UNIVERSITI TEKNIKAL MALAYSIA MELAKA

FAKULTI TEKNOLOGI MAKLUMAT DAN KOMUNIKASI

W O R K S H O P 1

R E P O R T

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Program	:	2 BITI S1G1
Project Title	:	Travel Express Bus Reservation System
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Supervisor Signature	:	
Evaluator Name	:	Dr. Noor Fazilla Abd Yusof

EXECUTIVE SUMMARY

Travel Express Bus Reservation System is a comprehensive solution designed to revolutionize the process of reserving bus trips for customers and optimizing operations for bus trip providers. This system addresses key challenges faced by both customers and bus trip companies, including booking processes, inefficient management of trip schedules and the challenge of finding available seats. The primary objectives of this project are to design a comprehensive and user-friendly online bus trip booking system that automates the booking process, enhances user experience, and streamlines administrative tasks. Next, to analyze the current bus trip booking process and identify its limitations and inefficiencies, including manual booking procedures. Third objective is 3. To develop an automated trip booking system that streamlines administrative tasks, simplifying the workload for administrators. By achieving these objectives, the system aims to streamline the booking experience, simplify operational processes, and ultimately boost customer satisfaction. The scope of the project includes designing and developing a program that allows customers to browse available trips, make bookings, and pay for bookings and drive more customers to this bus trip company. In other hand, customers can save time by quickly check the real-time availability of trips and seats. They don't need to contact the bus trip company directly or visit to bus terminal location. This system can automate the reservation and booking process, eliminating the need for human data entry and record-keeping. By doing this, the administrative can reduced workload, chore of keeping track managing paper tickets and manually updating data is eliminated. In conclusion, this Trip Booking System is secure to bring substantial benefits to both customers and bus trip service providers. Customers will enjoy a more convenient and efficient way to book bus trips, while companies will benefit from streamlined operations, improved inventory management, and an enhanced ability to meet customer demands.

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CHAPTER 1: INTRODUCTION

1.1   Introduction

Malaysia is one of the places that are famous for travelling. It not only attracted domestic travelers but also attracted many foreign travelers. A good Trip Booking System can attract more travelers and make it easy to book a trip. However, nowadays some trip booking planning runs in manual, cannot made by online platform. Trip planning and booking system is more critical than ever. The Trip Booking System is the best solution designed to transform the way to plan, book, and experience the travelling. The proposed trip booking system aims to simplify the bus trip booking process for customers and improve inventory management for bus trip companies. By addressing inefficient booking process, inefficient inventory management, and limited trip options, the system has the potential to significantly improve the bus trip industry and improve the customer experience.

1.2   Problem Statement

i. The current bus trip booking process relies on manual procedures, resulting in inefficiencies and longer booking times.

ii. There is a lack of a unified and user-friendly platform for booking bus trips, which makes it challenging for both customers and staff to manage bookings and trip details.

iii. The current online trip booking system lacks the necessary features to efficiently manage administrative tasks, resulting in heavy workload for administrators.

1.3   Objective (s) of the project

This project embarks on the following objectives:

i) To analyze the current bus trip booking process and identify its limitations and inefficiencies, including manual booking procedures.

ii) To design a comprehensive and user-friendly online bus trip booking system that automates the booking process, enhances user experience, and streamlines administrative tasks.

iii) To develop an automated trip booking system that streamlines administrative tasks,simplifying the workload for administrators.

1.4   Scope

1.4.1 Module to be developed

i.   Trip module

The module manages the trip details, adding, updating and deleting the trip details.

ii.   Booking Module

This module has the booking operations, price calculations, date and time calculations.

iii.   Report Module

This module includes the operations that are needed to be present in the monthly sales report, yearly sales report, date sales report and charts to illustrate sales.

iv.   Admin Module

This module consists of basic account management such as login to the account, managing trip, staff, customer, bus, driver, report and user profile details.

v. Staff Module

This module consists of basic account credentials such as login to the account, managing trip, customer, bus, driver, and user profile details.

vi. Customer Module

This module consists of basic account credentials such as login to the account, booking trip, cancel booking, view booking and manage user profile.

vii. User Profile Module

In this module users can change their details and password.

1.4.2 Target User

i) **Admin** - In this system admin have rights to manage the overall system. Admin can edit, add and delete the trip details. Admin can add, update, and delete staff details. Admin also can add, update and delete driver details. Then, admin can view the customer details. They can add, update, and delete bus details. Admin can see the total sales in the report module. Finally, admin can manage his details in user profile module.

ii) **Staff** - In this system staff can edit, add and delete the trip details. Staff also can add, update and delete driver details. Then, staff can view the customer details. They can add, update, and delete bus details. Finally, staff can manage their details in the user profile module.

iii) **Customer** - Customer who has an account can login directly to the system. Customer who did not have an account can register. In this system they can book the trips and can view the trip that they already booked. They can book the seat number that they want and can cancel the booking. Finally, customer can manage their details in user profile module.

1.5   Project Significance

This project is important because it greatly improves how we manage and analyse booking data. Some of the benefits:

1. **Better Data Visualization:**
   o The new charts and reports make it easier to understand booking trends over time. Seeing data visually with stars (*) helps quickly grasp which months and destinations are most popular.
2. **Enhanced Accuracy:**
   o By adding validation checks for dates, phone numbers, and emails, the project ensures that the information entered into the system is correct. This reduces errors and makes the data more reliable.
3. **Improved User Experience:**
   o Users are guided to enter valid information, making the system more user-friendly. This prevents mistakes and saves time, as users are immediately prompted to correct any invalid input.
4. **Informed Decision-Making:**
   o The detailed annual and monthly reports provide valuable insights. This helps in making informed decisions about promotions, resource allocation, and future planning based on real booking data.
5. **Efficiency:**
   o Automated data validation and error handling streamline the process, reducing the need for manual checks and corrections. This makes the system more efficient and less prone to human error.

1.6   Gantt Chart of Project Activities

no.	task	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
1	PROPOSAL	▓	▓												
2	ANALYSIS		▓	▓	▓										
3	PROGRESS 1			▓	▓	▓	▓	▓							
4	PROGRESS 2							▓	▓	▓	▓	▓			
5	PROGRESS 3											▓	▓	▓	
6	PRESENTATION														▓
7	FINAL REPORT														▓

CHAPTER 2: ANALYSIS OF PROBLEM

2.1   Problem Decomposition Description

i.   The bus trip companies face inefficiencies in trip management as they struggle to effectively handle their trip plans and bookings using manual methods such as recording booking, customer data, and other relevant information in papers. This reliance on manual processes leads to various problems, including lost revenue, compromised business records, and wasted resources.

ii.   Customers often encounter difficulties in finding trip plans. This presents a significant challenge, especially for travelers who rely on trips for vacation during their holidays. The limited availability and accessibility of trip plans in such areas can make it hard for customers to fulfil their requirements and can result in inconvenience.

iii.   The inefficiencies in the bus trip booking process by customers from issues related to the pricing structure and seats available. These factors create challenges that make it difficult for customers to compare prices and select the seat option.

