customer ID <input type="text" value="Eg: cus001"/>	Expiry <input type="text" value="Select Expiry"/>
Ticket ID <input type="text" value="3y9z47c8e"/>	Payment Received <input type="text" value="Select Status"/>
Allocated Parking Slot <input type="text" value="Select Slot"/>	
<input type="button" value="ISSUE"/> <input type="button" value="BACK"/>	



*Figure 2.2.9 - 0 - 38 Interface – Add – Ticketing Management*



### Manage Issued Tickets

[BACK](#)

Ticket Details		Actions	
Ticket Id : id7ih1tis	Customer Name : Hasindu Nilupul	<a href="#">DELETE</a>	<a href="#">EDIT</a>
Ticket Id : p4rucbevu	Customer Name : lkj sfgf	<a href="#">DELETE</a>	<a href="#">EDIT</a>
Ticket Id : nkutpq24y	Customer Name : hasindu nilupul	<a href="#">DELETE</a>	<a href="#">EDIT</a>
Ticket Id : vfv0sbi5y	Customer Name : hasu kil	<a href="#">DELETE</a>	<a href="#">EDIT</a>
Ticket Id : qmgoj9o06	Customer Name : Virat Kholi	<a href="#">DELETE</a>	<a href="#">EDIT</a>

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Figure 2.2.9 - 0 – 39 - Interface – Edit – Ticketing Management

Figure 2.2.9 - 0 – 40 - Interface - View – Ticketing Management

Figure 2.2.9 - 0 – 41 - Interface – Delete – Ticketing Management

Figure 2.2.9 - 0 – 42 - Interface – Search – Ticketing Management

## Ticket Report

User Name : lal start

Phone Number : 001 14 57 655

User Email : nadun@gmail.com

Number Of Plate : 2

Model : r5

Issued Date : 01:28

Departure Time : 07:28

Issued Date : 99

Ticket Id : y92q1rkdt

Expiry : 3

Payment Received : Yes

Parking Slot : 2

*Figure 2.2.9 - 0 – 43 - Interface – Report – Ticketing Management*

## **2.3 Implementation**

### **Tools used for the Development**

- Coding Environment – VS code
- Database Used – Mongo DB
- Display Web Page – Google Chrome

This system has developed similar to MVC Architecture.

## 2.4: Testing

**Table 2.4 - 1**

<b>Group ID : - ITP2021_S2_B01_G03</b>	
<b>Project title: ParkExpress - Park and Go Management System</b>	
<b>Employee Management</b>	
<b>Testing Function 1:</b> Add New Employee/Register Employee Function	
<b>Test case ID : PEx00</b>	<b>Test designed by:</b> Jayasekara T.K.K. <b>Reg. No-</b> IT20142278
<b>Test priority (High/Medium/Low):</b>	High
<b>Test Description:</b> User can't submit the form without entering a valid email to the form. Also, the Employee ID should be unique to each employee.	

**Preconditions (if there are any):** User first should login with the admin credentials and should log to the Manage Employee Dashboard and then should click the "Add New Employee Button" there, to log to the form.

**Dependencies (if there are any):** - None

### Test steps:

- 1) Load ParkExpress web app
- 2) Click login button on top corner and log with admin credentials
- 3) Go to Manage employee Page
- 4) Click Add New Employees button in the Employee dashboard
- 5) Click "Add Employee Button" in the form by entering already existing Employee ID to the form.
- 5) Click "Add Employee Button" in the form by entering an invalid email to the form.

**Pass-condition:** None

**Table 2.4 - 1**

**Test case**

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
PEx00-1	Employee ID – EMP -009 Name – Kasuni Jayasekara Age – 22 NIC – 200068602298 Date of Birth – 04.07.2000 Gender – Female Address - Piliyandala <b>Email = kasunigmail.com</b>	Red colour Error message will pop up and say " <b>Email invalid Please enter a valid email</b> "	Red color error message saying " <b>Email invalid Please enter a valid email</b> "	Pass	The test case worked as expected with proper message.
PEx00-2	Employee ID – EMP -009 Name – Kasuni Jayasekara Age – 22 NIC – 200068602298 Date of Birth – 04.07.2000 Gender – Female Address - Piliyandala <b>Email = kasuni@gmail.com</b>	Red colour Error message will pop up and say " <b>Email invalid Please enter a valid email</b> "	Red color error message saying " <b>Email invalid Please enter a valid email</b> "	Pass	The test case worked as expected with proper message.
PEx00-3	Employee ID - EMP - 009	Red colour Error message will pop up and say " <b>This EMP – 009 id already registered</b> "	Red color error message saying " <b>This EMP – 009 id already registered</b> "	Pass	The test case worked as expected with proper message.

