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PROJECT
TITLE

ONLINE MYANMAR EXPRESS (YANGON-MANDALAY) RAILWAYS TICKETS SALE MANAGEMENT SYSTEM

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Contents

Abstract.....	9
Acknowledgements.....	10
Chapter – 1.....	1
Introduction.....	1
1.1. Project Title that I select.....	1
1.2. Introduction.....	1
Chapter – 2.....	2
Literature Study	2
2.1. Topics for Investigation.....	2
2.2. Summary and Analysis of Similar online tickets sales management Systems	3
2.3. Summary and Analysis of Related online tickets sales management Systems.....	8
Chapter – 3.....	14
Proposed System.....	14
3.1. Key Phrases of proposed system	14
3.2. Aim of the proposed system	14
3.3. Objectives of the proposed system	14
Chapter – 4.....	17
Field Study	17
4.1. Environment.....	17
4.2. Organization.....	17
4.2.1. Location of Headquarter.....	17
4.2.1. Organizational chart of Myanmar Railway Tickets Selling Session.....	18
4.3. System Investigation.....	19
4.3.1.Reason and choosing of Interview and Comparison with the other methods.....	21
Chapter – 5.....	22
Lifecycle Tool and Approach Method.....	22
5.1. System Development Life Cycle (SDLC).....	22
5.3. Lifecycle	23
5.3.1. Waterfall	23
5.3.2.V model.....	24
5.3.3.DSDM	24
5.3.4.Rational Unify Process	25
5.3.5.RAD	27

5.4.Approach.....	28
5.4.1Prototype	28
5.4.2.MoSCoW	30
5.4.3.Time boxing.....	30
5.4.4.Facilitated workshop.....	31
5.5.5.How to choose MosCow and timebox.....	31
5.5. Method	32
5.5.1.SSM	32
5.5.2.OOADM	32
5.6. UML	34
5.6.1.Use Case Diagram	34
5..6.2.Class and Object.....	34
5.6.3.Sequence Diagram	34
5.6.4.State Diagram	34
5.6.5.Robustness Diagram	34
5.6.6.Packaging Diagram.....	34
5.6.7.Deployment Diagram.....	35
5.7. Developing Languages.....	35
5.7.1. Asp.Net	35
5.7.2. PHP	35
5.7.3. How to choose PHP and Affecting PHP language in my project	35
Chapter – 6.....	36
System Design.....	36
6.1.Use Case Diagram	36
6.1.1. Overall Usecase Diagram of Online Myanmar Express (Yaongon-Mandalay) Railway tickets sale Management System.....	36
.....	36
6.2. Class Diagram.....	37
6.3. Activity Diagram.....	38
6.3.1. Search schedule and book tickets.....	38
.....	38
6.4.Sequence Diagram.....	39
6.4.1. Register Staff.....	39
6.5. State Diagram	40

D.5.1.Register Train.....	40
6.6 Robustness Diagram.....	41
6.6.1. Register	41
6.7.Package Diagram	42
6.7.1. Registration Process in Online Myanmar Railway (Yangon-Mandalay) Express Tickets Sales Management System	42
6.8. Deployment Diagram	43
6.8.1. Deployment diagram	43
Chapter – 7	44
Database Chapter	44
7.1.Why am I choose MySQL among the other database	44
7.2.Data Collection and Data Analysis in project	46
Chapter – 8.....	63
Human Computer Interface	63
8.1.Type of the interface	64
Using Menu-driven interface and form-filling interface in this project.....	64
Chapter – 9.....	67
Testing	67
9.1. Software testing	67
9.2. Testing Method	67
9.3. Testing Level	68
9.3.1.Unit testing.....	68
9.3.2.System testing.....	68
9.3.3.Acceptance testing.....	68
9.4. Testing Artifacts	69
9.5.Test Plan for Online Myanmar (Yangon-Mandalay) Express tickets Sales Management System	69
Chapter – 10	71
Implementation	71
10.1. Implementation	71
10.1.1.Planning and Preparing of the project.....	71
10.1.2.Setting Up and customized process.....	72
10.1.3.Education and Training	73
10.1.4.Site Preparation	75
10.1.5.Manage release.....	75

10.2. Reasons for choosing Parallel Running.....	75
Chapter – 11	76
Critical evaluation and Conclusion	76
11.1. Critical evaluation	76
11.2. Conclusion.....	79
References	81
Appendix – A.....	1
Project Schedule and Development Plan	1
Appendix – B.....	4
Proposed System.....	4
A.1.Required Resources.....	4
A.2. Functional requirement and Non-Function.....	4
A2.1. Funcitiional Scope.....	4
A.2.2.Nonfunctional requirement.....	5
A.2. Overall Functional Scope of the Proposed System	6
A.3.Detail scope for the proposed system.....	6
A.4.Output Layout	7
Appendix – C.....	9
Field Study	9
C-1. Functions of Myanmar Railway Tickets Selling (Yangon => Mandalay)	9
C.2.Expanding the market	9
C.3.Products	10
C.4.What they like to better	10
C.5.New System Scope	10
C.5.1. Defining this project scope among the above facts	10
C.6. Interview Record.....	12
C.6.1.Interview for my Online Myanmar Express (Yangon-Mandalay) Railway Tickets Sale System	12
4.4.2.Finding summary in the text	14
Appendix - D	15
System Design.....	15
D-1 Use Case	15
D.1.1 Registration	15
D.1.1. Usecase Description for registration	16

D.1.2 Log in.....	17
D.1.2 Use Case Description for Log in	18
D.1.3 Register Train.....	19
D.1.3 Use Case Description for Register Train	20
D.1.4 Register Carriage	21
D.1.4 UseCase Description for Register Carriage.....	22
D.1.5.Register Route	23
D.1.5. Usecase Description for Register Route	24
D.1.6.Register Station	25
D.1.6.Use Case Description for Register Station.....	26
D.1.7. Register Route Price	27
D.1.7.Use Case Description for Register Route price.....	28
D.1.8.Draw schedule	29
D.1.8.Usecase Description for Draw schedules	30
D.1.9.Search schedule and book tickets	31
D.1.9.UseCase Description for search schedule and book tickets.....	32
D.1.10.Process Payment	34
D.1.10.UseCase Description for Process Payment.....	35
D.1.11.View Paid Tickets.....	36
.....	36
D.1.11.UseCase Description for View Paid Tickets	37
D.1.12.Close selling point of current station	38
.....	38
D.1.12.UseCase Description for Close selling point of current station.....	39
D.1.13.View Reports	40
D.1.13.UseCase Description for View Reports.....	41
D-2Class Diagram.....	43
D-3.Activity Diagram	44
D.3.1. Search Schedule and Book Tickets.....	44
D-4 Sequence Diagram.....	45
D.4.1. Log in.....	45
D.4.2. Register Train.....	45
D.4.3. Register Carriage	46
D.4.4. Register Route	46

D.4.5. Register Station	47
D.4.6. Register route price	48
D.4.7. Draw schedule	49
D.4.8. search schedule and book tickets.....	50
.....	50
D.4.9. Process Payment	51
D.4.10. View Paid Tickets	52
D.4.11. Close the selling point of current station	52
D.4.12. View reports	53
D-5 State Diagram	55
D.5.1.Register Carriage	55
D.5.2.Register Route	56
D.5.3.Register Station	57
D.5.4.Register route price	57
D.5.5.Draw schedule	58
D.5.6.Process Payment	60
D-6 Robustness Diagram.....	61
D.6.1.Log in	61
D.6.2.Register Train.....	62
D.6.3.Register Carriage	63
D.6.4.Register route	64
D.6.5.Register route price	65
D.6.6.Draw Schedule.....	66
D.6.7.Search schedule and Book tickets	67
D.6.8.Process Payment	68
D.6.9. View Paid Ticket.....	68
D.6.10.Close the selling point of current station	69
D.6.11.View Reports	69
D.7.Pakaging Diagram	70
D.7.1. Search schedule and Book tickets in Online Myanmar Railway (Yangon-Mandalay) Express Tickets Sales Management System.....	70
D.7.2.View tickets in Online Myanmar Railway (Yangon-Mandalay) Express Tickets Sales Management System	71
E. Human Computer Interface	72

E.1. Site Map for online Myanmar expresses (yangon-madalay) railway ticket sale management system	72
Appendix – F	73
Testing	73
F.1.Test Case for Online Myanmar (Yangon-Mandalay) Express tickets Sales Management System.....	73
F.2.Test Log of online Myanmar (Yangon-Mandalay) Express Tickets Sale System	86
Appendix-L	87
User Manuals	87
Admin Site.....	87
As for staff.....	120
As for Customers,.....	124
Bibliography	131

Abstract

This project is "Online Myanmar Railway (Yangon-Mandalay) Express Tickets Sale Management System" and it is submitted on "25 November 2015".The main purpose of this project is to know following procedures and processes.

- Customer Relationship Management (Register, Log in, search tickets, book tickets, process payment and view tickets)
- Supplier Relationship Management (Register, Log in, Management Information System, View Reports)

To implement this project successfully, similar or related projects (on the website) from all over the world. The nature and usage of lifecycle, method, tools and database are studied to apply in this project.

As for technology, PHP is used in this project so that the key word and the facilities of PHP are searched and studied by surfing internet.

To be compatible with this project and users' requirements, investigation and field study are made with the related users. The aim and objectives are presented in this project. After developing this project, security, testing and implementation way are presented.

Finally, the critical evolution is presented to criticize over the whole project as student assumption. Concerning it, conclusion is finished with this project. In conclusion, future developments are presented briefly.

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Finally, I would like to thanks my friends because they criticize on my project and give suggestions.

Chapter – 1

Introduction

1.1. Project Title that I select

Online Myanmar Express (Yangon-Mandalay) Railway Ticket Sales Management System

1.2. Introduction

Railway Transport system in Myanmar is introduced in May 1877 by British colony. In this year, there is only one transportation railway line in Yangon. It is concerned with the Lower Myanmar. It is transported from Yangon to Pyay crossing by Irrawaddy valley state. Its length is 262 kilometers or 163 miles.

But now it becomes more popular and Myanmar government extends to 5,403-kilometre (3,357 mi) and has become more 10 transport main line and several sub transport station lines. Now Myanmar Railway transportation is working with 858 stations and **the main stations are located north and south and they extend to east and west for smaller cities.** The trains are divided two kinds such as 18 freight trains and 379 passenger trains by transporting over 1000,000 passengers per day. As for long trips passengers can buy the tickets in the railway station with queue.

The another system in MR is Yangon Circular Railway and it runs 45.9 kilometer with 39 stations with metropolitan area including from satellite towns to suburban areas. As for circular railway passengers, they can buy in the station immediately and ride the train at the same time.

Chapter – 2

Literature Study

2.1. Topics for Investigation

I study other similar and related projects to implement my literature review. I also study how to choose the bus seats online and how to purchase online for the tickets. I study the following topics

- * Bus Ticket Ordering
- * Train Ticket Ordering
- * Airplane Ticket Ordering

2.1.1. Resources

I study many resources to get the best researched study for my project and I also study many difference resources not only inside the institute but also outside the institute. To imply my literature review, I study the following resources.

1. eBooks
2. previous project my seniors
3. Internet
4. Newspaper

2.1.2. Information search details

I get eBooks to support my literature review and project during the literature time and I also search them online. My senior supports their project as a guide lines. Some systems about project are found in newspaper. I also find some systems not including in eBooks and newspaper from internet.

2.1.3. Information Search Results

For my literature review and project, the resources detail are studied in detail as follow

1. eBook
 - * RAILWAY TICKETING AND RESERVATION SYSTEM IN CHINA
 - * Example Literature Study
2. previous project my seniors

- * Many projects with differences titles for exemplary
3. Internet
 - * www.redBus.in
 - * www.trailways.com
 4. Newspaper
 - * The Mirror

2.2. Summary and Analysis of Similar online tickets sales management Systems

The project title is "**Online Myanmar Railway Tickets Sale Management System**" and there are some difficulties to search the similar project because **other countries mostly sell the railway tickets locally** so I search the similar projects with another topic such as bus and air. Our Myanma Railway (MR) has not yet online tickets system. The similar projects that I found run 24/7 so the customers are very convenient. As Myanmar is developing country, **Online Myanmar Railway Tickets Sale Management System** should have.

2.2.1. Literature Review for My similar project redBus Tickets Sales System



Fig 2.1 logo of redBus.in

It is the Red Bus Tickets Sales System. It forms in 2005 and it settles in India. It runs locally. You can select over 1500 buses and 80,000 routes in redBus. It supports phone system, home delivery and physical outlet or SMS as well as website. All systems except website are usual. These info are recorded by <http://www.redbus.in>.

➤ **Contents of the website**

This website runs two ways such as booking or sale tickets and rental hotels but they are not concerned because it is not a car rental project. According to my project, I studied the side of the book or sale bus tickets certainly. According to this website, you can choose the

seat as you like and it really presents the selected seats and booked seats so you do not worry about it. It runs the following menus in the website

1. Home
2. Print/SMS ticket
3. Cancel Ticket
4. Check refund Status

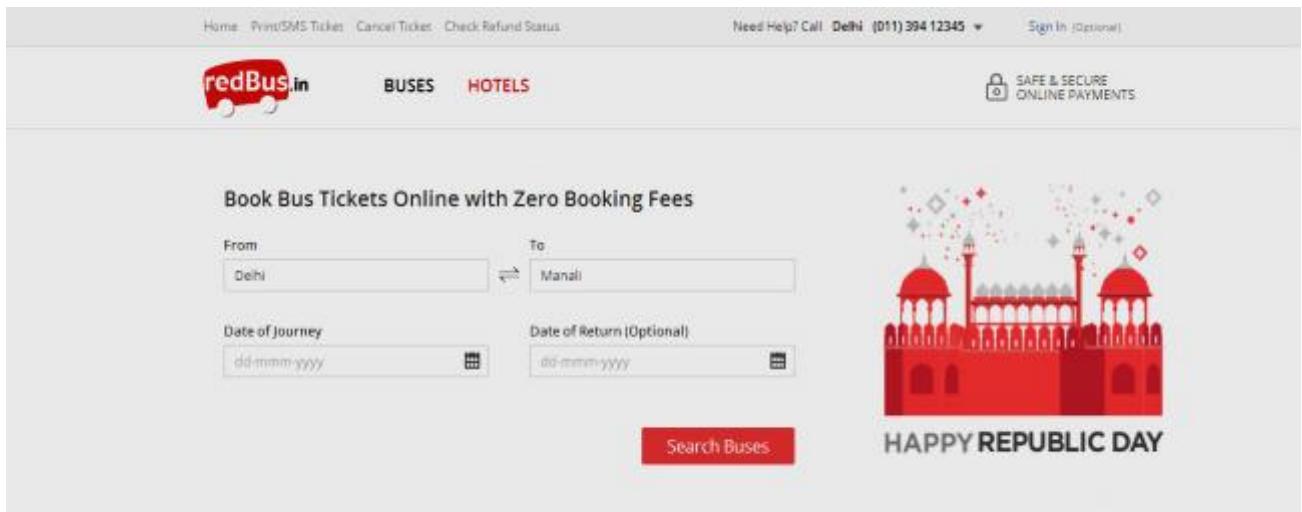


Figure 2.2 www.redBus.in home page

➤ **Main functions of the website**

As the main functions, it works the presented four menus with the useful subtitles.

As for Home Menu,

It tasks the real book the Ticket and chooses the seats and purchase the money. At first, we can search the bus via my requirement such start place, goal place, from date and return date (**with optional**) and then SEARCH.

And then, the next page with other subtitles is choosing the seats. According to subtitles, we can choose the bus as we like. The subtitles are Travels, Bus Type, Amenities, boarding, dropping and rating.

After viewing the seat, it can be selected the seat and then it calculates the fee for my tickets with tax. Next, we can choose the boarding point.

If your return date is optional, you can choose the return date if you return with this redBus. If not, it is Ok.

As for main function of purchasing of this website, it supports as with the credit card.

If you return this redBus, you can select the seat again. If not, it starts you to purchase with your credit card and then you have booked you tickets.

As for Print/SMS ticket Menu

You can type your ticket number and choose the way how the tickets get.

And then, you can print your ticket

As for Cancel Ticket Menu

You can type the ticket number an email-id and then you can cancel you ticket.

As for Check refund Status Menu

After typing ticket no and email id, you can check refund status.

Goodness and Weakness of the website

As for developing country, it can have many advantages in rural area. They are save time and convenient. We cannot give the booking charges to implement the booking. We can get the tickets with the three ways as we like. The bus tickets are available with the special categories according to subtitles such as travels, bus type and etc. Specially, if the interface of this website is not modernized, it is very convenient and comfort for the user. The best one of the reBus is secure transaction over the internet. It uses Secure Socket Layers (SSL) data encryption so we believe our credit card information.

In India, there are some urban areas .The people in there and the medium people as well as the old people are unfamiliar the website. So, it is a little weakness for them. But the reBus can recruit with Phone System, home delivery and SMS. The payment has a little drawback because it accepts only the credit card.

Analysis and Applying parts in my project

My project is Online Myanmar Railway Tickets Sale Management System so I want apply some systems in this website for my project. The system I like best is selecting the seats. In this project, choosing seat is absolutely systematical way because it already shows the selected seat or booked seat with the color clearly. And I want to apply this in my project. The next one is webpage. This website has very clear interface. I do not like the confused and modernized website but I want to have clear interface website.

2.2.2. Literature Review for My similar project Trailways buy tickets and Bus Rental Tickets System



Fig.2.3.Logon of Trailways

My second similar project is "**Trailways buy tickets and Bus Rental tickets system**". It settles in US state and it started in 1936 as motorcoach service companies. This runs with two functions such as Buy tickets and Rents Buses. To implement my project, I address to study "Buy Tickets" side. It has local office and you can call **855-519-6502 during 9:00 and 4:00 pm through except from Saturday and Sunday if you have a ticket problem but it can run website affectively.**

➤ Contents of the website

This website runs with two functions such as Buy tickets and car rental and this website has been supported for more than 4,000 customers and it supports nearly 30 routes in United State. As for this website, it can book only the tickets without choosing the seats. As for payment, it supports the credit card.



Figure.2.4 www.trailways.com in home page

➤ **Main functions of the website**

As for this website, it works main functions according to six menus

1. Home
2. Buy bus tickets
3. Rent a bus
4. Contact us
5. Hotel deals
6. International Travel

To imply my project, I emphasize to study in 2nd menu, **Buy bus tickets**. Other menus are studied skimpily as for concept.

As for Home menu

It works advertising for this website with many colorful pictures.

As for Buy bus tickets menu

It chooses the places about start point and end point and date and SEARCH. Moreover, it shows the top bus tickets in this page.

After searching, it shows the tickets detail. If you like you can book at once and if not, you can choose new date

And it shows the departure place and arrival date. If you like, fill first name and last name and go on,

Finally, it tasks the payment system with credit card. If we fill our credit card requirements, we will get our tickets.

Goodness and Weakness of the website

The first fact which I like best is interface and process. Interface is not only clear but also modernized and color match. The processes are clear according to step by step. Moreover it gives the instructions every process. It is user stratified fact. In the payment, it gives promise for your credit information not to encrypt. It uses 128 bits SSL encryption payment system.

But it has only one issue for the customers. It is that choosing seat. If customers don't know the seat number and actual seat place, customers would not decide to buy the tickets at once and it cannot save the time for customers. If this fact repaired on time, this website can run affectively.

Analysis and Applying parts in my project

I really like the website design so I want to create my website like this. This website is not only modernized but also clear.

2.3. Summary and Analysis of Related online tickets sales management Systems

The websites are very popular now because it runs 24/7. In previous time, the people worked 5 steps locally but websites are now working four steps except the delivery system. They are advertising system, order display system, invoice step and payment. Moreover the websites work these four steps all the time and they are visiting from overseas and every time. So, the related projects are not difficult to fine for me. I also study the related systems as guide lines for my project.

2.3.1. Literature Review for My related project bookmyshow Movie Tickets Booking System

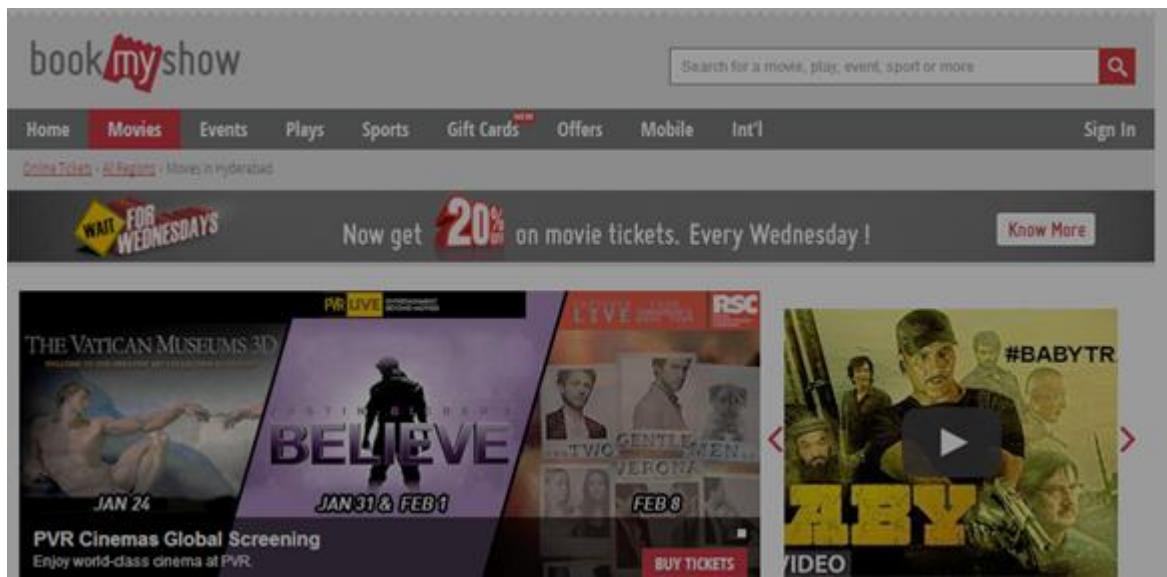


Fig.2.5.logo of bookmyshow

This project has started South Africa. Most of the project member is from India. This project has been last 12 years ago. According to my project, I study the booking of the movie tickets.

Content of the website

This website works booking tickets not only movies but also sports and plays. Moreover, it shows the categories to book the tickets by customers easily. They give back the gift cards with many categories to customers. The special program in this website is that every Wednesday can give 20% off every movies tickets booking.



Figure(2.6) <http://in.bookmyshow.com> in home page

The processes working in this website

This website works with 9 menus such as

1. Home
2. Movies
3. Events
4. Plays
5. Sports
6. Gift Cards
7. Offers
8. Mobile
9. Int'l

These 9 menus can work with their own processes. As usual my project, the Movies menu has to study in details.

As Home Menu,

It shows the movies showing currently on detail. Moreover, it shows the top movies list in respective region.

As Movies Menu,

It tasks to choose the desired movie and choose the wanted time. After choosing the seats with quantities, it shows the tickets with the real prices and do the purchase phase.

As Events, Plays and Sports Menus,

These menus also do the process according to the movie menu.

As Gift Card Menu,

In this session, it supports to give the tickets as a presents to your friends or family. And we should create this gift card 30 in advance.

As Offers Menu,

It supports to order the food and several things in advance.

As Mobile Menu,

It supports to book the tickets online with mobile. Nowadays the mobile phones are popular so it should have every websites.

As Int'l Menu,

It shows the celebration all over the world such as sports, music to book.

Weakness of the website

Technology is not only convenient to the customers but also easy to use. Most of the people are not familiar so the website should give the guideline to use this website.

Goodness of the website and Applying in the website

This website is mostly perfect with ticket booking so this project is one of the exemplary projects for my project. As for booking projects, the advertising and booking are king of them. According to this project, the advertising is perfect because the food is ordered within this website. As for booking session, this website can penetrate all over the world because we can book the shows such sports and music from all over the world. The session I admire most of this project is gift card session because it is not only for the customers but also the website stakeholders who good understand in market place. As for the above reasons, I will configure my project by imitating this bookmyshow website.

2.3.2. Literature Review for the Jefferson Lines Bus Tickets Sales and Cars Rental



Fig.2.7.Logo of JEFFERSON

The project is Jefferson Lines Bus Tickets Sale and Cars Rental and it settles in United State. The Jefferson Lines tickets are sold in local office and bus depot as well as online website. The manual systems are regular system and it has not special facilities. The info of this website is recorded by <http://www.jeffersonlines.com>

➤ **Contents of the website**

As for travelling, there are many types such as cars, airplanes and trains and cars and airplanes are the best because they are more comfortable fares than the fares of the airplanes. So, this website is mainly addressed for car not only the tickets of the bus sale but also rental for cars. This website runs with five menus

1. Book Your Trip
2. Bus Tracker
3. Service Locations
4. College Connection
5. Schedules
6. Chapters
7. Special offers

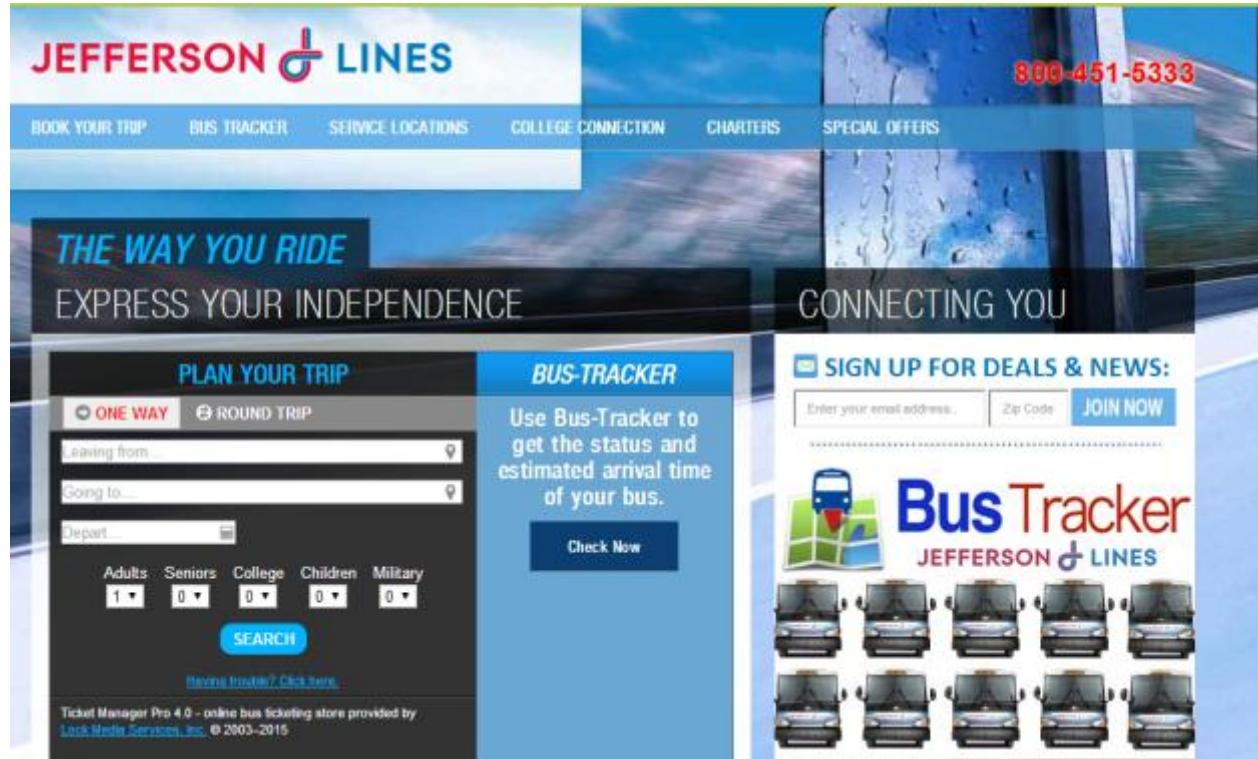


Figure. (2.8)www.jeffersonlines.com in home page

➤ **The processes working in this website**

According to Five menus, Search the requirements fields about your wanted tickets and then login account and buy your tickets

Secondly, the bus tracker session lets the customer to find the bus stat es free or busy.

Thirdly, it expresses the locations given services and it also gives the phone no 800-451-555 for annually system.

Moreover it can give the parking for customers when they visit their local depots or offices as their service location menus in website.

Fourthly, it manages the college connection program which supports local students under its college lists. It takes the students to go out or visit the parents' homes as well as trips.

Fifthly, chapter buses session manages your group trip when you write the requirements for it and the other way is car rental but it mainly support for country sight and it is ok for everywhere.

The last one is Special offer session and it carries the promotions or good chances to you like follow pictures

Weakness of this website

The issues of this website is flexible the fares. It does not insure the fares available online and local deport agents because it can change with advertising the customers. Another one is the interface of the website because it confuses when the unfamiliar people with IT see.

Goodness of the website and apply in my project

According the natural, every case has both goodness and weakness and this project also. This project has good points for me with two ways. The first one is easy to carry the tickets because it lets you to show the tickets in the phone when you do not have a printer. The next one is College Connection and it is very convenient for college and school as well as parents. If this program extended for another college or school or university over the list, it will be more successful.

This project is mostly perfect and it has little drawbacks so I will be exemplary some facts. As for examples, tickets checking, loading local agents. As for my project, the staff is also reconfirming to customers about the tickets after getting the money over the project scope so the showing the tickets with phones by customers is enough for me.

Myanmar is developing country so website is not convenient with the elder people so the manually system is also running

Chapter – 3

Proposed System

3.1. Key Phrases of proposed system

To implement the project, we observe the similar projects and related project to understand how to configure and construct the website. **GOOGLE** completely supports to the purposes that we search. As key phase of searching, the words we use are "**Online Tickets Ordering System**", "**Online Train Tickets System all over the word**" and "**Online Airplane Tickets Ordering System in Myanmar**".

3.2. Aim of the proposed system

Myanmar is the developing country and people in our country rely on Train transportation. So the Online Railway Ticket Sales Management System should. Moreover the people become convenient without buying tickets in queue. The train information is given to people according to time. By working 24/7, the website can be visited all over the world and book it. The main specific aim of the project is for Tourists who visit in Myanmar. For the time been, Myanmar Railway Ticket Sales only for Yangon and Mandalay portion will be taken account.

3.3. Objectives of the proposed system

1. To

Maintain and process of the data in the website safely and correctly.

Activities of the objective 1

At first the data is analyzed to build up the data requirement and the reports is come out. After correct reports, Normalization, Entity Relationship Diagram, class and objects are drawn to configure the database in Technical session. And then we select the database kinds with assumptions which have good security and performance. We read the database EBooks and online to get the secure database and good performance in the website.

Deliverables::

1. Correct Reports
2. Correct Normalization
3. Correct Entity Relationship diagram
4. Correct class and objects
5. Good secure and performance database

2. To

Understand the problems the existing system and requirements of the existing system

Activities of the objective 2

At first we must know the problems and requirements to get the solution. So, we interview the authorization peoples in the authentication area. I ask the questions with the quaternaries methods from the people in authentication area. Moreover the historical Myanmar railway is read online.

Deliverables::

1. The problems of the existing system
2. The requirements of the existing system
3. The questionnaires of the existing system

3. To

Understand the project functions about the similar and related projects and become notice the functions in my ideas

Activities of the objective 3

The similar and related projects are searched online and mimic the functions for my project and these functions reply in my website

Deliverables::

1. Literature Search
2. Literature Review according to similar and related projects

4. To

Understand and reply the OOAD Methodology and the project that I do detail

Activities of the objective 3

The project that I do is analyzed according to OOAD by drawing Use Case Diagram, Class Diagram, Sequence Diagram, Activity Diagram and Robustness Diagram.

Deliverables::

1. Use Case Diagram
2. Class Diagram
3. Activities Diagram
4. Robustness Diagram

5. To

Work the workable websites with all functions and know the errors of the website

Activities of the objective 3

At first, the various kinds of testing are studied online to implement project coding that I write. And we plan systematically our test case do the test case with white box testing and black box testing.

Deliverables::

3. Know the testing process and procedures
4. White box testing of our website
5. Black box testing of our website

Chapter – 4

Field Study

4.1. Environment

Myanmar Railway was established in the Second World War by the British rulers to Myanmar. Mainly used for transporting freights up and down of Myanmar. Later on Myanmar Railway expanded transporting passengers. Travelling with train is the traditional way of Myanmar so the customers and suppliers are simple. The tickets supplier is railway ministry and the customers are the people all over the Myanmar. Myanmar is a developing country so Myanmar government is trying developing the online website for selling Myanmar railway tickets. But some tour package includes and draws railway travelling in their tours but it is especially for foreigners.

4.2. Organization

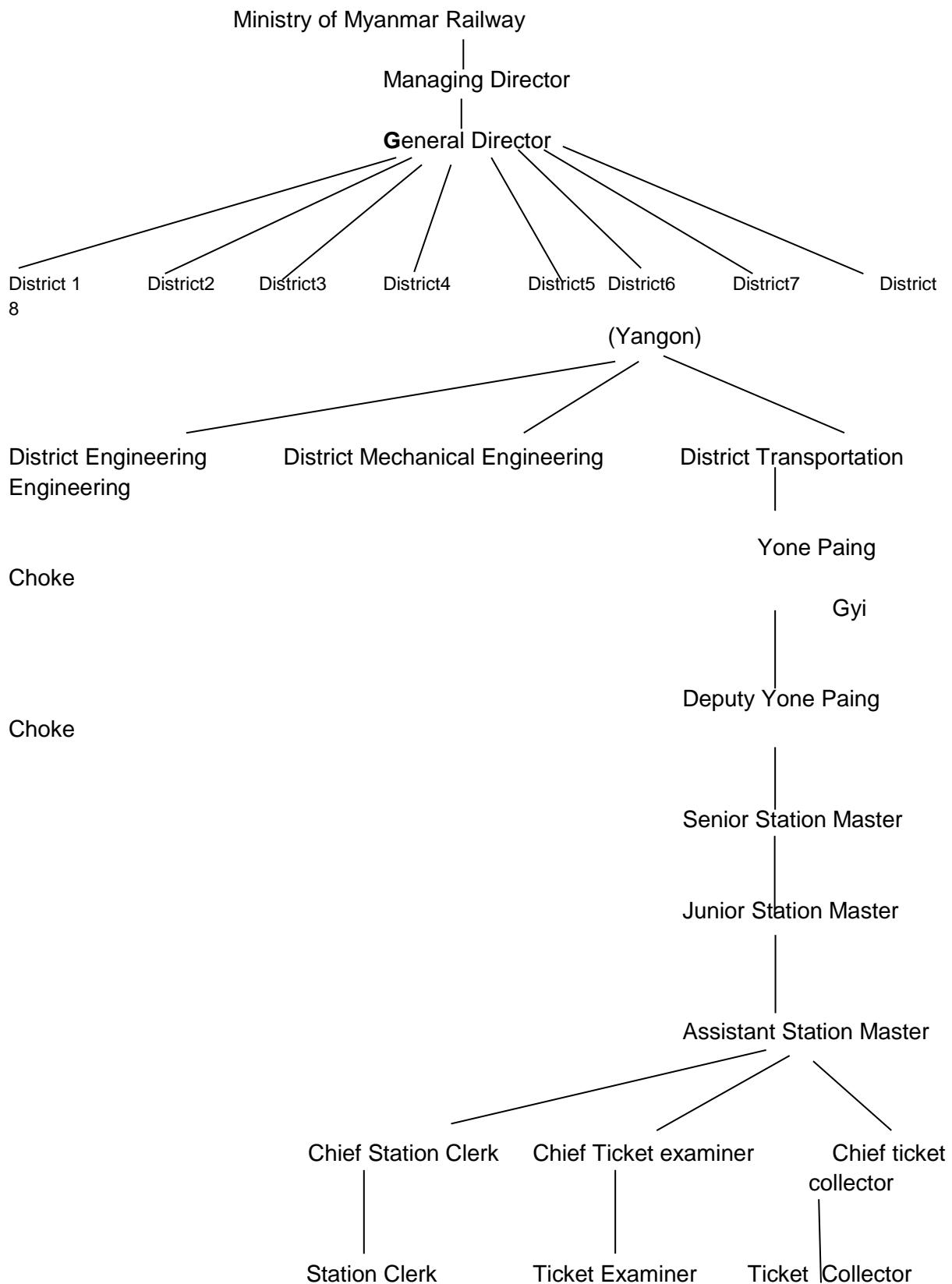
4.2.1. Location of Headquarter

Myanmar Railways is under the Ministry of Railways and Transport. Myanmar Railway supports two main ways for customers such as Yangon Circular Railway and Myanmar Railway within Myanmar. As for Yangon circular railway is supports 39 stations with Yangon. As for Myanmar Railway within Myanmar, it is divided two sessions such as Upper Myanmar and lower Myanmar. As for this project, it describes Yangon to Mandalay session. It supports five main stations and seventeen sub stations. Five main stations are

1. Yangon
2. Bago
3. Naypittaw
4. Thazi
5. Mandalay

But some trains skip the Bago station because Bago is near station with Yangon.

4.2.1. Organizational chart of Myanmar Railway Tickets Selling Session



4.3. System Investigation

System investigation means requirements analysis which is documenting and analyzing of the system requirements. Collecting requirements is an important stage of System Development Life Cycle. Sometimes, system analysts can wrong for discovering requirements. As wrong collection, they can be wrong in designing and development of a solution. To help them, Fact finding method is appearing. Fact finding method can help the analysts in gathering information. The following are kinds of fact finding method.

1. Record Searching

It is one of the best ways to collect the requirements from current system. The document of record searching consist customer detail, problem area, problems performance reviews, reports and user manual. According to advantages, it can save time and analysts can easily know that how to solve the problems by the people in that organization. According to disadvantages, it really needs to get authority for real information and reports.

2. Observation

Observation is one of the useful techniques in Fact finding method. It is liked with the Sampling techniques. The System analysts can totally involves in this observation activity. If the analyst has the user point and analysts can totally know about the system, this observation technique is really useful.

3. Questionnaires

It is a way to gather the requirements with questions from the many people in the organization with little amount of time. User only marks the answers after reading questions. So that it can save time. According to advantages, If it is answering questions without pressure, it is really affective way. Moreover it is really good at user site because they cannot think the answer difficulty and they can mark the answer. According to disadvantages, if it is answering question with pressures, it is totally useless way for finding requirements.

4. Interviews

Interview is an ancient way for gathering information. In interview, face to face is a best way to get and verify the requirements. The face to face interview involves the system analyst, interviewer and business owner, interviewee .According to advantages, the analysts can change the questions according to time and occurrence. Moreover analysts can know what is like and dislike on the questions according to interviewee's facial expression. It can improve communication between analysts and

stakeholder. As for disadvantages, it can have difficulty in time adjusting for interviewing. And the worst is biases of interviewers.

4.3.1.Reason and choosing of Interview and Comparison with the other methods

There are five fact finding methods. They are

1. Record Searching
2. Observation
3. Sampling
4. Questionnaires
5. Interview

According to above methods, Interviews is selected in my project because it is one of the ancient techniques to gather information and face to face interview. Before interviewing, the interviewer and interviewees are already **familiar**. That why, interviewees are not nervous and big chance to get the right requirements. To get big success for project, **co-operation** is important. Cooperation can get interviewing between interviewer and interviewee. The best thing of interview is **choosing the right interviewees**. The suitable interview can address the target solution with short time. Individual interviewing can get right kind of processing because we can guess the **interviewee's facial expression**. It can **increase the knowledge** because interviewer and interviewees can interchange their ideas and views.

Chapter – 5

Lifecycle Tool and Approach Method

5.1.System Development Life Cycle (SDLC)

SDLC is used in system engineering, information systems and software engineering. It addresses planning, creating testing and deploying of our project. It can work with 7 steps in my project

1. Project planning, feasibility study

In this stage, our project addresses functional and non-functional requirements and considers the objectives of the project.

2. Systems analysis, requirements definition

In this stage, we upgrade to be sure our objectives, functional and non-functional requirements. And, we will do literature studies and system investigation for our project

3. System design

In this stage, we consider detail features and operations in webpage. We define business rules. Moreover we draw the required diagram in project.

4. Implementation

In this stage, it is only for coding stage for my project.

5. Integration and testing

In this stage, we do the respective testing for my project and prepare the errors.

6. Acceptance, installation and deployment

As deployment stage, we do the project that is really running in real time.

7. Maintenance

In this stage, we update the project according to new business rule or time or occupation. And it is only for further step in our project.

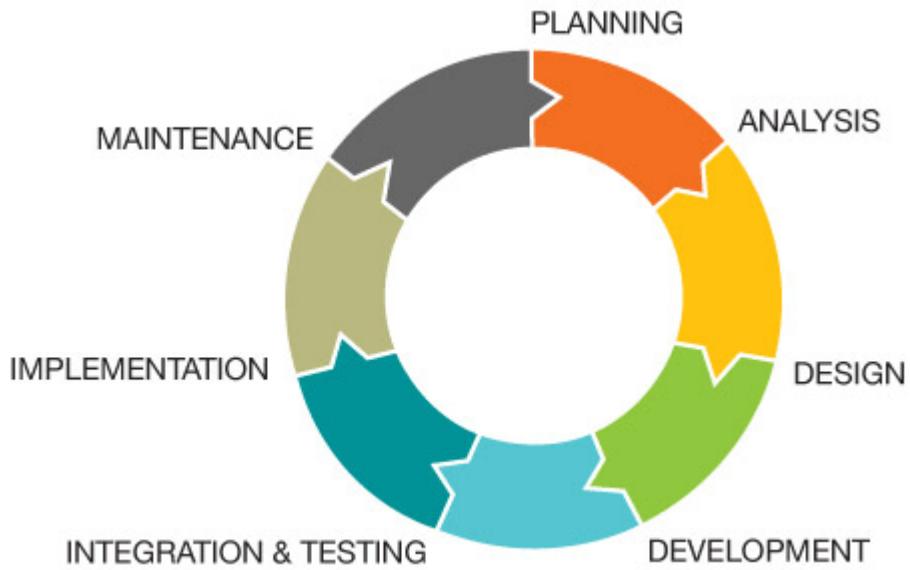


Fig.5.1 SDLC

5.3. Lifecycle

5.3.1. Waterfall

Waterfall is the senior method and it is linear sequential motion in SDLC. According to nature of waterfall, the stages never change back to previous stage.

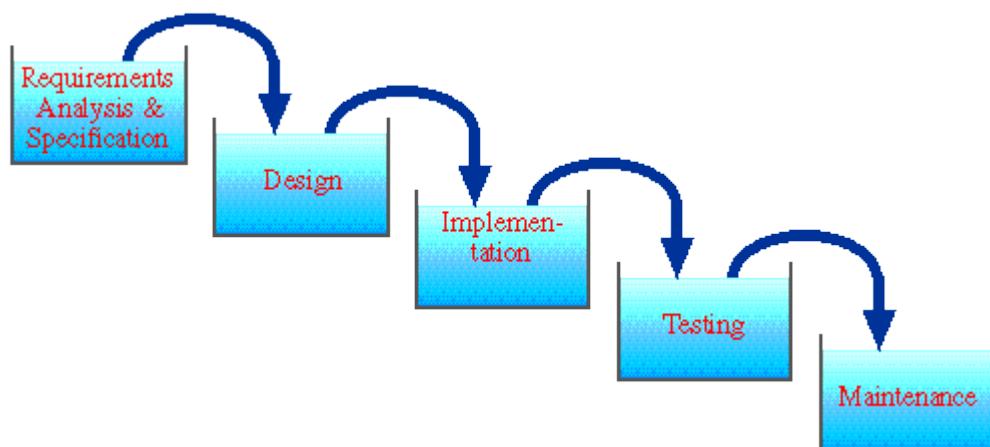


Fig 5.2. Waterfall

Strength of the waterfall method

It is best system in predefined objectives and functional scope. Moreover, it is suitable in large system. The best in this system is producing customers' satisfied deliveries and review process before go to next phase. Waterfall addresses more quality than cost and time.

Weakness of the waterfall model

It is only suitable for clear objective project. There is no chance to change and edit the error because it cannot come back to previous stage. According to this, this cannot use real time project because today business change the concept and frame in everywhere and everytime.

5.3.2.V model

It is junior model of waterfall model and it produces the complete specific delivery before go to next steps. It is also called Vee Model and Verification model. The strange fact in this model is running the testing and development phase in parallel.

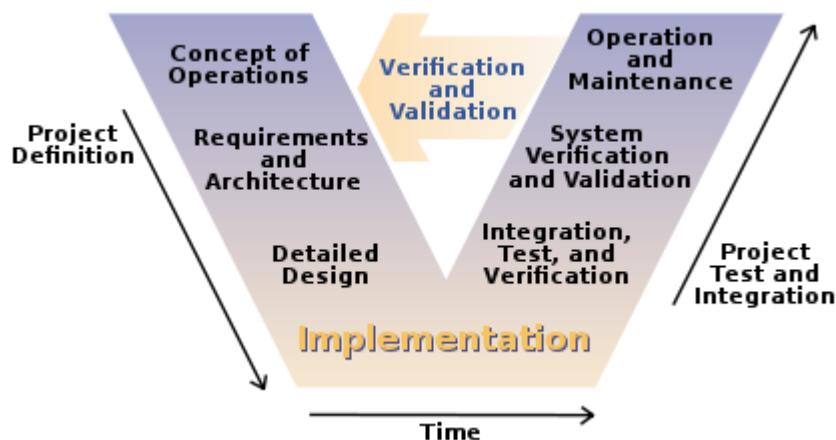


Fig.5.3.V model

Strength of the V model

It can have efficient for saving time because it can produce testing and development at the same time. Producing these two things at the same time can increase customer satisfaction by looking output for each stage.

Weakness of the V Model

Today business have changes in everywhere and everytime so it is not compatible. This model cannot back to previous stage according to changes like waterfall. It has weak point in flexible and rigid. It cannot produce workable software early.

5.3.3.DSDM

Dynamic Systems Development Method is an Agile project management and it addresses on time and on budget. Moreover it addresses on user involvement. It fix for time and cost. There are many approaches as follow

1. Facilitated Workshops
2. Modelling and Iterative Development
3. MoSCoW Prioritisation
4. Timeboxing

Strength of the DSDM

It has eight principles as follow

1. Focus on what the business needs
2. Deliver work on time
3. Collaborate effectively
4. Never, ever compromise quality
5. Build the project iteratively
6. Continuously communicative clarity
7. Demonstrate control

According to 8 principles, the advantages are produced. In this method, user involvement increase user satisfaction. It produces the delivery on time. It can fix time and cost it accepts the changes iteratively. It does good quality possibly. Demonstrate control can have the trust of the users.

Weakness of the DSDM

It needs well-experienced analysts, designers and developers because it is not easy to follow above eight principle exactly in on time and on budget while having customer changes. It is not suitable with the small projects.

5.3.4.Rational Unify Process

RUP is not an individual prescriptive process but it adapts the process framework. RUP can work with iteratively framework and it has some takes as follow

Iterative Development
Business value is delivered incrementally in time-boxed cross-discipline iterations.

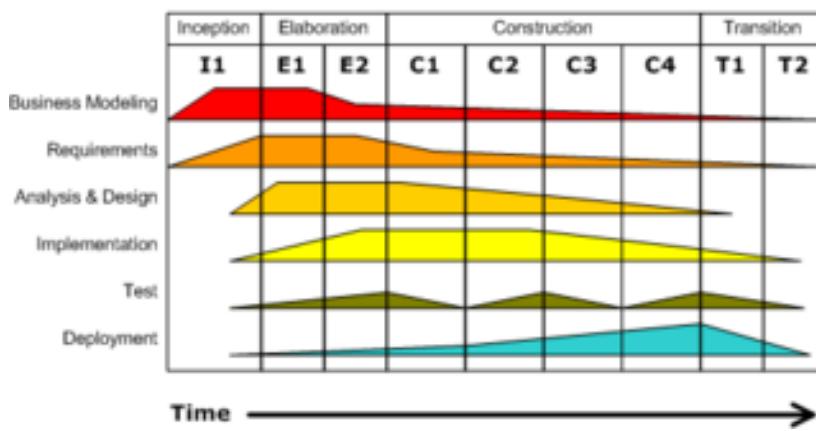


Fig.5.4. RUP

Strength of the RUP

It can increase the customer satisfactions in predefine clear objectives project. It can reduce the project risk in control requirements and it can give the project on time.

Weakness of the RUP

Main weakness of RUP needs the expert team members in developing the software under this methodology because the development process is too confuse and complex. Moreover, reuse of components will be impossible under this methodology. Integration cutting edge projects through the process of software development needs to develop this methodology successfully.

5.3.5.RAD

RAD is an incremental model and it address on right delivery on time and high quality function. It runs functions and components in parallel. While lifecycle, it can accept the customer feedback. According to time box, users and analysts are discussed and produce the project and do the testing.

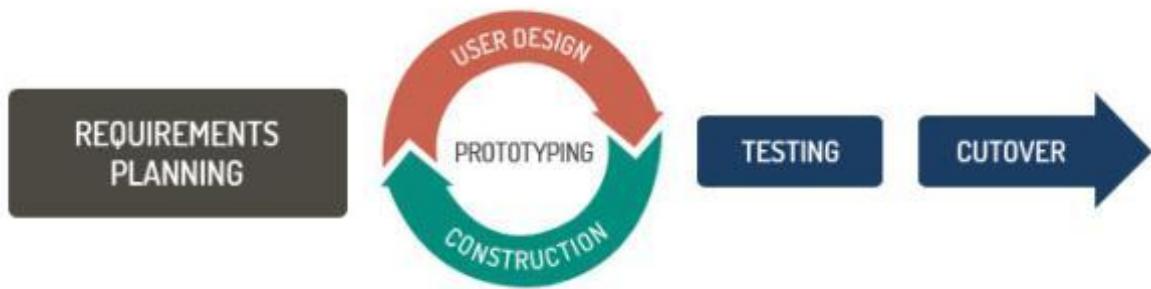


Fig .5.5 RAD

Strength of the RAD

The strength of RAD accepts user feedback. According to feedback, developers can decrease requirements and risks of the project. Moreover it can decrease the development time. Visible prototypes and quick reviews can increase the customers' satisfaction. This method can give the user training if it is needed.

Weakness of the RAD

In project management, it takes more times and it is really suitable in large and big project. It needs empower team is needed because of running functions and components in parallel.

How to choose RAD

As my options, I would like to choose RAD model. The fact which is most compatible is reduce the development time because our project duration is only about 6 month. To reduce time in our project, we show the prototype to our supervisor U Sann Lwin as a user and he give me feedback. According to our project, we develop with 5 stages such as

1. Business Modeling

According to Business Modeling, I study the environment of the Myanmar Railway and functions and transaction and environment of the foreign country online railway . I study the ebook and newspaper and magazine and online as Literature Study chapter in my project.

2. Data Modeling

According to data modeling, I investigate the real time project manually in Myanmar Railway. I go to Myanmar Railway department and records the requirements to development my project. For example, Background of the organization, Organization facts and do the interviews and records to know the problem of the existing system. I study system investigation chapter in my project.

3. Process Modeling

At this stage, we define the functional and non-functional requirements. Moreover, we consider the aim and clear objective of my project. According to them, we draw the respective diagram to development the project. In the class diagram, we produce the database object. Inside my project, this stage supports that almost finished my business document.

4. Application generation

At this stage, we access the coding part by using Nusphere and MySql using Xampp.

5. Testing and turn over

At this stage, we do the testing for my coding in application generation. And we show the supervisor and take the suggestion what is right or wrong.

5.4.Approach

5.4.1Prototype

5.4.1.1(Throwaway and evolutional)

Prototyping is the best approach to get the customer satisfaction because it runs with trial-and error process. Prototyping works with the scenarios so it defines the project's requirements in predefined time. There are two kinds of prototyping methods such as

❖ Throwaway prototyping

It addresses for requirements and products. And it is termed as Close-Ended Prototyping. It can works with 5 methods as follow

1. Identification of requirements and materials to be used
2. Planning
3. Implementation , Prototyping and Verification
4. Prototype Enhancements and Revisions
5. Finalization

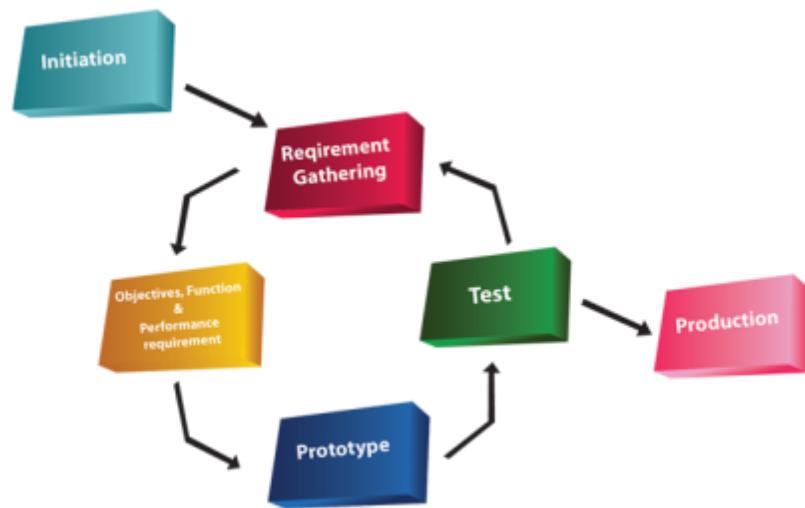


Fig.5.6.Throwaway Prototype

❖ Evolution prototyping

It is the opposite of throwaway prototyping and the first prototyping is given to customers. The customers can prepare this prototype and return the prepared prototype to analysts. The analysts can upgrade this prototype according to the user suggestions. The steps of the evaluating prototype are followed the following picture.

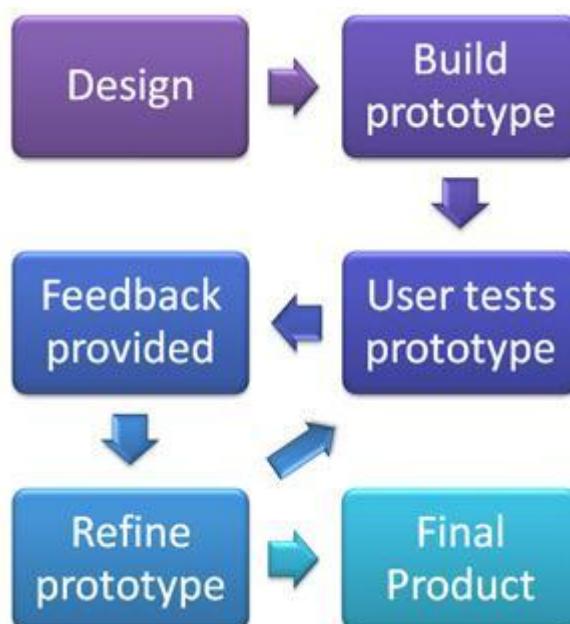


Fig.5.7.Evloution Prototyping

5.4.2.MoSCoW

MoSCoW addresses to the important requirement. It makes results to make the overall project. It describes the risks while developing new system. If the following requirements are accurate, the business will be success 80%. It address to

M -> must requirements

S -> should requirements

C -> could requirements

W -> won't requirements

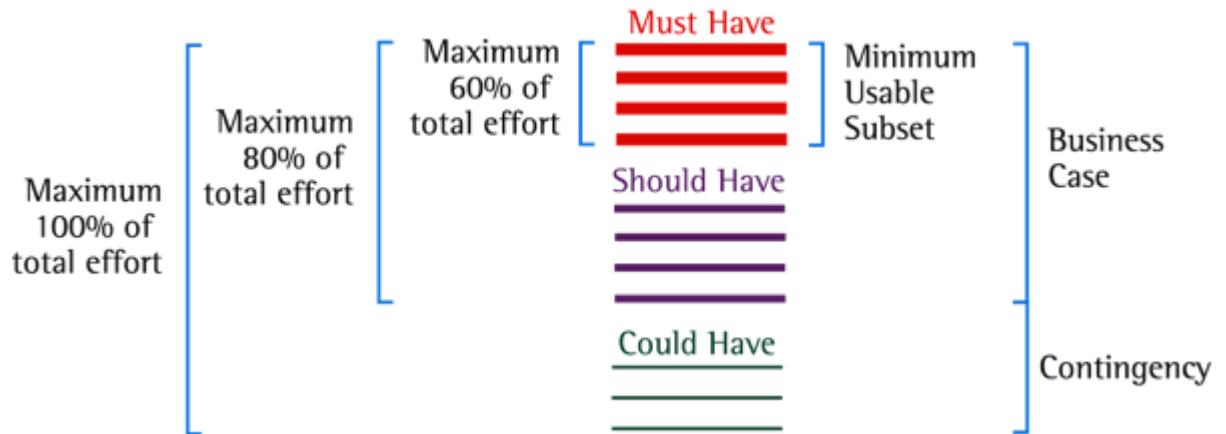


Fig. 5.8 MoSCoW

According to MoSCoW, we know what requirements are most important immediately.

