

Interim Report

Level 3

Online Bus Booking and Tracking System for

SLTB Central Bus Station - *Colombo*

B.W.G.N Ranathunge

E111041050

Supervised By Mr.Aruna Dissanayake

Bachelor of Information Technology (External)

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Abstract

It is very important to maintain efficient software to handle bus booking services in every place. This application provides a way to record the information and to access them in a simple way. The report presents the implementing details about web based online bus booking service system for SLTB in Colombo. In many centers, they do their all process manually. For example recording information, process, maintain their information, etc. SLTB bus booking center in Colombo is one of them. Hence passengers have to come to the center at Colombo, even they are from far. Due to this purpose, it's waste of both time and money of passengers.

To overcome those drawbacks our aim is to design self-sufficient software, web based online bus booking services system. The application must be extendable, easily maintainable, cost effective, robust, user friendly and errorless. The system is implementing using web base technology. The system is able track the location also. It is implemented using Android system. The system access is given according to their level of control to users such as administrator, System staffs, employees including conductor and passengers etc. There is able to do number of process such as validate User Login, analysis available seat, calculate total ticket price, generate bus ticket, analysis passenger data, generate admin report, etc. The customers should input their details such as available bus, available seat, receiving confirmation sms, print ticket, bus location, admin report, etc. The user will get a confirmation message when they complete there booking and payment.

The system presents additional features including generating reports as well. These reports included analyze and design of the system and also it emphasize how important these kind of system. This system could be implemented easily among the people.

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Chapter 1 – Introduction

1.1 Introduction

In Sri Lanka there are few bus booking centers. . Up to date most processes in bus booking center being carried out manually. Therefore it takes much time to fill information and produce the ticket. Hence there are queues. And also it is not possible to do a bus booking at any time of the day (24 hours). Because it is open only at working hours. SLTB bus booking center is situated in Colombo. Therefore it is difficult to book your tickets without going for the center. It is waste of both time and money for coming to the center for reserve your tickets. But without reserving the tickets it may also cause waste of time and lack of comfort. In such cases people require a possible solution. Due to their manual system and less information technology they couldn't settle an appropriate method for above problems.

Web based online bus booking system is the solution for above problems. To the people who suffer to go to places to reserve their tickets, this system may be a great solution. And after reserving their ticket they do not need to wait at the bus stand until bus comes, they could track the location of the bus and be at time. So it would be a quiet nice journey for passengers. Therefore this system is going to develop not only for online bus booking service and also to track the location. PHP [1], HTML [2], CSS [3], Ajax [5], jQuery [4], MySQL [6], android [7] and Google Cloud Platform [12] (for web service) would be used to develop this system.

1.2 Background and motivation

There are many aspects force me to select this problem. In Sri Lanka nowadays travelling in bus has been facing many issues. Personally, I have faced to some problems which I have mentioned above. And there are many changes in modern world. In this generation, IT has been using it power through all the areas. So when we look into travelling, in Sri Lanka we have to improve our technology resources. Technology and system design makes work easy and effective; therefore web based online bus booking and tracking system saves time. So the enthusiasm motivated me to do this project.

1.3 Aims & Objectives

Aim

The aim of this project is to archive a standard web based online bus booking and tracking system which will be a great solution with many benefits to bus booking centers and passengers. This system will be implemented with the use of technologies like [1], HTML, CSS, Ajax, jQuery, MySQL and android [7].

Objectives

- Researching and reviewing passengers' needs (easy, anywhere and anytime booking etc...).
- Researching and reviewing the manual bus booking system (SLTB).
- Generating the system as passengers could access it with least requirements to satisfy them. (Mobile phone or any devise to access internet is enough).
- Developing the system with user friendly interface and easy procedures to attract passengers.
- Using easy payment methods (Ez cash, visa etc).
- Implementing solutions through system and making it more effective such as developing system to book bus ticket whenever or wherever is passengers.
- Improving the growth of SLTB by using modern technology (web based and android) in luxury bus service. Therefore it would make changes in SLTB service.
- Study of using web technologies (PHP, HTML, CSS, Ajax, jQuery, MySQL) and android [7] Google Cloud Platform [12] (for web service) that develop the system.
- Manual booking system changing into automated web based system.
- Reinforce a variety of skills including concentration, problem solving effort, creativity to fulfill the vision.
- Evaluation of the web based system.
- Preparation of final documentation.

1.4 Web based Online Bus Booking and Tracking System for bus booking centers

In my project, the proposed solution would be the Web based online bus booking and tracking system for bus booking centers in order to eliminate the limitations of the existing manual system. The proposed solution, Web based online bus booking and tracking system designed for bus booking centers, to cover a wide range of bus transportation administration and management processes. It is an integrated end-to-end system that provides relevant information across the Sri Lanka Transportation Board to support effective transportation making for passengers, bus booking centers, administrations and profit increment, in a seamless flow. Web based online bus booking and tracking system provides the benefits of streamlining of operations, enhanced administration and control, improved response time, easily accessible for passengers, cost control and improved profitability. Mainly, the technologies such as PHP, HTML, CSS, Ajax, jQuery, MySQL, android [4] and Google Cloud Platform [12] (for web service) will be used in developing the solution.

The proposed solution will develop using MVC technology [8]. It will use Ajax, HTML cascading style sheets. The system will use mysql database as database management system. The system is platform independent. When implementing the solution, I will split my system into few modules such as Web client Module, Mobile client Module, Web server Module and its sub module as Web services Module and Database Module.

There are mainly four categories of users. The users are such as Administrator, System Operator, Conductor, and Booker. Administrator, System Operator has permit access the database. But there are two kinds of employees in System Operator. We will see more description about those users in further chapters. Conductors will View Passenger details, send message to passenger. And Booker have to enter there details and select the appropriate seats and confirm there tickets. As the output they would get a confirmation message.

Web based online bus booking and tracking system endows with finalize their profit and other relevant reports such as number of passengers monthly. Another facility that system provides is they could reserve there tickets 24 hours of the day. Passenger can book the ticket at anytime without going to the bus booking center. The system administrator will handle the whole system access and maintenance.

Information about the employees and viewing report is managed by the system administrator.

1.5 Remaining of the report

Rest of this interim report consists of several chapters including current issues in manual bus booking system, technology adapted for the solution, the approach for the solution analysis and design for the system, implementation of the solution, and finally there will be a discussion on the evaluation of the system. The Chapter 2 describes reports on a critical literature review and defines the problem addressed in the project. Chapter 3 is a survey on technology used for similar problems with an emphasis on technology to be used in this project. Chapter 4 is about the approach which describes the users, inputs, outputs, process, technology and overall features of the proposed solution and the Chapter 5 demonstrates the overall design of the system including the logical diagrams such as, top level design, ER Diagram, Data Flow Diagram, Use case, Class and Swim lanes etc. During the Chapter 6 of this report it will present the software, hardware, code segments, screen shots that are being used for implementing the solution. Finally, the Chapter 7 provides a discussion on the further work.

Chapter 2 – Current issues in Bus Booking System

2.1 Introduction

This chapter gives a full description about background information of the project. Based on a literature survey, here it is state about others approaches to solve similar problems, bus booking system. The chapter illustrates drawbacks of other alternative solutions also.

2.2 Alternative Solutions

2.2.1 Booking through Phone Line system

Some private centers use this kind of solutions. For example implement a solution through communication system for reserve seats. In this kind of system all users have to have to make a phone call to book their tickets. So in this kind of way they do other works manually. They do have more than one connection to contact but it is very difficult to get the line, because phone connection is not like online connection. Multi users cannot access the system simultaneously. And there is no proper interconnection among the employees. The employees do not have a proper system therefore information sharing is not consisted. And due to manual it is very less in reliable. After booking the ticket if they have to stand until buses come, then they do not have satisfying connection with system at anytime of the day to get the information about bus. It does not have data security and integrity.

All the customers should use the phone connection therefore nowadays it's an easy way to access. So it is easily accessible but less in security. System is in a manual way thus data transferring is not a problem. Security problems during data transferring do not apply in this approach. As well as it has low reliability, data access does not depend on the network solutions. Therefore the database reliability depends only on the current manual system.

Although this solution has very few advantages it is not feasible enough for the client's requirements due to the following reasons:-

From the system expect to provide facility to reserve the tickets in your own and you can book your tickets whenever you want, and customers can follow the location of the bus through tracking system. So it is incompatible with the Telephone-system. And it is high reliable cause to web based, online and tracking system. Web base online bus booking and tracking system means all processes in center which are done by manually should do via the system. Among various users, some of the information should be shared between them. Hence standalone system is not applicable for this requirement.

2.2.2 Existing Current Manual Process in SLTB

Bus booking service is to reserve the books earlier to confirm our seats at the time of journey. If there are many passengers, one related person could reserve all there tickets earlier. So bus booking is very useful to make sure of the journey and feel comfort, and also time saving. Sri Lanka Transport Board Company is one of the leading Transport service in Sri Lanka. It provides various traveling methods. SLTB is now having a manual system to store the details of buses, employee, and daily income. All the processes such as employees' attendance, customer details entering, daily transactions, and reports are done by manually. Therefore for it takes much time, more paper work and employees.

When it comes to bus booking, SLTB has a center in every district all over the country. In Colombo, the passengers should come to the main center in Pettah to reserve the tickets. Colombo is the capital of our country, and there will be many booking throughout the day. So it is not only a waste of time and money for passengers, it is also a disadvantage to SLTB. And when they have to get into the bus they should come to the main stand. Because they can't pickup everyone at there bus stands due to lack of information. Passengers can't get into the bus at there nearest bus halt because they can't stand there until bus comes. When they have to get information about time of the bus arrival, information about empty seats and bus route it is not more efficient. They should contact with the center and get information; sometimes it is not well satisfied.

So all these kind of process are done by manually. Therefore it is both waste of time and money for passengers. And also Bus booking by manually is less in

facilities in modern world. Hence manual processing system is not applicable for this requirement.

2.3 The Benefits of Web Based Online Bus Booking and Tracking System

The web based system keeps all the details computerized such as bus details, passengers' details and process them electronically, to implement manual system as web based online bus booking system. There is no need to keep all the records in paper work. It handles whole things in a proper way so it is capable of easy accessing. And it is easy to keep backups.

The information about the bus, employees, bus route, and passengers will be managed by administrator. The user can log into online system and book there tickets. Payment, transaction activities also will be managed by administrator. Users will get an email or message when you had completed your booking and payment. In web based system it provides facility such as passengers can get details from the web based online system, therefore no need to contact the center. The system creates the payment bills of the passenger. Web based system provides facility such as passengers can get details from the web based online system, therefore no need to contact the center. Another capability that can provide by the system is to communicate between department and bus. The system creates the connections between the centers so if they want administrators can share there common details. Web based system endows with finalize their profit and other relevant reports such as number of passengers monthly, etc.

Another facility that system provides is to book tour buses using the system. Passengers can book the bus without going to the center.

The web based systems have the following benefits.

- Reduced costs-Web based applications can dramatically lower costs due to reduced support and maintenance, lower requirements on the end user system and simplified architecture.
- It is efficiency in processing details and finds the destination, bus class to book the ticket and pay through online. Hence it reduces time waste.

- Profit increment – Due to Web based online bus booking and tracking system users would have a certain facilities in travelling, so there will be unimaginable increase in profit.
- No single failure location- Data is stored in multiple locations so it would be more disaster resistive to administer.
- Highly deployable-Due to the manageability and cross platform support deploying web applications to the end user is far easier. They are also ideal where bandwidth is limited and the system and data is remote to the user.
- Secured activities-Typically in larger more complex systems data is stored and moved around separate systems and data sources. In Web based online bus booking system these details and payment will secured and guaranteed with an email /message which is send by the system to your specific email address/telephone no.

Hence web based system is most applicable for this requirement.

2.4 Comparison between Manual vs. Web based online bus booking system

Criteria	Manual System	Computerized System
1. Storage	Stored in the manual file base system	Stored electronically in a database
2. Time consuming (Efficiency)	Time consuming is heavy due to the manual work	Less time consuming due to automated tasks
3.Querying information	Hard to manipulate queries based on different criteria	Easy query manipulation with MYSQL.
4. Report Generation	Hard to generate reports	Easy and extensive report generation functionality
5. Security	Less security to data since anyone can access the files.	High security due to role based access control and authentication mechanisms

6. Disaster Recovery	Files can be stolen, damaged or destroyed.	Data can be protected with backup mechanisms.
7. Portability	Data ,reports are not easily portable	Data, reports are portable due to web based online system

Table 2.1: Comparison between Manual vs. Web based online bus booking system

2.5 Summary

This chapter gave a full description about background information about the project.

Further, based on a literature survey other's approaches to solve similar problems have been discussed and compared those approaches with the approach of this project. Next chapter will discuss about the Technology adapted for this project.

Chapter 3 – Web Based Bus Booking System beyond Manual Booking System

3.1 Introduction

This chapter will discuss about the technology that can be adapted to solve the problem. The reasons for selecting such technologies will also be discussed. This is a project where we adapt technology to solve problems in manual system and design web based online and tracking system. Hence, selecting appropriate technologies would be important in order to facilitate the intended requirements successfully.

3.2 Web Based Bus Booking System exceeding manual processes

We have many problems in manual system therefore web based system is implementing as a solution with the use of web technologies. For web based online and tracking system we have used the technologies such as PHP [1], HTML, CSS, Ajax, jQuery [4] and MySQL, MVC, android [7] and Google Cloud Platform [12] (for web service) in developing the solution.

When the client send request from web page in his machine, it would be carried to the server, and it is done by HTTPS protocol. HTTPS protocol is being used because of its high security. When we do transaction through online, secure is very important.

Data manipulation would be an extremely well handled part of any system. As such, inserting, updating and deleting data to and from the database should be handled carefully since data is the most valuable part of the system. Keeping this in mind MySql has been selected for this project due to following reasons.

- The MySQL [6] is one of the most used open source databases best and the most-used database in the world for online applications.
- Continuously improved while remaining fast, secure and reliable
- Free from bugs, and it has GUI interface therefore easy to access.
 - Elegantly support with the coding language for this project (PHP)
- PHP is a popular general-purpose scripting language that is especially suited to web development.

Java Script - JavaScript is generally used for client-side scripting. JavaScript works best for visual animation (such as changing an image when a user moves the mouse pointer over it) or for validating form fields. *Can minimums human error.*

Model–view–controller (MVC) [8] is a software pattern for implementing this system.

JQuery is a cross-platform JavaScript library designed to simplify the client-side scripting of HTML.

CSS provide the ability to change the appearance of text (such as fonts, colors, spacing) on Web pages.

Ajax is techniques used on the client-side to create asynchronous web applications. With Ajax, web applications can send data to, and retrieve data from, a server asynchronously (in the background) without interfering with the display and behavior of the existing page.

In manual system it takes more paper work and more employees to do all the process. And it takes much time to get the work done. Cost more than web based system. With the use of such technologies web based system helps to do bus booking more efficient, attractive interface, easy procedures, quick access, less paper work and high secured. These are the reasons why I am using those technologies to develop the system.

Apache Server

Purpose:- The order to execute the client site of Online Bus Booking System, the web server specified above is required as the provider of the client software at the server site.

PHP

Purpose: In the order to build web pages which work with MySQL database and Apache server.

Definition of the Interface: PHP is a widely-used general-purpose scripting language that is especially suited for Web development and can be embedded into HTML.

Macromedia Dreamweaver

Purpose: The web development tool specified above is required for designing and coding the project.

Definition of the Interface: Macromedia Dreamweaver is the industry-leading web development tool, enabling users to efficiently design, develop and maintain standards-based websites and applications.

MySQL

Purpose: Required as database server.

Definition of the Interface: MySQL is the world's most popular open source database software. With superior speed, reliability, and ease of use, MySQL has become the preferred choice of corporate IT Managers because it eliminates the major problems associated with downtime, maintenance, administration and support.

3.3 Summary

This chapter discussed about the technology that can be adapted for this project and how/why those technologies are appropriate to solve the problem. PHP, jQuery, Ajax language has been selected for coding the application; MYSQL Server has been selected as the Database.

Chapter 4 - Using Web Based Online Bus Booking and Tracking System for Built SLTB Extraordinary

4.1 Introduction

This section will talk about the technology that are using in this project, users that are involve, what are the inputs , what are the out puts and process which are going to involve in this development. And this is about how we have assimilated the technology to solve the said problems in SLTB. By changing manual system to Web Based Online Bus Booking and Tracking System will increase the efficiency, accuracy and performance of the SLTB.

This system will be referred to as (**OBPTS**) Web Based **Online Bus Booking and Tracking System** in the future.

4.2 Users

The people who are interacted with the system can be defined as users. In this system, four types of users can be identified based on their access roles. They are namely Administrator, System Operator, Conductor and Booker.

Administrator

- Create System User and view report.

System Operator

- Enter all bus details, user details, ticket price and etc.

Conductor

- View Passenger details, send message to passenger and etc.

Booker (Online)

- Select destination and seat , enter passenger info, pay money and etc

Booker (Manua)

- Select destination and seat , enter passenger info, pay money and etc

4.3 Inputs

Bus details, Ticket Price, Passenger details, Payment details, etc.

There are many aspects which differentiate from other bus booking system. It is such as Bus Entry Point. In other booking system they do not have facilities to get into the bus at their nearest bus halt. But (OBPTS) have designed to overcome all those draw backs. They do have an option (Bus Entry Point) as input to select there nearest bus halt.

4.4 Outputs

- Available Bus, Available Seat.
- Receiving confirmation SMS, Print Ticket.
- Bus Location.
- Admin Report, etc.

As outputs we do have above actions. The highlight is we can locate the bus location through an android phone or internet connection.

4.5 Process

- Validate User Login.
- Analysis available seat.
- Calculate total ticket price.
- Generate bus ticket.
- Analysis passenger data.
- Generate admin report.

4.6 Technology

For web based online and tracking system we have used the technologies such as PHP [1], HTML, CSS, Ajax, jQuery [4], MySQL, MVC, android [7] and Google Cloud Platform [12] for web service in developing the solution. All those technologies used to design the system and achieve the vision of this system.

4.7 Features

There are many features such as

- Book the ticket within 24 hours of the journey.
- Selecting bus seats – You can select your own seat as your wish.
- Have a easy payment methods.
- Have a bus entry point.
- Find the location of the bus.

4.8 Summary

In this chapter described the approach for the proposed system. This chapter also discussed the technology, users, inputs, output, process and over all features for this system. The next chapter will discuss the analysis and design of the proposed system .It is one of the most important chapters in this report.

Chapter 5 – Analysis and Design of OBBTS

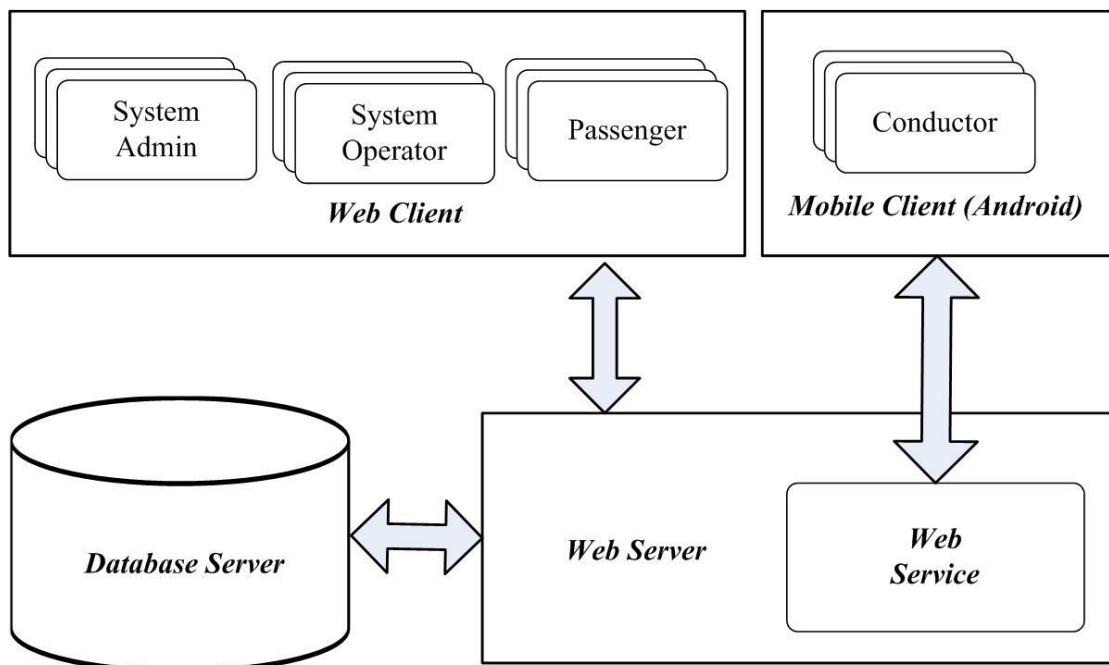
5.1 Introduction

Since, the project should gather, analyze and review the requirements to ensure that it meets the stated and implied needs of the SLTB, it is vital to have documented designs for understanding the system for development and further maintenance. Requirements shall form the basis for planning and development of subsequent work products. Every find out derived in this phase will be documented for the use of successful development of (OBBTS) and its maintenance.

5.2 Top Level Architecture of Web Based online bus booking and tracking System

In Top Level Architecture of (OBBTS) have mainly four modules. As figure 5.1 displays they are Web client Module, Database Module, Mobile client Module, Web server Module and its sub module as Web services Module.

Top Level Architecture of (OBBTS)



Figurer 5.1- Top Level Architecture

5.3 Use Case Diagram

Use case diagram shows the interaction between the user roles (actors) with the system. In this system actor such as Admin, System Operator, Booker, and Conductor interact with the system. The use case diagram for online bus booking system is cited in “Appendix A”.

5.4 Class Diagram

Class diagrams show the classes of the system, their interrelationships (including inheritance, aggregation, and association), and the operations and attributes of the classes. Class diagrams are used for a wide variety of purposes, including both conceptual/domain modeling and detailed design modeling. The class diagram for online bus booking system is cited in “Appendix B”.

5.3 Module Decomposition

This system comprises of following modules.

- Database Module
- System Operation Module
- Administration Module
- Booking Module
- Tracking Module

Firstly, the Administration Module is responsible for giving permission to users to access the system according to their responsibilities. Administrator controls the access level. There are two kind of system operator. First type of operators input bus details, bus route, ticket price, etc. And other type operators do booking tickets for people who comes to center to book there ticket. They book the ticket through (OBBTS). So the administrator manages user levels of operators and view daily reports. System Operation Module is used to intake the inputs such as, bus details, bus route, ticket price, creating new users, dropping users from the system, update information to system and permits to access the system to the users to select their destinations, bus entry point and reserve the seats. Thirdly, the Booking Module is the most important module of this system. Through booking module booker can select destination and bus seats, enter details, pay payments and print tickets, etc. And

Database Module will facilitate the functionalities stores and view data's of all the users and other details, etc. Tracking Module is design to give location details for the passengers through a map in the system. They could observe it through internet or android phone.

Module 1-Database module

In this module it handle whole database which are related to this (OBTS). The information which has to store, are concern in this module. This interacts with other module, Booking Module. To create this module supposed to use MySql. This module will be used by users such as administrator, system operators.