**Table 2.4 - 2**

<b>Testing Function 2:</b> All Employee list management Function	
<b>Test case ID :</b> PEx01	<b>Test designed by:</b> Jayasekara T.K.K. <b>Reg. No-</b> IT20142278
<b>Test priority (High/Medium/Low):</b>	Low
<b>Test Description:</b> User can't directly delete an employee by simply clicking the delete icon. He should confirm by clicking "OK" button in the popup alert which is coming when clicking the delete icon at the right corner of the <b>specific employee record</b> in all employee list. If user clicks "cancel" button in the pop up alert without clicking "OK" button that relevant employee will not be deleted from the employee list.	
<b>Preconditions (if there are any):</b> User should login with admin credentials and should be in the Manage Employee Page	
<b>Dependencies (if there are any):</b> None	
<b>Test steps:</b> 1) Load ParkExpress web app 2) Click login button on top corner and log with admin credentials 3) Go to Manage employee Page 4) Click All Employees button in the Employee dashboard 5) You will retrieve all employee list who are currently registered with the system 6) Click the red colour Delete icon ( Red Color garbage bin icon) in the relevant employee record you want. (Delete icon is in the right corner of each employee)	
<b>Pass-condition:</b> None	

**Table 2.4 – 2 – Test Case**

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
PEx01-1	Click Red color Delete icon in Kasuni Jayasekara's Record. Then click "OK" Button from the pop up appeared.	A Green color Toast msg will pop up saying " <b>The Kasuni Jayasekara employee is deleted successfully</b> "	Green color toast message is coming by saying " <b>The Kasuni Jayasekara is deleted successfully</b> "	Pass	The test case worked as expected.
PEx01-2	Click Red color Delete icon in Kasuni Jayasekara's Record. Then click "Cancel" Button from the pop up appeared.	The relevant employee record will not be deleted from the employee list.	<b>The relevant employee record (Kasuni Jayasekara) will not be deleted from the employee list.</b>	Pass	The test case worked as expected.

**Name** - Jayasekara T.K.K.  
**Reg No** - IT20142278

**Table 2.4 - 3**

<b><u>Register Employees , Search Employees, All Employee list management Function</u></b>					
<b>Logic in Interfaces</b>	<b>Validation and proper error messages</b>	<b>Connected to the database</b>	<b>Easy to use, User friendliness,</b>	<b>Easy navigation</b>	<b>Function is complete (%)</b>
<p>1. Simple and attractive UI design which can be easily understandable by the user.</p> <p>2. Well organized and easy to use</p> <p>3. UI elements and icons used are well arranged and very attractive.</p>	<p>1. validations are done in the employee registration form for all the fields Eg: Email validations  Password match etc.</p> <p>2. proper validations were done in the Search and upload employee image function as well.</p> <p>3. In both the Register Employee form and Manage employee list error messages were displayed in red and success in green color.</p>	<p>1. Connection to proper database collection was established.</p> <p>2. All employees who are registered with the system are in a separate collection in the database.</p> <p>3. When updating employee details, all updates are reflected in real time in the database</p>	<p>1. Buttons that were used were visible, attractive and simple.</p> <p>2. words in buttons and fields in the form were easy to understand.</p> <p>3. Font size and colors used in both forms were nice and calm.</p> <p>4. Easy Navigation</p>	<p>Navigation was easy because Back buttons were provided in every page.</p>	<p>Overall function did not have any issues with interfaces, database, navigation, or validations.</p> <p>Function was <b>100% completed with CRUD, search and report generating.</b></p>

**Table 2.4 - 4**

<b>Group ID :</b> ITP2021_S2_B01_G03	
<b>Project title:</b> ParkExpress – Park and Go Management	
<b>Parking Slot Management</b>	
<b><u>Testing Function 1: Reserve/Add Required Parking Slot Function</u></b>	
<b>Test case ID :</b> PEx02	<b>Test designed by:</b> Reg. No-IT20023164 Name-Perera L.K.
<b>Test priority (High/Medium/Low):</b>	Medium
<b>Test Description:</b> There are specific amount of slots we are offering for our customers. Therefore, user should enter less than 300 for required slot number. This test case is to identify whether the required slot number is in our system.	
<b>Preconditions (if there are any):</b> User should login to the system with their credentials and should visit the page that is allocated for the reservation of parking slots.	
<b>Dependencies (if there are any):</b> None	
<b>Test steps:</b> <ol style="list-style-type: none"> <li>1) Load ParkExpress web app</li> <li>2) Click login button on top corner and log with user credentials</li> <li>3) Go to Allot Parking page.</li> <li>4) Click any parking area in the allot parking dashboard.</li> <li>5) Read the information given or for further information go to about us page which is provided in the introduction page. If user need to continue click 'Pick my slot' button in the introduction page.</li> <li>6) Click "Save Parking" in the form by entering an invalid slot number to the form.</li> </ol>	
<b>Pass-condition:</b> None	