5.4.3.Time boxing

Time boxing runs many separate periods within the predefined time box. All time box have fix delivery, cost and deadline. Time box addresses processes of software in RAD. It runs with five stages

1. Kick-off meeting
2. Investigation
3. Refinement
4. Consolidation
5. Closeout meeting

5.4.4.Facilitated workshop

Facilitated workshop recognizes the people decisions and suggestion in the workshop time. It addresses the behaviors and interaction of other people. At the end of the workshop, some complicated case proves the better result effectively. Workshop vacillator manages and responses this facilitated workshop and the people in this workshop must be empowered. Most of the complex and large projects use this workshop to get the better result.

5.5.5.How to choose MosCow and timebox

As for Approach, we choose MoSCOW methodology because it exactly defined the requirements and function for producing reports. Its words like **Must have**, **Could have**, **Should have** and **Won't have requirements** can make the decisions for overall projects. Moreover it can success 80% document in my project. In my project, we can definitely produce **functional and non-functional scope and objectives of project**. That why, my project reaches **target quality**.

Time box can work the separated period within the predefined time. At the end of the timebox, the exact delivery will be come out. In my project, we draw Project Schedule by timebox. And, I really present my delivery to my supervisor according to timebox approach. That why my project reaches **target productivity**.

By using MoSCoW and Timebox approach, we totally reach quality target and productivity target. That why, my project doesn't have failures.

5.5. Method

5.5.1.SSM

It means for soft system methodology ad it is used in small project. If the problems are messy, it will not solve. It mostly focuses for problem solving than starting the project. It actually involves user involvement and it focuses about human, cultural, ethics and politics through the user involvement.

Strength of the SSM

User involvement can give the solution early and solve the problems. In this methodology, the problems can be solved by customers' view and analysts' view. The hard approach cannot solve the problems holistically however the SSM can solve the problem holistically.

Weakness of the SSM

One of the weakness of SSM is that it cannot define how to start a project however it can focuses on problem area. It takes many times because of customers' negotiation. It is difficult the customers' suggestion in the large project.

5.5.2.OOADM

It means Object Oriented Analysis and Design Methodology and it is really use in large system. It focuses on reliability and flexibility. It works under three modeling such as

1. Object Model -> it focuses on the object of the project.
2. Dynamic Model -> it focuses on the event of that object.
3. Functional Model -> it focuses on the process of that object.

Strength of the OOADM

The primary goal of OOADM is to reduce maintenance cost and some functions in the project is used with encapsulated method. Moreover some processes are reused and some new functions are collaborated with the old ones. The next goal is like real world modeling so most of the people avoid the misunderstanding of the functions. It focuses reliability and flexibility because of dynamic object. It supports to the inherit technology so it can get high code reusability.

Weakness of the OOADM

The difficulty of OOADM is to control the objects because the objects are dynamic. If OOADM is used, the teams are empowered in the large project.

How to choose OOADM

The OOADM in my project focuses on reliability and flexible because Online Railway system is complex and it is real world project. If the real world project is normally dynamic so it is really suitable with OOADM. After choosing OOADM, it has tools such as UML to configure our project. That why we use the following tools

5.6. UML

It means Unified Modeling Language and it supports on software application on my project. By using it, it helps this system small piece separately to understand whole system. The following UML techniques are used in my project.

5.6.1. Use Case Diagram

This diagram addresses connection the users and their processes like a photo. There are two types of Use Case such as Overall Use Case diagram and Detail Use Case diagram. Overall Use Case addresses the process of the whole system but not detail. Detail Use Case diagram addresses the detail of each process. These two Use Case are applied in this online railway tickets management project at first. So that, the analysts can views clearly the users' process in the system.

5.6.2. Class and Object

Class and Object address the coding for this process. As for developers, they use attributes, objects and methods as shown in class and object while implement coding. In this online railway tickets management project, there are 15 objects and their related attributes in the **online_railway_ticket** database.

5.6.3. Sequence Diagram

Sequence diagram also addresses approaching coding. It shows the process of each user as technique aspect. It is based on object oriented. In this project, there are 10 sequence diagrams as admin, staff and customer sites.

5.6.4. State Diagram

It is also called state chart diagram and state machine diagram. It is like the activity diagram but is doesn't include the swim lane and it is only based on one object. It is one of the important diagram in OOADM. In this project, this diagram is applied because of easy way to implement coding. In this project, there are 9 state diagrams.

5.6.5. Robustness Diagram

This diagram shows the gaps between the design and analysis. Moreover it is the first step of the developing of the website. This diagram can easily understand than the activity diagram. In this project, there are twelve diagrams.

5.6.6. Packaging Diagram

It is one of the Unified Modeling Language and the main concept is relating between the classes. It works with three positions such as Human Computer Interface, Problem

domain and Data Management. HCI can supports the webpage and PM can works for inputting data like processes. And DM works for processing the query based on database. The following packaging diagrams can targets for Online Myanmar Railway (Yangon-Mandalay) Express Tickets Sales Management System.

5.6.7.Deployment Diagram

Deployment diagram is one of the UML diagram and it describes hardware components, web server, software components and how difference pieces are connected. In this online Myanmar railway (Yangon-Mandalay) Express Tickets Sales Management System, browser is used like the software component, Apache and online_train_tickets database are used like webserver. They are presented deployment diagram.

5.7. Developing Languages

5.7.1.Asp.Net

Asp.Net is for web development to produce dynamic web services, sites and applications because it is server-side web application framework. It is object-oriented programming language. There are libraries to reuse the classes. It is produced by Microsoft. Any code of .NET languages can be useful in Asp.Net because it can be built on common language runtime. That's why; it can make programmers to be convenience.

5.7.2. PHP

PHP firstly appears with "Personal Home Language". But it is called "*Hypertext Pre Processor*" right now because it is widely used by world. Moreover, it is server side language to generate many website. Besides, it can be compatible with web application development. PHP can be written by embedding in HTML and it can use with web frameworks and web templates systems. The best point of PHP is open source so every programmers can write this free and vendors attached problems is not a big deal about it.

5.7.3. How to choose PHP and Affecting PHP language in my project

My project we be developed using PHP so I have to study PHP language advantages according to similar project and related project. PHP is open source and it has several built-in large web applications. I hope it can support my website according to successful time to Market. PHP can run any platform or easy integration so customers become more use and my project will successful. PHP is flexible so there is not worry about my project's maintaining

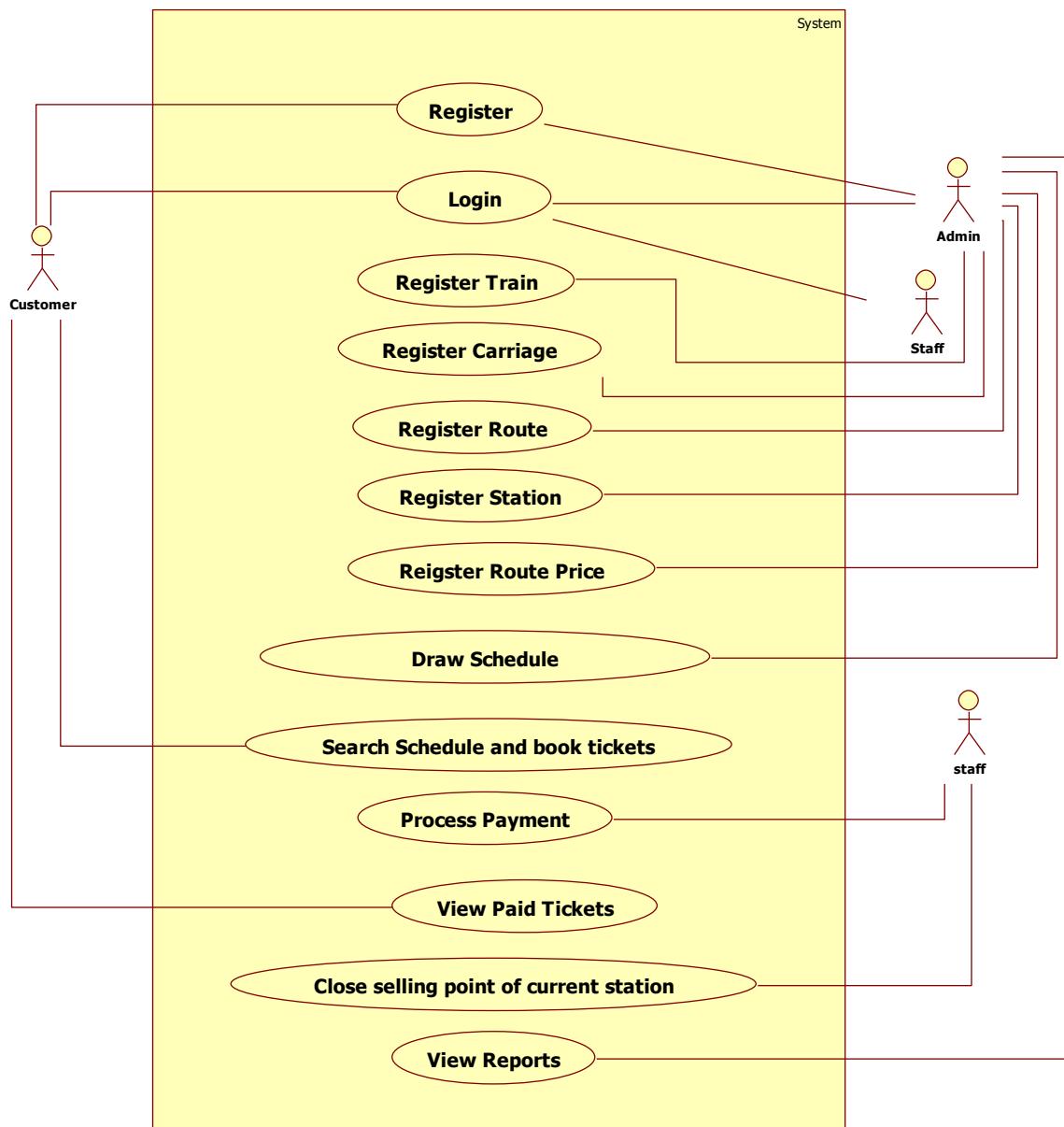
cost. At least, we don't worry about the PHP unknown functions because the PHP community is ready for us.

Chapter – 6

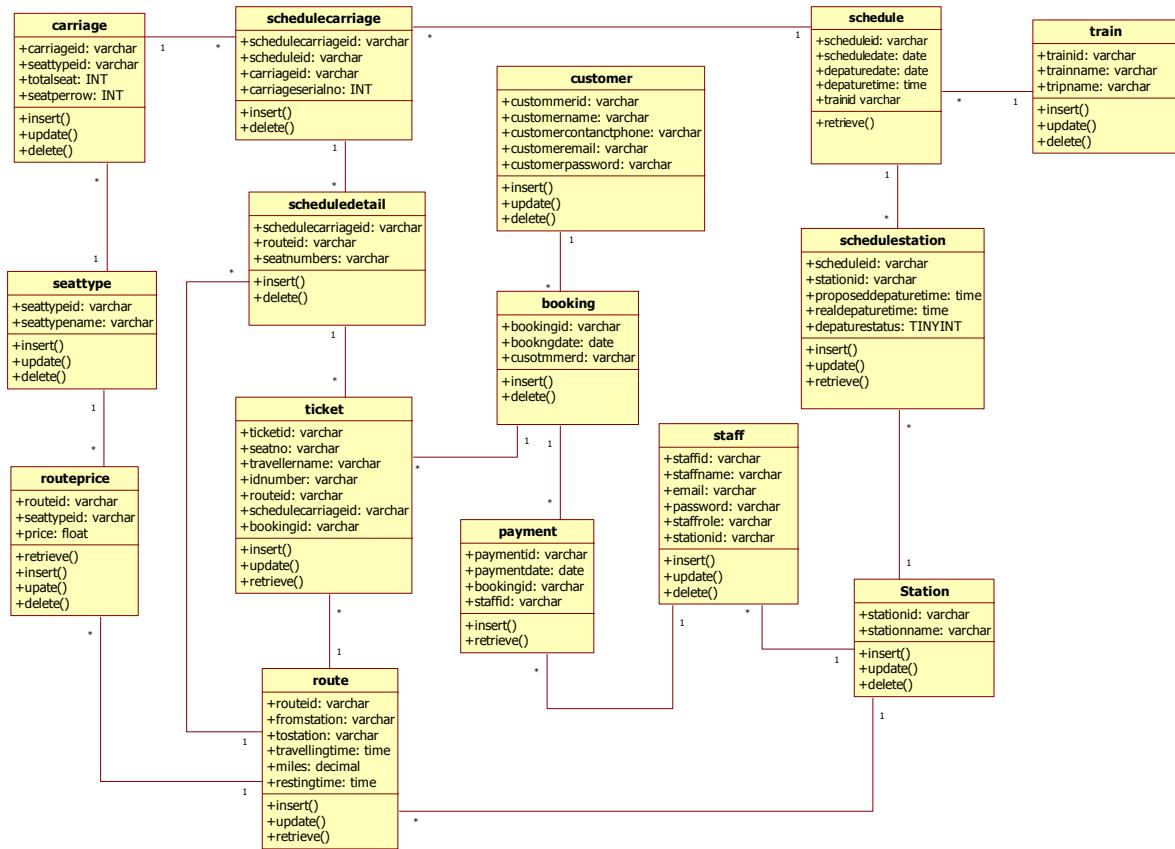
System Design

6.1. Use Case Diagram

6.1.1. Overall Usecase Diagram of Online Myanmar Express (Yaongan-Mandalay) Railway tickets sale Management System

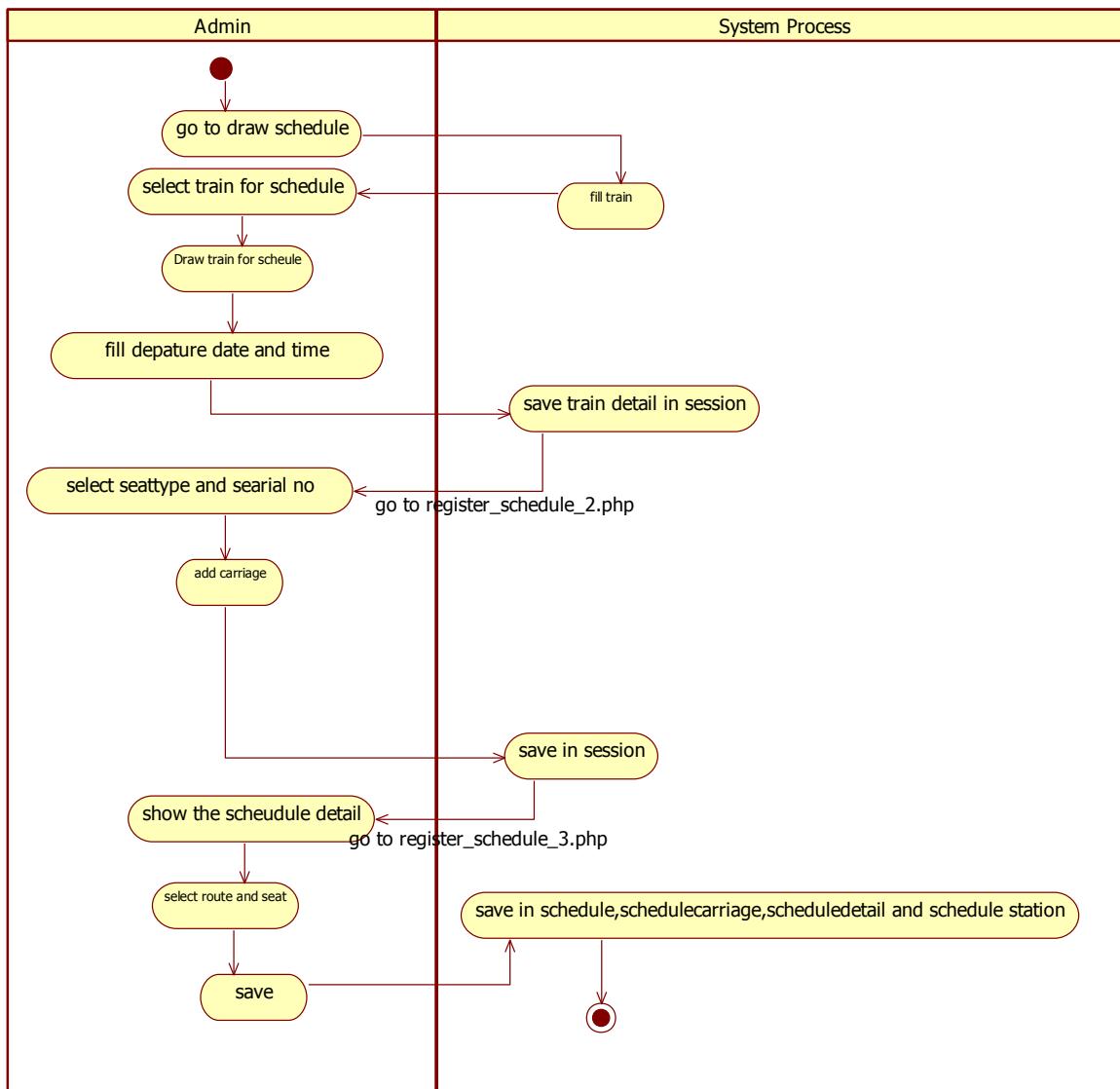


6.2. Class Diagram



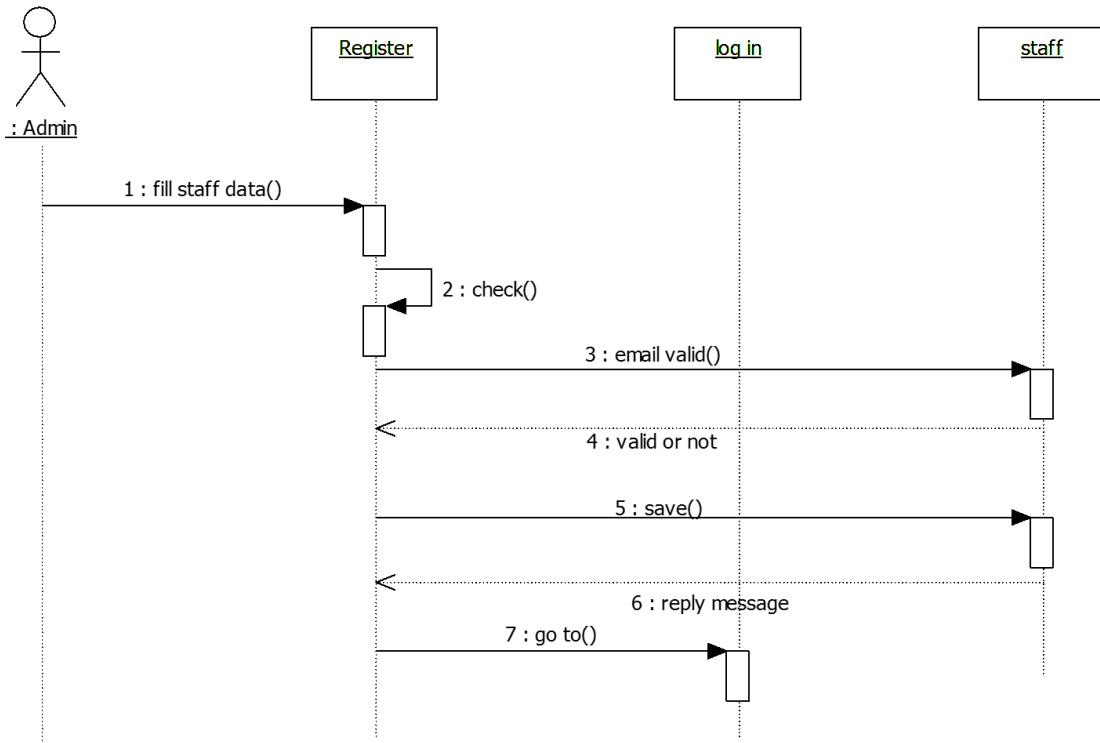
6.3. Activity Diagram

6.3.1. Search schedule and book tickets



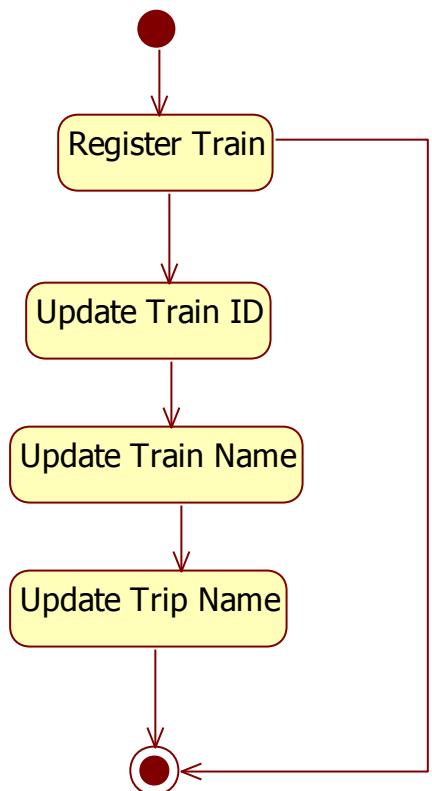
6.4.Sequence Diagram

6.4.1. Register Staff



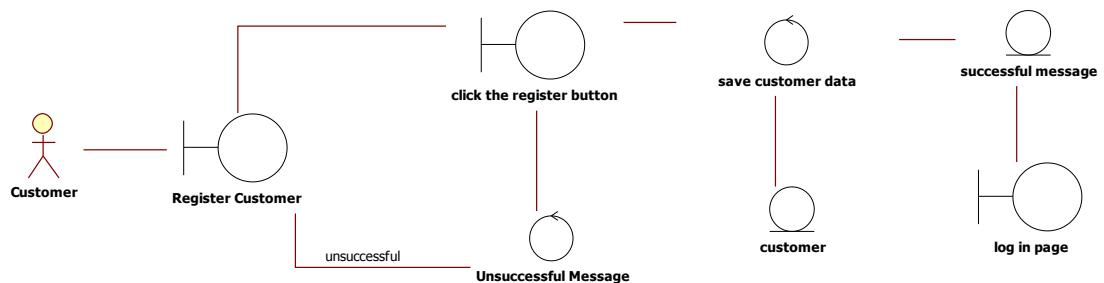
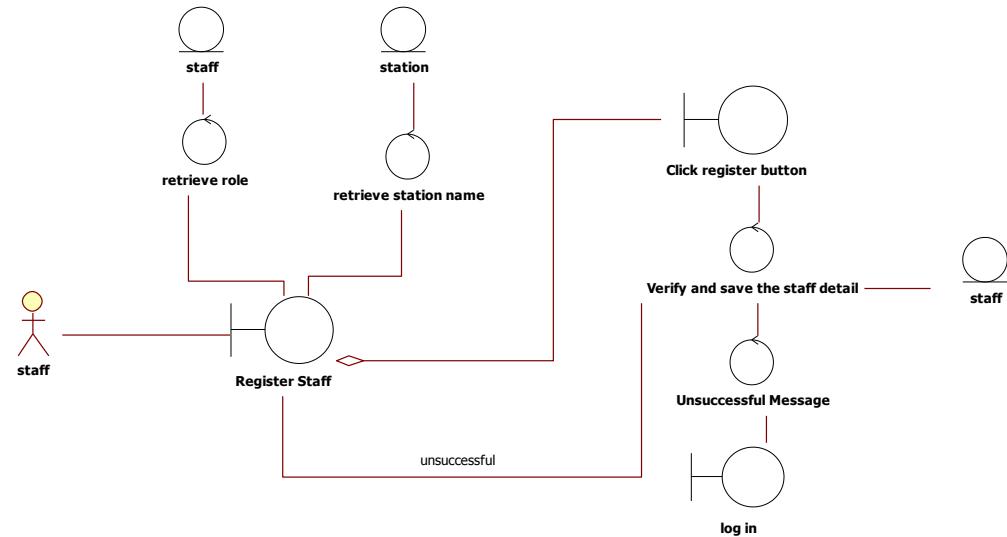
6.5. State Diagram

D.5.1. Register Train



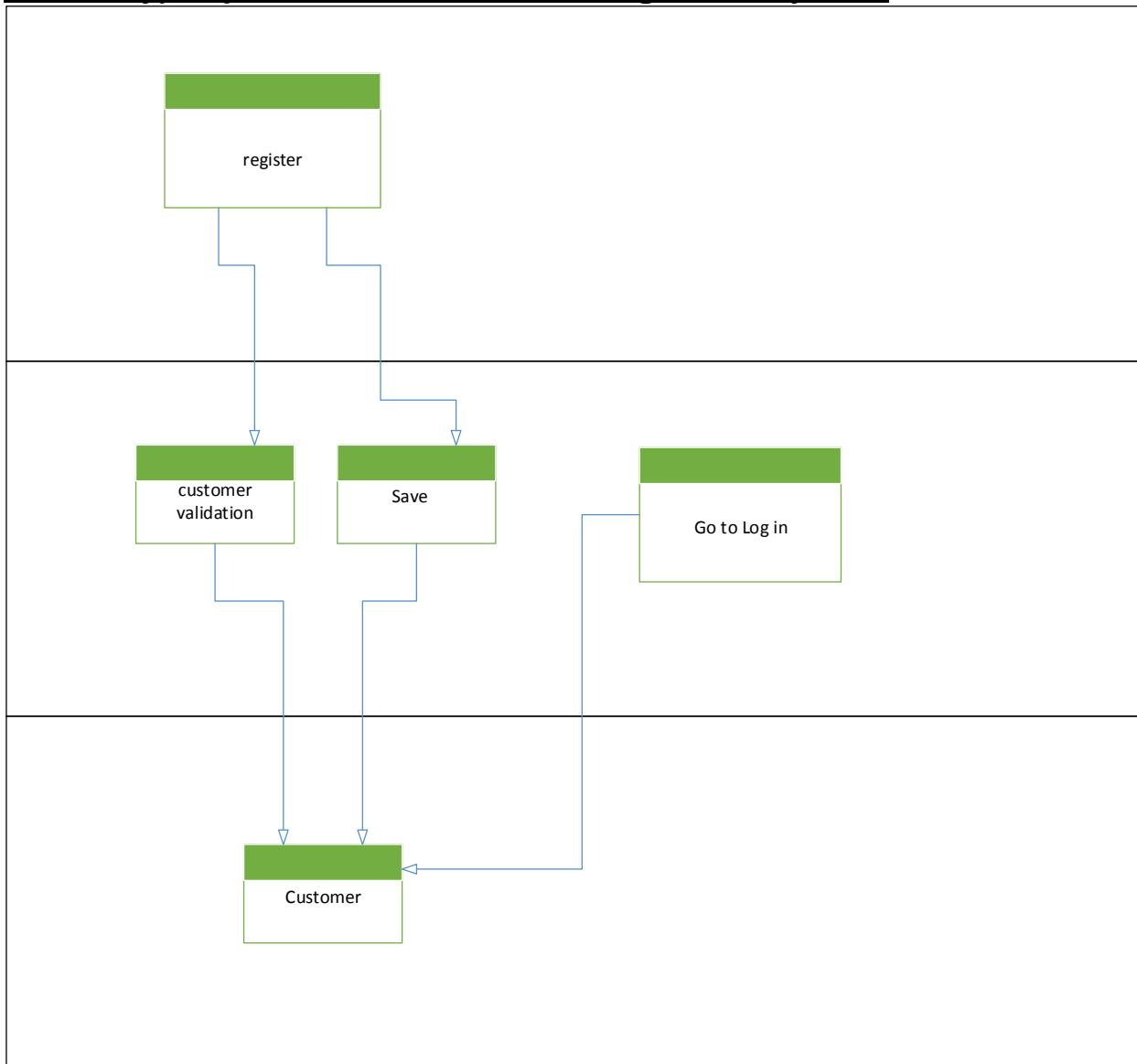
6.6 Robustness Diagram

6.6.1. Register



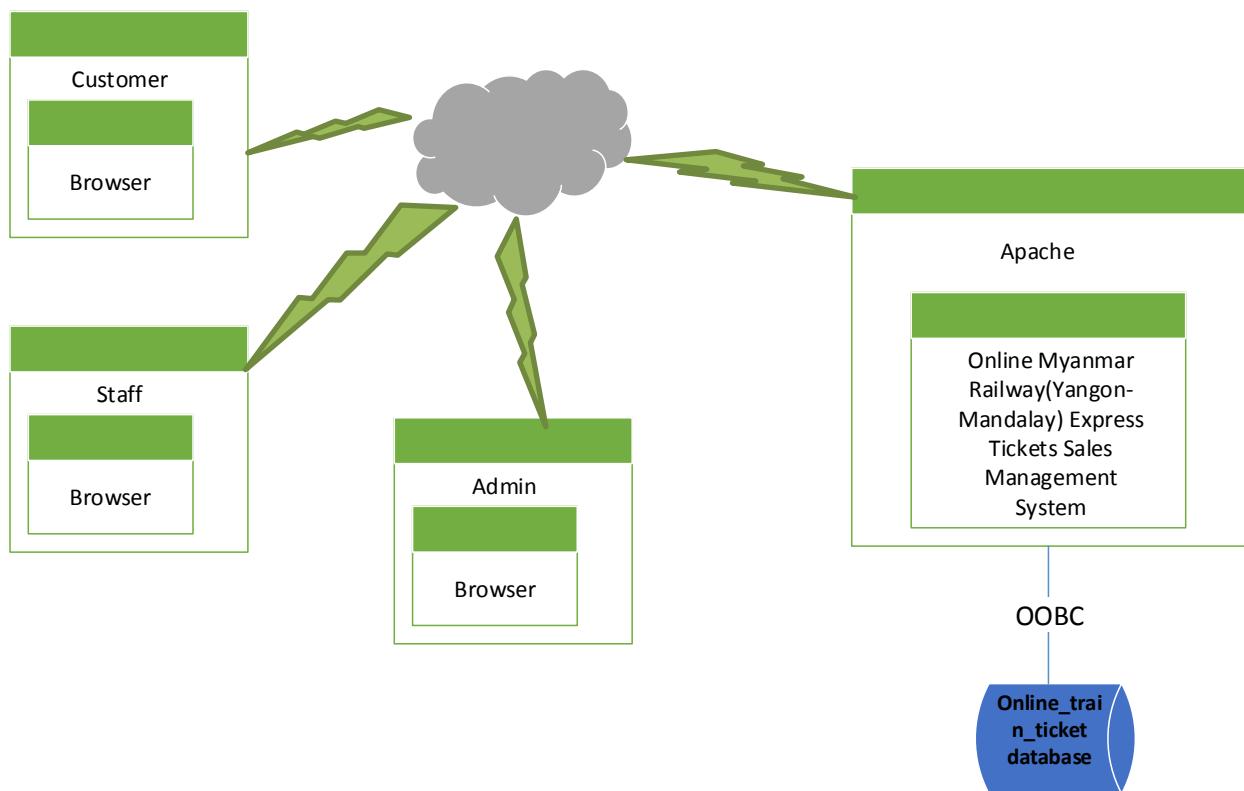
6.7.Package Diagram

6.7.1. Registration Process in Online Myanmar Railway (Yangon-Mandalay) Express Tickets Sales Management System



6.8. Deployment Diagram

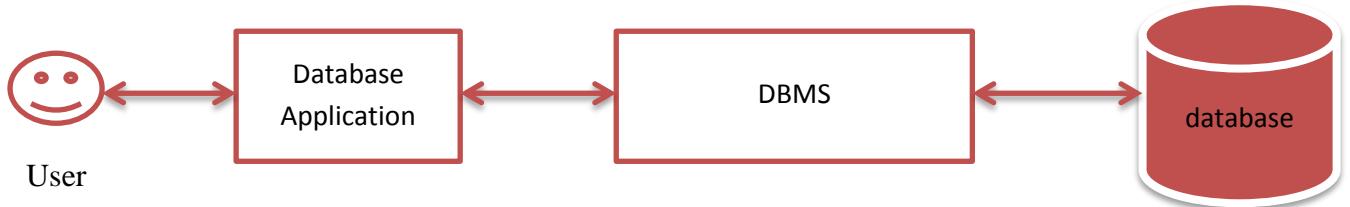
6.8.1. Deployment diagram



Chapter – 7

Database Chapter

Database is the self-describing collection of related records and table. Database work with user data, metadata, indexes, stored procedures, triggers ad application metadata. According to database nature, it can work in my project as follow



There are many kinds of database under the certain Database management system. They are

1. Relational Database
2. Operational Database
3. Distributed Database
4. Database Warehouse
5. End User Database

Among them, Relational database is selected as my project. In the other way, I chose MySQL Database to configure the project because the project which I do is suitable with relational database. As nature of relational database, MySQL works many types of data tables like customers, schedule, carriage, scheduledetail. etc. Each tables has own primary key likes custommerid, scheduleid, carriageid, scheduledetailid , etc. By using these keys, each table connect. And, we use data through the DBMS effectively.

7.1.Why am I choose MySQL among the other database

Nowadays, there are many popular and convenience relational database Management System. Somes are as follow

1. Oracle
2. MSSQL
3. MySQL



Oracle can work under all platform including network protocol and window. Oracle is mainly used in real world industry and large project because of effective benefits in online backup and recovery. That why, oracle is more suitable with large and real world project. The project which I do is student project and it doesn't need like this oracle database.



MSSQL is used in small to large business project and it mainly supports large data storage. It can cost high price because of its robust technology. It works with core language and it needs well-experienced analysis and programming. This Online Myanmar Railway Express Project is a student. As a student, it cannot spend more cost to buy database and it doesn't occupy high level analysis and programming.



Nowadays, Web and desktop programmers widely use MySQL because of open source. Another one is that it can support database back-end. It is really easily to use because installing is easy and third-party tools is really efficient. According to the project which I do, this project is student project and it is most suitable with MySQL . Most of the students want MySQL than Oracle because MySQL statement more clear and it can make less errors when they can normally understand in language. Back-end system is really effective. That why, I chose MySQL as my above options.

7.2.Data Collection and Data Analysis in project

As for data analysis, we analyzed the 1st NF, 2nd NF and 3rd NF through the user requirements. According to my system, we got the follow 3rd Normal Form.

Route	Seattype	RoutePrice	Carriage
<u>Routeid</u>	<u>seattypeid</u>	<u>Rotueid</u>	<u>carriageid</u>
fromstation	settypename	<u>Seattypid</u>	seattypeid*
tostation		price	totalseat
travellingtime			seatperrow
miles			
restingtime			

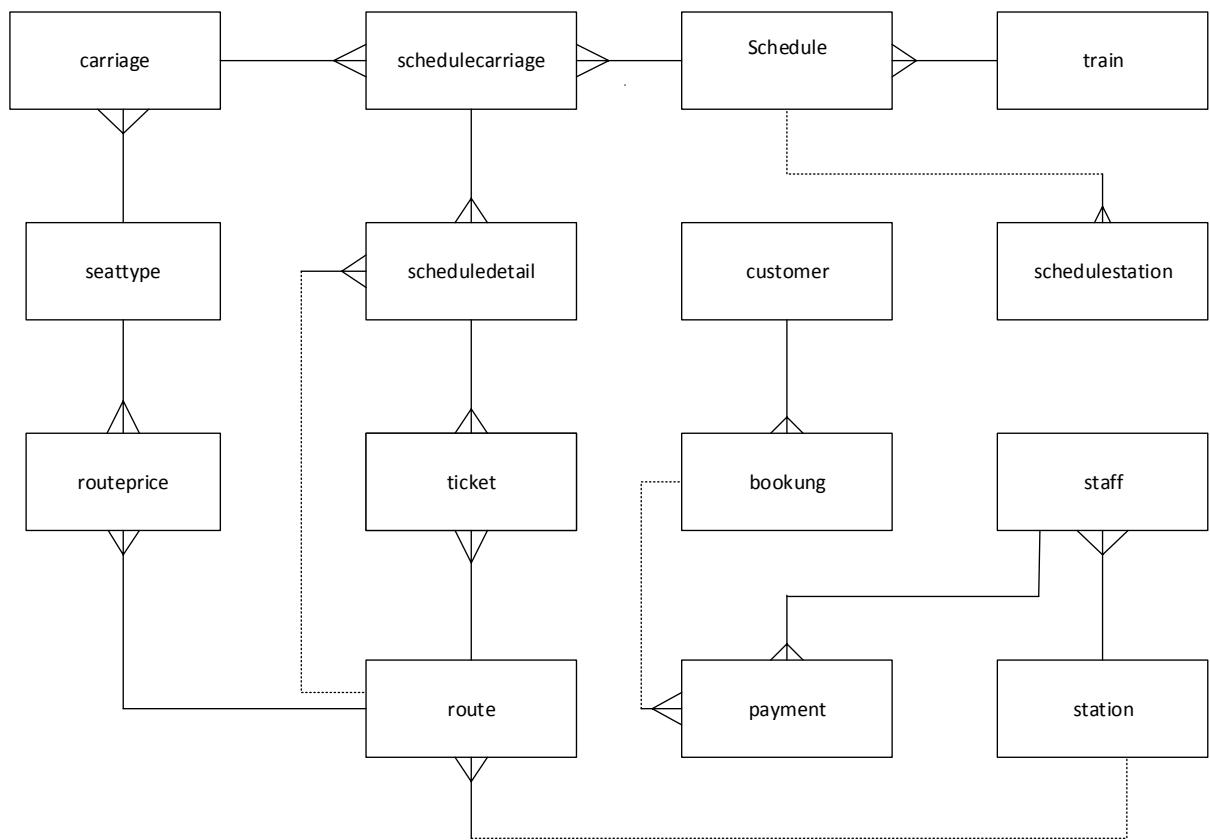
Train	Schedule	Shedulecarriage	scheduledetail
<u>trainid</u>	<u>scheduleid</u>	<u>schedulecarraigeid</u>	<u>schedulecarriageid</u>
trainname	schedulename	scheduleid*	<u>routeid</u>
tripname	depaturedate	carriageid*	seatnumbers
	depaturetime	carriageserialno	
	<u>tain_id*</u>		

Ticket	Customer	booking	Staff
<u>ticketid</u>	<u>customerid</u>	<u>bookingid</u>	<u>staffid</u>
seatno	customername	bookingdate	staffname
travellername	customercontanct	customerid*	staffemail
idnumber	phone		staffpassword
<u>schedulecarriageid</u>	customeremail		staffrole
<u>routeid</u>	customerpassword		stationed*
<u>bookingid</u>			

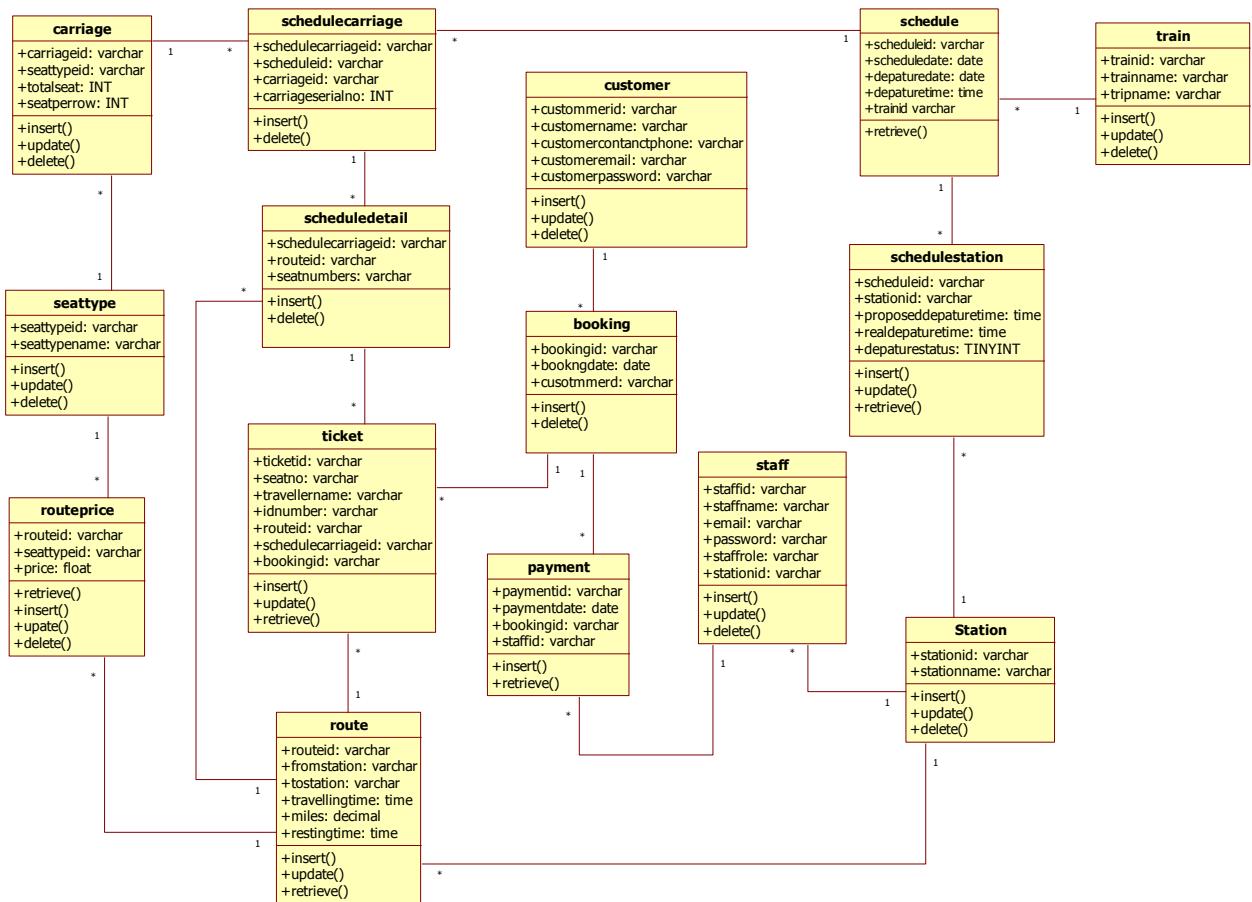
Payment	station	schedulestation
---------	---------	-----------------

<u>paymentid</u>	<u>stationid</u>	<u>scheduleid</u>
paymentdate	stationname	<u>stationid</u>
bookingid*		proposeddepaturetime
staffid*		realdepaturetime
		depaturestatus

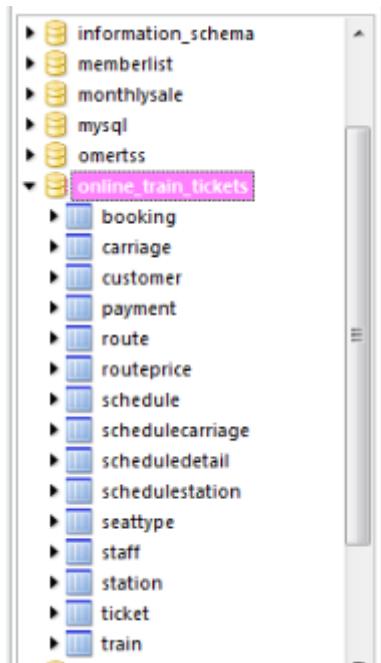
By using above third normal form, the following ERD come out for my system



By using above ERD diagram, we transform the class as follow



According to above data analysis, we make to configure online_train_tickets database in my MySQL database.



To configure this database, we needs three steps in my project. They are

1. Requirement Phase

In this project, a logical data representation of online_railway_ticket is created in this stage.

2. Design Phase

In this project, the above logical data models created tables in MySQL database. The tables are as follow