2.2   Structured Chart
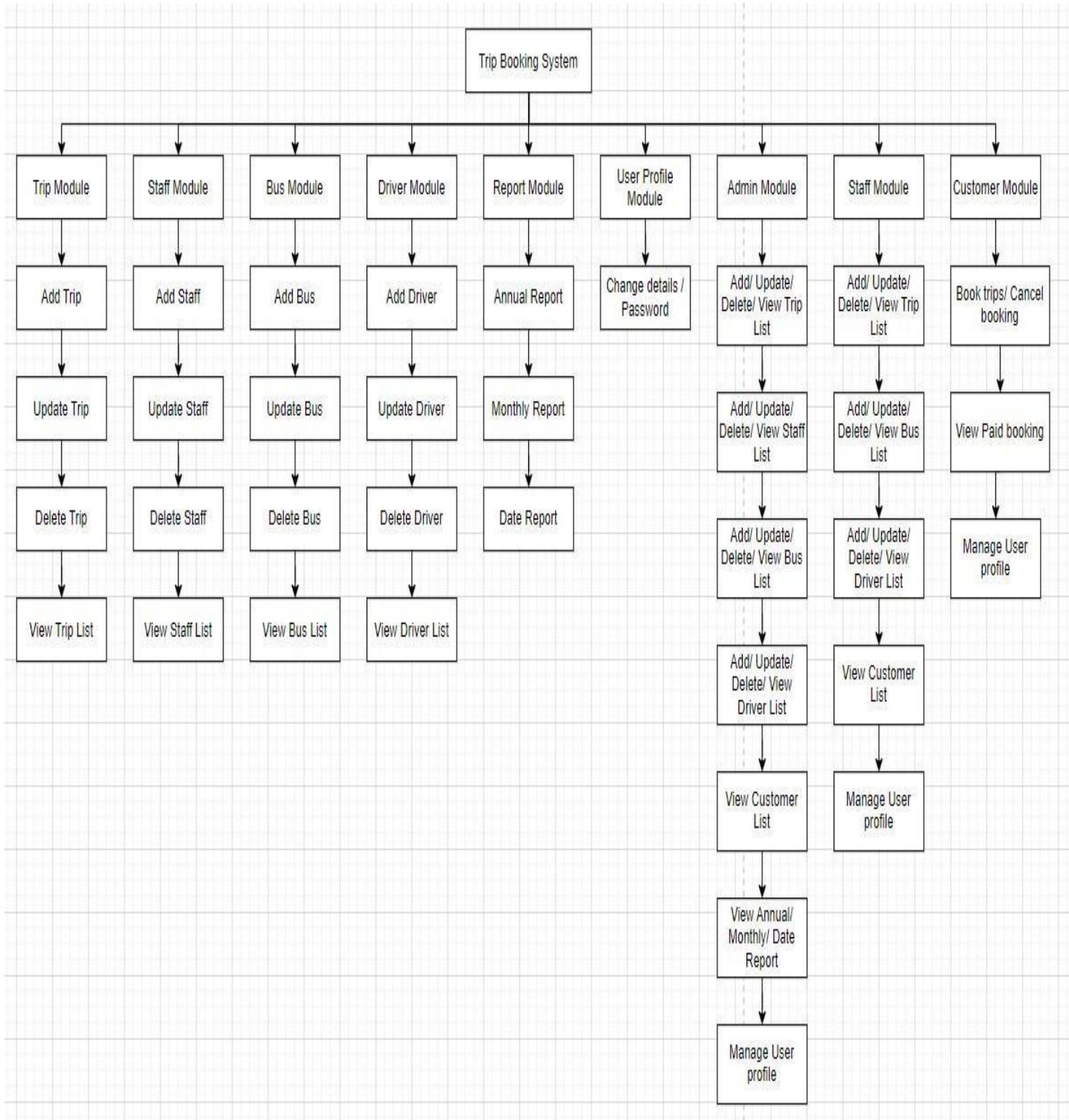

Figure 2.1 Structured Chart for the Project

CHAPTER 3: DESIGN

3.1   Flowchart

3.1.1 Main Page
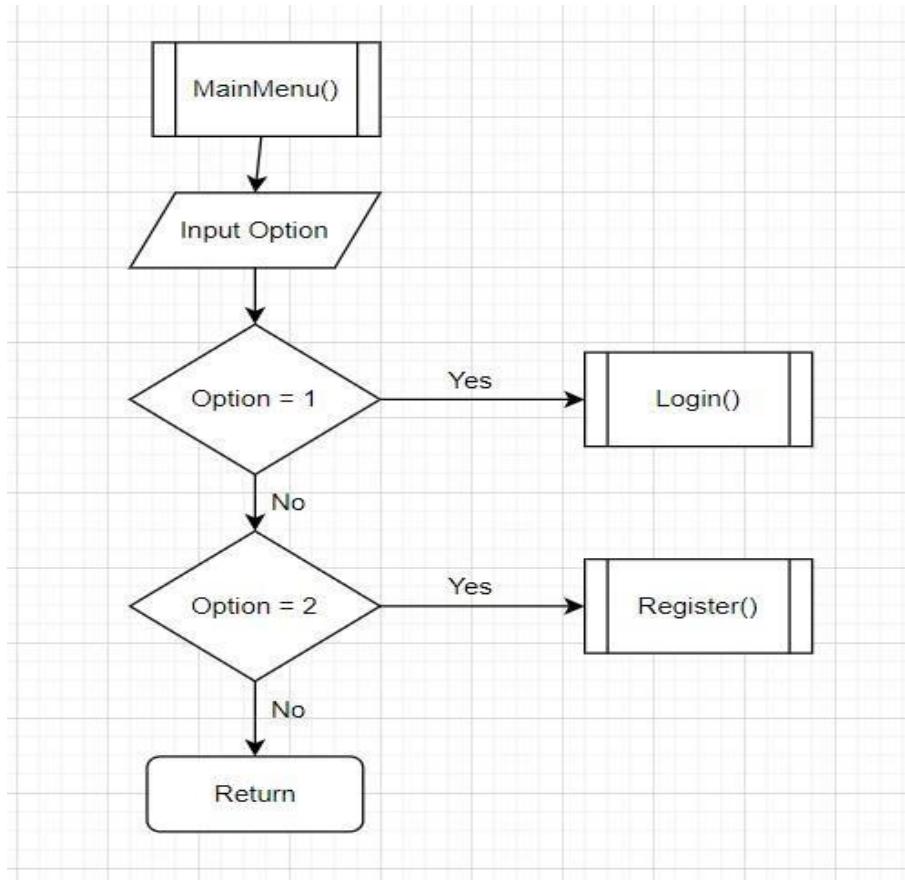
Figure 3.1 Flowchart for the Main Page Function

3.1.2 Login
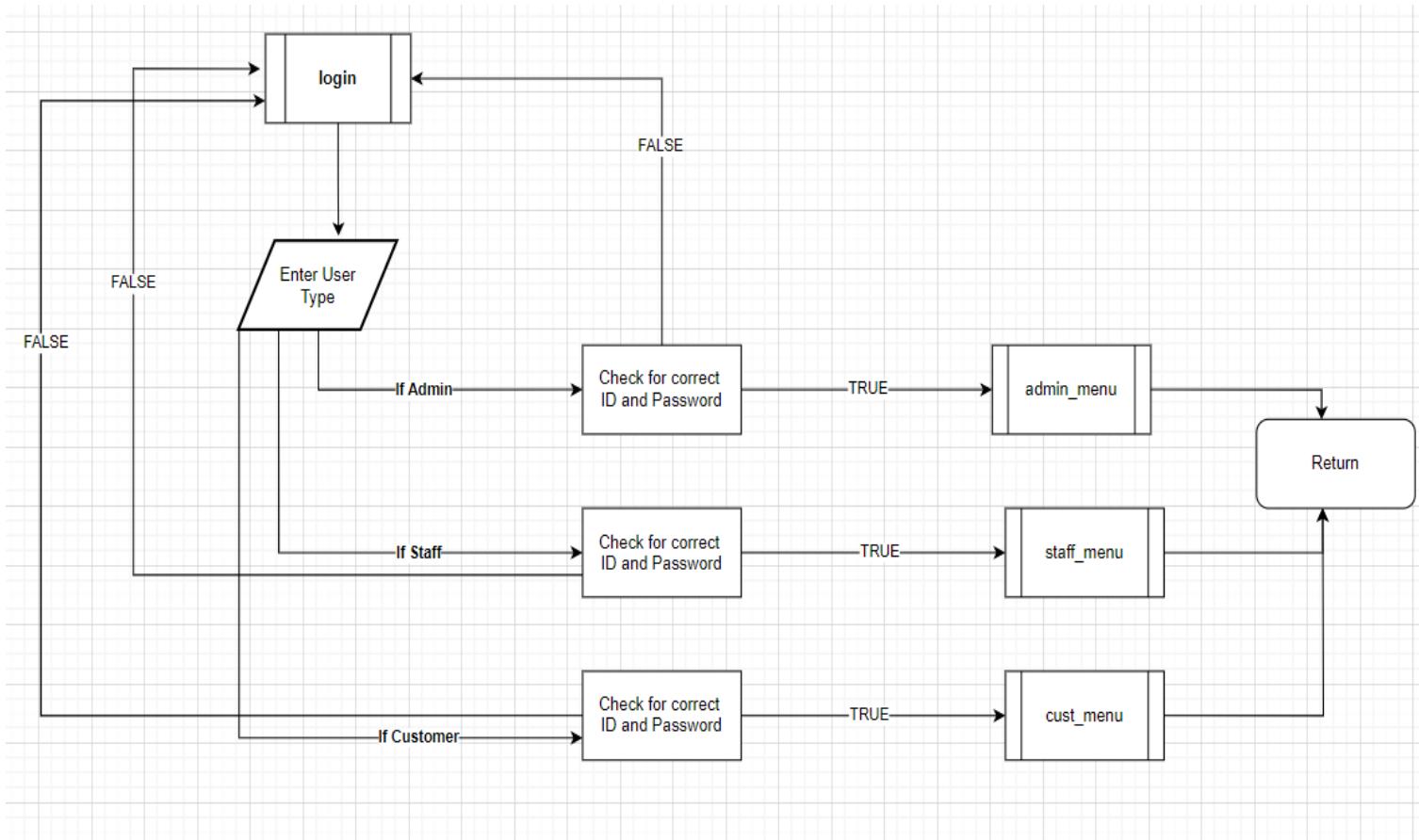
Figure 3.2 Flowchart for the Login Function

3.1.3 Register
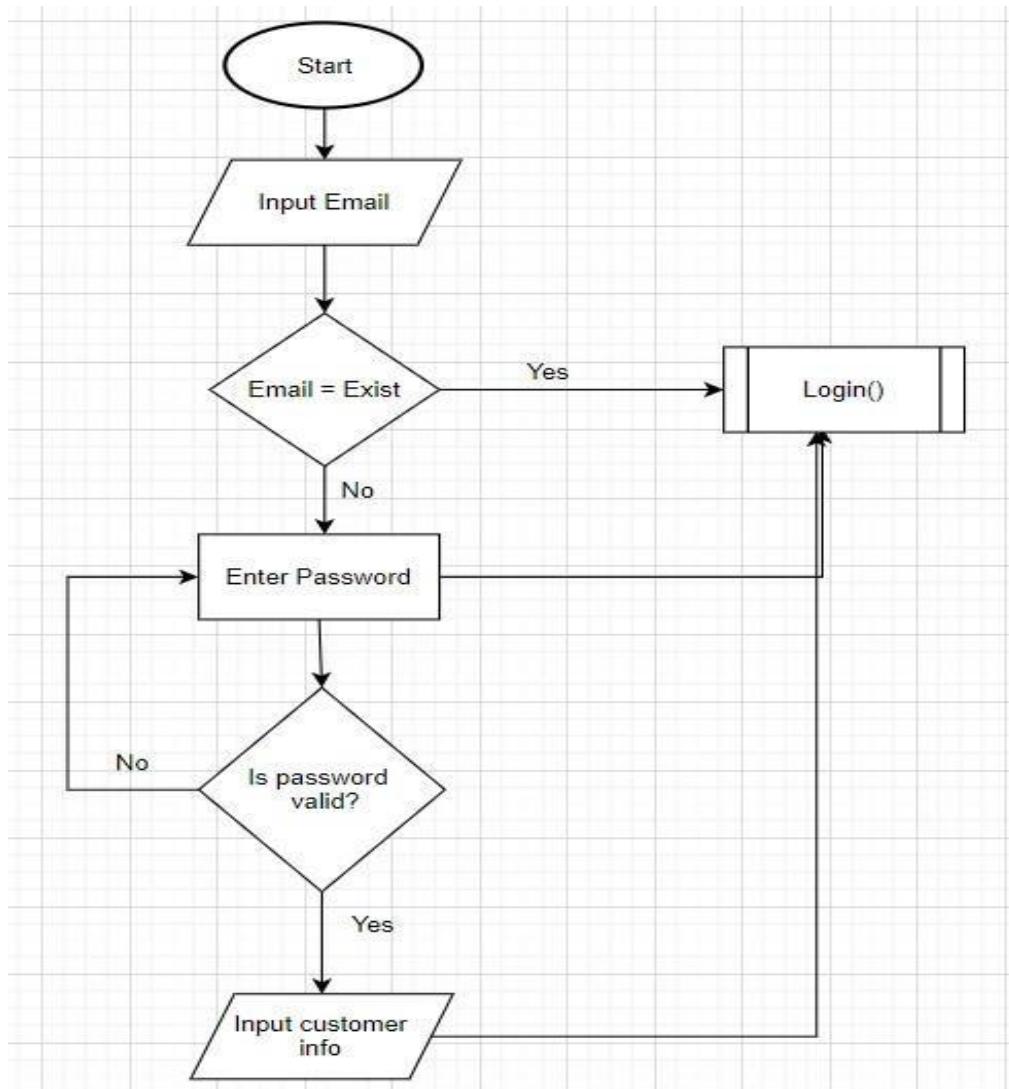
Figure 3.3 Flowchart for the Register Function

3.1.4 Admin Menu
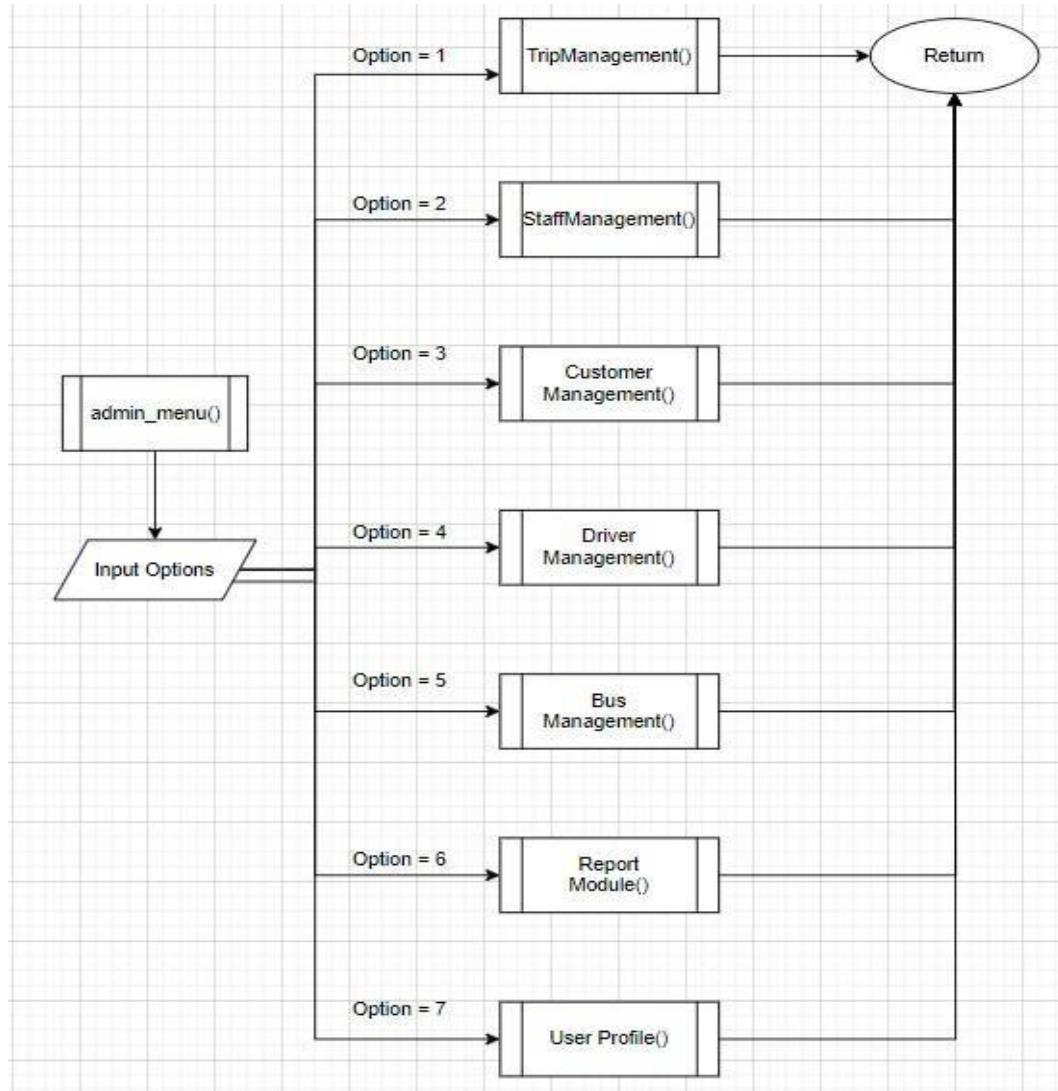
Figure 3.4 Flowchart for the Admin Menu Function

3.1.5 Staff Menu
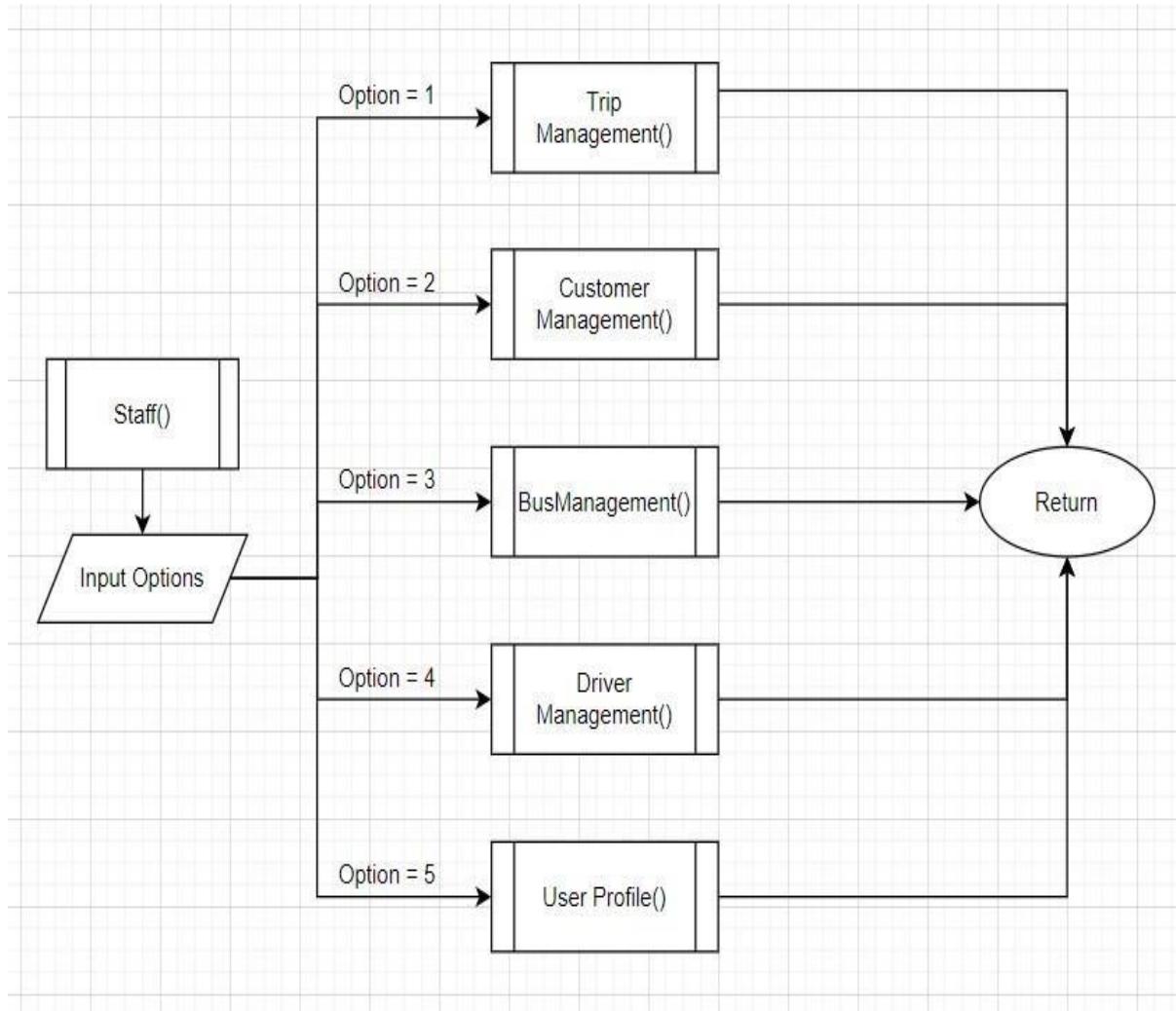
Figure 3.5 Flowchart for the Staff Menu Function

3.1.6 Customer Menu
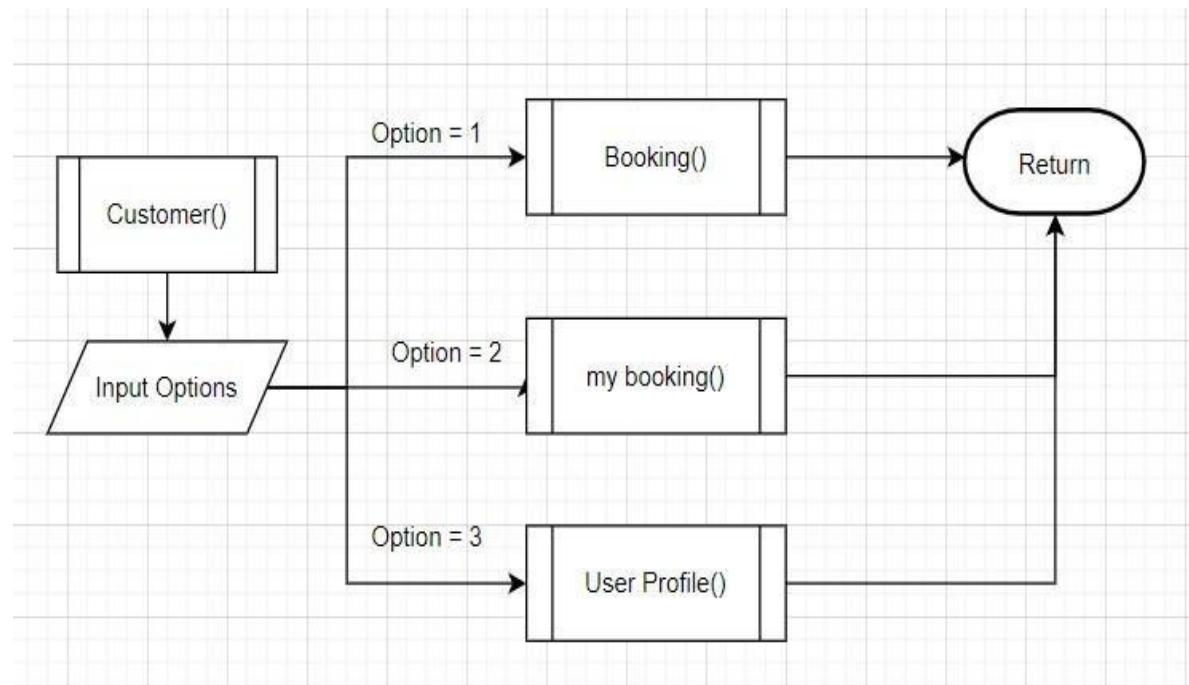
Figure 3.6 Flowchart for the Customer Menu Function

3.1.7 Trip Management for Admin
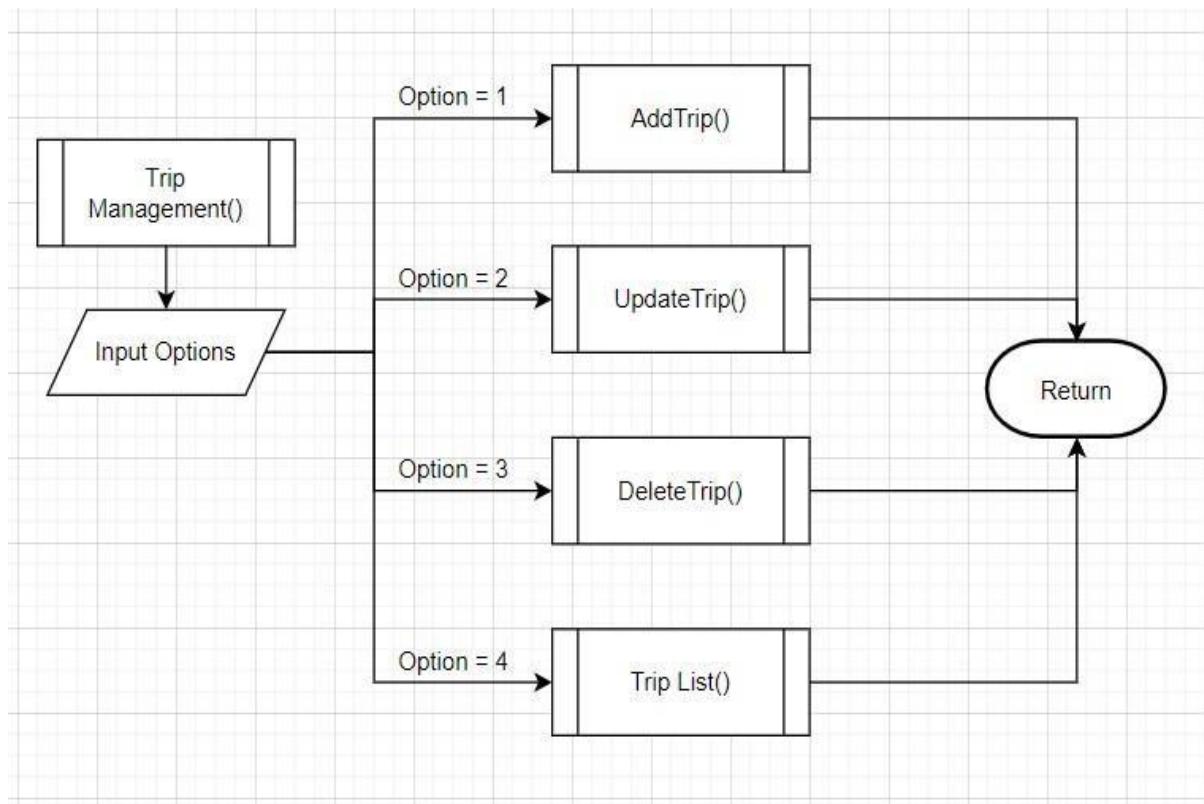
Figure 3.7 Flowchart for the Trip Management for Admin Function