Because all processes which are done by this system may have taken/stored their information in Database module such as information of buses, destinations, employees, customers' details and payment details

ER diagram represents the system database architecture and its relationship. Good ER diagram will make the system run smoothly and allow performing faster. It speeds up data retrieval and saving. This make the system run faster. The entity relationship diagram for this module is cited in “Appendix C”.

Module 2- System Operation Module

In this module it updates daily bus details such as bus routes, bus class, time schedules, ticket price, bus entry points and other important information. And it has access to create new users, drop users, etc.

The Swim lanes for System Operation are cited in “Appendix D”.

Module 3 - Administration Module

Administration Module is responsible for giving permission to users to access the system according to their responsibilities. Administrator controls the access level. And administrator view daily reports and manage the system. Administration module interacts with the system operator module by giving control of its access level. The Swim lanes for Administration Operation are cited in “Appendix E”. The Swim lanes for Administration Report are cited in “Appendix F”.

Module 4 – Booking Module

Booking Module is the most important module of this system. Through booking module booker can select destination, bus seats, bus entry point and enter details, pay payments print tickets, etc. All those details are stored in database through database module. Therefore this module is also interacts with database module through https protocol.

The Swim lanes for Booking Seat are cited in “Appendix G”.

Module 5 – Tracking Module

Tracking Module is design to give location details for the passengers through a map in the system. They could observe it through internet or android phone. Tracking module interacts with mobile client (android) and web services. Android technology cannot interact with web server. Therefore it interacts through web services. This is an important module in this system which differentiates from other alternative solutions for bus booking problems in nowadays. Uniquely it differentiates due to tracking the locations.

The Swim lanes for Tracking Bus are cited in “Appendix H”.

5.3 Summary

This chapter included the overall analysis and design part of the project. As such, it included several UML diagrams such as Use case diagram, Swim lanes and class diagram etc. The top level architecture shows the included modules of this system. Next Chapter will discuss about the implementation of the project thereby stepping to the developing stage of this project.

Chapter 6 - Implementation of Web Based online bus booking and tracking System

6.1 Introduction

In this chapter it is providing execution details of each module that is stated in the design diagram. In describing the implementation, it states about, software, hardware, and some pseudo code, code segments in modules in the design. Also the chapter describes why those software and hardware are choosing for the solution.

6.2 Resource Requirements

		Hardware	Software	Other
Client	Passenger	Computer, Mobile Phone	Web Browser	Internet access
	Conductor	<i>Android Device</i> (Minimum: 832 MHz, 290 MB RAM, 20 MB SD Card Space)	<i>Android OS</i>	
	Admin (SLTB)	Computer	Web Browser, pdf	
	System Operator (SLTB)	Computer	Web Browser,	
Server		3.06 GHz or faster processor, of 2 RAM space, 5 GB disk space	Apache Server, MySql Database	
Developer		Computer(3.06 GHz or faster processor, of 2 RAM space) <i>Android Device</i> (Minimum: 832 MHz, 290 MB RAM)	Windows OS, MySql, PHP, Apache Server, Android SDK, Java	

Table 6.1: Resource Requirements

6.3 Implementation of Web Based online bus booking and tracking System

Web based administration system consists of five modules as described in previous chapter such as database module, web client module, web server module and web mobile client module. These module are implementing use various technologies.

Module 1-Database module

Within this module it concern about whole database which are related to Web Based online bus booking and tracking System. The information which has to store, are concern in this module. The database is being implemented with MySQL Graphical Use Interface (use “phpMyAdmin” web tool) create all tables.

The Some screen shot of the Create Database are cited in “Appendix J”.

Module 2- System Operation Module

The implementation of this module id described through following details.

The flowcharts for System Operation are cited in “Appendix K”.

The Some screen shot of the Enter Data are cited in “Appendix O”.

The pseudo code for System Operation is show below.

Figure 6.1.1 - The Pseudo code for System Operation

Enter and Edit Bus Data

```
Begin
    Display Screen (Main Bus Page)
    //Add Bus Data
    IF click "Add" Button
        Display Screen (Enter Bus Form)
        //Input
        Input busNumber and Bus data from Text Fields
```

```

IF click "Save" Button
    IF required fields are empty
        Display Message "Field is Empty"
    ELSE
        Read all Bus Data
        //Open DB
        Open Database
        Insert all data to Bus Master Table
        IF insert is Success
            Display Message "Successful Save"
        ELSE
            Display Message "Not Save"
        END IF
        //Close DB
        Close Database
    END IF
END IF

//Update Bus Data
IF click "Update" Button
    //Input
    Enter busNumber
    IF click "Edit" Button
        IF Field is Empty
            Display Message "Fields is Empty"
        ELSE
            //Get the input Data
            Read busNumber
            //Open DB
            Open Database
            Get Bus Details to Bus Master Table
            //Process
            While (NOT End of Record)
                Read Data

```

```
Fill Fields
END While
//Output
Output Display Bus Details on Fields
Input New Data
IF click "Update" Button
    IF required fields are empty
        Display Message "Field is Empty"
    ELSE
        Read all Bus Data
        Update all data to Bus Master Table
        IF Update is Success
            Display Message "Successful Update"
        ELSE
            Display Message "Not Update"
        END IF
    END IF
    END IF
//Close DB
Close Database
END IF
END IF
End
```

Figure 6.1.2 - The Pseudo code for System Operation

Enter and Edit Conductor Details

```
Begin
    Display Screen (Main Page)
    //Add Conductor Data
    IF click "Add" Button
        Display Screen (Enter conductor Form)
        //Input
        Input conductorNo, conductorName, mobile, busNo data
        IF click "Save" Button
            IF required fields are empty
                Display Message "Field is Empty"
            ELSE
                Read all conductor Data
                //Open DB
                Open Database
                Insert all data to conductor Master Table
                IF insert is Success
                    Display Message "Successful Save"
                ELSE
                    Display Message "Not Save"
                END IF
                //Close DB
                Close Database
            END IF
        END IF
        //Update conductor Data
        IF click "Update" Button
            //Input
            Enter conductorNumber
            IF click "Edit" Button
                IF Field is Empty
                    Display Message "Fields is Empty"
```

```

ELSE
    //Get the input Data
    Read conductorNumber
    //Open DB
    Open Database
    Get conductor Details to conductor Master Table
    //Process
    While (NOT End of Record)
        Read Data
        Fill Fields
    END While
    //Output
    Output Display conductor Details on Fields
    Input New Data
    IF click "Update" Button
        IF required fields are empty
            Display Message "Field is Empty"
        ELSE
            Read all Bus Data
            Update all data to conductor Master Table
            IF Update is Success
                Display Message "Successful Update"
            ELSE
                Display Message "Not Update"
            END IF
        END IF
        //Close DB
        Close Database
    END IF
END IF
End

```

Figure 6.1.3 - The Pseudo code for System Operation

Enter and Edit Entry Point Details

```
Begin
    Display Screen (Main Page)
    //Add entry point Data
    IF click "Add" Button
        Display Screen (Enter conductor Form)
        //Input
        Input entryPointNo, entryPointName
        IF click "Save" Button
            IF required fields are empty
                Display Message "Field is Empty"
            ELSE
                Read all entry Point Data
                //Open DB
                Open Database
                Insert all data to entryPoint Master Table
                IF insert is Success
                    Display Message "Successful Save"
                ELSE
                    Display Message "Not Save"
                END IF
                //Close DB
                Close Database
            END IF
        END IF
        //Update entry Point Data
        IF click "Update" Button
            //Input
            Enter entryPointNumber
            IF click "Edit" Button
                IF Field is Empty
                    Display Message "Fields is Empty"
```

```

ELSE
    //Get the input Data
    Read entryPointNumber
    //Open DB
    Open Database
    Get entry Point Details to entryPoint Master Table
    //Process
    While (NOT End of Record)
        Read Data
        Fill Fields
    END While
    //Output
    Output Display conductor Details on Fields
    Input New Data
    IF click "Update" Button
        IF required fields are empty
            Display Message "Field is Empty"
        ELSE
            Read all Bus Data
            Update all data to entryPoint Master Table
            IF Update is Success
                Display Message "Successful Update"
            ELSE
                Display Message "Not Update"
            END IF
        END IF
        //Close DB
        Close Database
    END IF
END IF
End

```

Figure 6.1.4 - The Pseudo code for System Operation

Enter and Edit New Route Details

```
Begin
    Display Screen (Main Page)
    //Add route Data
    IF click "Add" Button
        Display Screen (Enter route Form)
        //Input
        Input routeNo, routeFrom, routeTo, pirce
        IF click "Save" Button
            IF required fields are empty
                Display Message "Field is Empty"
            ELSE
                Read all route Data
                //Open DB
                Open Database
                Insert all data to route Master Table
                IF insert is Success
                    Display Message "Successful Save"
                ELSE
                    Display Message "Not Save"
                END IF
                //Close DB
                Close Database
            END IF
        END IF
        //Update route Data
        IF click "Update" Button
            //Input
            Enter routeNumber
            IF click "Edit" Button
                IF Field is Empty
                    Display Message "Fields is Empty"
```

```

ELSE
    //Get the input Data
    Read routeNumber
    //Open DB
    Open Database
    Get route Details to route Master Table
    //Process
    While (NOT End of Record)
        Read Data
        Fill Fields
    END While
    //Output
    Output Display route Details on Fields
    Input New Data
    IF click "Update" Button
        IF required fields are empty
            Display Message "Field is Empty"
        ELSE
            Read all Bus Data
            Update all data to route Master Table
            IF Update is Success
                Display Message "Successful Update"
            ELSE
                Display Message "Not Update"
            END IF
        END IF
        //Close DB
        Close Database
    END IF
END IF
End

```

Figure 6.1.5 - The Pseudo code for System Operation

Enter and Edit System User Details

```
Begin
    Display Screen (Main Page)
    //Add System User Data
    IF click "Add" Button
        Display Screen (Enter route Form)
        //Input
        Input userName, emNo, emName, emMobileNo, passwaord, privilege
        IF click "Save" Button
            IF required fields are empty
                Display Message "Field is Empty"
            ELSE
                Read all route Data
                //Open DB
                Open Database
                Insert all data to systemUser Master Table
                IF insert is Success
                    Display Message "Successful Save"
                ELSE
                    Display Message "Not Save"
                END IF
                //Close DB
                Close Database
            END IF
        END IF
        //Update System User Data
        IF click "Update" Button
            //Input
            Enter userName
            IF click "Edit" Button
                IF Field is Empty
                    Display Message "Fields is Empty"
```

```

ELSE
    //Get the input Data
    Read userName
    //Open DB
    Open Database
    Get system user Details to systemuser Master Table
    //Process
    While (NOT End of Record)
        Read Data
        Fill Fields
    END While
    //Output
    Output Display system user Details on Fields
    Input New Data
    IF click "Update" Button
        IF required fields are empty
            Display Message "Field is Empty"
        ELSE
            Read all Bus Data
            Update all data to systemuser Master Table
            IF Update is Success
                Display Message "Successful Update"
            ELSE
                Display Message "Not Update"
            END IF
        END IF
        //Close DB
        Close Database
    END IF
END IF
End

```

The Some user Interface for System Operation is cited in “Appendix O”.

Module 3 - Administration Module

Administrator controls the access level, view daily reports and manages the system. Administration module does all these implementation using following details.

The flowcharts for Administration are cited in “Appendix L”.

The pseudo code for Administration is show below.

Figure 6.2.1 - The Pseudo code for Administration Module

Create System User

```
Begin
    Display Screen (Main Bus Page)
    //Create System User
    IF click "Create System User" Tab
        Display Screen (Create System User Form)
        //Input
        Input userName, password, userType from Text Fields
        IF click "Save" Button
            IF required fields are empty
                Display Message "Field is Empty"
            ELSE
                Read all Bus Data
                //Open DB
                Open Database
                Insert all data to Bus Master Table
                IF insert is Success
                    Display Message "Successful Save"
                ELSE
                    Display Message "Not Save"
```

```

        END IF
        //Close DB
        Close Database
    END IF
END IF

//Update System User
IF click "Update" Button
    //Input
    Enter userName
    IF click "Edit" Button
        IF Field is Empty
            Display Message "Fields is Empty"
        ELSE
            //Get the input Data
            Read userName
            //Open DB
            Open Database
            Get System User Details to Login Master Table
            //Process
            While (NOT End of Record)
                Read Data
                Fill Fields
            END While
            //Output
            Output Display Bus Details on Fields
            Input New password
            IF click "Update" Button
                IF required fields are empty
                    Display Message "Field is Empty"
                ELSE
                    Read all Data
                    Update all data to Login Master Table
                    IF Update is Success

```

```

        Display Message "Successful Update"
    ELSE
        Display Message "Not Update"
    END IF
END IF
END IF
//Close DB
Close Database
END IF
END IF
END IF
End

```

Figure 6.2.2 - The Pseudo code for Administration Module

Booking Report

```

Begin
    Display Screen (Report Page)
    //Input
        Enter bookingDate, bookingType
        IF click "Report" Button
            IF Field is Empty
                Display Message "Fields is Empty"
            ELSE
                //Get the input Data
                Read bookingDate, bookingType
                //Open DB
                Open Database
                Get Booking Details
                //Process
                Analysis Data
                While (NOT End of Record)
                    Read Data

```

```

        Fill row in table
        END While
        //Output
        Output Display Booking Report
        //Close DB
        Close Database
    END IF
END IF
End

```

Module 4 – Booking Module

Booking Module is the most important module of this system. Through booking module booker can select destination, bus seats, bus entry point and enter details, pay payments print tickets, etc. This module interacts with database module through https protocol.

The flowcharts for Booking are cited in “Appendix M”.

The pseudo code for Booking is show below.

Figure 6.3.1 - The Pseudo code for Booking Module

Search Available Bus

```

Begin
Display Screen (Search Bus Page)
//Input
    Enter journeyForm, journeyTo, journeyDate
    IF click "Search" Button
        IF Field is Empty
            Display Message "Fields is Empty"
        ELSE
            //Get the input Data
            Read journeyForm, journeyTo, journeyDate

```

```

//Open DB
Open Database
Get Available Bus Details
//Process
While (NOT End of Record)
    Read Data
    Fill row in table
END While
//Output
Output Display all Available Bus Details on the table
//Close DB
Close Database
END IF
END IF
End

```

Figure 6.3.2 - The Pseudo code for Booking Module

Booking Bus Seat

```

Begin
Display Screen (Booking Seat Page)
Select Seat
IF Select Seat
    Holed Bus Seat
    //Output
    Selection Seat, Time for expire seat
    IF (NOT expired cookie)
        //Input
        Booking Data (passengerName, gender, booker NIC, mobileNo)
        IF Field is Empty
            Display Message "Fields is Empty"
        ELSE

```

```

IF (NOT expired cookie)
    //Input
    Enter Payment Data
    IF (Valid Payment)
        Conform Booking
        //Open DB
        Open Database
        Update Data
        //Output
        Print Ticket
    ELSE
        Reject Booking
    END IF
    ELSE
        //Output
        Display Message "Time is expired"
    END IF
    END IF
    ELSE
        //Output
        Display Message "Time is expired"
    END IF
END IF
End

```

Module 5 – Tracking Module

In this module it generates longitudes, latitudes of the location to the tracking system. It interacts with the web services module. This is used to get details from web service modules such as customers' details, destination, etc.

The flowcharts for Tracking are cited in “Appendix N”.

The pseudo code for Tracking is show below.

Figure 6.4.1 - The Pseudo code for Tracking Module

Track Bus Location

```
Begin
    Display Screen (Main App Window)
    On "GPS" Button
        IF check GPS on
            Get Latitude & longitude
        END IF
    On "Send Latitude & longitude" Button
        IF check "GPS" AND "Latitude & longitude" Button
            //Open DB
            Open Database
            Update Latitude & longitude data to Table
        END IF
End
```

Figure 6.4.2 - The Pseudo code for Tracking Module

Show Bus Location on Map

```
Begin
    Display Screen (Map)
    //Input
    busNumber
    IF click "Show Location" Button
        IF required fields are empty
            Display Message "Field is Empty"
        ELSE
            Read busNumber
            //Open DB
            Open Database
            Search Latitude & longitude form Table
```

```
//Output  
Show Bus location on Map  
END IF  
END IF  
End
```

6.4 Summary

This chapter state about, software, hardware, algorithms, pseudo codes, code segments for each module in the design and it shows the relation between design and implementing process.

Chapter 7 - Discussion

7.1 Introduction

This chapter will discuss the summary about the report and a brief description on further work of implementing OBBTS. Further it provides a critical appraisal of the work undertaken and its outcome. This review considers three perspectives, namely, success in meeting the project objectives, success in adhering to the project plan and milestones laid out in the initial stages and success against the obstacles that were faced.

7.2-Summary of the report

This interim report covered the topics ranging from problem identification (literature survey) to early steps of implementation for Web Based Online Bus Booking and Tracking System (OBBTS) of the SLTB. The main objective of this project is to overcome the problems existing in the manual bus booking system of the SLTB. Such problems include consuming much resources; mainly time, effort and papers and lower decision making power due to lack of accessing data quickly, when working in the manual ledger based environment. Such problems would be reduced with the implementation of the automated (OBBTS).

In the chapter 1 of this report elaborated about the organization's current system's background and why SLTB should come across for the new computerized system.

In chapter 2, it conversed about the current manual bus booking system of the SLTB and its drawbacks, comparison between current system and fully web based online system and benefits of the proposed web based online system.

In Chapter 3 discussed about the technology that can be adapted to solve the problem. The reasons for selecting such technologies also discussed.

In Chapter 4 talked about the efficiency in web based online system including system users, inputs, process and outputs.

In chapter 5, explained about the development methodology use for the web based online system.

Additionally in this chapter present the top level architecture. The description of modules in the diagram stating what each module does and its interaction with other modules/components and user privileges as well as discussed the ER, use case and Swim lanes in order to understand the system's functionalities correctly.

In the concluding chapter it have been discussed the fundamental steps for implementation of OBBTS, with the used software and hardware requirements as well as the implementations of modules.

The highlight is the tracking system of (OBBTS). This is used to track the location of the bus for passengers or other users. In modern IT world every problem has solutions in new aspect. Therefore the web based online bus booking and tracking system is the only one which differentiates from other alternative solutions for bus booking problems in nowadays. Tracking system is absolutely most affective solution for above problems which I have pointed out.

There are some evaluation tests to do after completing the system. The facility which does not included in this system is ticketing cancellation. In some other web based systems, they have provided an option to cancel the ticket. According to there company rules and regulations they will return the money. But here I have not included the cancellation facility. In future it may be included with the permission of SLTB.

7.3-Further work

In system design, problem encountered when drawing ER and Class diagram on identifying relevant entities and classes and their activities. Such ambiguity could be managed by referring relevant articles on the internet and ideas taken from the supervisor. Time was a crucial factor to manage. It was a challenge to study a new subject in the context of bus booking system, gather the required skills, and utilize new technology and implement such a system within the short span of time. After

creating the system we will do system validation and verification process. As well as able to do several testing process such as

- Functionality Testing
- Performance Testing
- Usability Testing
- Server Side Interface
- Client Side Compatibility
- Security.

However, almost all the requirements are gathered and analyzed, the design of the system is completely understood and thinking to implement a quality solution that goes beyond the expectations of the current issues of this system.

7.4 Summary

This chapter included a summary about the report and a brief description on further work of implementing OBBTS. Further, it provided a critical appraisal of the work undertaken and its outcome of this project. Also it discussed about the problems faced during the project and their solutions. This is the Final chapter of this interim report.

References

Web References:

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Appendices A- Use case diagram for Online Bus Booking System