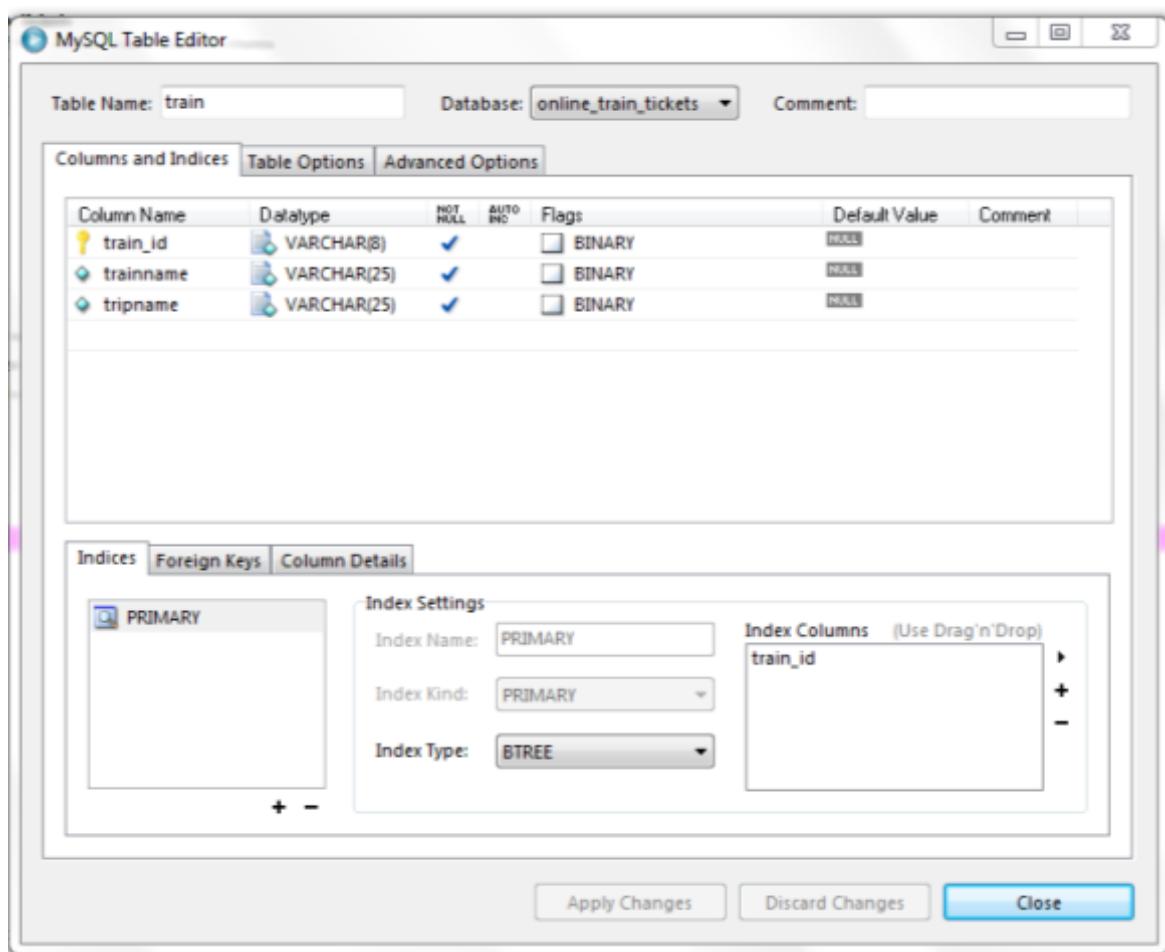


Figure of Train

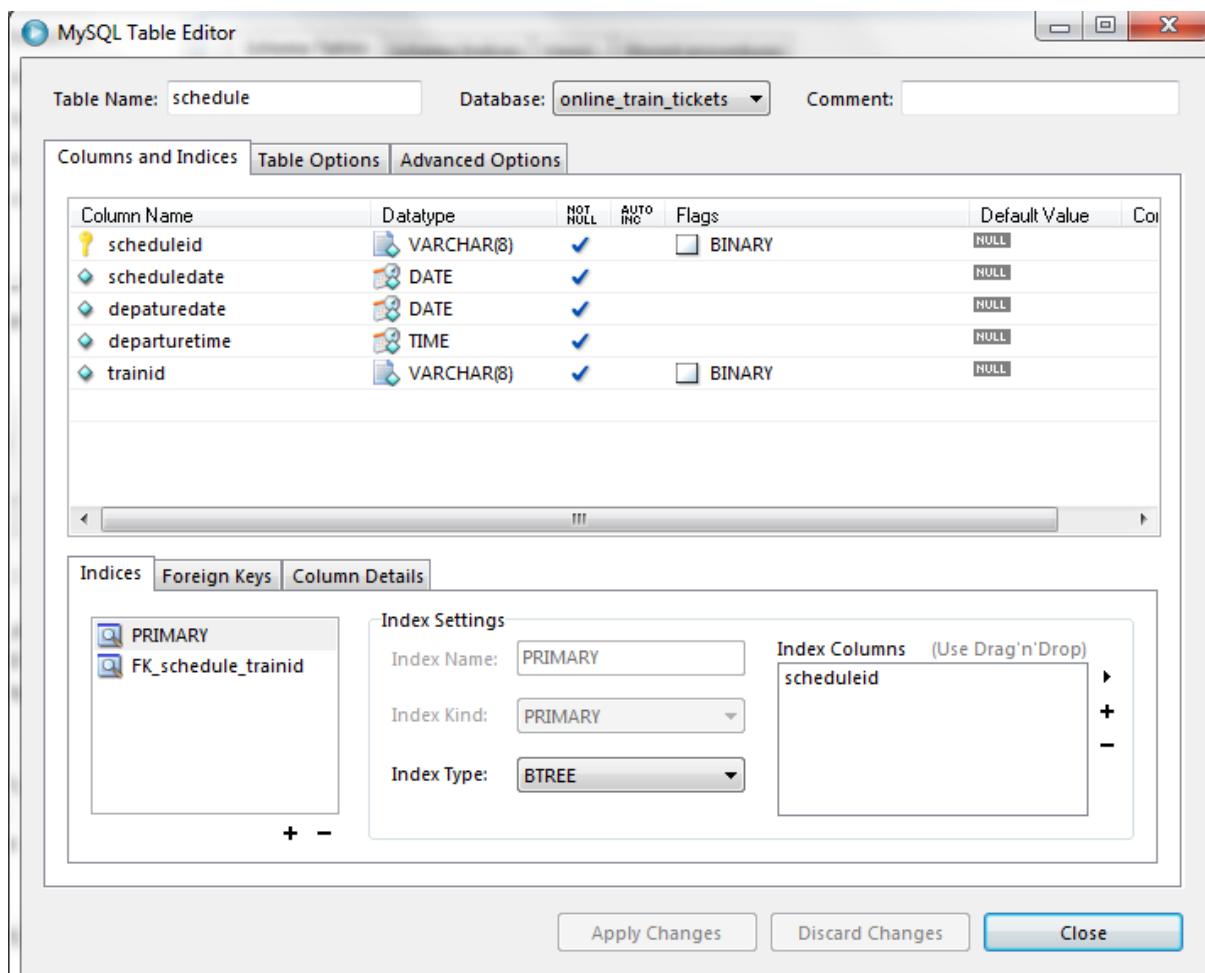


Figure of Schedule

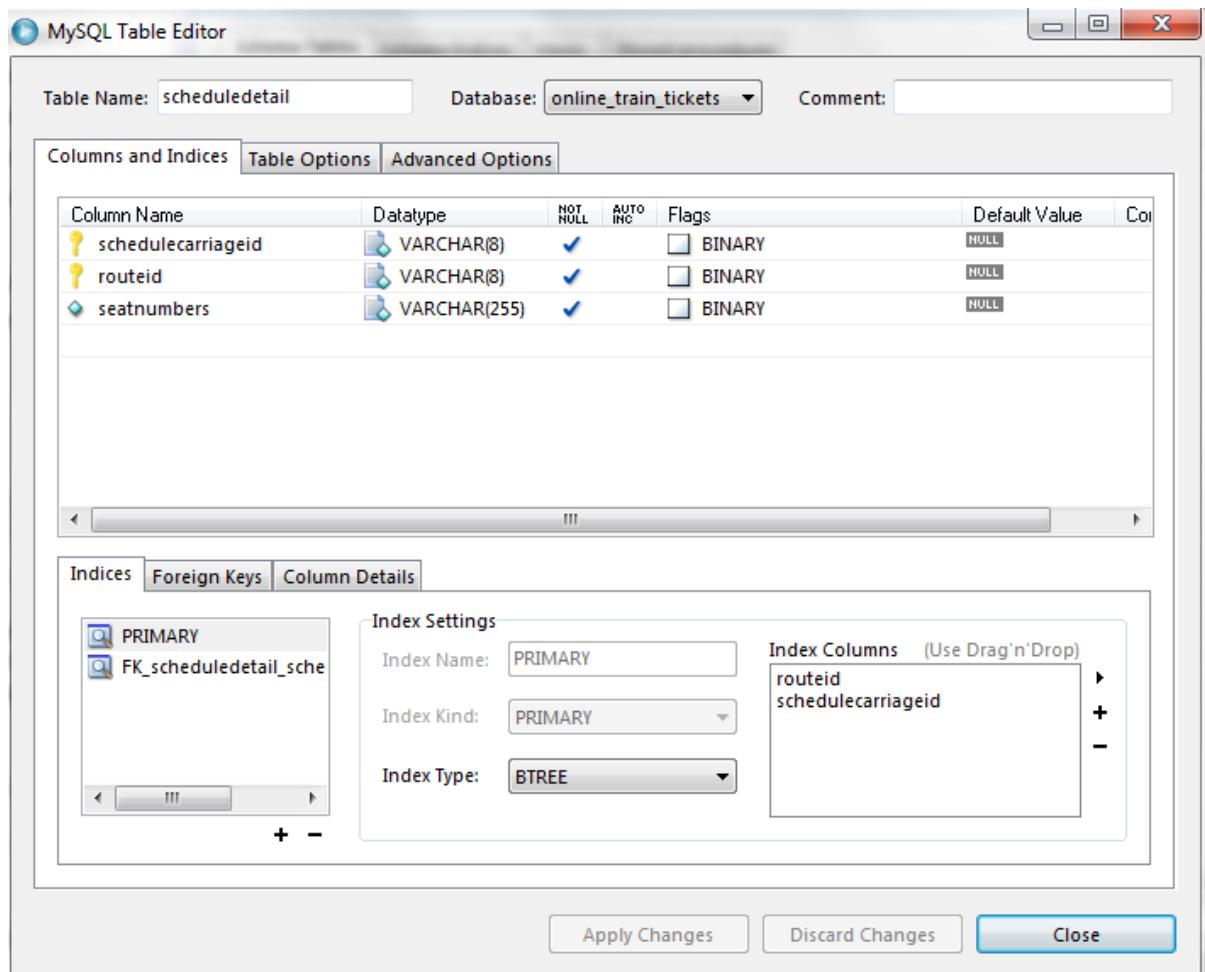


Figure of scheduledetail

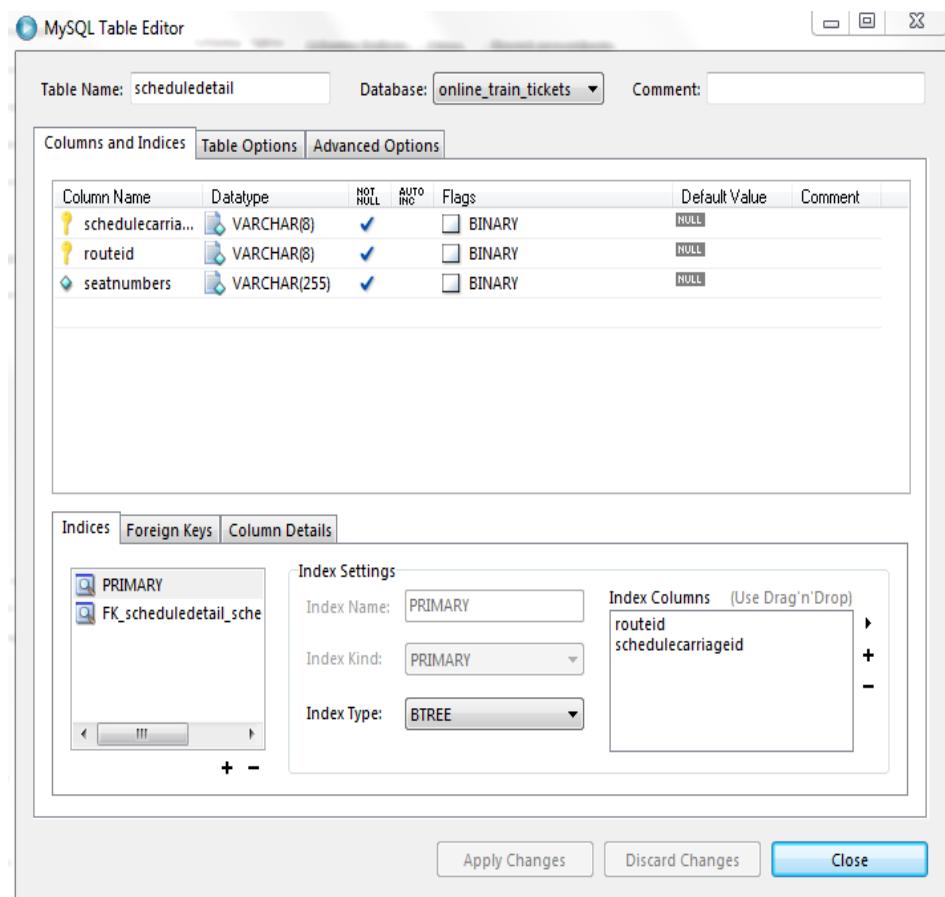


Figure of carriage

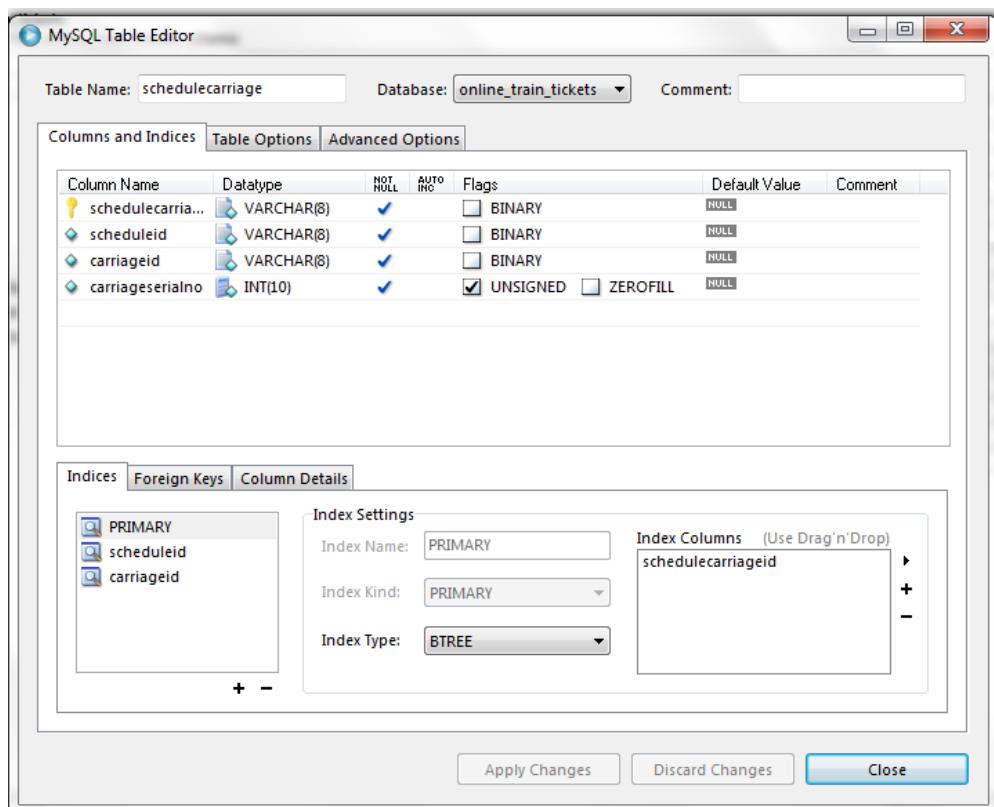


Figure of schedulecarriage

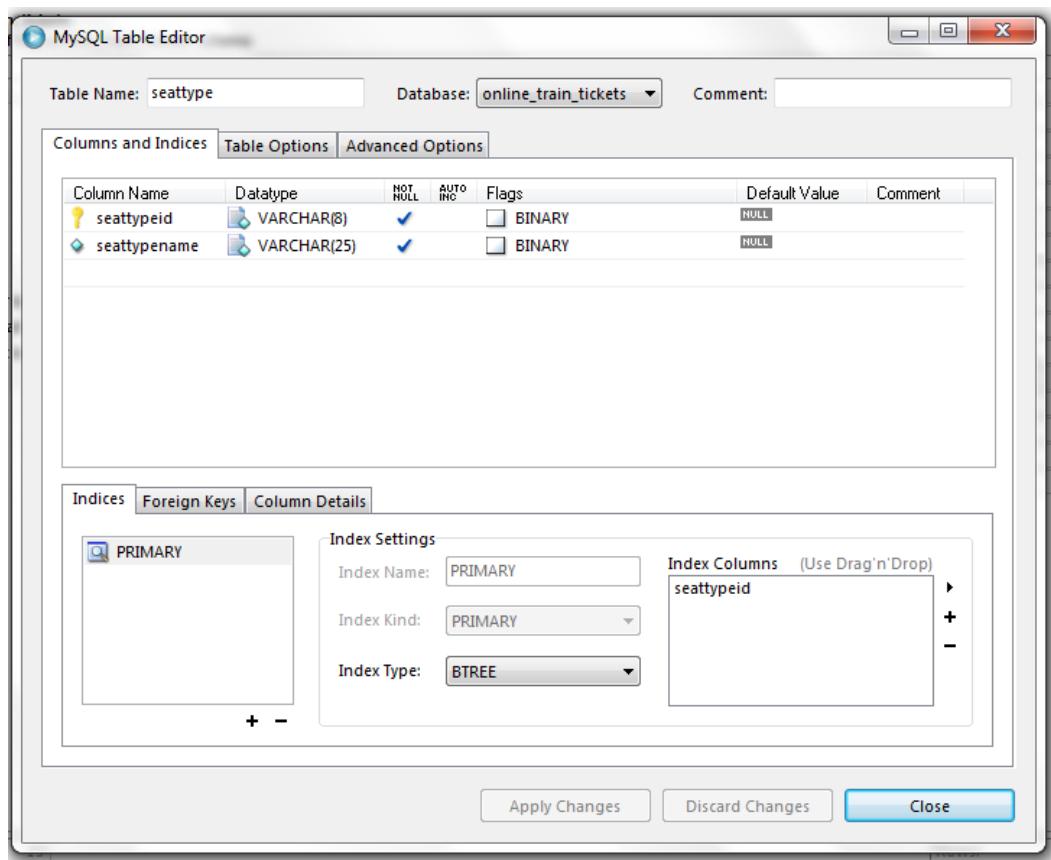


Figure of seatype

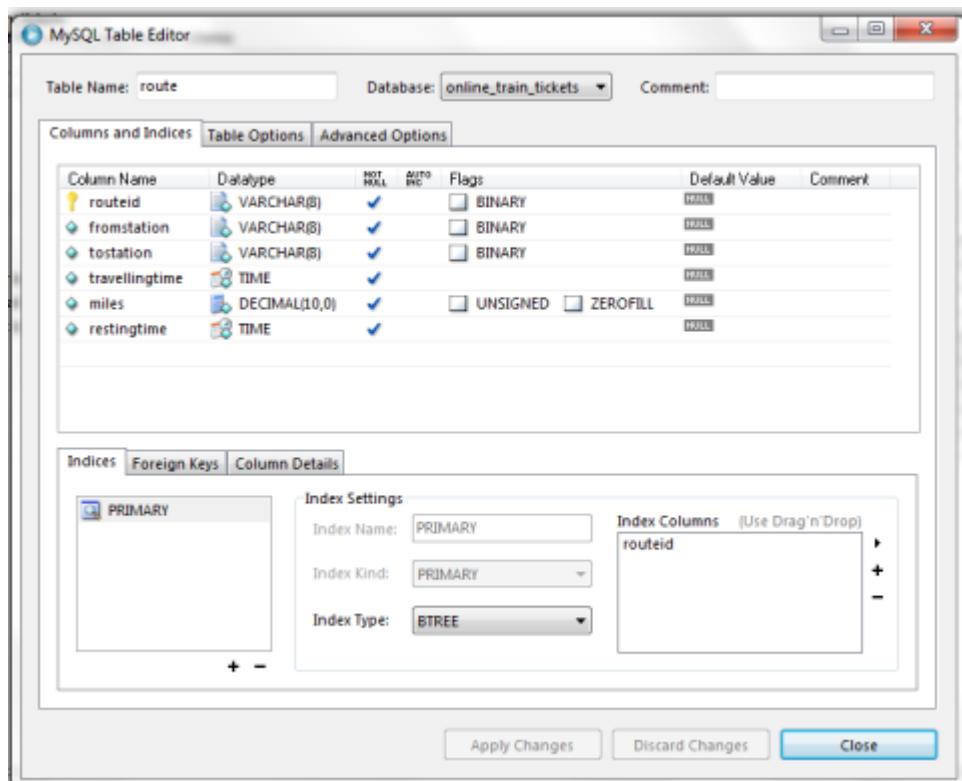


Figure of route

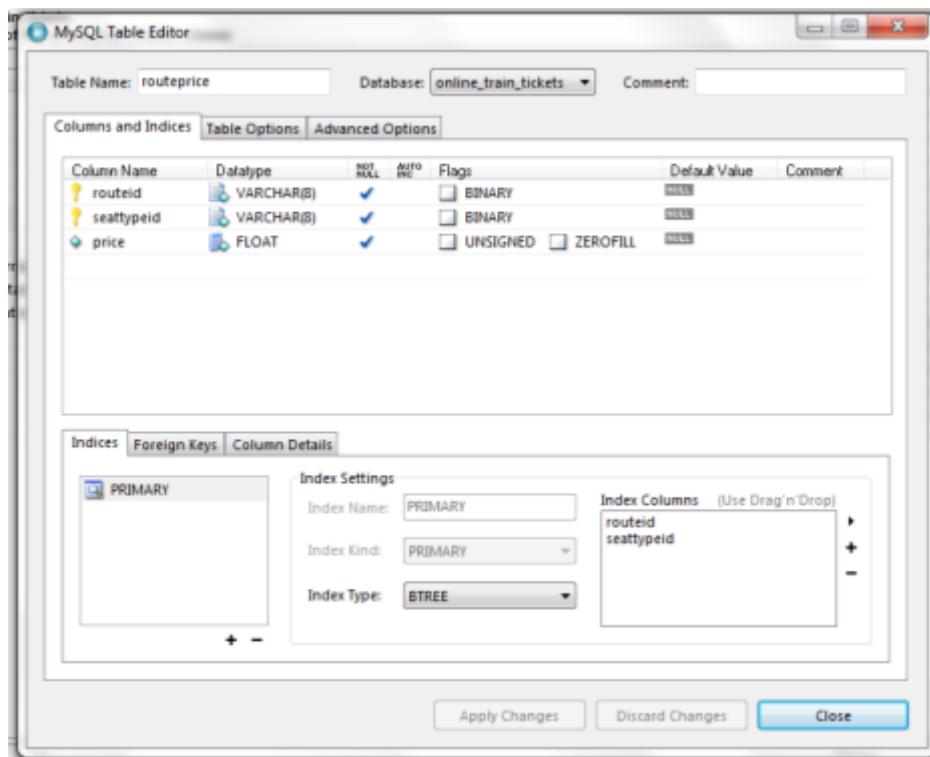


Figure of routeprice

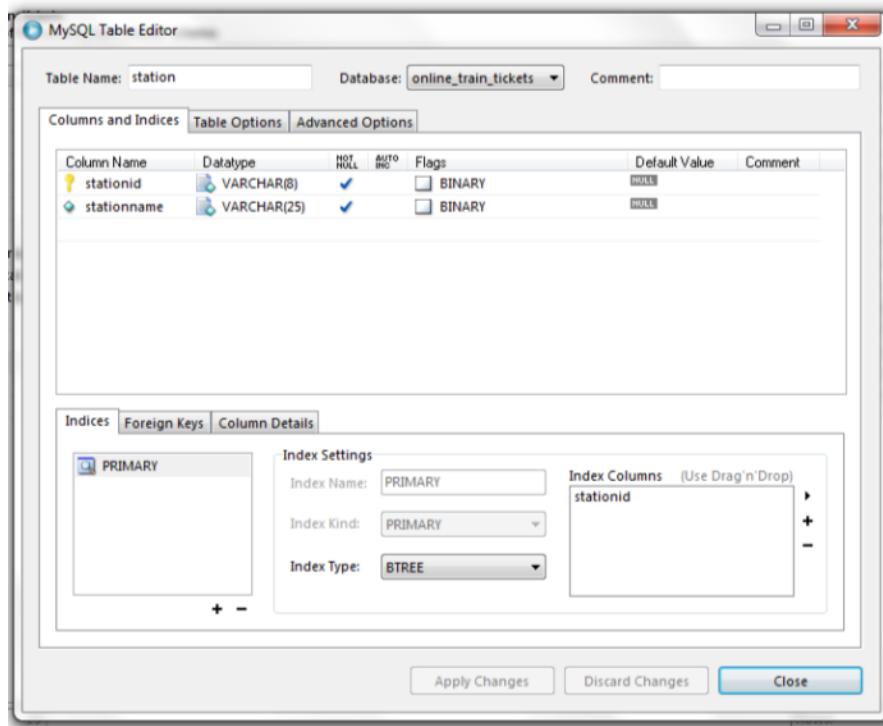


Figure of station

MySQL Table Editor

Table Name: schedulestation Database: online_train_tickets Comment:

Columns and Indices Table Options Advanced Options

Column Name	Datatype	NOT NULL	AUTO INC	Flags	Default Value	Comments
scheduleid	VARCHAR(8)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	BINARY	NULL	
stationid	VARCHAR(8)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	BINARY	NULL	
proposeddepaturetime	TIME	<input checked="" type="checkbox"/>	<input type="checkbox"/>		NULL	
realdepaturetime	TIME	<input type="checkbox"/>	<input type="checkbox"/>		NULL	
depaturestatus	TINYINT(3)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	UNSIGNED	<input type="checkbox"/>	ZEROFILL

Indices Foreign Keys Column Details

Index Settings

Index Name: PRIMARY
 Index Kind: PRIMARY
 Index Type: BTREE

Index Columns (Use Drag'n'Drop)
 scheduleid
 stationid

Apply Changes Discard Changes Close

Figure of schedulestation

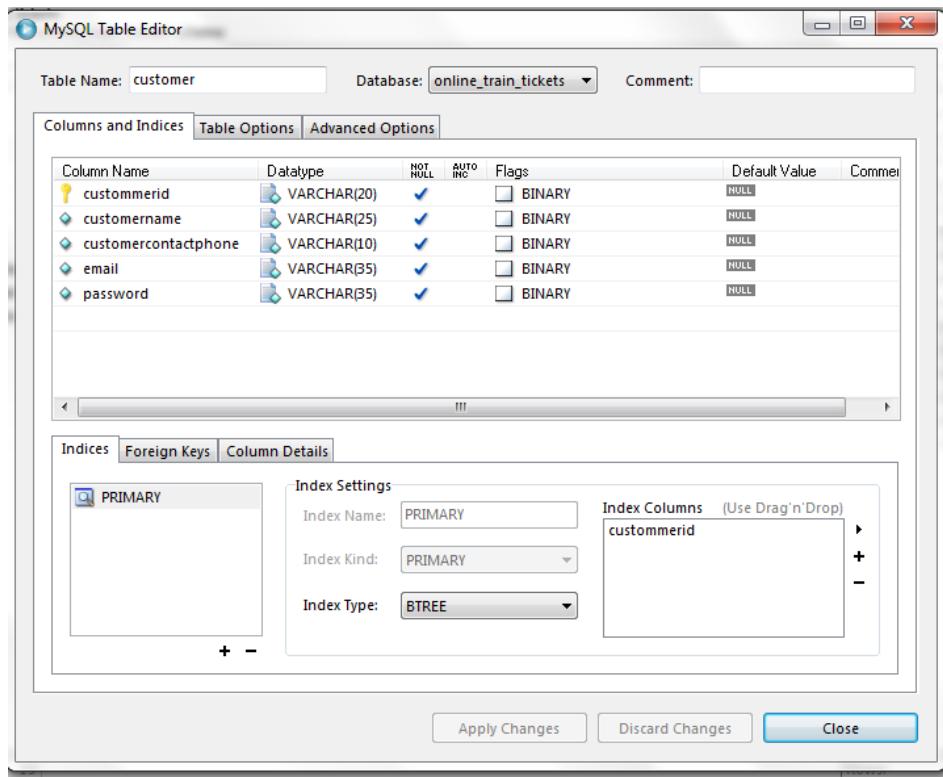


Figure of customer

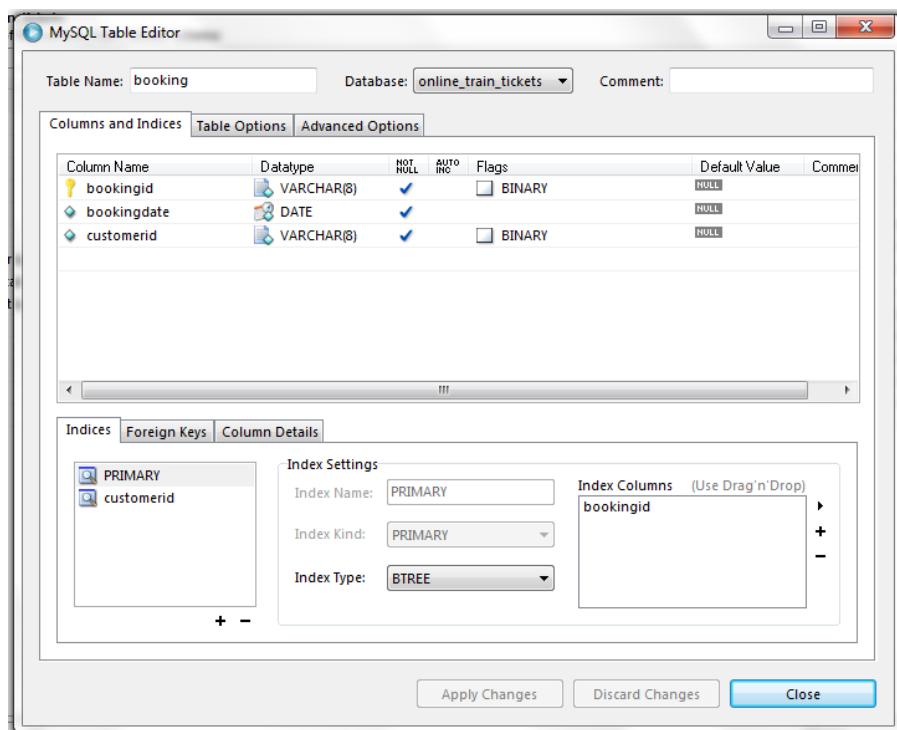


Figure of Booking

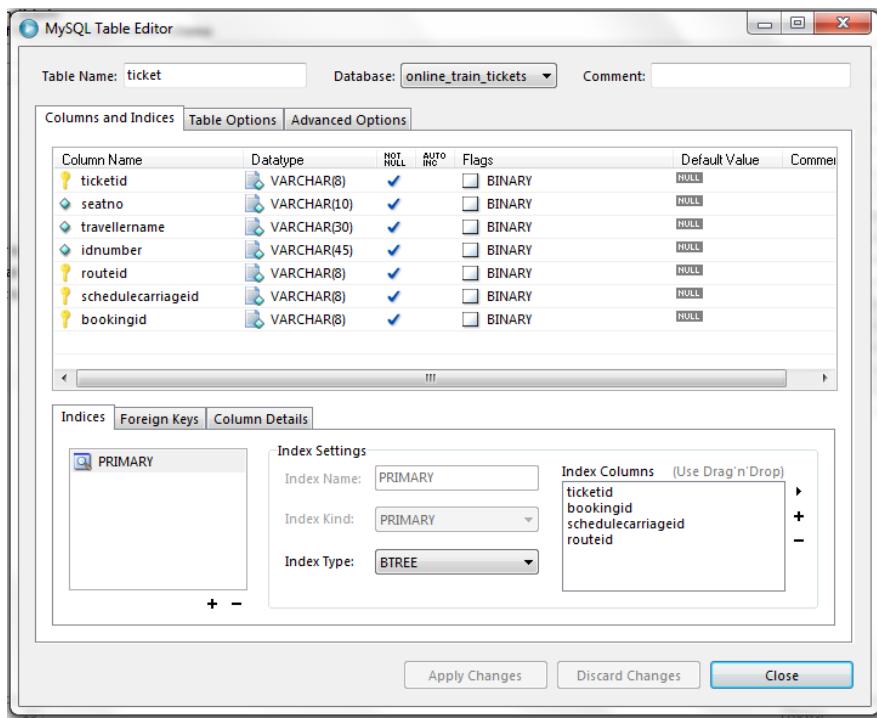


Figure of ticket

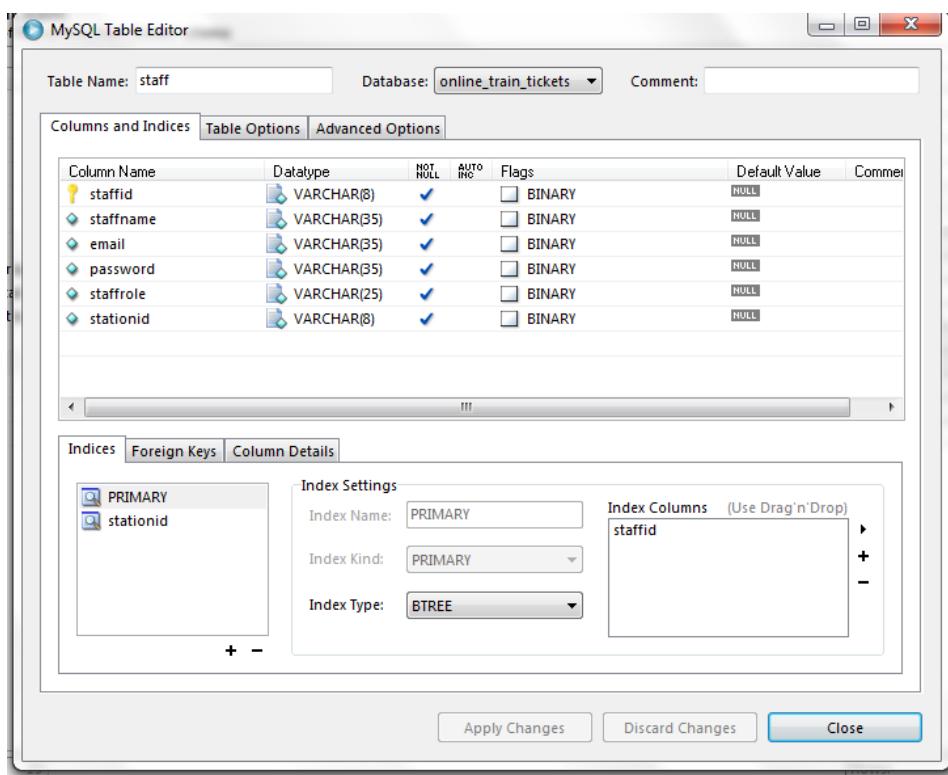


Figure of staff

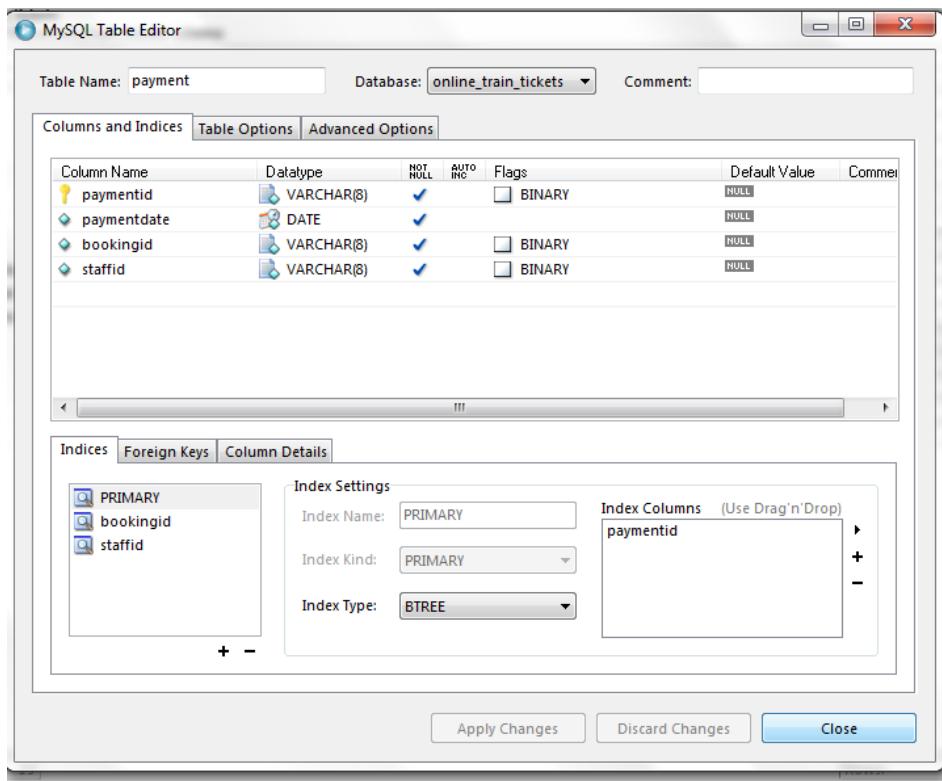


Figure of payment

3. Implementation Phase

At this phase, the above tables are filled with the testing data and write the queries the query for the technical parts of the project. According to following queries and testing data, "**online_train_tickets**" database will be correct. As a proof, following queries are as follow

❖ Query for searching schedule

```
Select Distinct t.trainname
      , sch.depaturedate
      , sch.depaturetime
      , sch.scheduleid
      , schs.depaturestatus
      , t.trainid
  from train as t
      , schedule as sch
      , schedulestation as schs
      , station as st
      , scheduledetail as schd
      , route as r
 where t.trainid    = sch.trainid
   and sch.scheduleid = schs.scheduleid
   and schs.stationid = st.stationid
   and schd.routeid   = r.routeid
```

```
and fromstation = 'Yangon'  
and tostation= 'Bago'  
and depaturedate='2015-11-30';
```

According to query, column names trainname, depaturedate, realdepaturetime and scheduleid are retrieved in the tables such as train, schedulestation, station, scheduledetail and route. As for joining tables, t for train, sch for schedule, schs for scheduledetail, st for station, schd for scheduledetail and r for route are marked. And then, the primary keys and foreign keys are used to join the tables as above query. Finally, the condition which is we want are checked. In this query, we wants schedule for Yangon to Bago route and '2015-08-30' for depature date.

➤ Result for searching query

trainname	depaturedate	realdepaturetime	scheduleid
11Up	2015-08-30	09:00:00	Sch001

❖ Query for daily ticket sale report

```
Select r.fromstation
      , r.tostation
      , seat.seattypename
      , SUM(price)
From schedulecarriage as schcar
      , carriage as car
      , seattype as seat
      , scheduledetail as schd
      , ticket as tic
      , route as r
      , routeprice as rp
      , booking as book
where book.bookingid = tic.bookingid
and schd.schedulecarriageid = tic.schedulecarriageid
and schcar.schedulecarriageid = schd.schedulecarriageid
and schcar.carriageid = car.carriageid
and car.seattypeid = seat.seattypeid
and seat.seattypeid = rp.seattypeid
and r.routeid = rp.routeid
and r.routeid = schd.routeid
and r.routeid = tic.routeid
and book.bookingdate = '2015-11-25'
GROUP BY seat.seattypename;
```

According to query, column names fromstation, tostation, seattypename and sum of price are retrieved in the tables such as schedulecarriage, carriage,seatty, scheduledetail, ticket, route ,routeprice and booking. As for joining tables, schcar for schedulecarriage, car for carriage , seatfor seatype,schd for scheduledetail, tic for ricket, r for route and rp for fouteprice and book for bookig are marked. And then, the primary keys and foreign keys are used to join the tables as above query. The condition which is we want are checked. In this query, we wants '2015-08-08' for depatured date. Finally, the query shows the retrieved column name according to seattypename.

➤ Result for daily ticket sale report

fromstation	tostation	seattypename	SUM(price)
SO01	SO02	Ordinary Class	2800

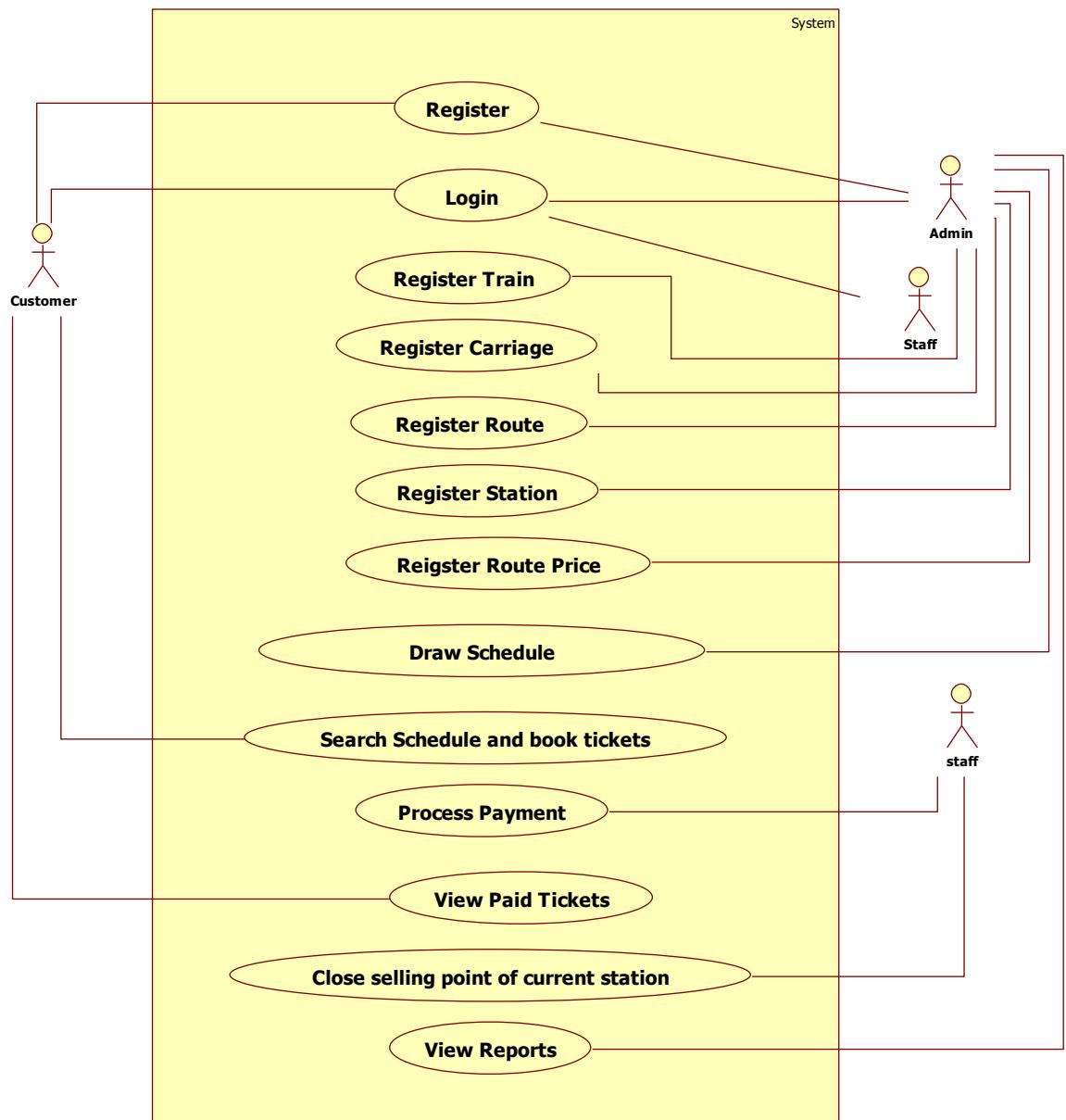
Chapter – 8

Human Computer Interface

Human Computer interface means convenient between website and users. As meaning HCI, it is core component for users. Among the user, there are three types as follow

1. Well-experienced user
2. Normal user
3. Unknown user

Among them, HCI address to unknown user as first priority. In this online railway ticket sale management system, "Admin", "Staff" and "Customer" are working in following use case.



8.1.Type of the interface

User interface means that presentation of graphical, textual and auditory of the computer program and the user can control the program using keyboard and mouse.

According to interface, the two visible examples are

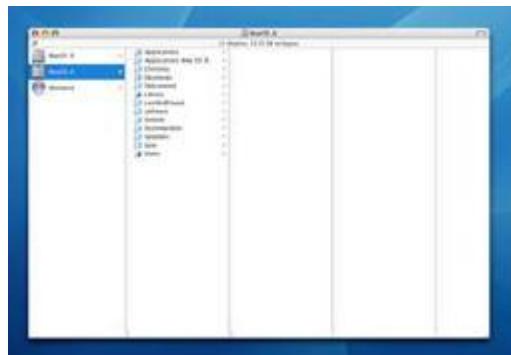
Command Line interface

This interface can work for inputting text using command string through the keyboard and it also work for outputting by using printing text on the computer screen. As an example

```
D:\temp\test>egis2svg.exe seenganz_seenganz.svg R.t
egis2svg.exe (version 0.5, 2005-09-12)
Usage: egis2svg.exe --input yourinputShapefile --output youroutput.svg --roundval
1.0.1 (--scale 25000) (--inputunits m) (--outputunits m) (--referenceframe)
and
you have to specify an input file (.shp)?
D:\temp\test>egis2svg.exe --input seenganz --output seenganz.svg --roundval R.t
working on layer seenganz ...
converting shapefile to a temporary sqlfile ... done.
tablename: seenganz
The following attributes are available. Please select the attributes you want to
include in the SVG export:
Attribute=gid. Type=serial: Do you want to include it (y/n)?
```

Graphical User Interface

GUI is based on **wimps** such as window, icon, menu, pointer and shortcuts. It can use these things to process input and output as follow



Among above, GUI is more suitable with the online railway system because it can convenience with Myanmar people in ease, control, speed, low resources for project. Online Railway system is not the screen based but it is just form based because the project is working with the data.

Using Menu-driven interface and form-filling interface in this project

In GUI, online train tickets sales management system can use **Menu-driven interface** and **form-filling interface**. Menus driven interface is a part of the GUI and it cannot remark with the typical rules. That why, this project uses menu to navigate from one page to another.

And form-falling interface is the best way to describe or insert the related data by users. That why, most of the registration page and login page use form-filling interface.



Fig: Log in form

As usual nature of people, they are like easy and usable and they don't like typing more words. In GUI, some help facilities support more convenient for users. This online railway system supports to get customer satisfaction with radio button and calendar etc. Radio button can help to customer to be easy with texting many words. Calendar facility can get to user to easy to choose the date. The following screenshots are using radio button and calendar facility in this project.

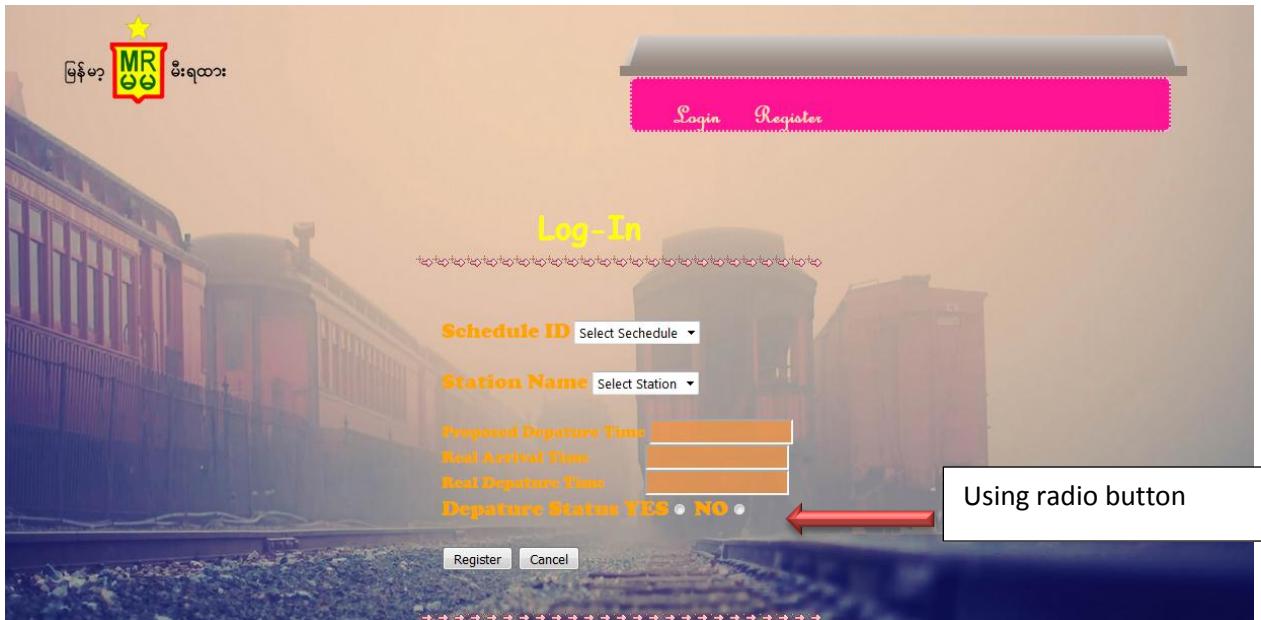


Fig .Close the station interface

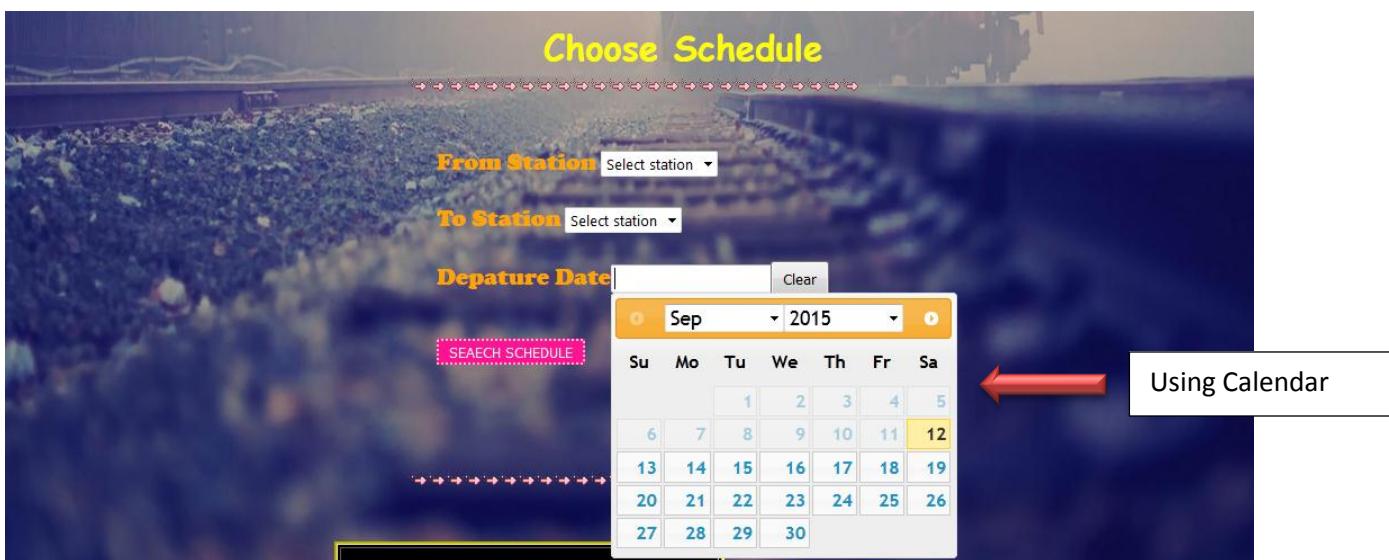


Fig. Search schedule interface

Chapter – 9

Testing

9.1. Software testing

Testing is the process based on error-oriented. Every kind of projects needs testing to get the right solution. According to this project, software testing is absolutely needed. In the real world, testing is made by humans and softwares. Those humans are called tester and software tester or software quality assurance engineers is also called in IT. The difference between them is software can only find the errors 30% and human have a chance to find the errors 70%.

Software testing targets end users and bugs and it means giving right software to user on time. Software testing aims the following facts

- ❖ Getting the right requirements by wanted design and development
- ❖ Working good in enquiry and respond
- ❖ Having performance and assessment time
- ❖ Intending user friendly
- ❖ Having compatible with the related environment
- ❖ Matching the users' requirements and product result

9.2. Testing Method

Static Method and Dynamic Method include the testing methods. Static testing can review, walkthrough and inspire. The static method can take the tools check the code, syntax data flow.

Dynamic can work the code by giving test case. Dynamic testing is easy to start because of executing the program itself. Before the program, it can get 100% completeness by checking functions and coding.

Box Approach

White box testing, Black box testing and Grey box testing include in the box approach and they are mostly used both real time project and students projects. They target the sides of the software tester through the given design test case.

White box targets the programming skills and it check input, output as well as the process so is called glass box testing, clear box testing and transparent box testing. This testing check the whole project by internal view through the source code.

Black Box testings are normally done by software testers. However it ignores the internal process and targets the output through the interface. It doesn't interest why and where the input come and get.

Gray box testing supports white box and black box testing because it targets database and document. White box can check whole testing process by using the programming skill and black box testing can targets the output effectively. If the three testing really work in the project, the project is real perfect project.

9.3. Testing Level

There are four testing level and this is applied in the development software. They are

1. Unit testing
2. Integration testing
3. System testing
4. Acceptance testing

9.3.1. Unit testing

This testing can target the functionality of the source code. It is mainly on the function level. It intends to class in the OOP. According to checking the functions, the tester who has programming skill mostly do this test in various kinds of project.

Integration Testing

This testing can target to get reliable interface because this testing check the errors in interface and connection between the components. This testing can do after the unit testing.

9.3.2. System testing

This testing is like the alpha testing. This testing can do end user or external tester or independent test team by the developer's view. It normally check log in, entry and respond and sending and printing process in the project. This testing is the previous testing of the acceptance testing.

9.3.3. Acceptance testing

This testing is called beta testing. This testing can be done by the people who out of the project team. It only targets to reduce the errors and want to get the suggestion from the users

Software Performance testing

There are eight performances testing to get better performance and they are

1. Load testing
2. Volume testing
3. Stress testing
4. Stability testing

5. Real-time testing
6. Usability testing
7. Accessibility testing
8. Security testing

9.4. Testing Artifacts

1. Test Plan
2. Test Design
3. Test case
4. Test log
5. Test incident report

Reason for choosing Black box testing

As for 0ption, black box is chosen because this online Myanmar express (Yangon-Mandalay) railway ticket sales management sales system is an academic project and UOG education give to do assignment during 6 months. Moreover not only document but also technical of this project do during this limited time.

If all testing which presented in this document, this project will be perfect but I have time gap so I only choose black box testing. It can also check the output of this project through the interface.

9.5. Test Plan for Online Myanmar (Yangon-Mandalay) Express tickets Sales Management System

Functions in this project – Registration by Customer and Staff

- Log in by Customer and Staff
- Register train
- Register carriage
- Register route
- Register station
- Draw and Delete schedules
- Search schedule and book tickets
- View tickets
- Close station at the selling point
- Produce Reports

Aim of testing

- The above functions can work well in this project

Duration	- 4 days (5 th September to 8 th September)
Kind of project	- Academic project
Resource	- low cost and limited time

- You can see *Test Case* and *Test Log* of this project in the [Appendix- F.](#)

Chapter – 10

Implementation

10.1. Implementation

In the implementation of the project, it is one of the important roles to configure the entire of project. To get the successful implementation, it needs to get planning, commitment, and sponsorship from the company's related team. It is the core work to understand both user and business organization's requirements before starting the project. So that the developer can set up targets to fulfill with the developing project. After the development, it come implementation. Here are five steps in implementation.

1. Planning and Preparing of the project
2. Setting Up and customized processing
3. Education and Training processing
4. Site preparation
5. Manage Release

10.1.1. Planning and Preparing of the project

This step is about the organization to show the organization's vision, aims, objectives, resources, tools and decency. If we organize this step right, it doesn't waste time and resources of the organization.

To organize the organization

Project's executive champion – should take part in this project and starts and supports the initiative of the project

Administrator(s) – who understand the whole business processes and knows the requirement both the organization and customers. He or she or they can understand the planning the of the organization through time and resources.

Project Manager – who are the leaders of this implement and is one of the important person of the whole project to configure

Users – who is most important people to get the effective system

Trainers - who is an important because it includes in one of the sessions in implementation

Set the realistic Aim

- Describe the corporate mission such as using PRINCE2 (project control in environment)

- Describe the objectives and future expansion
- Prioritize and document of the requirement of the organization

Understanding the data

Data is sophisticated and unusual format before starting the project. And the customer cannot understand the data immediately. That's why the customer should be discussed and explained about the data by taking the time.

Select the implementation approaches

At this stage, approach is chosen to be suitable with the implement timeline. Two main popular approaches are waterfall and scrum methodology. Most of the organization use the more iterative scrum approach because it can imply with deliver units and revise and refine within the cycle.

This stage will produce the best suitable approach with the business. Many enterprise customers start the initial release with the waterfall approach and then start using a more agile approach, scheduling regular major (for example, quarterly) and minor (for example, monthly or bi-monthly) releases.

Create the project timeline

Building the timeline needs the effective time which includes designing, building and deploying. And another necessary thing is Prioritization of requirements. Concerning chosen approach, it decides tasks which do in parallel, such as cleaning, mapping, and loading data. Moreover, it decides requirement and estimate the require effort to implement.

10.1.2. Setting Up and customized process

According to Setting Up, the first we needs to configure the project is the hardware esuch as UPS, internet access, etc.

According to customized processes, the system are ready to set up and customized because description of requirements, understanding the data and select the method are completed in first stage.

The following are some approach to configure setting up and customized process

- Describe the setting of the security

- Customize the application
- Generating the reports

10.1.3.Education and Training

The stage is user-oriented step through the task which is running the system in the organisation. It gives users and staff to get the effective skill. This stage is one of the practical based stage.

The following are method of training

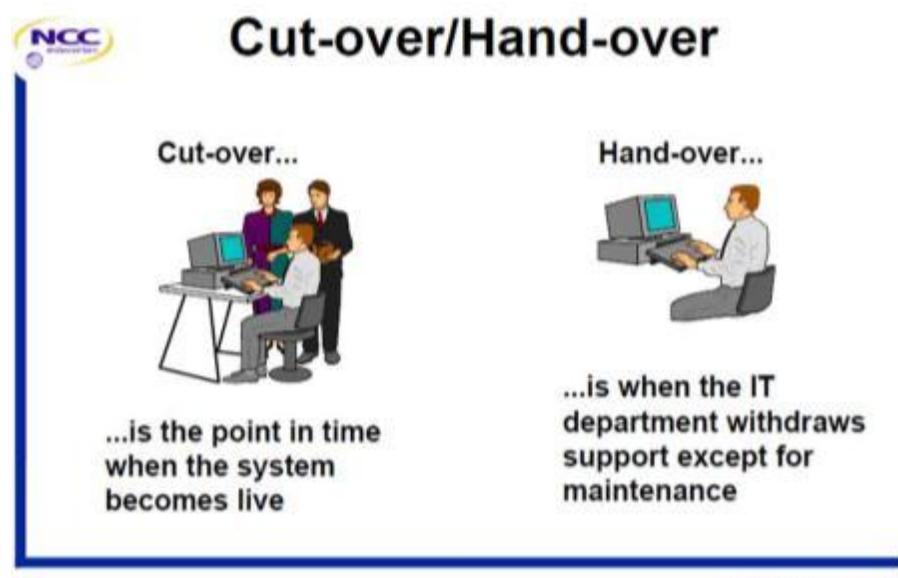
- # Formal lecture
- # Discussion
- # Computer-assisted training
- # User Manuals
- # Programmed loading text
- # Quick-reference guide

The task which is running the system in the organization

Changeover

It is combination of step such as cutover and handover.

Planning and Implementation - 24.8



Its processes are

- * Data conversion
- * Procedural conversion
- * Control conversion
- * Documentation

Changeover can be performed in many ways. In brief we can define 3 ways, they are

1. Parallel Running

It is running both old and new system. It can run cross-checking the result effectively and it can get the full testing in testing phase. It can compare errors while running but it needs the more workers.

2. Pilot running

It can run the old system and new system concurrently. It can test using at first and use later. It is called the retrospective running.

3. Direct Changeover

It installs the old version to the new version directly. According to direct changes, there are effective the involvement and participation of staffs. It has many chances to meet the risk. To get successful direct Changeover, testing has been exhaustive and confidence. This testing should do the occasion which has little work.

10.1.4.Site Preparation

It is about the place which is set up the system. To develop the site preparation, the following fact are considered

- ! Saloon
- ! Power Supply
- ! Heat dissipation
- ! Office alternation
- ! Office layout
- ! Office furniture

10.1.5.Manage release

To create the new life cycle of CRM, it includes valued new functions and user request. Release management should establish as soon as possible after the initial deployment. This approach will permits the users about the requirement which is addressing their needs and requests.

10.2. Reasons for choosing Parallel Running

Myanmar Railway is suitable with the parallel running because it is real time project. This organization is large organization and the people in organization are not familiar with the new technology. It means that average age of people in this organization can have over 35 years old. Additionally, our country is developing country so that there are many risks when this new system will imply with another changeover ways. As big organization, only parallel running can only give full testing. Making parallel running needs more workers. It is not big deal because of this big organization.

Chapter – 11

Critical evaluation and Conclusion

11.1. Critical evaluation

Criticism is addressing to the completed work of the project. Discussion can complete the good criticism. This project is an academic project so that it aims to purposes such as **reports quality** and **usability**. To accomplish these two facts, this project that I do with many potions. This project is "**Online Myanmar Railway (Yangon -Mandalay) Express Tickets Sales Management System**" and the domain problem is established from the Myanma Railway which was running by government. The major issue is that there is no website presence. Additionally, there is no online registration process and online booking tickets and Management Information System. The aim of this project is to cover above domain issues of this organization. Firstly, the appropriate title is selected in introduction and project development plan is created within the limited timeline. After studying the similar and related projects in literature study, the proposed system is drawn for this project. In the proposed system, the aim and objectives of this project is presented and the required resources to configure this project literally and technically are marked in this session. Moreover proposed system is in detail scoped with entry, response, update functions and reports. As supporting the proposed system, I become know some impropriated matching between the aims and scopes of the project. After documenting proposed system, I go to situated local business to configure field study. In this, I study the environment of the organization by drawing the organization chart. When the procedures of organization are observed practically, there are some unfamiliar problems however literature studies help me to understand. To get more detail procedures and taking user requirements, I mainly interviews U Ye Naing, staff in Tharzi Railway Station and I make the discussion about new system with his friends like the facilitated workshop with the in timebox. Finally, I get user requirement like functional and non-functional list. After studying this procedures and processes of the system literately and practically, lifecycle, approach, tools, UML and language are selected to configure this proposed system. As the lifecycle, RAD is selected because it is increment process and address to customer feedback. It produces the right things based on the right time. As for approach, facilitated workshop and timebox are selected collective and right time is the part of the system to success. As for method, OOADM is selected because this project is dynamic and complex. As for diagram, UML diagram such as Use Case Diagram, Class Diagram, Sequence Diagram, State Diagram, Robustness diagram, Package Diagram and Deployment Diagram are selected because it can understand the whole

system separately. PHP is selected as a language because I think that it is able to easy integration by studying the website in literature study. After studying the nature of the diagram, this system is configured with their diagrams. Among UML diagrams, class diagram is firstly drawn. Firstly, usecase with usecase details and activity diagrams are drawn because the relations and processes of users and system is wanted to know. Secondly, I analyzed the data which is collected in field system to reach third normal form. Third normal form are used to draw the ERD of this project. ERD is based to draw class diagram to process database. After drawing these two diagrams, sequence diagram, state diagram, robustness diagram, packaging diagram and deployment diagram are drawn to know and configure the process of web. In this chapter, I was wrong between state diagram and sequence diagram because they two are little similar but totally different. After understanding procedures of this project, the first to configure the website is the accurate database. That's why, database chapter is created. In this chapter, the database which I use in this project is selected and it is MySQL. Because it is easy to use and install and database back-end process. According to class diagram, the database and the tables are drawn in MySQL concerning with this project. After inserting some data in the related tables, some reports query is tested because I want to know database is correct or not. Creating the database in MySQL is not a big deal because database engineering lectures help me at this time. Correct database is the first to configure website. In this project, "**Online Myanmar Railway (Yangon -Mandalay) Express Tickets Sales Management System**" is built. In this project, it includes Customer Relationship Management (Online Registration system, Search Schedule, Booking Tickets, Payments, etc.),Supplier Relationship Management (Online Management System) and Generating Reports. But the correct reports do not come out on the website when the queries are applied with PHP. It takes me times to find out this error. Finally I know it because there are case sensitive about the date such as Report Date. That's why I use the calendar GUI to correct format. At that time, the reports are come out reliably. To create above processes in website, HCI is one of the important components. The HCI of this project is user-friendly but the design is not modernized. Responsive technology does not include. Because there is no time to integrate with this project and I am still studying this technology. In testing, every process is tested as my possible with three sessions Test Plan, Test Case and Test Log. At first time, some tests are filled but they are amended finally. Above three testing, Test Log is the most important and the first testing fail of this project will see Test log in Testing Chapter. In security, this project is not good enough security to implement in real world. As it is the government project, it is more to insert the secure way. In this chapter, I become to know

backup is important and how to protect this project from threat as a government project. In implementation stage, Parallel implementation is chosen because the organization is large and this is on time project. After implement this project in the local department, there are little changes on the organization. The criticisms of the organization is little terrible. The people in strategic level are really satisfied but the people in operation level can have fear and blames on the new system. It means resistance to change. But, this project is an academic and simple project to work the procedure on the whole organization. The people in strategic level can demand to produce more reports about each department but I explain that this project is academic and just a simple project. They really satisfied the function, "**Close the selling point of the current station**" because it can produce systematic and reliable data and procedures. After accomplishing this project, I make a list about my abilities myself between before and after the project. Before the project, my status I firstly realized is poor critical thinking because of no experience for big project and mis-understanding of the nature of lifecycle, approach and tools. Software development skill is un-isolated.

In the diagram, I can draw the diagram such as class diagram, usecase, activity, sequence, robustness diagram and ERD and my drawing skill scatter and un-sequence. I really have little knowledge database about performance, reading skill or the business from all over the world are poor. After doing the project, I think I firstly gained Experience which is more improve than usual and critical thinking of reports are modernized and the produced reports are more suitable with the organization than the reports in second year project. Selecting the lifecycle is more confident because of errors can point out the right way. I select wrong lifecycle in this project. According to this fault, I get the right idea and suitable lifecycle in the project. Moreover, the nature of lifecycle is more familiar. After doing this project, my software skill isolated and know step by step software developing diagram. The performance which is really concern with database functions and storage are known vividly. Reading for Literature Study, the procedures of booking hotel, tickets, airplane and cinema from all over the world are known and the useful social advertisement are known widely. "**Online Myanmar Railway (Yangon -Mandalay) Express Tickets Sales Management System**" is very suitable with the local business. The people in strategic level are really satisfied about it because it can save time. However, the people in operational level are not satisfied but it will be convenience when they are familiar with this system. Moreover, I suggested them that this project can save not only time but also cost because of de-layering of staff and staffing. That's why, it can save cost and it can also overcome the competitors by reducing the cost. But, this project was not complete with the whole organization because it is tested with only two trains,

only one schedule, un-completed staff detail and only the scope (yangon-mandalay). Because there are many coursework and project within the limited duration and I have to accomplish. Many coursework means Information Technology Planning, Development Framework Methodology and Database Engineering and they are rather difficult with each one. Moreover, there is also Distance Learning Exam for my local graduate degree and we have to study for it. That's why: there are some weaknesses for this project.

11.2.Conclusion

This project is "Online Myanmar Railway (Yangon -Mandalay) Express Tickets Sale Management System" and it mainly based on customer relationship management for booking process and MIS system. This project lets customer to register, log in, search schedule, book tickets and view the purchased tickets. As for MIS system, the staff is let to register, log in, draw schedules, confirm payment and view reports for each position. The above procedures and processes are carried out actually.

