1. INTRODUCTION

1.1 Problem Definition

In such occupied days, officials and students have to go to the counter to buy bus ticket or to ask for bus schedule. Furthermore, customers need to pay cash. When they buy the bus ticket and sometimes needs to queue up for long time to get the bus ticket or to know some sort of information about bus schedule and route.

1.2 Initial Requirement Document

Title of the project	Online Bus Ticket Booking System
Stakeholders involved in capturing requirement	Riya Agrawal, Shrabanti De, Bus Owner
Techniques used for requirement capturing	Interviewing & Brainstorming
Name of the person along with designation	-
Date	August 2021
Users of the system	Bus Owner, Customer, Admin
Version	1.0
Consolidated list of initial requirements:	
Req #1.	The system shall be able to authenticate authorized user.
Req #2.	The system shall be able to provide the availability of a particular bus and its seats.
Req #3.	The admin shall be able to maintain details of the entire bus owner.
Req #4.	The bus owner whose route is limited to Gujarat shall be able to get registered.
Req #5.	The bus owner shall be able to maintain details of all the staff.
Req #6.	The bus owner shall be able to maintain details of all the bus, seats, route, schedule.
Req #7.	The customer shall be able to book ticket from the available options.

Req #8.	The customer shall be able to book ticket on the basis of booking policy
Req #9.	The customer shall be able to cancel ticket based on cancellation policy.
Req #10.	The customer shall be able to search the bus on the basis of date, arrival and destination station.
Req #11.	The customer shall be able to pay the amount of ticket.
Req #12.	The customer shall be able to manage the ticket from his/her logged in account.
Req #13.	The customer shall be able to give feedback.
Req #14.	The admin shall be able to generate reports.

1.3 Product Objective

- Better Customer services.
- Save environment
- To bring transparency and fairness.
- Reduce cost of business operation
- To curb corruption
- Simple work flow

1.4 Product Scope

In Scope:

- This system can only be accessed by authorized admin, bus owner and customers.
- Customers can only choose the travel agencies, which are registered on the system.
- The boundary of the System is limited to Gujarat.

Out Scope:

- The system does not book the tickets for the connecting routes.
- Once the online reservation is made then it cannot be rescheduling through system.

2. OVERALL DESCRIPTION

2.1 Product Perspective/ Environment Description

2.1.1 Hardware Interface/ Hardware Specification

Utilities	Needs
RAM	2 GB
Hard Disk	10 GB
Display	1023 x 768

2.1.2 Software Interface/ Software Specification

Type	Web - Based Application
Front-End	HTML, HTML5, BOOTSTRAP, PHP, JQUERY
Back-End	MYSQLi
Operating System	All versions of Windows and Ubuntu.
Tools	Neatbeans, Xampp

3. SYSTEM PLANNING

3.1 Software Engineering Model: - Spiral Model

In this project, Spiral model is used for developing Online Bus Ticket Booking System. The Spiral Model is a risk-driven with uncertainty of failure and the impact of that failure on the software operation. The failure may be defined in terms of cost and schedule overrun, low quality, occurrence of defects, programmatic risks, etc. High risk activities may cause threat to the project. The spiral model incorporates "risk assessment" into the life cycle phases.
The Spiral model is divided into four phases:

- Determine objectives, alternatives and constraints
- Evaluate alternatives, identify and resolve risks
- Develop and verify next level product
- Plan next phases

This model combines the features of the waterfall model and prototyping model, and it is advantageous for large, complex and expensive projects.
The spiral model repeats the phases rounds:

- Round 0. Feasibility study
- Round 1. Concept of operation
- Round 2. Top level requirements analysis
- Round 3. Software design
- Round 4. Design, implementation and testing

4. SYSTEM SPECIFIC REQUIREMENTS

4.1 Functional Requirement for Online Bus Ticket Booking System

4.1.1 Manage Login and Registration

4.1.2 Manage Customer

4.1.3 Manage Bus Owner

4.1.4 Manage Staff

4.1.5 Manage Bus

4.1.6 Manage Schedule

4.1.7 Manage Route

4.1.8 Manage Booking

4.1.9 Manage Passenger

4.1.10 Manage Payment

4.1.11 Manage Feedback

4.1.12 Generate Ticket

4.1.13 Generate Reports

Registration Module

RN	Description	Comments
FR1	This module will be managed by Admin. A user is allowed to register as Bus Owner	Registration_BusOwner_View_Page
FR2	This module will be managed by Admin. A user is allowed to register as Customer.	Registration_Customer_View_Page
FR3	This module will be managed by Bus Owner. A user is allowed to register as Customer.	Registration_Customer_View_Page

Login Module

RN	Description	Comments
FR1	This module will be managed by Admin.	Login _View_Page
FR2	The system will assign a unique id (Login ID) to user.	Login _AddID_Page
FR3	If the username and password don't match then user's login process get fails and system asks for reenter the username and password	Login _View_Page
FR4	If the username and password get match then user get successfully login to the system	Login _View_Page

Manage Customer Module

RN	Description	Comments
FR1	This module will be managed by Admin and Bus Owner.	Add_ Customer _Page
FR2	The system will assign a unique id of Customer (Customer ID) . System will take Customer Name, gender etc.	Add_ Customer _Page
FR3	The customer shall be able to	
FR4	In this module Admin and Bus Owner shall be able to add the details of Customer .	Add_ CustomerDetails_Page