3.1.8 Staff Management
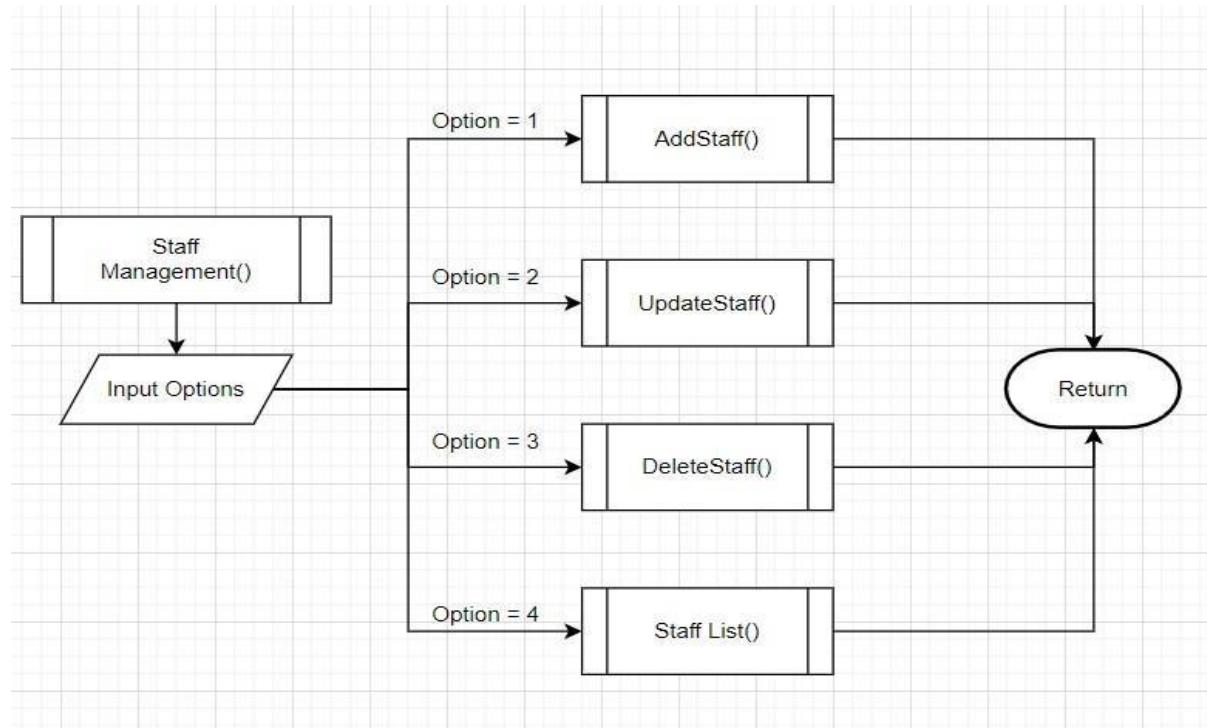
Figure 3.8 Flowchart for the Staff Management Function

3.1.9 Customer Management
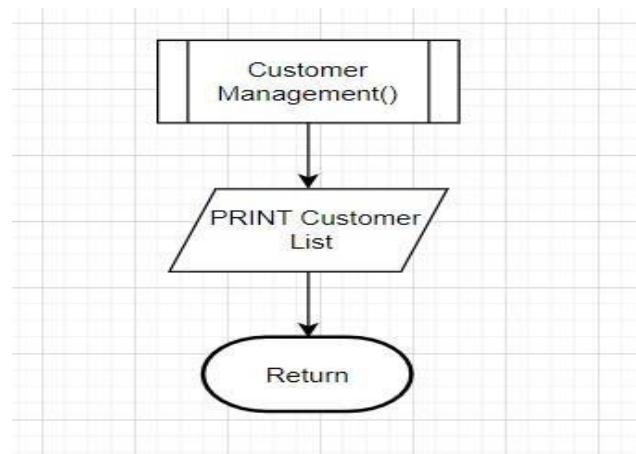
Figure 3.9 Flowchart for the Customer Management Function

3.1.10 Driver Management for Admin
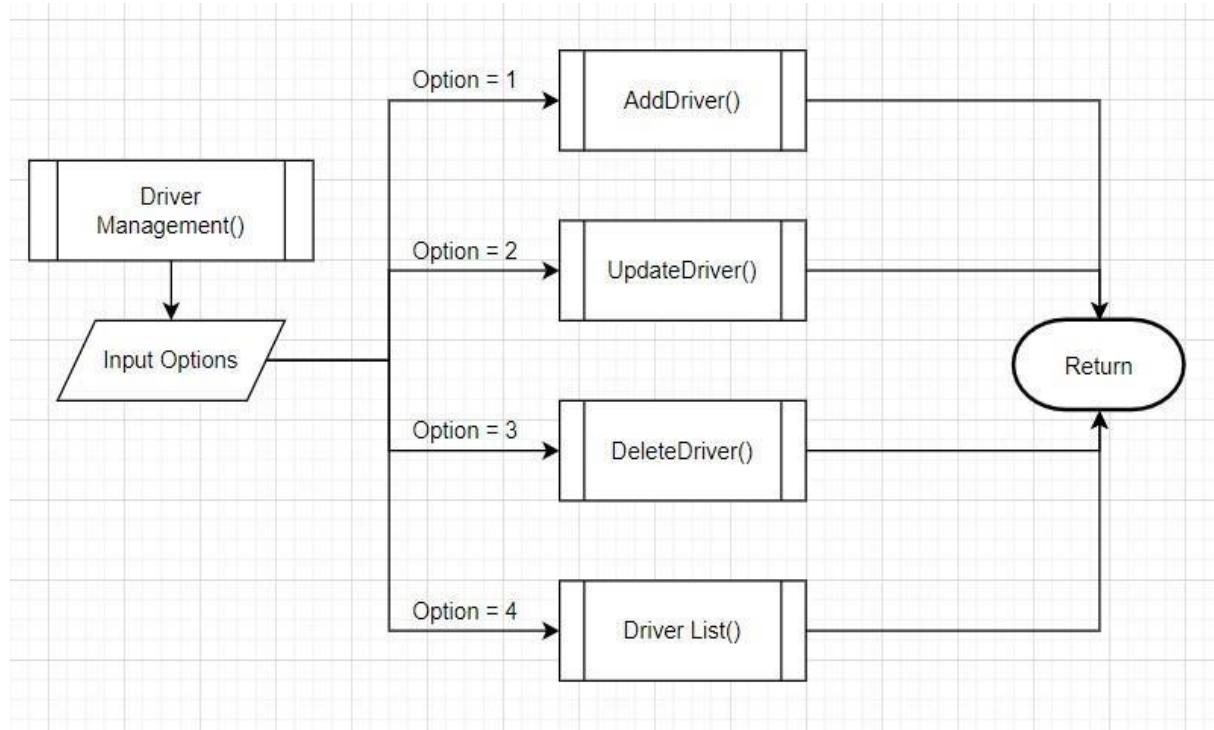
Figure 3.10 Flowchart for the Driver Management for Admin Function

3.1.11 Bus Management for Admin
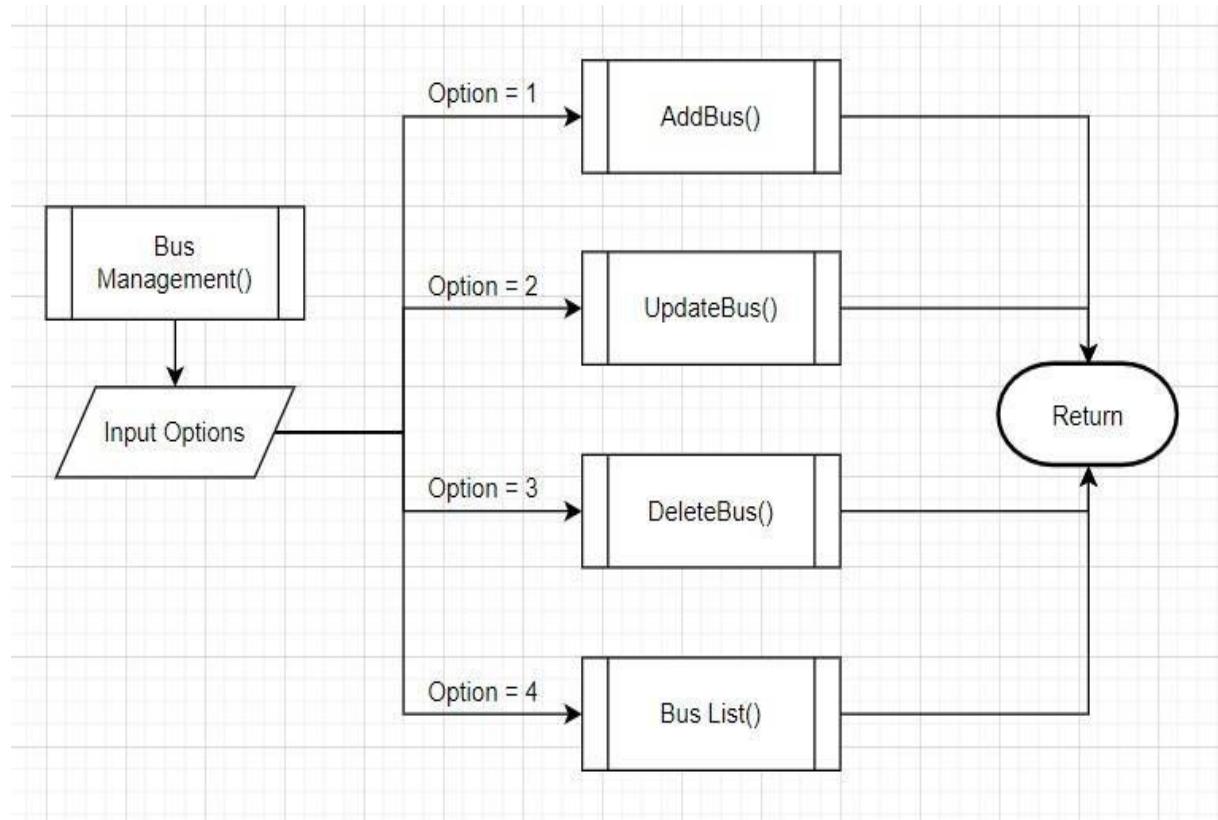
Figure 3.11 Flowchart for the Bus Management for Admin Function

3.1.12 Report Module
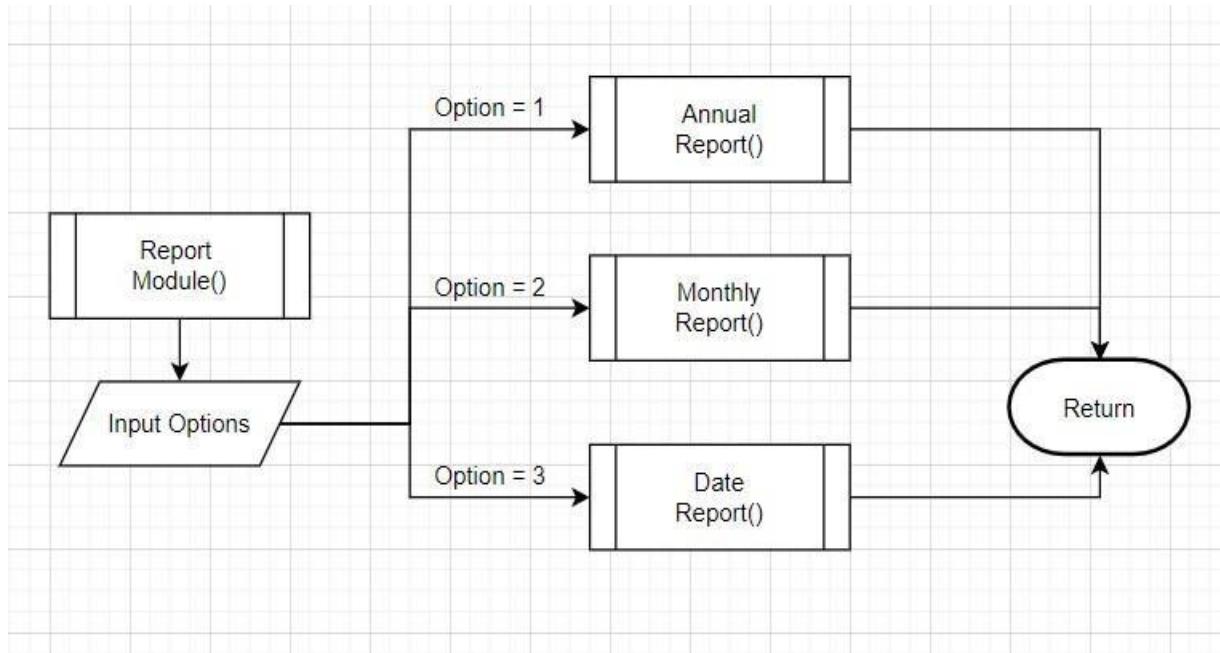
Figure 3.12 Flowchart for the Report Module Function

3.1.13 User Profile
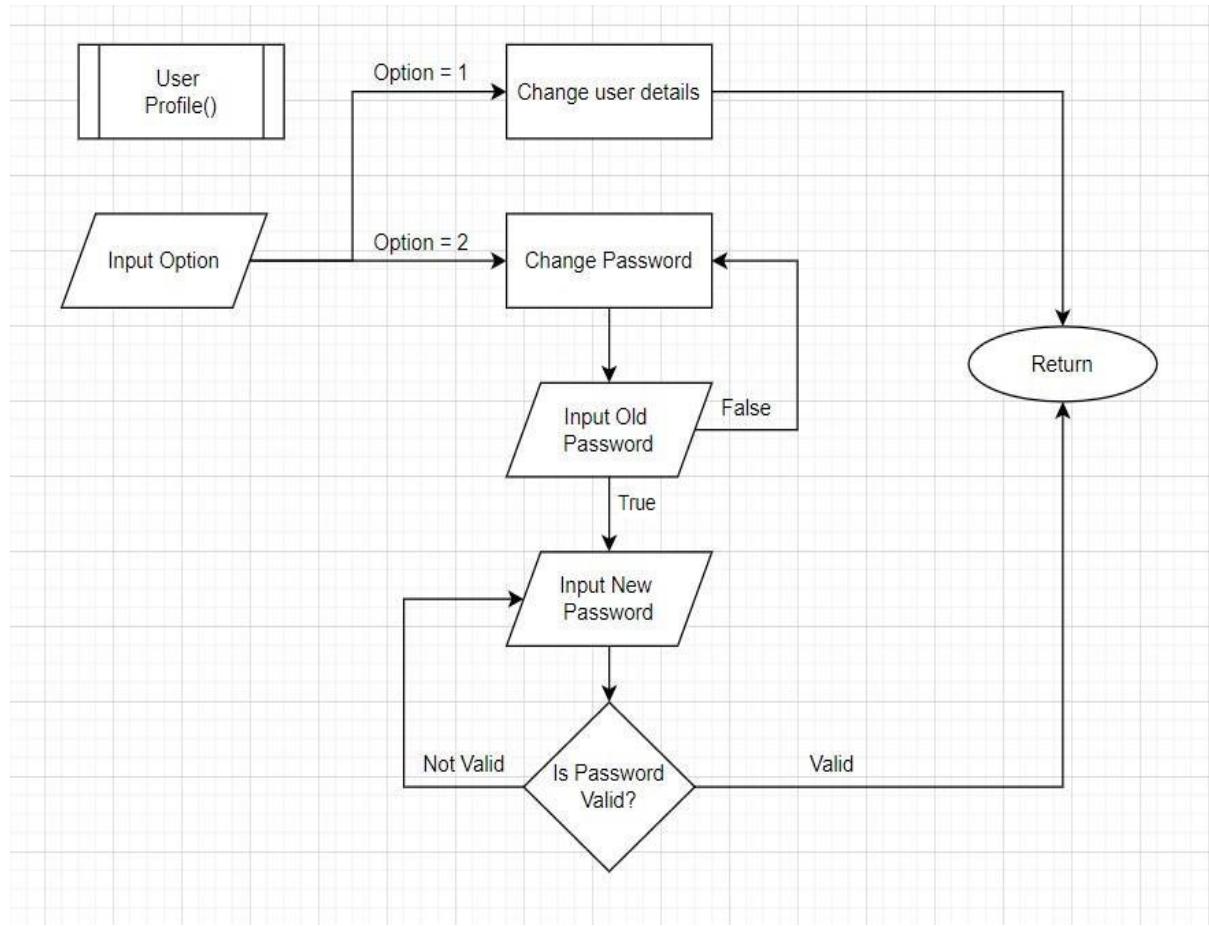
Figure 3.13 Flowchart for the User Profile Function

3.1.14 Trip Management for Staff
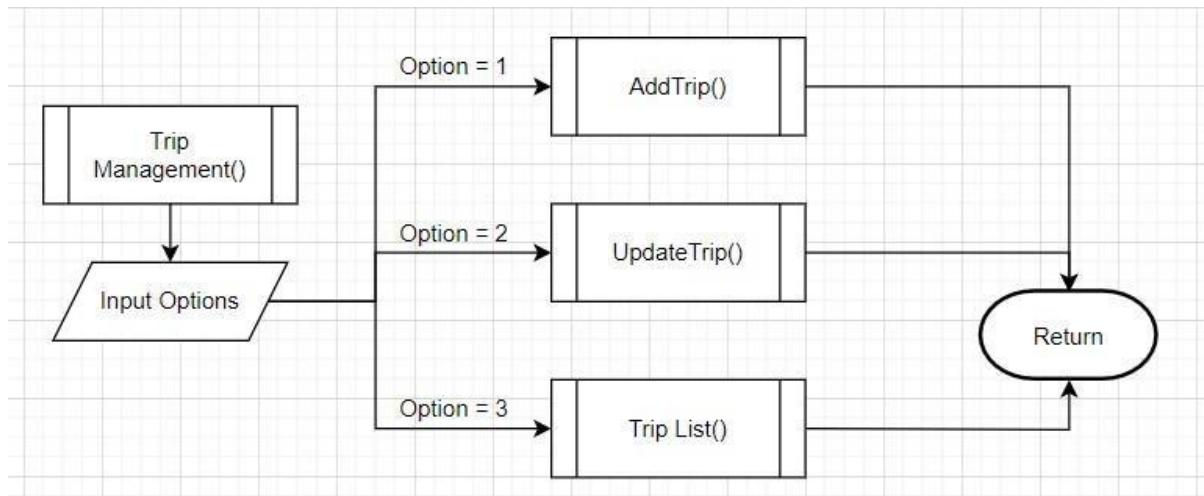
Figure 3.14 Flowchart for the Trip Management for Staff Function