This project can work well within the predefined functional scope. To get complete software project, studying the background, preparing the prototypes, searching the technique concepts on the internet, making the program with PHP ,generating the reports and testing are make myself within the limited times and schedule plan. As an academic project, this project will not give marketing, suitable web-design design, modernized payment system and reliable back up.

As the nature of project, the future development will need to meet the objectives of the futures. One of main future development of this project is e-marketing. This project is built up without e-marketing. Making E-marketing with social software like Facebook, Twitter, etc will be more success not only Myanmar but also all over the world.

This project is academic project and can cover main functions of the user organization. It may have some errors and later customer found errors that I should correct. Moreover it should be needed to localized by people in Myanmar. It means that presenting Myanmar fonts and presenting Myanmar Map to point out locations.

Online payment is one of the important future developments and this project is built with the bank transferring. In the future, online payment should be utilized with visa cards or master cards.

Concerning with Government, there might be political conflict. At that time, hackers can have more chance to hack. Moreover, there is no doubt about destroying by nature disasters. To cover above cases, security policies should be taken account and applied.

When the programs are completed, this are tested within the organization as test run. They absolutely satisfied about them and they think that it is accomplished with their business. That's why; I let them to use this project as a simple to develop their business although it has more things to reform.

Later, the applications on the mobile will popular than usual. As Myanmar is a developing country, everyone use mobile phone today. That's why: as my assumption, this business will be more successful if this project will convert as application on the mobile.

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Appendix – A

Project Schedule and Development Plan

University of Greenwich, B.Sc (Hons) Business IT

Project Schedule and Development Plan for 2013 June to 2015 Dec Exam Cycle

Student Name: **KHIN YADANA PHYO**

No.	Task Name	Task Deliverable(s)	From	To	No. of Days	Weeks
1.1.	Produce Project Development Plan	Project Development Plan	27-Jul			1
1.2.	Produce Project Proposal and submit with Detailed Plan to supervisor	Project Proposal (including project title and development plan)		27-Jul		
1.3.	Plan and carry out literature search and review	Literature review	28-Jul	28-Jul		
1.3.1.	Study and review similar websites	Similar websites research and reviews	28-Jul	28-Jul		
1.3.2.	Study and review system development lifecycle, system analysis and design methodology and development approaches.	Review of system development aspects containing: - Comparison of existing development lifecycles, methodologies and development approaches	29-Jul	30-Jul	2	
1.4.	Contact with user organisation, and obtain legal approve	-	31-Jul	31-Aug	1	
1.5.	Identify and create required report contents in Word templates	Word template file containing required report sections	1-Aug	2-Aug	2	
2.1.	Meet up with client organisation and identify the system scope	Context level use case	3-Aug	4-Aug	2	
2.2.	Carry out Feasibility Study	Feasibility study report fully identified: - economically, - technically and	5-Aug	6-Aug	2	
2.3.	Carry out JAD workshop (together with important persons from client org.)	Initial JAD workshop result, including problems of old system, and improvements in new system	7-Aug	8-Aug	2	
2.4.	Discuss and identify functional and non-functional requirements	Functional and Non-functional Requirements List	9-Aug	10-Aug	2	4
2.5.	Discuss and produce functional prototype of the new system	Functional prototypes (based on functional and non-functional requirements)	11-Aug	12-Aug	2	
2.6.	Carry out Business Study (detailed system analysis and design)	Detailed system analysis report section containing (initially): - introduction - the background of the new system - problems with the existing system	13-Aug	16-Aug	4	
2.7.	Review functional prototype if require, go back to stage 2.3. or 2.4.	Functional prototypes (reviewed and modified)	17-Aug	18-Aug	2	
2.8.	Draw Level 1 Use case	Level 1 Use case diagram	19-Aug	20-Aug		
2.9.	Write up use case scenarios (Primary + Secondary) based on the requirements	Detailed use case descriptions (Primary + Secondary)	20-Aug	21-Aug	3	
2.11.	Collect sample data, carry out normalisation and produce Entity Relationship Diagram	Third normal form (3NF) data, optimisation and Entity Relationship Diagram (ERD)	22-Aug			
2.10.	Draw initial class diagram (based on 3NF and ERD)	Class diagram (initial)		22-Aug		
2.10.1.	Review and finalise the class diagram (identify attributes and operations in details)	Class diagram in detail containing: - attributes and operations	22-Aug		2	
2.12.	Produce physical database specification	Database specification (or) Physical database schema		23-Aug		
2.13.	Construct physical database	An empty database file for the development of the new system	24-Aug			5
2.14.	Data entry to database tables, test query for enquiry in the scope and reports in the scope, correct database	construct database, make data entry, enquiry response and reporting through query, get screen captures in each step		28-Aug		
2.11.	Draw robustness diagram	Robustness diagram	29-Aug			
2.12.	Draw sequence diagram	Sequence diagram				
2.13.	Draw activity and state machine	Activity diagram, State machine		30-Aug		
3.1.	Carry out the development (write the program or website)	Program modules (based on the functional and non-functional req.)	31-Aug	4-Sep	5	2
3.2.	Prepare test data, test case and carry out validation testing, Test log	Test case, Test log	5-Sep	6-Sep	2	
3.3.	Produce user training plan	User Training plan	7-Sep	8-Sep	2	
3.4.	Produce user manual	User manual	9-Sep	9-Sep	1	
3.5.	Carry out verification testing (by users), and produce test log	Test log	10-Sep	11-Sep		
3.6.	Review the first version of the system with functional prototypes, (make amendments if require)	Amendment to code	12-Sep	13-Sep	4	

4.1.	Revise and review according to the aims and objectives of the project	Revision	14-Sep	17-Sep	4	
4.2.	Document the comparison of the system development approaches	Comparison of system development approaches	18-Sep	20-Sep	3	
4.3.	Document the system analysis and design, add other chapters	Detailed and finalised system analysis and design report containing the functional and non-functional requirement list, with associated design diagrams, and database specifications	21-Sep	22-Sep	2	
4.4.	Finalise the system version 1, package and produce setup file	System version 1 package and setup file	23-Sep	26-Sep	4	4
4.5.	Demonstrate to supervisor	Supervisor review containing required modifications and amendments	27-Sep	29-Sep	3	
4.6.	Discuss additional security measures with the client organisation	Security review	30-Sep	3-Oct	4	
4.7.	Amend the system version 1, with required security features (if require)	Amendment to code	4-Oct	9-Oct	6	
4.8.	Finalise the system version 2, package and produce setup file	System version 2 package and setup file	10-Oct	11-Oct	2	
5.1.	Produce critical appraisal	Critical appraisal	12-Oct	13-Oct	2	
5.2.	Write up conclusion	Conclusion section	14-Oct	15-Oct	2	
5.3.	Add up the abstract of the system	Abstract	16-Oct	17-Oct	2	
5.4.	Add bibliography and reference lists	Bibliography and reference list	18-Oct	18-Oct	1	
5.5.	Compile and complete the final write-up report	Final write-up report	19-Oct	19-Oct	1	
5.6.	Final demonstration of error free system to supervisor	Final tested system	20-Oct	10/20/201	1	
5.7.	Prepare to upload, and burn project CD	Project CD ready to be uploaded	21-Oct	22-Oct	2	
5.8.	Print out the final project report	Fully printed final project report	22-Oct	23-Oct	2	
5.9.	Submit to supervisor, and upload to UOG	Final printed report, and CD containing soft copy report, project source file, setup file and database backup file	25-Oct	25-Oct	1	
					Total Duration:	13 weeks
	13 Weeks * 7 Days per week *2Hrs per day	= 182 Hours				
		This is my own schedule for Online Myanmar Railway Tickets Sales Management System according to my supervisor schedule plan.				

Appendix – B

Proposed System

A.1.Required Resources

To construct for the project, the following resources can be used.

As for Business resources

- 1) Reference
Books => from my lecture and online
- 2) EBooks => from my lecture and online

As for Technical resources

- 3) Xampp => To join with MySQL
- 4) MySQL => To construct Database
- 5) Sublime => To write PHP code
- 6) OS => Window 7
- 7) Reference
Books => from my lecture and online
- 8) Star UML => to create the Diagrams

A.2. Functional requirement and Non-Function

A2.1. Funcitiional Scope

- ✓ Register Staffs and Customers
- ✓ Log in Staffs and Customers
- ✓ Register Schedule
- ✓ Register Route
- ✓ Register Carriages
- ✓ Register Route Price
- ✓ Draw Schedule by Staffs
- ✓ Search Schedule by Customers
- ✓ Choose seat by Customers
- ✓ Book the tickets
- ✓ Process Payment
- ✓ View Paid Tickets

- ✓ Close the selling tickets points of the current station which is arriving train according to time
- ✓ Produce Reports
 - 1. Daily Tickets Report
 - 2. The remain tickets by station per schedule
 - 3. Daily Unpaid Ticket Order by schedule
 - 4. Passenger list by carriage per schedule

A.2.2.Nonfunctional requirement

- # reject the schedule
- # Weak Security

A.2. Overall Functional Scope of the Proposed System

Myanmar Railway station has many routes such as North Myanmar, East Myanmar, West Myanmar, South Myanmar and Yangon Circular Railway. Among them, Yangon-Mandalay online tickets sales and control the stations within this route are scope of the system I do.

A.3. Detail scope for the proposed system

Entry

Customer Registration-New customers register with email and password etc.

Train Registration-New train register by staff

Carriage Registration-New carriages register by staff

Route Registration-New routes register by staff

Schedule Registration-New schedules register by staff

Station Registration-New stations register by staff

Book the tickets- customer check the schedule and book the tickets

Entry Response

Search the schedule – Customer search the schedule with from station, to station, depature date which is registered by staff. According to that, it shows the schedule with train name, depature date and depature time.

Choose the seat – Customers choose the seat with the from station, to station, depature date and seat type. If the current seed is not yet booked, it can available.

Close the selling point by registration departure date – Admin close the current selling station because the train depart currently and it aims not buying the tickets by customers at this station.

Response the payment process- Staff responses the process is ok or not.

View paid tickets – customers log in and see tickets.

Update Function

Customers and Staff update the their information

Staff updates the information of the trains

Staff updates the information of routes

Staff updates the information of the carriages

Staff updates the information of the stations

Staff updates the information of the route price

Reports

Daily Tickets Report

The remain tickets by station per schedule

Daily Unpaid Ticket Order by schedule

Passenger list by carriage per schedule

A.4.Output Layout

Daily Tickets income Report

Train Name	fromstation	tostation	Class	Ticket Quantity	Amount
Tic01	Yangon	Bago	Ordinary Class	9	9000
Tic02	Yangon	Madalay	First Class	20	186000
			Total		195000

The remain tickets by station per schedule

Ticketid	Seatno	Station Name	Schedule Date	Trip Name
T010	22	Tharzi	7/1/2015	Yangon-Mandalay
T044	4	Bago	7/1/2015	Yangon-Mandalay

Daily Unpaid Ticket Order by schedule one day in advance

Order ID : 0001			Customer Name : Mg Mg			Order Date : 2015-07-13		
Ticketid	seatno	travellername	idnumber	fromstation	tostation	Class	Schedule Date	
Tic01	1	Kyaw Min Thu	1111	Yangon	Bago	Ordinary Class	7/1/2015	
Tic02	2	Naw Say Kaung	2222	Yangon	Madalay	First Class	7/1/2015	
Order ID : 0001			Customer Name : Pyae			Order Date : 2015-07-13		
Ticketid	seatno	travellername	idnumber	fromstation	tostation	Class	Schedule Date	
Tic04	1	Khin Yadana Phy	1111	Yangon	Madalay	First Class	7/1/2015	
Tic05	2	Pyae Min Khant	2222	Yangon	Madalay	First Class	7/1/2015	
Tic06	3	Ei Thin Zar Kyaw	3333	Yangon	Madalay	First Class	7/1/2015	

Passenger list by carriage per schedule

Mg Mg	1	Kyaw Thu	2
First Class		First Class	

Phyo	3	Jenny	1
First Class		First Class	
Pyae	7	Soe	8
First Class		First Class	

Appendix – C

Field Study

C-1. Functions of Myanmar Railway Tickets Selling (Yangon => Mandalay)

The function of ordering tickets by stations is so simple because there is only one district department office for each associated district. In travelling duration, the sub stations like Tharzi, Naypyitaw , etc. order the tickets important ordering papers to the district department offices.

As for customer side, buying the tickets with queue is the classic way for Myanmar citizens. Each passenger is sold only two tickets. The people line up the queue for two days in advance. The people have to start queue to buy the tickets in 4 AM in front of the counter. But the Yangon railway station sells the tickets around 6 AM. Various classes of people ride the various classes of carriages such as

1. Upper Sleeper
2. Upper Class
3. First Class
4. Ordinary Class

In a current situation, there are no promotions and lucky draw plans but Myanmar Railway Ministry is testing these plans but it is not developing yet. The cash flow of tickets is managed by district departments office for each district and the chief station clerk go to the distinct department offices to do the budget list for selling tickets.

As for replenishment of the tickets, the stations order the tickets for 3 months in advance. The stations send this ordering paper to the district department office. It takes about 10 or 12 days to replenish the tickets.

C.2.Ex panding the market

Myanmar Railway has been started in 1896 and Myanmar people have been used the trains for travelling and transferring freights as a default. Thus, there is no need to advertise to get more customers. Ticketing system has to renovate.

However Myanmar Railway has a plan to develop selling tickets online to let the customers buy the tickets everywhere and every time conveniently. The trains run on their own railway so taking the railway is rarely to less than accident for the children. Thus, riding

the railway is secure, peaceful and pleasant. If we expand the train market to advice the above facts, the train transposition will get more customers and more popular.

C.3.Products

The tickets expand to the stations in Yangon to Mandalay. The stations order the tickets to district department office once third months. But there are already tickets for six months in the stock. In the stations, recording for daily tickets are controlled with daily stock books. In the evening, the staff in station reports the budget and quantity to district department office.

C.4.What they like to better

In the current situation, Myanmar Railway is testing Online Tickets Selling so they don't know what the best is for them.

The current difficulties in Myanmar Railway

1. design There is no advertising in Myanmar Railway now but some of the tour package inserts and draw the railway plan in their tour.
2. As for tickets and invoice, the words in there are too small and not clear so the customers and staffs are really disappointed.
3. There is no online system so they search the data in the record book. For each time, they take long time to get the required data and to produce the reports.
4. In current situation, paper system is active in Myanmar Railway so the recording sale and cash flow takes long time and difficult to edit.

C.5.New System Scope

As for railway lines in Myanmar, there are Ayeyarwaddy district as in West, Pyay district to Mandalay district as in East, Mandalay to Yay district as in North. Among them, Yangon to Mandalay railway line is the most popular in Myanmar. Yangon to Mandalay trains departure 2 times a day.

C.5.1. Defining this project scope among the above facts

In this project, only two express trains departure from Yangon station and Mandalay station. The tickets are sold 2 days ahead. In one train, there are only ten carriages. According to ten carriages, there are only two Upper Sleepers, two Upper Classes, three First Classes and three Ordinary Classes. For each Upper Classes and First Classes, there are thirty seed and there are fifty seed in Ordinary Class.

1. To fill the data entries in the project
 - * Schedule
 - * Carriage
 - * Station
 - * Route
 - * Train
 - * Customer
 - * Staff
2. To get the enquiry and respond in the project
 - * For tickets to sell, search by carriage and schedule
 - * For tickets to purchase, pay with bank account
3. To Update process in the project
 - * The staffs must update the seats on time for sold tickets.
 - * The staffs must update departure time after departing the train.
 - * The staffs must update the schedule regularly
4. To produce Report and Output
 - * Daily Tickets Income Report
 - * The remain tickets by station per schedule
 - * Daily Unpaid Ticket Order by schedule One day in advance
 - * Passenger list by carriage per schedule

C.6. Interview Record

C.6.1. Interview for my Online Myanmar Express (Yangon-Mandalay) Railway Tickets Sale System

In my project, I use Interview for my system investigation. As I am a student, interview is really effective for me. I want to do facilitated workshop with respective people in Railway Department. However, they are really busy with their job because most of the Myanmar people depend on railway tour because it can cheap fees and comfortable.

That why, I interviews **U Ye Naing who is staff in Tharzi Station of Myanmar Railway Organization** with following questions which is supported to my project.

Me: Hi U Ye Naing! I am Phyto and I must do the project in my BIT course and my project name is "Online Myanmar Express (Yangon-Mandalay) Railway Tickets Sales System". That why, May I ask some questions to support my project.

U Ye Naing : Hi Phyto. OK I answer your questions as possible. Let start!

Me: As for my project scope is Yangon to Mandalay, which types of train departs one day and time plz?

U Ye Naing : There is two type of train departs each day. They are 11 up and 3 up. 3 Up is express and it departs 5:00 PM. 11 Up trains departs at 6:00 AM and 3:00 PM.

Me : How many station do they rest ?

U Ye Naing : They rest 4 stations as an interval and they are

1. Bago
2. Taungoo
3. Naypyitaw
4. Tharzi

Me : Plz, tell me about schedule for Yangon to Mandalay.

U Ye Naing : I am not sure about it however we can order for tickets for 3 months in advance. As my opinion, they draw the schedule for 3 months in advance.

Me : Ok , how about tickets' price?

U Ye Naing : As for tickets, we make the price depends on class. We has four class such as Ordinary Class, First Class, Upper Class and Sleeper Class. We takes following prices depends on class.

Ordinary Class – 5650 Kyats

First Class – 5800 Kyats

Upper Class – 9300 Kyats

Sleeper Class – 12750 Kyats

Me : I become to know about tickets as u emotion. In addition, I close the selling point the station after departing time in my project. That why, I need to know resting time in each station.

U Ye Naing : Ok. As for resting time, each station rest around 10 minutes but we assume that Taungoo is half trip and the train is bathed. That why, each train rests between 15 minutes and 30 minutes.

Me : Thank a lot U Ye Naing and Your answer is very complete for my project. However could I come to you and interview again if my project is needed?

U Ye Naing : Come On Phy. If you need to interview me, I am ok for everytime except departing time.

I record the above interviewing questions as Myanmar language but I translate and presented it in English like above.

4.4.2.Finding summary in the text

In Myanmar Railway System(Yangon-Mandalay), There are a Yangon Head Office and Bago, Taungoo, Tharzi and Mandalay stations. I interviews U Ye Naing who is responsible in Tharzi station. According to his interview, we know the existing system. As for Yangon to Mandalay route, there are three trains in 1 day. Their departed times are 6:00 AM, 3:00 PM and 5:00 PM. There are four classes such as

1. Original Class
2. First Class
3. Upper Class
4. Sleeper Class

As prices for each class, there are 5650 Kyats in Original Class, 5800 Kyats in First Class, 9300 Kyats in Upper Class and 12750 Kyats in Sleeper Class.

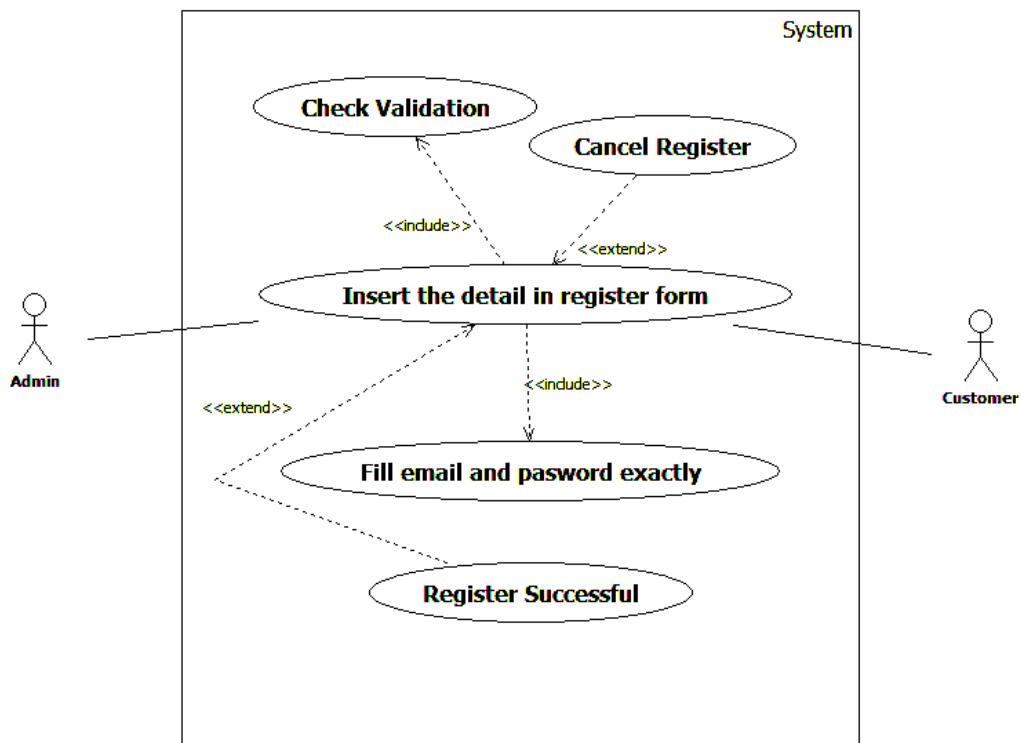
As for tickets for Tharzi station, He makes the tickets on Ticket Stock book daily and He must submit this book to State Station Office. As for ordering tickets, he orders the tickets to Yangon Myanmar Railway Station 3 months in advance. In Special Occupation, he must send special paper ordering tickets to Yangon Myanmar Railway. At that time, Yangon Office send the tickets parcel to ordered station within 10 or 15 days.

Appendix - D

System Design

D-1 Use Case

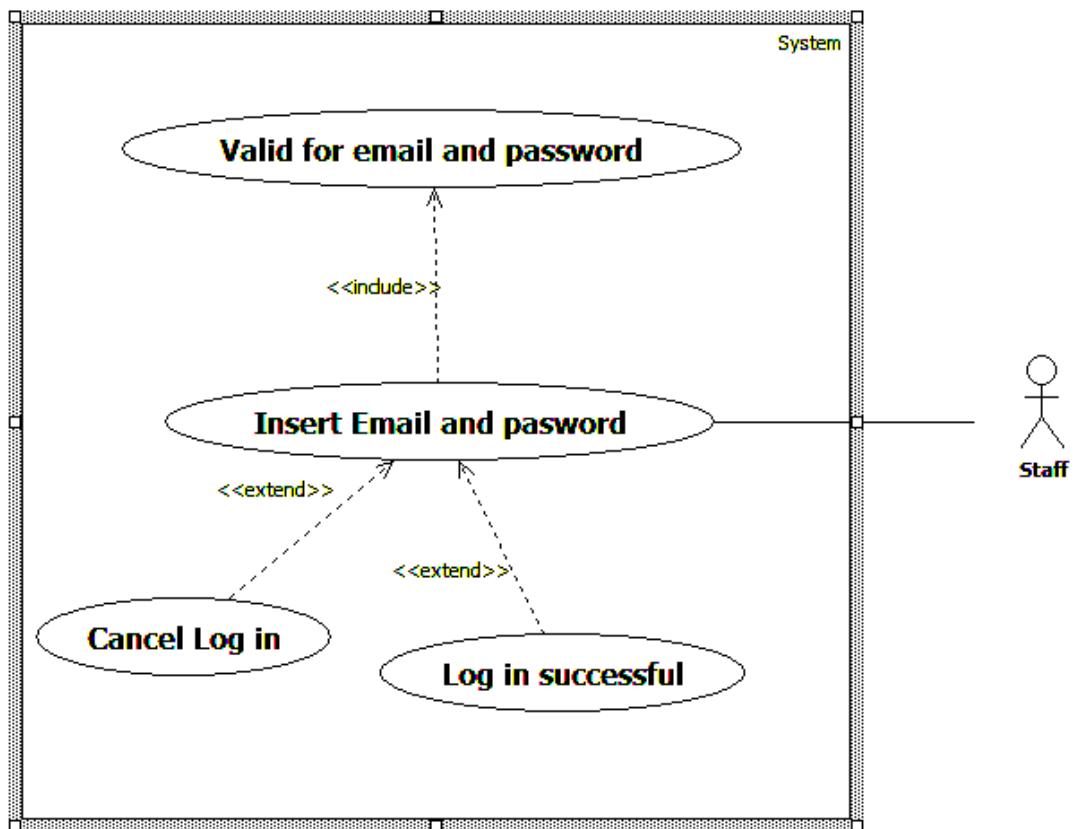
D.1.1 Registration



D.1.1. Usecase Description for registration

Number:	UC01
Name:	Registration
Status:	Working
Actors:	Customer and Admin
Pre-requisites:	As both customers and admin, they visits this webpage
Goal:	Successful registration for customers and admin
Use-Case Relationships:	
Extend :	Cancel register : Register successfully
Include :	Fill email and password exactly Check validation
Association:	Admin and Customer
Generalization:	
Description:	
Index	Actor Event
1	Both customers and admin click the registration link on the screen.
2	Fill the detail on the registration form
3	Submit the registration button
4	Verify and save the data by the system and end the usecase
5	If clicking cancel button, registration process hasn't.
Alternatives:	
Index	Actor Event
A4	Verify and save the data by the system and end the usecase
A4.1	Duplicate Email
A4.2	Go back to step 2 again

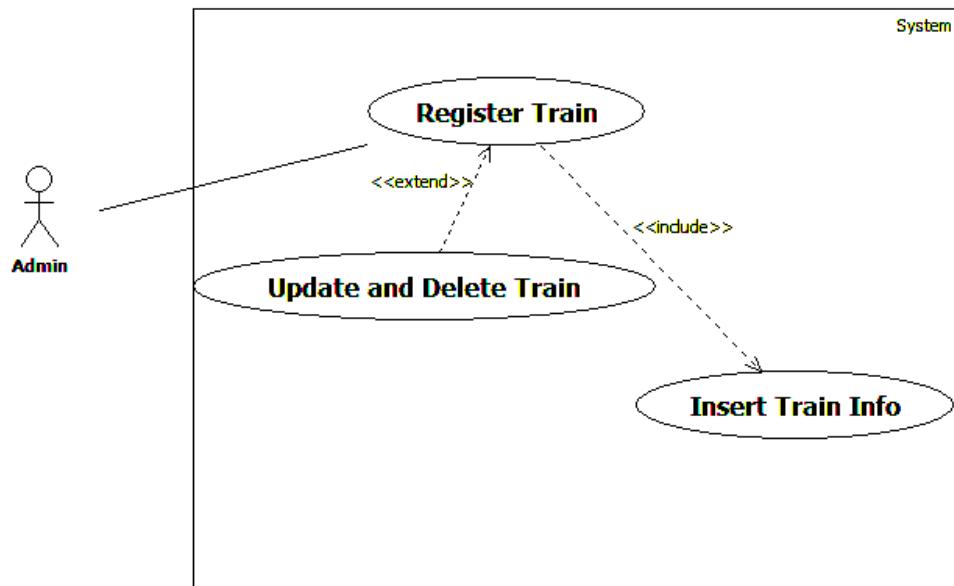
D.1.2 Log in



D.1.2 Use Case Description for Log in

Number:	UC02
Name:	Log In
Status:	Working
Actors:	Staffs
Pre-requisites:	Staff has already registered in this webpage
Goal:	Successful registration staff
Use-Case Relationships:	
Extend	: Log in successful : Cancel Log in
Include	:Valid for email and password
Association	:
Generalization	:
Description:	
Index	Actor Event
1	Staff click log in link on the screen
2	Fill email and password on the log in form
3	Submit the login button
4	Check the email and password by the system
5	Login successful and use case end
6	If clicking cancel button, log in process hasn't.
Alternatives:	
Index	Actor Event
A4	Check the email and password by system
A4.1	Wrong email or password
A4.2	Go back to step 2 again

D.1.3 Register Train



D.1.3 Use Case Description for Register Train

Number:	UC03
Name:	Register Train
Status:	Working
Actors:	Admin Staff
Pre-requisites:	Admin must open this webpage on the screen and log in
Goal:	Register train successfully

Use-Case Relationships:

Extend	:	Update and delete train
Include	:	Insert train info
Association	:	
Generalization	:	

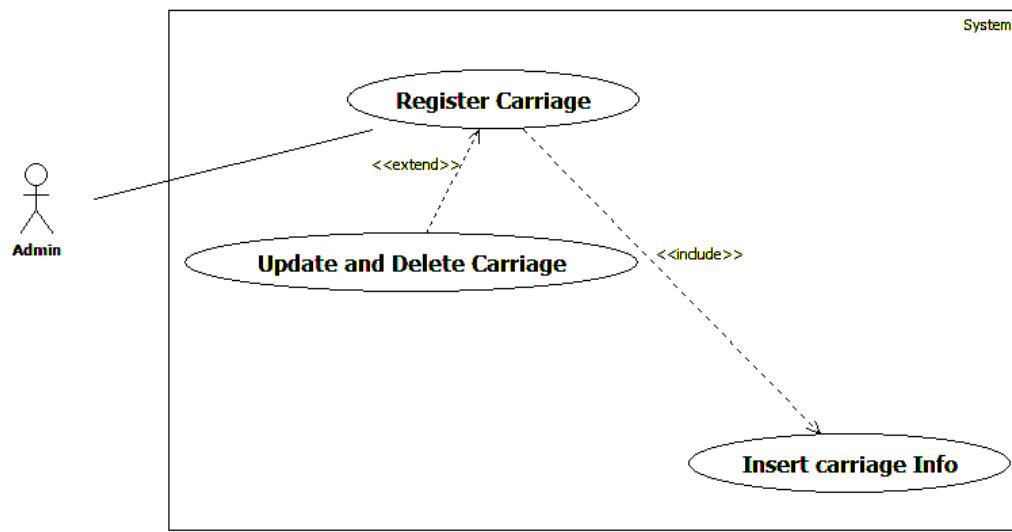
Description:

Index	Actor Event
1	Admin staff click the login link on the screen
2	After log in, click the "train" link on the screen
3	Fill the train information on registration train form
4	Click register button
5	Verify and save the information by system
6	If clicking update link, type the information that wants to update in registration form
7	Click the register button to update
8	Verify and update the information by system
9	If clicking delete link, the respective train has been deleted
10	Verify and delete the information by system

Alternatives:

Index	Actor Event
A5	Verify and save the information by system
A5.1	Wrong format
A5.2	Go Back to step 3 again

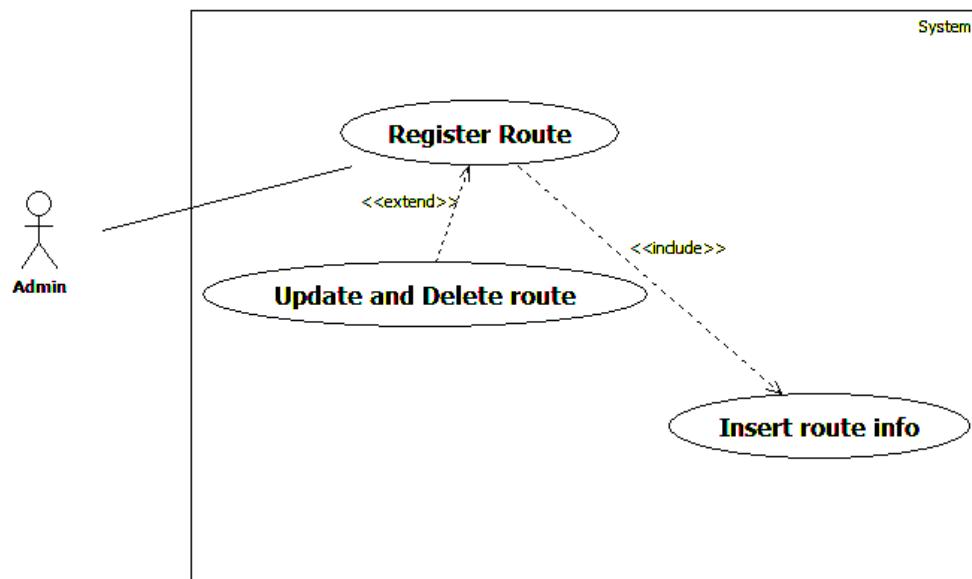
D.1.4 Register Carriage



D.1.4 UseCase Description for Register Carriage

Number:	UC04
Name:	Register carriage
Status:	Working
Actors:	Admin staff
Pre-requisites:	Staff must open this webpage on the screen and log in
Goal:	Register carriage successfully
Use-Case Relationships:	
Extend	: Update and delete carriage
Include	: Insert carriage info
Association	:
Generalization	:
Description:	
Index	Actor Event
1	Staff click the login link on the screen
2	After login, click the "carriage" link on the screen
3	Insert the detail information on the register carriage form
4	Click register button
5	Verify and save the information by system
6	If clicking update link, type the information that wants to update in registration form
7	Click the register button to update
8	Verify and update the information by system
9	If clicking delete link, the respective carriage has been deleted
10	Verify and delete the information by system
Alternatives:	
Index	Actor Event
A5	Verify and save the information by system
A5.1	Wrong format
A5.2	Go Back to Step 3 again

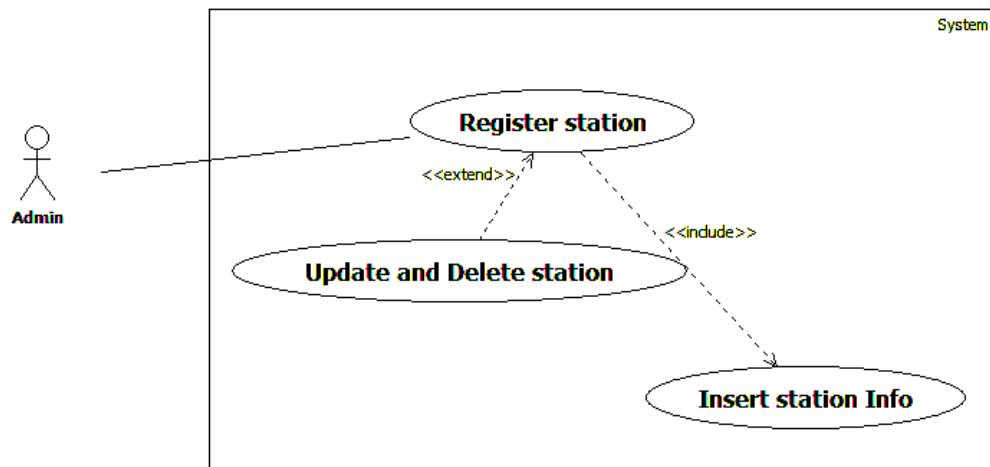
D.1.5.Register Route



D.1.5. Usecase Description for Register Route

Number:	UC05
Name:	Register Route
Status:	Working
Actors:	Admin Staff
Pre-requisites:	Staff must open this webpage on the screen and log in
Goal:	Register route successfully
Use-Case Relationships:	
Extend	: Update and delete route
Include	: Insert route information
Association	:
Generalization	:
Description:	
Index	Actor Event
1	Staff click the login link on the screen
2	After login, click the "route" link on the screen
3	Insert the detail information on the register route form
4	Click register button
5	Verify and save the information by system
6	If clicking update link, type the information that wants to update in registration form
7	Click the register button to update
8	Verify and update the information by system
9	If clicking delete link, the respective route has been deleted
10	Verify and delete the information by system
Alternatives:	
Index	Actor Event
A5	Verify and save the information by system
A5.1	Wrong Format
A5.2	Go back to step 3 again

D.1.6.Register Station



D.1.6.Use Case Description for Register Station

Number:	UC06
Name:	Register Station
Status:	Working
Actors:	Admin Staff
Pre-requisites:	Staff must open this webpage on the screen and log in
Goal:	Register station successfully

Use-Case Relationships:

Extend	:	Update and Delete station
Include	:	Insert station information
Association	:	
Generalization	:	

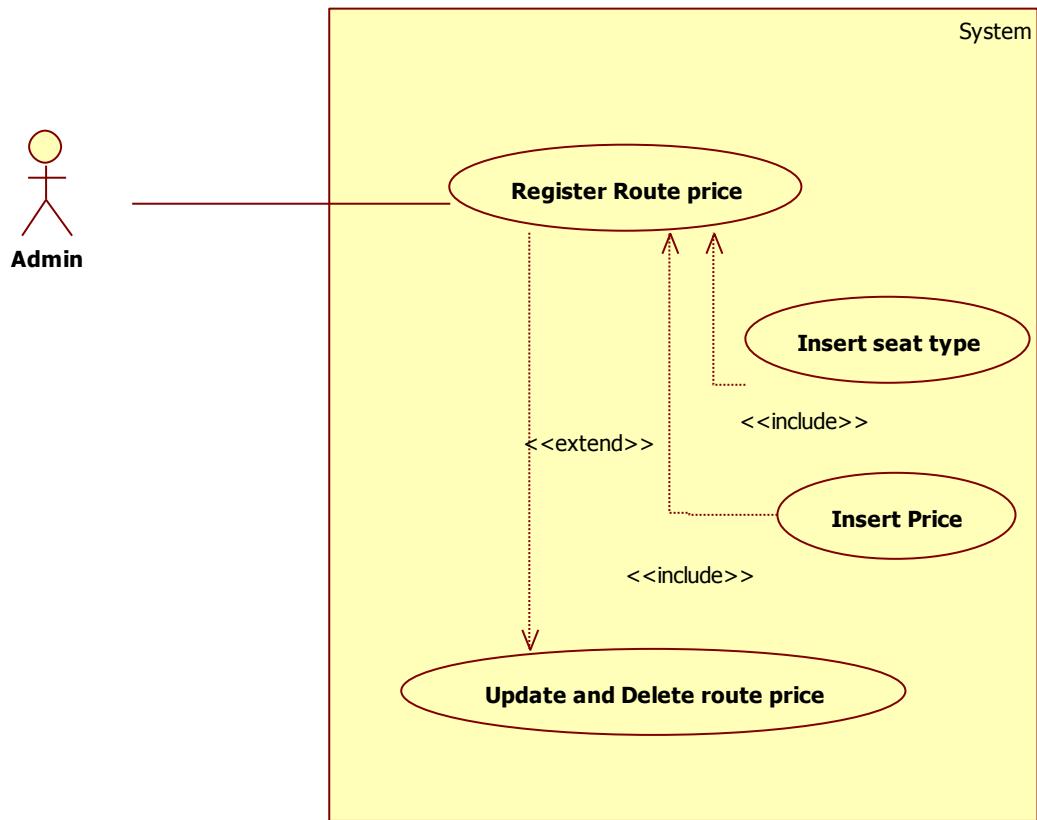
Description:

Index	Actor Event
1	Staff click the login link on the screen
2	After login, click the "route" link on the screen
3	Insert the detail information on the register station form
4	Click register button
5	Verify and save the information by system
6	If clicking update link, type the information that wants to update in registration form
7	Click the register button to update
8	Verify and update the information by system
9	If clicking delete link, the respective station has been deleted
10	Verify and delete the information by system

Alternatives:

Index	Actor Event
A5	Verify and save the information by system
A5.1	Wrong format
A5.2	Go back to step 3 again

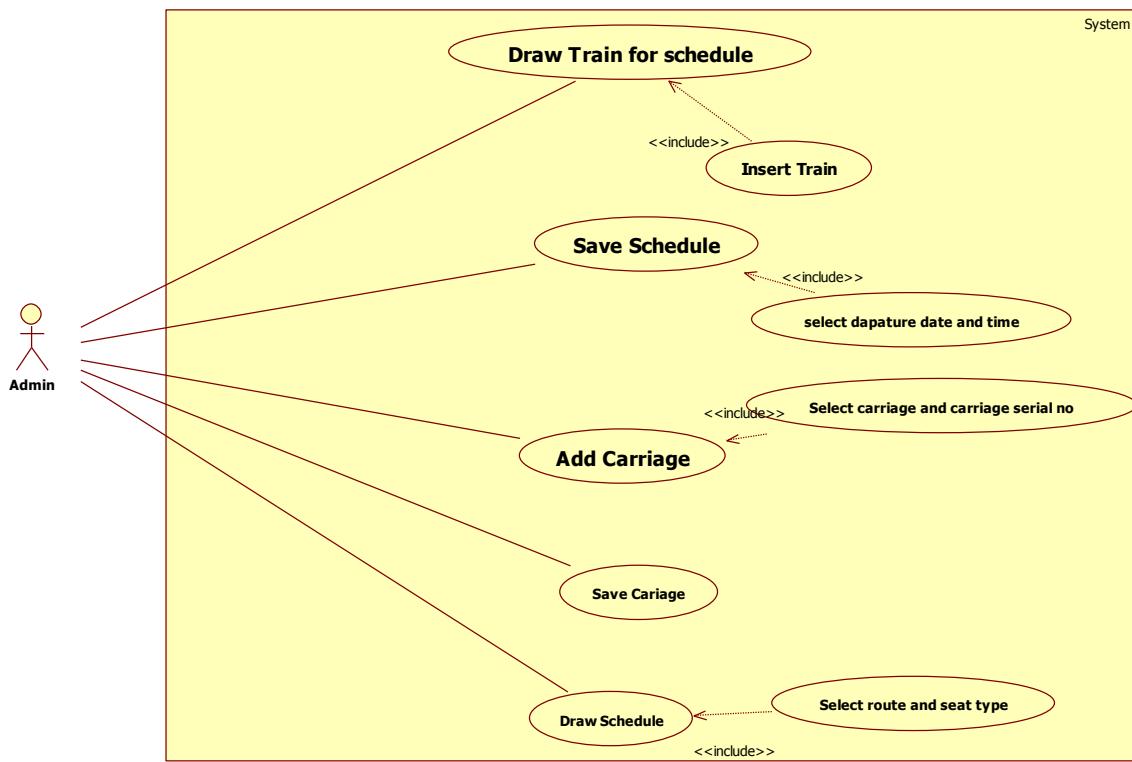
D.1.7. Register Route Price



D.1.7.Use Case Description for Register Route price

Number:	UC07
Name:	Register route price
Status:	Working
Actors:	Admin Staff
Pre-requisites:	Staff must open this webpage on the screen and log in
Goal:	Register price successfully
Use-Case Relationships:	
Extend	: Update and Delete route price
Include	: Insert route price information
Association	:
Generalization	:
Description:	
Index	Actor Event
1	Staff click the login link on the screen
2	After login, click the "price" link on the screen
3	Insert the detail information on the register route price form
4	Click register button
5	Verify and save the information by system
6	If clicking update link, type the information that wants to update in registration form
7	Click the register button to update
8	Verify and update the information by system
9	If clicking delete link, the respective station has been deleted
10	Verify and delete the information by system
Alternatives:	
Index	Actor Event
A5	Verify and save the information by system
A5.1	Wrong format
A5.2	Go back to step 3 again

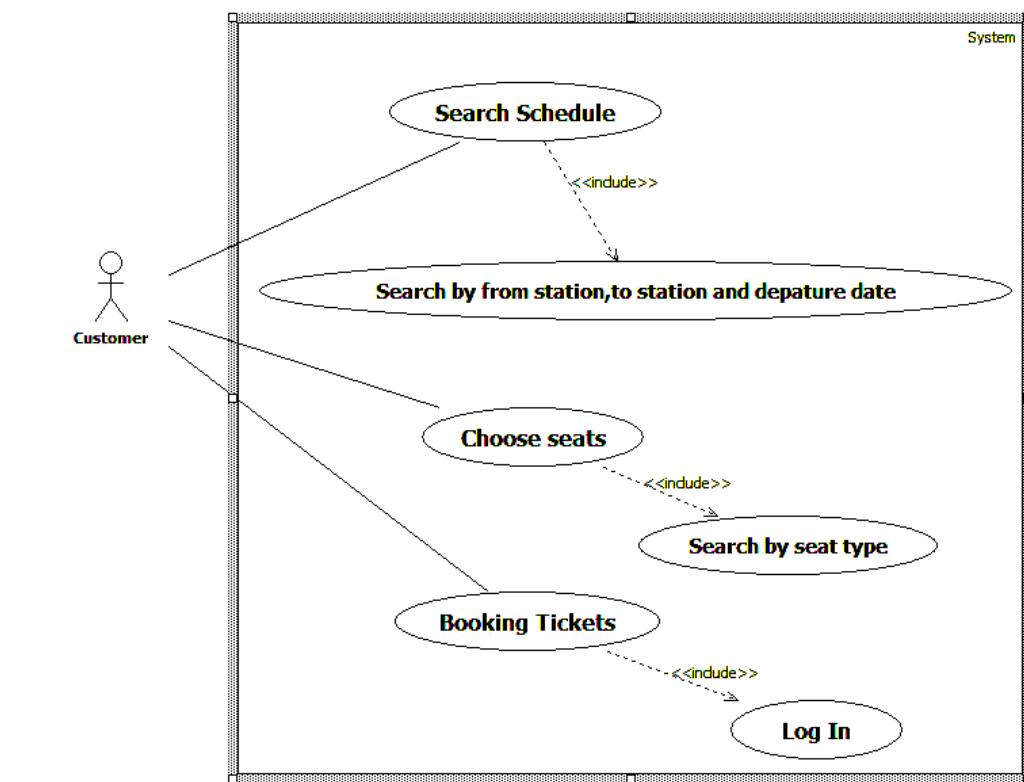
D.1.8.Draw schedule



D.1.8.Usecase Description for Draw schedules

Number:	UC08
Name:	Draw, Edit and Delete Schedule
Status:	Working
Actors:	Admin Staff
Pre-requisites:	Staff must register train, carriage, route and station info in advance
Goal:	Draw Schedule successfully
Use-Case Relationships:	
Extend :	
Include :	Insert Train Select departure date and departure time Select carriage and carriage serial no Select route and seattype
Association :	
Generalization :	
Description:	
Index	Actor Event
1	Click the schedule click on the screen
2	Select the train
3	Click Draw Train for schedule button
4	Verify and save the information by system
5	Insert departure date and departure time
6	Click the save button
7	Verify the information by system
8	Insert carriage and carriage serial no
9	Click Add carriage button
10	Click save button
11	Select route and insert seattype
12	Draw schedule

D.1.9.Search schedule and book tickets

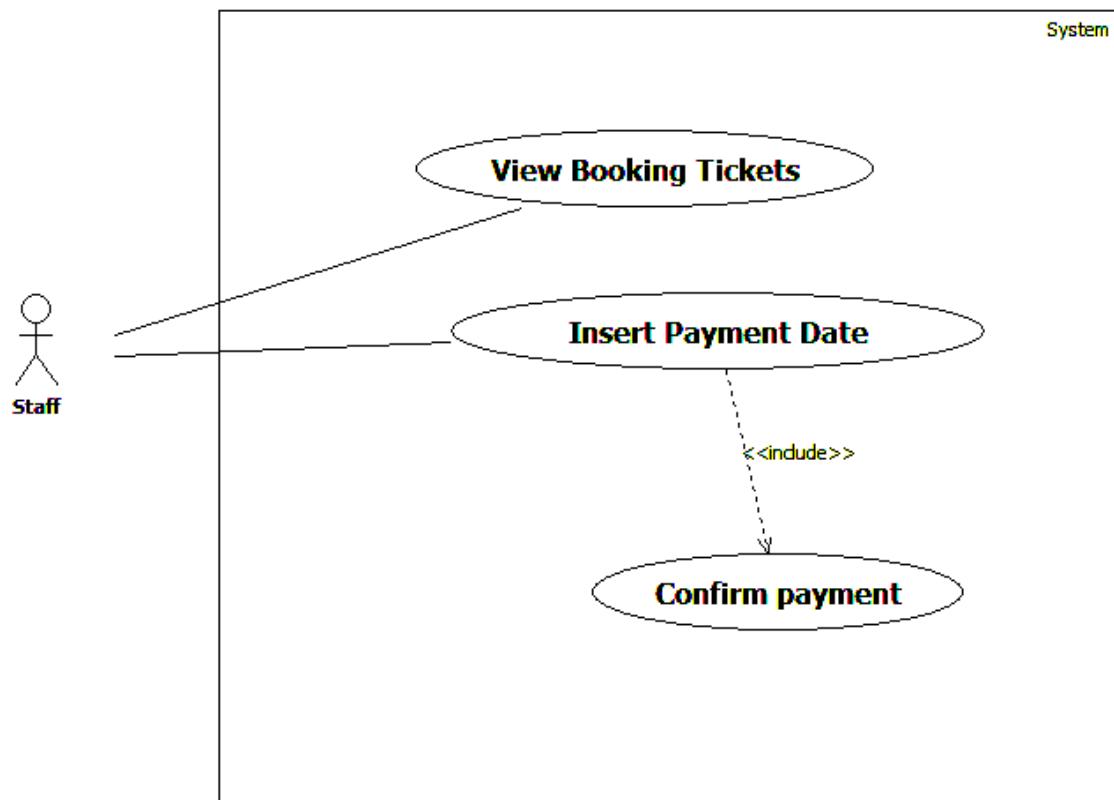


D.1.9.UseCase Description for search schedule and book tickets

Number:	UC09
Name:	Search schedule and book tickets
Status:	Working
Actors:	Customer
Pre-requisites:	Customer has already visited this webpage
Goal:	Book tickets successfully
Use-Case Relationships:	
Extend :	
Include :	: Search by train, route, depaturetime, depart date Search by seat type Log in
Association :	
Generalization :	
Description:	
Index	Actor Event
1	Customer click the search link on the screen
2	Insert from station, to station and departure date on the search form
3	Click the search button
4	Verify the system and show the schedule on the screen
5	If we book the schedule, click the book link
6	After clicking book link, must log in by customer
7	Search the carriage by seat type
8	Click the search seat button
9	Verify the system and show the carriage on the screen
10	We click the seat button to book temporary
11	Click the "Book Your seat Here" button
12	Verify the system and Go to next page
Alternatives:	

Index	Actor Event
A4	Verify the system and show the schedule on the screen
A4.1	Select wrong station or date
A4.2	Go back to step 2
A6	After clicking book link, must log in by customer
A6.1	Wrong Email or password
A6.2	Retype email and password

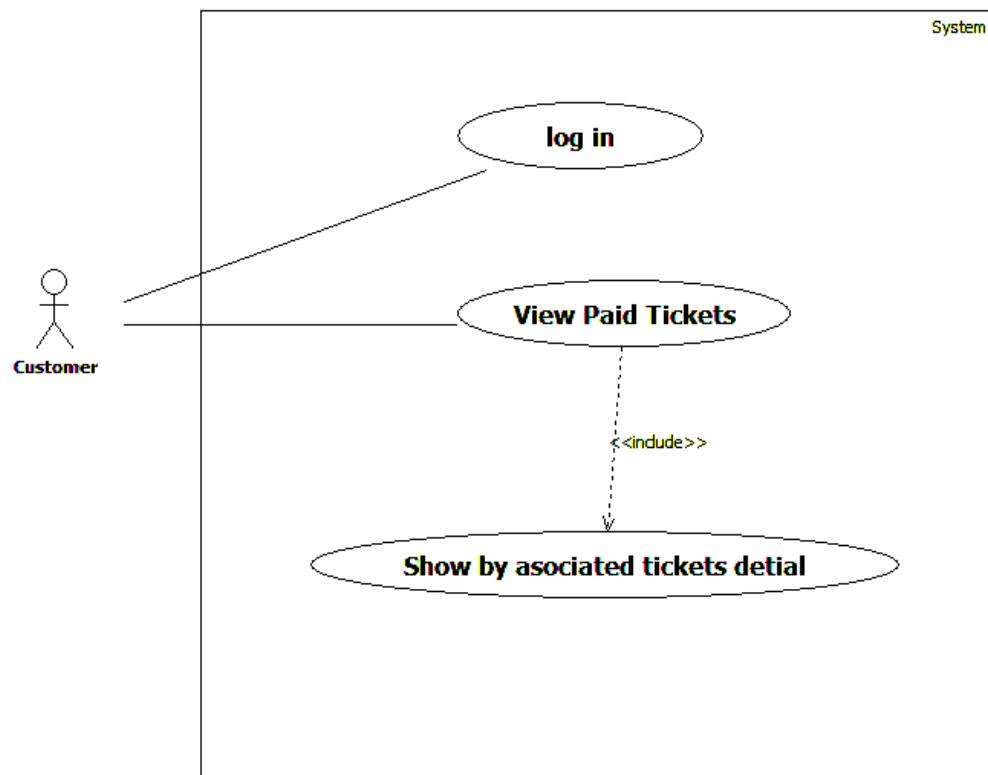
D.1.10.Process Payment



D.1.10.UseCase Description for Process Payment

Number:	UC10
Name:	Process Payment
Status:	Working
Actors:	Staff
Pre-requisites:	Customer has already booked Staff must be log in
Goal:	Has been inserted Payment Date
Use-Case Relationships:	
Extend :	
Include :	Confirm payment
Association :	
Generalization :	
Description:	
Index	Actor Event
1	Staff click confirm payment link
2	Insert payment date
3	Verify and save payment detail
4	Confirm payment
Alternatives:	
Index	Actor Event
A3	Verify and save payment detail
A1.1	Wrong payment date
A1.2	Go back to step 2 again

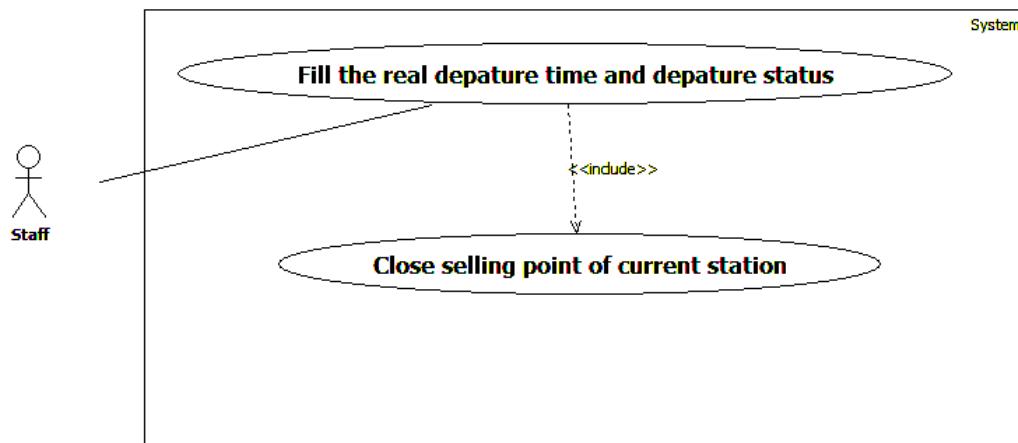
D.1.11.View Paid Tickets



D.1.11.UseCase Description for View Paid Tickets

Number:	UC11
Name:	View Tickets
Status:	Working
Actors:	Customer
Pre-requisites:	Customer has been booked tickets Staff have to finish the payment process View Date have to be before departure date by 1 Day
Goal:	View the paid tickets with tickets detail
Use-Case Relationships:	
Extend :	
Include :	Show by associated tickets detail
Association :	
Generalization :	
Description:	
Index	Actor Event
1	Customer go to log page
2	After log in, go to search page
3	View the paid tickets
Alternatives:	
Index	Actor Event
A2	Go to search page directly without log in
A2.1	There is no tickets to show
A2.2	Go back step 1 and log in again

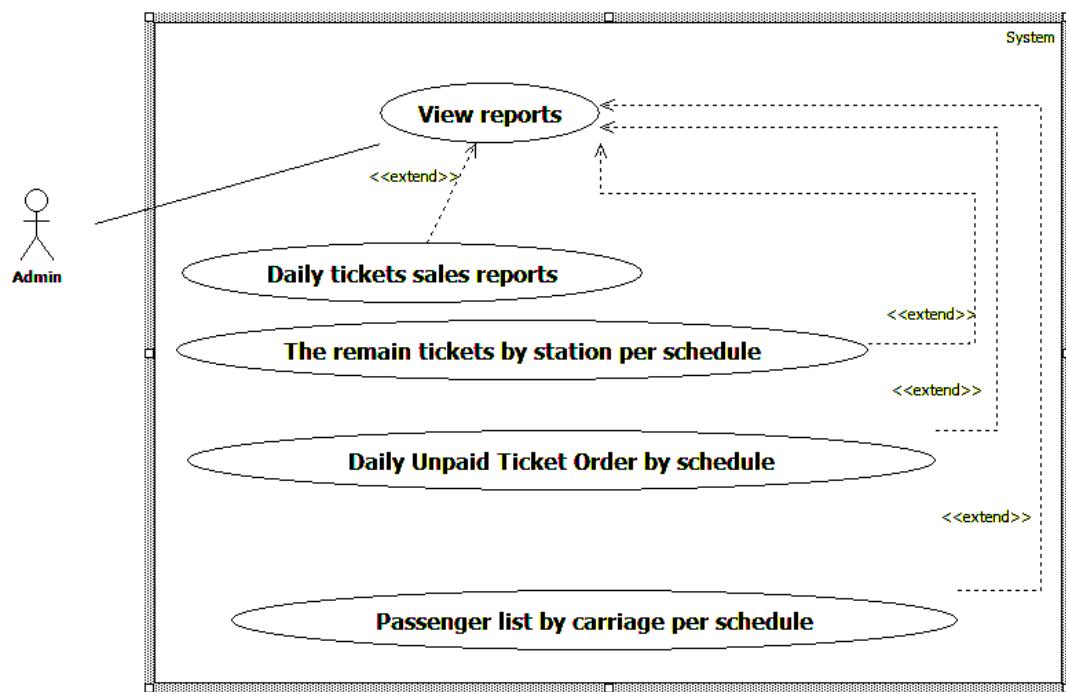
D.1.12.Close selling point of current station