Manage Bus Owner Module

RN	Description	Comments
FR1	This module will be managed by Admin.	Add_BusOwnerDetails_Page
FR2	The system will assign a unique id of Bus Owner (Bus Owner ID) . System will take Bus Owner name, contact number, address, gender , email ID etc.	Add_BusOwnerDetails_Page
FR3	In this module admin shall be able to View the bus Owners.	View_BusOwnerDetails_Page

Manage Staff Module

RN	Description	Comments
FR1	This module will be managed by Bus Owner.	Add_ Staff_Page
FR2	The system will assign a unique id of Staff (Staff ID). System will take Staff Name, gender etc.	Add_ Staff _Page
FR3	In this module Bus Owner shall be able to update the details of Staff.	Update_ StaffDetails_Page
FR4	In this module Bus Owner shall be able to search and active/ de-active the Staff.	Active_Deactive_Search_Staff _Page
FR5	In this module Bus Owner shall be able to View the Staff.	View_ StaffDetails_Page

Manage Bus Module

RN	Description	Comments
FR1	This module will be managed by Bus Owner.	Add_Bus_Page
FR2	The system will assign a unique id of Bus (Bus ID). System will take Bus No, Bus Type etc.	Add_Bus_Page
FR3	In this module Admin, Bus Owner and Customer shall be able to Search and View the bus.	Search_View_BusDetails_Page

Manage Schedule Module

RN	Description	Comments
FR1	This module will be managed by Bus Owner.	Add_Schedule _Page
FR2	The system will assign a unique id of Schedule (Schedule ID). System will take Journey date , arrival time, etc.	Add_ Schedule _Page
FR3	In this module Admin, Bus Owner and Customer shall be able to Search and View the Schedule.	Search_View_ Schedule Details_Page

Manage Route Module

RN	Description	Comments
FR1	This module will be managed by Bus Owner.	Add_ Route_Page
FR2	The system will assign a unique id of Route (Route ID). System will take Destination, Arrival etc.	Add_ Route _Page
FR3	In this module Admin, Bus Owner and Customer shall be able to Search and View the Route.	Search_View_ RouteDetails_Page

Manage Booking Module

RN	Description	Comments
FR1	Customer will manage this module.	Add_Ticket_Page
FR2	The system will assign a unique id for each booking (booking ID). System will take Seat No, etc.	Add_Ticket_Page
FR3	In this module Customer shall be able to cancel their seats.	Cancel_Ticket_Page
FR4	In this module Bus Owner and customer shall be able to View the Booking.	View_Seat_Page

Manage Passenger Module

RN	Description	Comments
FR1	Customer will manage this module.	Add_Passenger_Page
FR2	The system will assign a unique id for each passenger (Passenger ID). System will take Passenger Name	Add_ Passenger_Page

Manage_Payment Method

RN	Description	Comments
FR1	This module will be managed by Customer.	Add_ Payment_Page
FR2	The module will take Amount, etc.	Add_ Payment_Page

Manage FeedBack Module

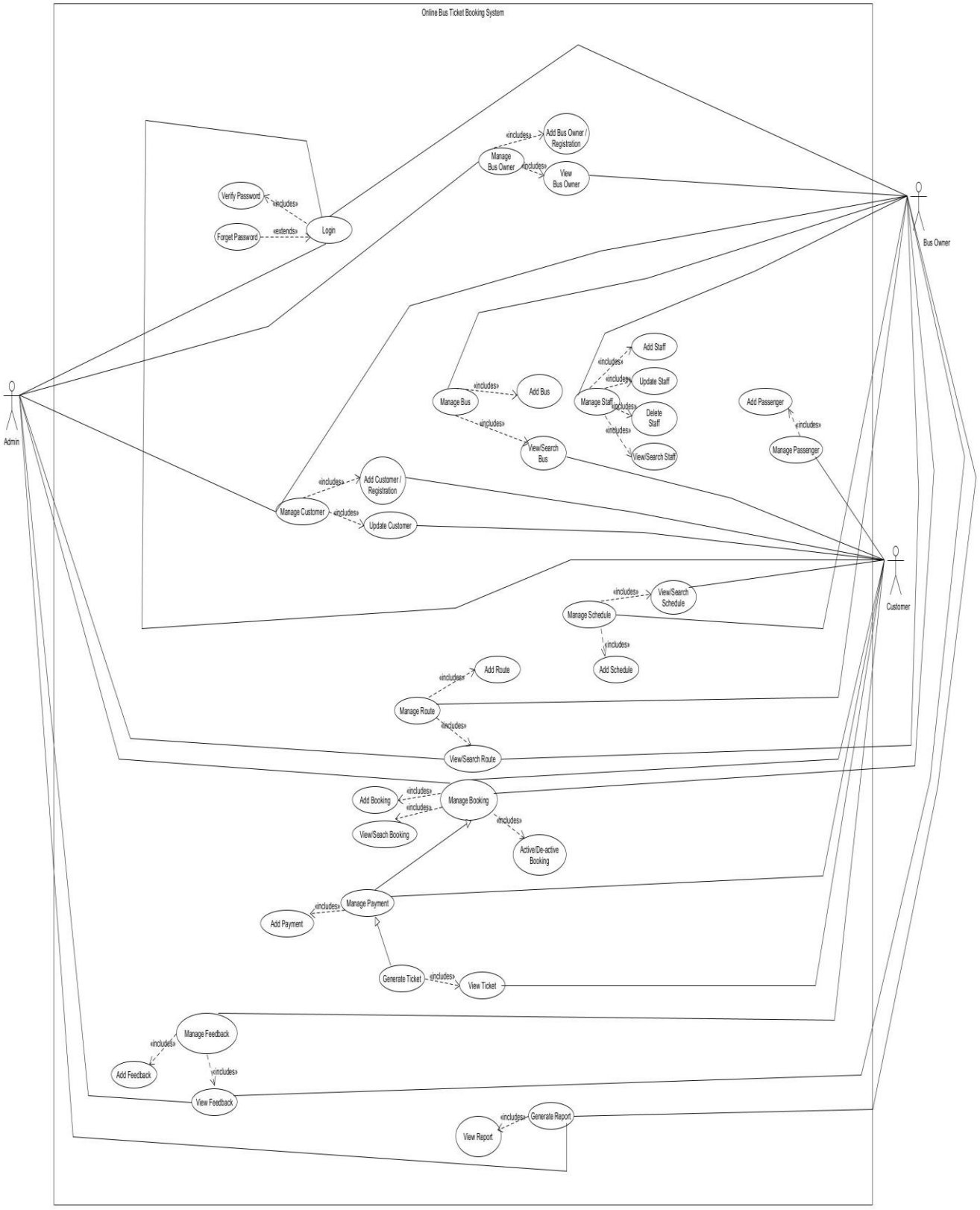
RN	Description	Comments
FR1	This module will be managed by Customer.	Add_ Feedback_Page
FR2	In this module Admin and Bus Owner shall be able to View the Feedback given by the Customer.	View_ Feedback_Page