3.1.15 Driver Management for Staff
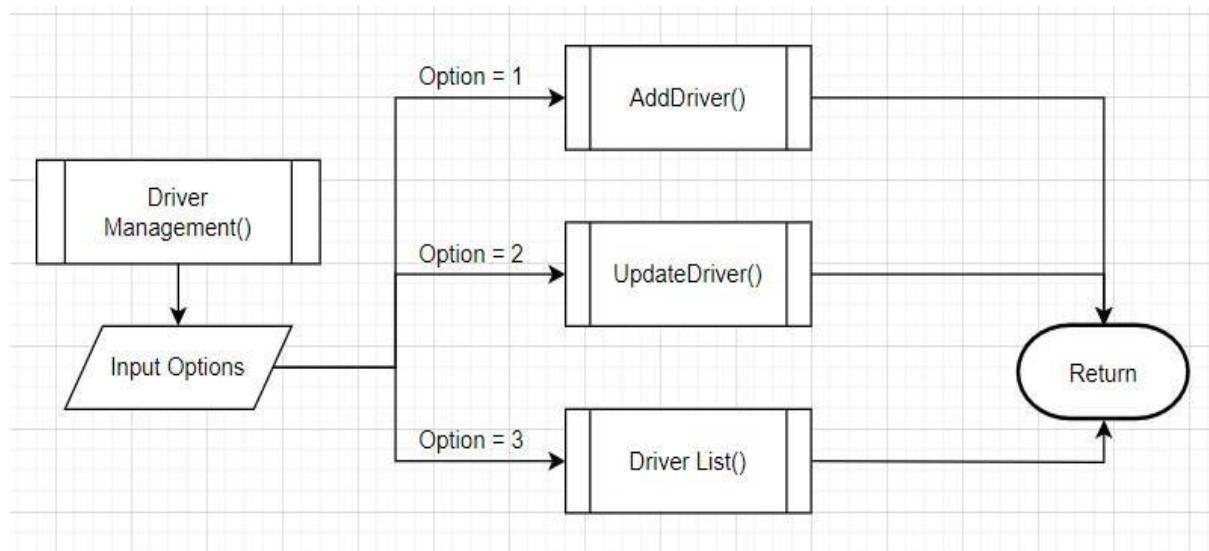
Figure 3.15 Flowchart for the Driver Management for Staff Function

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3.1.16 Bus Management for Staff
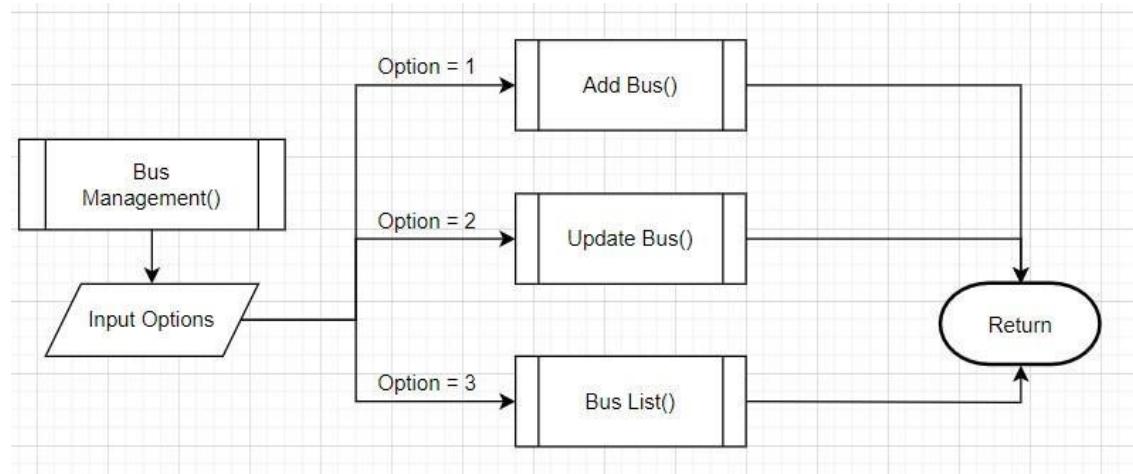
Figure 3.16 Flowchart for the Bus Management for Staff Function