D.1.12.UseCase Description for Close selling point of current station

Number:	UC12
Name:	Close the selling point of the station
Status:	Working
Actors:	Staff
Pre-requisites:	Today must be departure date
Goal:	Close the buying tickets after departure train
Use-Case Relationships:	
Extend :	
Include :	Close the selling point of current station
Association :	
Generalization :	
Description:	
Index	Actor Event
1	Staff click the login link on the screen
2	After log in, go to close station page
3	Insert train
4	Click prepare to close link
5	Insert the real departure time
6	Click the Close button
7	Change the departure status to close by the system
Alternatives:	
Index	Actor Event
A4	Click prepare to close link without inserting train
A4.1	Show error message
A4.2	Go back to step 3

D.1.13. View Reports



D.1.13.UseCase Description for View Reports

Number:	UC13
Name:	Produce Reports
Status:	Working
Actors:	Admin
Pre-requisites:	The respective detail has been recorded in the database
Goal:	View the reports successfully

Use-Case Relationships:

Extend : Daily Tickets Sales Report
 The remain tickets per by station per schedule
 Daily unpaid tickets report
 Passenger List by carriage per schedule

Include :

Association :

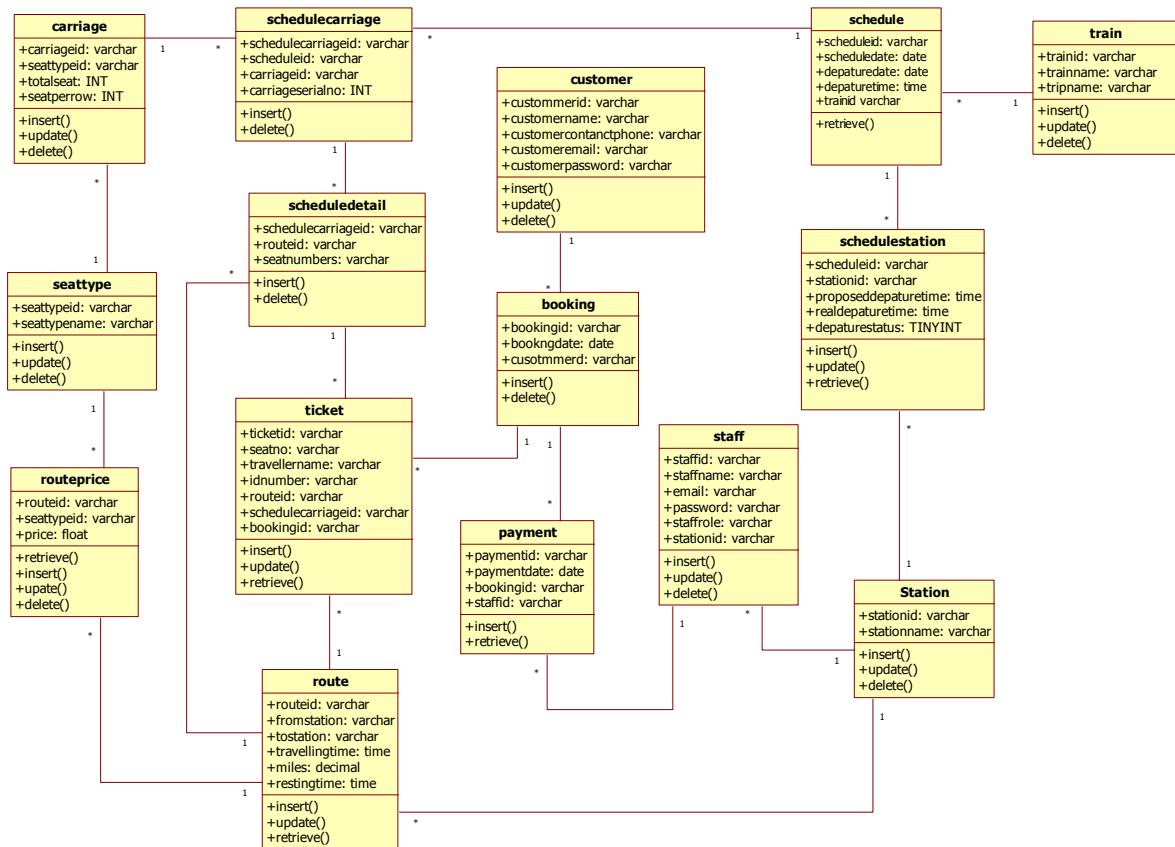
Generalization :

Description:

Index	Actor Event
1	Admin staff click the log in link on the screen
2	After log in, click report link
3	Choose the reports wants to produce
4	According to Daily Tickets Sales report, insert report date and seat type
5	Generate by system
6	Show the Daily Tickets Sales Reports
4	According to The remain tickets per by station per schedule report, insert from station, to station and report date
5	Generate by system
6	Show The remain tickets per by station per schedule report
4	According Daily unpaid tickets report, insert station

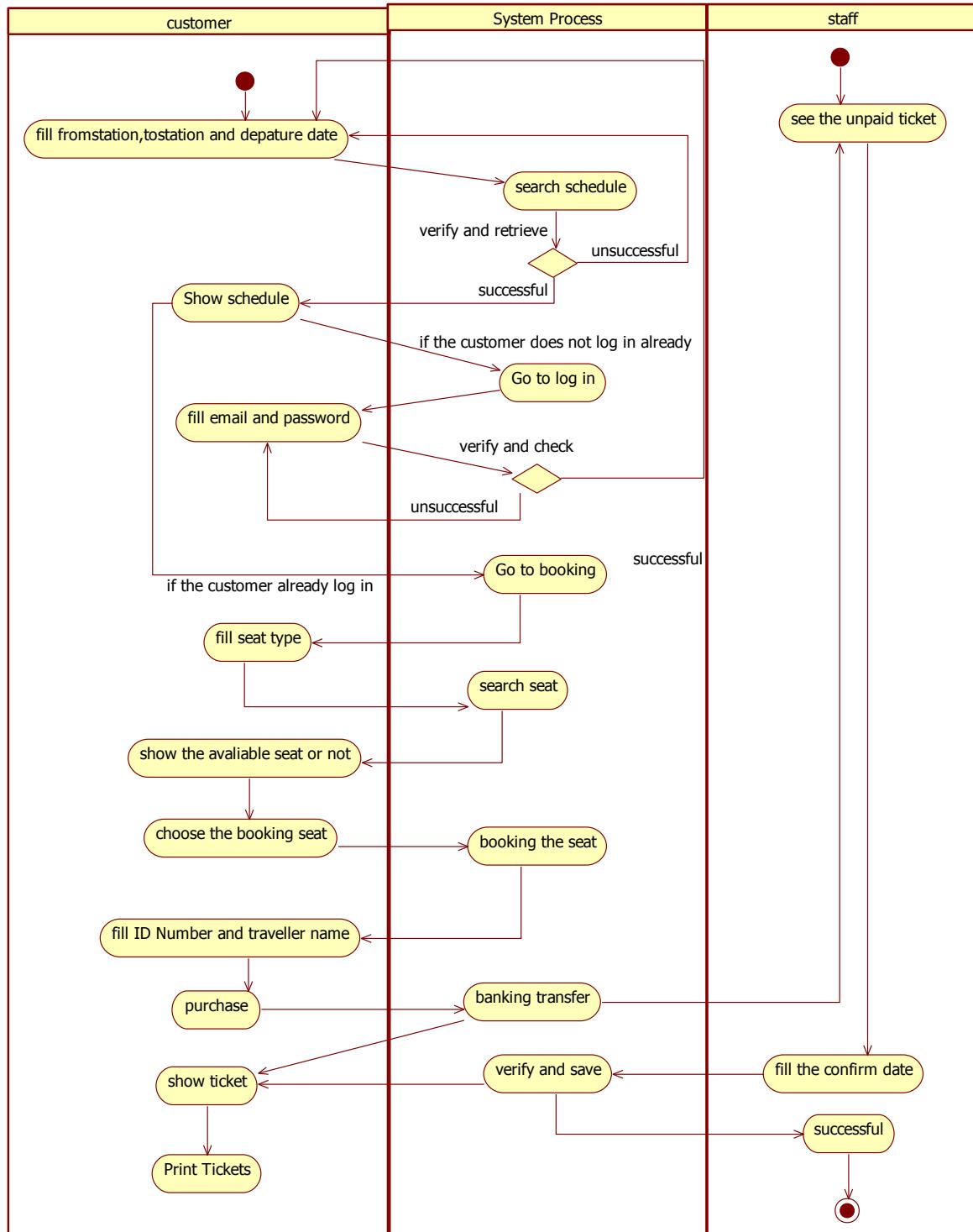
5	Generate by system
6	Show Daily unpaid tickets report
4	According to Passenger List by carriage per schedule report, insert date
5	Generate by system
6	Show Passenger List by carriage per schedule report
Alternatives:	
Index	Actor Event
A5	Generate by system
A5.1	Insert wrong date
A5.2	Go back to step 3 again

D-2Class Diagram



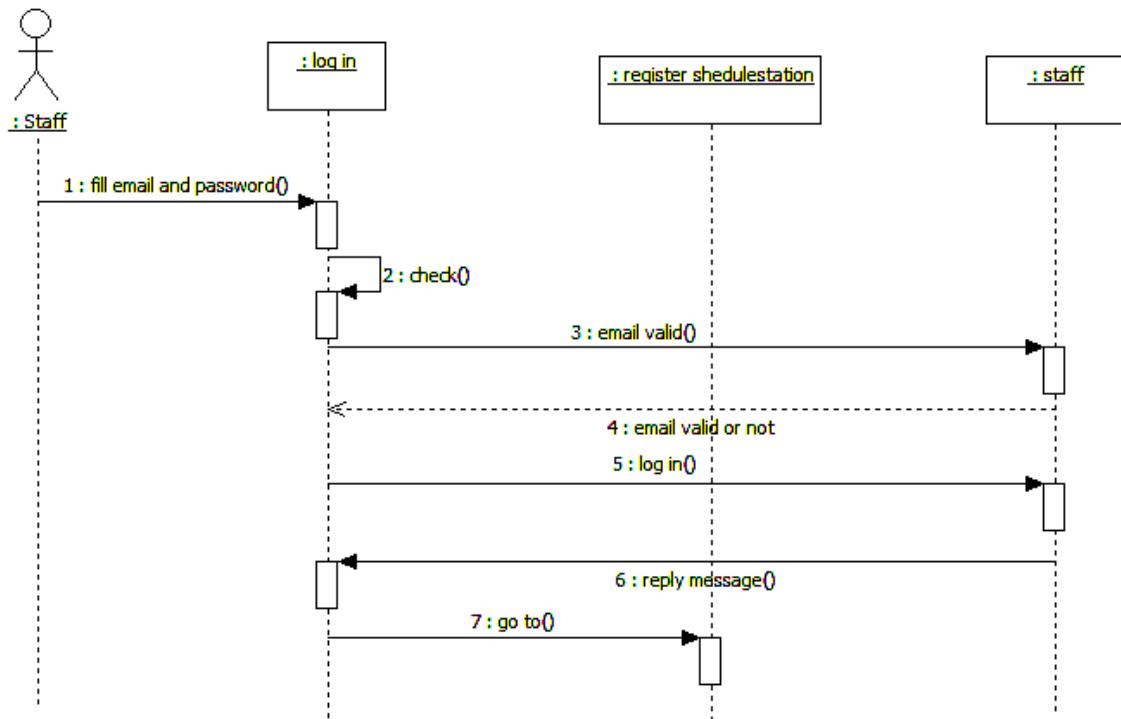
D-3.Activity Diagram

D.3.1. Search Schedule and Book Tickets

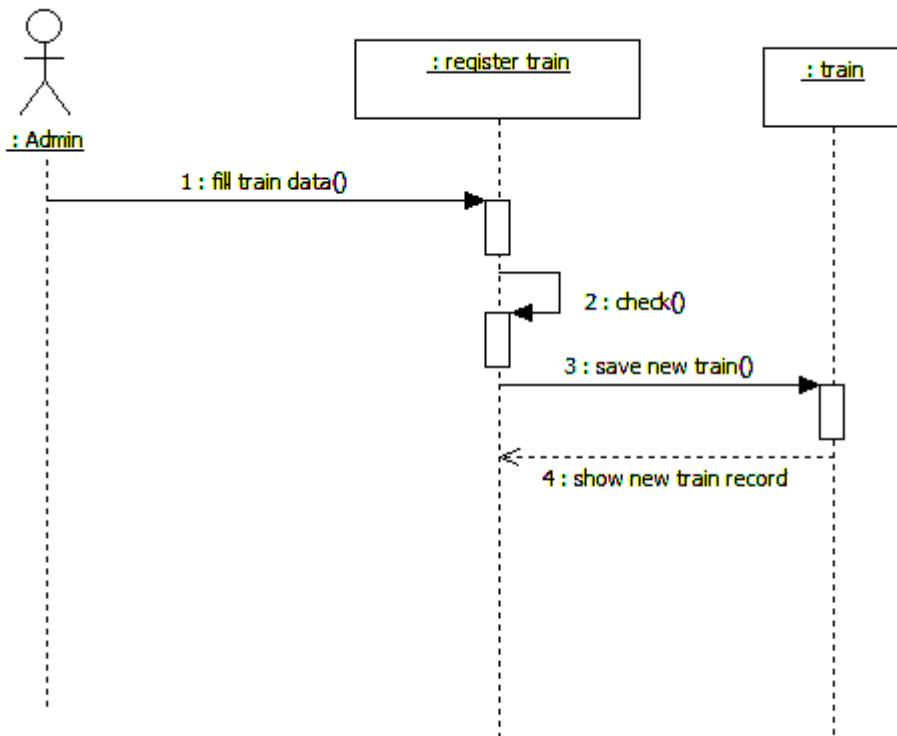


D-4 Sequence Diagram

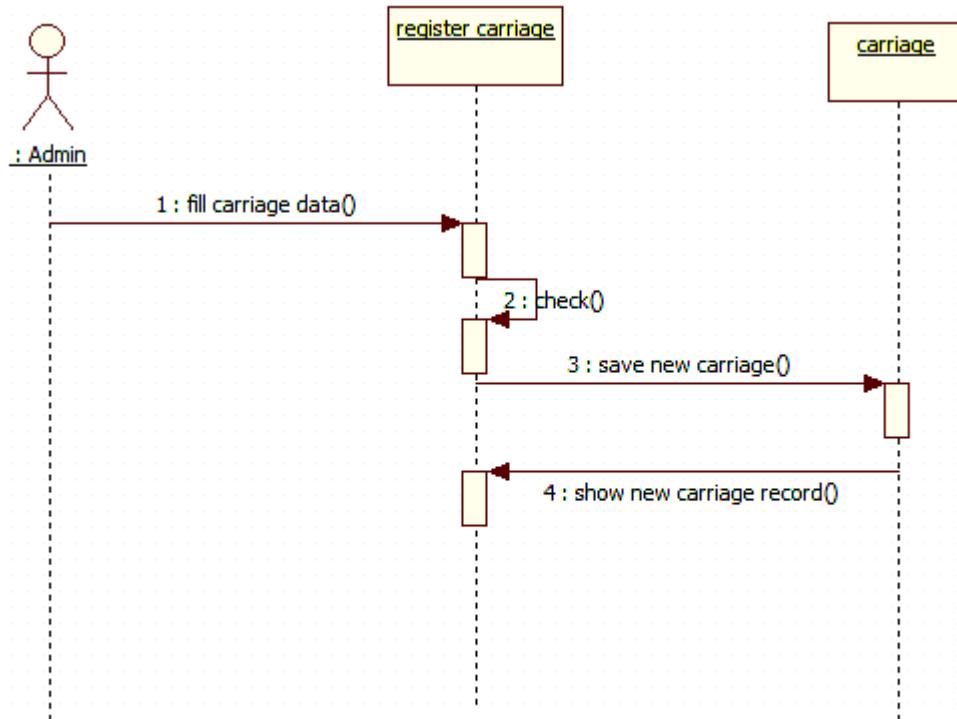
D.4.1. Log in



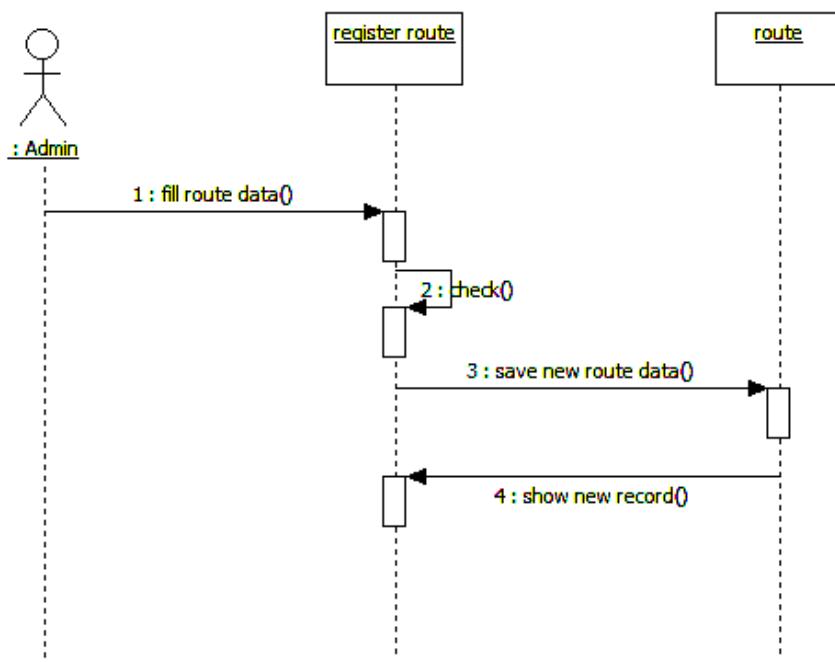
D.4.2. Register Train



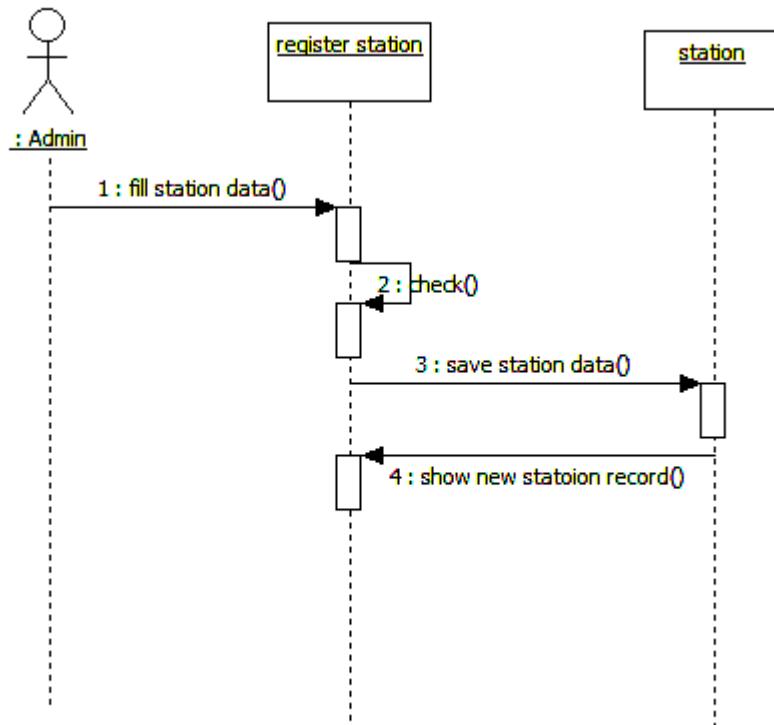
D.4.3. Register Carriage



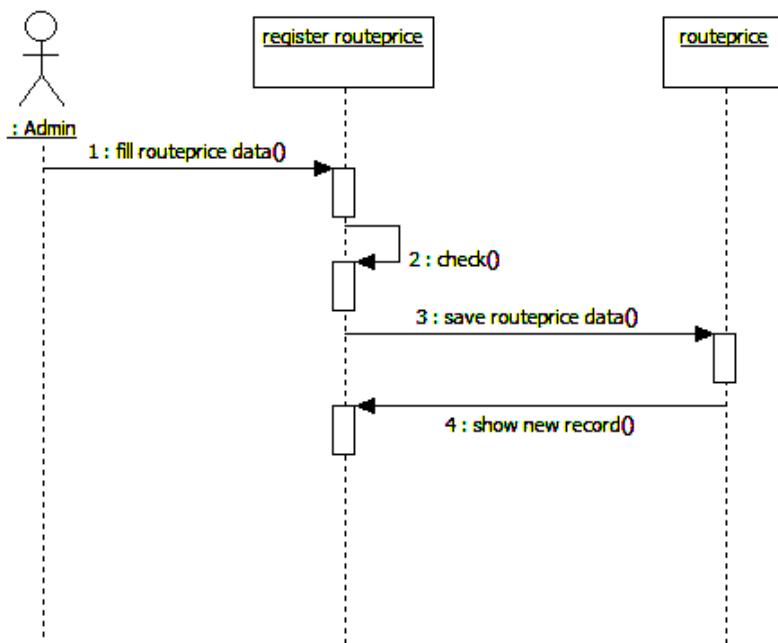
D.4.4. Register Route



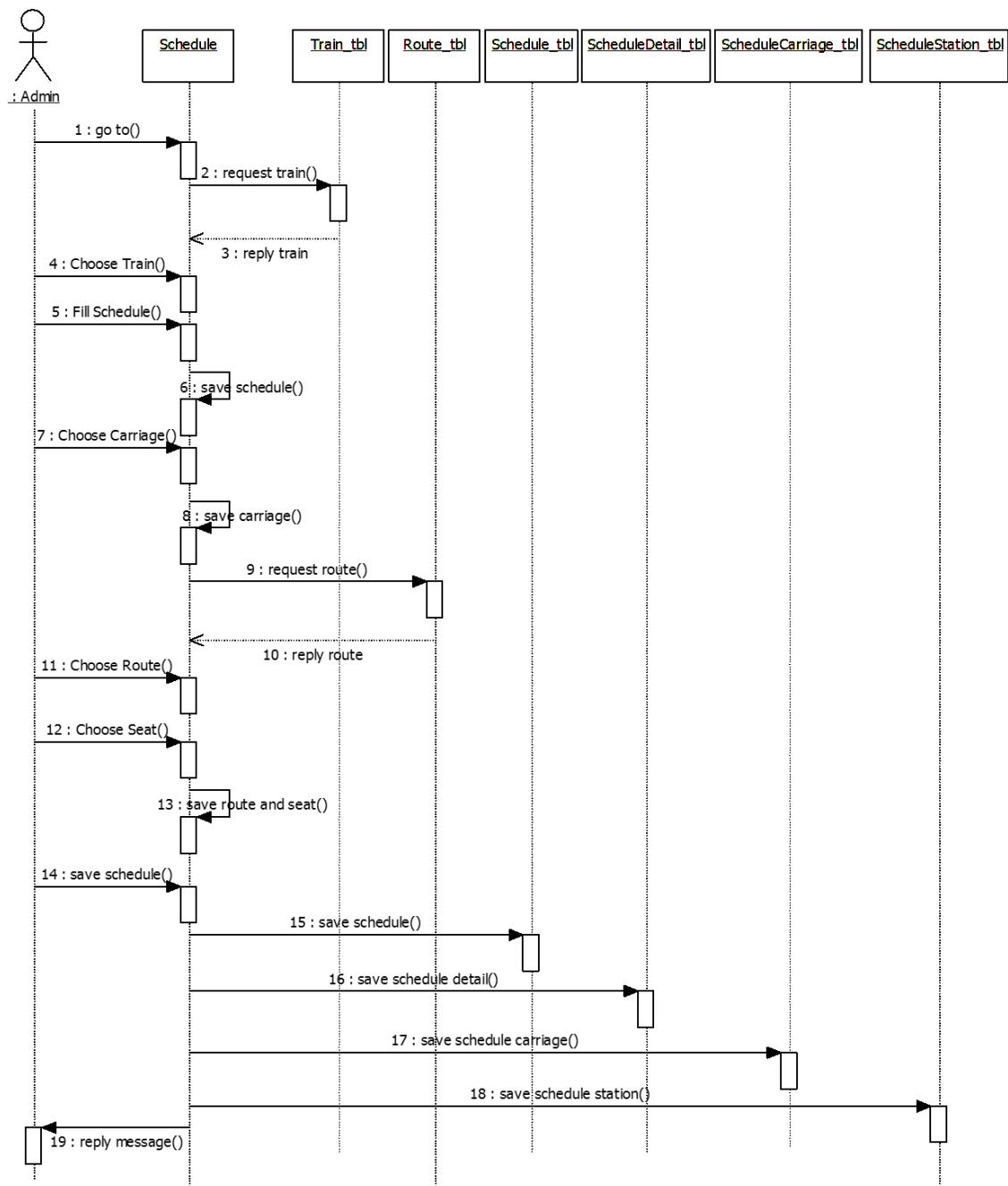
D.4.5. Register Station



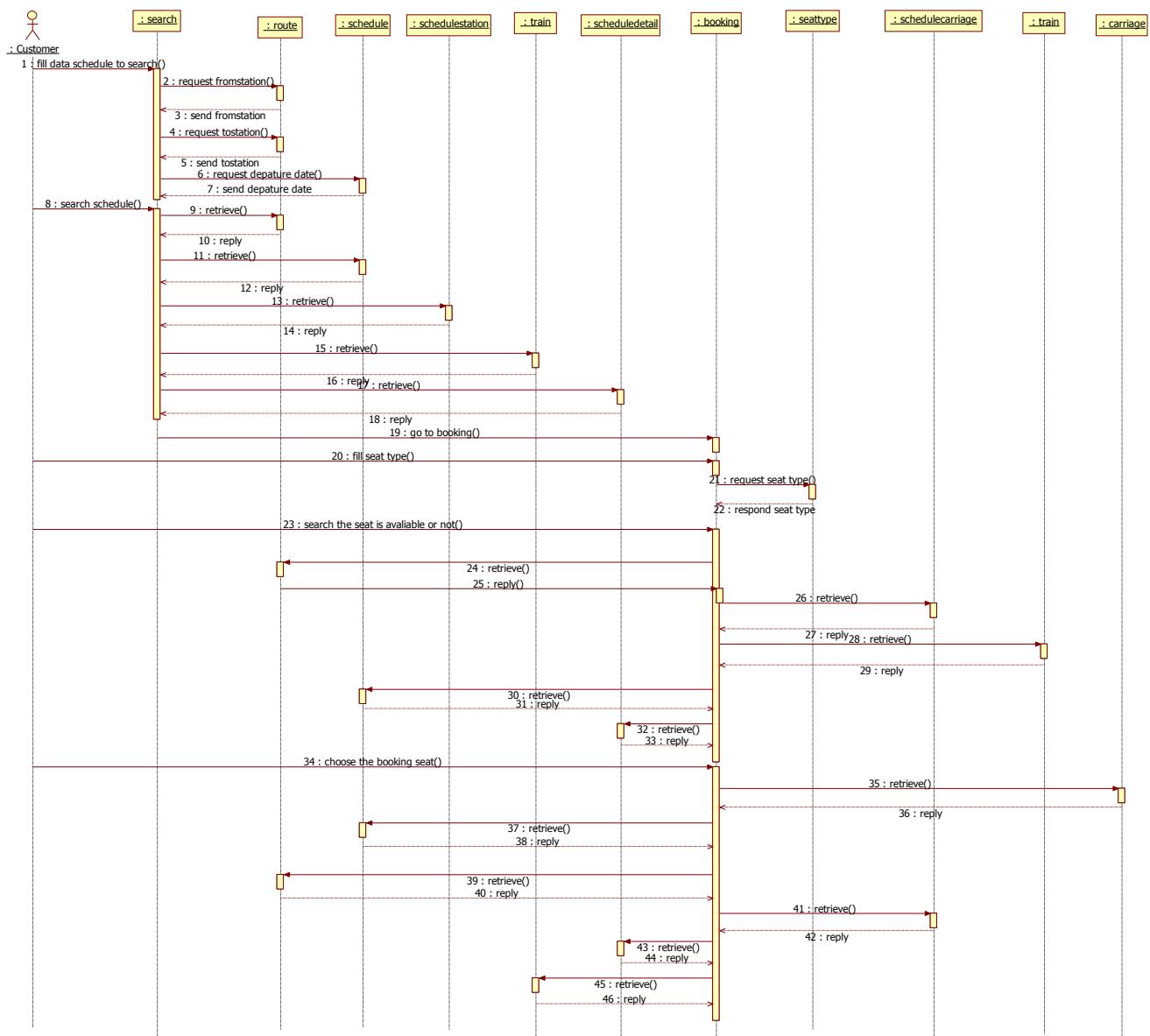
D.4.6. Register route price



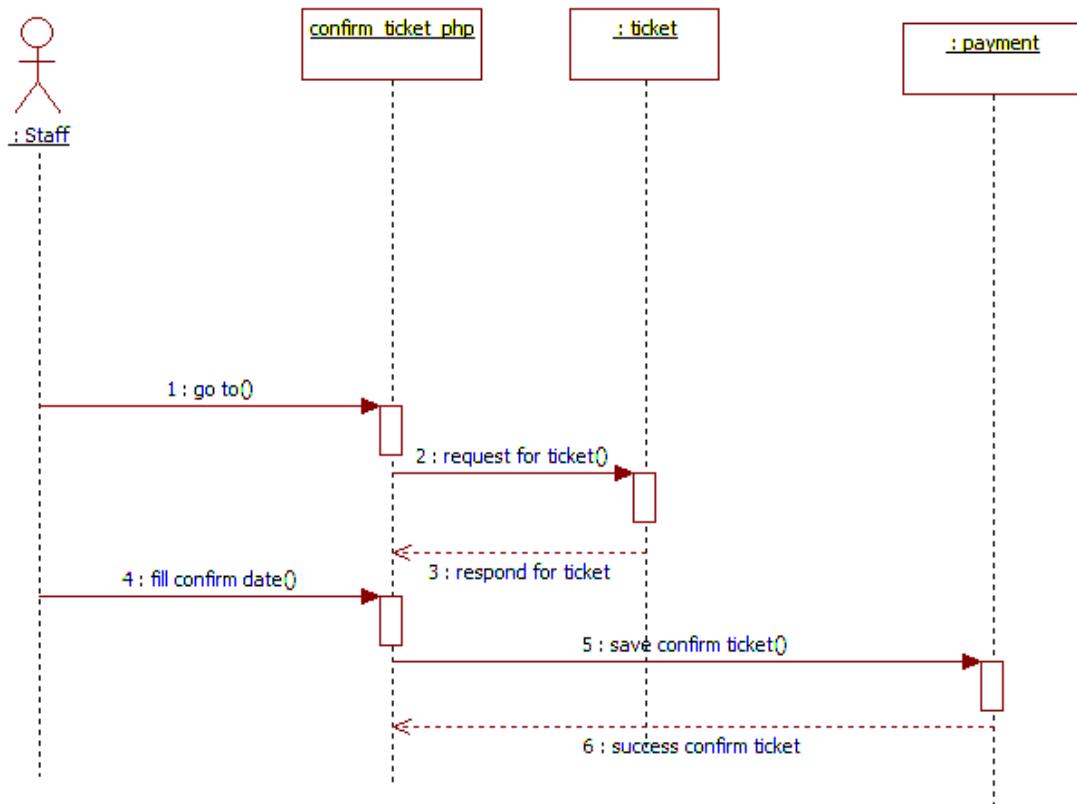
D.4.7. Draw schedule



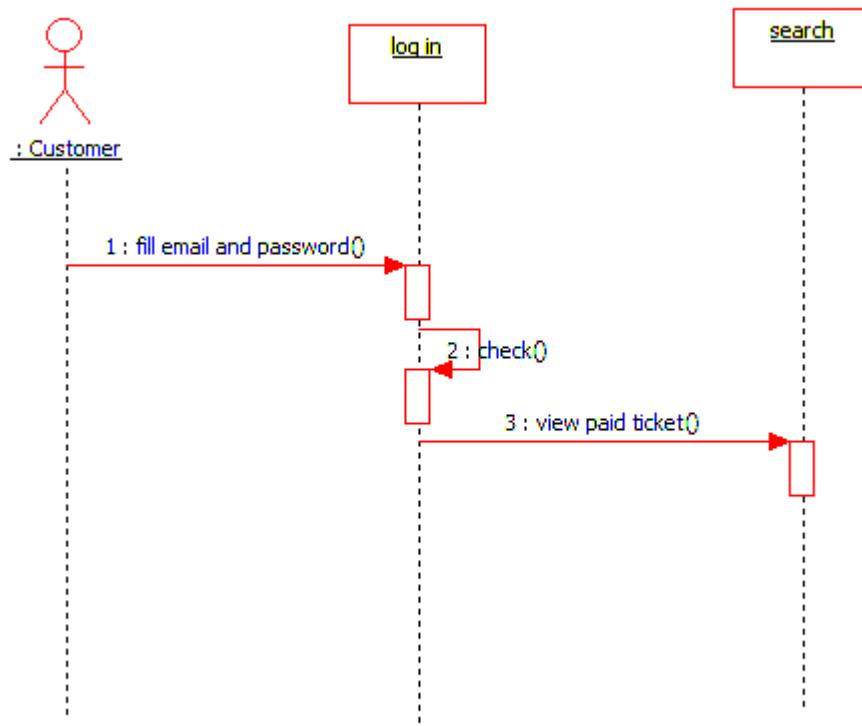
D.4.8. search schedule and book tickets



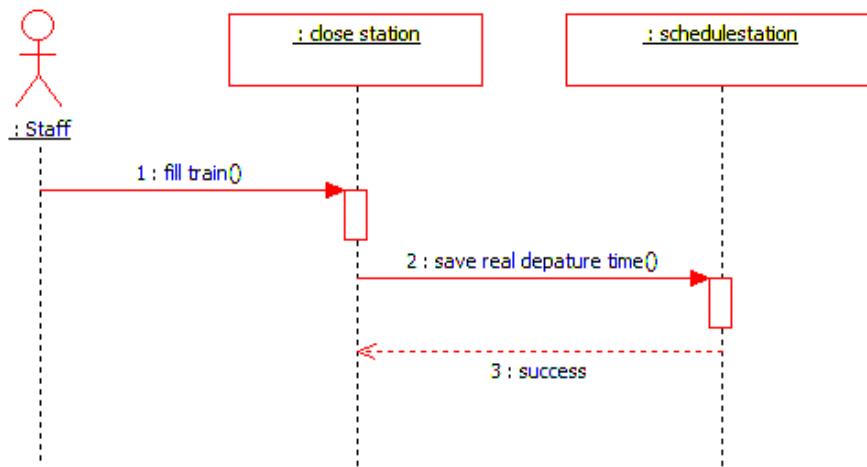
D.4.9. Process Payment



D.4.10. View Paid Tickets

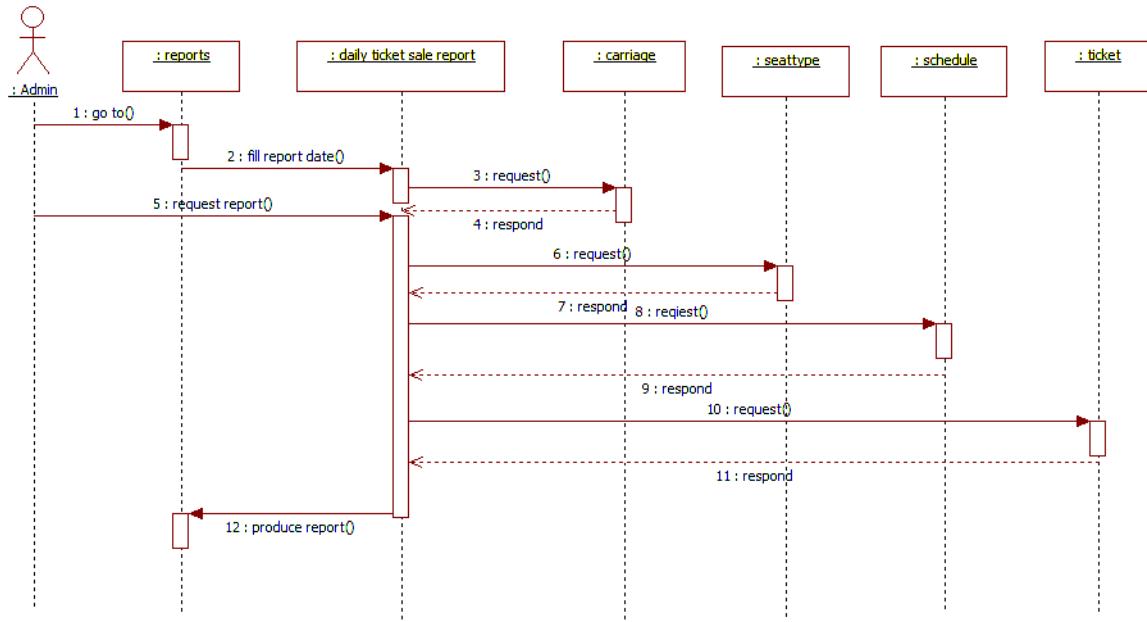


D.4.11. Close the selling point of current station

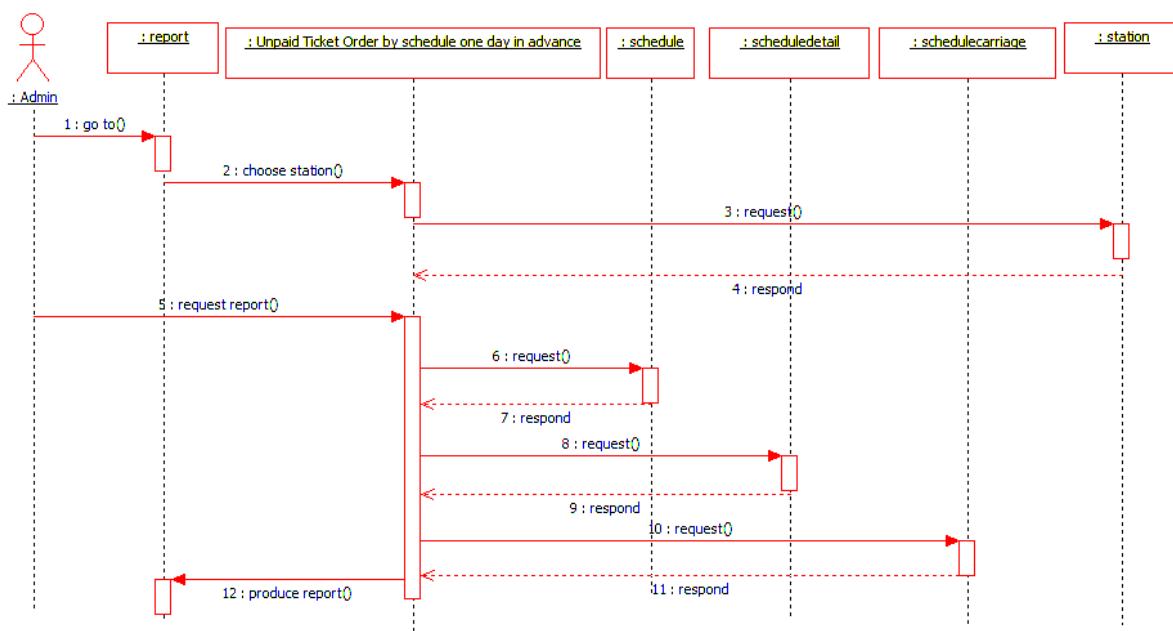


D.4.12. View reports

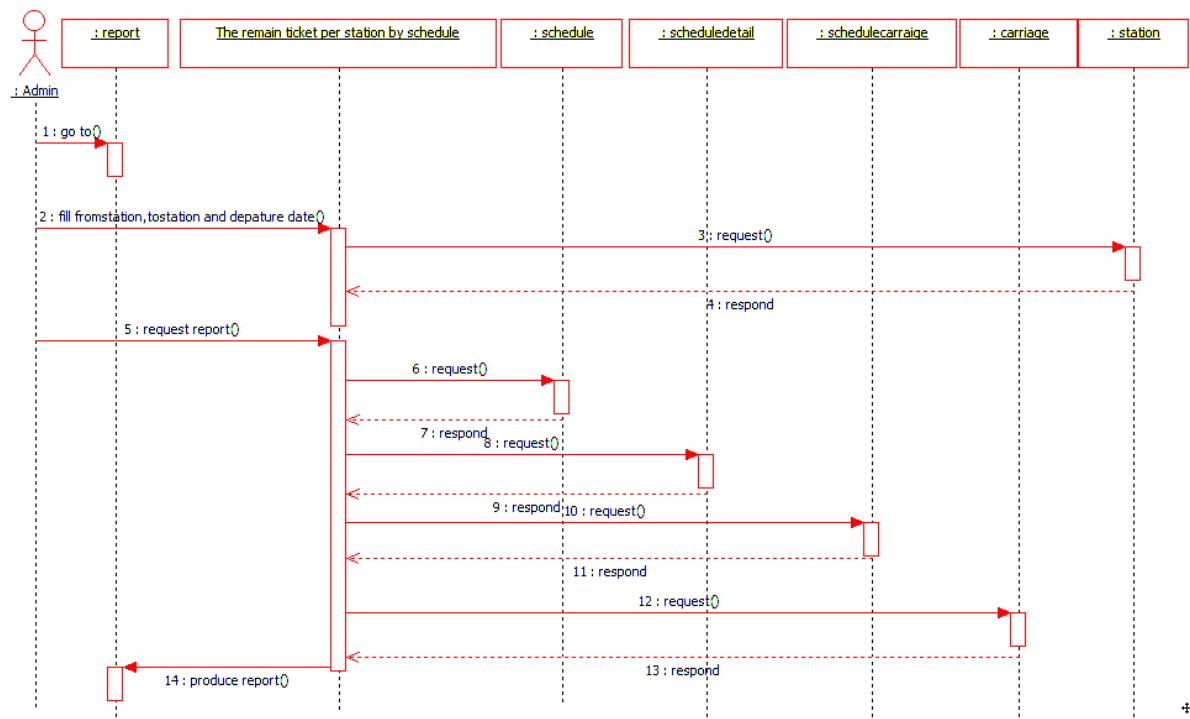
D.4.12.1. View reports for daily tickets sale report



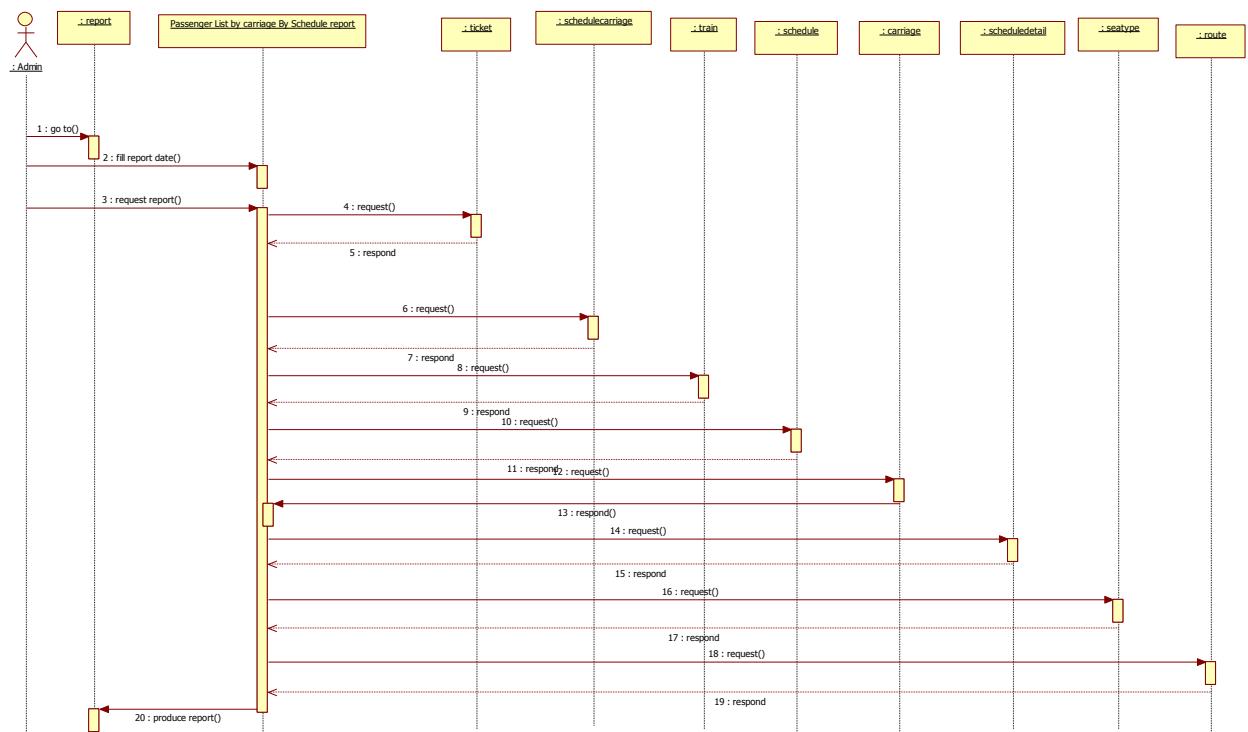
D.4.12.2. View reports for view report for Unpaid Ticket Order by schedule one day in advance



D.4.12.3. View reports for view report for Remain Tickets per station by schedule

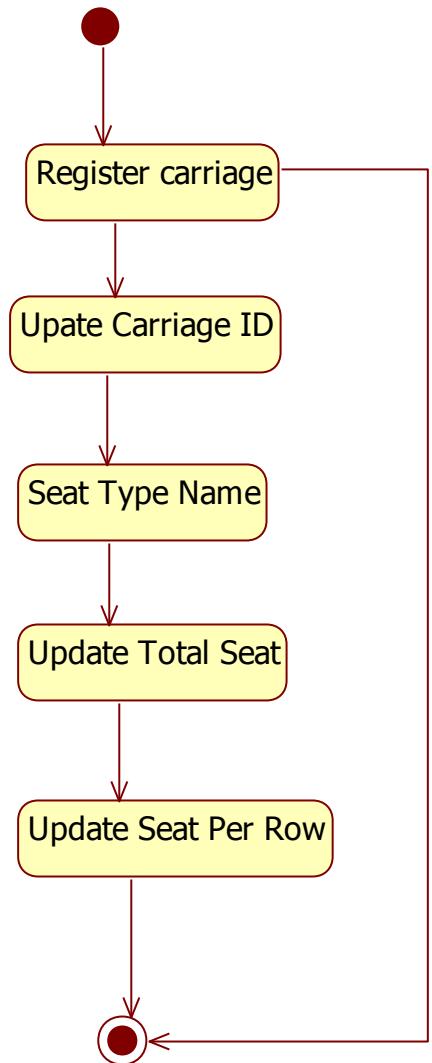


D.4.12.4. View reports for Passenger List by Carriage by schedule

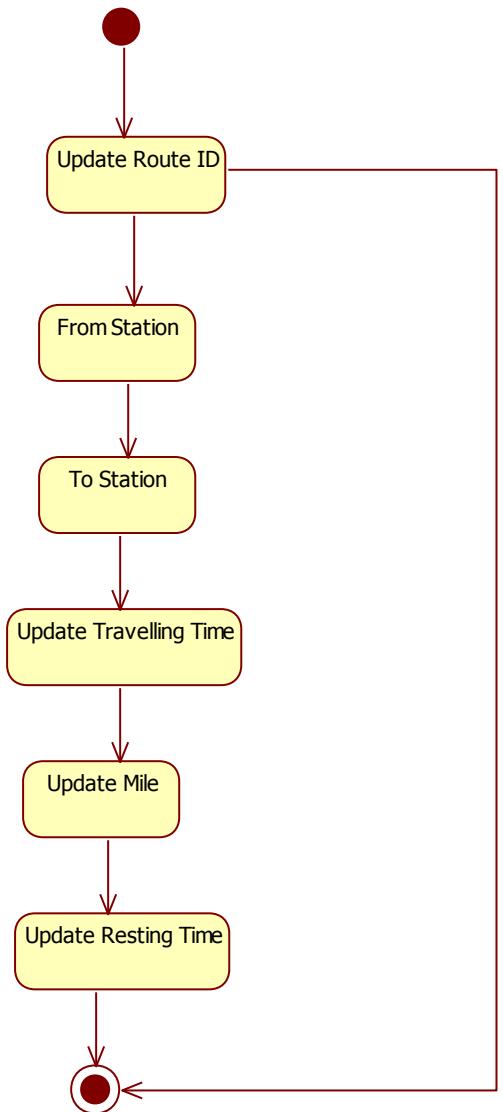


D-5 State Diagram

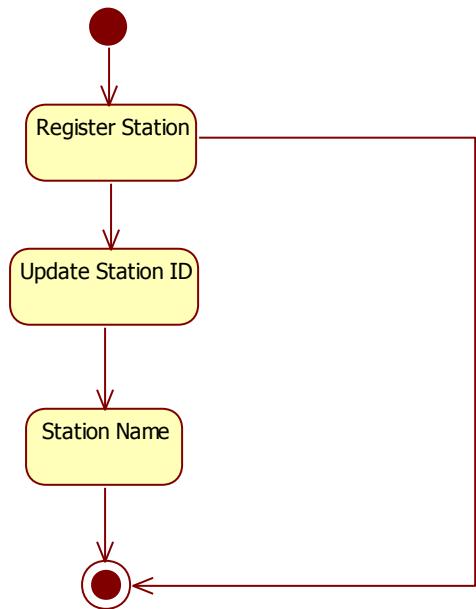
D.5.1.Register Carriage



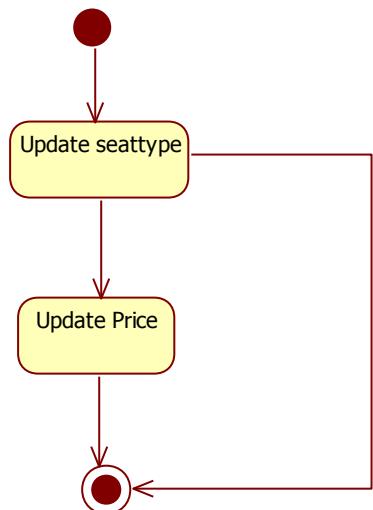
D.5.2.Register Route



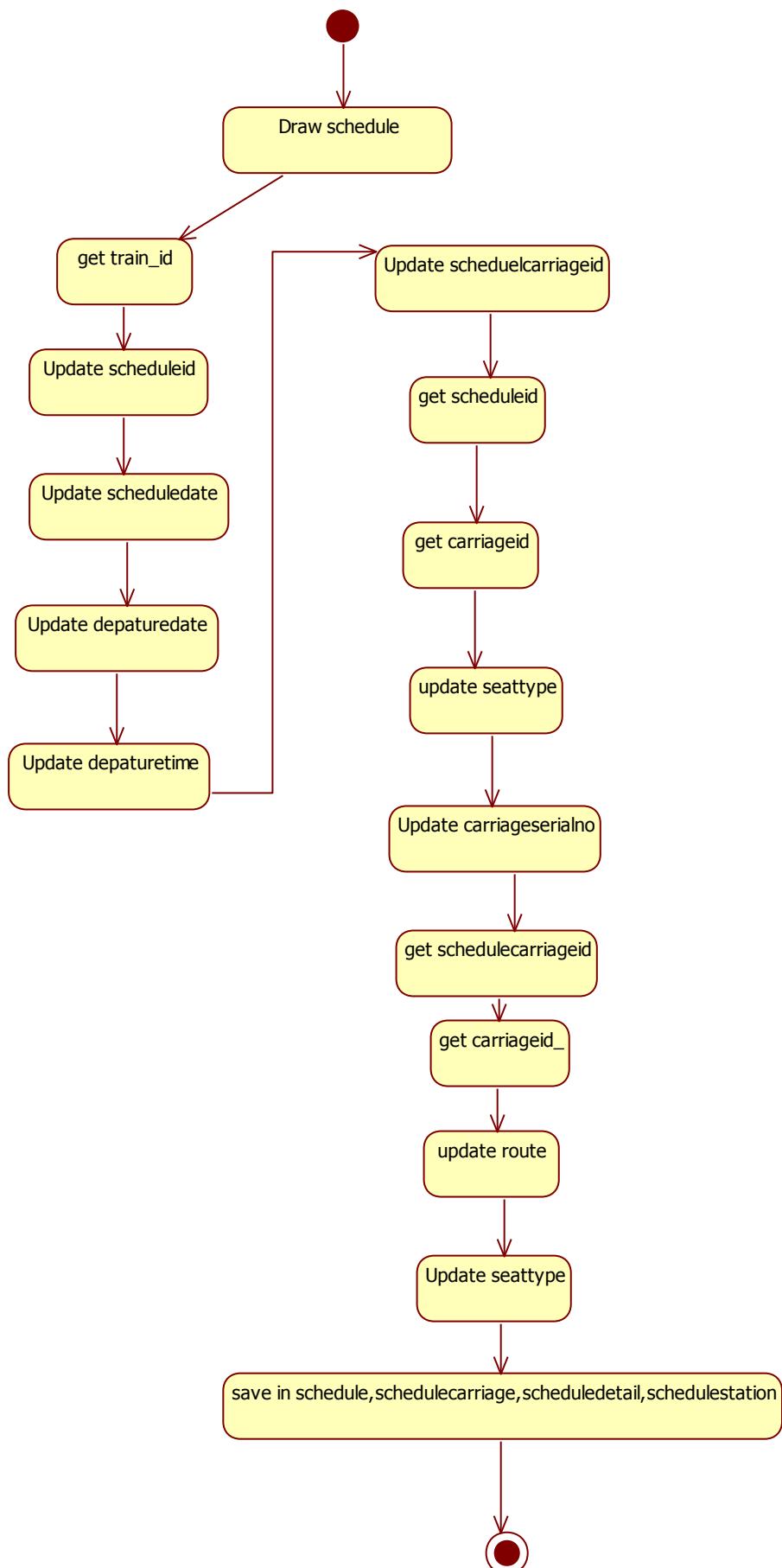
D.5.3.Register Station



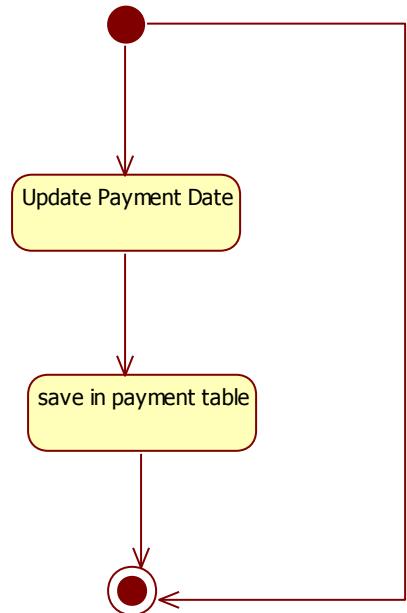
D.5.4.Register route price



D.5.5. Draw schedule

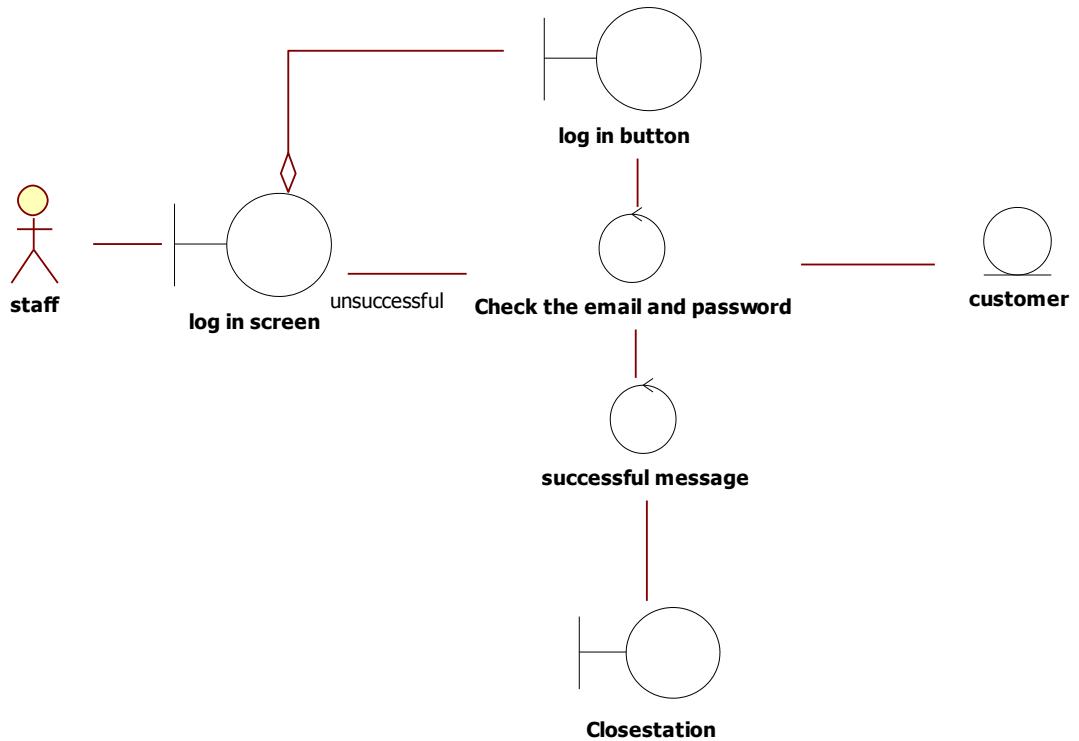
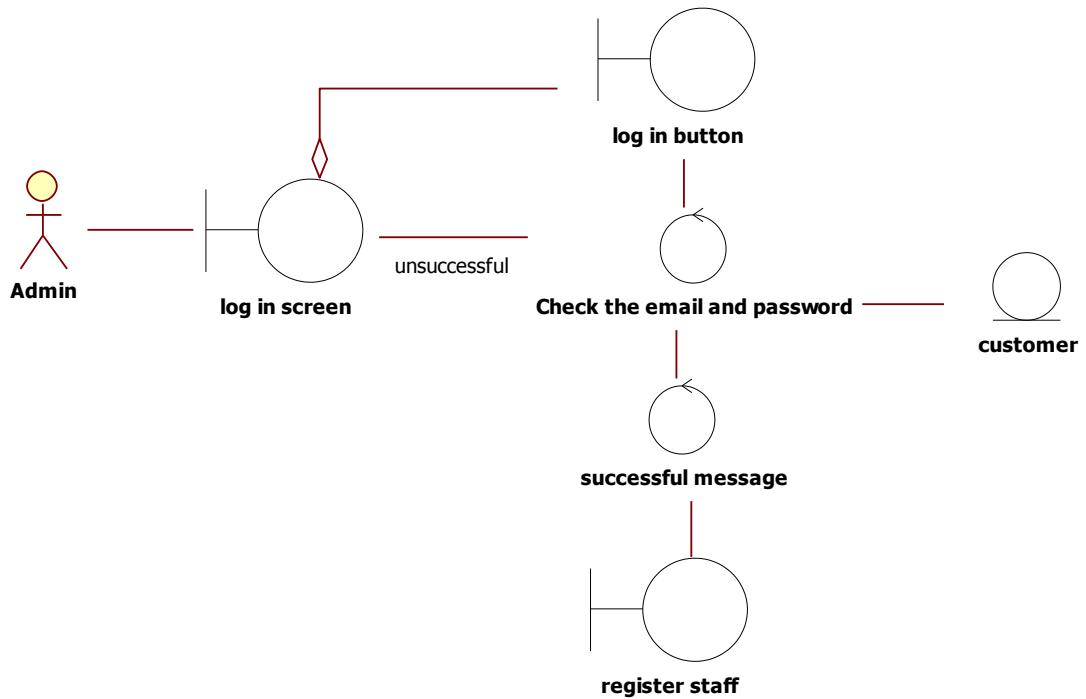