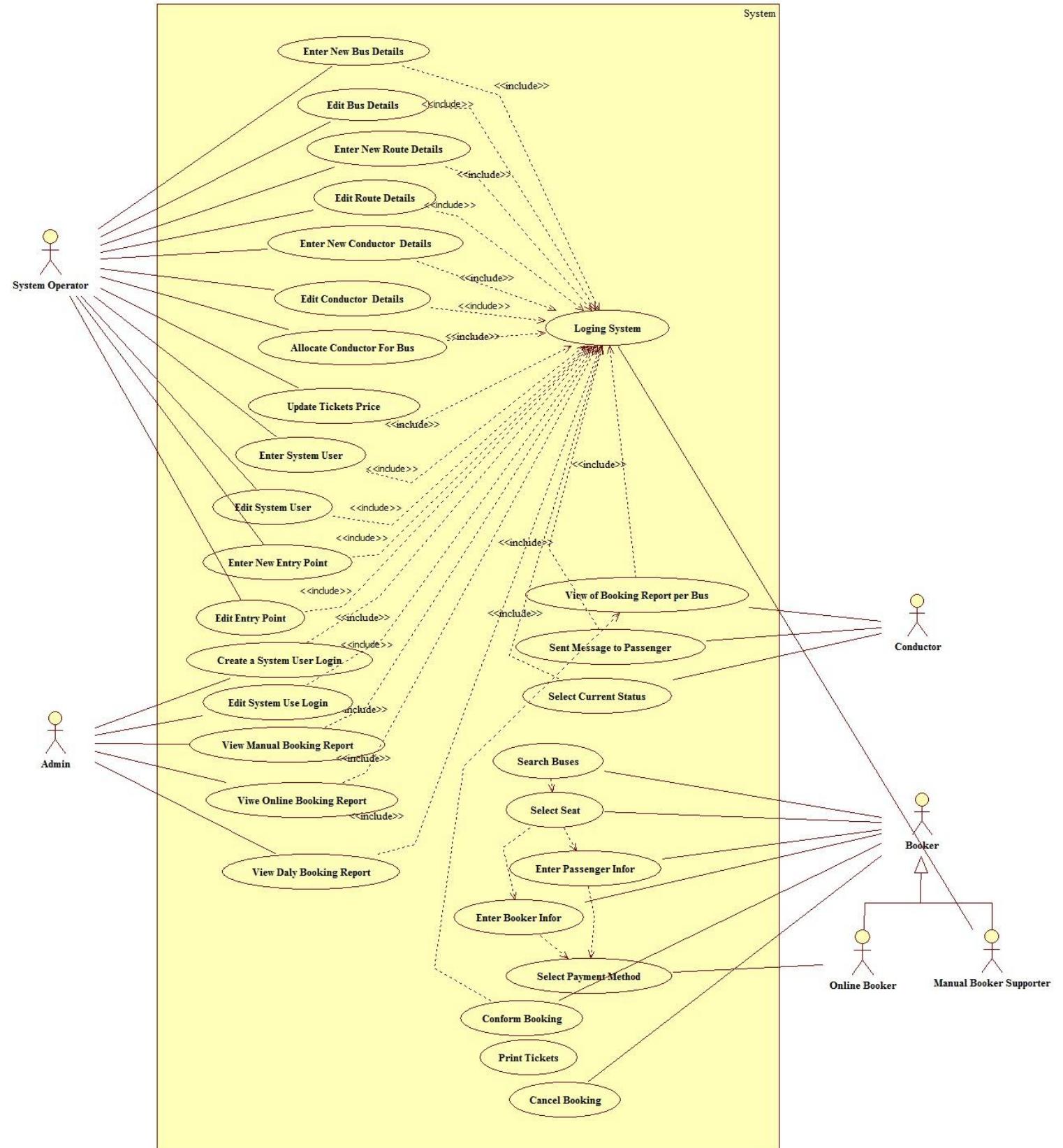


Figure 5.2- Use case diagram for Online Bus Booking System

Appendices B- Class diagram for Online Bus Booking System

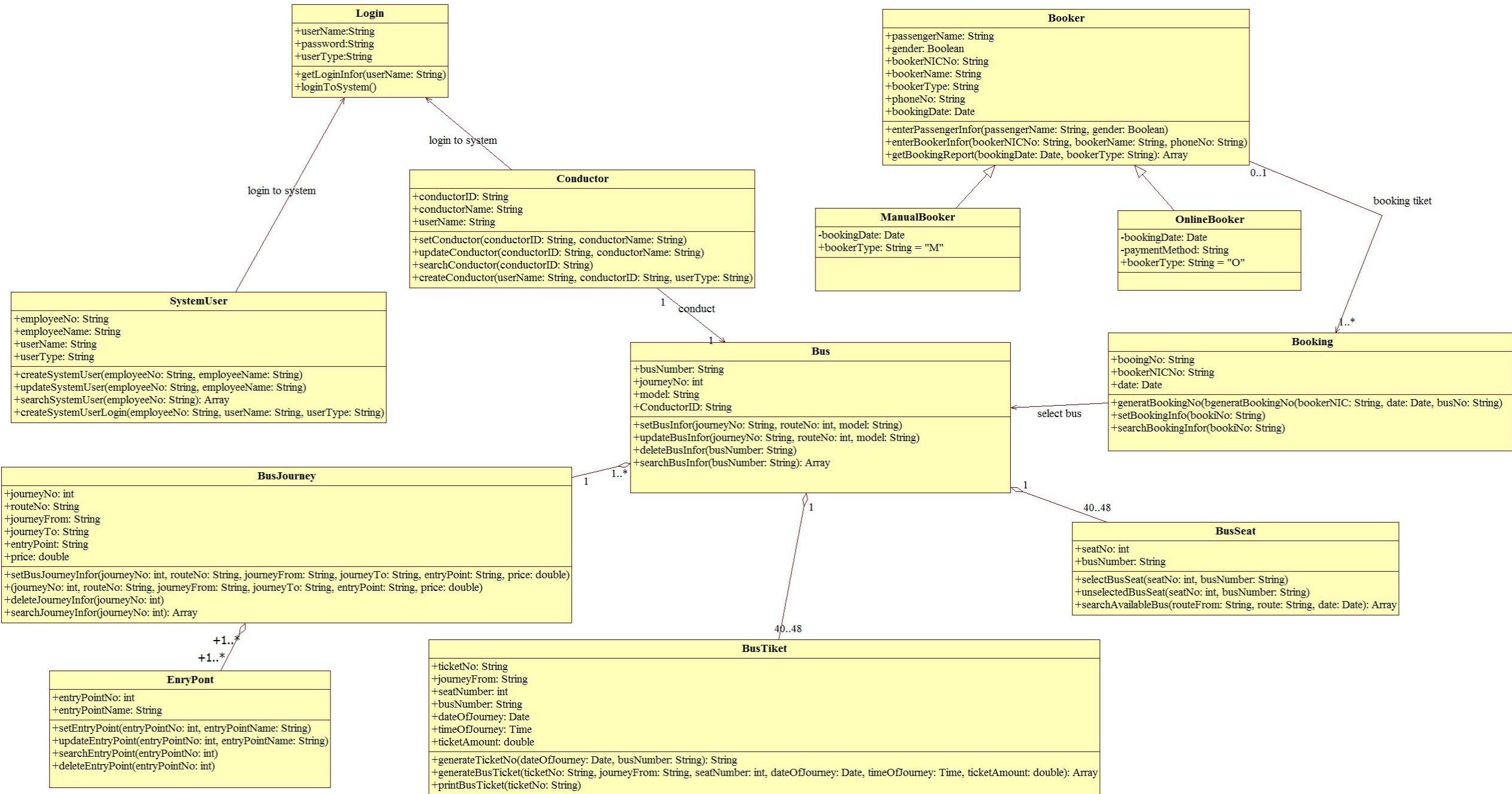


Figure 5.3 - Class diagram for Online Bus Booking System

Appendices C- Entity relationship diagram for database module

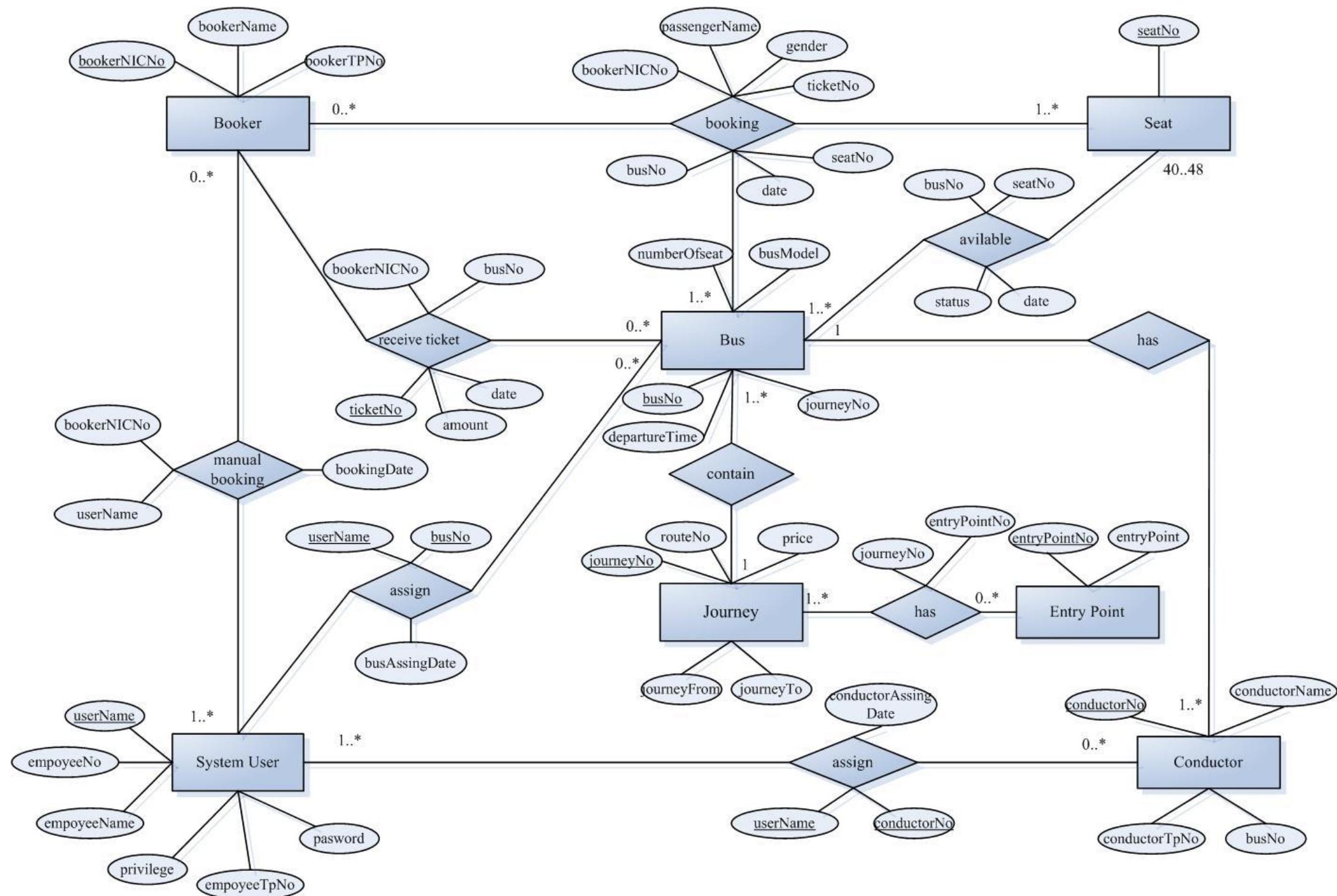


Figure 5.4- Entity Relationship diagram for database module

Appendices D-Swim lanes for System Operation

Enter Bus Details

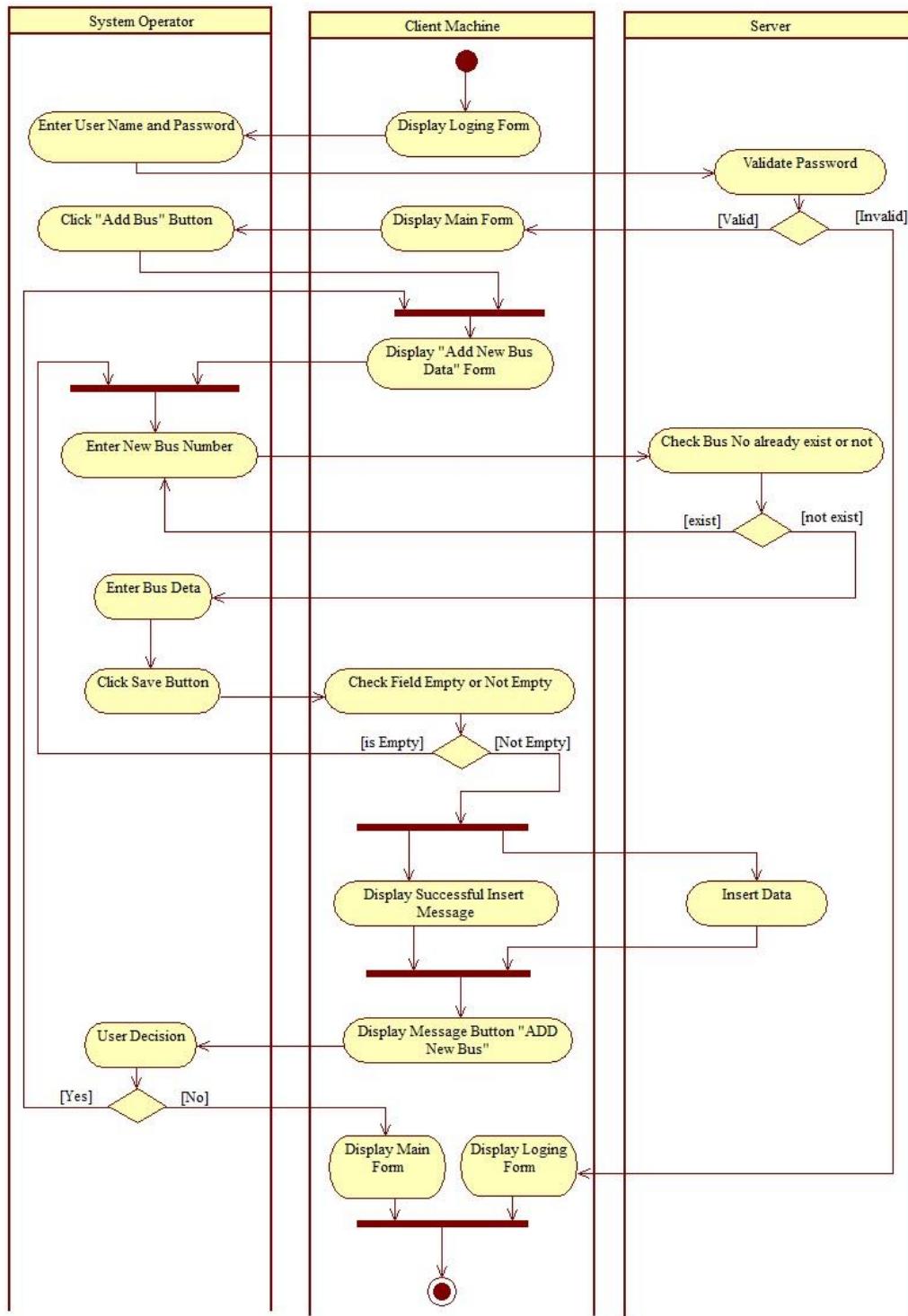


Figure 5.5.1- Swim lanes for System Operation

Edit Bus Details

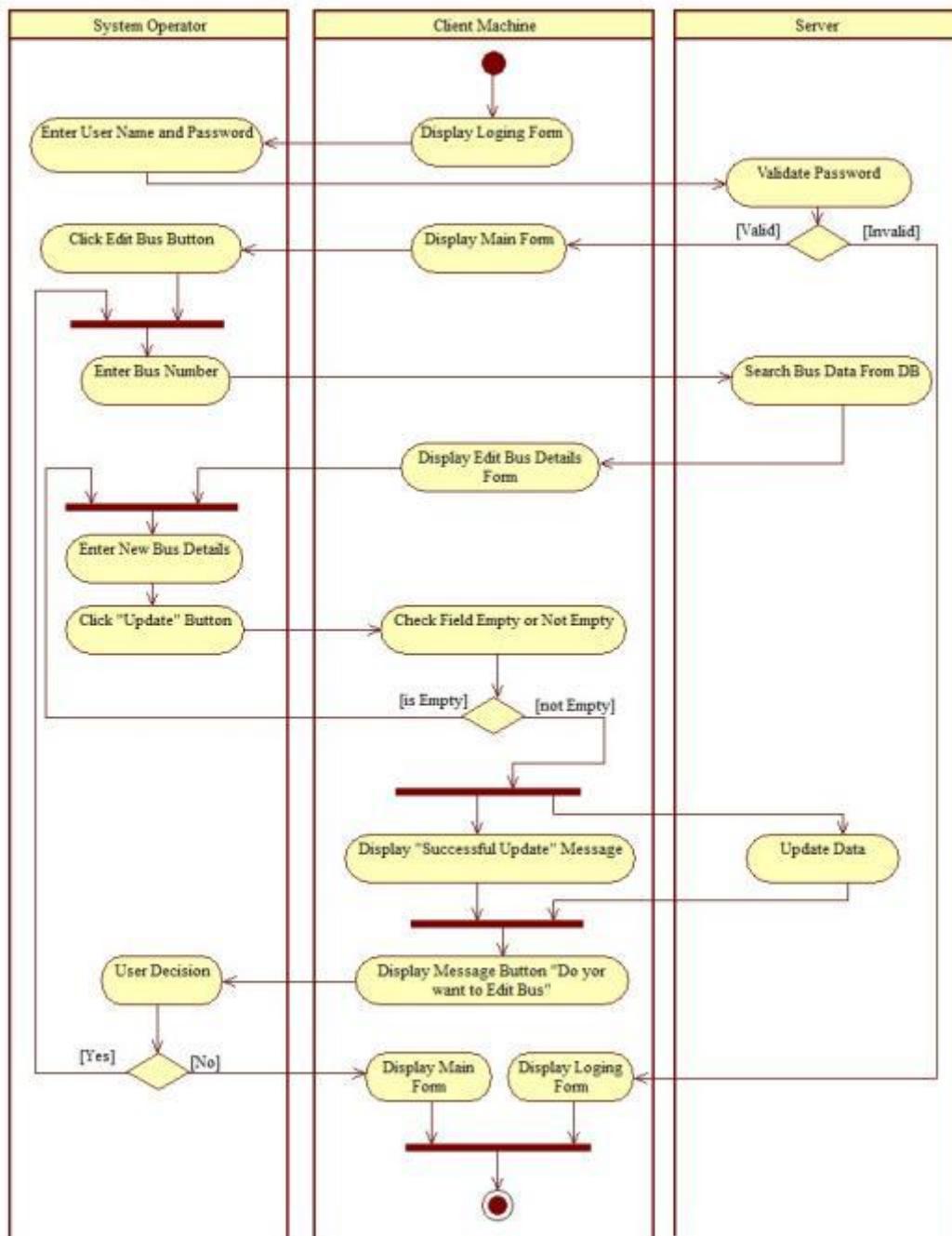


Figure 5.5.2- Swim lanes for System Operation

Enter New Route Details

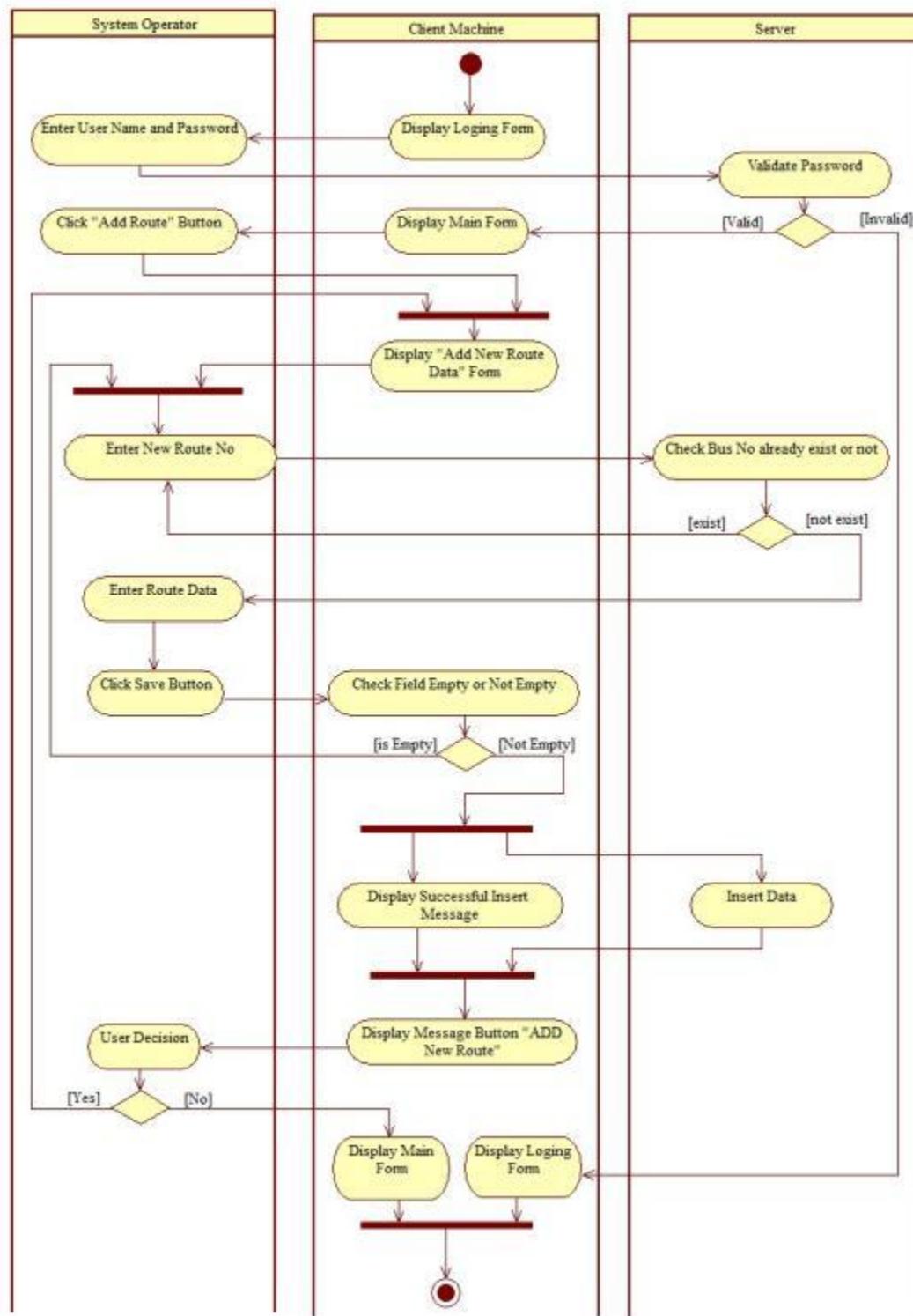


Figure 5.5.3 - Swim lanes for System Operation

Edit Route Details

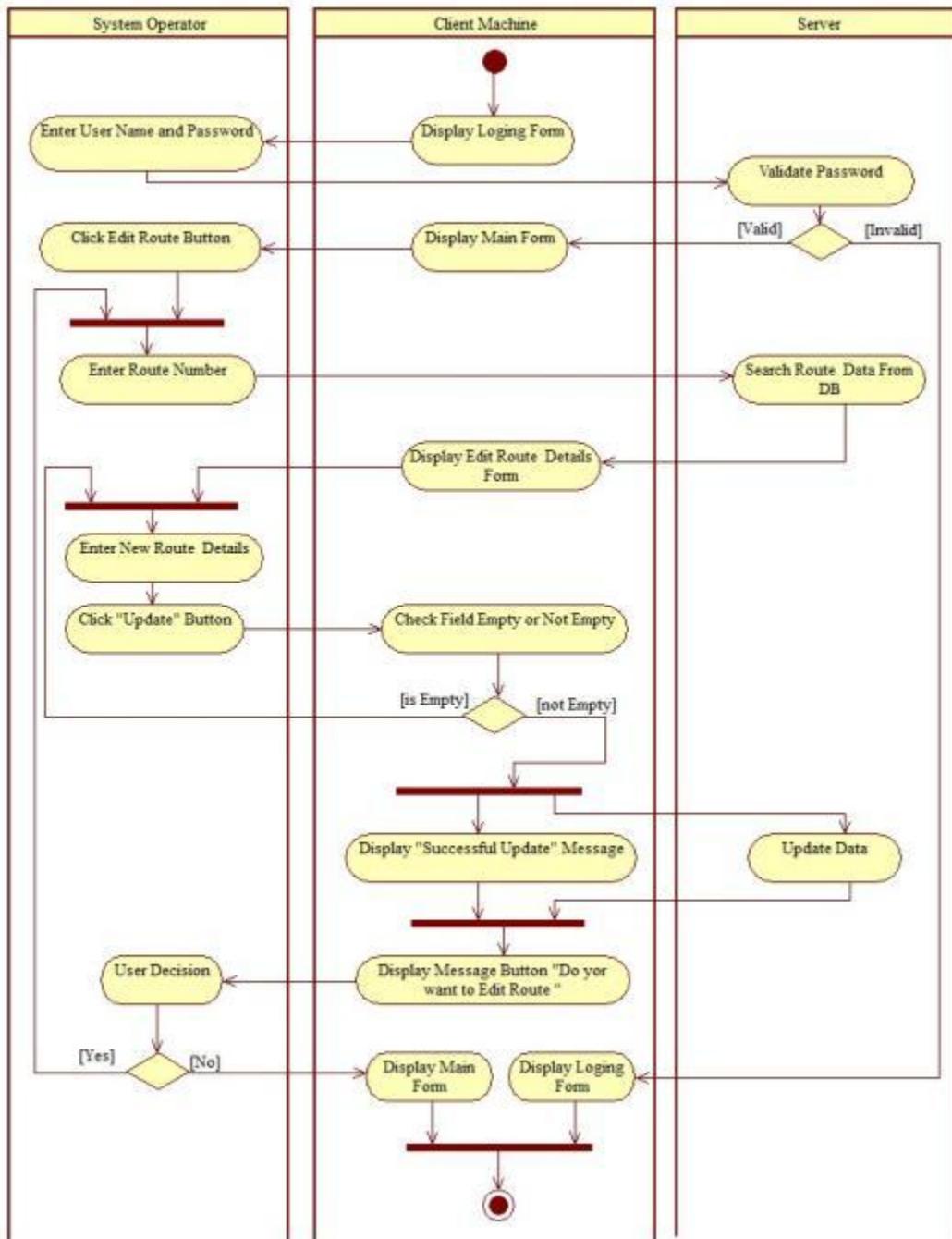


Figure 5.5.4- Swim lanes for System Operation

Enter New Conductor Details

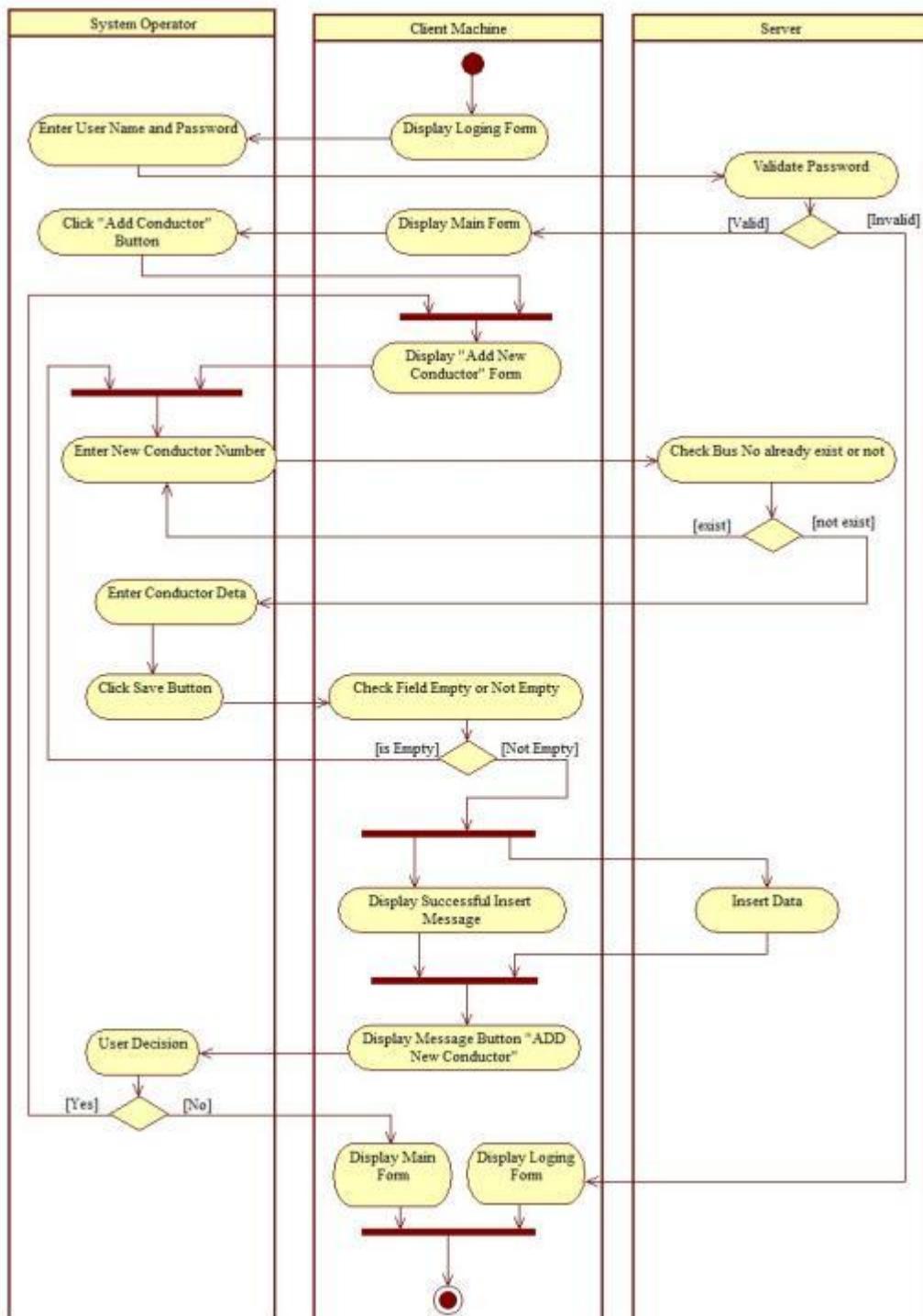


Figure 5.5.5 - Swim lanes for System Operation

Edit Conductor Details

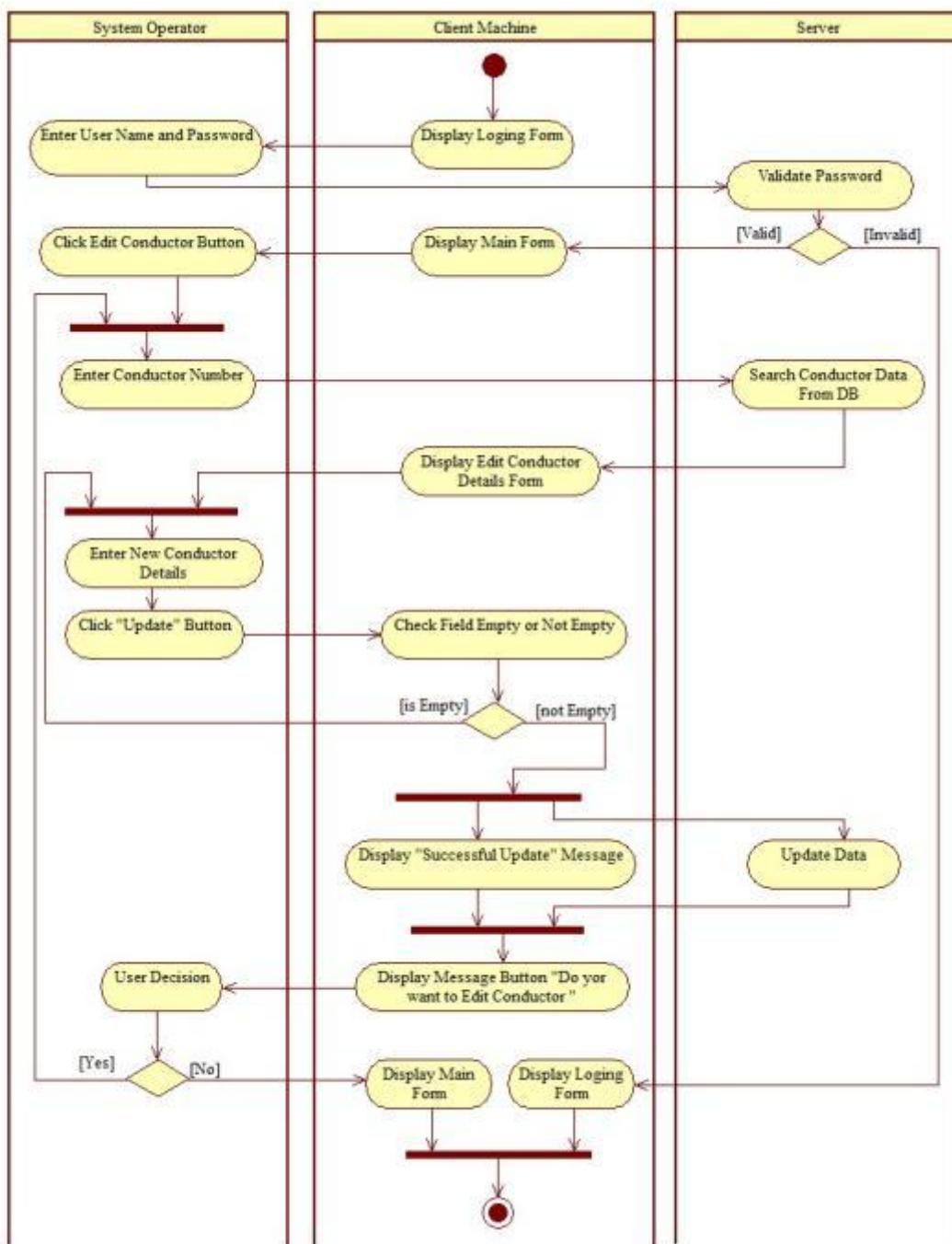


Figure 5.5.6 - Swim lanes for System Operation