**Table 2.4 – 4 – Test case**

<b>Test ID</b>	<b>Test Inputs</b>	<b>Expected Output</b>	<b>Actual Output</b>	<b>Result (Pass/Fail)</b>	<b>Comments</b>
PEx02-1	Parking slot No : 589	Red color error message saying "Value must be less than or equal to 300."	Red color error message saying "Value must be less than or equal to 300."	Pass	Testing was as expected. No error occurred.
PEx02-2	Parking slot No : 58	Success popup message saying "Record Inserted Successfully!"	"Record Inserted Successfully!" popup message appeared after entering the save parking button.	Pass	Testing was as expected. No error occurred.

**Table 2.4 - 5**

<b><u>Testing Function 2: Reserve/Add Required Parking Slot Function</u></b>	
<b>Test case ID :</b> PEx03	<b>Test designed by:</b> <b>Reg. No-IT20023164</b> <b>Name- Perera L.K.</b>
<b>Test priority (High/Medium/Low):</b>	Medium
<b>Test Description:</b> In the time of registration the user is provided with a unique number to identify the user in our system. Without a proper user registration ID user cannot reserve a parking slot. This test case is to identify the user ID of the user.	

<b>Preconditions (if there are any):</b> User should login to the system with their credentials and should visit the page that is allocated for the reservation of parking slots.
<b>Dependencies (if there are any):</b> None

**Test steps:**

- 1) Load ParkExpress web app
- 2) Click login button on top corner and log with user credentials
- 3) Go to Allot Parking page.
- 4) Click any parking area in the allot parking dashboard.
- 5) Read the information given or for further information go to about us page which is provided in the introduction page. If user need to continue click 'Pick my slot' button in the introduction page.
- 6) Click "Save Parking" in the form by entering an invalid slot number to the form.

**Pass-condition:**

None

**Table 2.4 – 5 – Test Case**

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
PEx03-1	Customer Reg No : d95674	Red color error message saying "Please enter the requested format."	Red color error message saying "Please enter the requested format."	Pass	No error occurred and the testing was success.
PEx03-2	Customer Reg No : C5896	Success popup message saying "Record Inserted Successfully!"	"Record Inserted Successfully!" popup message appeared after entering the save parking button.	Pass	No error occurred and the testing was success.

Name - Perera L.K.  
Reg No - IT20023164

**Table 2.4 – 6**

<b>Testing Function 3: Parking Slot Management</b>					
Logic in Interfaces	Validation and proper error messages	Connected to the database	Easy to use, User friendliness,	Easy navigation	Function is complete (%)
Interface had the proper logic and it had the save parking option and back option.	All validations are enabled and if any validation is incorrect it displays a proper error message.	Connection was success with the database and the data had passes successfully.	Form is short, therefore it can fill quickly and easily. Provided a back button as well as there was helpful error messages.	Navigation was easy and it had back button which supported for the previous page.	Function was 100% completed and implemented with ease of use.

**Table 2.4 – 7**

<b>Group ID :</b> ITP2021_S2_B01_G03	
<b>Project title:</b> ParkExpress – Park and Go Management	
<b>Employee Salary Management</b>	
<b>Testing Function 1:</b> Add new Employee Salary function	
<b>Test case ID:</b> PEx04	<b>Test designed by:</b> Rizwan F.H <b>Reg. No-</b> IT20146788
<b>Test priority (High/Medium/Low):</b> High	
<b>Test Description:</b> This test case is designed to test if the user has calculated the net pay correctly. User can't submit the form without calculating the net pay correctly. If so, it will pop up a message as "Net pay calculation Error".	
<b>Preconditions (if there are any):</b> User first should login with the admin credentials and should log to the Manage Salary Dashboard and then should click the "Add New Employee Salary Button" there, to log to the form.	
<b>Dependencies (if there are any):</b> Manage Employee Function	

**Test steps:**

- 1) Load ParkExpress web app
- 2) Click login button on top corner and log with admin credentials
- 3) Go to Manage employee Salary Page
- 4) Click Add New Employee Salary button in the Employee Salary page
- 5) Click "Submit Button" by entering all the values in the form.