3.1.17 Add Trip
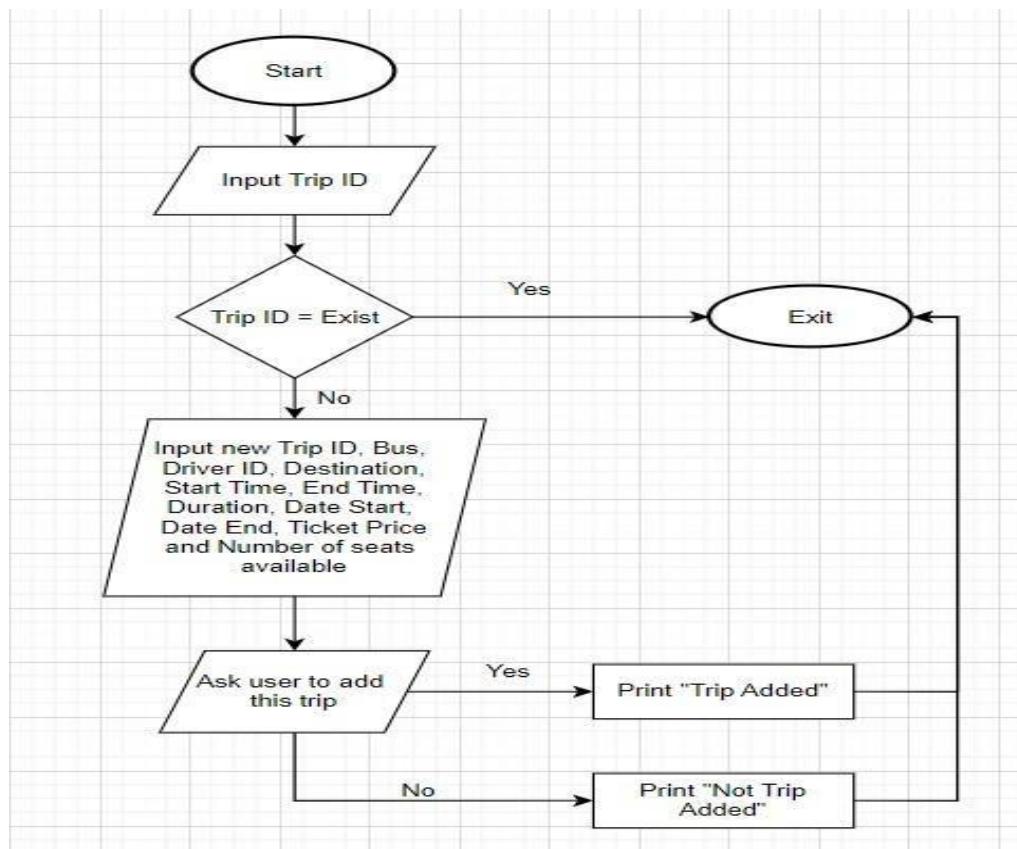
Figure 3.17 Flowchart for the Add Trip Function

3.1.18 Add Staff
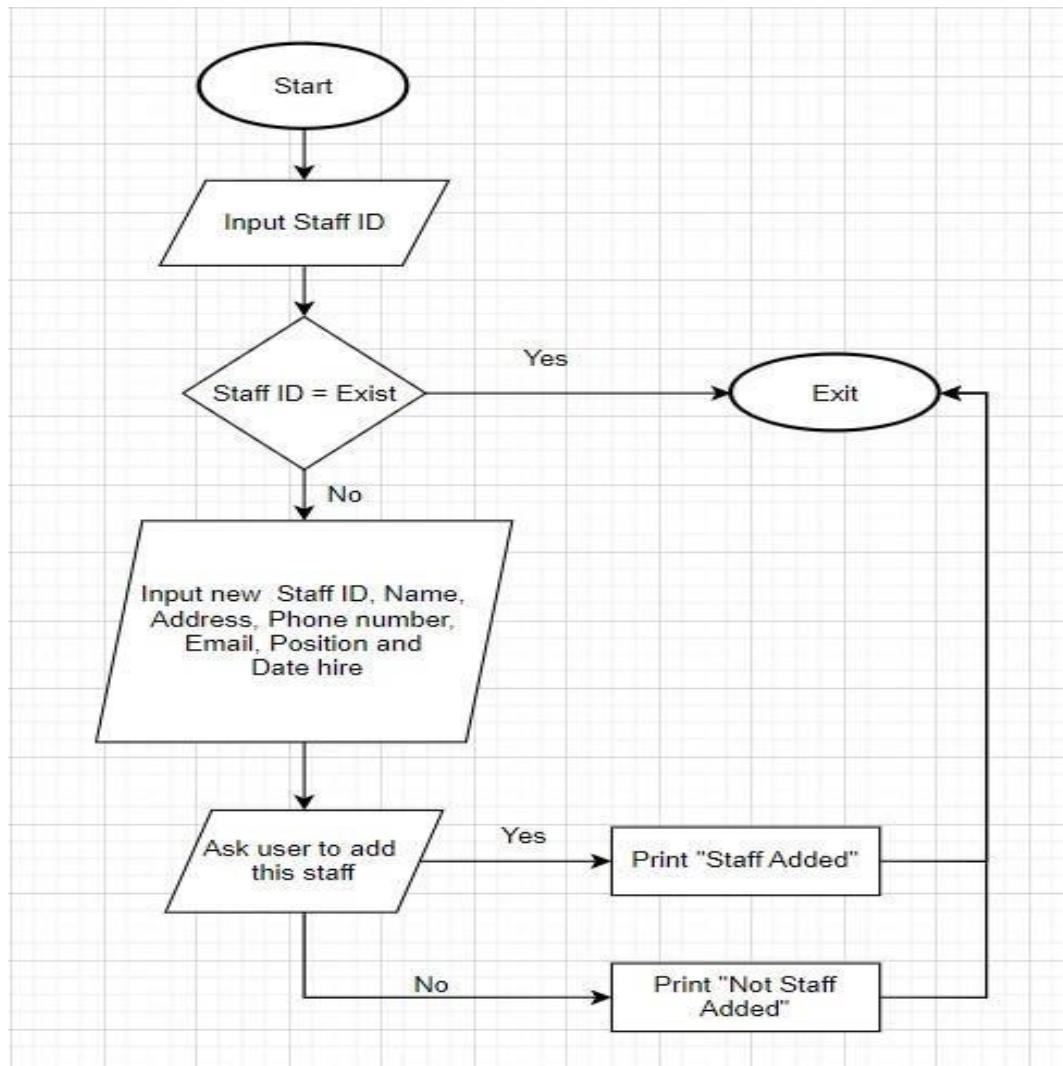
Figure 3.18 Flowchart for the Add Staff Function

3.1.19 Add Bus
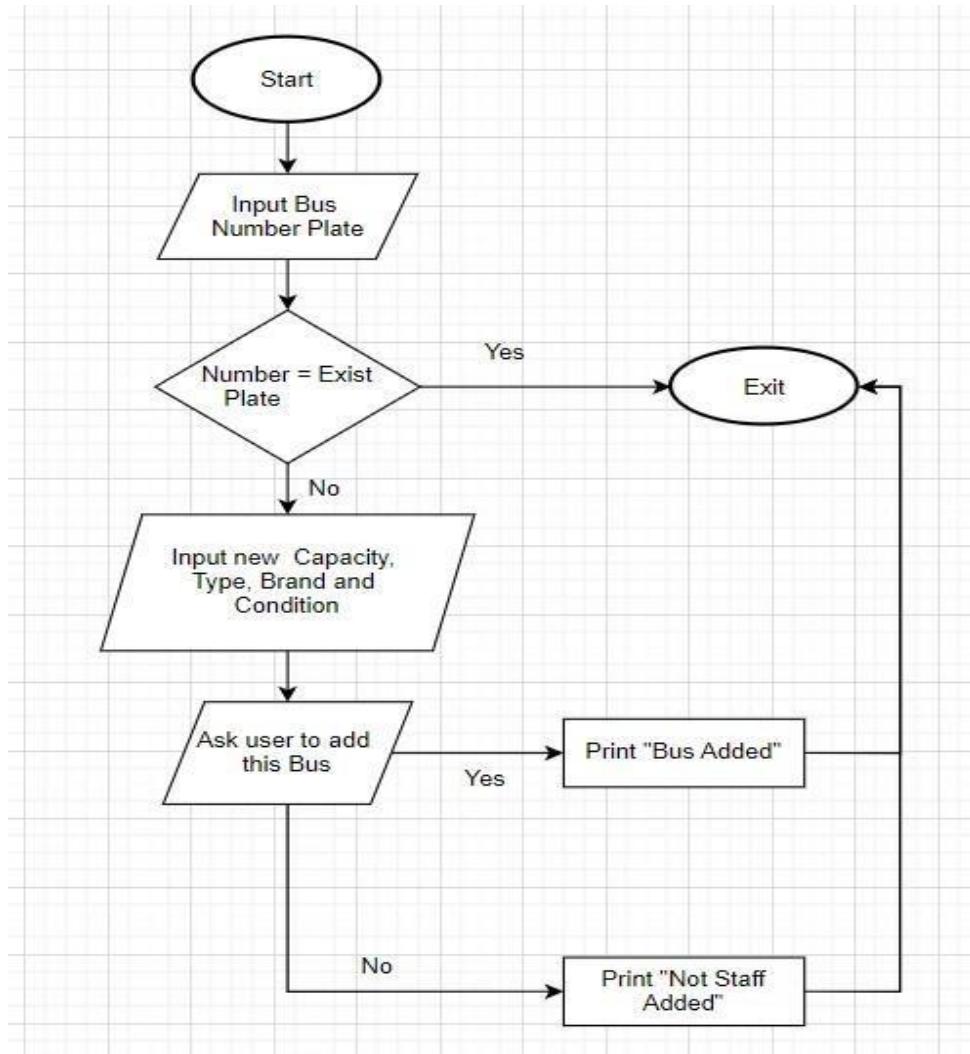
Figure 3.19 Flowchart for the Add Bus Function

3.1.20 Add Driver
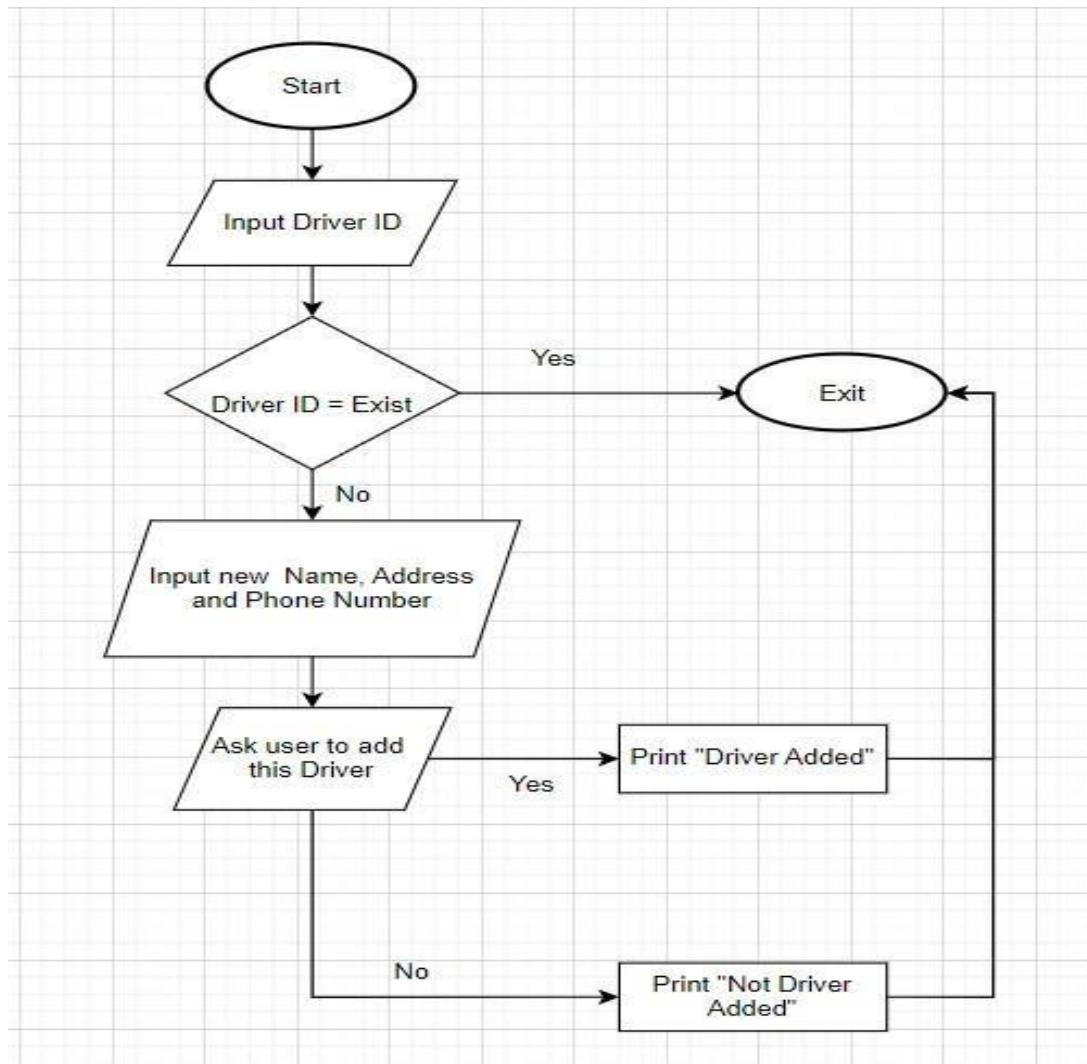
Figure 3.20 Flowchart for the Add Driver Function

3.1.21 Update Trip
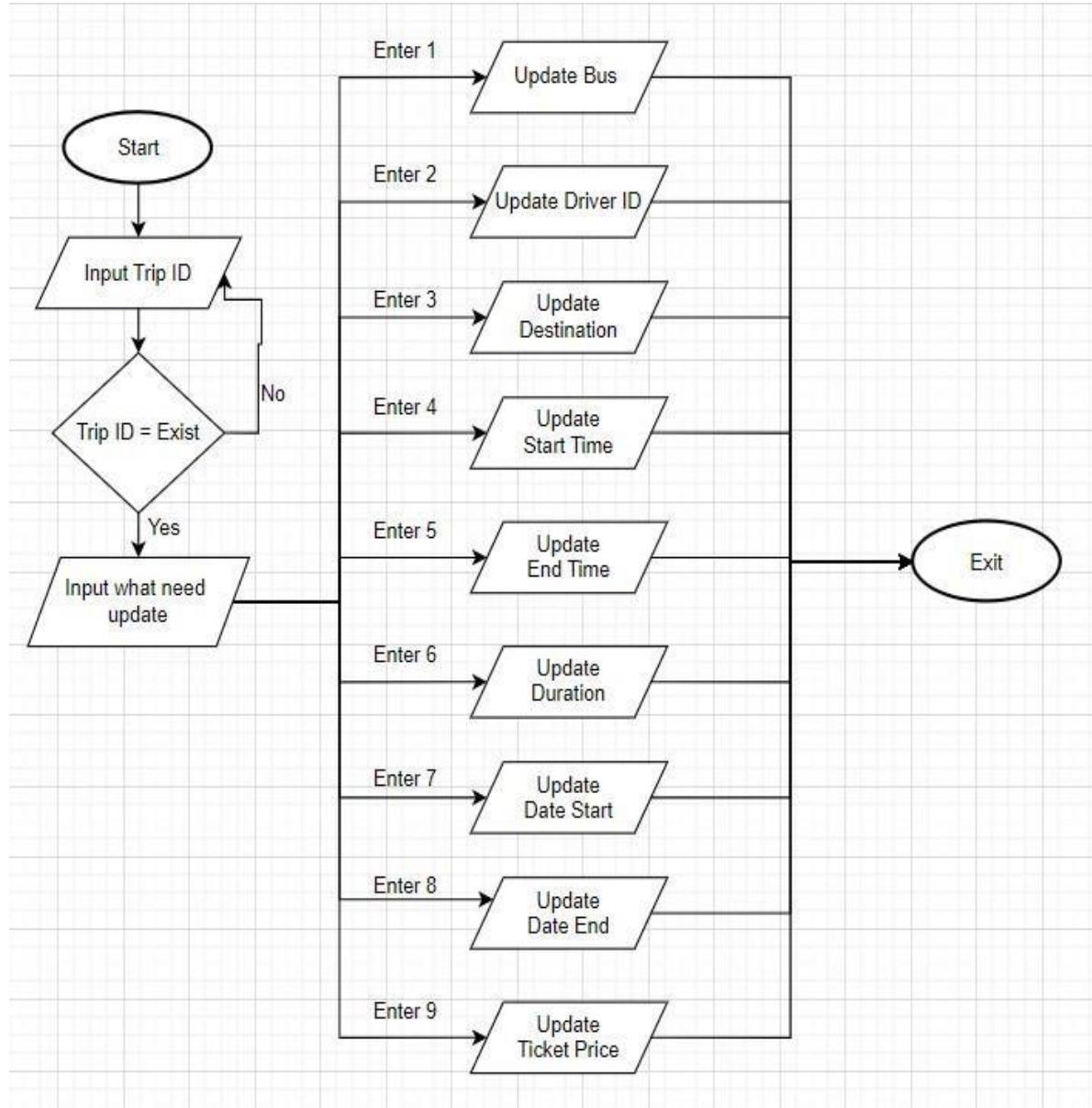
Figure 3.21 Flowchart for the Update Trip Function

3.1.22 Update Staff
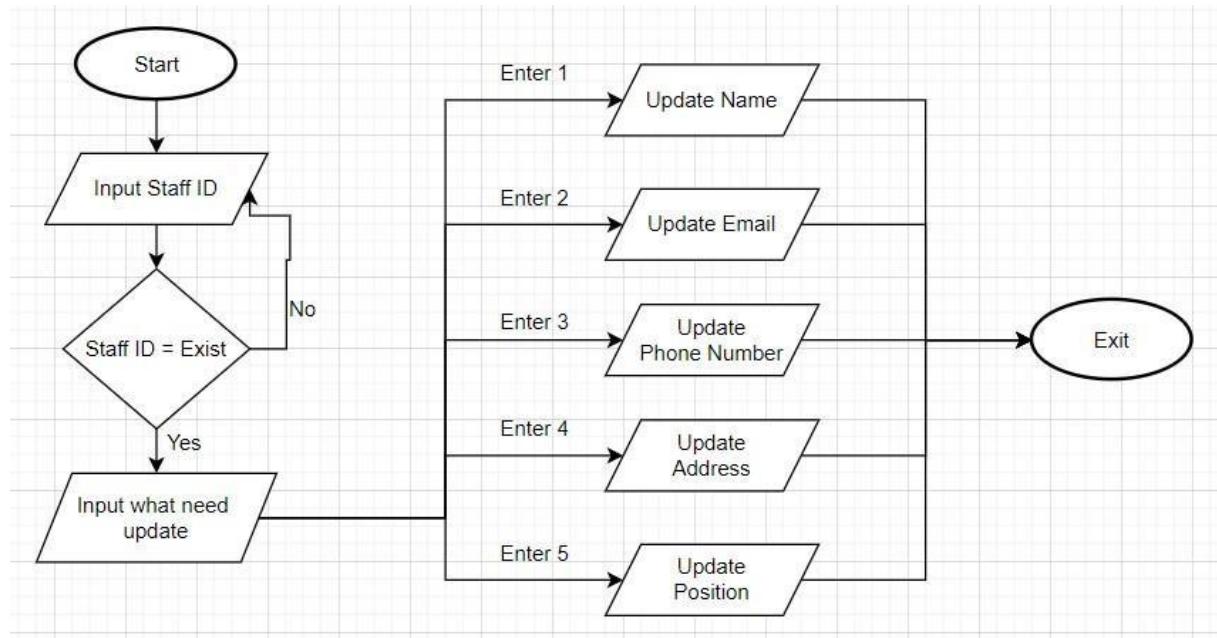
Figure 3.22 Flowchart for the Update Staff Function

3.1.23 Update Bus
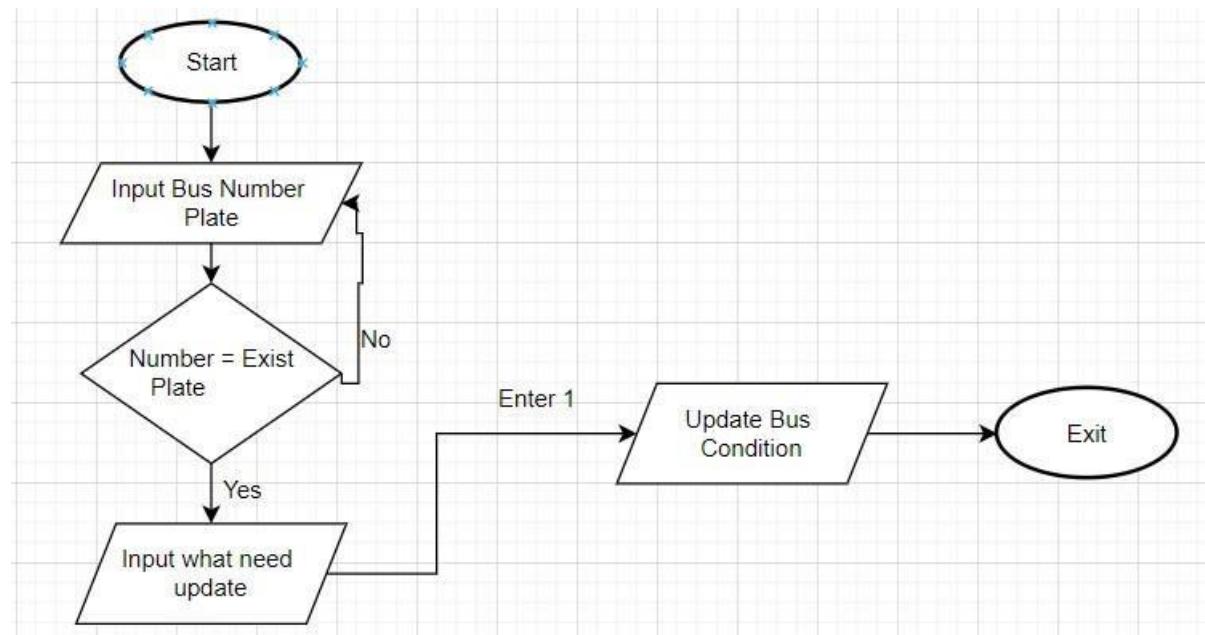
Figure 3.23 Flowchart for the Update Bus Function

3.1.24 Update Driver
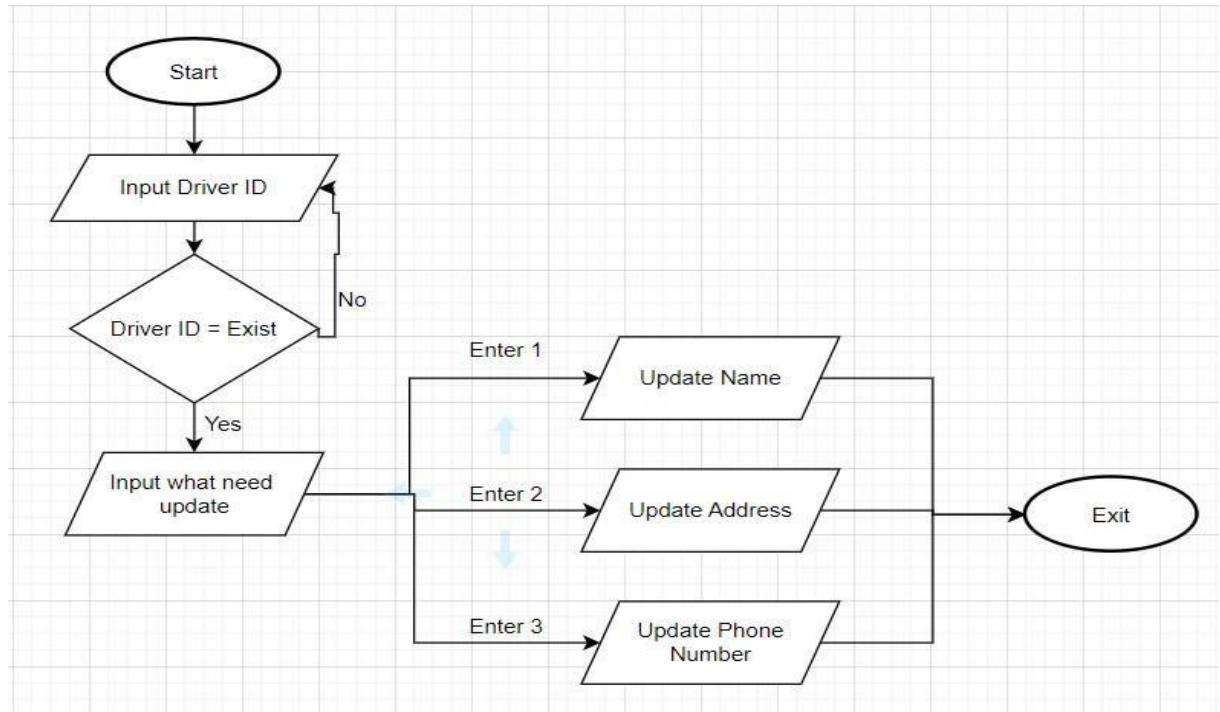
Figure 3.24 Flowchart for the Update Driver Function

3.1.25 Delete Trip
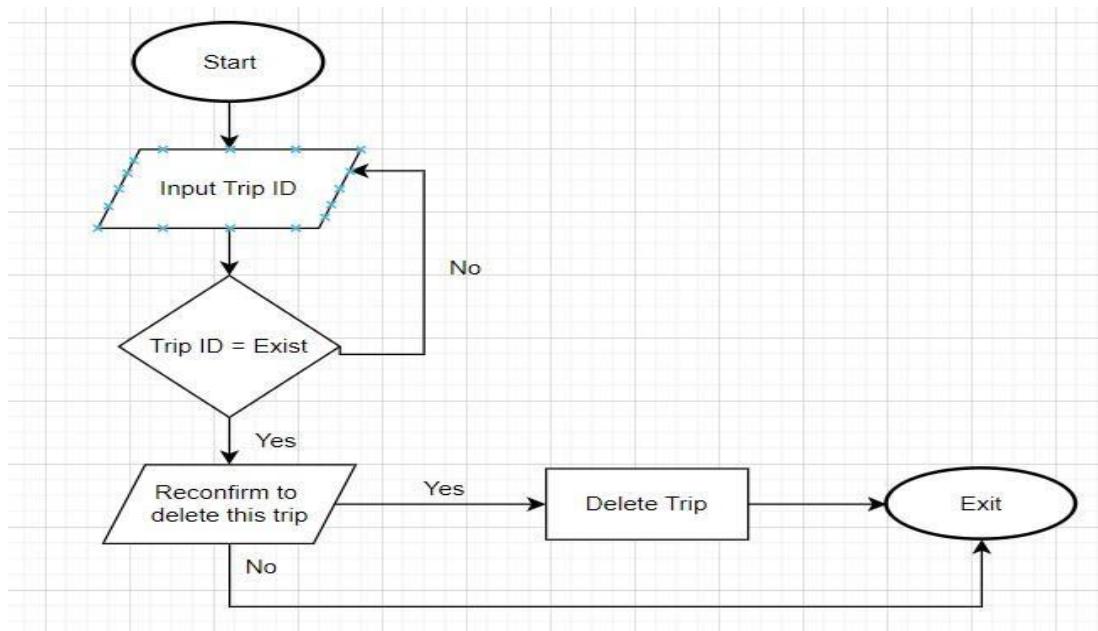
Figure 3.25 Flowchart for the Delete Trip Function

3.1.26 Delete Staff
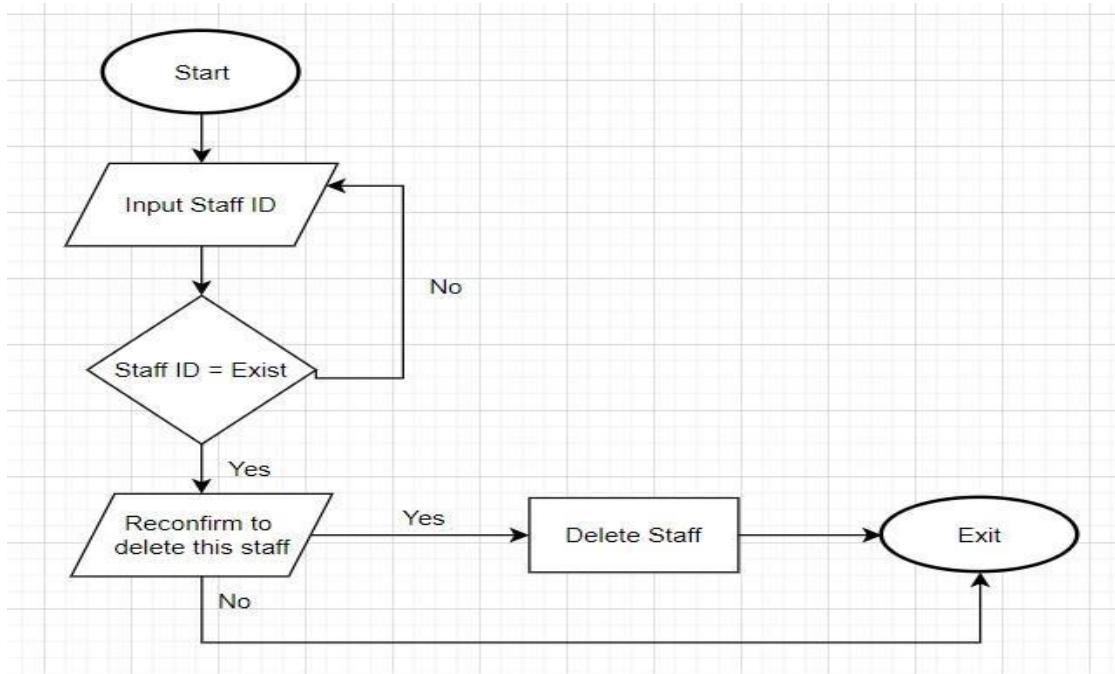
Figure 3.26 Flowchart for the Delete Staff Function

3.1.27 Delete Bus
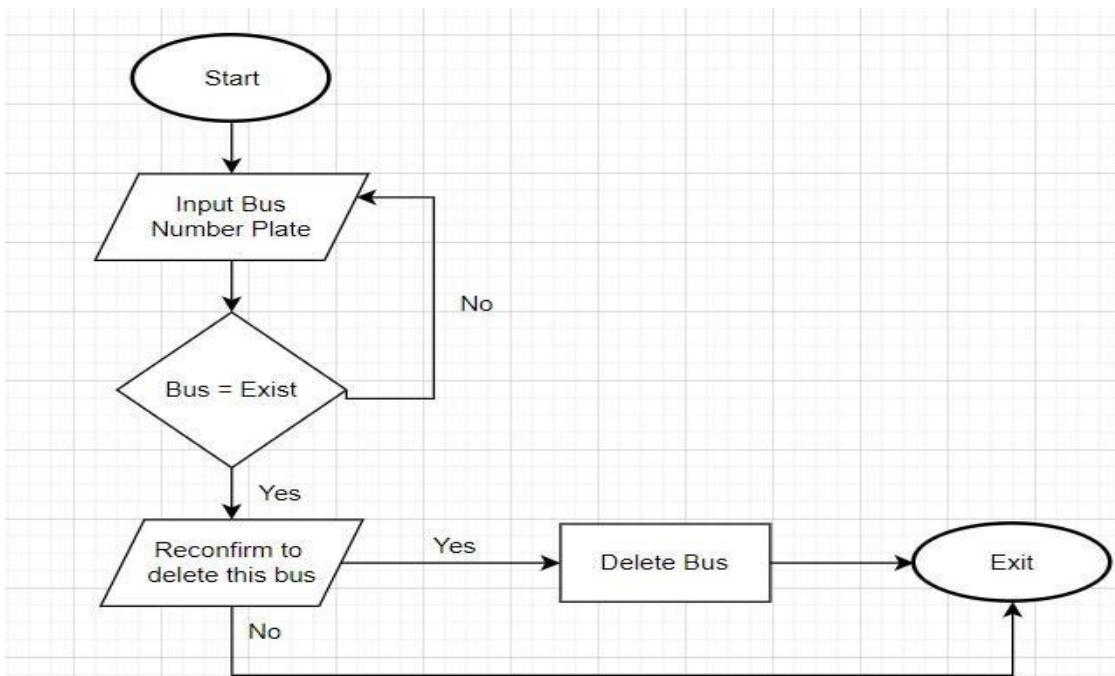
Figure 3.27 Flowchart for the Delete Bus Function

3.1.28 Delete Driver
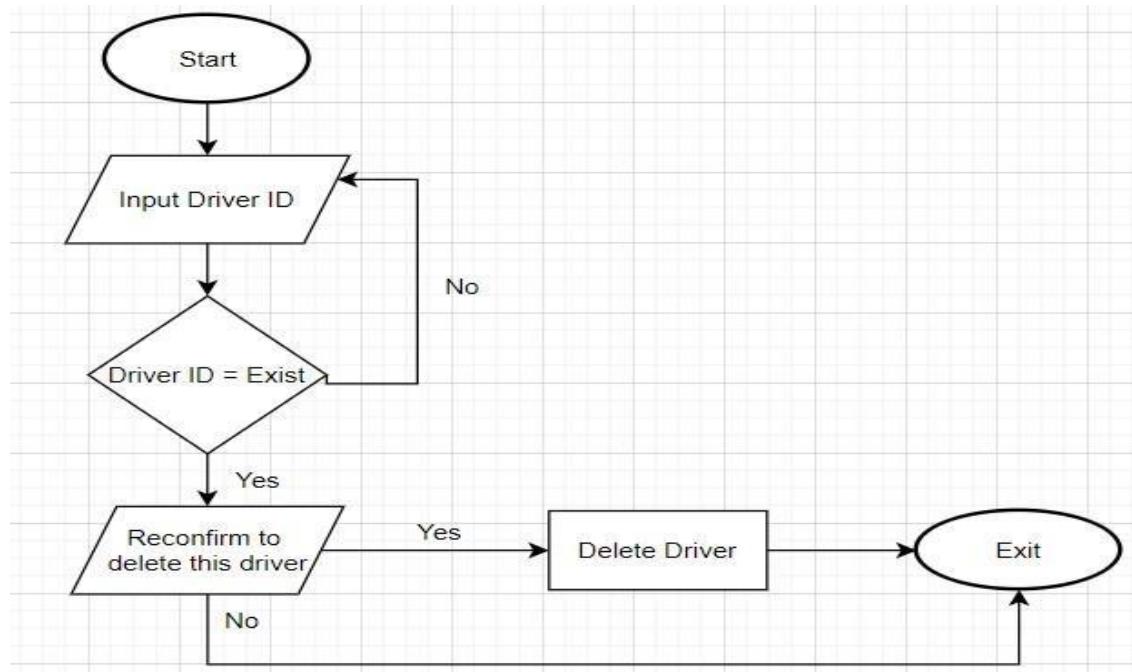
Figure 3.28 Flowchart for the Delete Driver Function

3.1.29 Booking
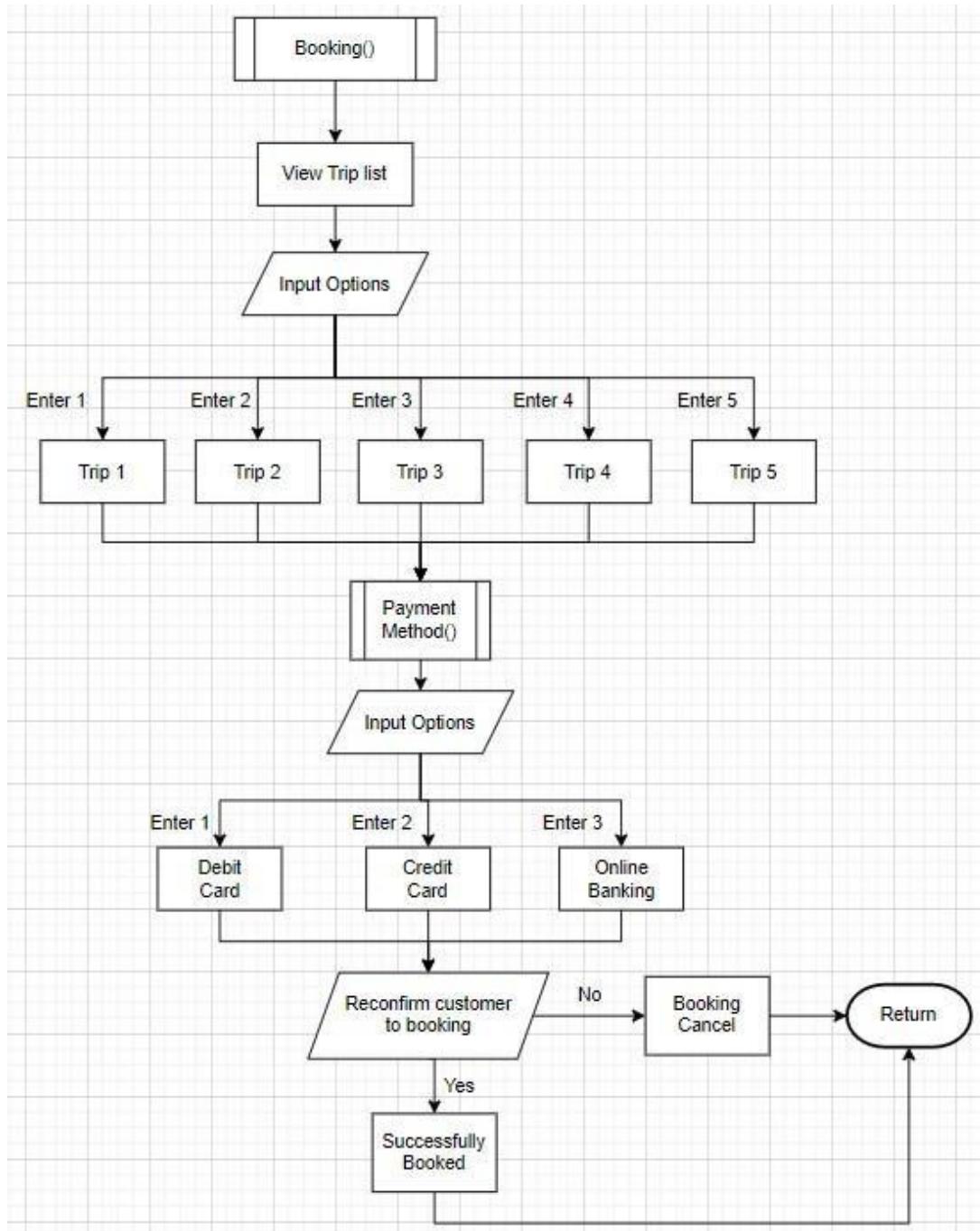
Figure 3.29 Flowchart for the Booking Function

3.2　ERD