Allocate Conductor for Bus

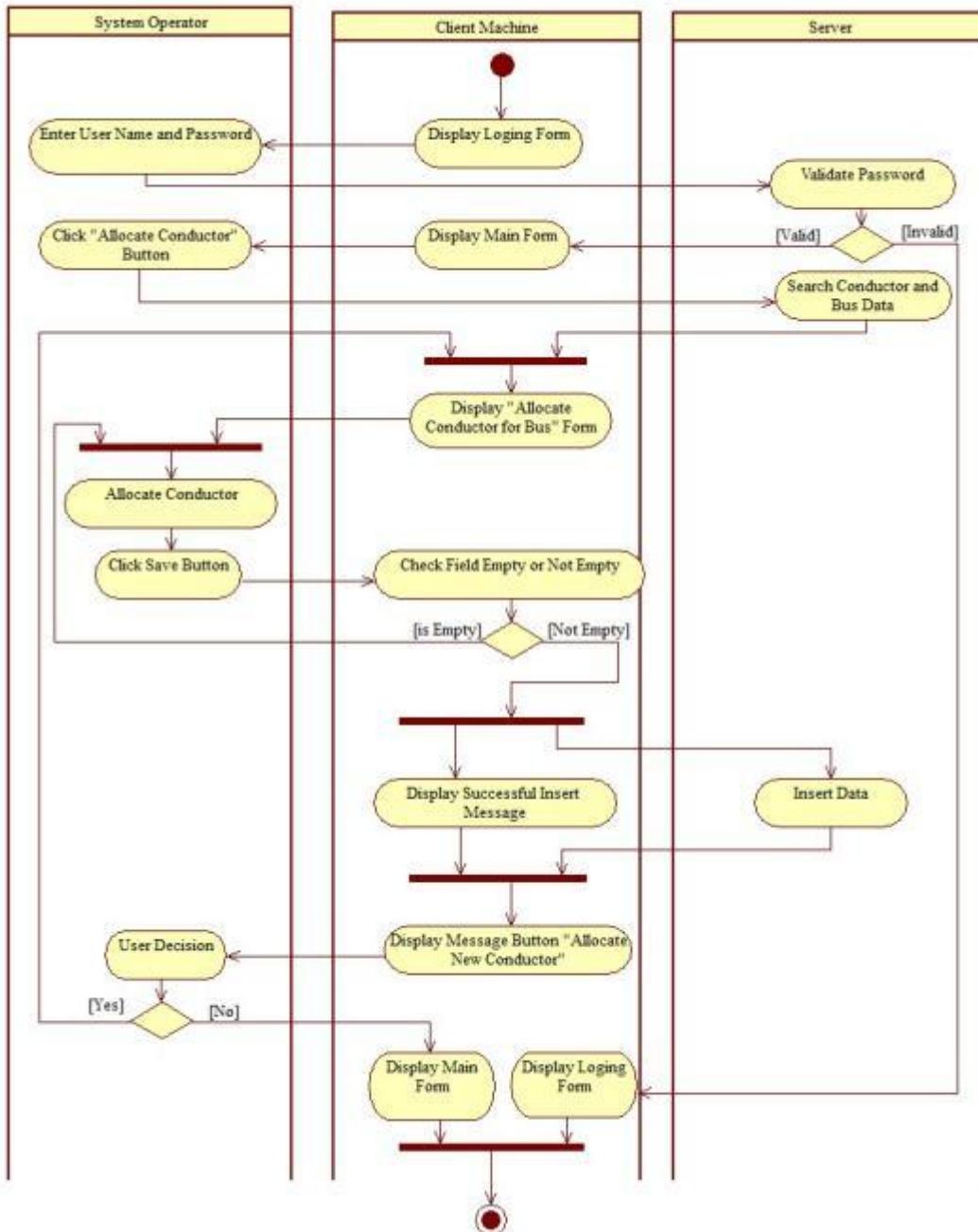


Figure 5.5.7 - Swim lanes for System Operation

Update Tickets Price

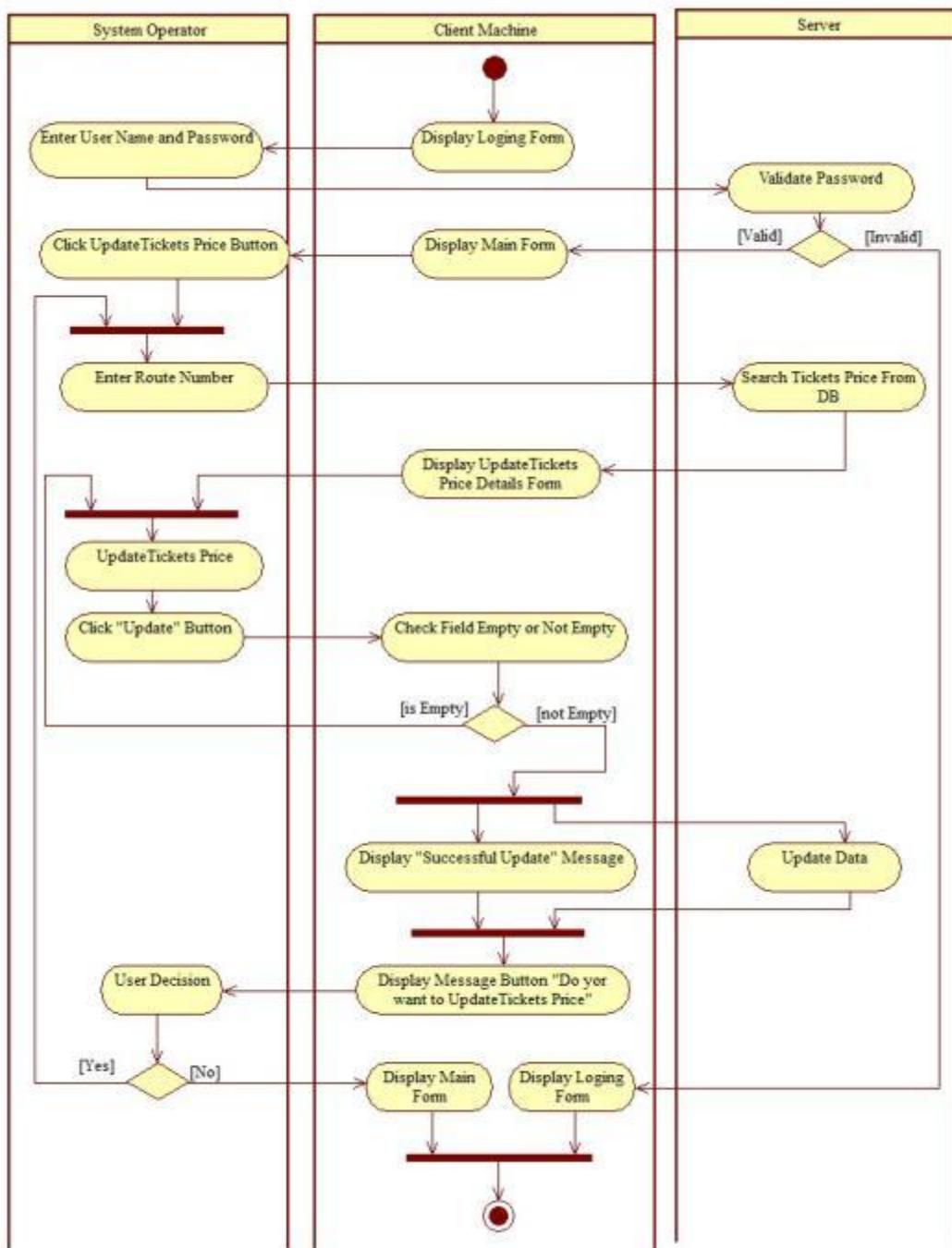


Figure 5.5.8 - Swim lanes for System Operation

Enter System User

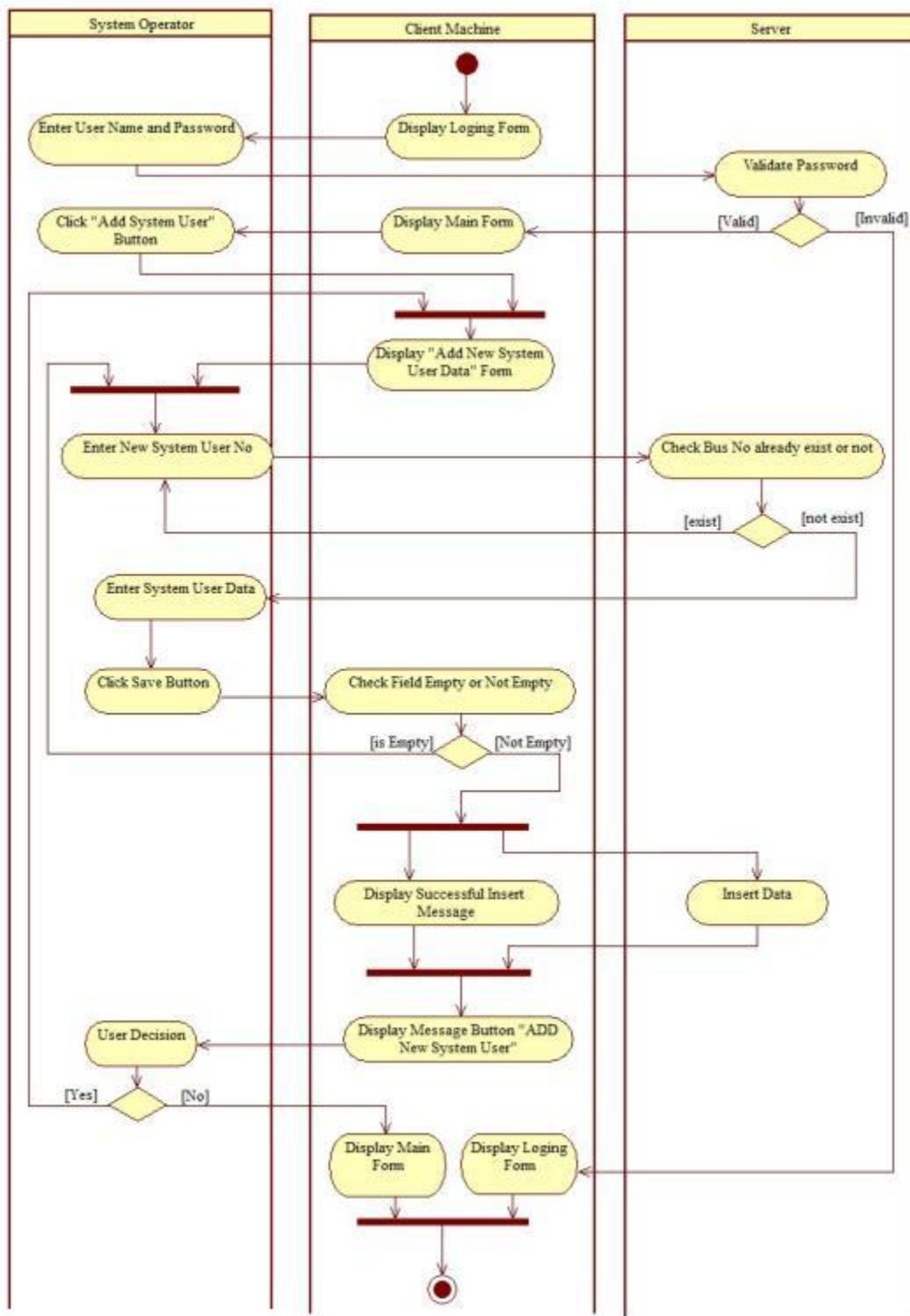


Figure 5.5.9 - Swim lanes for System Operation

Edit System User

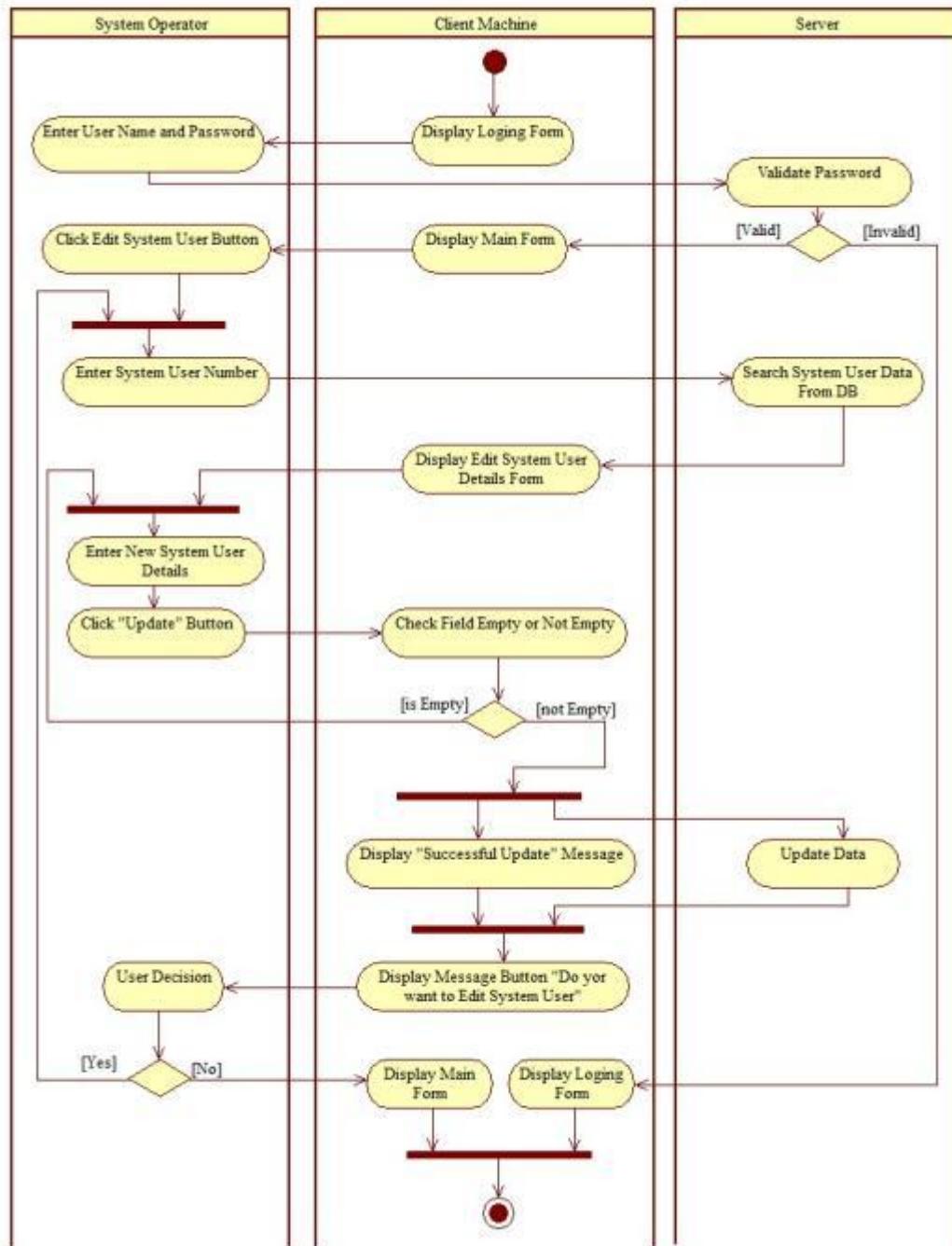


Figure 5.5.10 - Swim lanes for System Operation

Enter New Entry Point

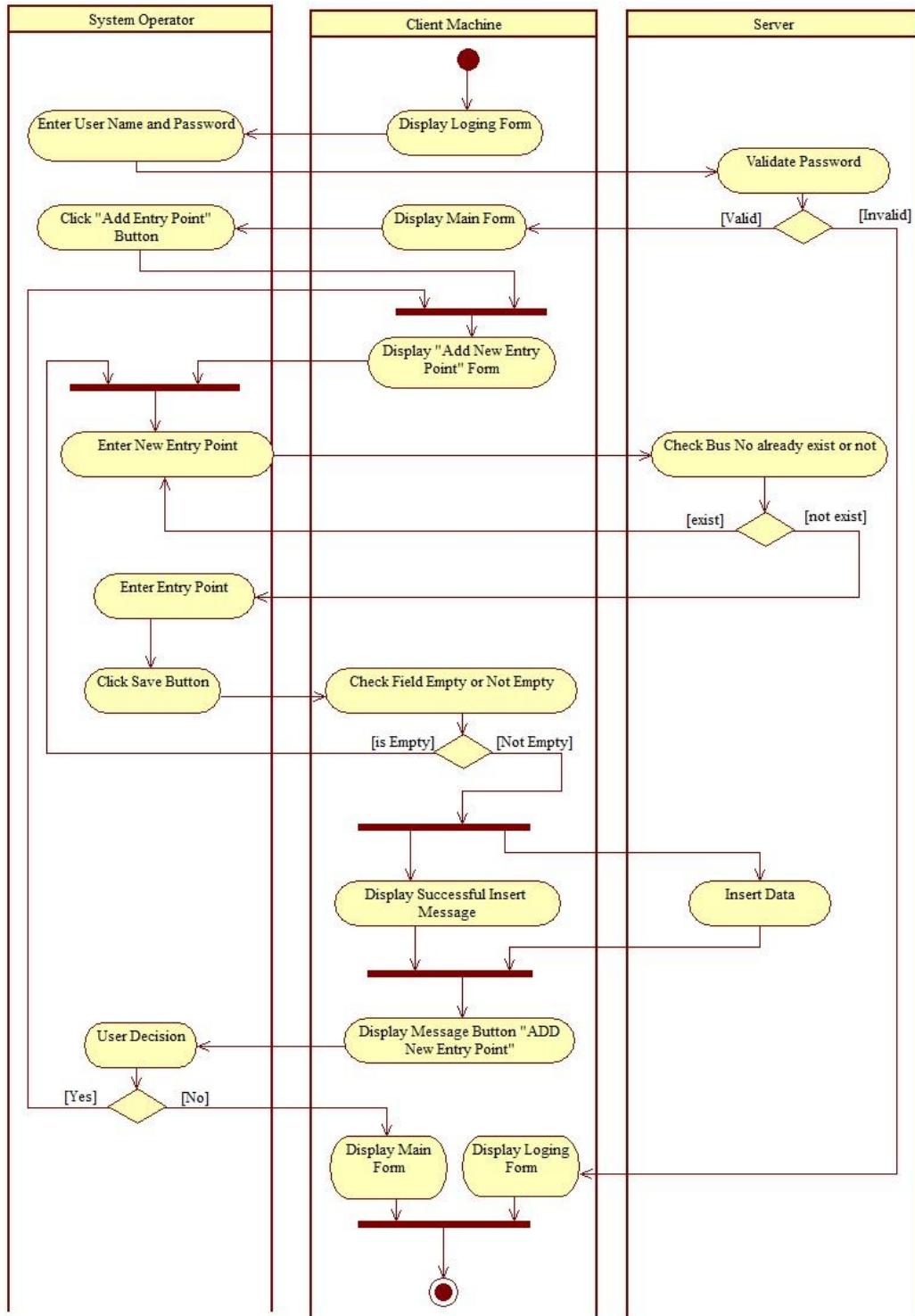


Figure 5.5.11 - Swim lanes for System Operation

Edit Entry Point

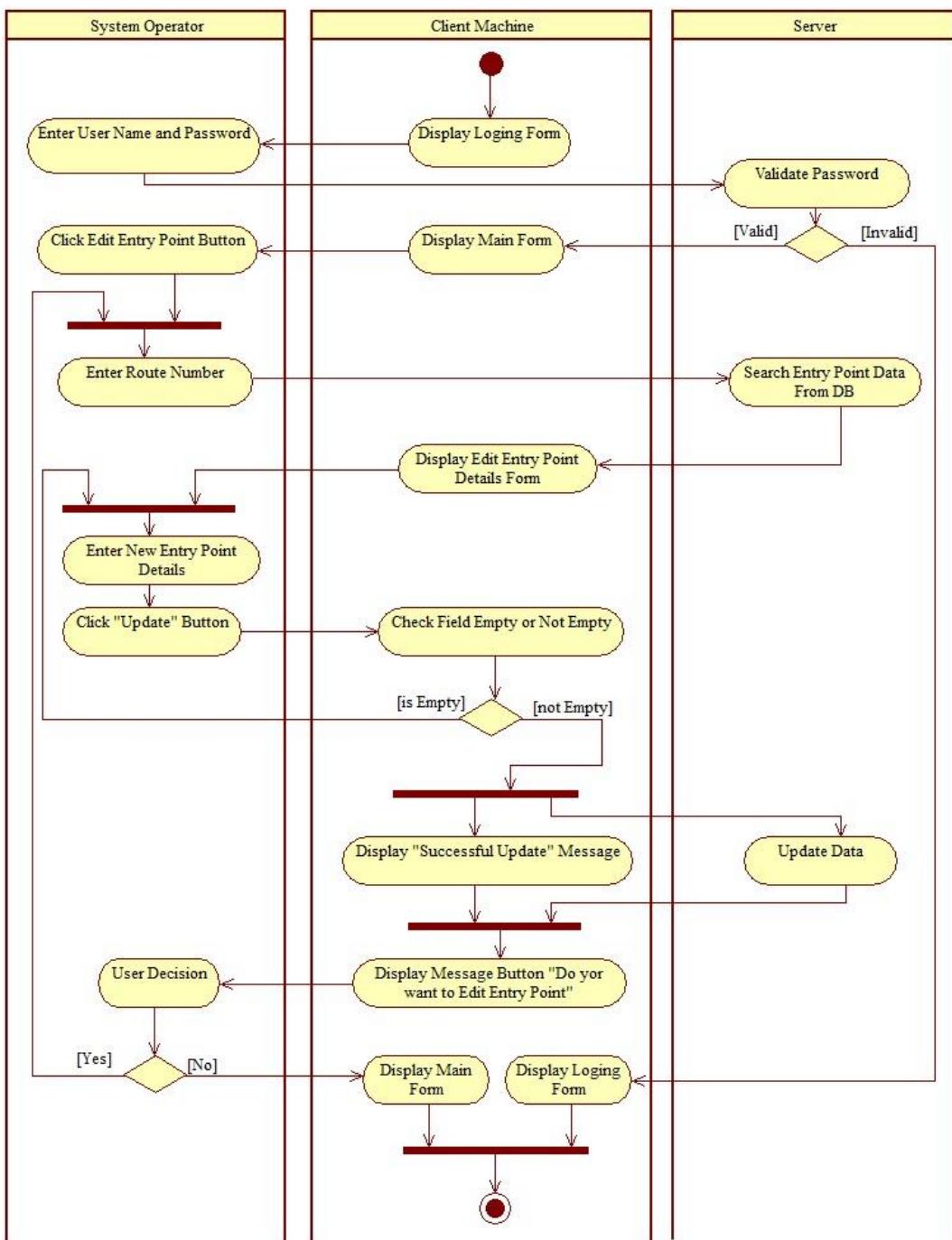


Figure 5.5.12 - Swim lanes for System Operation

Appendices E- Swim lanes for Admin Operation

Create System User Login

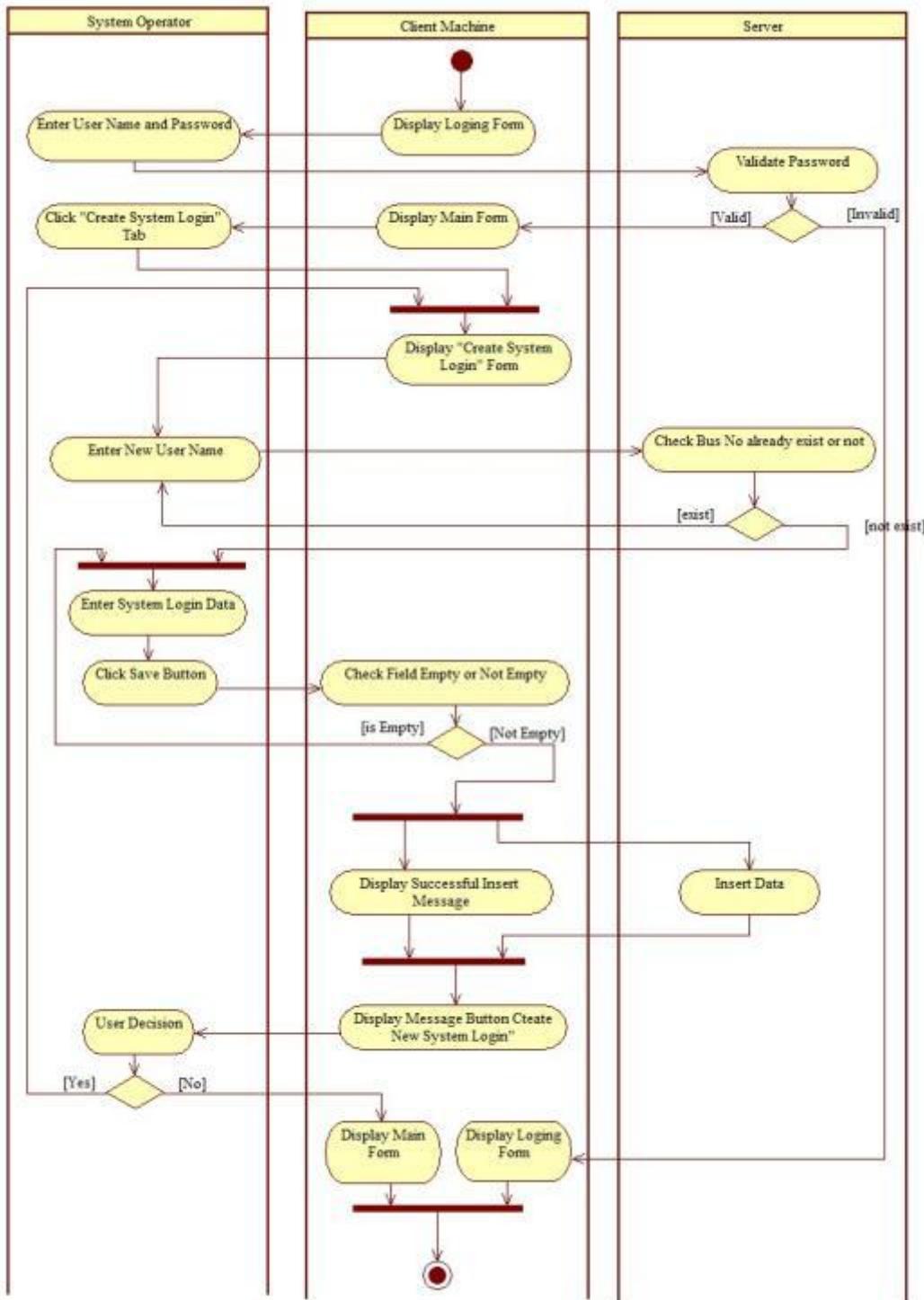


Figure 5.6.1 - Swim lanes for Admin Operation

Edit System Use Login

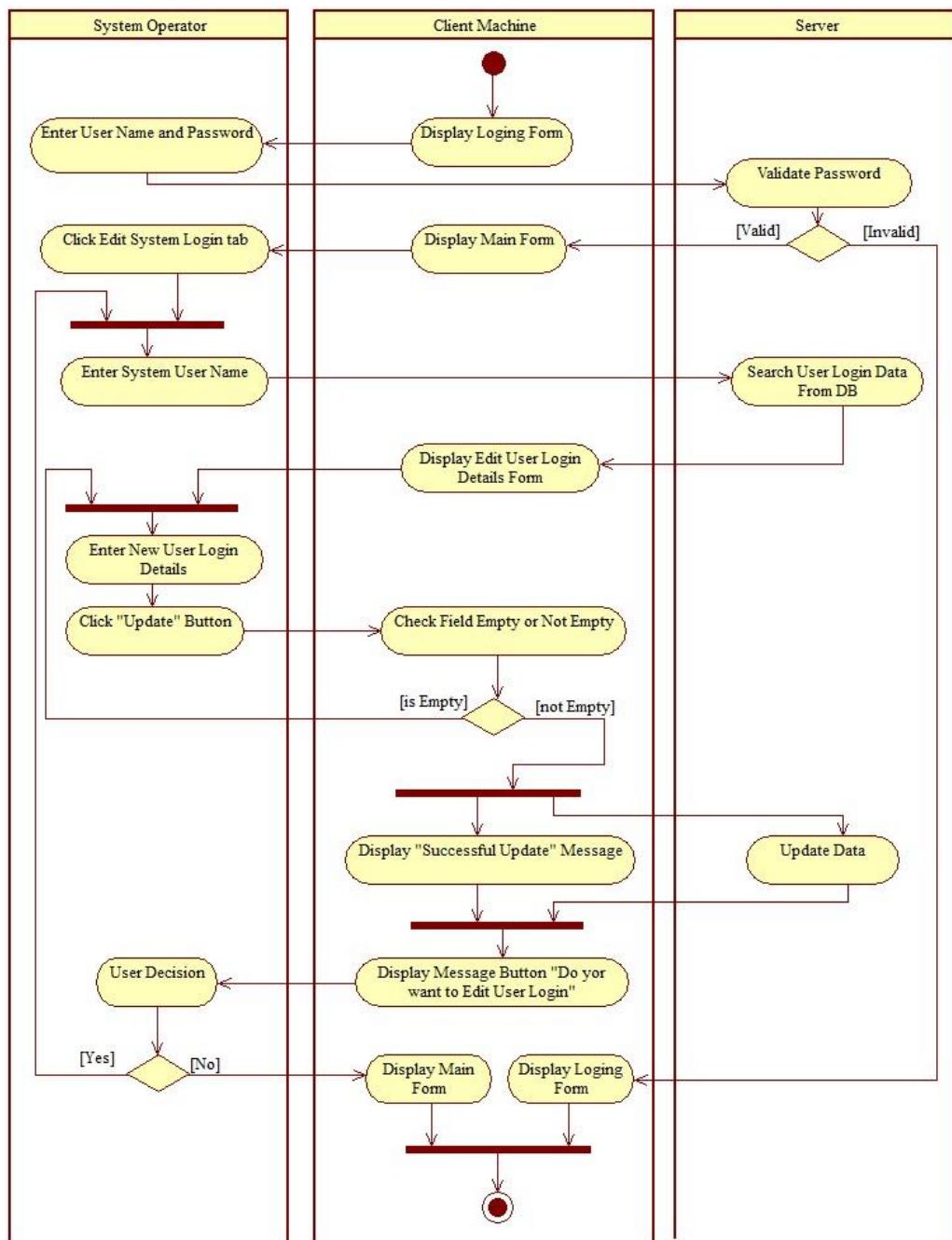


Figure 5.6.2 - Swim lanes for Admin Operation

Appendices F - Swim lanes for Admin Report

Manual Booking Report

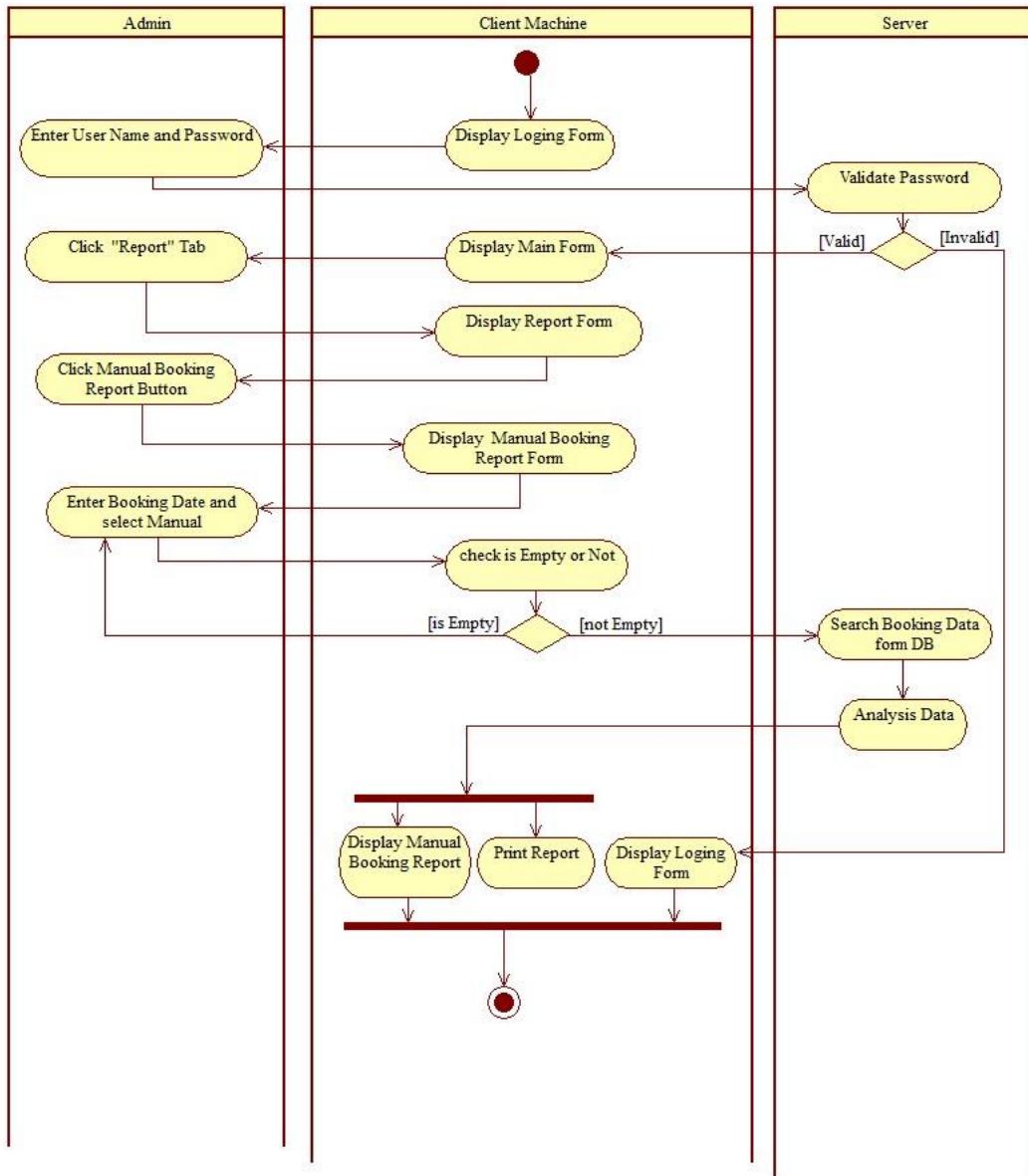


Figure 5.7.1 - Swim lanes for Admin Report

Online Booking Report

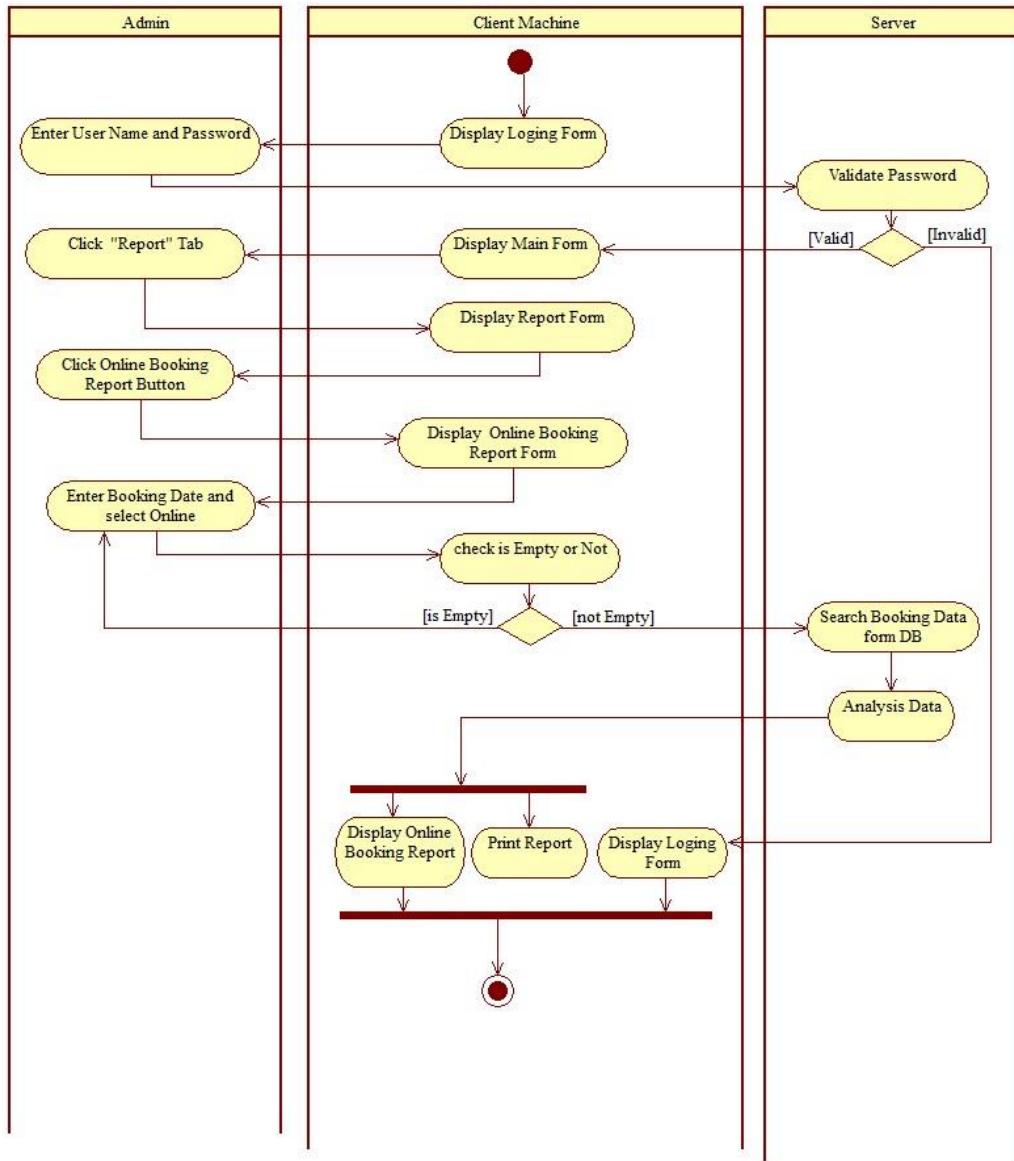