**Pass-condition:** none

**Table 2.4 – 7 – Test Case**

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
PEx04-1	Employee ID: E100 Basic pay: 15,000 Allowance: 300 Total deductions:3000 Net Pay:17,000	Error message in red color stating "Net pay calculation Error"	Error message in red color stating "Net pay calculation Error"	Pass	Test cases are working as expected with proper messages
PEx04-2	Employee ID: E100 Basic pay: 15,000 Allowance: 300 Total deductions:3000 Net Pay:12,300	An alert message will pop up saying "The relevant employee salary is added successfully"	An alert message will pop up saying "The relevant employee salary is added successfully"	Pass	Test cases are working as expected with proper messages

**Table 2.4 – 8**

<b>Testing Function 2:</b> Apply Employee Leave function	
<b>Test case ID :</b> PEx05	<b>Test designed by:</b> Rizwan F.H <b>Reg. No-</b> IT20146788
<b>Test priority (High/Medium/Low):</b> high	
<b>Test Description:</b> this test case is designed to test if the user has given a future date to apply for leaves. If the user submits with a past date it will pop up a message as "Enter a future date".	
<b>Preconditions (if there are any):</b> User first should login with the admin credentials and should log to the Manage Salary Dashboard and then should click the "Apply Leave Button" there, to log to the form.	
<b>Dependencies (if there are any):</b> Manage Employee	

<b>Test steps:</b>
1) Load ParkExpress web app
2) Click login button on top corner and log with admin credentials
3) Go to Manage employee Page
4) Click Apply Leave button
5) Click "Submit Button" in the form by entering the values to the form.

**Pass-condition: none**

**Table 2.4 – 8 – Test Case**

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
PEx05-1	Employee id: E100 From date: 12/09/2021 No Of Days: 7 Reason: Annual Leave	Error message in red color stating “Enter a future date”	Error message in red color stating “Enter a future date”	Pass	Test cases works properly without any issues
PEx05-2	Employee id: E100 From date: 3/11/2021 No Of Days: 7 Reason: Annual Leave	An alert message will pop up saying “The relevant employee leave is added successfully”	An alert message will pop up saying “The relevant employee leave is added successfully”	Pass	Test cases works properly without any issues

Name - Rizwan F.H  
Reg No - IT20146788

**Table 2.4 – 9**

**Testing Function 3: Employee Salary Management**

Logic in Interfaces	Validation and proper error messages	Connected to the database	Easy to use, User friendliness,	Easy navigation	Function is complete (%)
1.There is a proper logic in the interfaces and the navigation is also made easy.  2.Buttons to submit and other operations are properly placed.	Proper validations are given for the inputs in the forms.  Proper error messages are given for the validations when they are violated.	There is a proper connection to the database and the data is successfully recorded in the database.	1.words used are simple and easy to understand.  2.calculator and back button is provided for easy use  3.helpful error messages are provided	Navigation is easy as there is a back button for all the pages and also it is easy to find the home button.	Overall function does not have any issues with the user interfaces, navigation, and validations.  Function is 100% completed. CRUD, search, pay slip print and the report generation is implemented and working properly.

**Table 2.4 – 10**

<b>Testing Function 1: Add new slot booking function</b>	
<b>Booking Management</b>	
<b>Test case ID :</b> PEx06	<b>Test designed by:</b> G.R.PACKERAN <b>Reg. No-</b> IT20041298
<b>Test priority (High/Medium/Low):</b>	Medium
<b>Test Description:</b> this test case is used to check whether the bus number that the user is providing is according to the bus numbers available in our system.	
<b>Preconditions (if there are any):</b> the user should select a package that they desire and should be in the booking form page.	
<b>Dependencies (if there are any):</b> - None	
<b>Test steps:</b> 1) Load ParkExpress web app 2) Login with the customer credentials 3) Go to Bookings page 4) Select the package they need from the bookings page 5) Click the "Submit" button in the booking form by entering an invalid bus number to the form.	
<b>Pass-condition:</b> None	

**Table 2.4 – 10 – Test Case**

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
PEx06-1	Booking ID-B001 First Name-Ann Last Name -Peter Contact Number- 07154785412 Address- 89/k, Kandy License Plate Number - DSA-8956 Vehicle Model - Toyota Entry Date/Time - 12/08/2020 Exit Date-15/08/2020 <b>Bus Number - 890</b>	An error message will be displayed as a pop-up message saying that <b>“Value must be less than or equal to 250.”</b>	Pop-up message <b>“Value must be less than or equal to 250.”</b>	Pass	Test case works successfully. The error messages were displayed properly.
PEx06-2	Booking ID-B002 First Name-Ann Last Name -Peter Contact Number- 07154785412 Address- 89/k, Kandy License Plate Number - DSA-8956 Vehicle Model - Toyota Entry Date/Time - 12/08/2020 Exit Date-15/08/2020 <b>Bus Number - Sd1245</b>	An error message will be displayed as a pop-up message saying that <b>“Please match the requested format.”</b>	Pop-up message <b>“Please match the requested format.”</b>	Pass	The error messages are clearly visible, and the test cases works successfully.