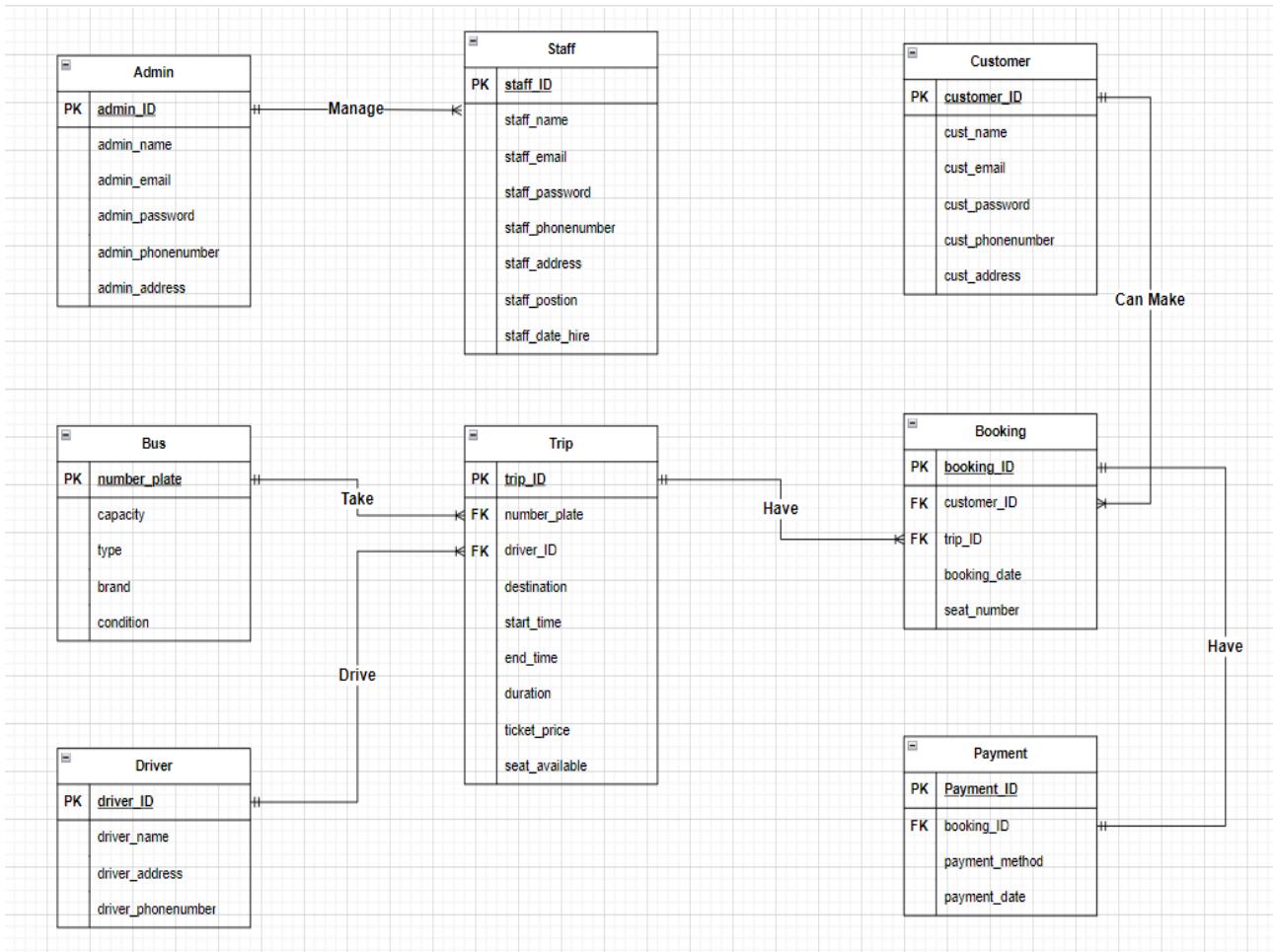
Figure 3.30 Entity Relationship Diagram (ERD) for the Project

3.3   Data Dictionary

1.   **Admin Menu**

Table 2.1 Data Dictionary for the Admin Table

ATTRIBUTE NAME	CONTENT	DATA TYPE	UNIQUE	PRIMARY KEY (PK)/ FOREIGN KEY (FK)
admin_ID	Admin ID	VARCHAR (25)	YES	PK
admin_name	Admin Name	VARCHAR (45)	-	-
admin_email	Admin Email	VARCHAR (45)	YES	-
admin_password	Admin Password	VARCHAR (45)	-	-
admin_phonenumber	Admin Phone Number	VARCHAR (20)	-	-
admin_address	Admin Address	VARCHAR (255)	-	-

2.   **Staff Menu**

Table 2.2 Data Dictionary for the Staff Table

ATTRIBUTE NAME	CONTENT	DATA TYPE	UNIQUE	PRIMARY KEY (PK)/ FOREIGN KEY (FK)
staff_ID	Staff ID	VARCHAR (25)	YES	PK
staff_name	Staff Name	VARCHAR (45)	-	-
staff_email	Staff Email	VARCHAR (45)	YES	-
staff_password	Staff Password	VARCHAR (45)	-	-
staff_address	Staff House Address	VARCHAR (255)	-	-
staff_phonenumber	Staff Phone Number	VARCHAR (20)	-	-
staff_position	Staff position	VARCHAR(45)	-	-
staff_date_hire	Date Hire	DATE	-	-

3. **Customer Menu**

Table 2.3 Data Dictionary for the Customer Table

ATTRIBUTE NAME	CONTENT	DATA TYPE	UNIQUE	PRIMARY KEY (PK)/ FOREIGN KEY (FK)
customer_ID	Customer ID	VARCHAR (25)	YES	PK
cust_name	Customer Name	VARCHAR (45)	-	-
cust_email	Customer Email	VARCHAR (45)	YES	-
cust_password	Customer Password	VARCHAR (45)	-	-
cust_address	Customer Address	VARCHAR (255)	-	-
cust_phonenumber	Customer Phone Number	VARCHAR (20)	-	-