4.2 Non-functional Requirement

RN	DESCRIPTION	COMMENTS
NFR1	The application will be user-friendly and easy to operate, the functions will be easily understandable.	Usability
NFR2	The system will be available for at any time of the day.	Availability
NFR3	The system can adapt to possible or future changes in its requirements.	Flexibility
NFR4	The system will be Password protected.	Security

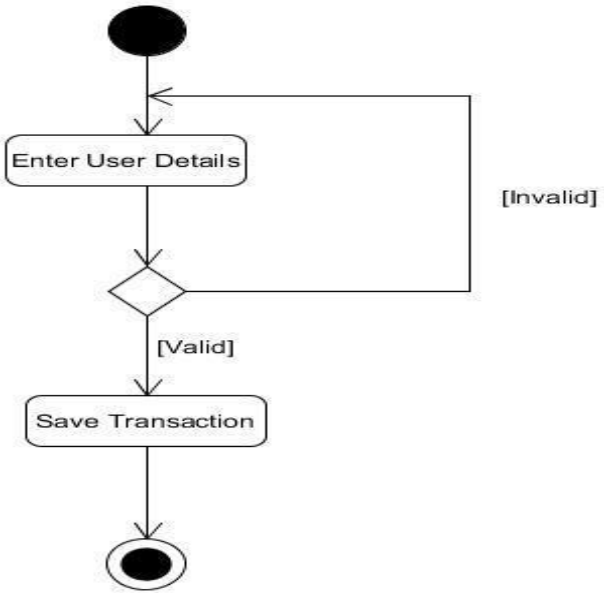
5. SYSTEM ANALYSIS

5.1 Use Case Diagram for Online Bus Ticket Booking System

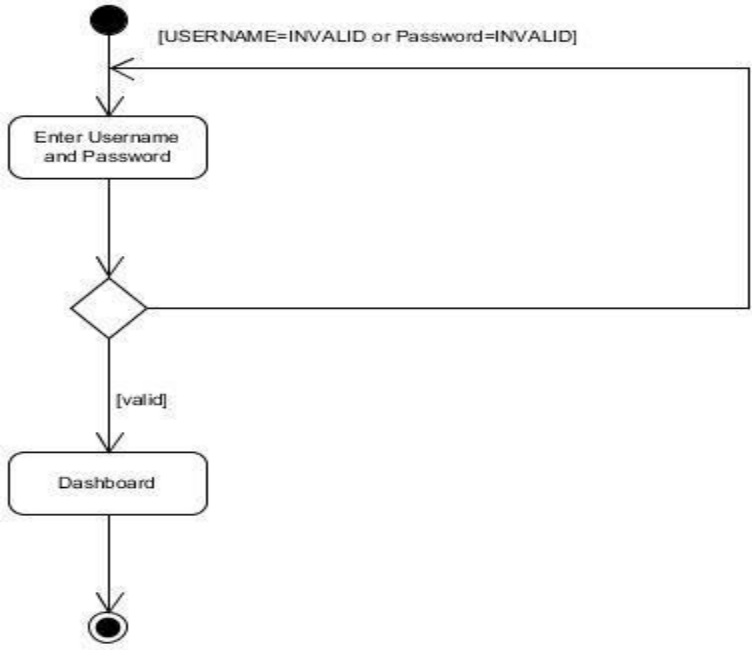


5.2 Activity Diagrams

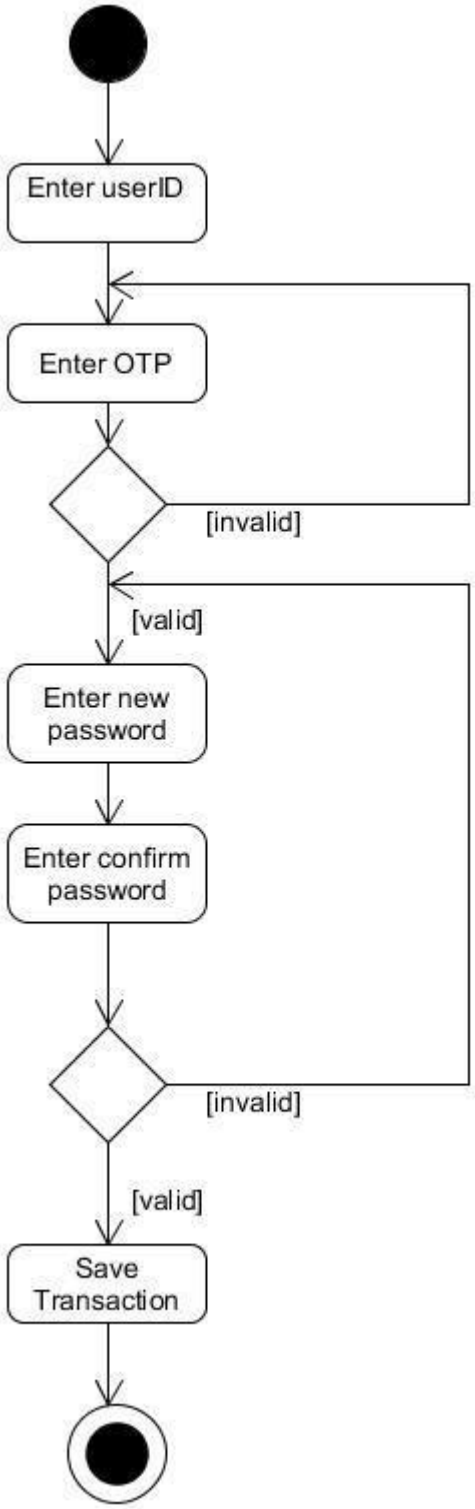
1) Activity Diagram for Registration Module



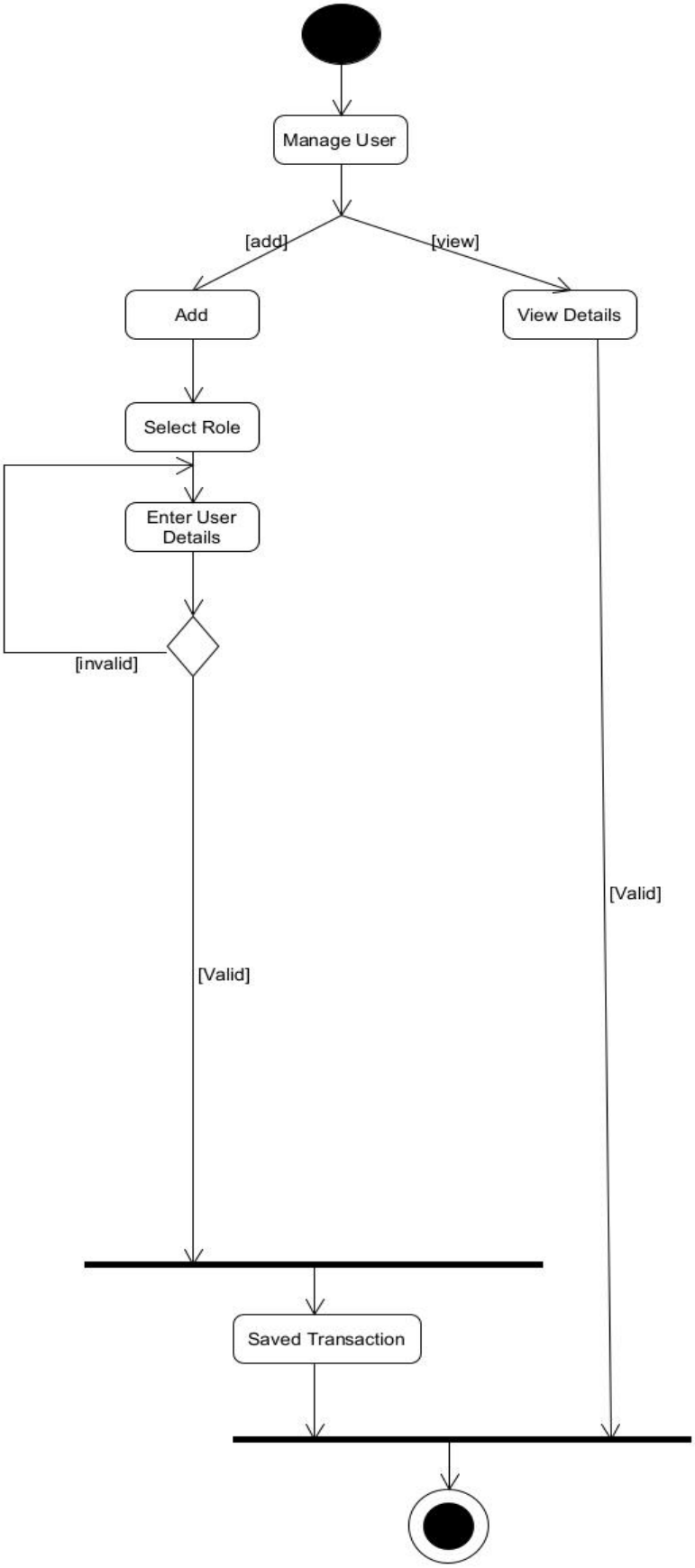
2) Activity Diagram for Login Module.