**Table 2.4 – 11**

<b>Testing Function 2: Add new slot booking function</b>	
<b>Test case ID :</b> PEx07	<b>Test designed by:</b> G.R.PACKERAN <b>Reg. No-</b> IT20041298
<b>Test priority (High/Medium/Low):</b>	High
<b>Test Description:</b> this test case is used to check whether the user has given the card number properly in order to do transactions properly.	

**Preconditions (if there are any):** the user should select a package that they desire and should be in the booking form page.

**Dependencies (if there are any):** - None

**Test steps:**

- 1) Load ParkExpress web app
- 2) Login with the customer credentials
- 3) Go to Bookings page
- 4) Select the package they need from the bookings page
- 5) Click the "Submit" button in the booking form by entering an invalid card number to the form.

**Pass-condition:** None

**Table 2.4 - 11 - Test Case**

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
PEX07-1	Booking ID-B002 First Name-Ann Last Name -Peter Contact Number-07154785412 Address- 89/k, Kandy License Plate Number - DSA-8956 Vehicle Model - Toyota Entry Date/Time - 12/08/2020 Exit Date-15/08/2020 Bus Number - 150 Bus Route - pettah <b>Card Number - 754875</b>	An error message will be displayed as a pop-up message saying that <b>"Card number must have 10 digits"</b>	Pop-up message <b>"Card number must have 10 digits"</b>	Pass	Test was successful. The error messages were visible.
PEX07-2	Booking ID-B002 First Name-Ann Last Name -Peter Contact Number-07154785412 Address- 89/k, Kandy License Plate Number - DSA-8956 Vehicle Model - Toyota Entry Date/Time - 12/08/2020 Exit Date-15/08/2020 Bus Number - 150 Bus Route - pettah <b>Card Number - Fdes045128</b>	An error message will be displayed as a pop-up message saying that <b>"Please match the requested format."</b>	Pop-up message <b>"Please match the requested format."</b>	Pass	The test cases work as expected with the error messages displayed.
PEX07-3	Booking ID-B002 First Name-Ann Last Name -Peter Contact Number-07154785412 Address- 89/k, Kandy License Plate Number - DSA-8956 Vehicle Model - Toyota Entry Date/Time - 12/08/2020 Exit Date-15/08/2020 Bus Number - 150 Bus Route - pettah <b>Card Number -784512032564</b>	An error message will be displayed as a pop-up message saying that <b>"Card number too long. Card number must have 10 digits"</b>	Pop-up message <b>"Card number too long. Card number must have 10 digits"</b>	Pass	Popup messages were visible, and the test case is working.

Table 2.4 – 12

Testing Function : 4 Slot Booking Function					
Logic in Interfaces	Validation and proper error messages	Connected to the database	Easy to use, User friendliness,	Easy navigation	Function is complete (%)
<p>1. The page were easy to navigate, the buttons and UI components were used accordingly.</p> <p>2. All the components in the pages were visible and all of them are logically correct.</p>	<p>1. The fields such as booking ID, contact number, license plate number, and credit card number are validated.</p> <p>2. Proper error messages were displayed and the error messages clearly visible in all the fields of the form.</p>	<p>The database connection was properly done and all the new bookings that are done by the users were sent to a collection in the database called 'Bookings'</p>	<p>1. Interfaces were simple and very easy to understand.</p> <p>2. helpful messages were provided when the user inserts, update and delete bookings are done.</p> <p>3. Warm colors were used, and the font sizes were appropriate.</p> <p>4. The buttons were clear and understandable.</p>	<p>Back buttons are provided in each page to navigate back to the home page. This made navigation lot easier.</p>	<p>CRUD functions were 100% completed along with search function and generating a meaningful report.</p> <p>Overall, the functions does not contain any issues with navigation, validation, database connectivity and the overall interfaces.</p>