Figure 5.7.2 - Swim lanes for Admin Report

Daly Booking Report

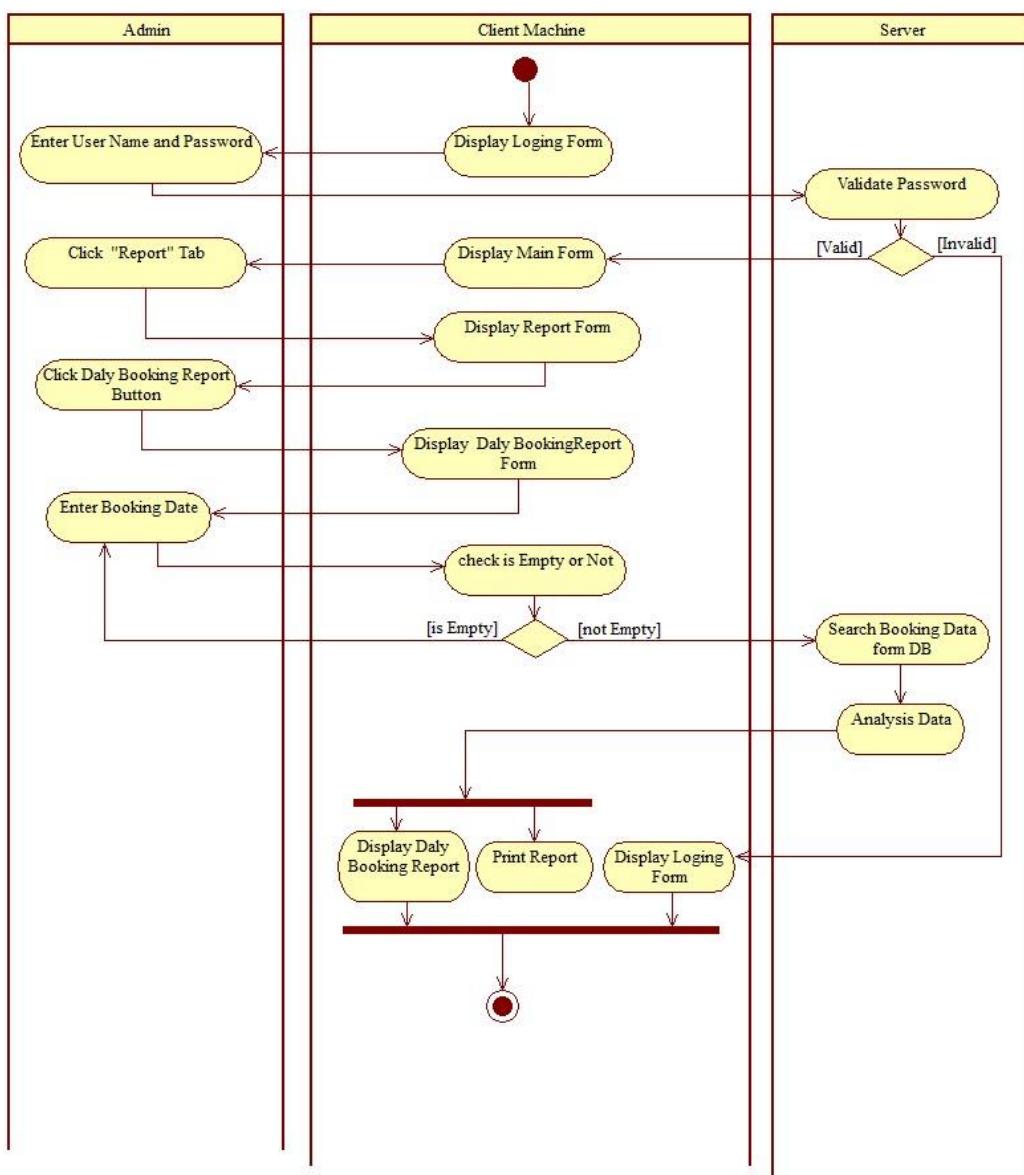


Figure 5.7.3 - Swim lanes for Admin Report

Appendices G- Swim lanes for Booking Bus Seat

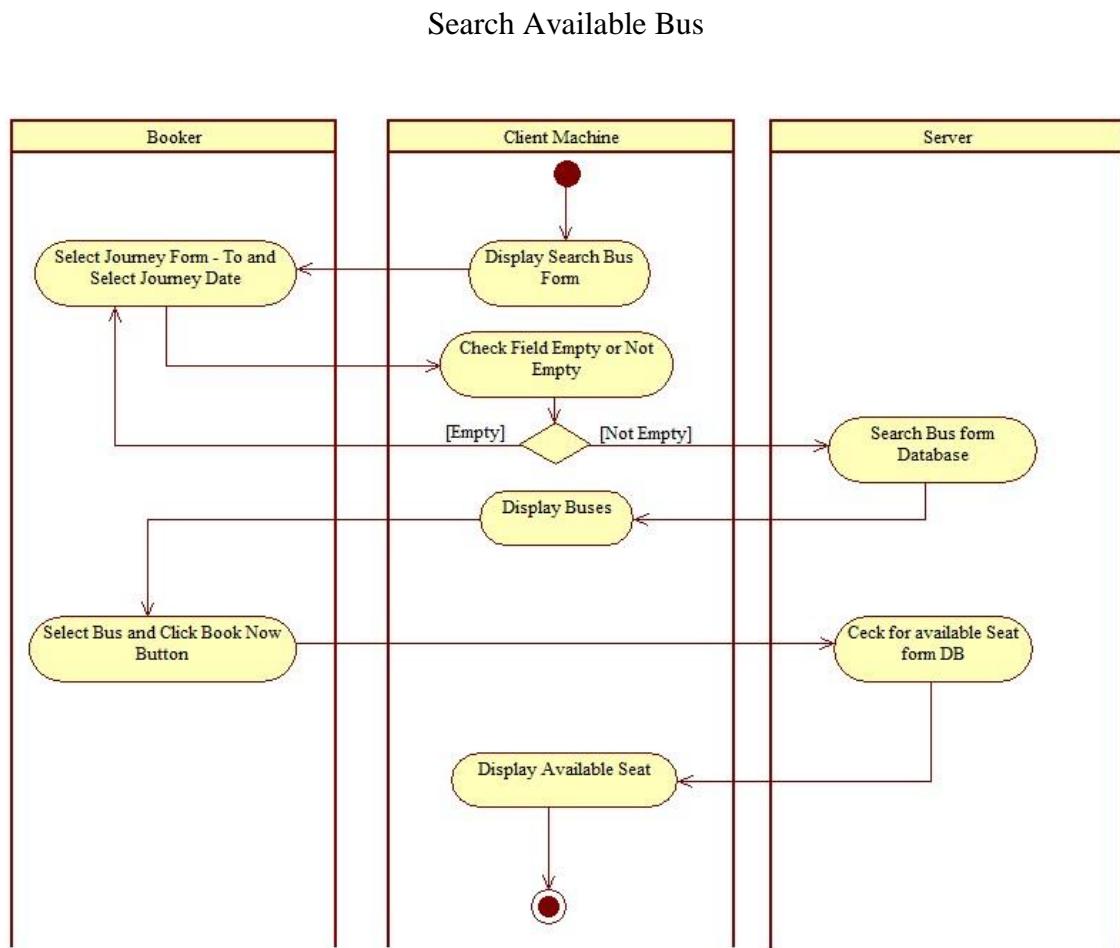


Figure 5.8.1 - Swim lanes for Booking Bus Seat

Booking Bus Seat

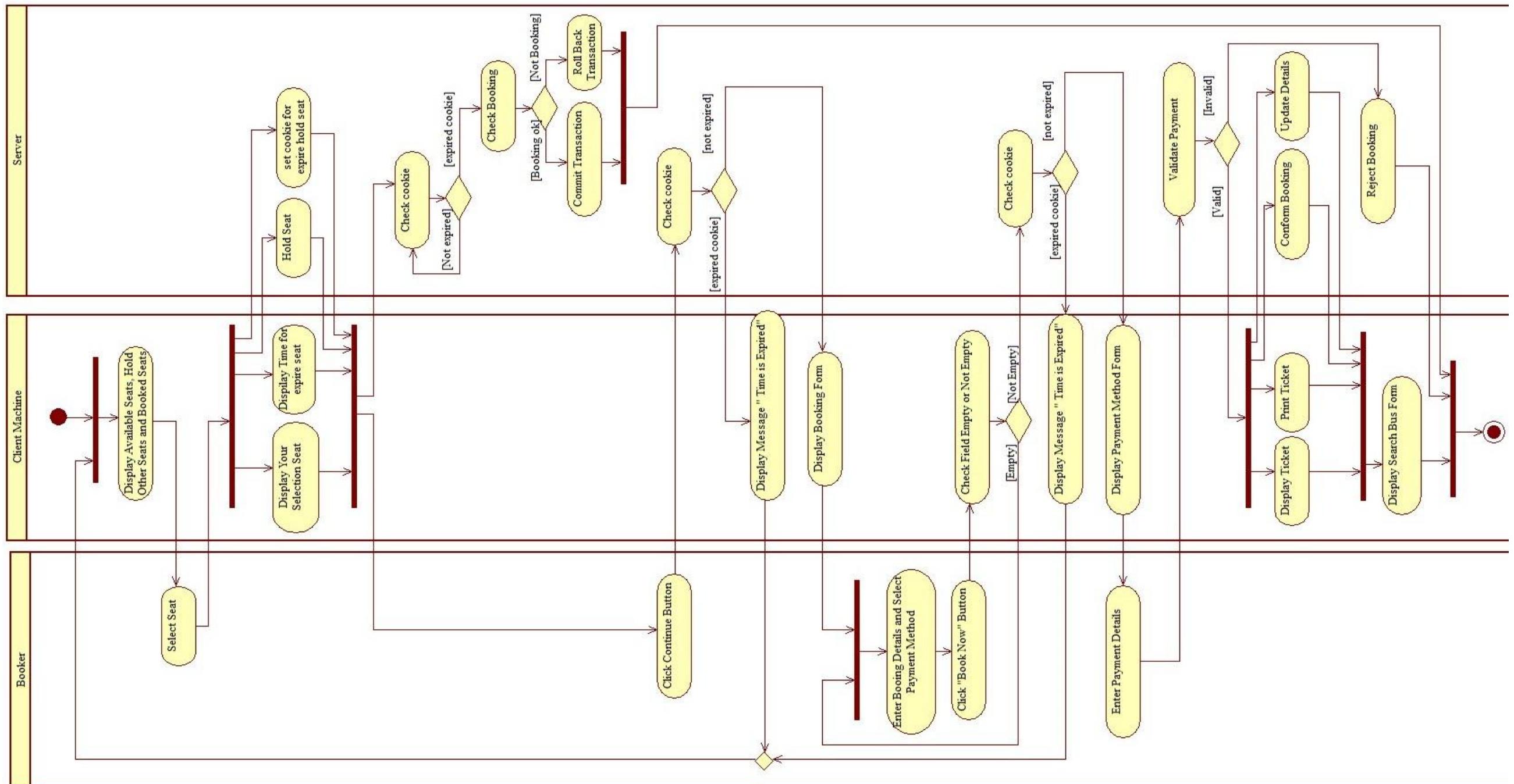


Figure 5.8.2 - Swim lanes for Booking Bus Seat

Appendices H - Swim lanes for Bus Tracking System.

Track Bus Location

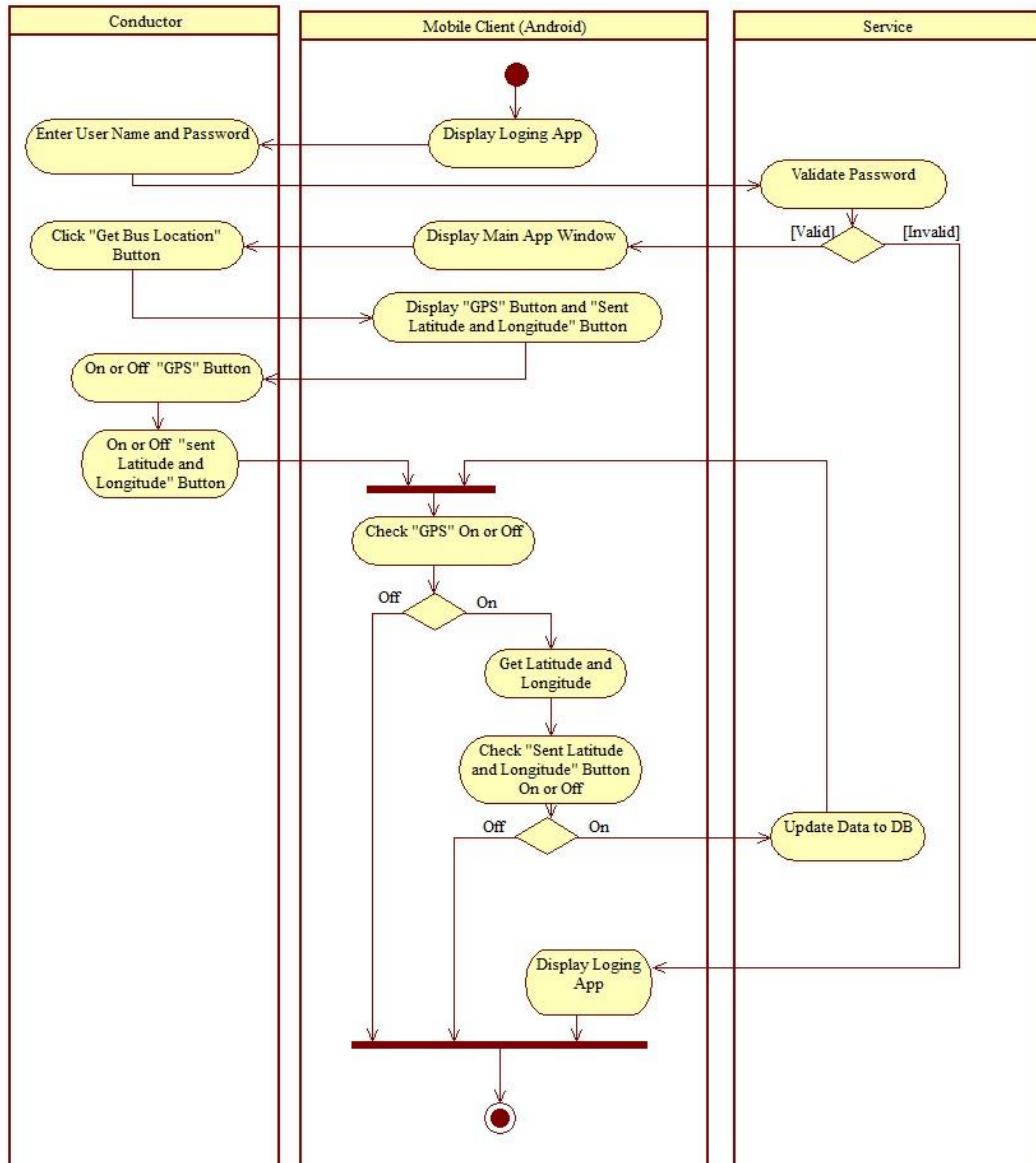


Figure 5.9.1 - Swim lanes for Tracking System.

Show Bus Location on Map

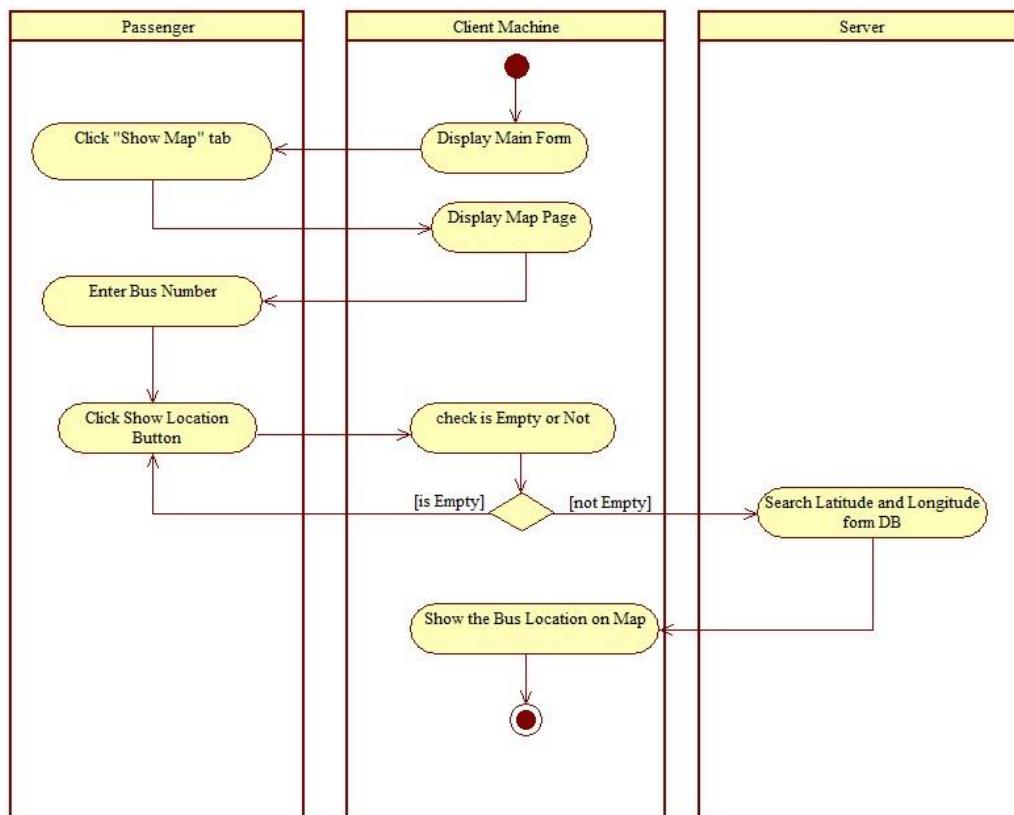


Figure 5.9.2 - Swim lanes for Tracking System

Appendices I- Swim lanes for Conductor Report.

Booker Summary Report

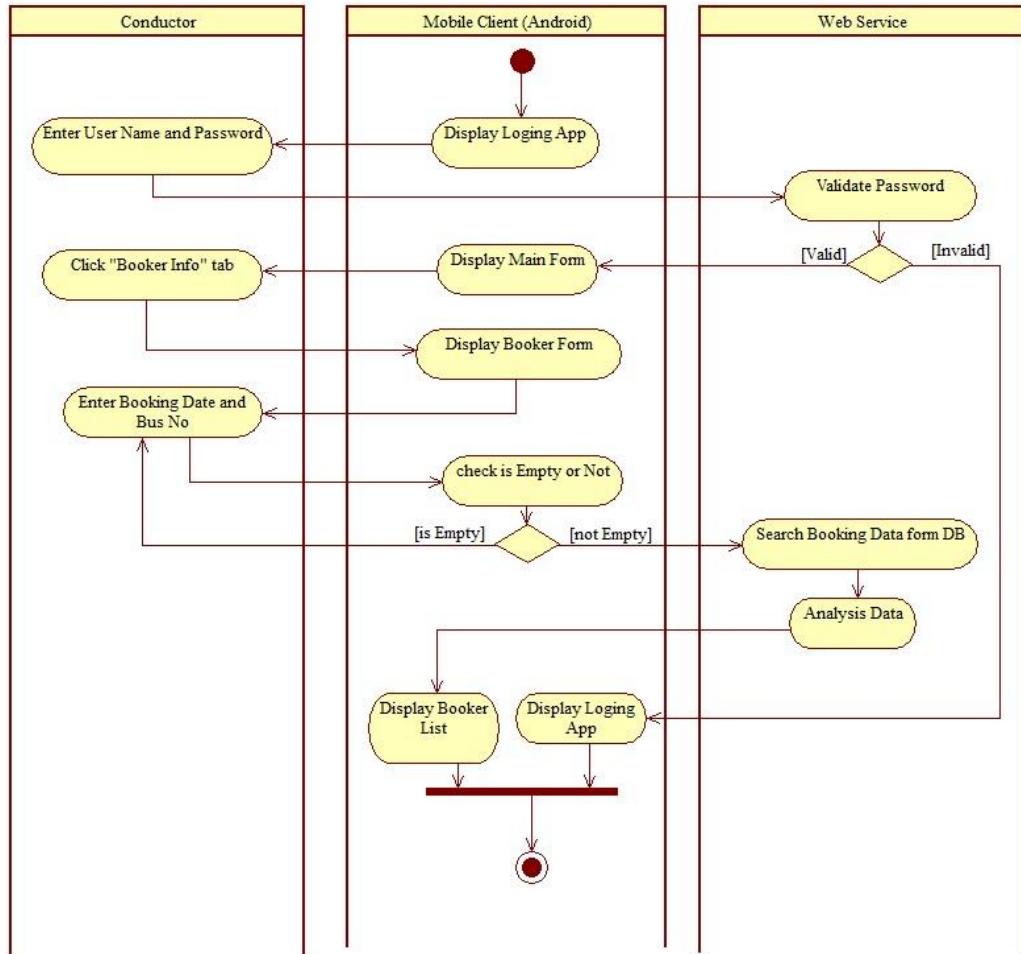


Figure 5.10.1 - Swim lanes for Conductor Level

Appendices J - Screen shot of the Database.

sltb_booking Database

The screenshot shows the phpMyAdmin interface for the 'sltb_booking' database. The left sidebar lists the database structure with 14 tables: assing_bus, assing_coductor, available_seat, booker, booking, bus, conductor, entrypoint_for_journey, entry_point, journey, manual_booking, receive_ticket, seat, and system_user. The main area displays a table of these 14 tables, each with actions for Browse, Structure, Search, Insert, Empty, and Drop. A summary at the bottom indicates 14 tables and a sum of 0. Navigation buttons for Check All / Uncheck All and With selected: are also present.

Table	Action
assing_bus	Browse Structure Search Insert Empty Drop
assing_coductor	Browse Structure Search Insert Empty Drop
available_seat	Browse Structure Search Insert Empty Drop
booker	Browse Structure Search Insert Empty Drop
booking	Browse Structure Search Insert Empty Drop
bus	Browse Structure Search Insert Empty Drop
conductor	Browse Structure Search Insert Empty Drop
entrypoint_for_journey	Browse Structure Search Insert Empty Drop
entry_point	Browse Structure Search Insert Empty Drop
journey	Browse Structure Search Insert Empty Drop
manual_booking	Browse Structure Search Insert Empty Drop
receive_ticket	Browse Structure Search Insert Empty Drop
seat	Browse Structure Search Insert Empty Drop
system_user	Browse Structure Search Insert Empty Drop
14 tables	Sum

Figure 6.5.1 - Screen shot of the Database.