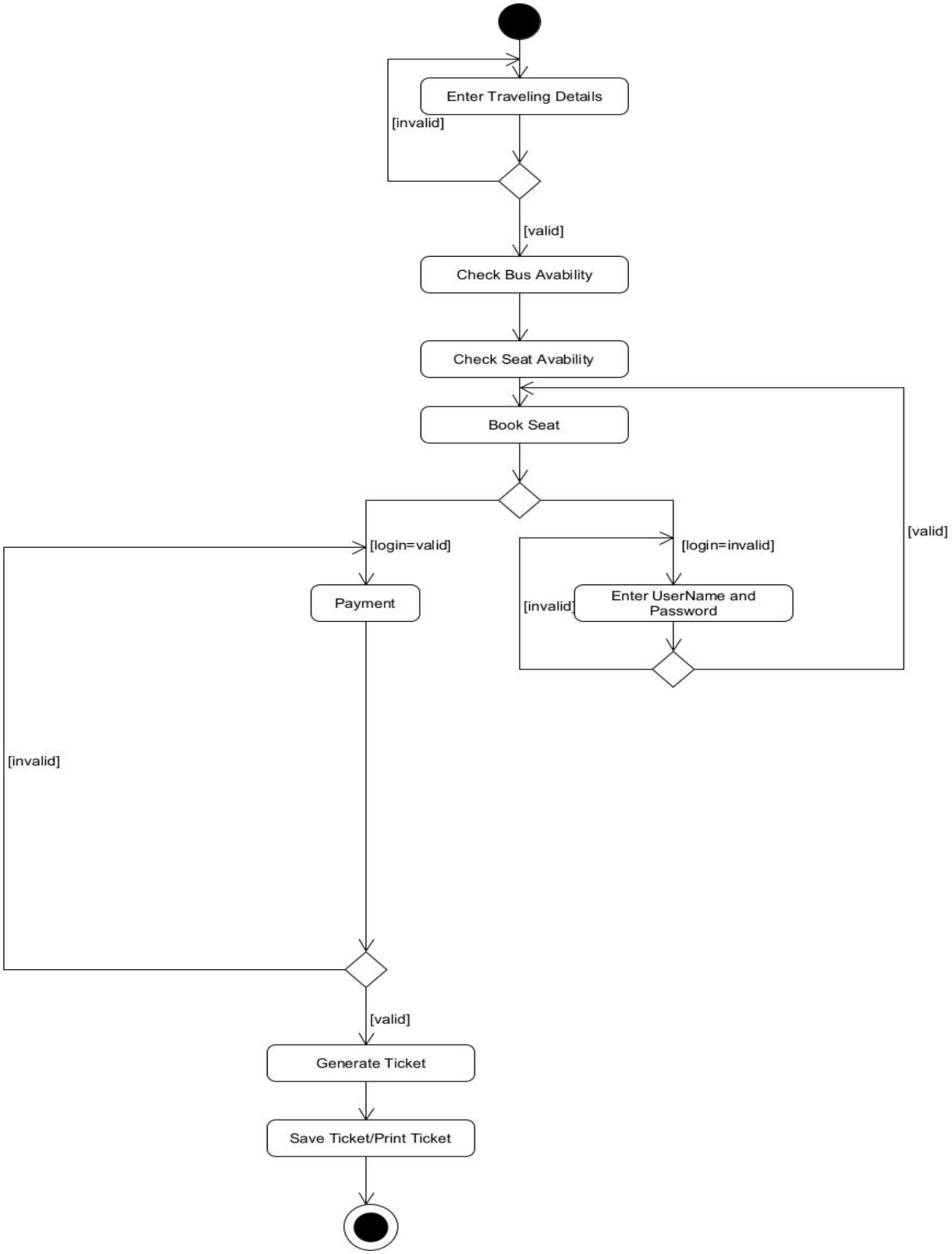
3) Activity Diagram for Forget Password Module