4. **Trip**

Table 2.4 Data Dictionary for the Trip Table

ATTRIBUTE NAME	CONTENT	DATA TYPE	UNIQUE	PRIMARY KEY (PK)/ FOREIGN KEY (FK)
trip_ID	Trip ID	VARCHAR (25)	YES	PK
number_plate	Number Plate	VARCHAR (25)	-	FK
driver_ID	Driver ID	VARCHAR (45)	-	FK
destination	Destination	VARCHAR (45)	-	-
start_time	Start Time	VARCHAR (25)	-	-
end_time	End Time	VARCHAR (25)	-	-
duration	Duration (Hour/Day)	VARCHAR (45)	-	-
ticket_price	Ticket Price (RM)	INT	-	-

seat_available	Seat Available	INT	-	-

5. **Bus**

Table 2.5 Data Dictionary for the Bus Table

ATTRIBUTE NAME	CONTENT	DATA TYPE	UNIQUE	PRIMARY KEY (PK)/ FOREIGN KEY (FK)
number_plate	Number Plate	VARCHAR (25)	YES	PK
capacity	Capacity (Seats)	INT	-	-
type	Type	VARCHAR (50)	-	-
brand	Brand	VARCHAR (45)	-	-
condition	Condition	VARCHAR (45)	-	-

6. **Driver**

Table 2.6 Data Dictionary for the Driver Table

ATTRIBUTE NAME	CONTENT	DATA TYPE	UNIQUE	PRIMARY KEY (PK)/ FOREIGN KEY (FK)
driver_ID	Driver ID	VARCHAR (25)	YES	PK
driver_name	Driver Name	VARCHAR (45)	-	-
driver_address	Driver Address	VARCHAR (255)	-	-
driver_phonenumber	Driver Phone Number	VARCHAR (20)	-	-

7. **Booking**

Table 2.7 Data Dictionary for the Booking Table

ATTRIBUTE NAME	CONTENT	DATA TYPE	UNIQUE	PRIMARY KEY (PK)/ FOREIGN KEY (FK)
booking_ID	Booking ID	VARCHAR (50)	YES	PK
customer_ID	Customer ID	VARCHAR (25)	-	FK
trip_ID	Trip ID	VARCHAR (25)	-	FK
booking_date	Booking Date	DATE	-	-
seat_number	Seat Number	VARCHAR (45)		

8. **Payment**

Table 2.8 Data Dictionary for the Payment Table

ATTRIBUTE NAME	CONTENT	DATA TYPE	UNIQUE	PRIMARY KEY (PK)/ FOREIGN KEY (FK)
payment_ID	Payment ID	VARCHAR (25)	YES	PK
booking_ID	Booking ID	VARCHAR (50)	YES	FK
payment_method	Payment Method	VARCHAR (45)	-	-
payment_date	Payment Date	DATE	-	-

3.4   Interface Design
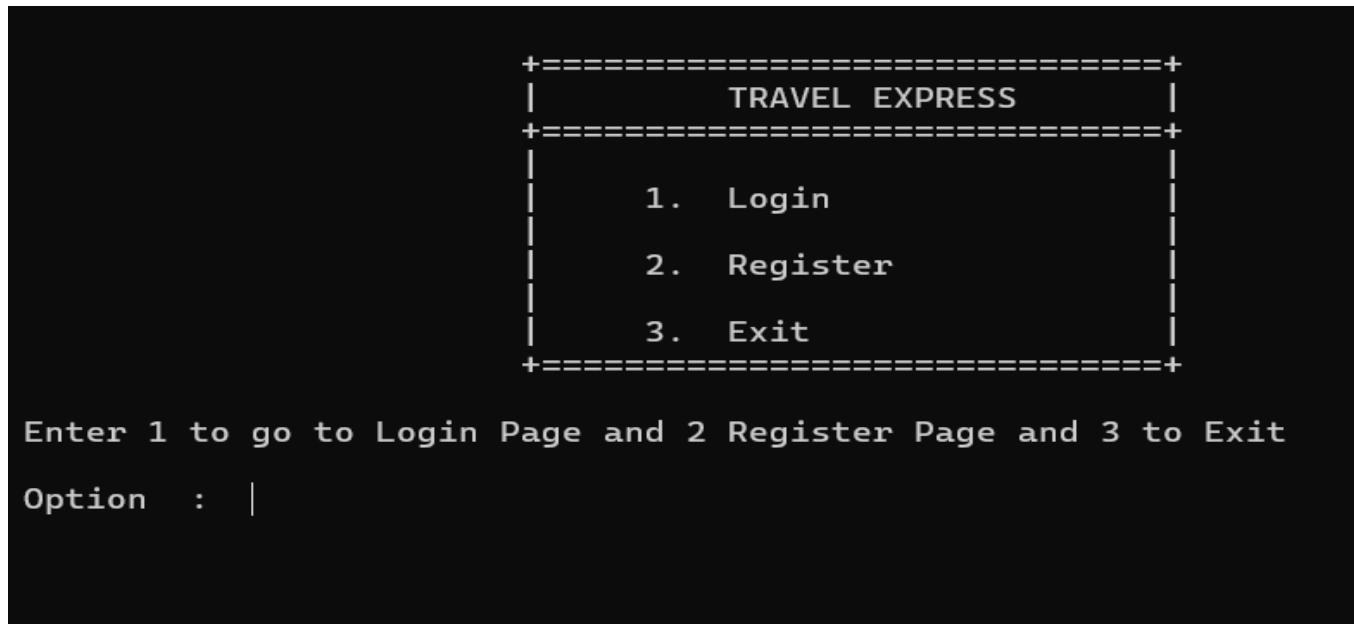
Figure 3.31 MAIN PAGE
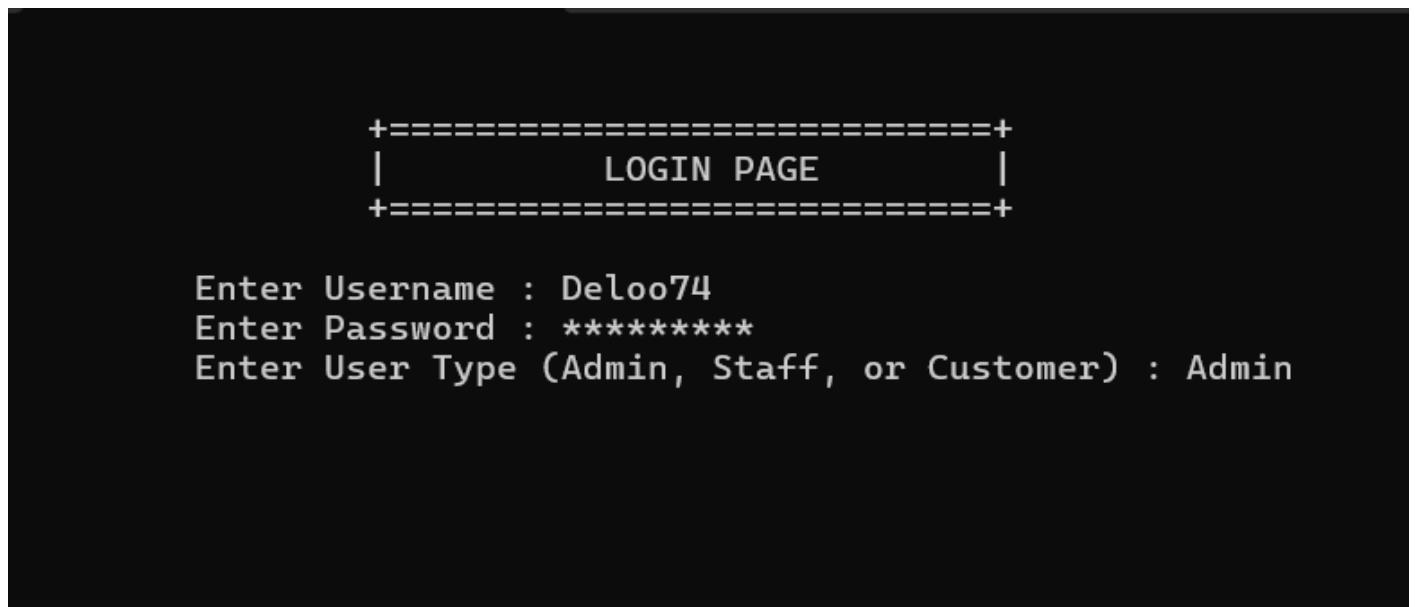
Figure 3.32 LOGIN PAGE

Figure 3.33 ADMIN MENU

Figure 3.34 STAFF MENU

```
        Login successful! Welcome, Ahmad Ali!

                +===================================+
                |     TRAVEL EXPRESS BOOKING SYSTEM |
                +===================================+
                |                                   |
                |         1. User Profile           |
                |         2. Search For a Trip       |
                |         3. See All Trips           |
                |         4. My Booking              |
                |         5. Main Menu               |
                |                                   |
                +===================================+

Option  :  |
```

Figure 3.35 CUSTOMER MENU

```
            +===================================+
            |          TRIP MANAGEMENT          |
            +===================================+
            |                                   |
            |       1. Add Trip                 |
            |       2. Edit Trip                |
            |       3. Delete Trip              |
            |       4. View Trip List           |
            |       5. Back                     |
            |                                   |
            +===================================+

Option  : 1
```

Figure 3.36 TRIP MANAGEMENT FOR ADMIN

Figure 3.37 ADD TRIP

Figure 3.38 UPDATE TRIP

Figure 3.39 DELETE TRIP

Figure 3.40 TRIP LIST

Figure 3.41 STAFF MANAGEMENT FOR ADMIN

Figure 3.42 ADD STAFF

Enter the new address for this staff: 284 Jalan Bukit , Kuala Lumpur

Are you sure you want to change 101 Jalan Gombak, Sarawak to 284 Jalan Bukit , Kuala Lumpur?

Enter Y for Yes, N for No

Option : y

```
------------------------------------
|      Staff Update Successfully     |
------------------------------------
```

Figure 3.43 UPDATE STAFF


```
                        STAFF DETAILS
        ==========================================

            Staff ID          : Wal

            Name              : Waleed

            Email             : Waleed@gmail.com

            Phone Number      : 01184938567

            Address           : UG

            Position          : Manager

            Date Hire         : 2020-05-17

Are you sure you want to delete this staff?
Enter Y to Delete, N to Cancel
Option  :  y

Staff deleted successfully.
```

Figure 3.44 DELETE STAFF

Figure 3.45 STAFF LIST

Figure 3.46 BUS MANAGEMENT FOR ADMIN

```
Enter Bus Number Plate to Add: SAJ6394
Bus Capacity  : 60
Bus Type  : Coach
Bus Brand  : Hino
Bus Condition : IN SERVICE
===============================================================

      Bus Number Plate     : SAJ6394
      Bus Capacity         : 60
      Bus Type             : Coach
      Bus Brand            : Hino
      Bus Condition        : IN SERVICE


===============================================================

Are you sure want to Add this Bus? (Y or N)
Enter Y for Yes, N for No
Option  : Y

Bus added successfully.
```

Figure 3.47 ADD BUS

```
Enter the condition for this Bus:  OUT OF SERVICE


Are you sure you want to change IN SERVICE to OUT OF SERVICE ?

Enter Y for Yes, N for No

Option  :  Y



                        ------------------------------------
                        |       Bus Update Successfully     |
                        ------------------------------------
```

Figure 3.48 UPDATE BUS

```
                              BUS DETAILS
         ==================================================

                  Bus Number Plate     : ZXC4299

                  Capacity             : 60

                  Type                 : Coach

                  Brand                : Hino

                  Condition            : OUT OF SERVICE


Are you sure want to Delete this ZXC4299 Bus ?
Enter Y to Delete N to Cancel
Option  :  Y

Bus deleted successfully.
```

Figure 3.49 DELETE BUS

```
    BUS  LIST
----------------


| Number Plate |  Capacity |  Type                       |  Brand          |  Condition
---------------- ----------- ----------------------------- ----------------- --------------
ASD4567          60          School Bus                    MAN                IN SERVICE
BHV1234          80          Double-Decker                 Volvo              IN SERVICE
GHJ9012          60          Coach                         Mercedes-Benz      IN SERVICE
IKJ5678          60          Coach                         Hino               IN SERVICE
LKU5678          50          Express                       Scania             IN SERVICE
MNB4321          60          School Bus                    Yutong             IN SERVICE
PAV5939          40          Standard City                 Zhongtong          IN SERVICE
PLM3456          50          Express                       Volvo              IN SERVICE
QWE3456          20          Mini Bus                      Isuzu              IN SERVICE
RFV6789          150         Rapid Transit Bus (BRT)       Yutong             IN SERVICE
SAJ6394          60          Coach                         Hino               IN SERVICE
TGB6789          20          Mini Bus                      Zhongtong          IN SERVICE
TYU7890          40          Standard City                 Hino               IN SERVICE
VCX8765          150         Rapid Transit Bus (BRT)       MAN                IN SERVICE
YHN1234          40          Standard City                 Isuzu              IN SERVICE
ZAS0987          80          Double-Decker                 Scania             IN SERVICE
```

Figure 3.50 BUS LIST
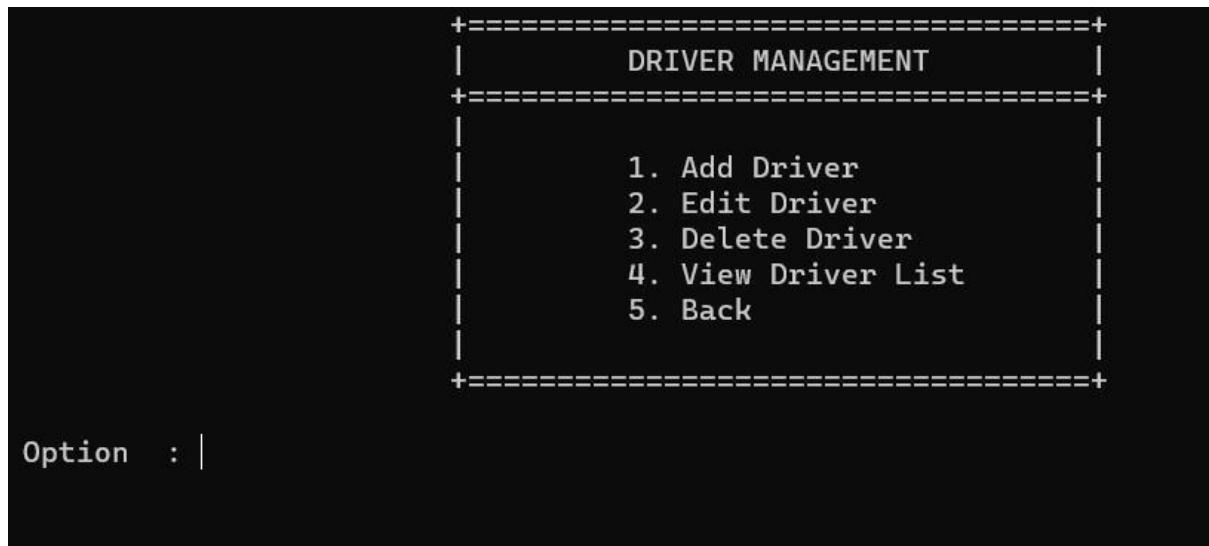
Figure 3.51 DRIVER MANAGEMNET FOR ADMIN

Figure 3.52 ADD DRIVER

Figure 3.53 UPDATE DRIVER

Figure 3.54 DELETE DRIVER

Figure 3.55 DRIVER LIST

Figure 3.56 REPORT MODULE

```
Report for year 2024
+----------+--------------+----------------+
| Trip ID  | Num Bookings | Total Sales(RM)|
+----------+--------------+----------------+
| TRIP005  | 2            | 115.00         |
| TRIP041  | 2            | 82.00          |
| TRIP020  | 2            | 155.00         |
| TRIP014  | 2            | 85.00          |
| TRIP015  | 2            | 110.00         |
| TRIP008  | 2            | 105.00         |
| TRIP009  | 2            | 100.00         |
| TRIP016  | 2            | 120.00         |
| TRIP006  | 2            | 90.00          |
| TRIP010  | 2            | 120.00         |
| TRIP002  | 2            | 95.00          |
| TRIP017  | 2            | 115.00         |
| TRIP018  | 2            | 135.00         |
| TRIP004  | 2            | 95.00          |
| TRIP011  | 2            | 85.00          |
| TRIP012  | 2            | 100.00         |
| TRIP019  | 2            | 145.00         |
| TRIP003  | 2            | 85.00          |
| TRIP049  | 2            | 98.00          |
| TRIP013  | 2            | 110.00         |
| TRIP048  | 1            | 45.00          |
| TRIP043  | 1            | 60.00          |
| TRIP050  | 1            | 55.00          |
| TRIP042  | 1            | 55.00          |
| TRIP037  | 1            | 50.00          |
| TRIP044  | 1            | 45.00          |
| TRIP036  | 1            | 45.00          |
| TRIP031  | 1            | 60.00          |
| TRIP035  | 1            | 60.00          |
| TRIP030  | 1            | 55.00          |
| TRIP025  | 1            | 50.00          |
| TRIP029  | 1            | 50.00          |
| TRIP024  | 1            | 45.00          |
| TRIP023  | 1            | 60.00          |
| TRIP007  | 1            | 65.00          |
| TRIP001  | 1            | 50.00          |
| TRIP046  | 1            | 55.00          |
| TRIP045  | 1            | 50.00          |
| TRIP040  | 1            | 45.00          |
| TRIP047  | 1            | 60.00          |
| TRIP039  | 1            | 60.00          |
| TRIP034  | 1            | 55.00          |
| TRIP038  | 1            | 55.00          |
| TRIP033  | 1            | 50.00          |
| TRIP028  | 1            | 45.00          |
| TRIP032  | 1            | 45.00          |
| TRIP027  | 1            | 60.00          |
| TRIP022  | 1            | 55.00          |
| TRIP026  | 1            | 55.00          |
| TRIP021  | 1            | 50.00          |
+----------+--------------+----------------+
```