**Table 2.4 – 13**

<b>Group ID :</b> ITP2021_S2_B01_G03	
<b>Project title:</b> ParkExpress – Park and Go Management	
<b>Registration of users, login and user profile Management</b>	
<b>Testing Function 1:</b> Login function	
<b>Test case ID :</b> PEx08	<b>Test designed by:</b> Wanigasekera K.S.R <b>Reg. No-</b> IT20198572
<b>Test priority (High/Medium/Low):</b> High	
<b>Test Description:</b> This test case is designed to test whether the login function works as required.	
<b>Preconditions (if there are any):</b> should click the login button that takes a user to the login page with the login form	
<b>Dependencies (if there are any):</b> none	
<b>Test steps:</b> <ol style="list-style-type: none"><li>1. Load ParkExpress web app</li><li>2. Click login button on top corner</li><li>3. Enter email address</li><li>4. Enter password</li><li>5. Click 'Login'</li></ol>	
<b>Pass-condition:</b> none	

**Table 2.4 – 13 – Test Case**

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
PEx08-1	Email: <a href="mailto:samindi1209@gmail.com">samindi1209@gmail.com</a> Password: sam123	Error message in red color stating "This email does not exist"	Red color error message saying "this email does not exist"	Pass	The test case worked as expected. UI was simple and easy to navigate
PEx08-2	Email: <a href="mailto:samindiw@gmail.com">samindiw@gmail.com</a> Password: sam1234	Error message in red color stating "Incorrect password"	Red color error message saying "Incorrect password"	Pass	The test case worked as expected. UI was simple and easy to navigate

**Table 2.4 – 14**

<b>Testing Function 2:</b> Register function	
<b>Test case ID :</b> PEx09	<b>Test designed by:</b> Wanigasekera K.S.R <b>Reg. No-</b> IT20198572
<b>Test priority (High/Medium/Low):</b> high	
<b>Test Description:</b> this test case is designed to test the functionality of the registration of users function.	

**Preconditions (if there are any):** should click the Sign up button that takes a user to the sign up page with the registration form

**Dependencies (if there are any):** none

**Test steps:**

1. Load ParkExpress web app
2. Click Sign Up button on right hand side top
3. Fill first name, last name, email, telephone number, password and confirm password fields
4. Click 'Register'

**Pass-condition: none**

**Table 2.4 – 14 – Test Case**

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
PEx09-1	First name: John Last Name: James Email: <a href="mailto:james@gmail.com">james@gmail.com</a> Telephone: 07162839403 Password: j123john Confirm password: j123john0	Error message in red color stating “Passwords do not match”	Red color error message stating “Passwords do not match”	Pass	Test case work accordingly. UI was simple and minimalistic, easy to understand.
PEx09-2	First name: John Last Name: James Email: <a href="mailto:james@gmail.com">james@gmail.com</a> Telephone: 07162839403 Password: j123john Confirm password: j123john	Success message in green color stating “Registration successful. Please check your email to activate account” and activation email should be available in the inbox of the email address you have provided in the form	Green color success message stating “Registration successful. Please check your email to activate account” and activation email was sent to email inbox	Pass	Test case work accordingly. UI was simple and minimalistic, easy to understand.

**Table 2.4 – 15**

<b>Testing Function 5 : Login, Register Users and Profile function</b>					
<b>Logic in Interfaces</b>	<b>Validation and proper error messages</b>	<b>Connected to the database</b>	<b>Easy to use, User friendliness,</b>	<b>Easy navigation</b>	<b>Function is complete (%)</b>
<p>1. Simple login and UI buttons on the main menu that are easy to find and navigate</p> <p>2. The buttons to submit the login and registrations forms were also simple but very visible to the eye</p> <p>3. the button to reach the user's profile once logged in was easy to find</p>	<p>1. validations were done in the registration form for all the fields Eg:                  Email format                  Password format                  Password match etc.</p> <p>2. proper validations were done in the login form as well Eg:                  Check whether the email address is registered with the system and check if password is correct</p> <p>3. in both the login and register forms, error messages were displayed in red and success in green color</p> <p>4. user profile validation – user cannot update the email address from the user profile</p>	<p>Connection to proper database collection was established. All users that are newly registered were sent to one collection in the database. When user profiles are updated, all updates are reflected in real time in the database.</p>	<p>1. buttons that were used were visible and simple</p> <p>2. words in buttons and fields in the form were easy to understand</p> <p>3. font size and colors used in both forms were nice and calm</p> <p>3. it was easy to navigate to the user profile after logging in</p>	<p>Navigation was easy because Back buttons were enables with both form pages, and the profile page to go back to the home page.</p>	<p>Overall function did not have any issues with interfaces, database, navigation, or validations.</p> <p>Function was 100% completed with CRUD, search and report generating.</p>

**Table 2.4 – 16**

<b>Group ID : - ITP2021_S2_B01_G03</b>	
<b>Project title: Park Express - Park and Go Management System</b>	
<b>Ticket Management</b>	
<b>Testing Function 1:</b> Adding a new ticket	
<b>Test case ID :</b> PEx10	<b>Test designed by:</b> Haputhantri H.N. <b>Reg. No-</b> IT20145316
<b>Test priority (High/Medium/Low):</b>	High
<b>Test Description:</b> Admin can add tickets only for the walk-in customers.	