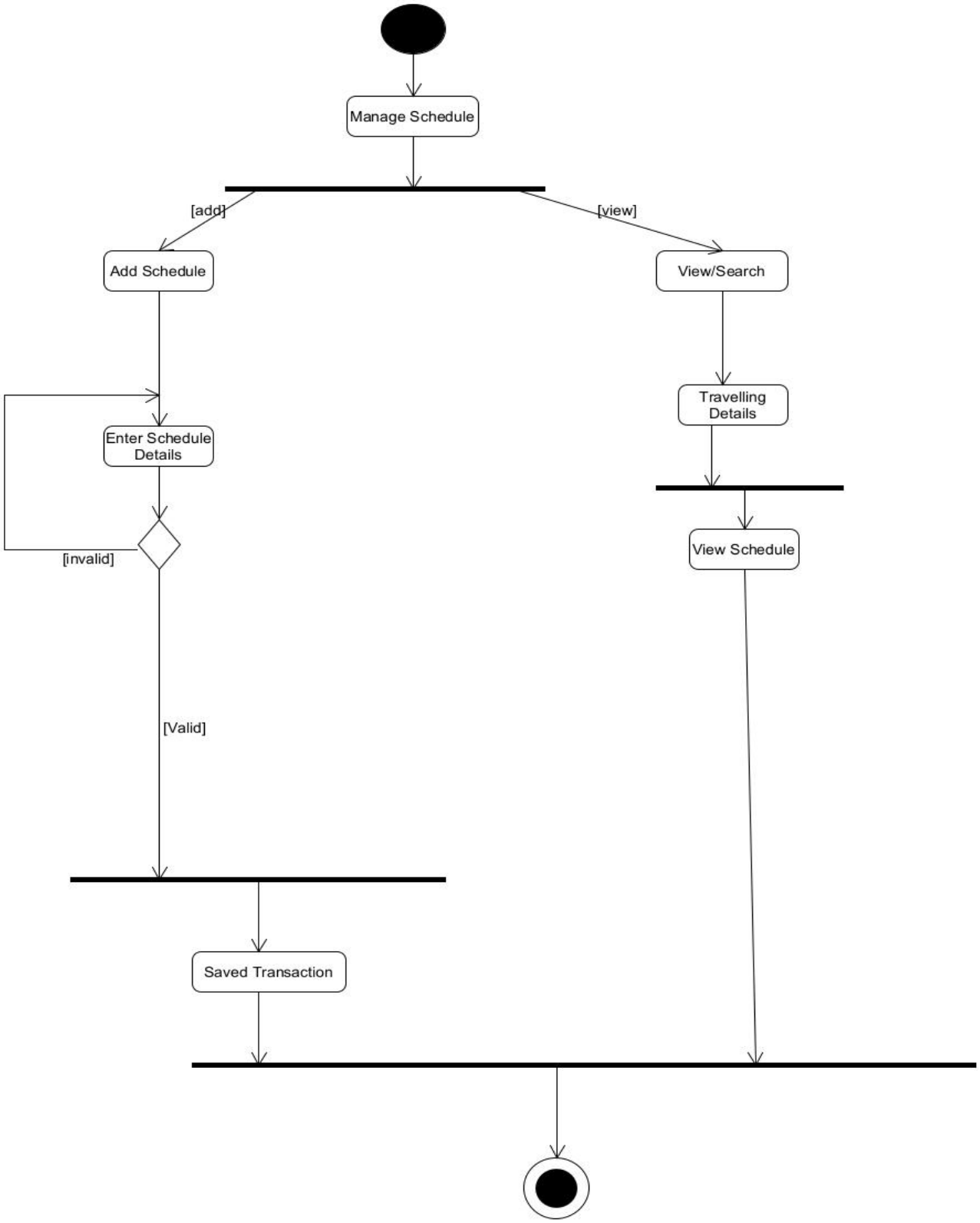
4) Activity Diagram for Manage User Module



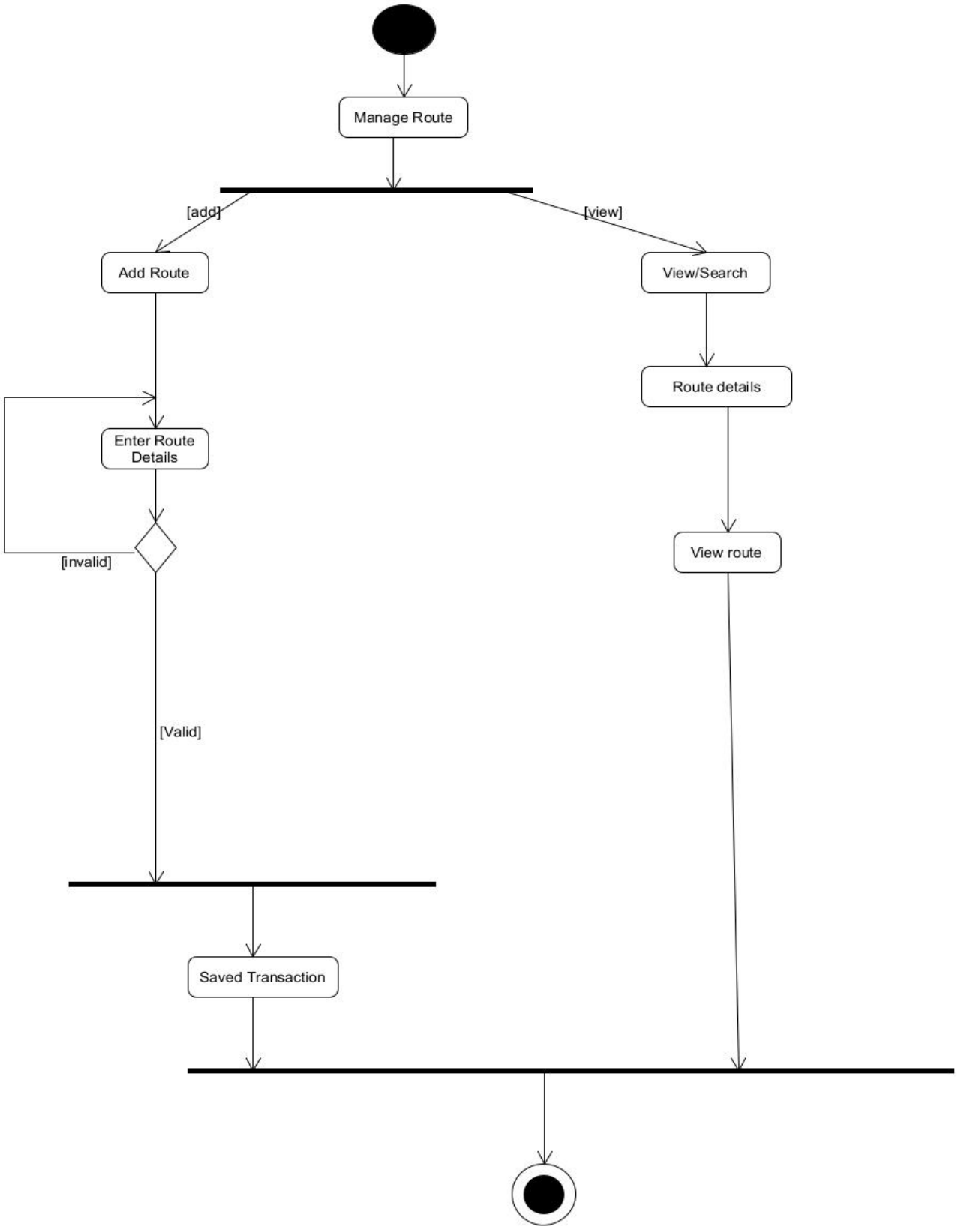
5) Activity Diagram for Manage Booking Module