Figure 3.57 ANNUAL REPORT

```
Report for June 2024

+-----------+----------------+-----------------+
| Trip ID   | Num Bookings   | Total Sales(RM) |
+-----------+----------------+-----------------+
| TRIP041   | 1              | 32.00           |
| TRIP050   | 1              | 55.00           |
| TRIP026   | 1              | 55.00           |
| TRIP006   | 1              | 50.00           |
| TRIP038   | 1              | 55.00           |
| TRIP018   | 1              | 75.00           |
+-----------+----------------+-----------------+

Enter 1 to Back

Option  :
```

Figure 3.58 MONTHLY REPORT

```
        Report for 2024-04-01 to 2024-06-15

    +-----------+----------------+------------------+
    | Trip ID   | Num Bookings   | Total Sales(RM)  |
    +-----------+----------------+------------------+
    | TRIP005   | 2              | 115.00           |
    | TRIP041   | 1              | 32.00            |
    | TRIP018   | 1              | 75.00            |
    | TRIP015   | 1              | 50.00            |
    | TRIP037   | 1              | 50.00            |
    | TRIP017   | 1              | 70.00            |
    | TRIP008   | 1              | 60.00            |
    | TRIP036   | 1              | 45.00            |
    | TRIP016   | 1              | 65.00            |
    | TRIP050   | 1              | 55.00            |
    | TRIP006   | 1              | 50.00            |
    | TRIP049   | 1              | 50.00            |
    | TRIP025   | 1              | 50.00            |
    | TRIP020   | 1              | 70.00            |
    | TRIP048   | 1              | 45.00            |
    | TRIP024   | 1              | 45.00            |
    | TRIP004   | 1              | 55.00            |
    +-----------+----------------+------------------+
```

Figure 3.59 SELECTED DATE REPORT

```
Monthly Bookings for 2024

January     | ******* (7 bookings)
February    | ******* (7 bookings)
March       | ******* (7 bookings)
April       | ******* (7 bookings)
May         | ******* (7 bookings)
June        | ****** (6 bookings)
July        | ****** (6 bookings)
August      | ***** (5 bookings)
September   | ***** (5 bookings)
October     | **** (4 bookings)
November    | ***** (5 bookings)
December    | **** (4 bookings)
```

Figure 3.60 MONTHLY BOOKINGS CHART

```
Bookings by Destination for 2024

ALOR SETAR              | ** (2 bookings)
BANDAR SERI BEGAWAN     | * (1 bookings)
BESUT                   | * (1 bookings)
BINTULU                 | * (1 bookings)
CYBERJAYA               | ** (2 bookings)
DUNGUN                  | * (1 bookings)
GEORGE TOWN             | ** (2 bookings)
GUA MUSANG              | * (1 bookings)
IPOH                    | ******* (7 bookings)
JOHOR BAHRU             | ****** (6 bookings)
KANGAR                  | ** (2 bookings)
KOTA BHARU              | * (1 bookings)
KOTA KINABALU           | ** (2 bookings)
KUALA LUMPUR            | ******* (7 bookings)
KUALA TERENGGANU        | * (1 bookings)
KUANTAN                 | ** (2 bookings)
KUCHING                 | ** (2 bookings)
LABUAN                  | * (1 bookings)
LANGKAWI                | * (1 bookings)
MELAKA                  | ****** (6 bookings)
MIRI                    | ** (2 bookings)
PENANG                  | ***** (5 bookings)
PUTRAJAYA               | ** (2 bookings)
RAUB                    | * (1 bookings)
SANDAKAN                | ** (2 bookings)
SEREMBAN                | ** (2 bookings)
SHAH ALAM               | ** (2 bookings)
SIBU                    | * (1 bookings)
TAIPING                 | ** (2 bookings)
TAWAU                   | ** (2 bookings)
```

Figure 3.61 BOOKINGS BY DESTINATION CHART

```
                        USER PROFILE
        ==============================================

                Username        : ali02

                Name            : Ali Bin Abu

                Email           : ali.abu@hotmail.com

                Address         : 606 Jalan Loke Yew, Johor

                Phone Number    : 0123456806

Do you want to change your details?
Enter 1 for Update details, 2 for Back

Option  :
```

Figure 3.62 USER PROFILE

```
Do you want to change your details?
Enter 1 for Update details, 2 for Back

Option  :  1

Which detail do you want to update?
1. Email
2. Name
3. Address
4. Phone Number
5. Password
6. Back

Option: 1
Enter the new value: ali32@outlook.com


            ----------------------------------
            |        Update Successfully      |
            ----------------------------------
```

Figure 3.63 USER'S DETAILS

```
Do you want to change your details?
Enter 1 for Update details, 2 for Back

Option  :  1

Which detail do you want to update?
1. Email
2. Name
3. Address
4. Phone Number
5. Password
6. Back

Option: 5
Enter the new password: 057107
Confirm the new password: 057107

                  ------------------------------
                  |       Update Successfully    |
                  ------------------------------
```

Figure 3.64 CHANGE PASSWORD

```
                    +==============================+
                    |        PAYMENT METHOD        |
                    +==============================+
                    |                              |
                    |     1.  Debit Card           |
                    |     2.  Credit Card          |
                    |     3.  Online Banking        |
                    |     4.  Back                 |
                    |                              |
                    +==============================+

Please choose a payment method

Option  :  3
```

Figure 3.65 PAYMENT METHODS

```
|            SEAT SELECTION            |
+=============================+

+------+------+------+------+
|  1A  |  1B  |  1C  |  1D  |
+------+------+------+------+
|  2A  |  2B  |  2C  |  2D  |
+------+------+------+------+
|  3A  |  3B  |  3C  |  3D  |
+------+------+------+------+
|  4A  |  4B  |  4C  |  4D  |
+------+------+------+------+
|  5A  |  5B  |  5C  |  5D  |
+------+------+------+------+
|  6A  |  6B  |  6C  |  6D  |
+------+------+------+------+
|  7A  |  7B  |  7C  |  7D  |
+------+------+------+------+
|  8A  |  8B  |  8C  |  8D  |
+------+------+------+------+
|  9A  |  9B  |  9C  |  9D  |
+------+------+------+------+
| 10A  | 10B  | 10C  | 10D  |
+------+------+------+------+

Seats Available :
1A 1B 1C 1D
2A 2B 2C 2D
3A 3B 3C 3D
4A 4B 4C
5B 5C 5D
6A 6B 6C 6D
7A 7B 7C 7D
8A 8B 8C 8D
9A 9B 9C 9D
10A 10B 10C 10D

Please select your seat

Enter your seat number : 5B
```

Figure 3.66 SEATS SELECTION

```
            ***  Booking Successful  ***

      //  RM 40 deducted from Credit Card

      Thank You for Booking


                                    BOOKING
                  =================================================

                      Trip ID         : TRIP041
                      Bus Details     : IKJ5678
                      Destination     : KUALA LUMPUR
                      Start Time      : 09:00
                      End Time        : 13:00
                      Duration        : 4h
                      Date Start      : 2024-11-12
                      Date End        : 2024-11-12
                      Price           : RM 40.00
                      Seat Number     : 4B
                      Booking ID      : cr105595
                      Booking Date    : 2024-06-09
                      Payment Date    : 2024-06-09
                      Payment ID      : cr105595y202469
                      Payment Method  : Credit Card
                      Customer        : n_izaah



Enter 1 to Continue with Another Booking, 2 to Exit

Option  : |
```

Figure 3.67 BOOKING

```
      Your Booking

            +--------------+----------------+------------------+
            |  Booking ID  |    Trip ID     |  Booking Date    |
            +--------------+----------------+------------------+
            |  cr105595    |  TRIP041       |  2024-06-09      |
            |  cr114850    |  TRIP016       |  2024-07-05      |
            |  cr114856    |  TRIP013       |  2024-01-15      |
            |  cr114863    |  TRIP033       |  2024-01-05      |
            +--------------+----------------+------------------+

Enter 1 to Cancel Booking, 2 to see Booking details, 3 to Back

Option  :
```

Figure 3.68 MY BOOKINGS

```
            +============================+
            |        REGISTER PAGE       |
            +============================+

   Enter Account ID : Sar_9700
   Enter Name        : Sarah Ahmed

   Enter Email       : sar9700@gmail.com

   Enter Phone       : 01147385945

   Enter Address     : 707 Jalan Raja Chulan, Terengganu

   Enter Password    : 0571075822
   Confirm the new password : 0571075822

   Enter Account Type (Admin, Staff, or Customer)   :   CUSTOMER

   Please verify the following information:
   Account ID   : Sar_9700
   Name         : Sarah Ahmed
   Email        : sar9700@gmail.com
   Phone        : 01147385945
   Address      : 707 Jalan Raja Chulan, Terengganu
   Account Type : customer

   Is the information correct? (Y/N): Y

   Registration successful! Please login with your new credentials.

   Do you want to login now? (Y/N): |
```

Figure 3.69 REGISTRATION

CHAPTER 4: IMPLEMENTATION

4.1   Naming Convention

These are some variables that were used in this project.

```
void admin_about_me(string ac, string pw)
{
    string dp, yon, yono, cp, bo, userid, name, email, address, phone, rr, goback;

    connectToDatabase();
```

Figure 4.1 VARIABLE

4.2   Function

The figure below shows, some functions used in the project.

```
32      void main_menu();
33
34      void login_page();
35
36      void registerUser();
37
38      void admin_menu(string, string);
39
40      void staff_menu(string, string);
41
42      void cust_menu(string, string);
43
44      bool doesIDExist(const string& id);
45
46      void admin_staff(string ac, string pw);
47
48      void admin_cust(string ac, string pw);
49
50      void admin_driver(string ac, string pw);
51
52      void admin_bus(string ac, string pw);
53
54      void report(string ac, string pw);
55
56      void admin_about_me(string ac, string pw);
57
58      void admin_trip(string ac, string pw);
59
60      void staff_trip(string ac, string pw);
61
62      void staff_cust(std::string ac, std::string pw);
63
64      void staff_driver(string ac, string pw);
65
66      void staff_bus(string ac, string pw);
67
```

Figure 4.2 FUNCTION

4.3 Vector

One of the examples of Vector used in the project is shown in the figure below.The example here is for the function responsible for displaying the tables.

```cpp
void displayTable(const vector<vector<string>>& table)
{
    if (table.empty()) {
        cout << "No records found." << std::endl;
        return;
    }

    // Calculate the width for each column
    vector<size_t> columnWidths(table[0].size(), 0);
    for (const auto& row : table) {
        for (size_t i = 0; i < row.size(); ++i) {
            columnWidths[i] = max(columnWidths[i], row[i].length());
        }
    }
```

Figure 4.3 VECTOR

4.4   Selection

One of the examples of selection used in the project is shown in the figure below.

The example here is where to select choice in the admin menu section.

```cpp
std::cout << "Option : ";
std::cin >> amoption;

if (amoption == "1")
{
    system("cls");
    admin_trip(ak, pss);
}
else if (amoption == "2")
{
    system("cls");
    admin_staff(ak, pss);
}
else if (amoption == "3")
{
    system("cls");
    admin_cust(ak, pss);
}
else if (amoption == "4")
{
    system("cls");
    admin_driver(ak, pss);
}
else if (amoption == "5")
{
    system("cls");
    admin_bus(ak, pss);
}
```

Figure 4.4 SELECTION

4.5   Control

Do while loop

In this figure below, the main page uses do while loop for to select login or register or to exit

```cpp
cout << "Enter 1 to go to Login Page and 2 Register Page and 3 to Exit   \n";
cout << endl;

do {
    cout << "Option   :   ";
    cin >> mmoption;

    if (mmoption == "1") {
        system("cls");
        login_page();
    }
    else if (mmoption == "2") {
        system("cls");
        registerUser();
    }
    else if (mmoption == "3") {
        system("cls");
        exit(0);
    }
    else {
        cout << "Incorrect" << endl;
        cout << endl;
    }
} while (mmoption != "1" && mmoption != "2" && mmoption != "3");
```

Figure 4.5 DO WHILE LOOP

Break statement

Figure below is used once the selection is used; it should exit the loop.

```cpp
std::cout << endl;
do {
    std::cout << "Option  :  ";
    std::cin >> choice1;

    if (choice1 == "Y" || choice1 == "y") {
        newp2.clear();
        break;
    }
    else if (choice1 == "N" || choice1 == "n")
    {
        // User chose to exit
        system("cls");
        admin_about_me(ac, pw);
    }
    else
    {
        std::cout << "Incorrect" << endl;
        std::cout << endl;
    }
} while (choice1 != "Y" || choice1 != "y" || choice1 != "N" || choice1 != "n");
```

Figure 4.6 BREAK STATEMENT

4.6   Pointer

I declare a pointer to a sql::Connection object. This pointer is initially set to nullptr to indicate that it doesn't point to any object.

```cpp
sql::mysql::MySQL_Driver* driver;
sql::Connection* con = nullptr;
sql::PreparedStatement* pstmt = nullptr;
```

Figure 4.7 POINTER

4.7   Error Handling

The two pictures below show the try and catch error handling method, to avoid any error to be happened related to MySQL database connection

```cpp
try {
    // Prepare SQL statement to check staff credentials
    string query = "SELECT * FROM staff WHERE staff_ID = ? AND staff_password = ?";
    PreparedStatement* pstmt = globalCon->prepareStatement(query);
    pstmt->setString(1, ac);
    pstmt->setString(2, pw);

    ResultSet* rs = pstmt->executeQuery();

    while (rs->next()) {
        cout << "\t\t\t                USER PROFILE                " << endl;
        cout << "\t\t\t=========================================" << endl;
        cout << endl;
        cout << "\t\t\t   Username        : " << rs->getString("staff_ID") << endl;
        cout << endl;
        cout << "\t\t\t   Name            : " << rs->getString("staff_name") << endl;
        cout << endl;
        cout << "\t\t\t   Email           : " << rs->getString("staff_email") << endl;
        cout << endl;
        cout << "\t\t\t   Address         : " << rs->getString("staff_address") << endl;
        cout << endl;
        cout << "\t\t\t   Phone Number    : " << rs->getString("staff_phonenumber") << endl;
        cout << endl;
        cout << endl;

        cout << "Do you want to change your details?" << endl;
        do {
            cout << "Enter 1 for Update details, 2 for Back" << endl;
            cout << endl;

            cout << "Option   :  ";
            cin >> yon;
}

catch (sql::SQLException& e) {
    cout << "# ERR: " << e.what();
    cout << " (MySQL error code: " << e.getErrorCode();
    cout << ", SQLState: " << e.getSQLState() << " )";
}
```

Figure 4.8 TRY AND CATCH

CHAPTER 5: CONCLUSION

5.1 Constraints

a. **Data Integrity and Reliability:**

It can be challenging to guarantee that the data is true and dependable in the absence of a strong database system. The lack of robust protection against data loss or corruption offered by XAMPP may result in issues with the system's dependability.

b. **Limited Payment Options:**

Customers' available payment alternatives are limited in the absence of a payment gateway. They might not be able to select from a wide range of payment options, including digital wallets which are frequently accepted by payment gateways. Customers who prefer payment methods or those who do not have access to the available manual payment channels may find this constraint inconvenient.

c. **Limited Database Functionality:**

There is no adequate database system in place for this trip booking system. It makes use of the limited MySQL Workbench. This implies that sophisticated database operations or handling of massive volumes of data may be beyond the capabilities of the system.

5.2 Future Improvements

a. **Mechanisms for Backup and Recovery:**

Regular backups of the system's data can be implemented to guard against data loss and guarantee data dependability. To safeguard the data in the event of system failure, this entails regularly creating duplicates of the data. Moreover, include procedures to confirm and validate the data, ensuring its accuracy and consistency.

b. Add a Payment Gateway:

We can add a practical and safe payment method to the system in future. Customers will now have more ways to pay for their bookings, that is credit cards, debit cards, and online payment. Customers can make bookings more easily and conveniently while maintaining the security of their financial information by integrating a payment gateway.

c. Upgrade the Database System:

We can enhance the system's data handling to make it better. We can use a more robust and dependable database system, such as MySQL, in place of XAMPP. With this update, the system will be able to manage more data and store and retrieve data more effectively.

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