Data Dictionary

2/25/2014 127.0.0.1 / localhost / sltb_booking | phpMyAdmin 3.4.9

localhost ► sltb_booking

assing_bus

Table comments: This Transaction Table is store who is assing Route for Bus

Column	Type	Null	Default	Comments
assingRoute	int(11)	No		this is primary key
userName	varchar(10)	No		System User Name
journeyNo	int(3)	No		Bus Route Number
date	date	No		Route assing Date

assing_cuductor

Table comments: This Transaction Table is store who is assing conductor for Bus

Column	Type	Null	Default	Comments
assingConductorNo	int(11)	No		this is primary key
userName	varchar(10)	No		System User Name
conductorNo	varchar(10)	No		Conductor Number
date	date	No		Conductor assing Date

available_seat

Table comments: This Transaction Table is current Stauts a Bus Seat

Column	Type	Null	Default	Comments
availableSeatNo	int(11)	No		this is primary key
seatNo	int(2)	No		Bus Seat Number
busNo	varchar(10)	No		SLTB Bus Number
status	varchar(2)	No		Seat Status
date	date	No		Status Date

booker

Table comments: This Master Table is store Bus Booker Data

Column	Type	Null	Default	Comments
bookerNICNo	varchar(10)	No		Bus Booker NIC Number
bookerName	varchar(20)	No		Booker Short Name
bookerMNo	varchar(10)	No		Booker Mobile Number

2/25/2014

127.0.0.1 / localhost / sltb_booking | phpMyAdmin 3.4.9

booking

Table comments: This Transaction Table is store booking data

Column	Type	Null	Default	Comments
bookingNo	int(11)	No		this is primary key
ticketNo	varchar(15)	No		
bookerNICNo	varchar(10)	No		Bus Booker NIC Number
busNo	varchar(10)	No		SLTB Bus Number
passengerName	varchar(20)	No		Passenger Name
seatNo	int(2)	No		Bus Seat Number
date	date	No		Booking Date
gender	varchar(1)	No		Passenger Gender

bus

Table comments: This Master Table is store Bus Data

Column	Type	Null	Default	Comments
busNo	varchar(10)	No		Bus Number
journeyNo	int(3)	No		Bus Route Number
busModel	varchar(15)	No		Bus Model
numberOfSeat	int(2)	No		Number Of Seat
departureTime	varchar(8)	No		Bus Departure Time
arrivalTime	varchar(8)	No		Bus Arrival Time

conductor

Table comments: This Master Table is store Conductor Data

Column	Type	Null	Default	Comments
conductorNo	varchar(10)	No		Conductor Number
conductorName	varchar(20)	No		Conductor Name
conductorMNo	varchar(10)	No		Conductor Mobile Number
busNo	varchar(5)	Yes	NULL	Assing Bus No

entry_point

Table comments: This Master Table is store Entry Point for bus Route

Column	Type	Null	Default	Comments
entryPointNo	int(2)	No		Bus Entry Point No
entryPoint	varchar(15)	No		Bus Entry Point Name

entrypoint_for_journey

Table comments: This Transaction Table is assing Entry Point for Bus Route

Column	Type	Null	Default	Comments
entryPoint for journey	int(3)	No		this is primary key
journeyNo	int(3)	No		Bus Route Number
entryPointNo	int(2)	No		Bus Entry Point Number

journey

Table comments: This Master Table is store Bus Route Data

Column	Type	Null	Default	Comments
journeyNo	int(3)	No		
routeNo	varchar(5)	No		Bus Route Number
journeyFrom	varchar(10)	No		Bus Route Start Point
journeyTo	varchar(10)	No		Bus Route End Point
price	float	No		Bus Ticket Price

manual_booking

Table comments: This Transaction Table is store who is manual booking Booker

Column	Type	Null	Default	Comments
manualBookingNo	int(11)	No		this is primary key
userName	varchar(10)	No		System User Name
bookerNICNo	varchar(10)	No		Booker NIC Number
date	date	No		ManualBooking Date

receive_ticket

Table comments: This Transaction Table is store Bus Ticket data

Column	Type	Null	Default	Comments
ticketNo	varchar(15)	No		Bus Ticket Number
bookerNICNo	varchar(10)	No		Bus Booker NIC Number
busNo	varchar(10)	No		Bus Number
ammount	float	No		Total Amount of Bus ticket
date	date	No		Ticket receive Date

seat

Table comments: This Master Table is store Bus Seat Number

Column	Type	Null	Default	Comments
seatNo	int(2)	No		Bus Seat Number

system_user

Table comments: This Master Table is store System User Data and Login Data

Column	Type	Null	Default	Comments
userName	varchar(10)	No		User Name for login to System
employeeNo	varchar(8)	No		Employee Number of System User
employeeName	varchar(20)	No		Employee Name of System User
employeeMNo	varchar(10)	No		Employee Mobile Number of System User
password	varchar(250)	Yes	NULL	Password for login to system
privilege	varchar(2)	Yes	NULL	Privilege for access to System

Appendices K - Flowcharts for System Operation.

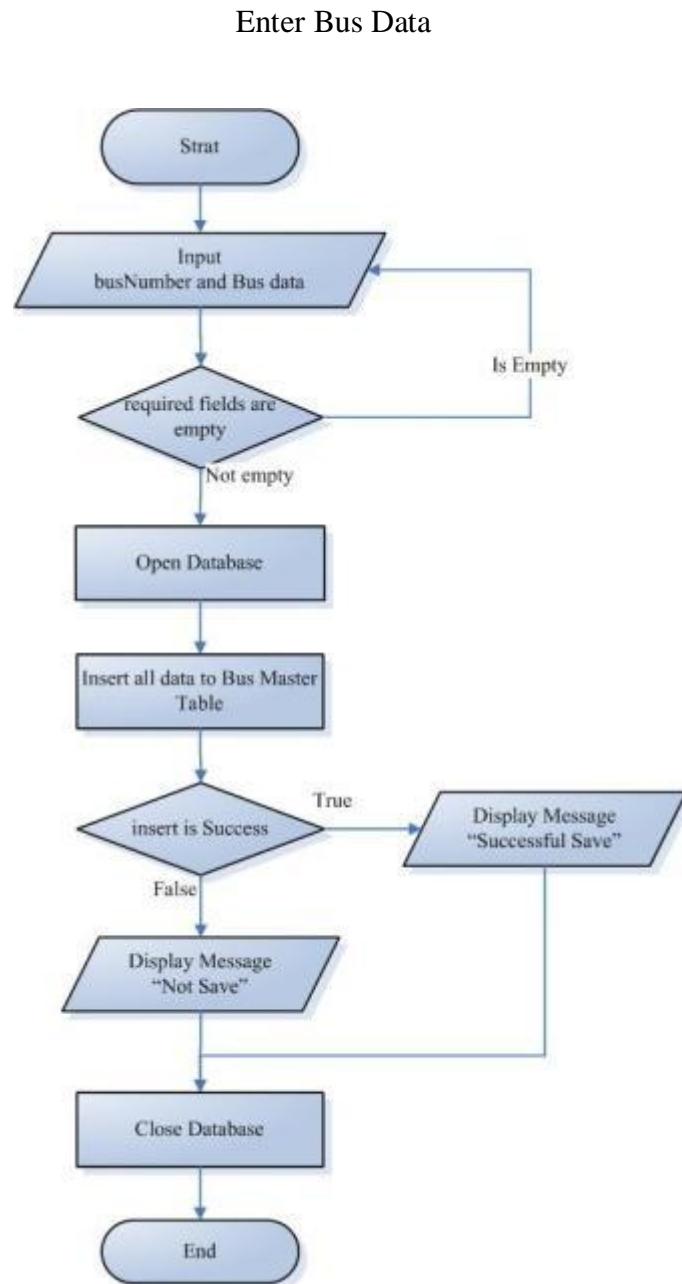


Figure 6.6.1 - Flowcharts for System Operation.

Enter New Entry Point

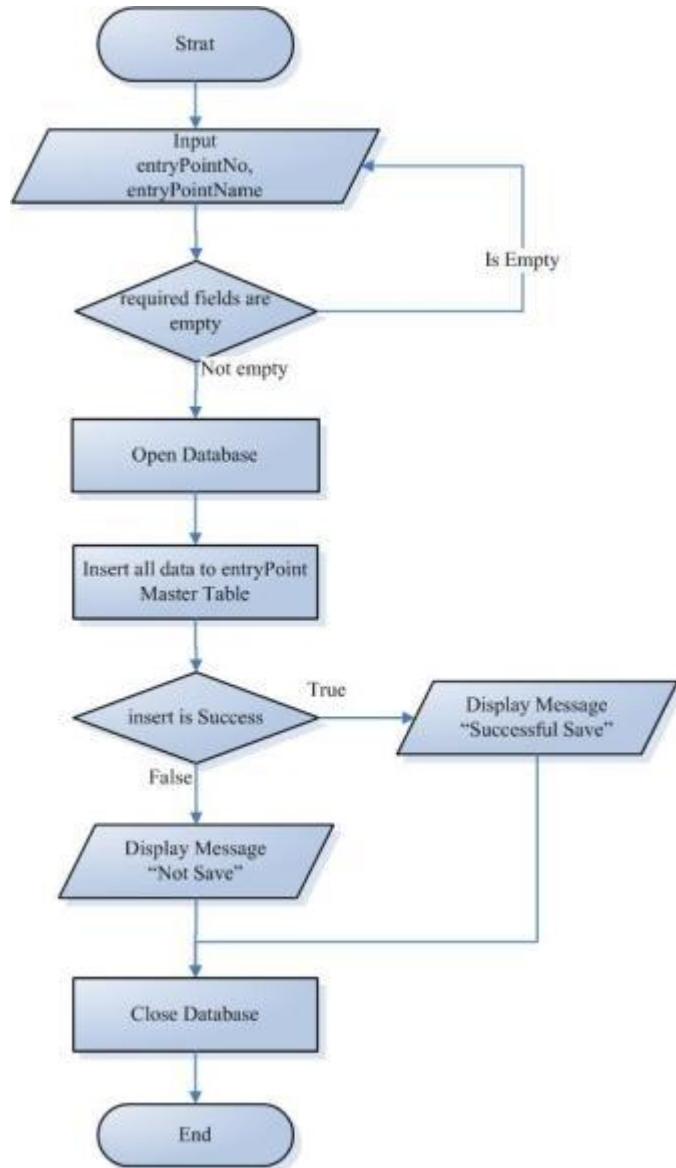


Figure 6.6.2 - Flowcharts for System Operation.

Add new Route Details

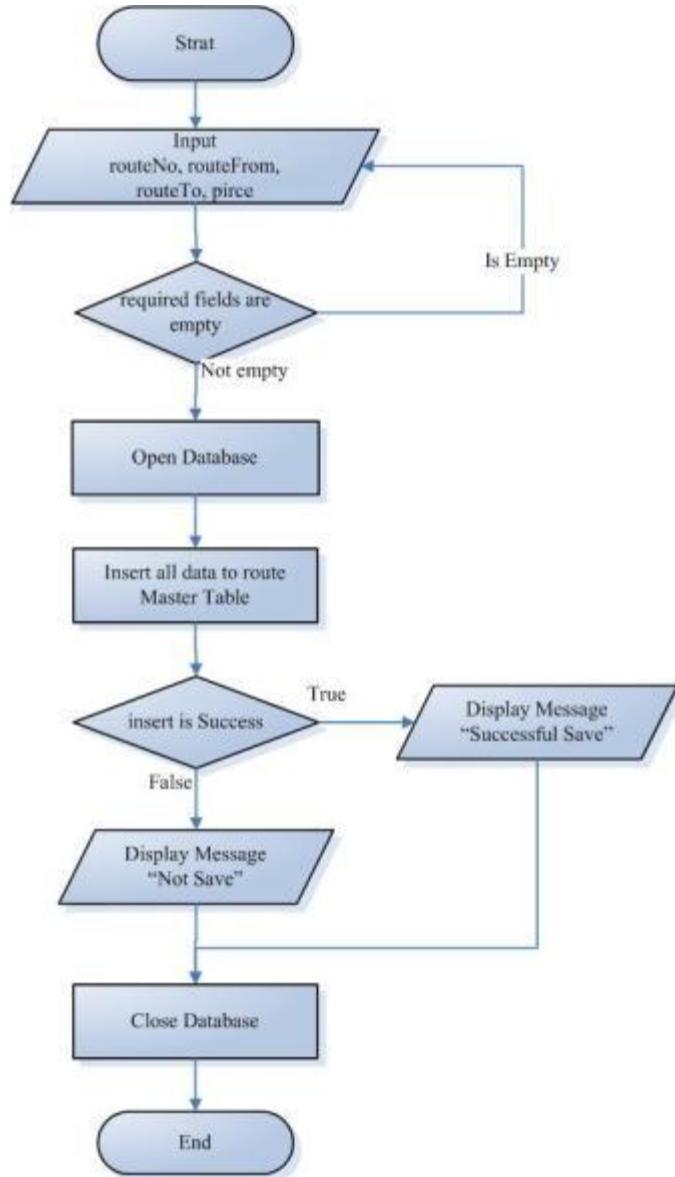


Figure 6.6.3 - Flowcharts for System Operation.

Add New Conductor

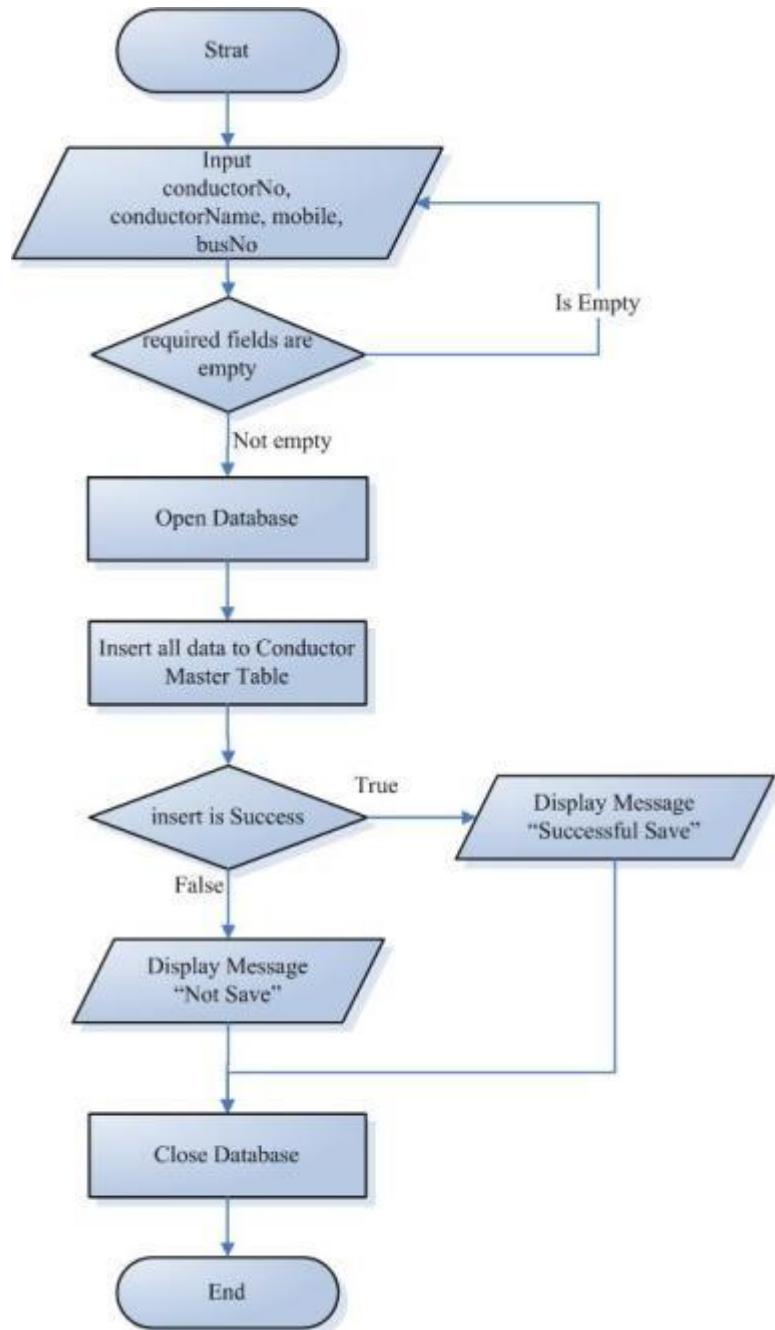


Figure 6.6.4 - Flowcharts for System Operation.

Edit Bus Data

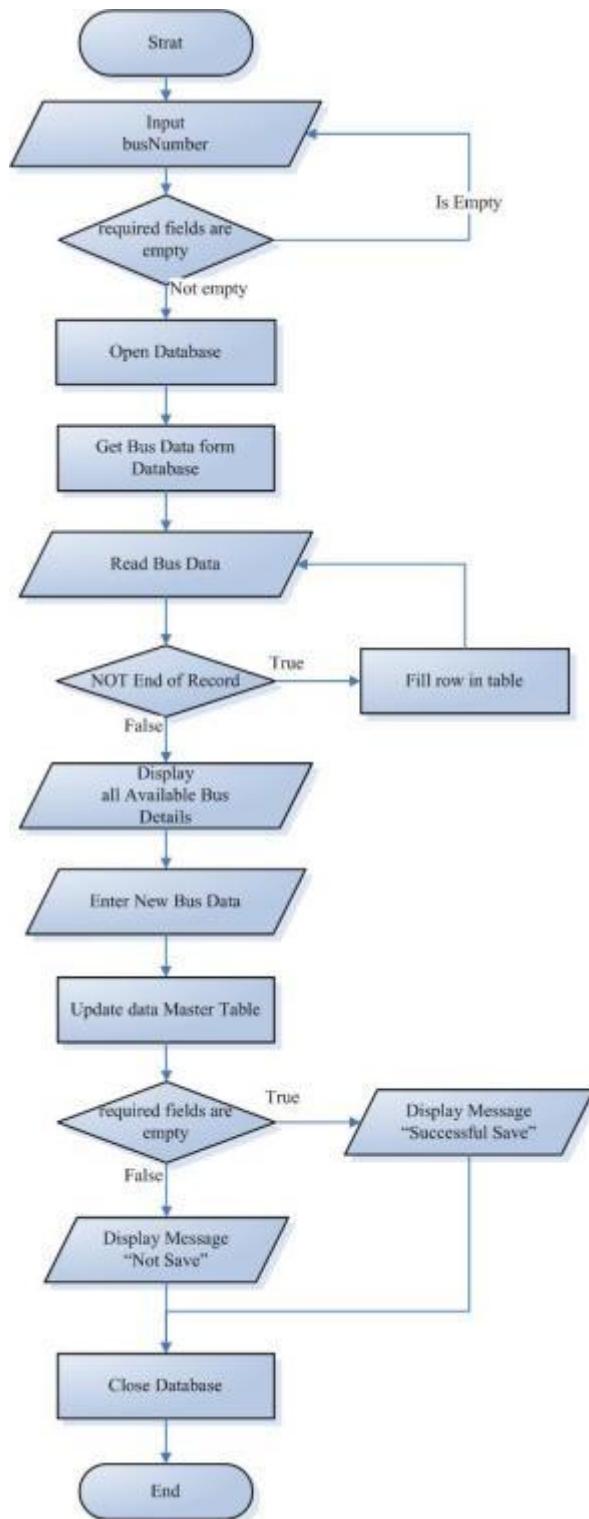


Figure 6.6.5 - Flowcharts for System Operation.

Edit Route Data

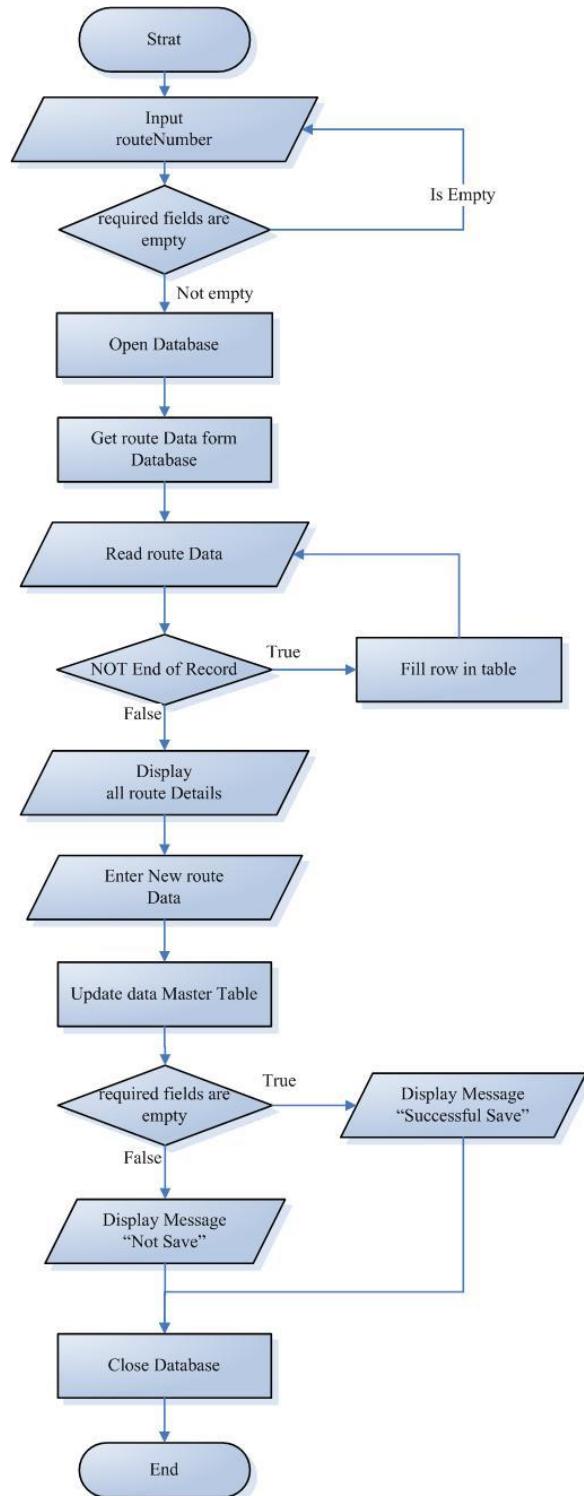


Figure 6.6.6 - Flowcharts for System Operation.