6) Activity diagram for Manage Schedule Module



7) Activity diagram for Manage Route Module



6. SYSTEM DESIGN

6.1 Database Design

6.1.1 Database Schema

TblUser(User_id[PK], User_email, User_role, User_status, User_password)

FD-> User_email, User_role, User_status, User_password

TblCustomer(Customer_id[PK], Customer _fname, Customer _lname, Customer _gender, Customer _dob, Customer_contactNo, Customer_city, Customer_Email)

FD-> Customer _fname, Customer _lname, Customer _gender, Customer _dob, Customer_contactNo, Customer_city, Customer_Email

TblBusOwner(busowner _id [PK], busowner _fname, busowner _lname, busowner _travelagencyname, busowner _gender, busowner _dob, busowner _contact, busowner _city, busowner _Email, approvement)

FD - > busowner _fname, busowner _lname, busowner _travelagencyname, busowner _gender, busowner _dob, busowner _contact, busowner _city, busowner _Email, approvement

TblStaff(Staff_id[PK], Staff_fname, Staff_lname, Staff_dob, Staff_Designation, Staff_houseno, Staff_area, Staff_city, Staff_contactNo, Staff_Experience, Staff_Email, Busowner_id[Foreign Key(TblBusOwner)])

FD - > Staff_fname, Staff_lname, Staff_dob, Staff_Designation, Staff_houseno, Staff_area, Staff_city, Staff_contactNo, Staff_Experience, Staff_Email

tblBus(Bus_id[PK],Bus_number, Bus_type, ACNON, busimg, Bus_capacity, Busowner_id[Foreign Key(TblBusowner)])

FD-> Bus_number, Bus_type, ACNON, busimg, Bus_capacity, Busowner_id[Foreign Key(TblBusowner)])

TblSchedule(Schedule_id[PK], Journey_date, Departure_time, Arrival_time, Route_id[Foreign Key(TblRoute)])

FD-> Journey_date, Departure_time, Arrival_time, Route_id[Foreign Key(TblRoute)])

TblRoute(Route_id[PK],Departure_station, Arrival_station, bpoint, dpoint, Distance, Bus_id[Foreign Key(TblBus)])
FD - > Departure_station, Arrival_station, bpoint, dpoint, Distance, Bus_id[Foreign Key(TblBus)])

TblSeat(Seat_id[PK], Seat_no, Amount, S_Status, Bus_id[Foreign Key(TblBus)])
Fd-> Seat_Number, Amount, Seat_Status, Bus_id[Foreign Key(TblBus)]

TblBooking(Booking_id[PK], Customer_id[Foreign Key(TblCustomer)], Seat_id, Booking_Status, Schedule_id[Foreign Key(Tblschedule)])
FD- >Customer_id[Foreign Key(TblCustomer)], Seat_id[Foreign Key(TblSeat)], Booking_Status

TblPassenger(Passenger_id[PK], Passenger_Name, Customer_id[Foreign Key(Tblcustomer)], Booking_id[Foreign Key(TblBooking)])
Fd-> Passenger_Name, Customer_id[Foreign Key(Tblcustomer)], Booking_id[Foreign Key(TblBooking)]

TblFeedback(Feedback_id[PK], Travelagencyname, service, review
FD-> Travelagencyname, service, review

6.1.2 Data Dictionary

1. tbluser

SR. NO.	FIELD NAME	DATATYPE	SIZE	CONSTRAINTS	DESCRIPTION
1	User_id	int	-	Primary Key	ID of particular user
2	User_email	Varchar	100	Not Null	Email of particulal user
3	User_role	Varchar	50	Not Null	Role of user
4	User_status	int	-	Not Null	Status code according to the user role
5	User_password	Varchar	50	Not Null	Password of the user

2. tblcustomer

SR. NO.	FIELD NAME	DATATYPE	SIZE	CONSTRAINTS	DESCRIPTION
1	Customer_id	int	-	Primary Key	ID of particular Customer
2	Customer_fname	Varchar	50	Not Null	First Name of Customer
3	Customer_lname	Varchar	50	Not Null	Last Name of Customer
4	Customer_gender	Char	1	Not Null	Gender of Customer
5	Customer _dob	date	-	Not Null	Date of Birth of Customer
6	Customer_contact No	Big Int	10	Not Null,Unique	Contact Number of Customer
7	Customer_city	Varchar	50	Not NULL	City of Customer
8	Customer_Email	Varchar	100	Not Null,Unique	Email of Customer