<b>Preconditions (if there are any):</b> Admin should log in to the system, navigate to Ticketing Dashboard, click issue and fill the form.
<b>Dependencies (if there are any):</b> - None

<b>Pass-condition:</b> None
<b>Test steps:</b> 1) Load Park Express through a web browser. 2) Click login button on top corner and log with admin credentials. 3) Go to issue ticket. 4) fill the form correctly and click issue button.

**Table 2.4 – 16 – Test Case**

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
PEx10-1	Customer ID – Customer Name – Sunil Koore No. Plate - TD-123 Vehicle type – Noah Parking time – 10.45 a.m. Departure time –12.30 p.m. Time duration – 2hours Contact Number -	Browser should display an error message as “fill all the details”	Error message was shown as “fill all the details”	Pass	The test case worked as expected with proper message.
PEx10-2	After filling all the data and press the issue button	Browser should display a successful message	Browser display a successful message as “Ticket added”.	Pass	The test case worked as expected with proper message.

**Table 2.4 – 17**

<b>Testing Function 2:</b> Deleting a ticket.	
<b>Test case ID :</b> PEx11	<b>Test designed by:</b> Haputhantri H.N <b>Reg. No-</b> IT20145316
<b>Test priority (High/Medium/Low):</b>	High
<b>Test Description:</b> Admin can delete the given ticket when the customer leaves the parking area with his/her vehicle	

**Preconditions (if there are any):** Admin should log in to the system, navigate to Ticketing Dashboard, click manage ticket and choose the ticket and click delete icon

**Dependencies (if there are any):** None

**Test steps:**

- 1) Load Park Express through a web browser.
- 2) Click login button on top corner and log with admin credentials
- 3) Go to Manage ticket page.
- 4) Choose the relevant ticket.
- 5) Click delete button in the ticket.

**Pass-condition:** None

**Table 2.4 – 17 – Test Case**

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
PEx11-1	Click “Delete” Button	Relevant ticket will be deleted from the database and get successful message	Relevant ticket will be deleted after clicking the delete button	Pass	No error occurred and testing was success.
PEx11-2	Click “ok” in successful message	There are showing the remaining tickets.	Deleted data will not showing.	Pass	No error occurred and the testing was success.

**Name** - Haputhantri H.N  
**Reg No** - IT20145316

**Table 2.4 – 18**

<b><u>Adding, Searching and Managing Walk-in Customers in the system</u></b>					
Logic in Interfaces	Validation and proper error messages	Connected to the database	Easy to use, User friendliness,	Easy navigation	Function is complete (%)
Very simple UI with a vivid color pallet. Easy to read and fill the forms.  Cards and icons are well designed and arranged.	Admin should fill all the details in the form if not browser display an error message.	Connection with the database happens successfully and data passes.	Form is short and colorized in to three basic colors. So it is easier to recognize it's type.  There's proper error messages and warnings.	Navigation was easy because whole function has a dash board. It's easier to work with a dashboard.	Function was 100% completed and designed very well.

**Table 2.4 – 19**

<b>Group ID : - ITP2021_S2_B01_G03</b>	
<b>Project title: ParkExpress - Park and Go Management System</b>	
<b>Transport Management</b>	
<b>Testing Function 1:</b> Adding a new bus	
<b>Test case ID :</b> PEx12	<b>Test designed by:</b> Silva W.S.J <b>Reg. No-</b> IT20189112
<b>Test priority (High/Medium/Low):</b>	Medium
<b>Test Description:</b> Admin can only add future dates from today as the “Registered Date” of a bus and all the fields are required.	

<b>Preconditions (if there are any):</b> Admin should log in to the system, navigate to Transportation Dashboard, click view busses and click add new bus.
<b>Dependencies (if there are any):</b> - None

<b>Test steps:</b>
1) Load Park Express through a web browser. 2) Click login button on top corner and log with admin credentials. 3) Go to Manage Shuttles page. 4) Click view busses, then add new bus in the Transportation Dashboard. 5) Click the date picker in Registered Date field. 6) Click add button to check.