D.5.6.Process Payment

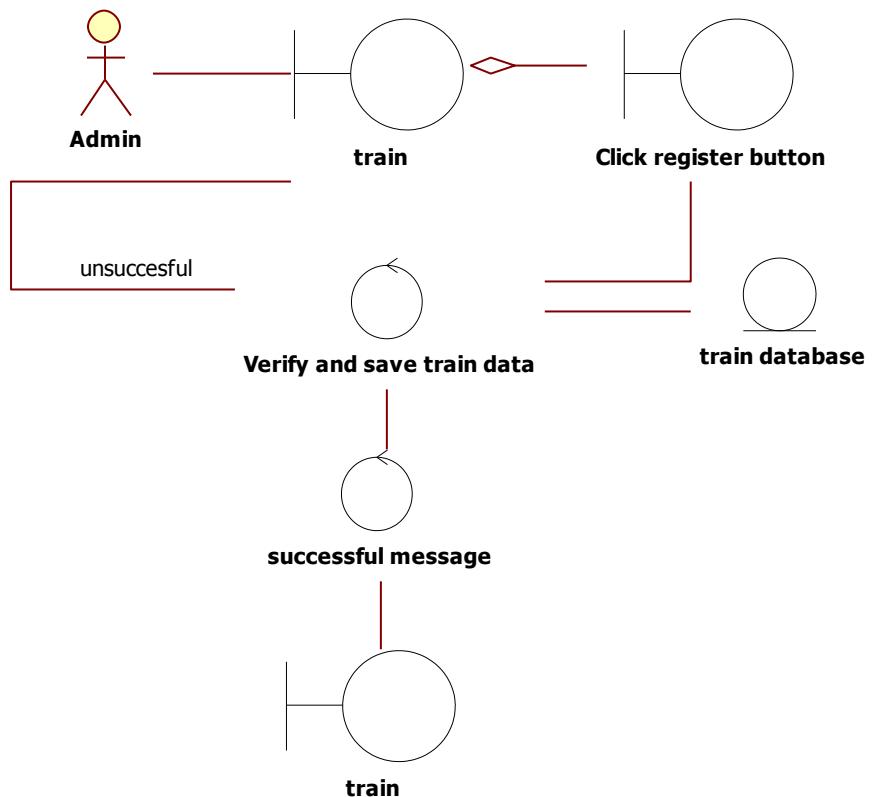


D-6 Robustness Diagram

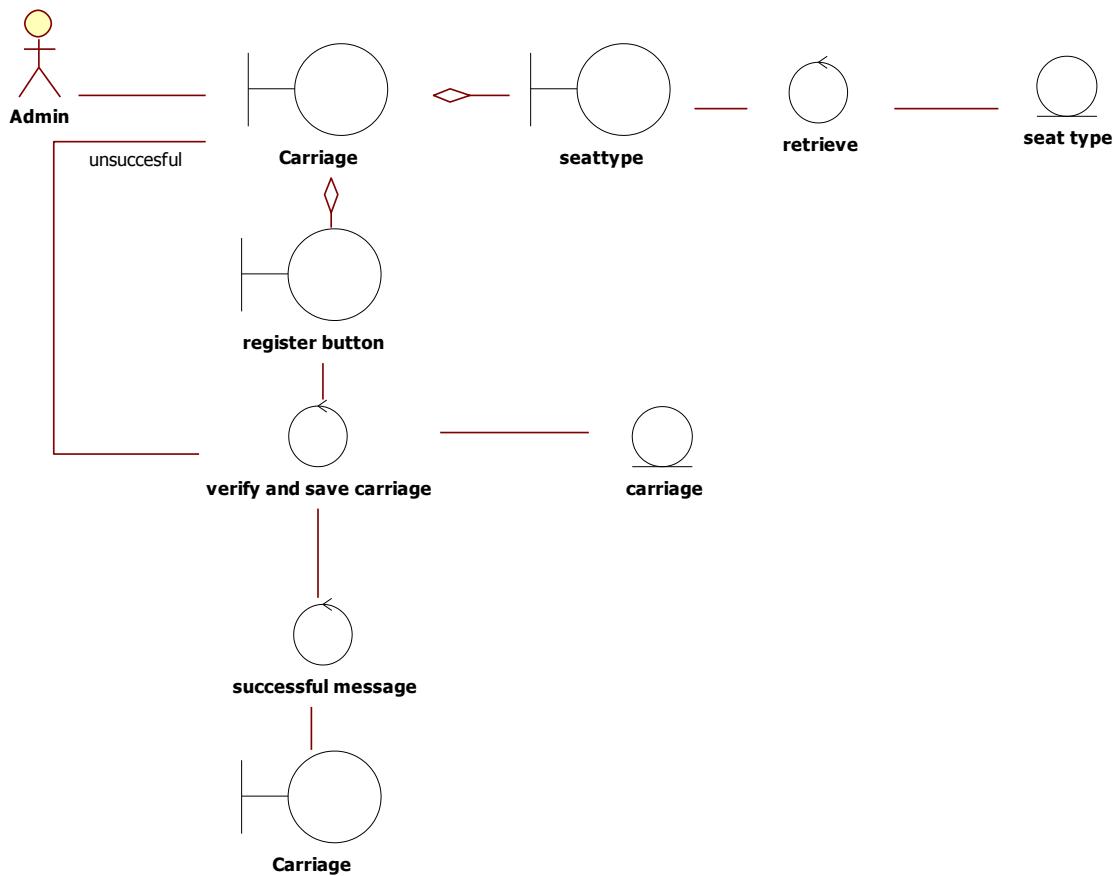
D.6.1.Log in



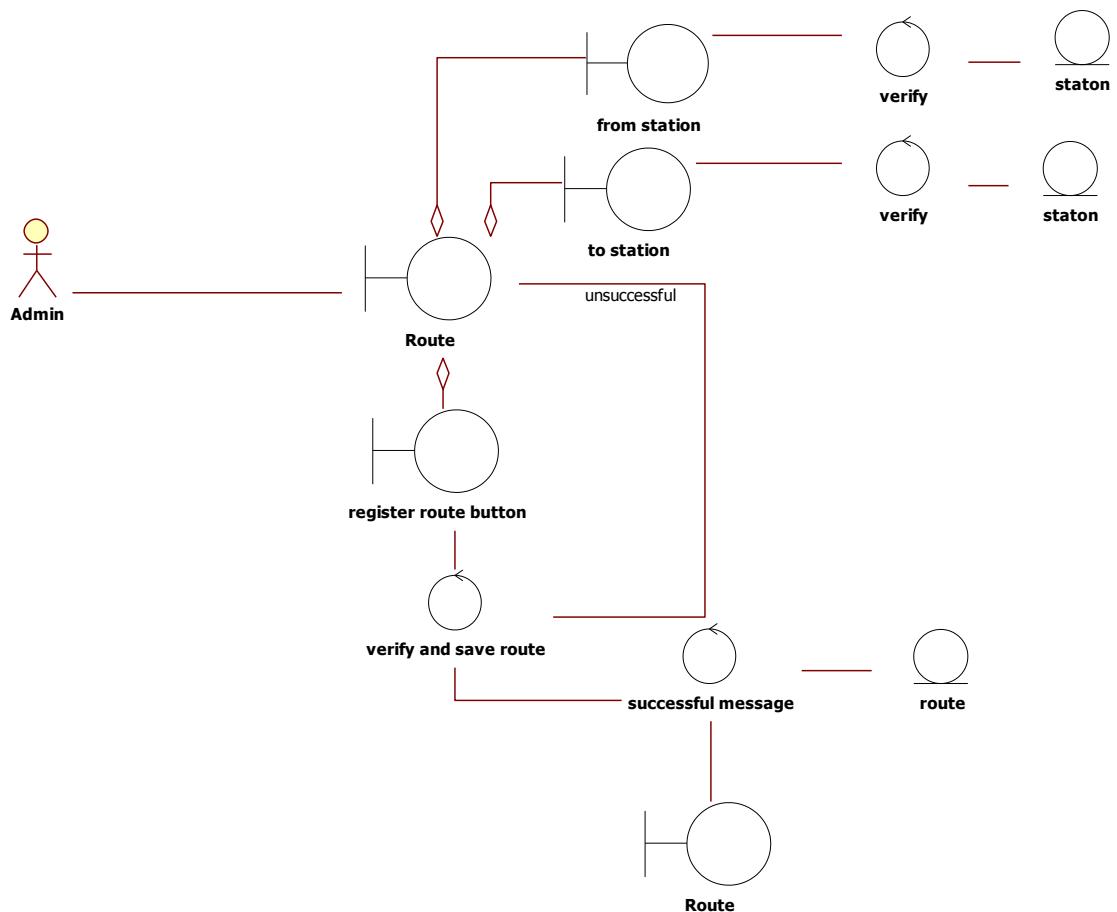
D.6.2.Register Train



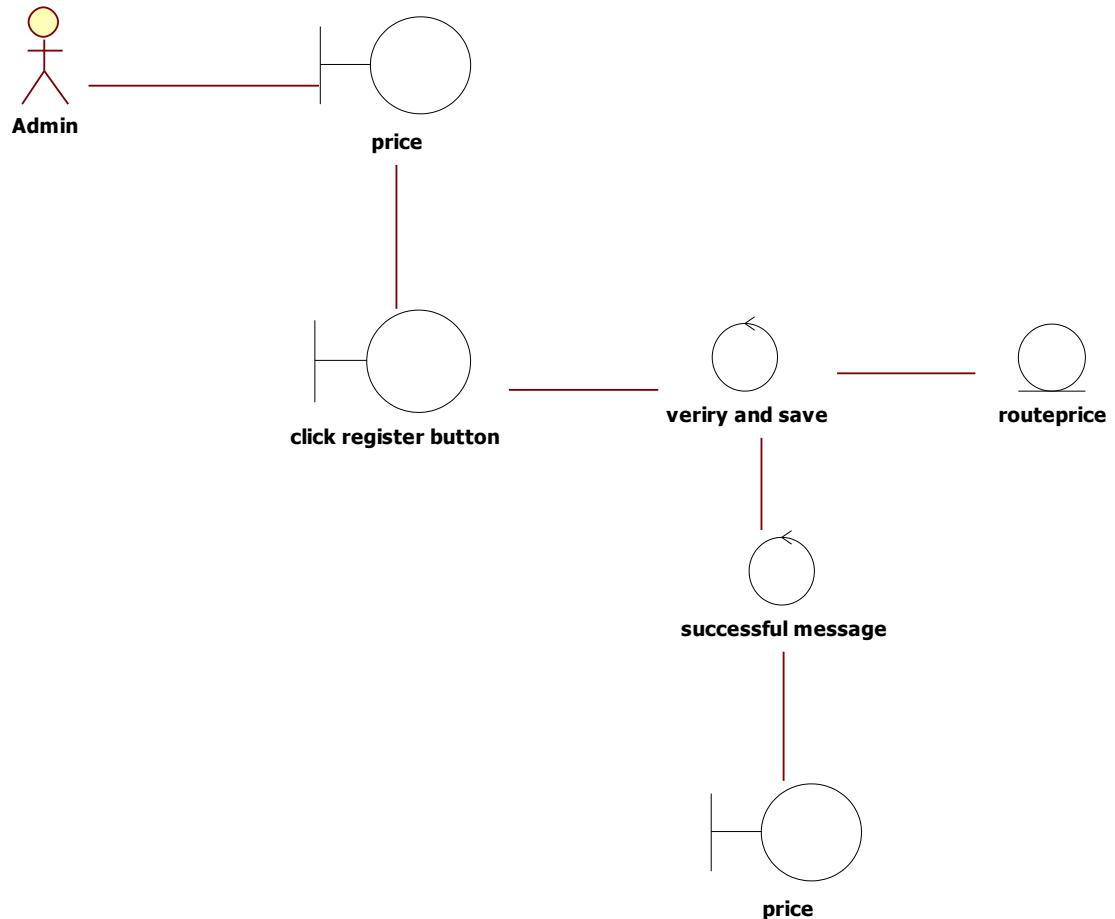
D.6.3.Register Carriage



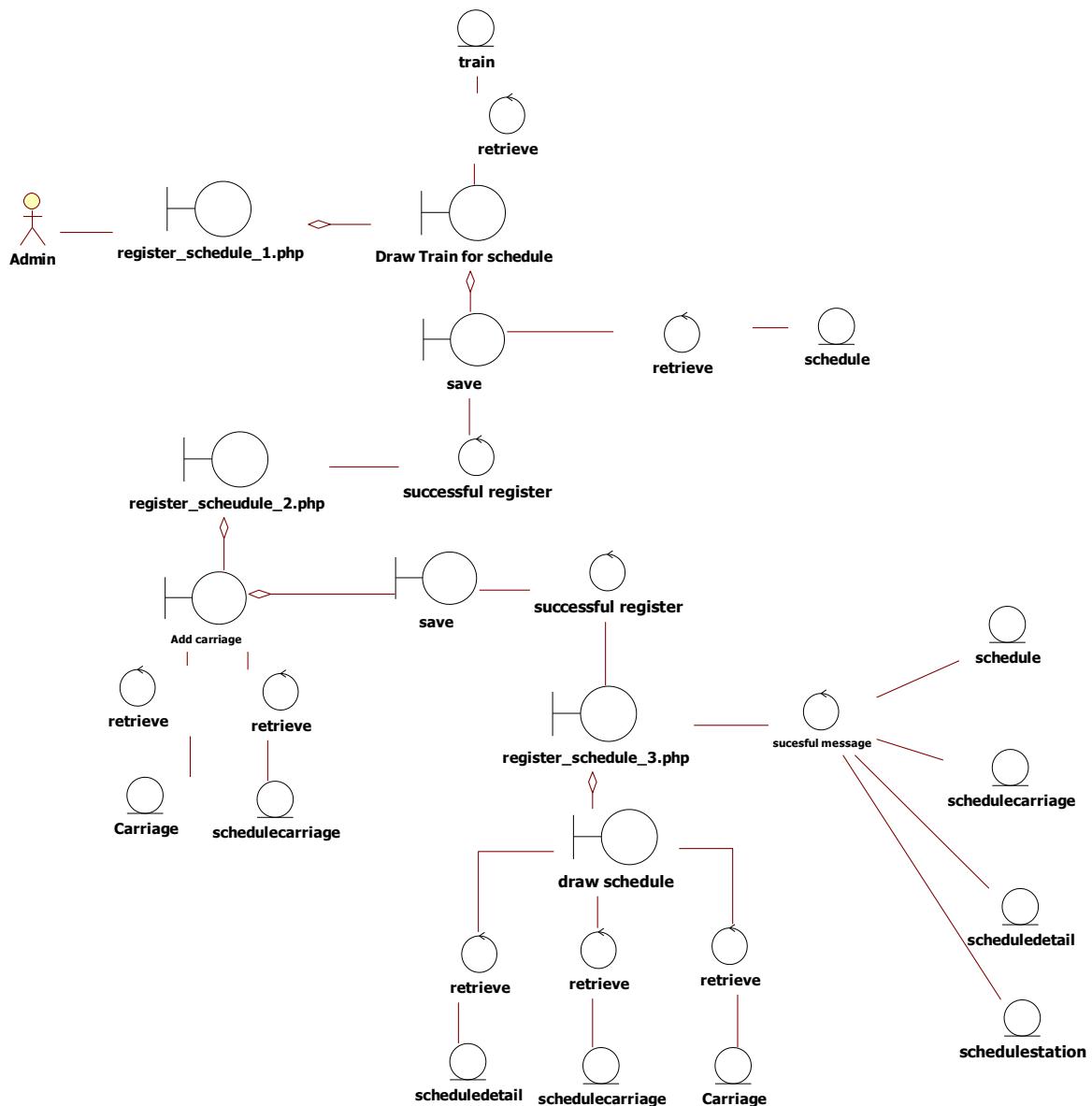
D.6.4.Register route



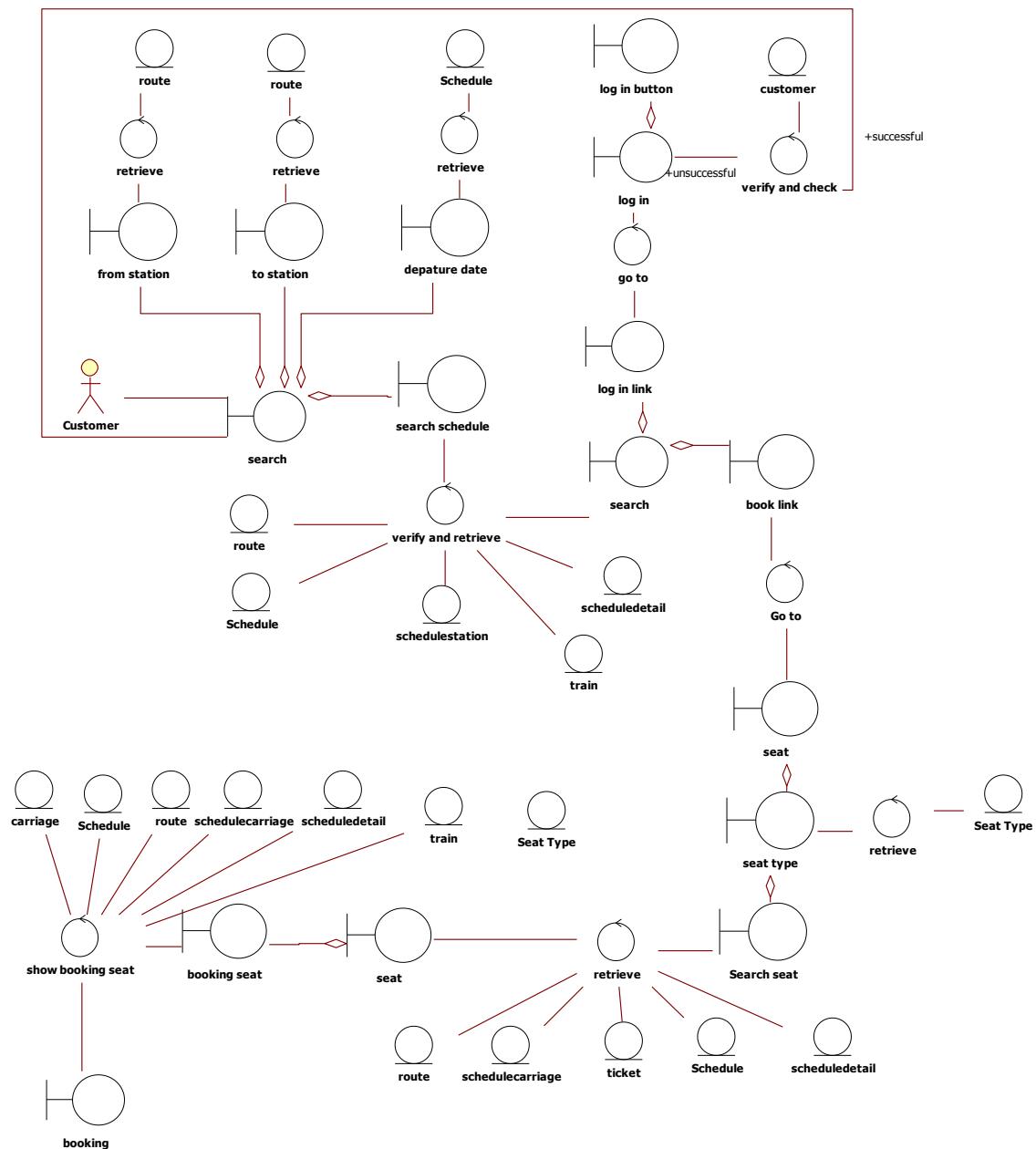
D.6.5.Register route price



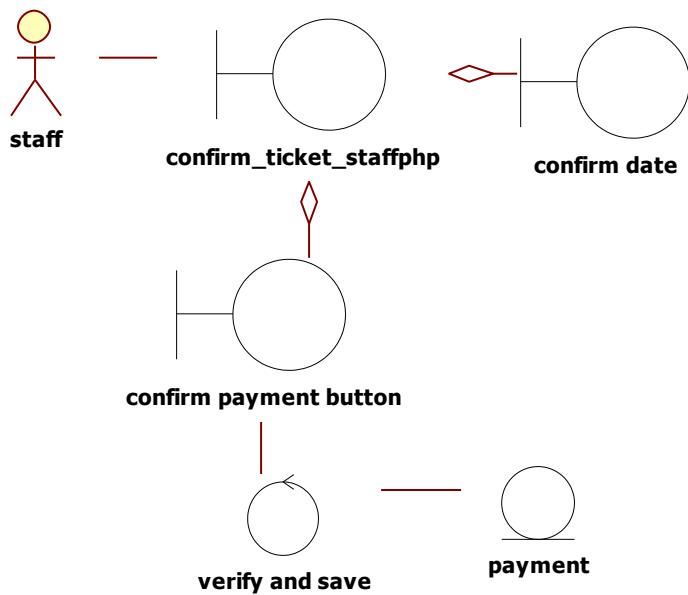
D.6.6. Draw Schedule



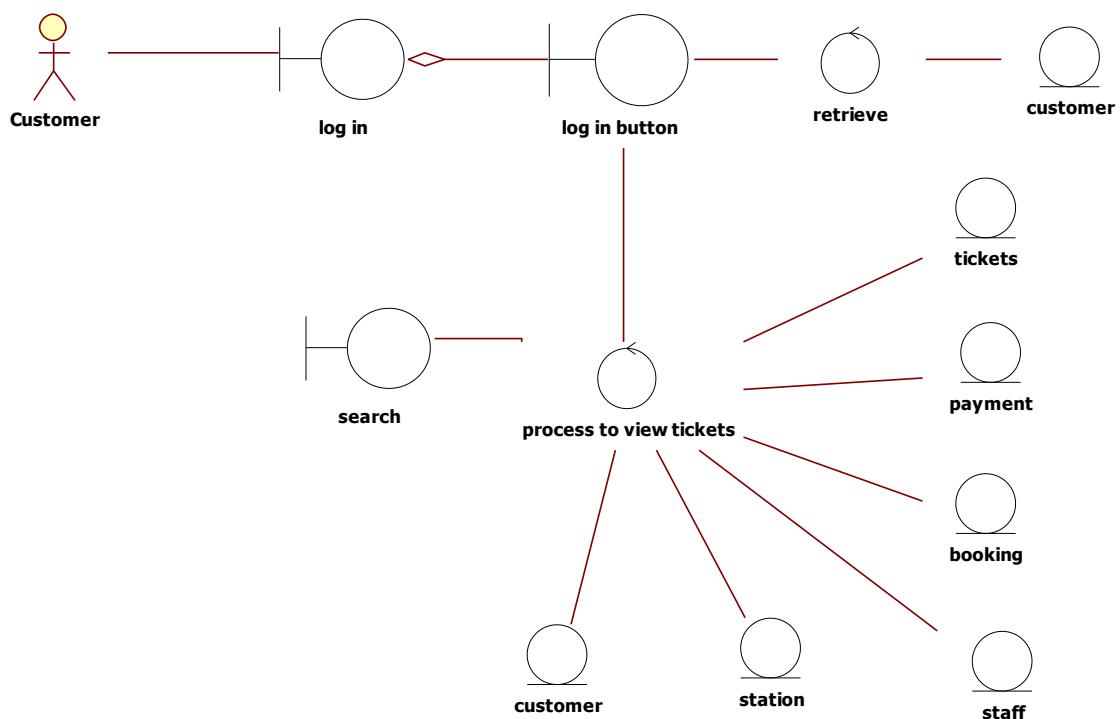
D.6.7.Search schedule and Book tickets



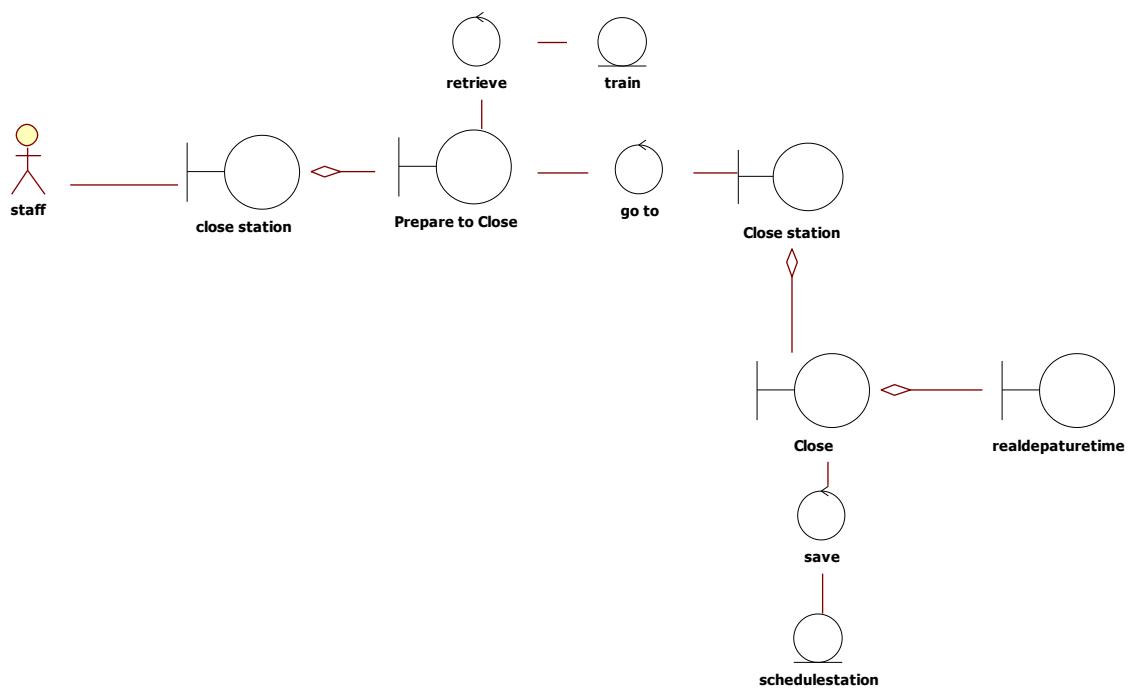
D.6.8.Process Payment



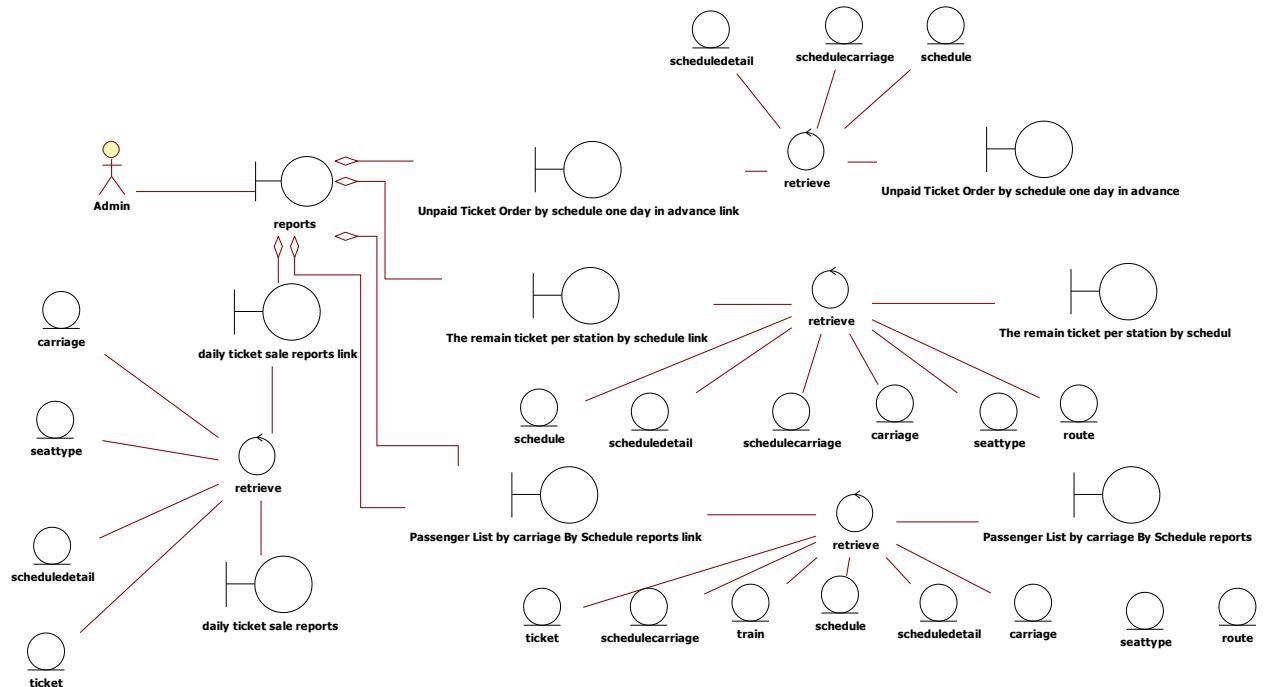
D.6.9. View Paid Ticket



D.6.10.Close the selling point of current station

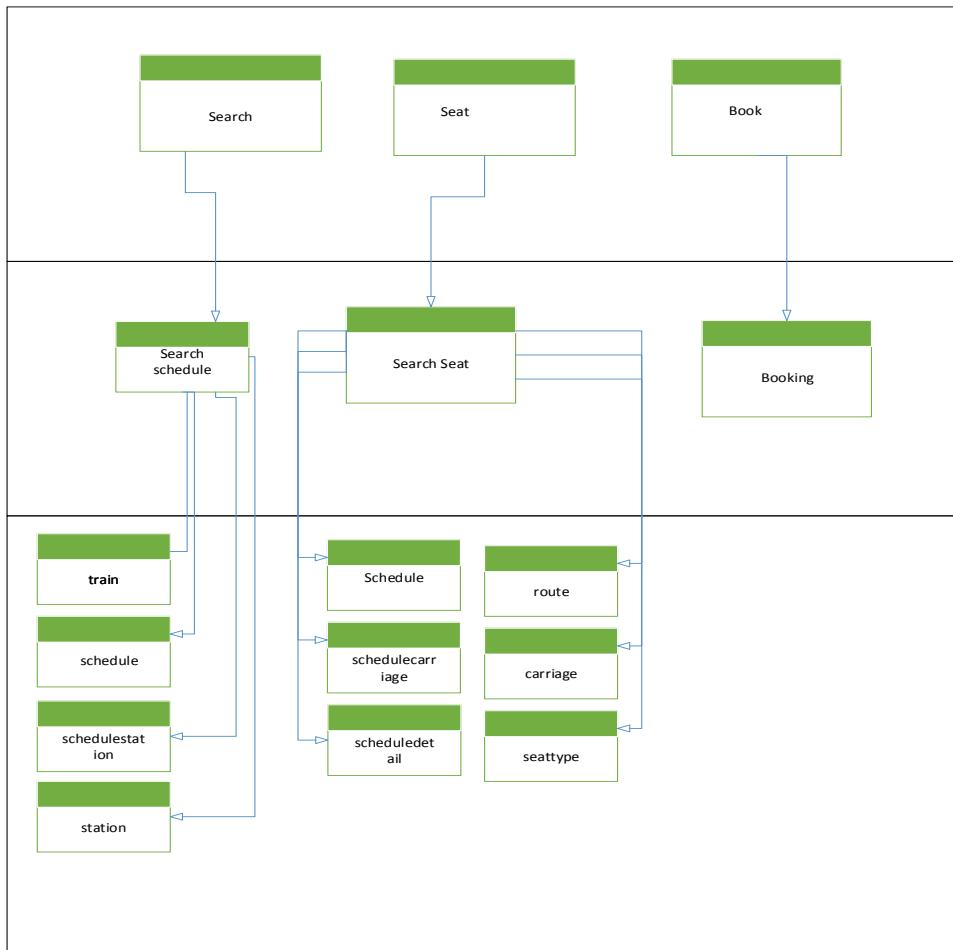


D.6.11.View Reports

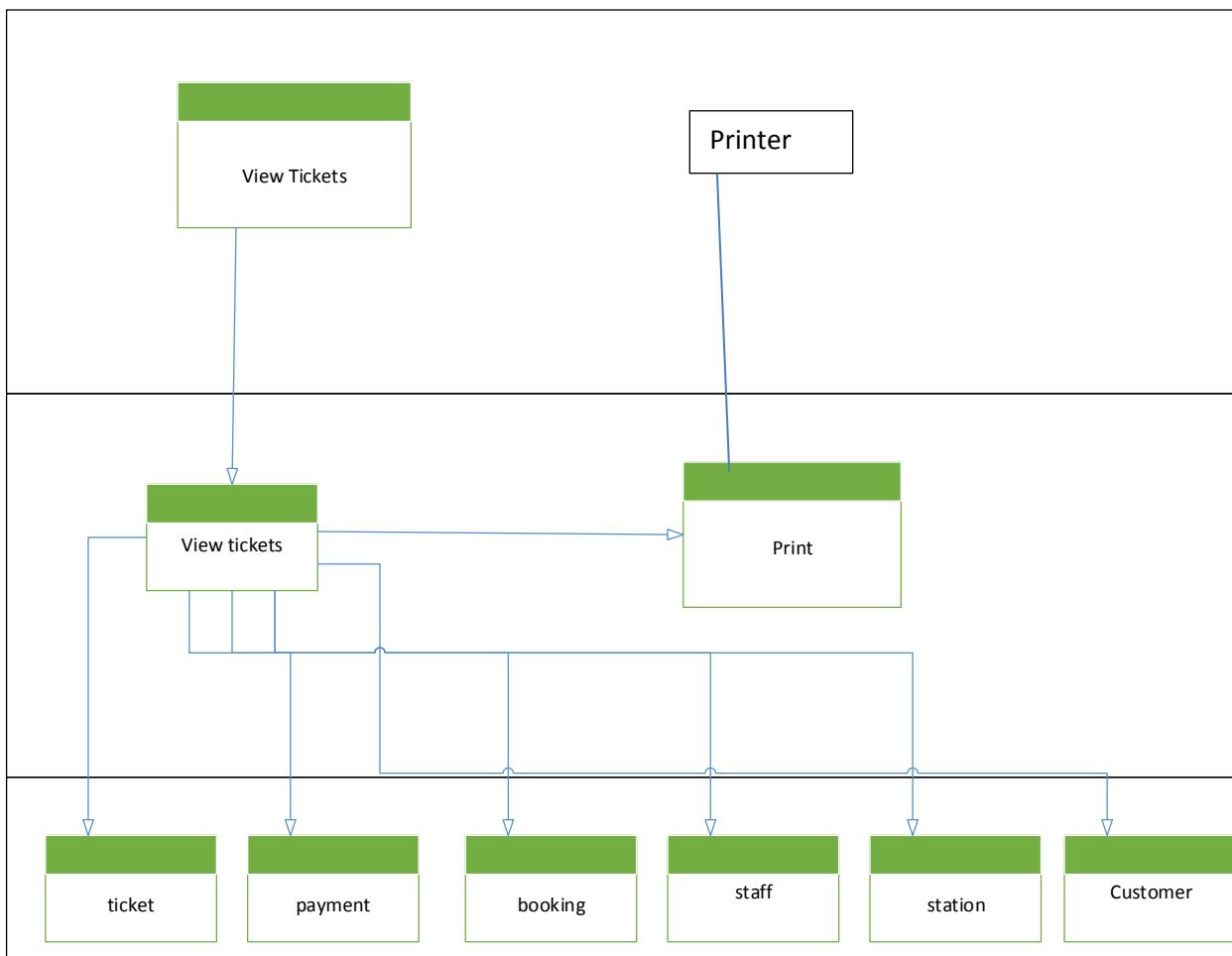


D.7.Pakaging Diagram

D.7.1. Search schedule and Book tickets in Online Myanmar Railway (Yangon-Mandalay) Express Tickets Sales Management System

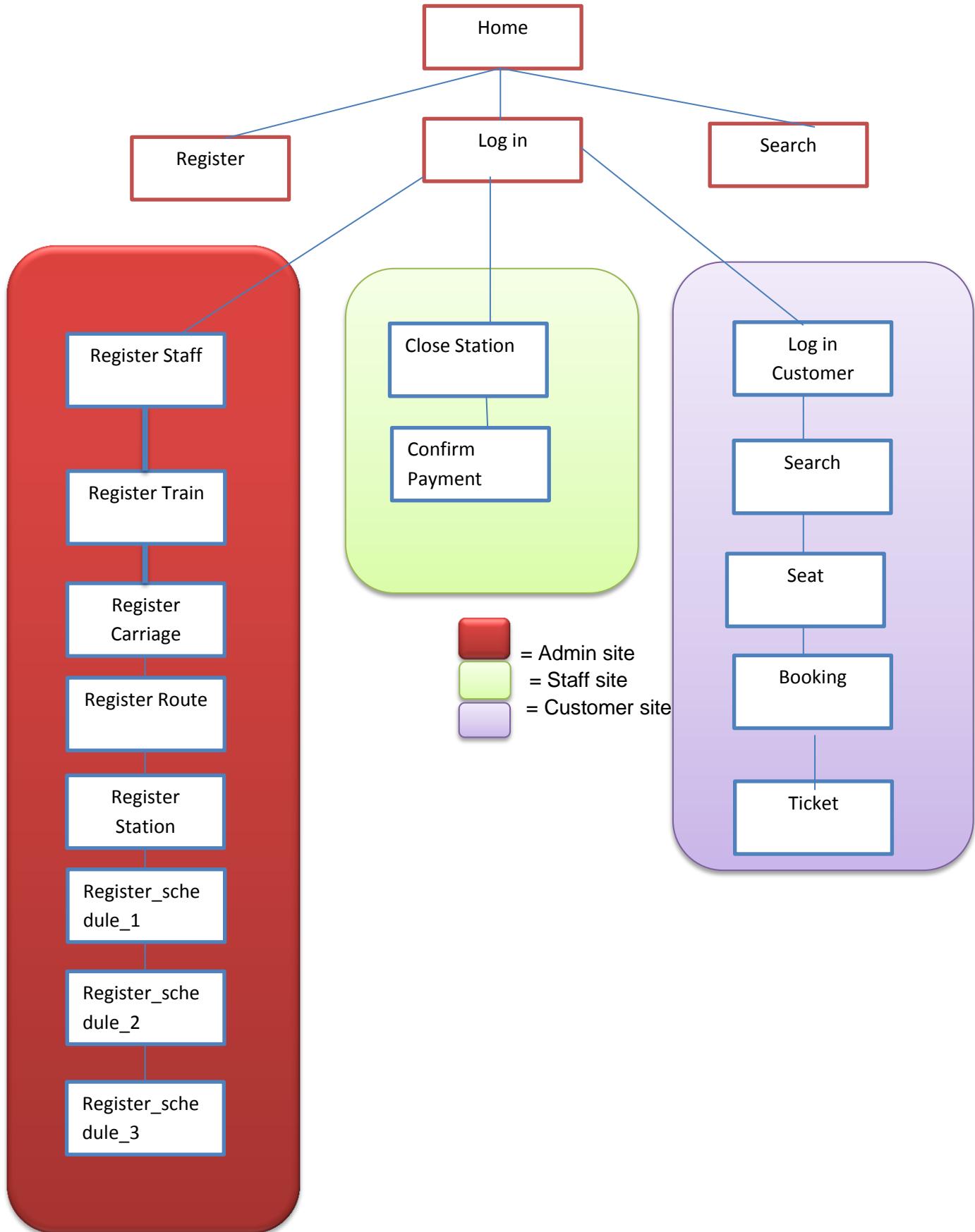


D.7.2.View tickets in Online Myanmar Railway (Yangon-Mandalay) Express Tickets Sales Management System



E. Human Computer Interface

E.1. Site Map for online Myanmar expresses (yangon-mandalay) railway ticket sale management system



Appendix – F

Testing

F.1. Test Case for Online Myanmar (Yangon-Mandalay) Express tickets Sales Management System

F.1.1. Test Case : No 1. Registration by Customer

Input : Insert name, contact phone, email, password and repassword

Procedure :1. Above inserted fields are inserted in customer table

2. The password and repassword are valid

3. Click "register" button

Test Data : The same email in database is inserted and an invalid repassword is inserted

Excepted result: The message to use another message is shown and the invalid message for password is shown.

Actual Result: The message to use another message is shown and the invalid message for password is shown.

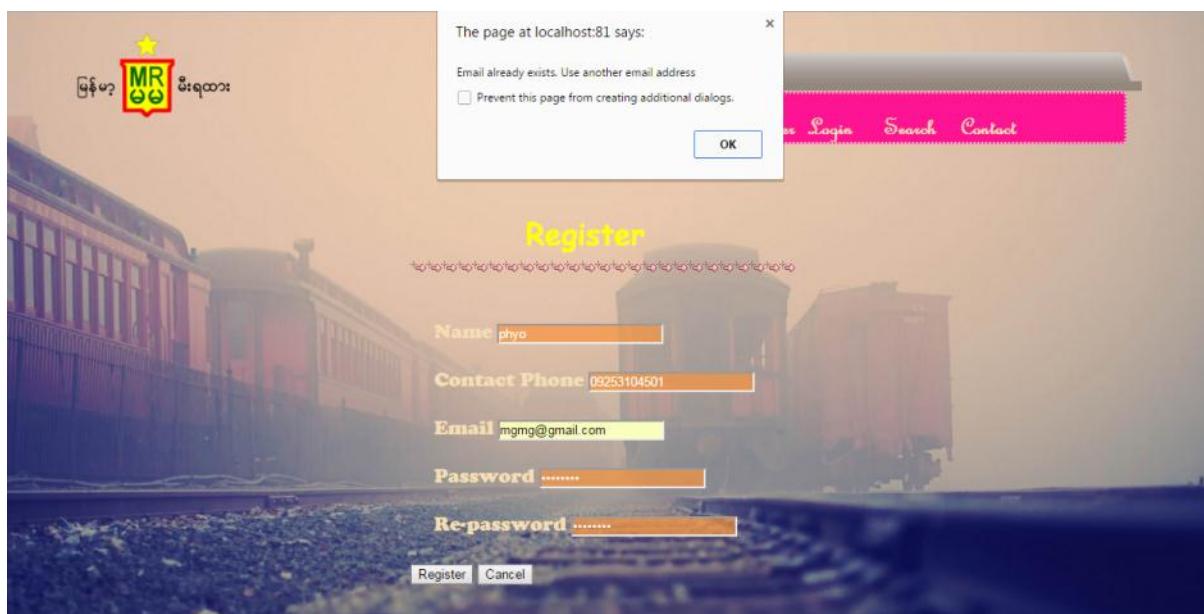


Fig F.1.Invalid Email message

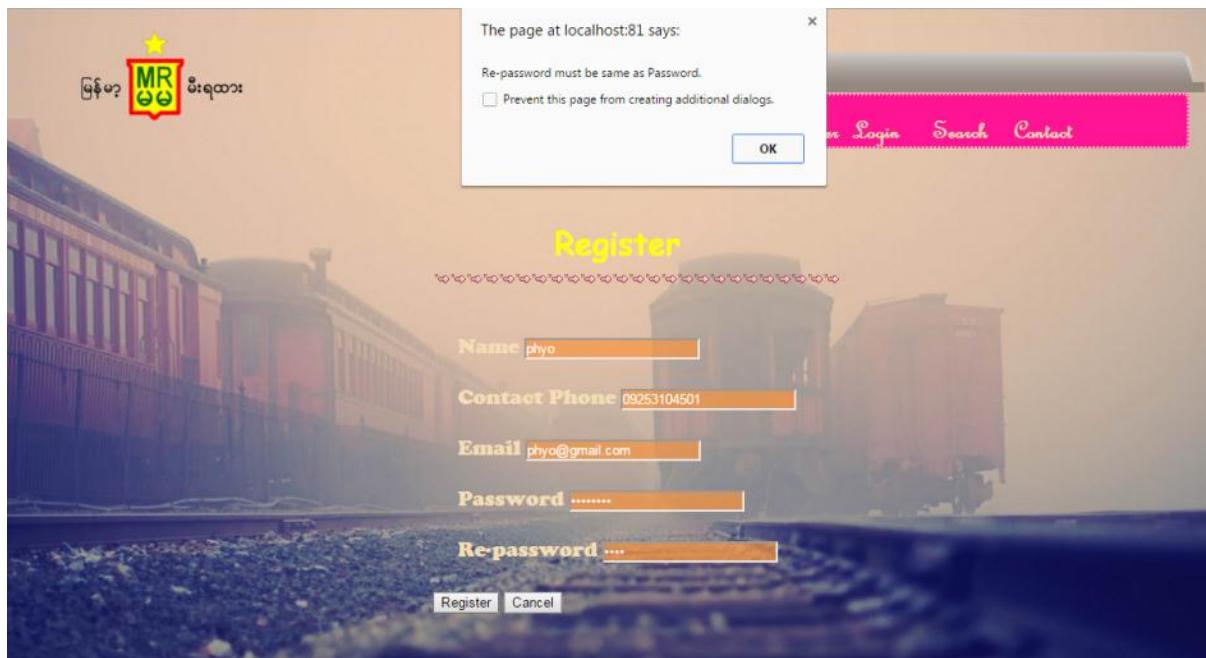


Fig F.2.Invalid retype password message

F.1.2.Test Case : No 1.1 Registration by Staff

Input : Insert name, email, password, role and station name

Procedure :1. Above inserted fields are inserted in staff table

2. Click "register" button

Test Data : An valid data are inserted

Excepted result: The successful message is shown.

Actual Result : The successful message is shown.

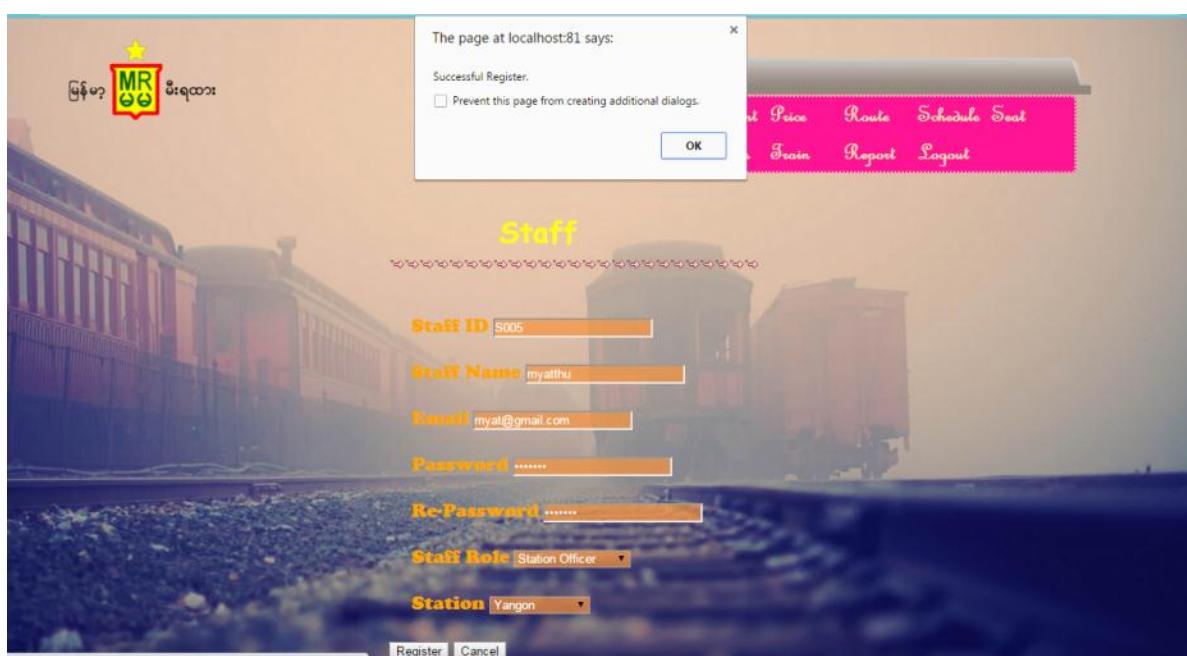


Fig F.3.Successful message for registration of staff

F.1.3.Test Case : No 2 Log in by Customer

Input : Insert email and password

Procedure :1. Above inserted fields are inserted

2. Click "login" button

Test Data : Username is inserted instead of email

Excepted result: An error is occurred while pressing login button

Actual Result : An error is occurred while pressing login button

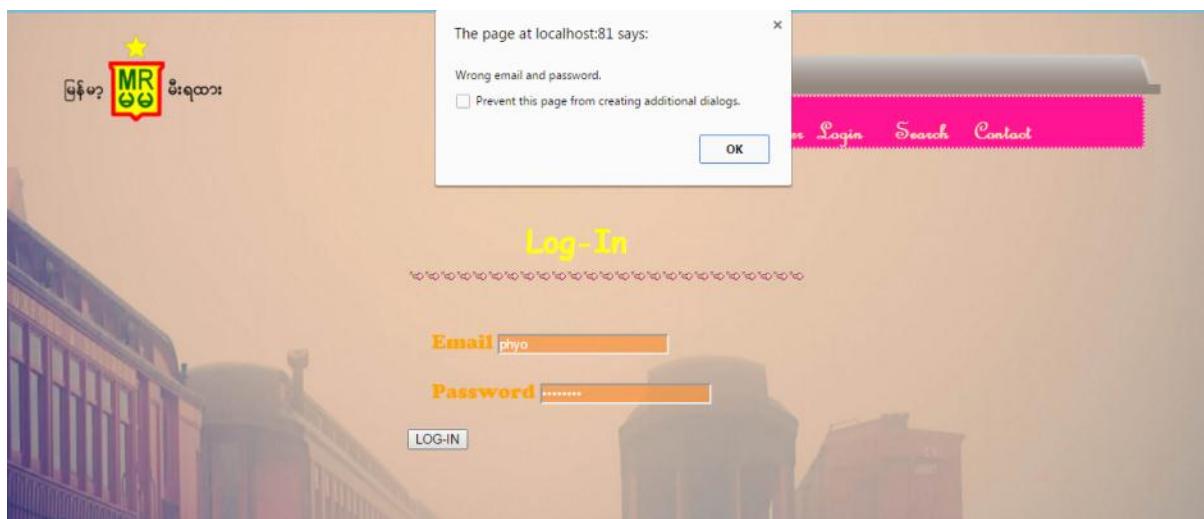


Fig F.4. Error message for username and password

F.1.4.Test Case : No 2.1 Log in by Staff

Input : Insert email and password

Procedure :1. Above inserted fields are inserted

2. Click "login" button

Test Data : Inserting wrong password

Excepted result: An error is occurred while pressing login button

Actual Result: An error is occurred while pressing login button



Fig.F.5. Error or password message

F.1.5.Test Case : No 3 register train

Input : Insert trainname and tripname

Procedure :1. Insert trainname and select tripname

2. Click "register" button

Test Data : Correct trainname and tripname

Excepted result: The successful message is shown

Actual Result : The successful message is shown.

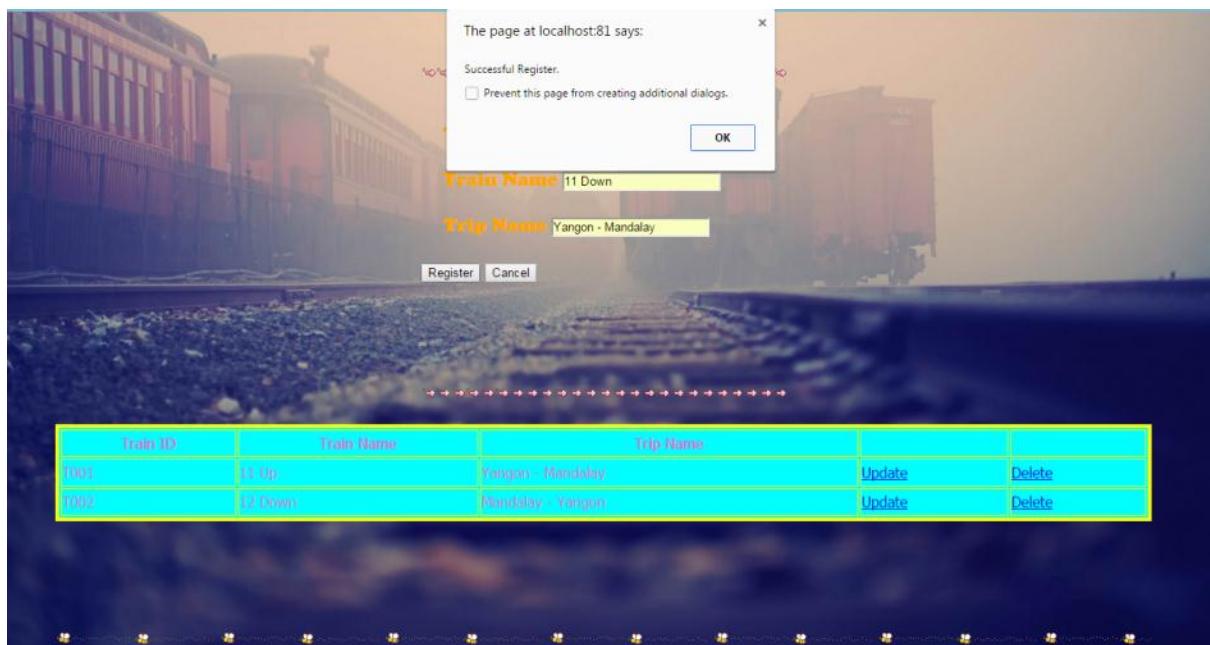


Fig.F.6.Successful Message

F.1.6.Test Case : No 4 register carriage

Input : Select Seat Type and Insert total seat and seat per row

Procedure :1. Select Seat Type and Insert total seat and seat per row

2. Click "register" button

Test Data : Correct seat type and total seat and seat per row

Excepted result: The successful message is shown

Actual Result : The successful message is shown.