Edit Entry Point

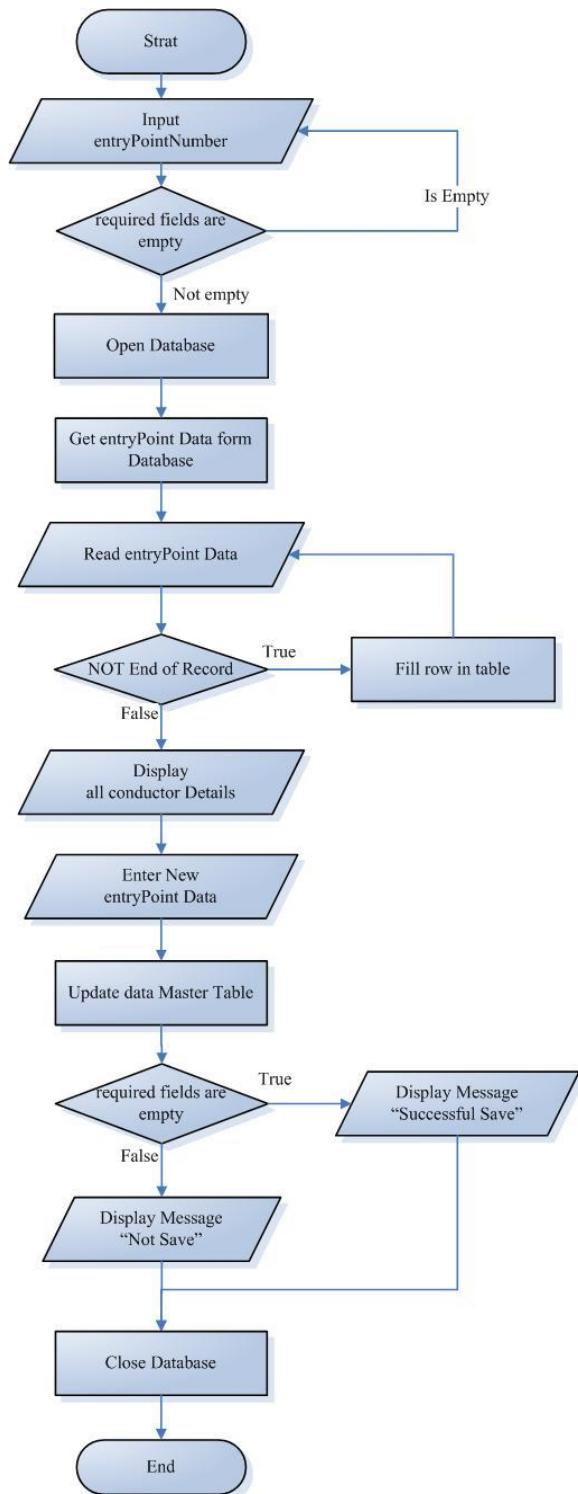


Figure 6.6.7 - Flowcharts for System Operation.

Edit System User

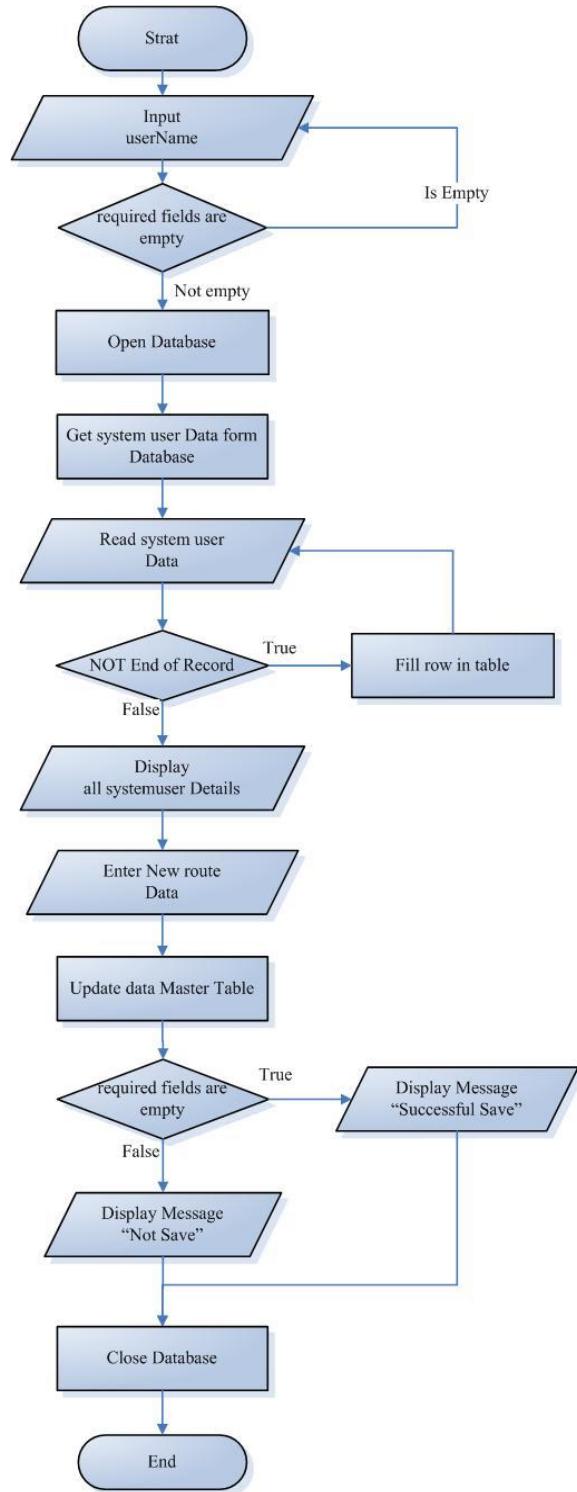


Figure 6.6.8 - Flowcharts for System Operation.

Appendices L - Flowcharts for Administration.

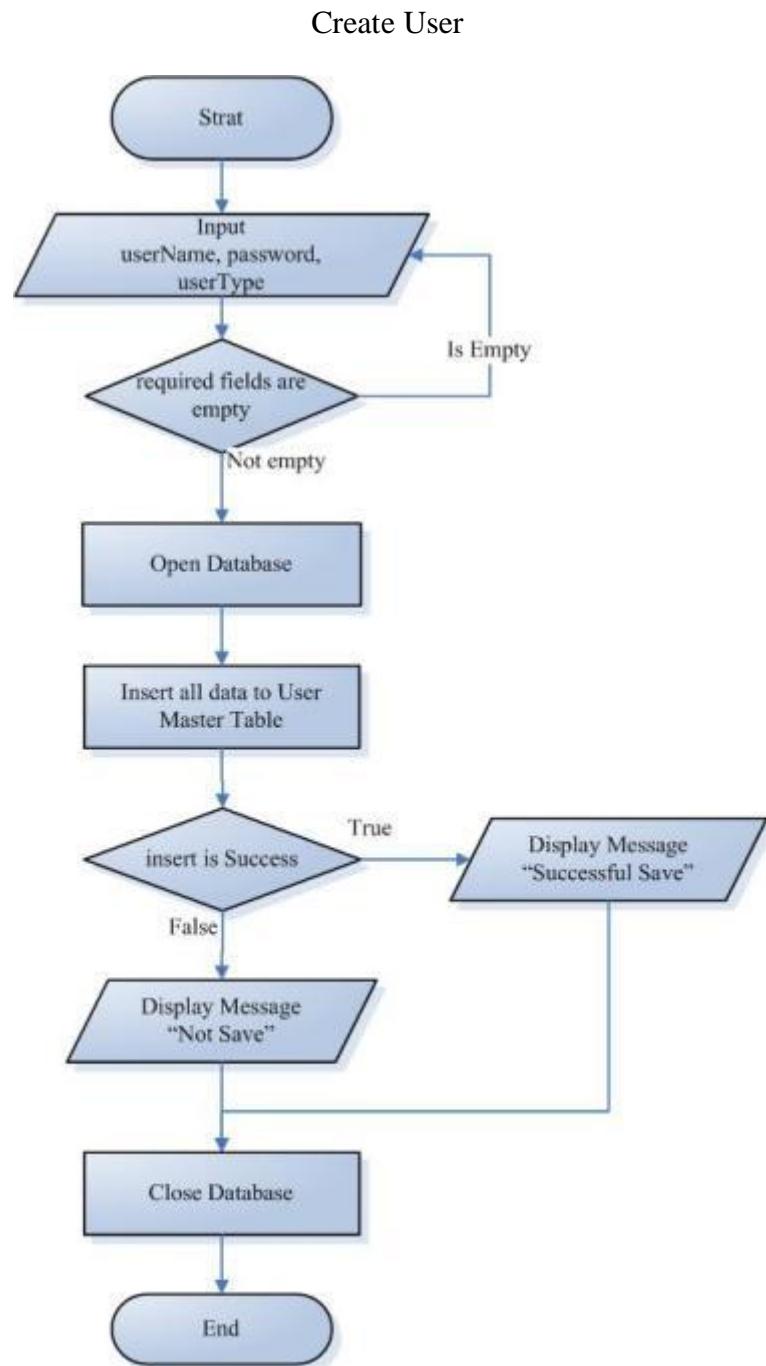


Figure 6.7.1 - Flowcharts for Administration.

View Report

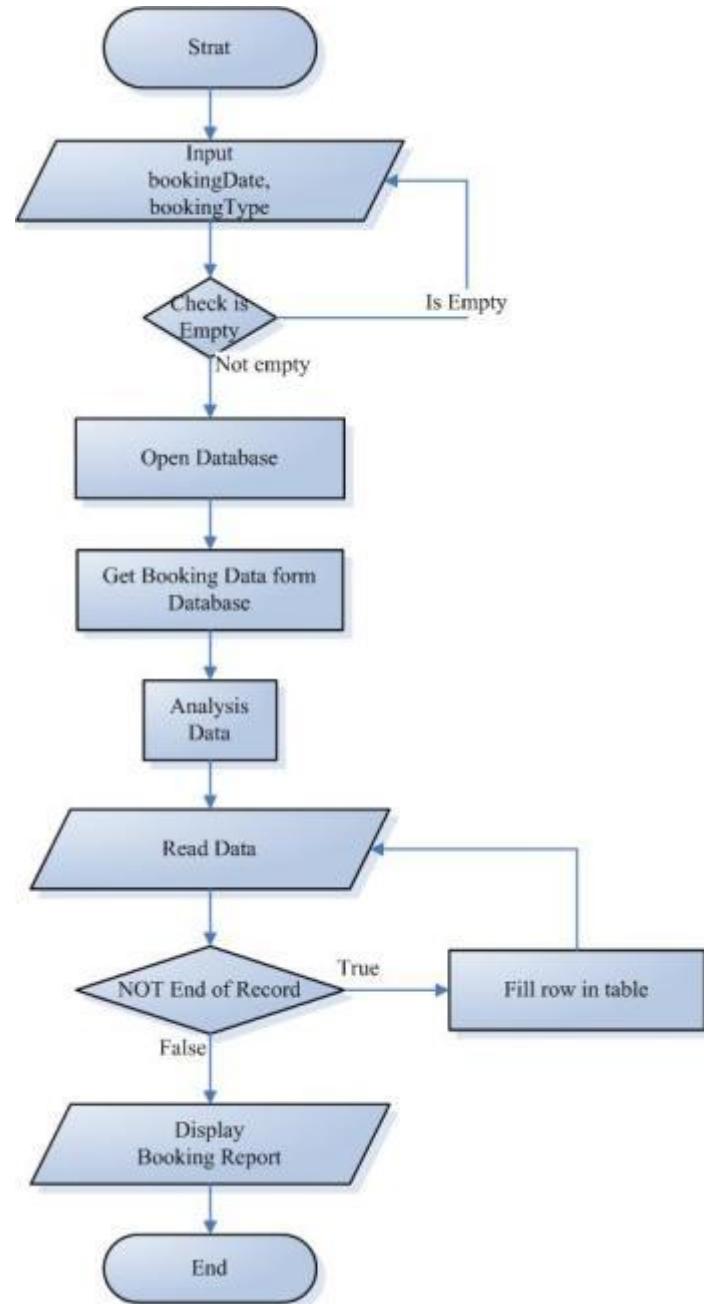


Figure 6.7.2 - Flowcharts for Administration.

Appendices M- Flowcharts for Booking.

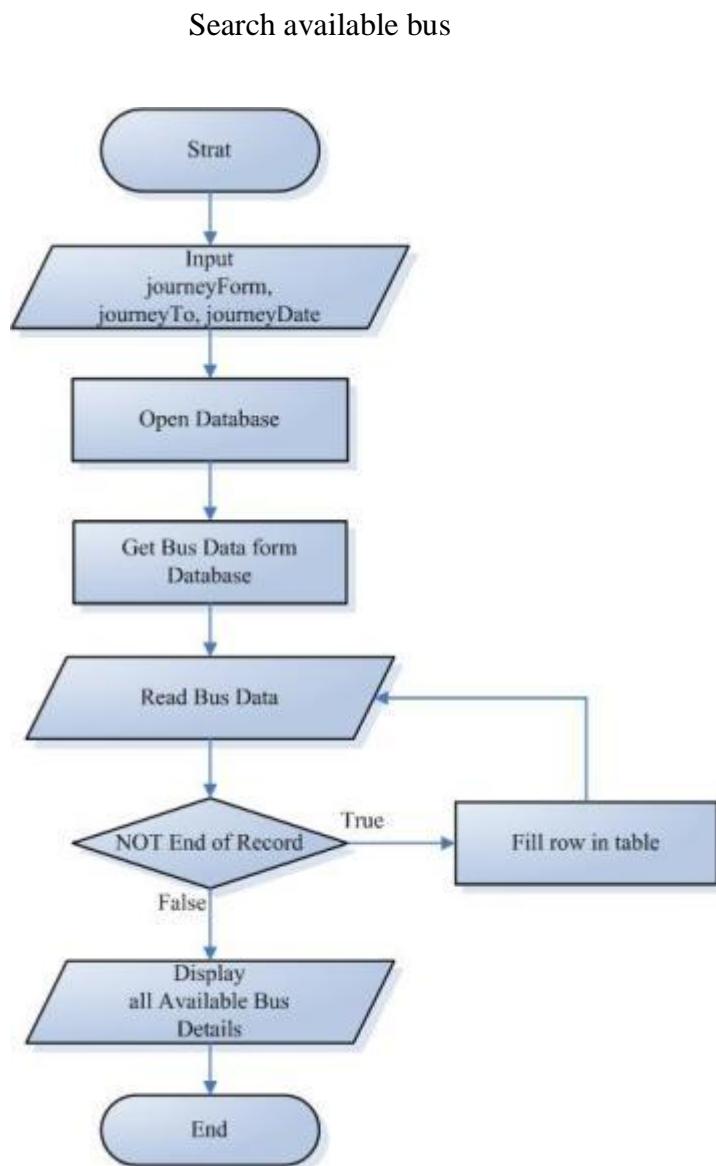


Figure 6.8.1 - Flowcharts for Booking.

Appendices N – Flowcharts for Tracking.

Track Bus Location

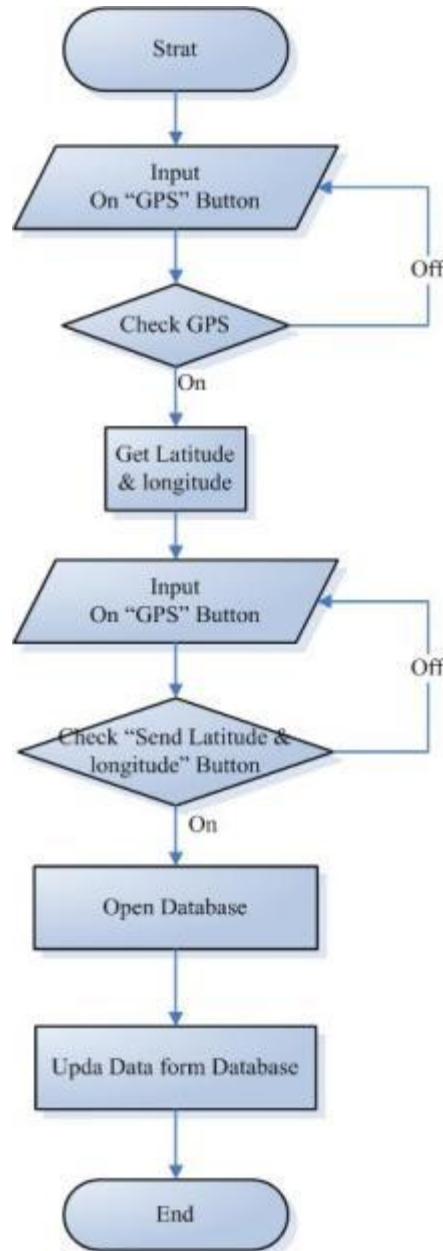


Figure 6.9.1 - Flowcharts for Tracking

Show Bus Location on Map.

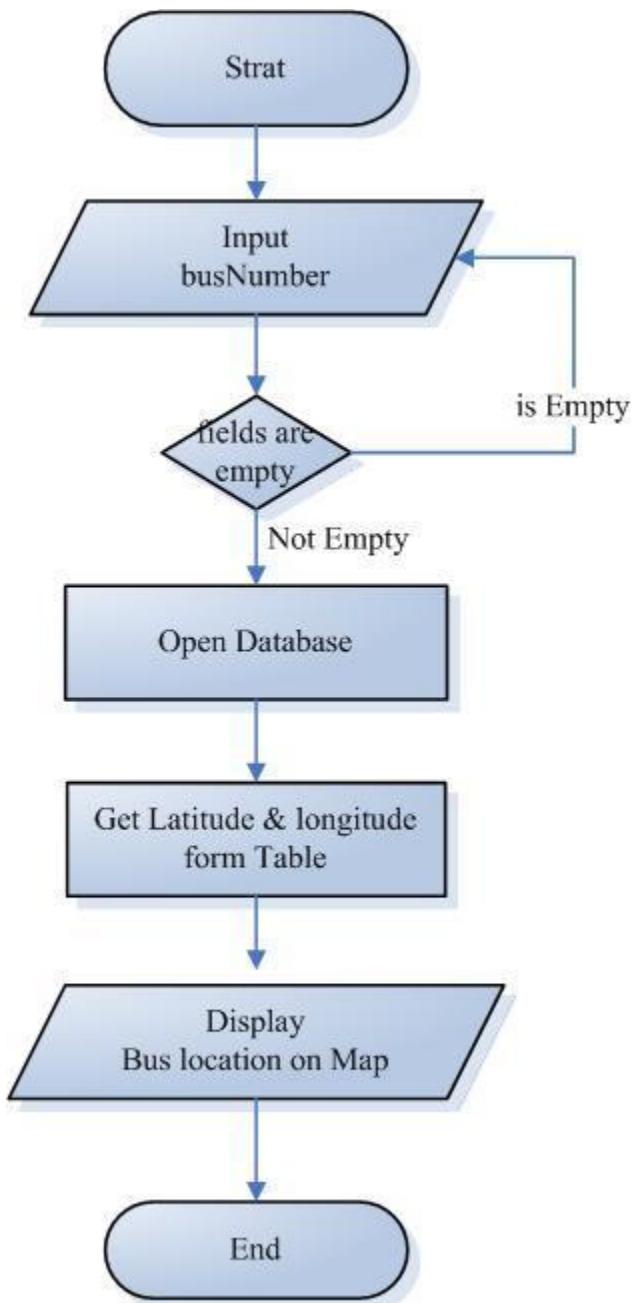
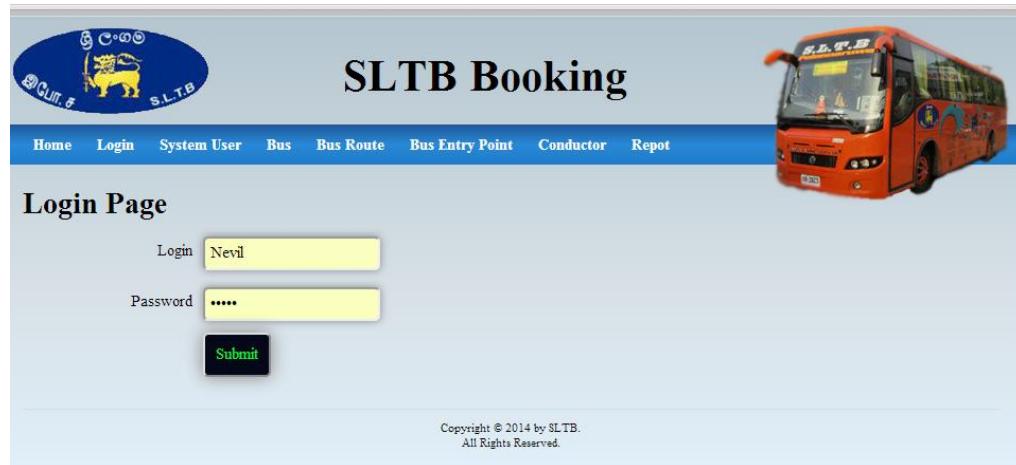


Figure 6.9.2 - Flowcharts for Tracking

Appendices O- User Interface for System Operation.

Login Page



The screenshot shows the SLTB Booking login page. At the top left is the Sri Lanka Transport Board logo. To its right is the text "SLTB Booking". On the far right is a photograph of an orange SLTB bus. Below the logo is a horizontal menu bar with links: Home, Login, System User, Bus, Bus Route, Bus Entry Point, Conductor, and Report. The main area is titled "Login Page". It contains three input fields: "Login" with the value "Nevil", "Password" with the value ".....", and a "Submit" button. At the bottom of the page, a copyright notice reads "Copyright © 2014 by SLTB. All Rights Reserved."

Figure 6.10.1 - User Interface for System Operation

Add Bus Page



The screenshot shows the SLTB Booking add bus page. At the top left is the Sri Lanka Transport Board logo. To its right is the text "SLTB Booking". On the far right is a photograph of an orange SLTB bus. Below the logo is a horizontal menu bar with links: Home, Login, System User, Bus, Bus Route, Bus Entry Point, Conductor, and Report. To the right of the menu are three icons: a blue square with a white grid, a green circle with a white plus sign, and a yellow square with a red pencil. The main area is titled "Add New Bus". It contains several input fields: "Bus No", "Journey No" (with a dropdown arrow), "Bus Model", "Number Of Seat", "Departure Time", and "Arrival Time". At the bottom is a "Add Data" button. In the bottom right corner, there is a key icon and the text "Activate W Go to PC settin".

Figure 6.10.2 - User Interface for System Operation

View Bus Page

The screenshot shows the 'SLTB Booking' application interface. At the top, there is a logo of Sri Lanka with the text 'S.L.T.B.' and a blue navigation bar with links: Home, Login, System User, Bus, Bus Route, Bus Entry Point, Conductor, and Report. To the right of the navigation bar is a large image of an orange bus. Below the navigation bar, the title 'All Buss' is displayed. Underneath the title is a table showing two entries:

Bus No	Journey No	Bus Model	Number Of Seat	Departure Time	Arrival Time	Action
SD 3463	1	tata	46	2:20 PM	1:05 PM	
WE 4567	2	asok	45	2:20 PM	1:05 PM	

Below the table, it says 'Showing 1 to 2 of 2 entries'. At the bottom right, there are links: First, Previous, 1, Next, Last. At the very bottom, it says 'Copyright © 2014 by SLTB. All Rights Reserved.'

Figure 6.10.3 - User Interface for System Operation

Update Bus

The screenshot shows the 'SLTB Booking' application interface with the title 'Edit Bus'. The top navigation bar and bus image are identical to Figure 6.10.3. The main area contains a form with the following fields:

- Bus No: SD 3463 (with a clear icon)
- Journey No: 1 (with a dropdown arrow)
- Bus Model: tata
- Number Of Seat: 46
- Departure Time: 2:20 PM
- Arrival Time: 1:05 PM

At the bottom left is a 'Save Data' button. On the right side, there is a key icon with the text 'Activate W' and 'Go to PC settings'.

Figure 6.10.4 - User Interface for System Operation

Appendix P - Supervisor Approval

INTERIM REPORT SUBMISSION FORM

Student Name:

Student Registration no.:

Project title:

.....
Student Signature

.....
Date

Comments of supervisor:

.....
.....
.....
.....

Name of supervisor:

.....
Signature of supervisor Date