3. tblbusowner

SR. NO.	FIELD NAME	DATATYPE	SIZE	CONSTRAINTS	DESCRIPTION
1	Busowner_id	int	-	Primary Key	ID of particular Bus Owner
2	Busowner _fname	Varchar	50	Not Null	First Name of Bus Owner
3	Busowner _lname	Varchar	50	Not Null	Last Name of Bus Owner
4	Busowner_travels agencyname	Varchar	100	Not Null	Travels Agency Name of Bus OWNER
5	Busowner _gender	Char	1	Not Null	Gender of Bus Owner
6	Busowner _dob	Date	-	Not Null	Date of Birth of Bus Owner
7	Busowner_contact	Big Int	10	Not Null,Unique	Contact Number of Bus Owner
8	Busowner_city	Varchar	50	Not NULL	City of Bus Owner
9	Busowner _Email	Varchar	100	Not Null,Unique	Email of Bus Owner
10	Approvement	Varchar	15	Not Null	Stores the approve and pending

4. tblstaff

SR. NO.	FIELD NAME	DATATYPE	SIZE	CONSTRAINTS	DESCRIPTION
1	Staff_id	int	-	Primary Key	ID of particular Staff
2	Staff_fname	Varchar	50	Not Null	First Name of Staff
3	Staff_lname	Varchar	50	Not Null	Last Name of Staff
4	Staff_dob	date	-	Not Null	Date of Birth of Staff
5	Staff_Designation	Varchar	50	Not Null	Designation of Staff
6	Staff_ houseno	Varchar	10	Not Null	Houseno of staff
7	Staff_ area	Varchar	50	Not Null	Area of staff
8	Staff_city	Varchar	50	Not Null	Houseno of staff
9	Staff_contactNo	Big Int	10	Not Null,Unique	Contact Number of Staff
10	Staff_Experience	float	3,1	NOT NULL	Experience year of Staff
11	Staff_Email	Varchar	100	Not Null, Unique	Email of Staff

5. tblbus

SR. NO.	FIELD NAME	DATATYPE	SIZE	CONSTRAINTS	DESCRIPTION
1	Bus_id	int	-	Primary Key	ID of particular Bus
2	Bus_Number	Varchar	20	Not Null	Bus Number
3	Bus_Type	Varchar	20	Not Null	Type of sleeper/sitting/double decker
4	ACNON	varchar	20	Not Null	Type of Bus i.e. AC/Non AC
5	busimg	varchar	100	Not Null	Stores the image of the bus
6	Bus_Capacity	int	-	Not Null	Capacity of Bus
7	BusOwner_id	Int	-	Foreign Key	ID of Bus Owner

6. tblschedule

SR. NO.	FIELD NAME	DATATYPE	SIZE	CONSTRAINTS	DESCRIPTION
1	Schedule_id	int	-	Primary Key	It stores the Schedule ID
2	Journey_date	Date	-	Not Null	It stores the Journey Date
3	Departure_time	DateTime	-	Not Null	It stores the Departure time
4	Arrival_time	DateTime	-	Not Null	It stores the Arrival time
5	Route_id	Int	-	Foreign Key	It stores the Route ID

7. tblroute

SR. NO.	FIELD NAME	DATATYPE	SIZE	CONSTRAINTS	DESCRIPTION
1	Route_id	int	-	Primary Key	It stores the Route ID
2	Departure_station	Varchar	50	Not Null	It stores the departure station name
3	Arrival_station	Varchar	50	Not Null	It stores the arrival station name
4	bpoint	Varchar	50	Not Null	It stores the boarding point.
5	dpoint	Varchar	50	Not Null	It stores the dropping point.
6	Distance	Float	6,2	Not Null	It stores the distance between Departure and Arrival station
7	Bus_id	Int	-	Foreign Key	It stores the bus ID

8. tblseat

SR. NO.	FIELD NAME	DATATYPE	SIZE	CONSTRAINTS	DESCRIPTION
1	Seat_id	int	-	Primary Key	It stores Seat ID
2	Seat_no	Varchar	10	Not Null	It stores the Seat ID
3	Amount	Float	(6,2)	Not Null	It stores the per seat Amount
4	S_Status	Int	20	Not Null	It stores the Seat status i.e. Available or not
5	Bus_id	int	-	Foreign Key	It stores the bus ID

9. tblbooking

SR. NO.	FIELD NAME	DATATYPE	SIZE	CONSTRAINTS	DESCRIPTION
1	Booking_id	int	-	Primary Key	It stores Booking ID
2	Customer_id	Int	-	Foreign Key	It stores the customer ID
3	Seat_id	int	-	Foreign Key	It stores the seat ID
4	Booking_Status	varchar	10	Not Null	It stores the booking Status
5	Schedule_id	Int	-	Foreign Key	It stores the schedule ID

10. tblpassenger

SR. NO.	FIELD NAME	DATATYPE	SIZE	CONSTRAINTS	DESCRIPTION
1	Passenger_id	Int	-	Primary Key	It stores the Passenger ID
2	Passenger_name	Varchar	100	Not Null	It stores the Passenger Name
3	Customer_id	Varchar	50	Not Null	It stores the Customer ID
4	Booking_id	Int	-	Foreign Key	It stores Booking ID

11. tblfeedback

SR. NO.	FIELD NAME	DATATYPE	SIZE	CONSTRAINTS	DESCRIPTION
1	Feedback_id	Int	-	Primary Key	It stores the payment ID
2	Travelagencyname	Varchar	100	Not Null	It stores the description of the feedback
3	Service	Varchar	100	Not Null	It stores the service
4	Review	Varchar	100	Not null	It stores the review