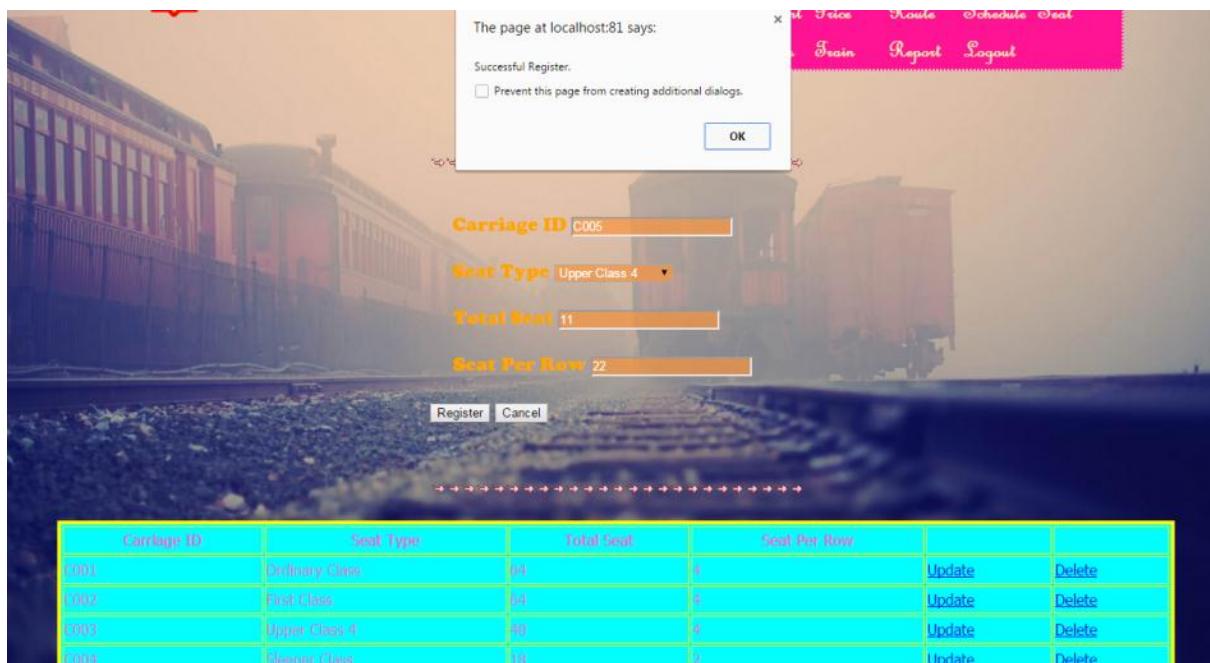


Fig F.7.Successful message

F.1.7.Test Case : No 5 register route

Input : Select from station, to station and insert travelling time, mile and resting time

Procedure :1. Select from station, to station and insert travelling time, mile and resting time

2. Click "register" button

Test Data : Same route is inserted

Excepted result: The message to change another route is shown.

Actual Result: The message to change another route is shown.

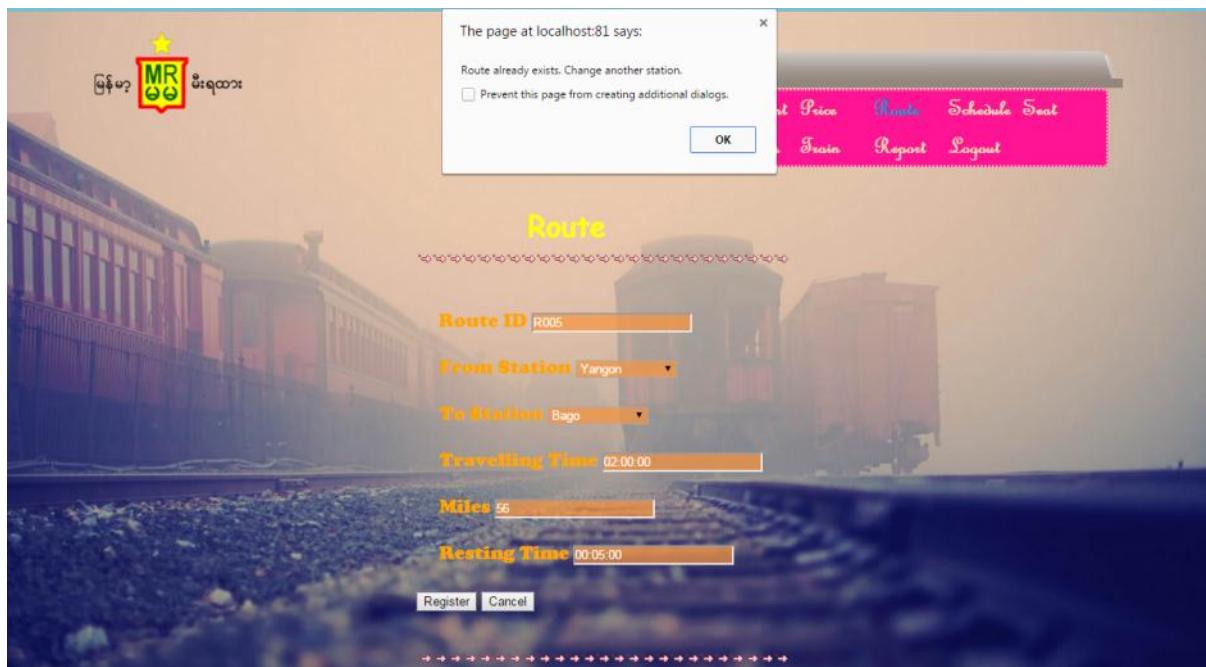


Fig F.8. The message to change another station is shown

F.1.8.Test Case : No 6 register station

Input : Select stationname

Procedure :1. Select stationname

2. Click "register" button

Test Data : Correct stationname

Excepted result: The successful message is shown

Actual Result : The successful message is shown.

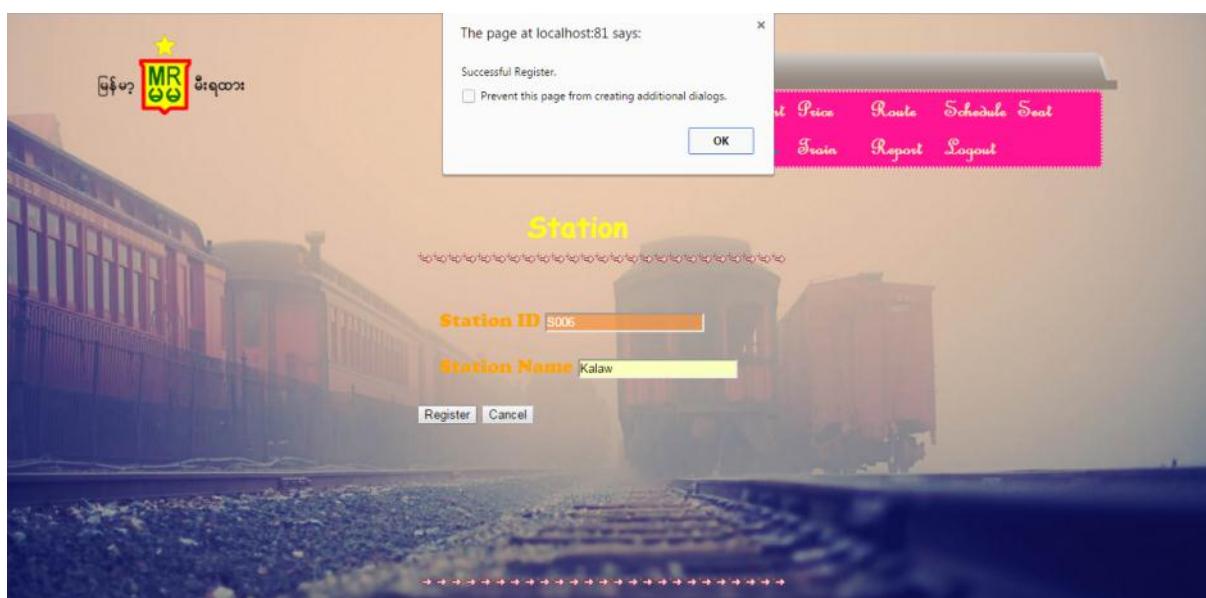


Fig.F.9.Successful Message is shown.

F.1.9.Test Case : No 7 draw and delete schedule

Input : Select stationname

Procedure :1. Select stationname

2. Click "register" button

Test Data : Correct stationname, depature date and depature time

Excepted result: The successful message is shown

Actual Result : The successful message is shown.

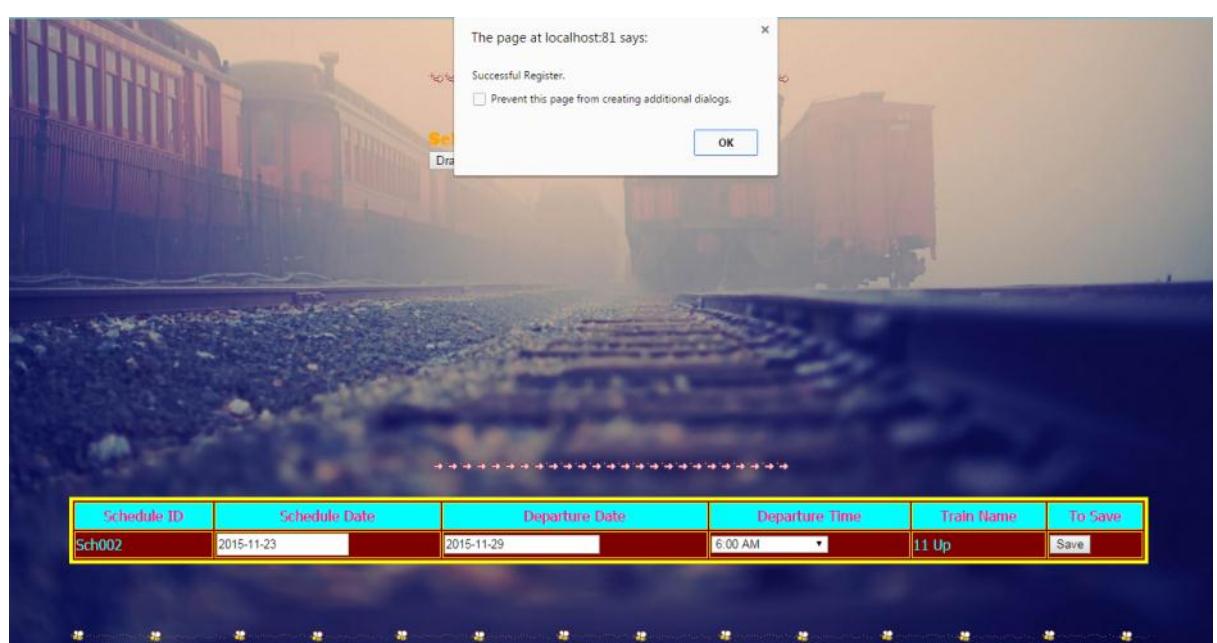


Fig F.10.Successful message is shown

F.1.10.Test Case : No 8.1 Search schedule

Input : Insert fromstation, tostation and select depaturedate

Procedure :1. Insert fromstation, tostation and select depaturedate

2. Click "search schedule" button

Test Data : Correct fromstation,tostation and depature date

Excepted result: Show correct schedule

Actual Result : Show correct schedule

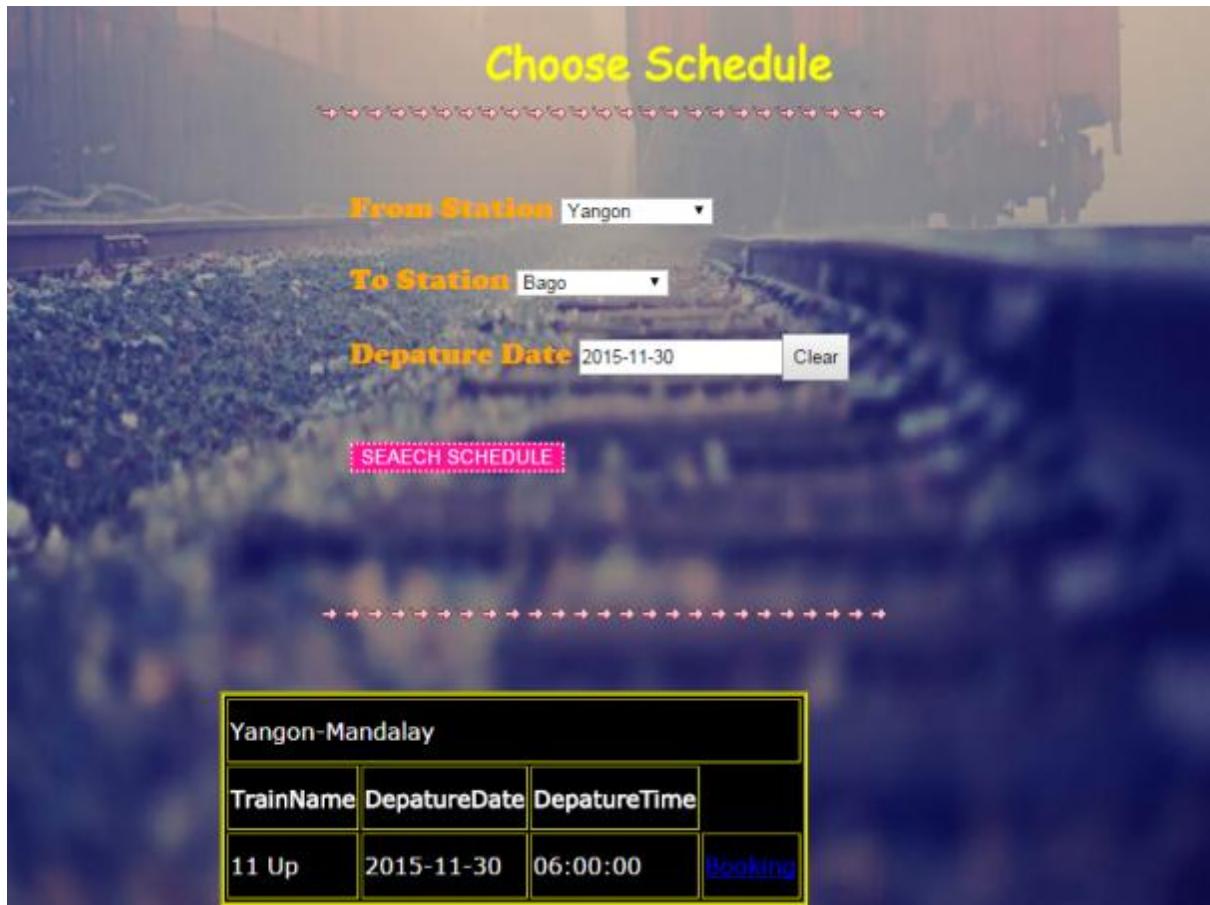


Fig F.11. Show correct schedule

F.1.11.Test Case : No 8.2 Booking seat

Input : Insert fromstation,tostation and select depaturedate,select seat type

Procedure: 1. Insert fromstation,tostation and select depaturedate

2. Click "**search schedule**" button
3. Press "Booking" link
4. Choose seat type
5. Click "**Search seat type**" button
6. Click "**Book Your Seat Here**" Button

Test Data : Ordering the tickets without choosing the seat

Excepted result: Error message is shown

Actual Result : Error message is shown

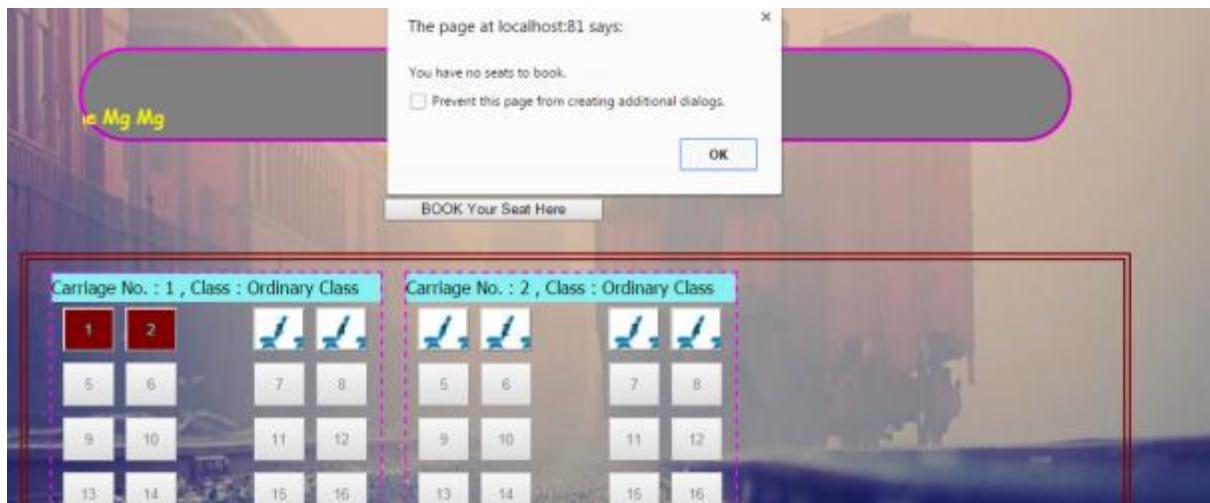


Fig. F.12 Show error message

F.1.11.Test Case : No 9 view Paid tickets

Input : Log in

Procedure :1. Must be log in first

Test Data : correct log in process

Excepted result: The paid tickets is shown

Actual Result: The paid tickets is shown.

The Tickets that confirmed by Staff												
ID Number	Traveller	From	To	Price	Seat	Carriage	Seat Type	Train	Trip	For Date	For Time	
112233	Mg Mg	Yangon	Mandalay	3000	13	1	Ordinary Class	11 Up	Yangon - Mandalay	2015-11-30	06:00:00	Print
445566	Ag Ag	Yangon	Mandalay	3000	14	1	Ordinary Class	11 Up	Yangon - Mandalay	2015-11-30	06:00:00	Print

Fig F.13. Show Tickets

F.1.12.Test Case : No 10 Close station at the selling point

Input : Select train, proposed departure time, real departure time and departure status

Procedure :1. Select train name

2. Click "**Prepare To Close**" button

3. Press "**Update**" link

4. Insert real departure time

Test Data : Correct all data

Expected result: The message which is close the station is shown

Actual Result : The message which is close the station is shown

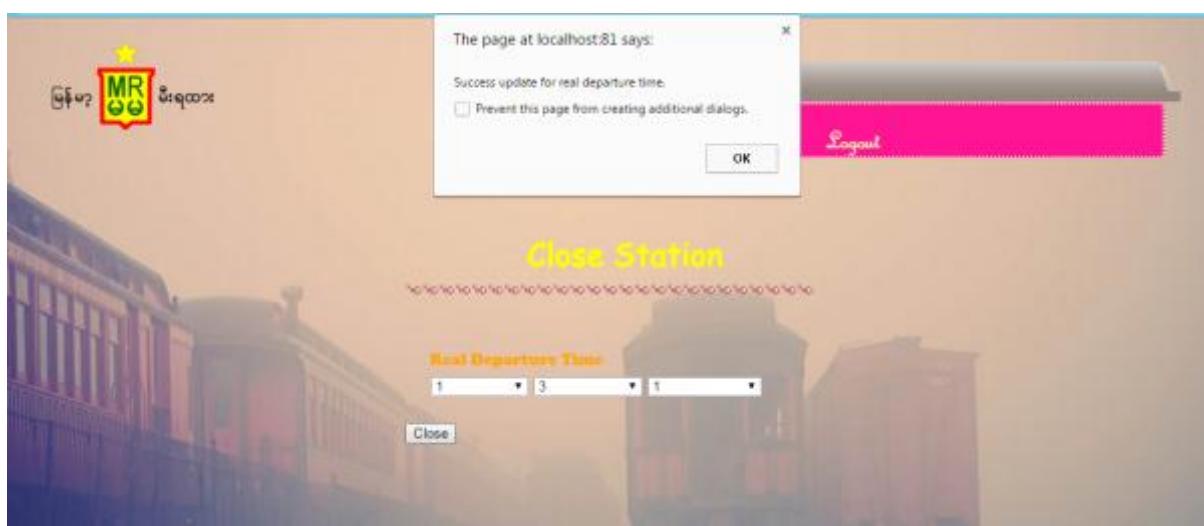


Fig.F.14.Successful Closing Station

F.1.13.Test Case : No 11 .1 Reports for daily tickets income report

Input : Select reported date

Procedure: 1. Select reported date

2. Click "**Produce**" button

Test Data : Click "**Produce**" to get the output

Expected result: the reports are come out

Actual Result: the reports are come out

From Station	To Station	SeatType Name	Price
0001	0002	Ordinary Class	1400

Fig F.15. Daily tickets income report

F.1.14.Test Case : No 11.2 Reports for the remain tickets by station per schedule

Input : Select fromstation, tostation and report date

Procedure :1. Select fromstation, tostation and report date

2. Click "**Produce**" button

Test Data : Click "**Produce**" to get the output

Excepted result: the reports are come out

Actual Result : the reports are come out



The remain ticket per station by schedule

From Station: Yangon

To Station: Bago

Report Date: 2015-11-30 | **Clear**

Produce | **Cancel**

Seat Type Name	Carriage Serial No	Total Seat	Sold Ticket	Remain Ticket
Ordinary Class	1	4	2	2
Ordinary Class	2	4	0	4
Upper Class 4	3	4	0	4

Fig .F.16.remain tickets by station per schedule

F.1.15.Test Case : No 11.3 Reports for Daily Unpaid Ticket Order by schedule one day in advance

Input : Select station

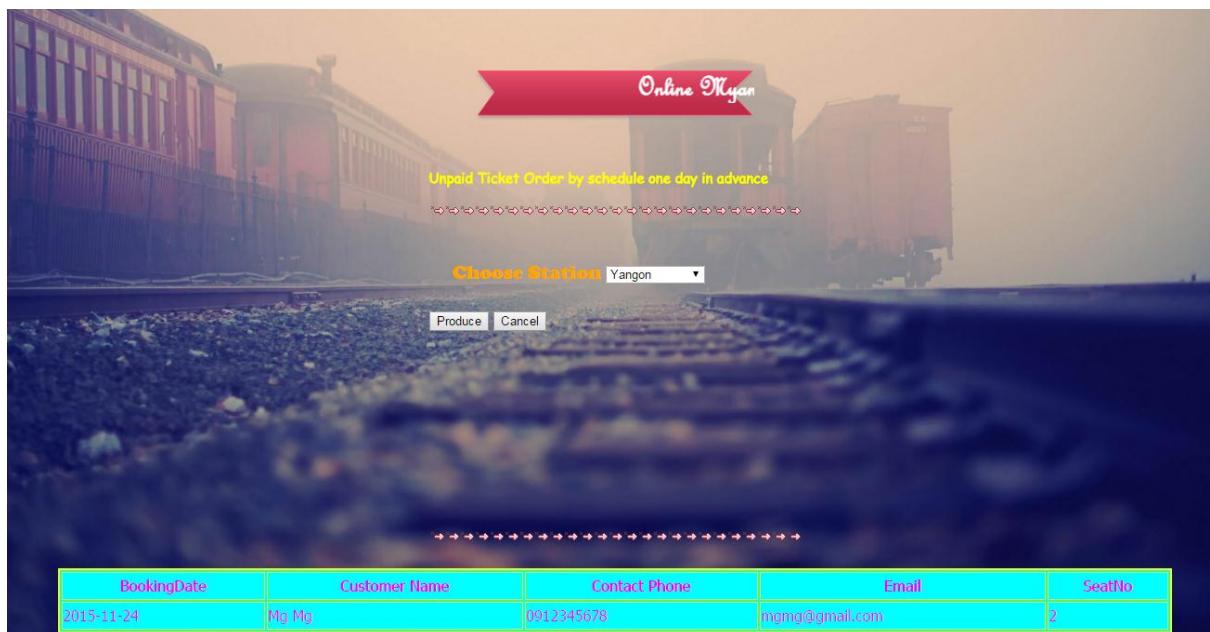
Procedure: 1. Select report date

2. Click "Produce" button

Test Data : Click "Produce" without inserting reported date

Excepted result: the reports are not come out

Actual Result: the reports are not come out



Online Myan

Unpaid Ticket Order by schedule one day in advance

Choose Station: Yangon

Produce | **Cancel**

BookingDate	Customer Name	Contact Phone	Email	SeatNo
2015-11-24	No. Mg	0912345678	mgmg@gmail.com	2

Fig F.17.Daily Unpaid Ticket Order by schedule one day in advance

F.1.16.Test Case : No 11.4 Reports for Passenger list by carriage per schedule

Input : Select reported date

Procedure :1. Select reported date

2. Click "**Produce**" button

Test Data : Click "**Produce**" to get the output

Excepted result: the reports are come out

Actual Result : the reports are come out

ID Number	Traveller Name	Carriage Serial No	From Station	To Station	Train Name	Seat Type Name	Seat No
111233	Mg Mg	2	Yangon	Mandalay	EE Up	Economy Class	13
445566	Ao Ao	3	Yangon	Mandalay	EE Up	Economy Class	14

Fig F.18.Reports for Passenger list by carriage per schedule

F.2.Test Log of online Myanmar (Yangon-Mandalay) Express Tickets Sale System

Test Case	Output (Fail or Pass)	Date	Reason
Register by Customer	Pass	2015.09.05	-
Register by Staff	Pass	2015.09.05	-
Log in by customer	Pass	2015.09.05	-
Log in by staff	Pass	2015.09.05	-
Registration train	Pass	2015.09.05	-
Registration carriage	Pass	2015.09.05	-
Register route	Pass	2015.09.05	-
Register station	Pass	2015.09.05	-
Draw and Edit schedule	Pass	2015.09.06	--
Search schedule	Pass	2015.09.06	-
Book Tickets	Pass	2015.09.06	-
Process Payment	Pass	2015.09.06	-
View Tickets	Pass	2015.09.06	-
Close the selling point of the current station	Pass	2015.09.06	-
View report	Pass	2015.09.06	-

Appendix-L

User Manuals

In this user manual, there are two sessions for staffs and users. As for staffs, there are two roles such as admin and staffs.. The authority of staff is to close the selling point of current station and process payment The authority of admin is to register for staff and register the related functions and he can view the reports.

Admin Site

As for admin site, he firstly log in

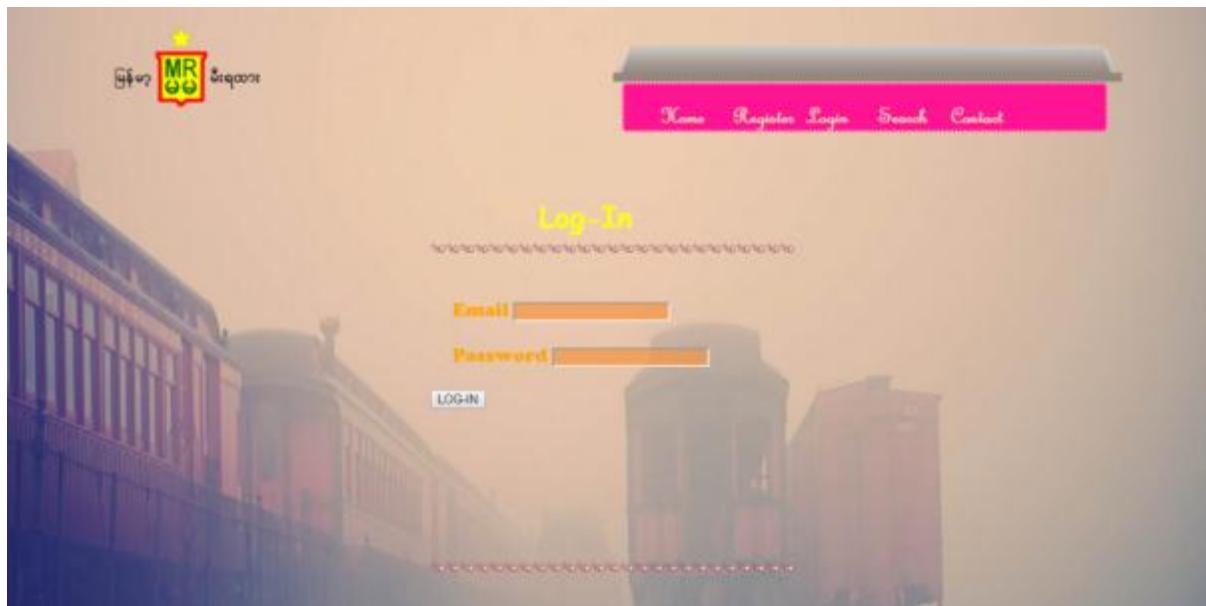


Fig. manual - 1

After log in, the system directly go to registerstaff page

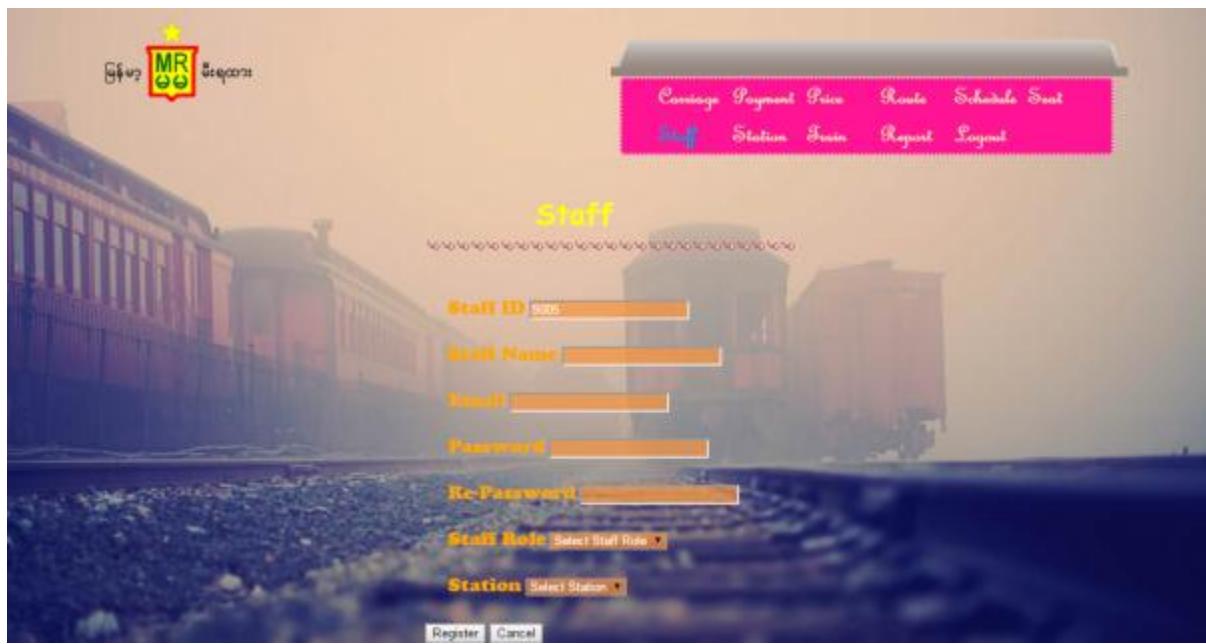


Fig. manual - 2

Admin go the different pages to register and see reports such as



Fig. manual - 3

According to carriage registration,

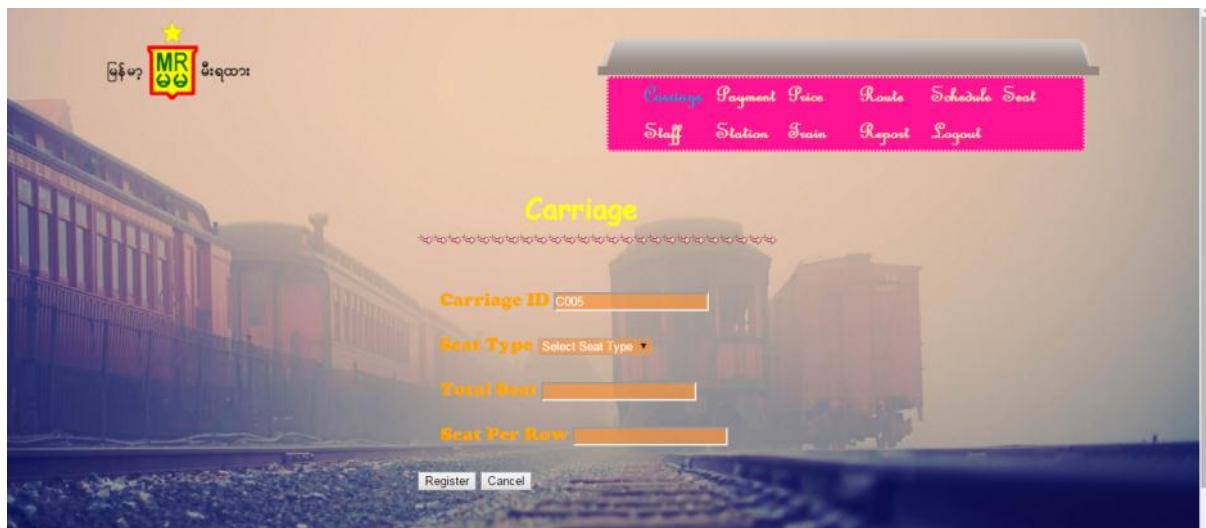


Fig. manual - 4

In this page, seattype, total seat and seat per row are inserted as follow

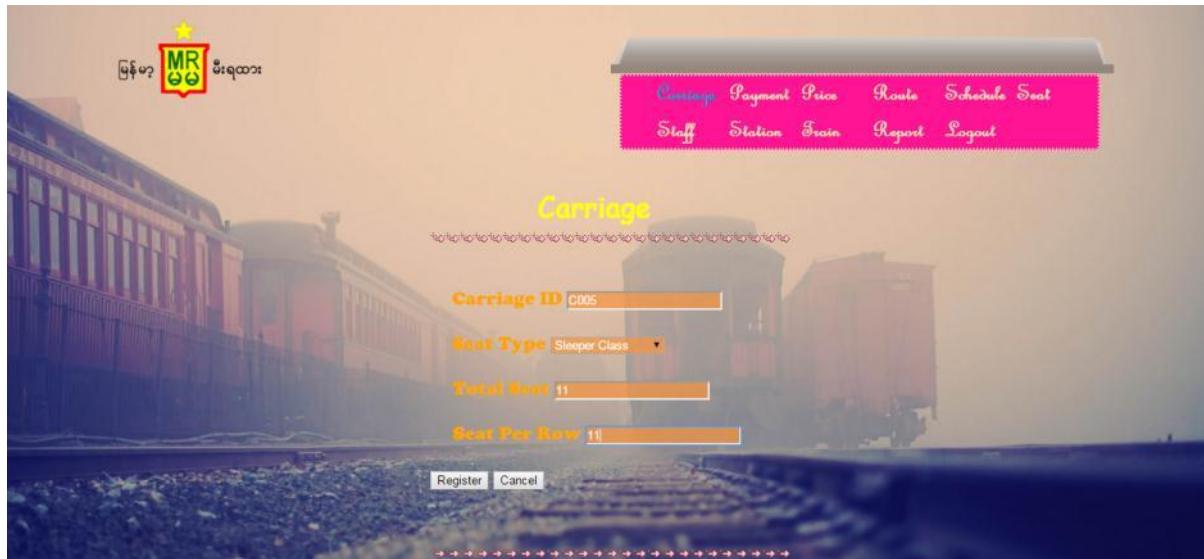


Fig. manual - 5

If clicking register button, successful message is seen as follow

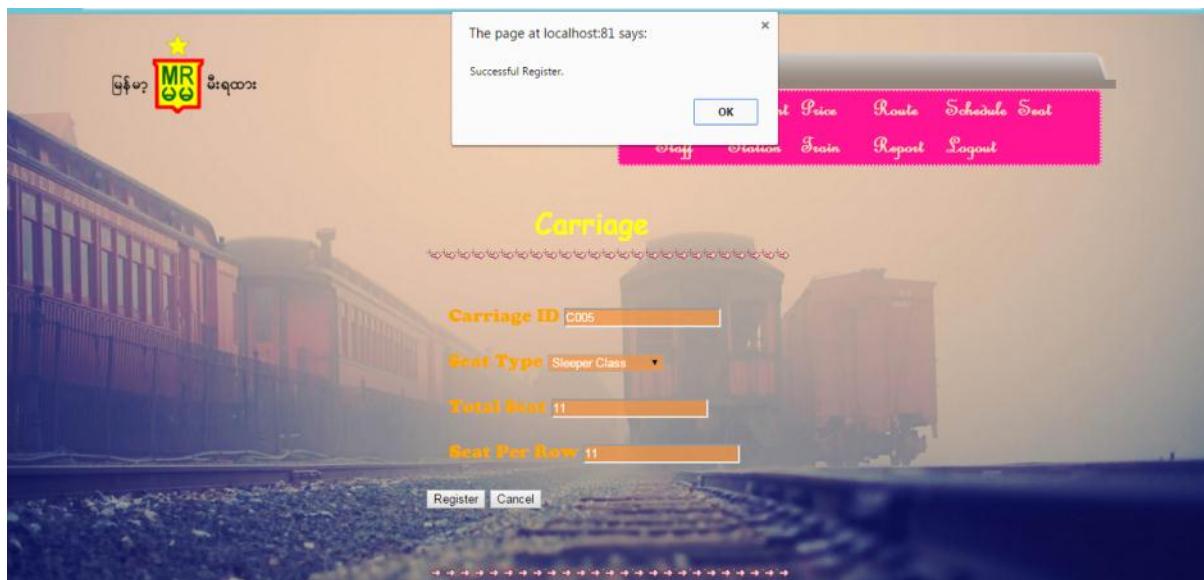


Fig. manual - 6

If you update the carriage, you will click the update link

Carriage

Carriage ID: **Seat Type:**

Total Seat: **Seat Per Row:**

Carriage ID	Seat Type	Total Seat	Seat Per Row	Update	Delete
C001	Ordinary Class	64	8	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
C002	First Class	64	8	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
C003	Upper Class 4	64	8	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
C004	Sleeper Class	10	2	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
C005	Sleeper Class	11	11	<input type="button" value="Update"/>	<input type="button" value="Delete"/>

Fig. manual - 7

The data which is wanted to update is inserted

Carriage

Carriage ID: **Seat Type:**

Total Seat: **Seat Per Row:**

Carriage ID	Seat Type	Total Seat	Seat Per Row	Update	Delete
C001	Ordinary Class	64	8	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
C002	First Class	64	8	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
C003	Upper Class 4	64	8	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
C004	Sleeper Class	10	2	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
C005	Sleeper Class	11	12	<input type="button" value="Update"/>	<input type="button" value="Delete"/>

Fig. manual - 8

By the clicking update button, the data is updated

The page at localhost:81 says:
Successful Register.
 Prevent this page from creating additional dialogs.

Seat Type: Sleeper Class
Total Seat: 11
Seat Per Row: 12

OK

Carriage ID	Seat Type	Total Seat	Seat Per Row		
C001	Ordinary Class	64	8	Update	Delete
C002	First Class	64	8	Update	Delete
C003	Upper Class 4	40	8	Update	Delete
C004	Sleeper Class	18	2	Update	Delete
C005	Sleeper Class	11	11	Update	Delete

Fig. manual - 9

If you want to delete the row, please click the delete link and the message is seen.

The page at localhost:81 says:
Are you sure to delete?
 Prevent this page from creating additional dialogs.

OK Cancel

Seat Type: Select Seat Type
Total Seat:
Seat Per Row:

Register Cancel

Carriage ID	Seat Type	Total Seat	Seat Per Row		
C001	Ordinary Class	64	8	Update	Delete
C002	First Class	64	8	Update	Delete
C003	Upper Class 4	40	8	Update	Delete
C004	Sleeper Class	18	2	Update	Delete
C005	Sleeper Class	11	11	Update	Delete

localhost:81/OMERTSS/registercarriage.php?deleteId=C005

Fig. manual - 10

Please click OK button and the data delete.

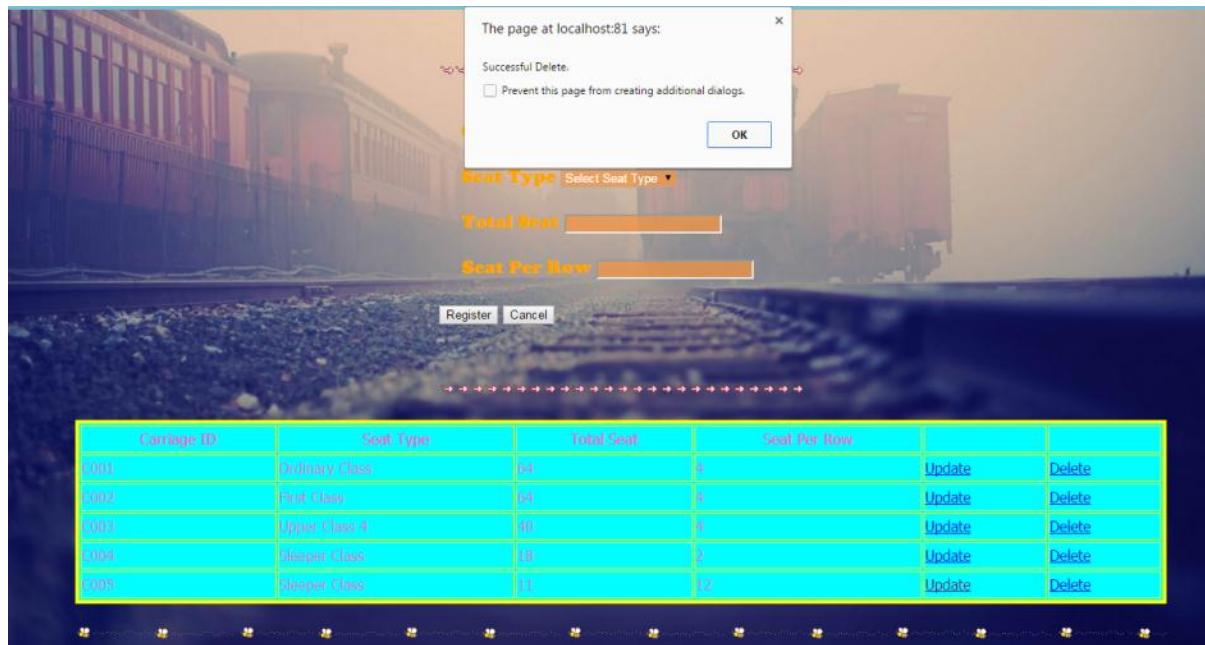


Fig. manual - 11

According to Payment ----

According register price,

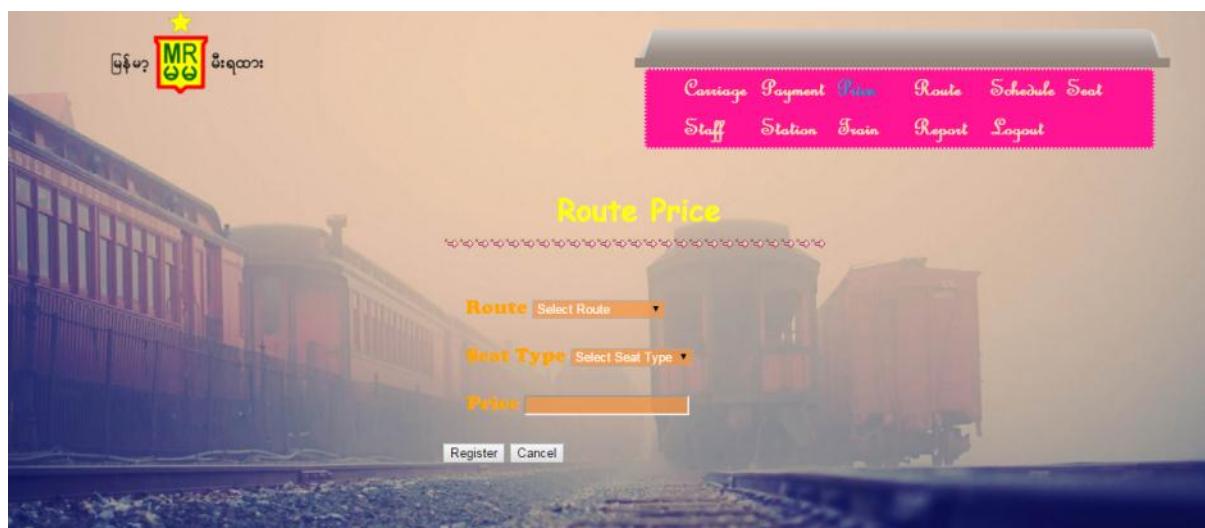


Fig. manual - 12

In this page, the data that is you want to register are inserted.

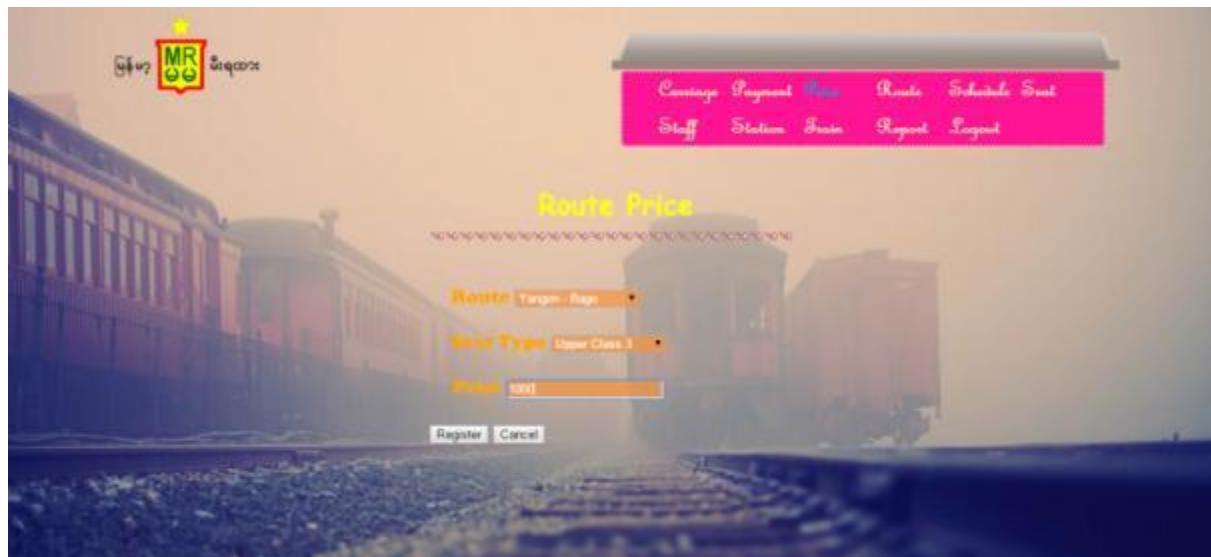


Fig. manual - 13

Click register button and the successful message is seen.

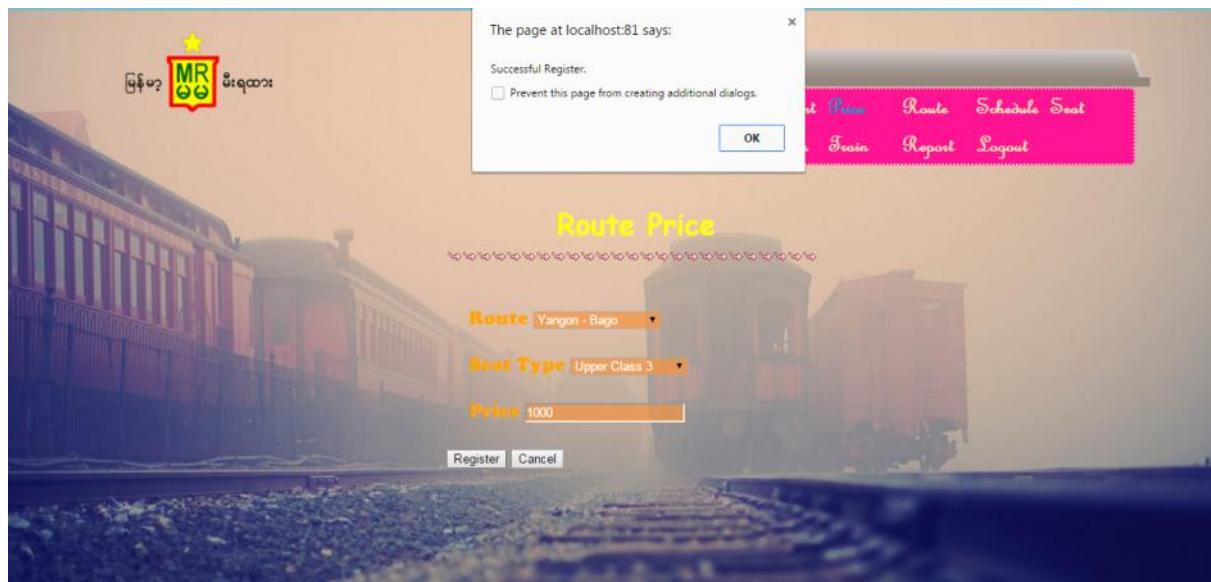


Fig. manual - 14

If you want to update the data, please click update link and insert the updated data.

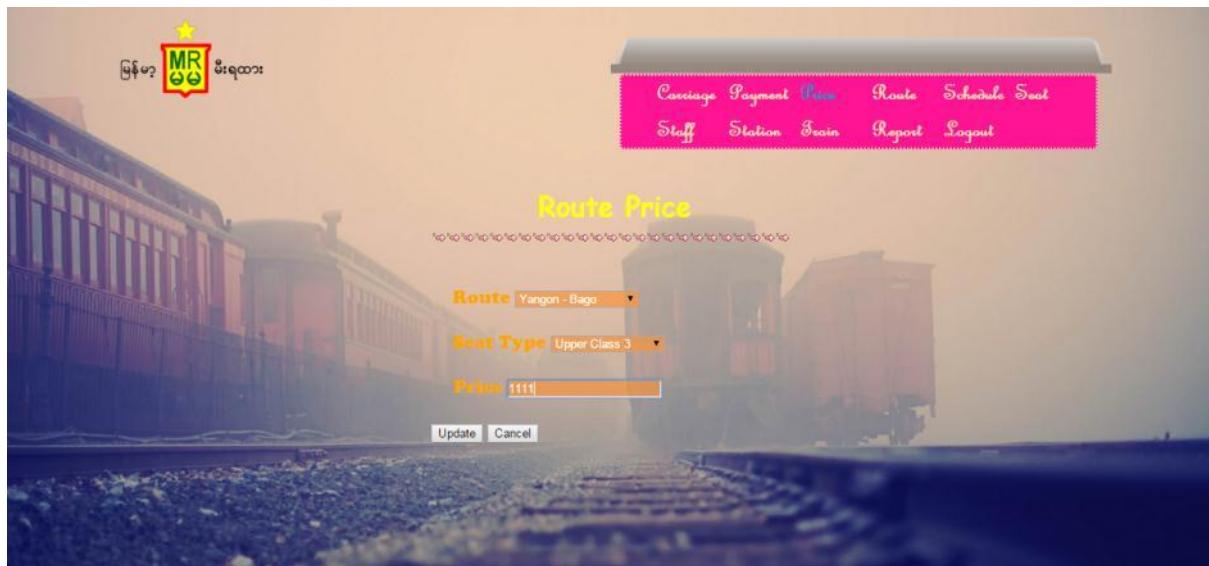


Fig. manual - 15

Click update button and the updating process is finished and see successful message

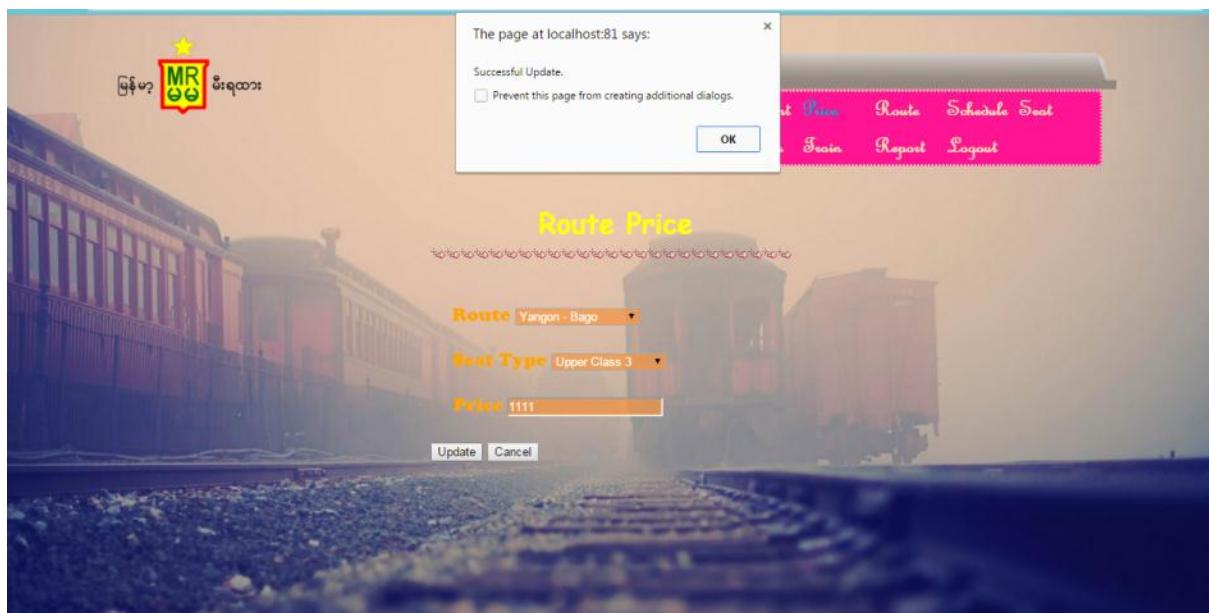


Fig. manual - 16

If you delete the row, please the delete link and the system ask you to delete or not

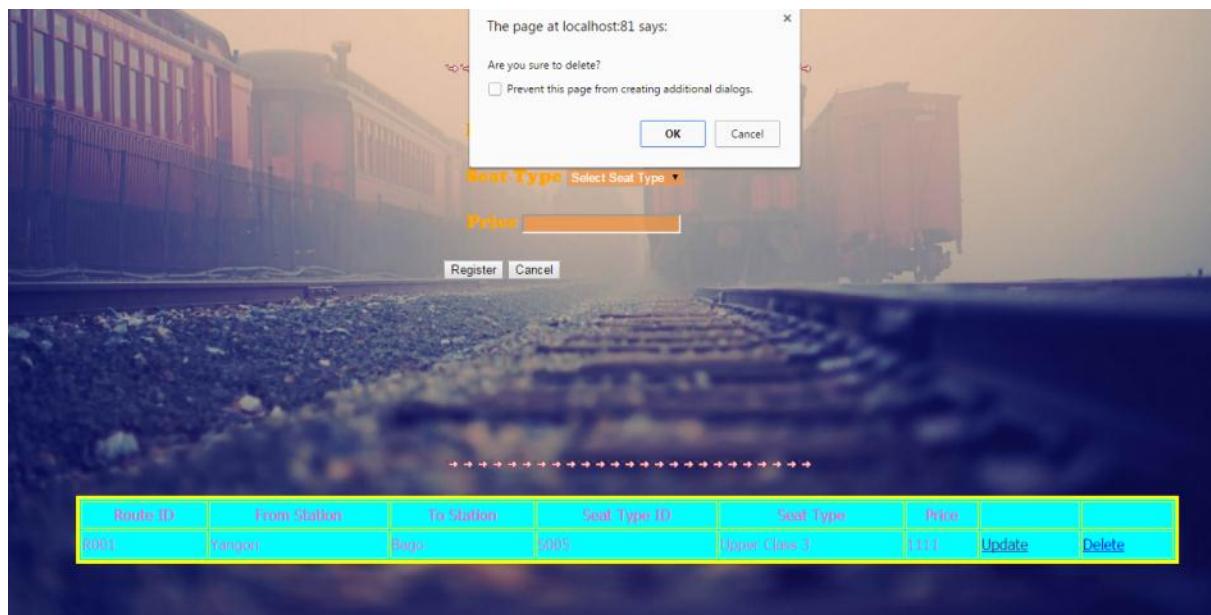


Fig. manual - 17

Please click OK button and the delete process is successful.