<b>Pass-condition:</b> None
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**Table 2.4 – 19 – Test Case**

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
PEx12-1	Bus ID – Bus Name – Bus 9 No. Plate - TD-123 Owner's Name – John Date Rented - 10/02/2021 Rental Remaining – 10/02/2026 Contact Number - 0772352524	Browser should warn as “Please enter a unique valid Bus ID” on Bus Id field.	Warning was shown as “Please enter a unique valid Bus ID” in the form.	Pass	The test case worked as expected with proper message.
PEx12-2	After clicking the date picker in Date Rented.	Previous dates should be disabled in date picker.	Previous dates before today are disabled in date picker	Pass	The test case worked as expected with proper message.

**Table 2.4 – 20**

<b>Testing Function 2:</b> Deleting an unwanted member from the Staff member list.	
<b>Test case ID :</b> PEx13	<b>Test designed by:</b> W.S.J Silva <b>Reg. No-</b> IT20189112
<b>Test priority (High/Medium/Low):</b>	High
<b>Test Description:</b> Admin cannot delete a staff member without confirmation. If admin clicks delete icon of a separate staff member, It will alert as "Are you sure?". By only clicking "OK" confirms the deletion. Clicking "Cancel" does nothing to the data.	

<b>Preconditions (if there are any):</b> Admin should log in to the system, navigate to Transportation Dashboard, click view staff members and click delete icon.
<b>Dependencies (if there are any):</b> None

<b>Test steps:</b>
1) Load Park Express through a web browser. 2) Click login button on top corner and log with admin credentials 3) Go to Manage Shuttle page. 4) Click view staff members in the Transportation Dashboard. 5) Recently added staff member list will be retrieved. 6) Click the delete (garbage bin icon) to perform a deletion.

<b>Pass-condition:</b> None
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**Table 2.4 – 20 – Test Case**

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
PEx13-1	Click “OK” Button	Relevant data will be deleted from the list (real time).	Relevant data is deleted after clicking “OK”.	Pass	No error occurred and testing was success.
PEx13-2	Click “Cancel” Button	Nothing will be deleted.	There's no sign of data deletion. Nothing happened.	Pass	No error occurred and the testing was success.

**Name** - Silva W.S.J  
**Reg No** - IT20189112

**Table 2.4 – 21**

<b><u>Adding, Searching and Managing Buses, Routes and Staff Members</u></b>					
Logic in Interfaces	Validation and proper error messages	Connected to the database	Easy to use, User friendliness,	Easy navigation	Function is complete (%)
Very simple UI with a vivid color pallet. Easy to read and fill the forms.  Cards and icons are well designed and arranged.	Empty field validations are done in all three registration forms in Transportation Management System.  After adding a Rented Date it will automatically add five years into Rental Remaining Date Picker.	Connection with the database happens successfully and data passes.	Form is short and colorized into three basic colors. So it is easier to recognize its type.  There's proper error messages and warnings.	Navigation was easy because whole function has a dash board. It's easier to work with a dashboard.	Function was 100% completed and designed very well.

### **3. Conclusion**

Park and Go was introduced for the users to park their vehicle in a secure place, to avoid hectic traffic congestion and to make the travelling much easier. Our system is divided in to two main parts, the customers can either book the parking slot they need or park their vehicle as a walk-in customer. We provide a bus shuttle system to our customers; they can park their vehicles in our parking lot and get to their destination by using the shuttle service that we provide. We analyzed these requirements and started developing a web application. There are eight functions that we have covered in this system. User management, Booking management, Parking Slot management, Employee management, Employee Salary management, Ticket management and Bus route management.

Primarily, in the user management system, it had been facilitating for developing and holding the customer details who will be registering with our system and the booking management system handles all the bookings done by the customer. As per the employee management system it holds all the details regarding the employees which is managed by the admin. The employee salary is managed by the salary management system and all the parking slots are managed by the parking slot management system. The tickets for the walk-in customers are issued by the ticket management system and the details regarding the shuttle services that we provide are held and managed by the bus route management system.

Seven members manage to handle the above-mentioned functions on the period of four months and come up with a system is logically and morally created with all functioning properties. We are very grateful for the hard work and the grate concept that we came up with as a group. We think that we improved with this project parallel to learning through our errors and mistakes.

## 4. References

- [1] <https://parkinglogix.com/search-for-parking-roads-congested/#:~:text=Wasted%20Time%20%26%20Money&text=A%20study%20by%20INRIX%20found,more%20time%20looking%20for%20spots>.
- [2] <https://www.sundayobserver.lk/2018/07/15/news-features/colombo-needs-better-managed-parking>
- [3] IEEE Citation Guidelines.
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# Appendix A: Design Diagrams

## ER Schema