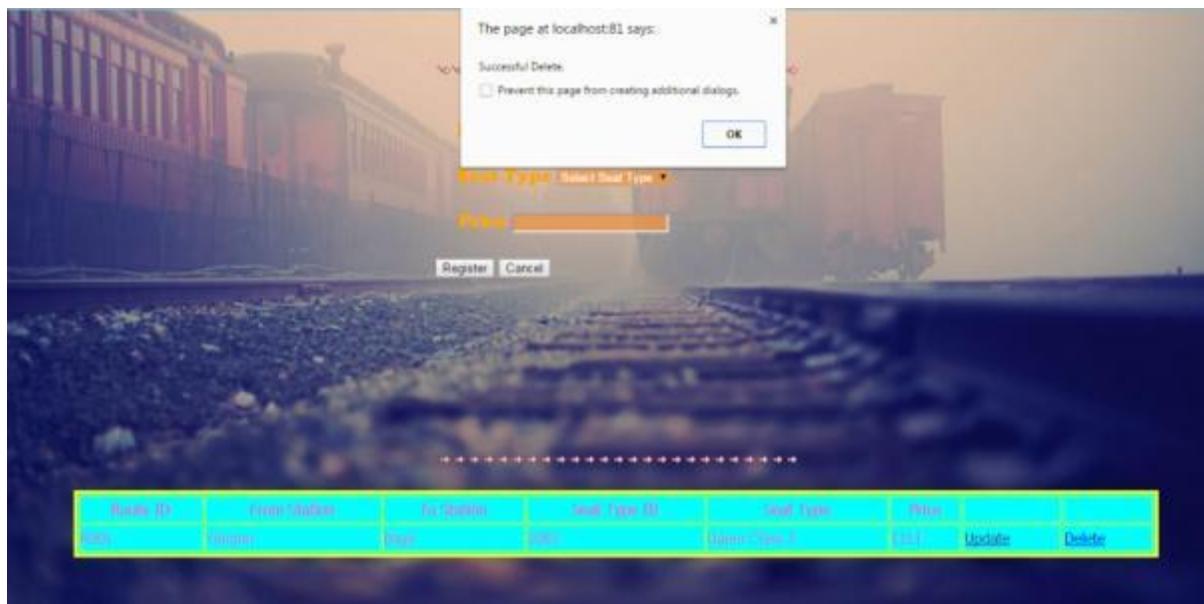


Fig. manual - 18

According to register route,

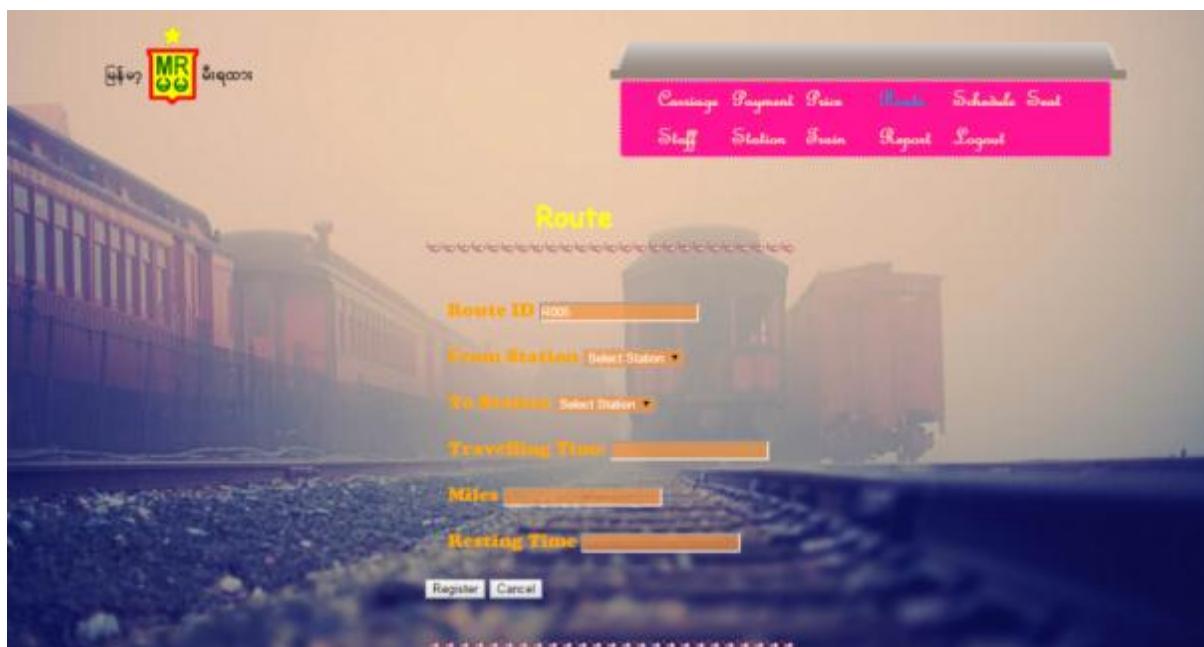


Fig. manual - 19

Insert the from station, to station, travelling time, miles and resting time as follow

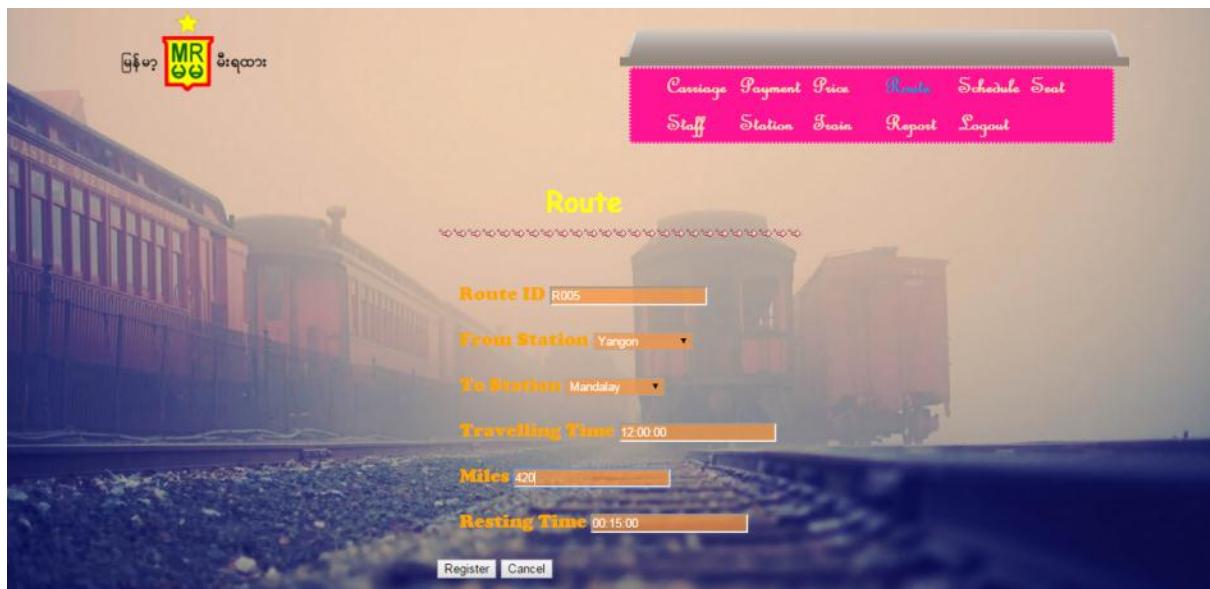


Fig. manual - 20

Click register and registration is successful.

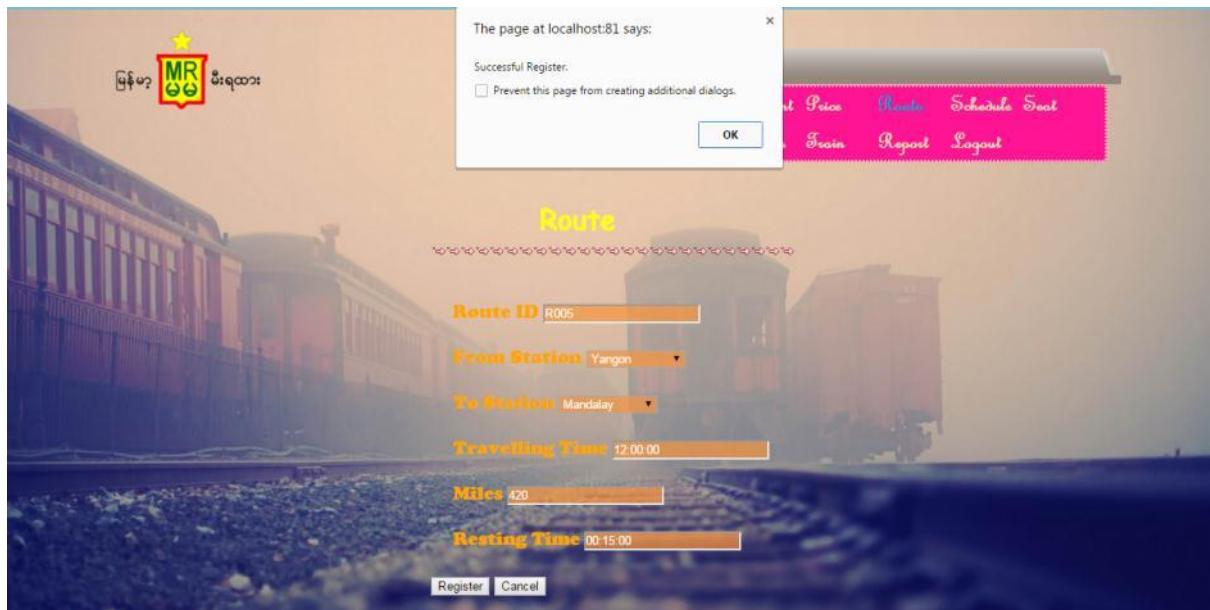


Fig. manual - 21

If you want to update the route, click the update link and insert the data you update

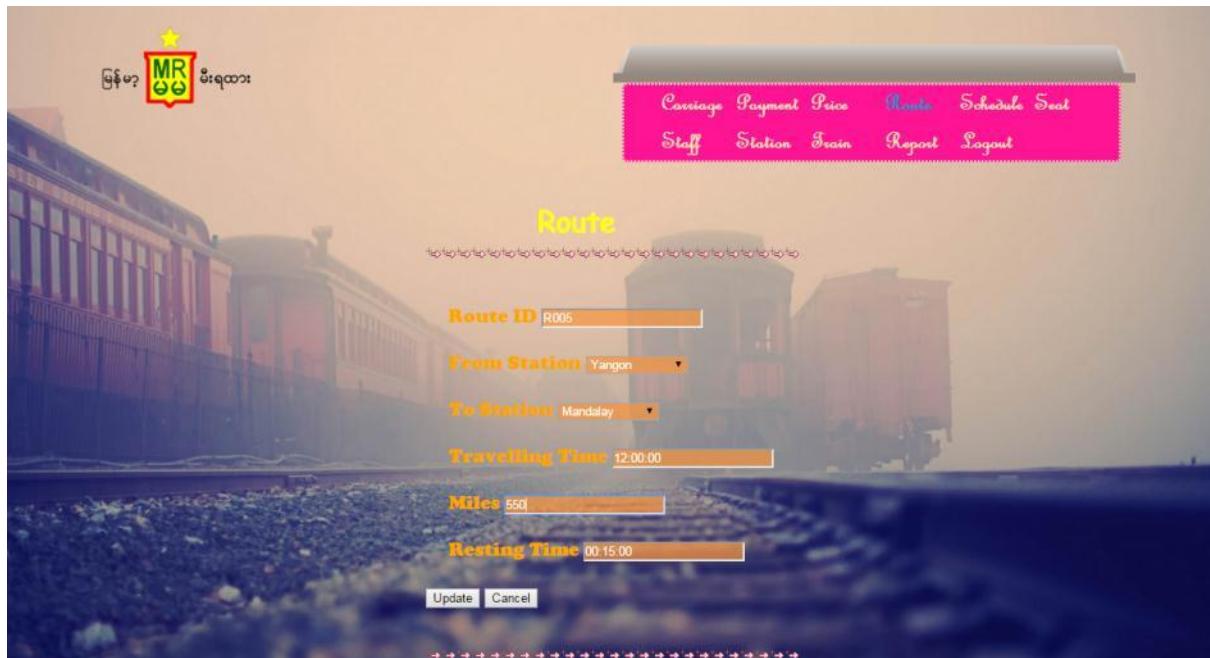


Fig. manual - 22

Click the update button and update process successful.

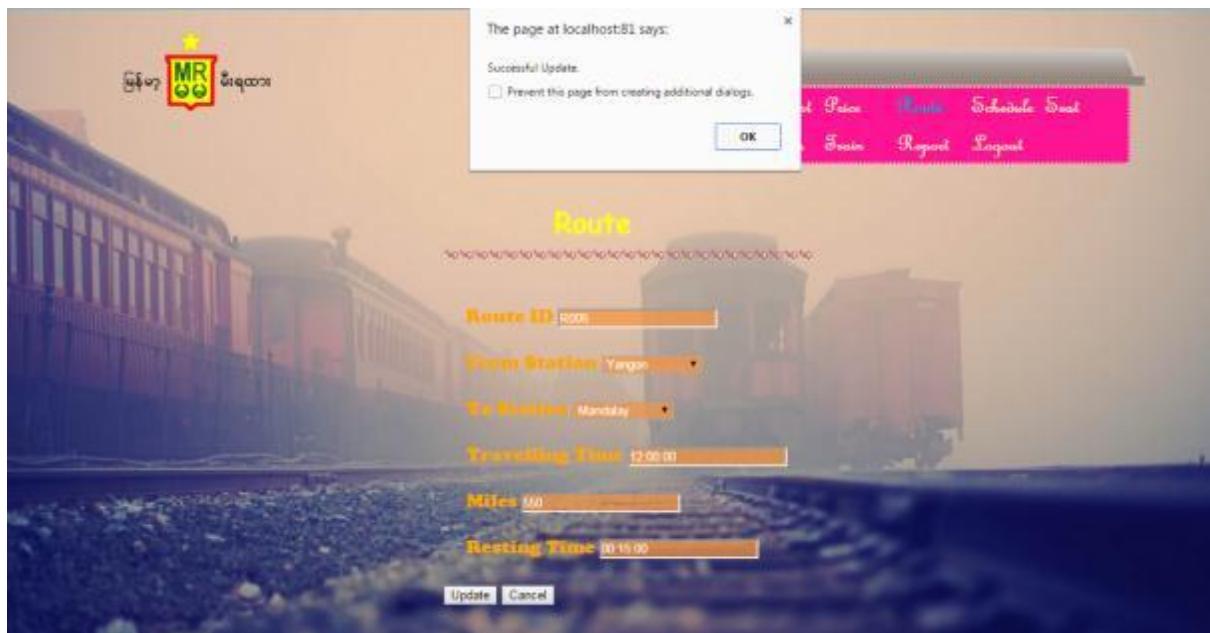


Fig. manual - 23

If you want to delete the row, click the delete link and delete process is successful.

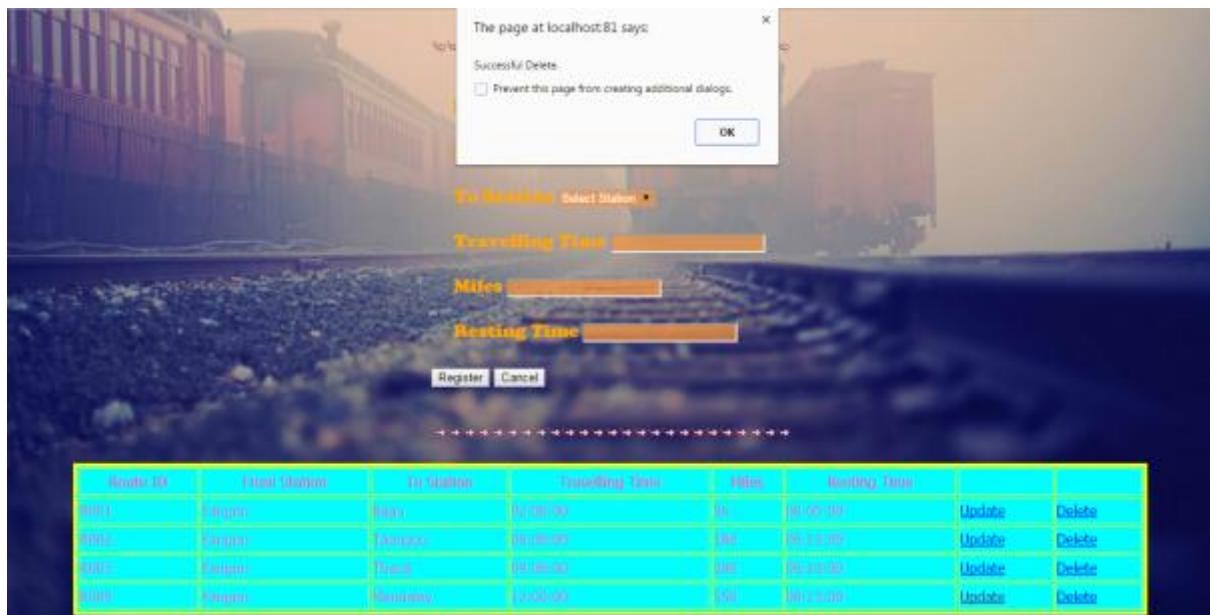


Fig. manual - 24

According to draw schedule, firstly select the train

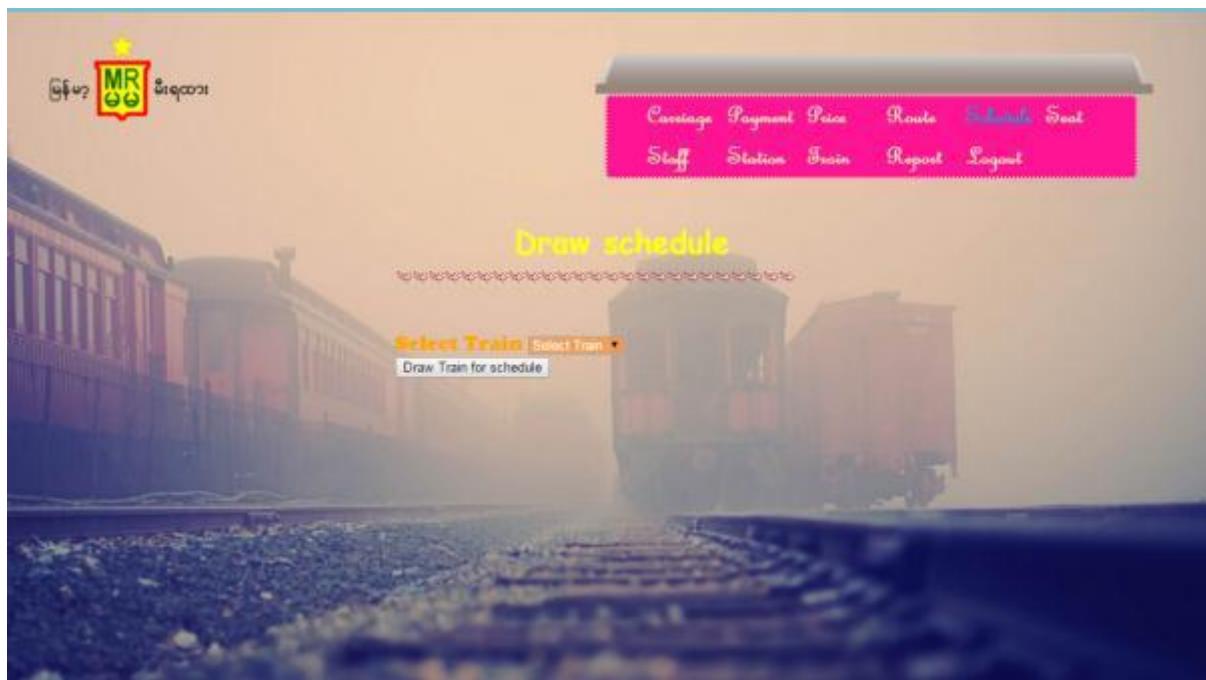
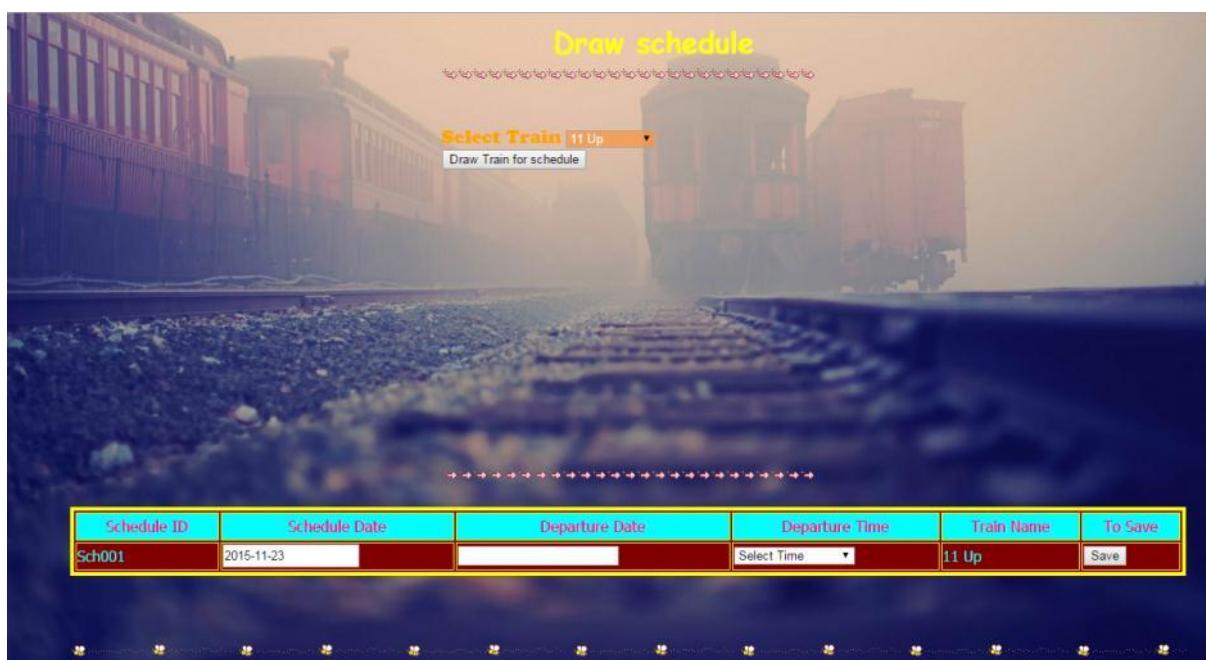


Fig. manual - 25

After choosing the train, it shows scheduleID, scheduleDate,Train Name



Schedule ID	Schedule Date	Departure Date	Departure Time	Train Name	To Save
Sch001	2015-11-23		Select Time	11 Up	Save

Fig. manual - 26

Select the departure date and departure time as follow

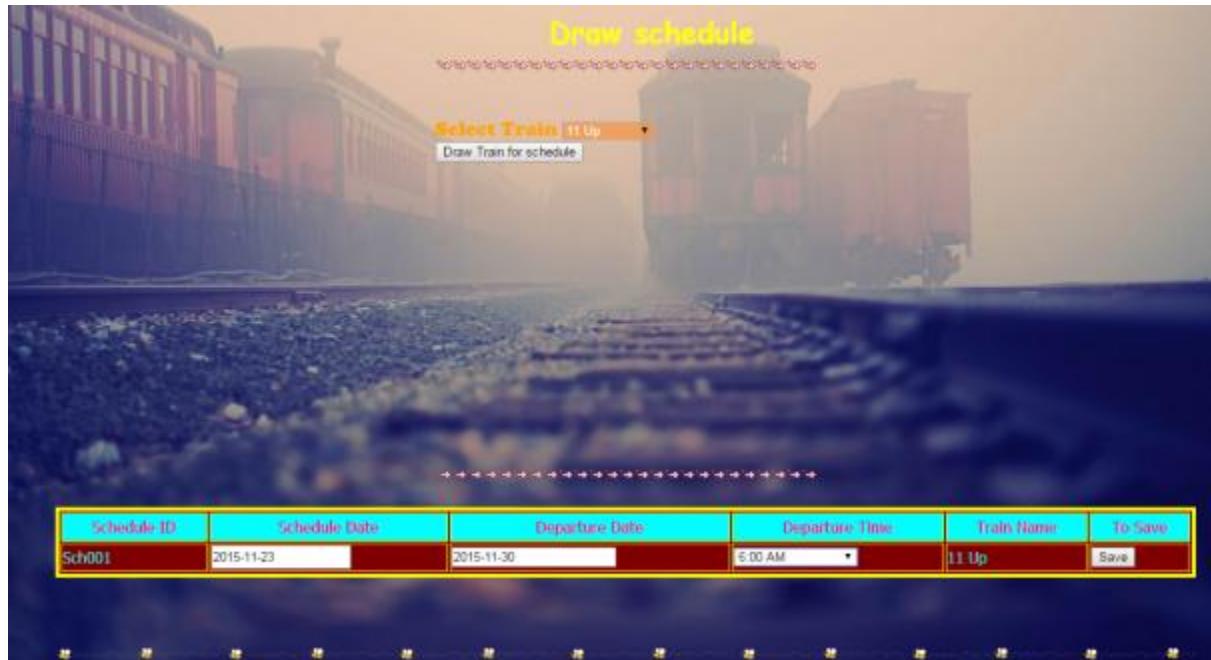


Fig. manual - 27

After clicking the "Save" button, it shows the schedule is successful for train as follow

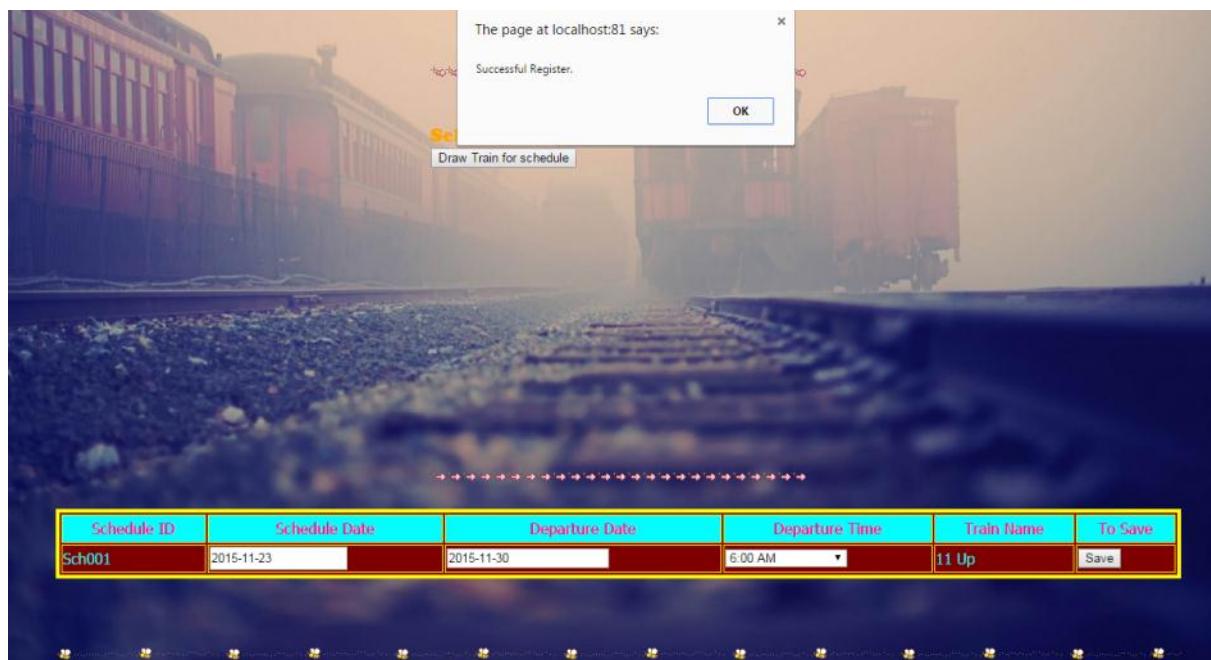


Fig. manual - 28

Although the schedule of the train is successful, it is not perfect because you need to carriage, seat, route and serial no.

To insert the carriage, you see the following page after clicking the success button for train

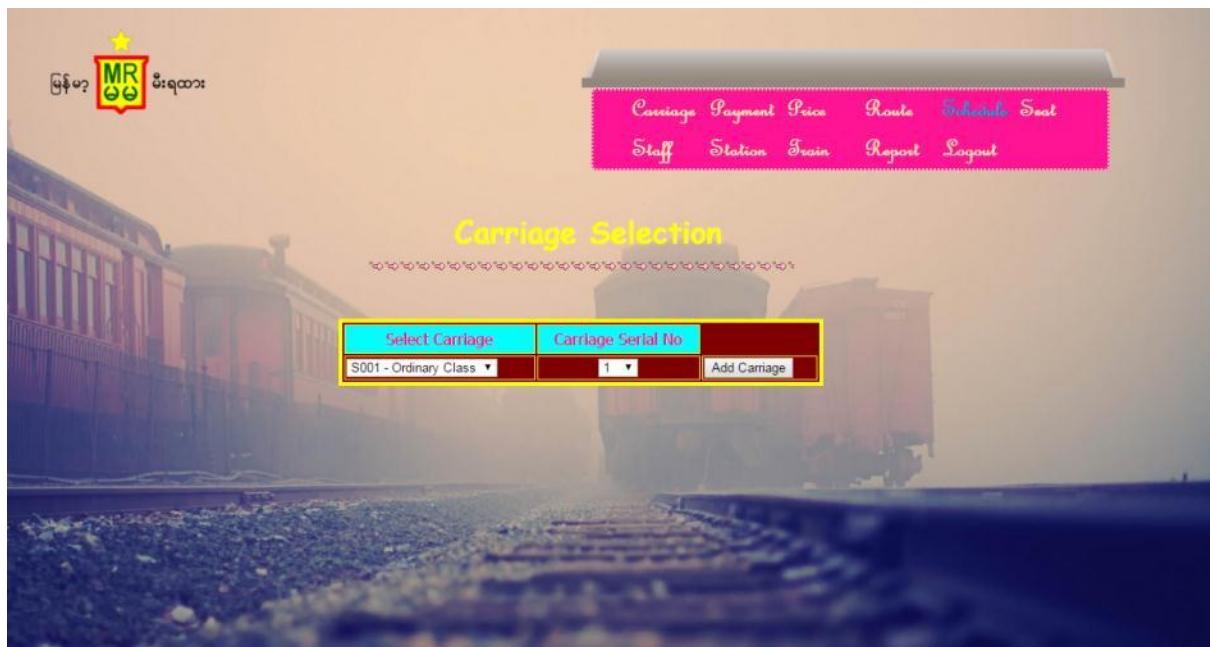


Fig. manual - 29

Select the carriage and carriage serial

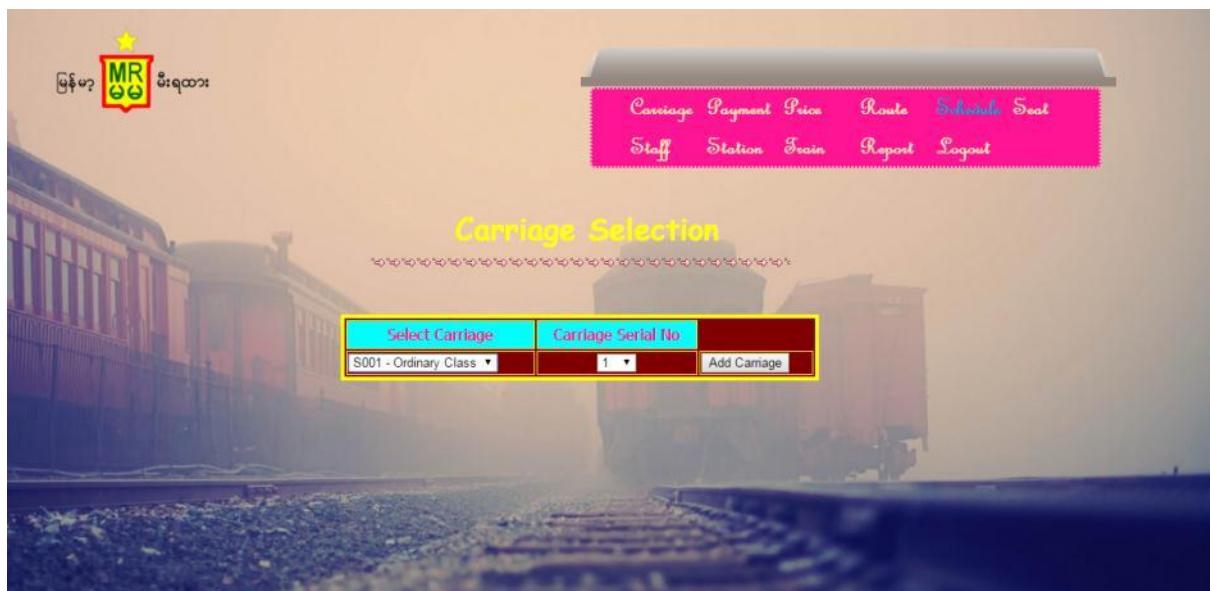


Fig. manual - 30

After clicking "Add Carriage"



Fig. manual - 31

After clicking "Save" button, successful register for carriage is successful and see message as follow

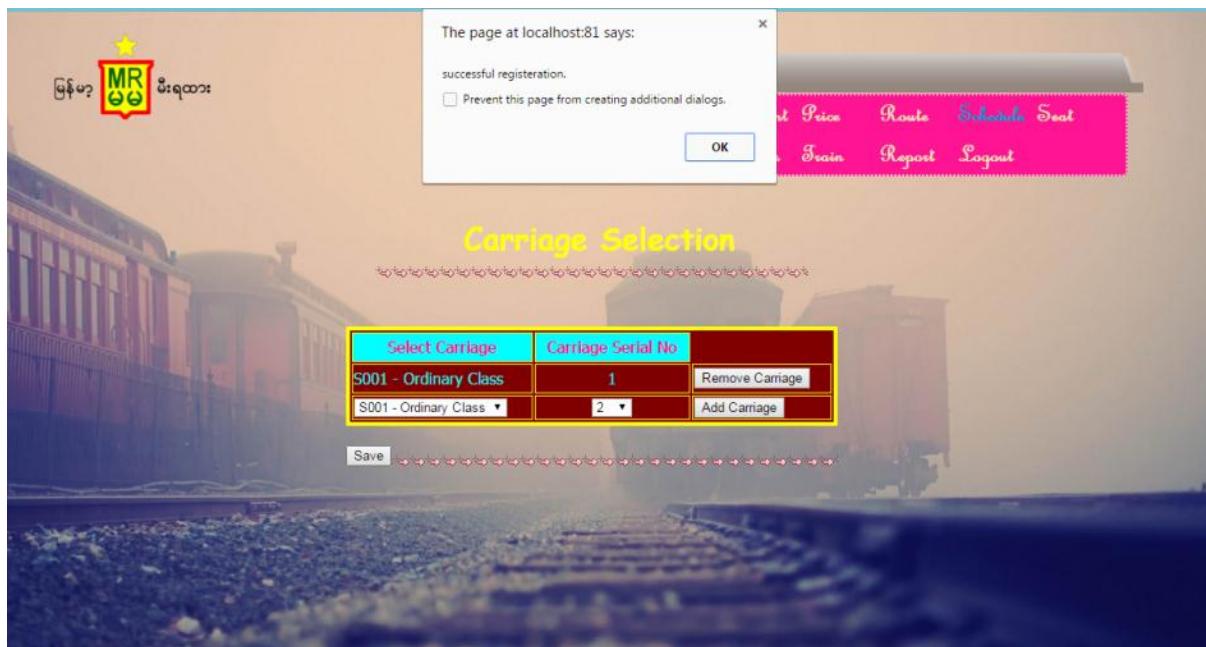


Fig. manual - 32

Although, registration for train and carriage, selection route and seat type are needed to select for completed drawing schedule.

After clicking OK button for successful registration of carriage, the following page are shown by system to insert route and seattype



Fig. manual - 33

At this stage, choose the seattype and it is shown by each route through the different color as follow



Fig. manual - 34

At this stage, choose the seat type by different colors as follow



Fig. manual - 35

After drawing schedule, the successful message is shown

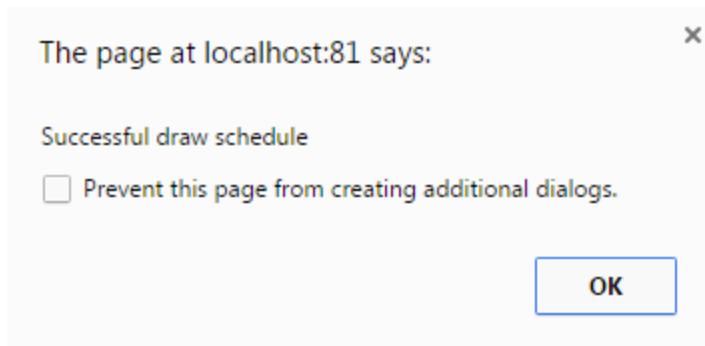


Fig. manual - 36

After clicking OK button, the whole registration of schedule is completely successful.

According to register seat,

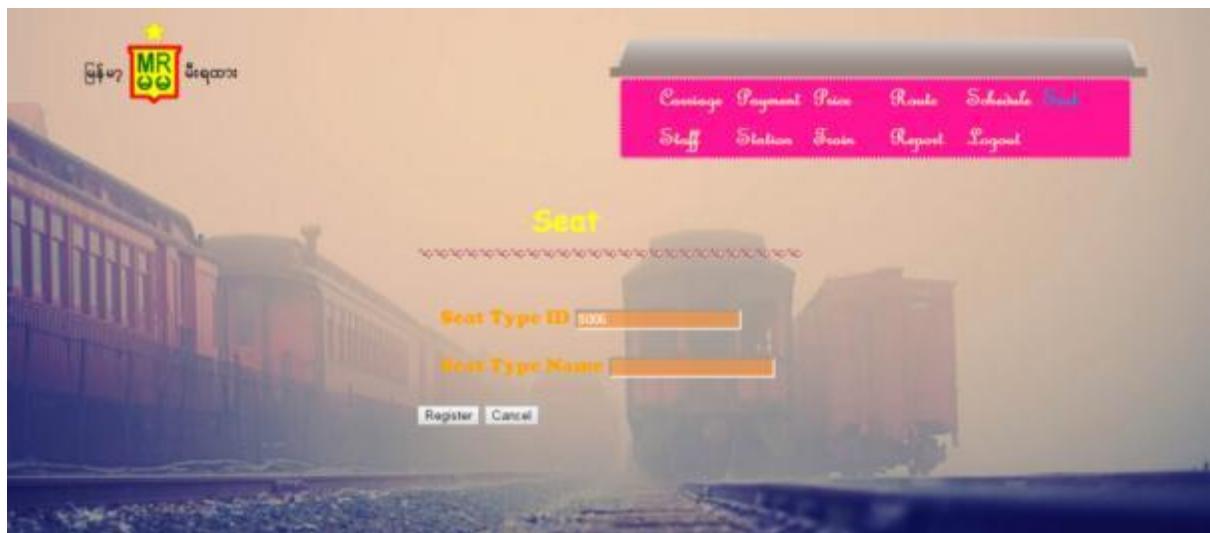


Fig. manual - 37

In this page, insert the data that you want to register as follow

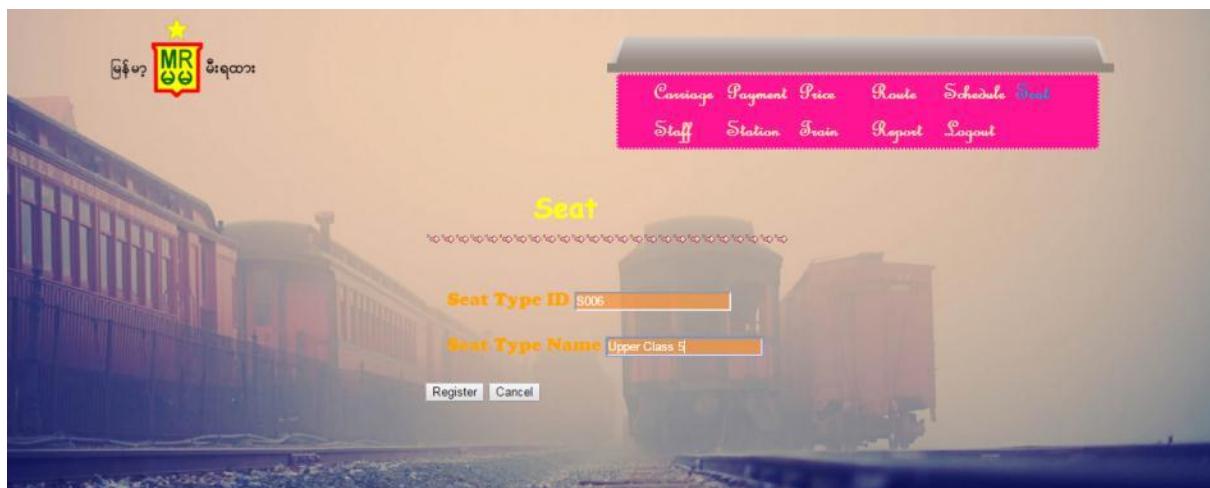


Fig. manual - 38

Click the register button and register successfully



Fig. manual - 39

If you want to update the data, click the update link and insert the data that you want to update



Fig. manual - 40

Click update button and update process is successful

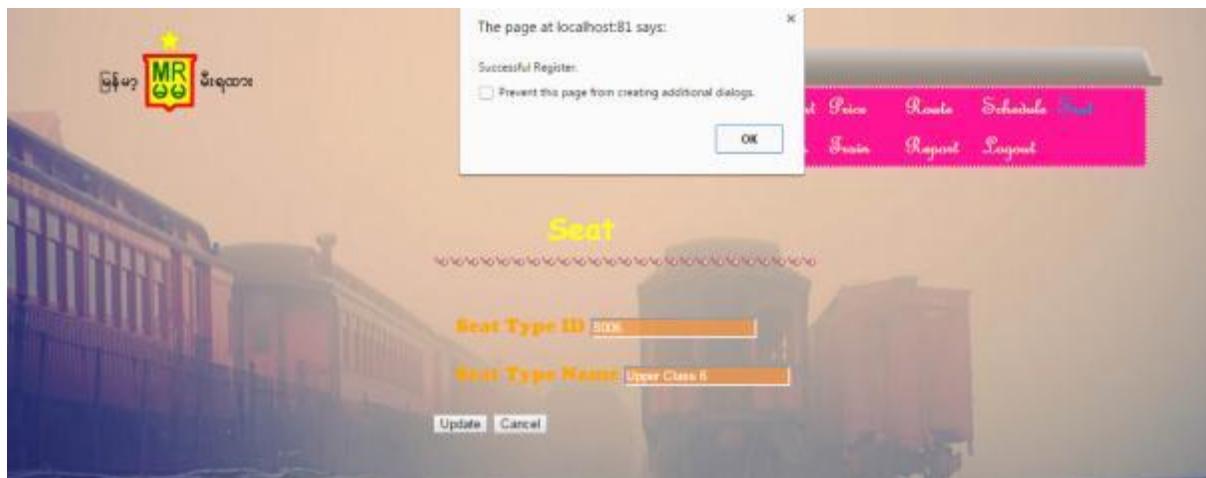


Fig. manual - 41

If you delete the row, please click the delete link

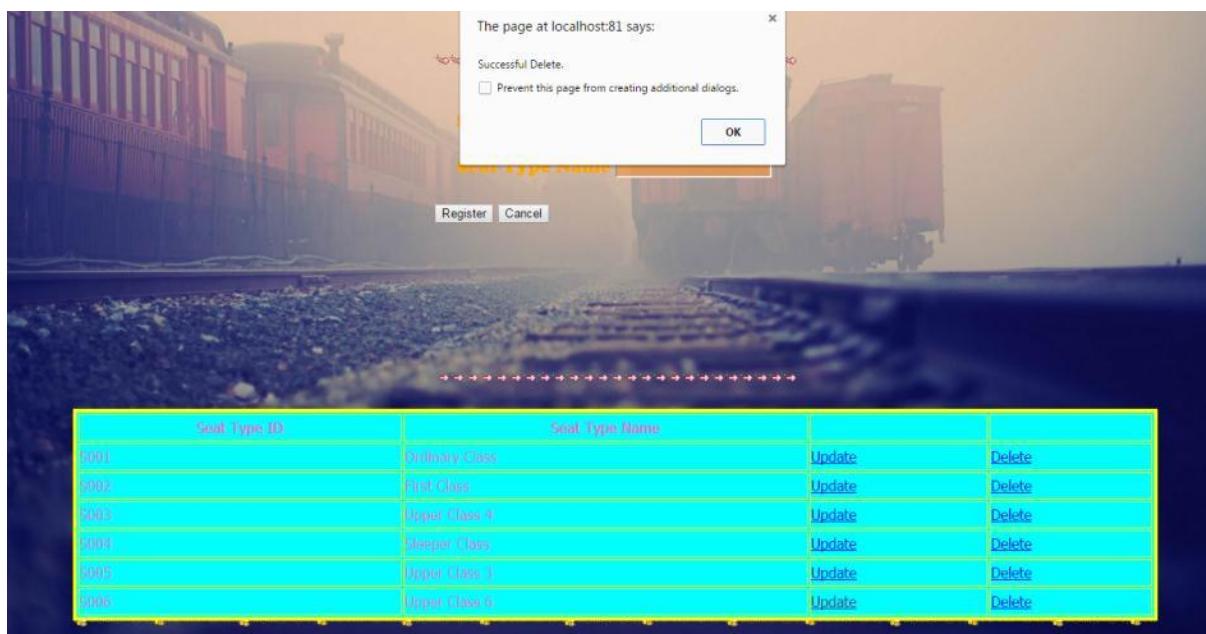


Fig. manual - 42

According to register station,



Fig. manual - 43

If you want to insert the data that is you register, please insert the data as follow



Fig. manual - 44

Please register button and the registration process is successful.



Fig. manual - 45

If you want to update the data, click the update link and insert the data that you want to update as follow



Fig. manual - 46

Please click Update button and updating process is successful

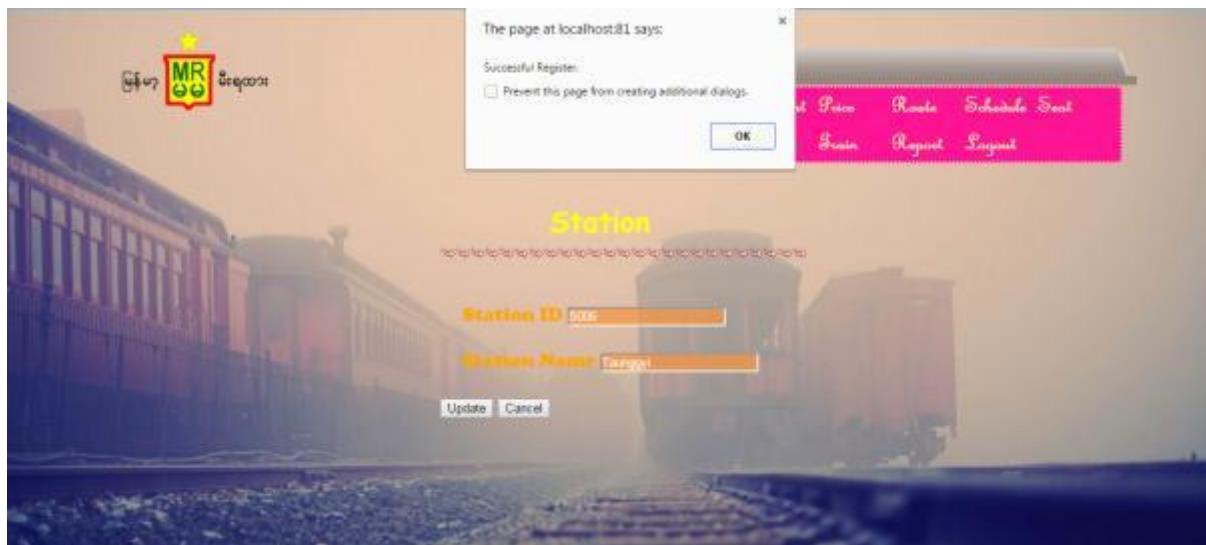
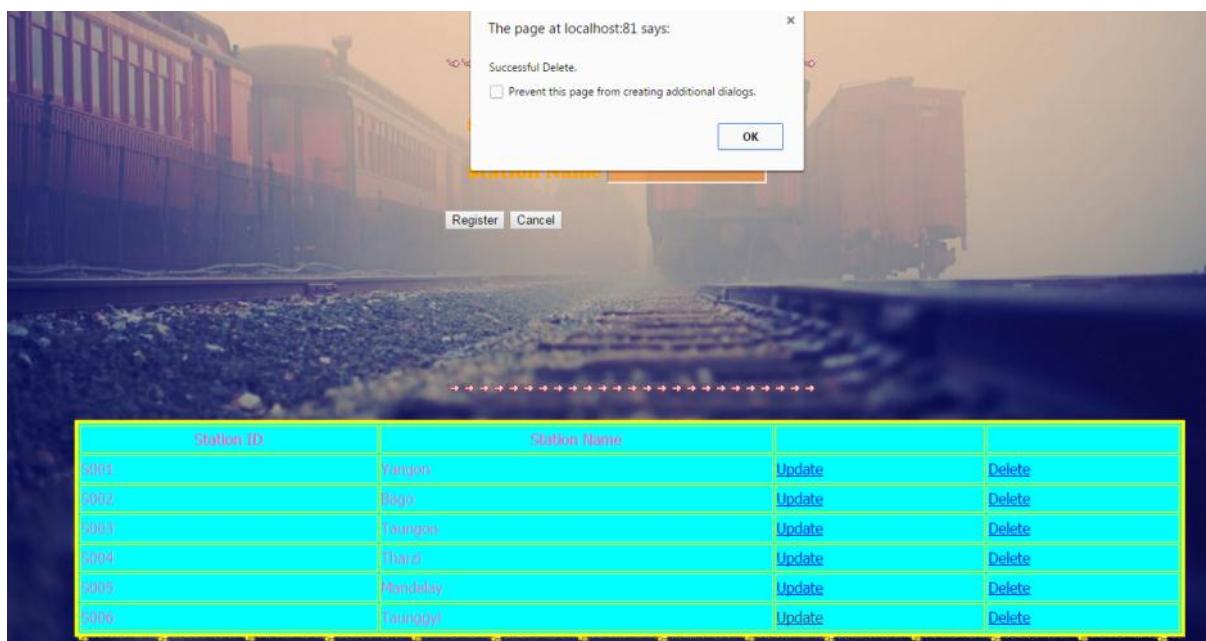


Fig. manual - 47

If you want to delete the row, please click the delete link and your deleting process is successful.



Station ID	Station Name	Update	Delete
5001	Pangon	Update	Delete
5002	Bago	Update	Delete
5003	Gangao	Update	Delete
5004	Hank	Update	Delete
5005	Randalay	Update	Delete
5006	Taungby	Update	Delete

Fig. manual - 48

According to register Train,

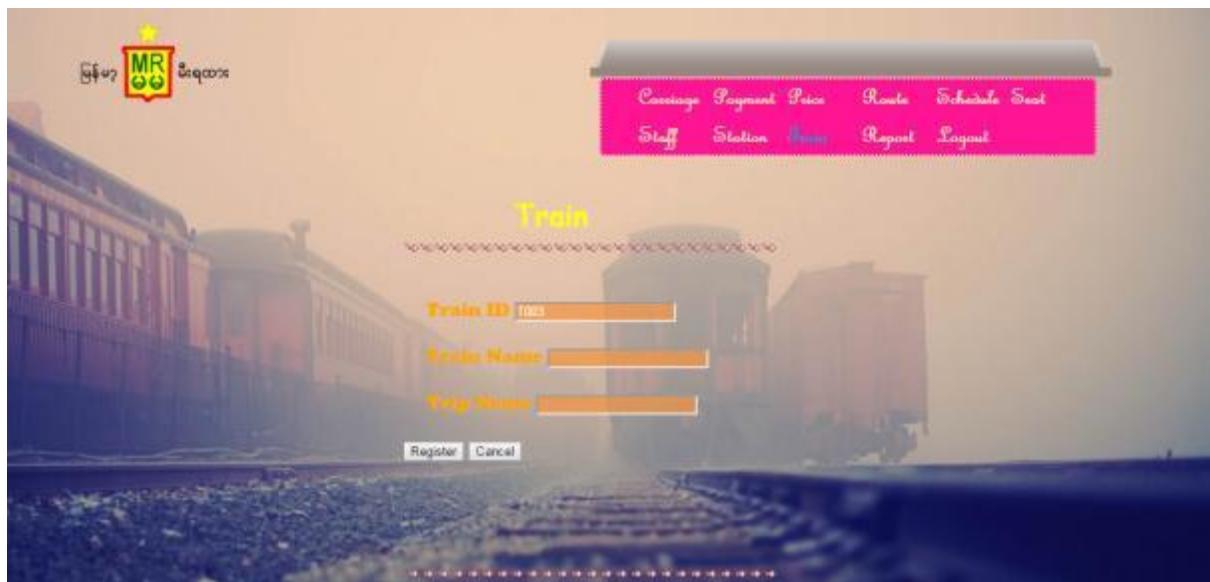


Fig. manual - 49

Insert the data that is want to register as follow

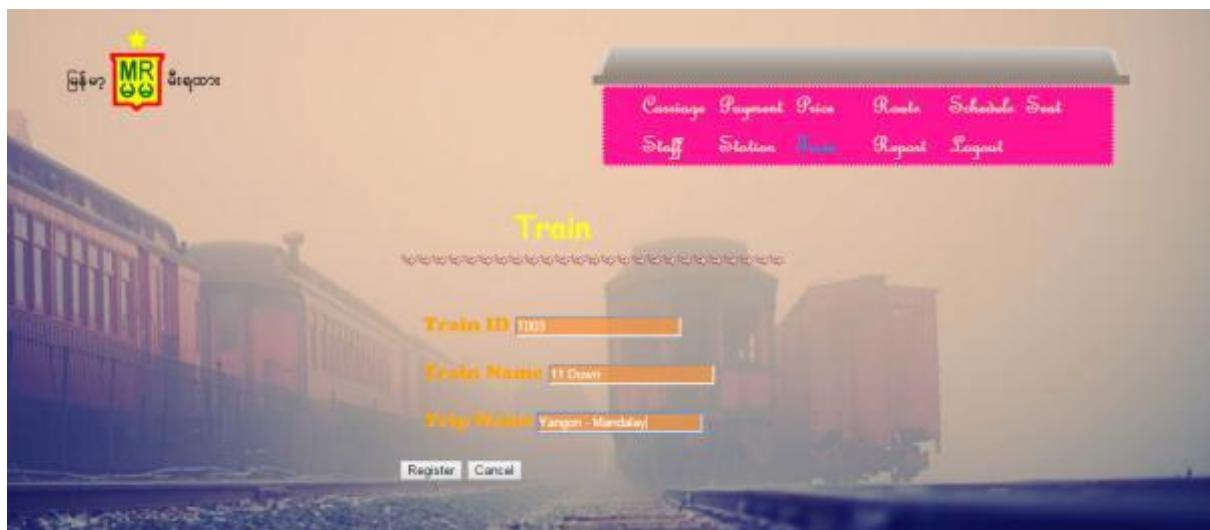


Fig. manual - 50

After clicking register button, the successful message is shown

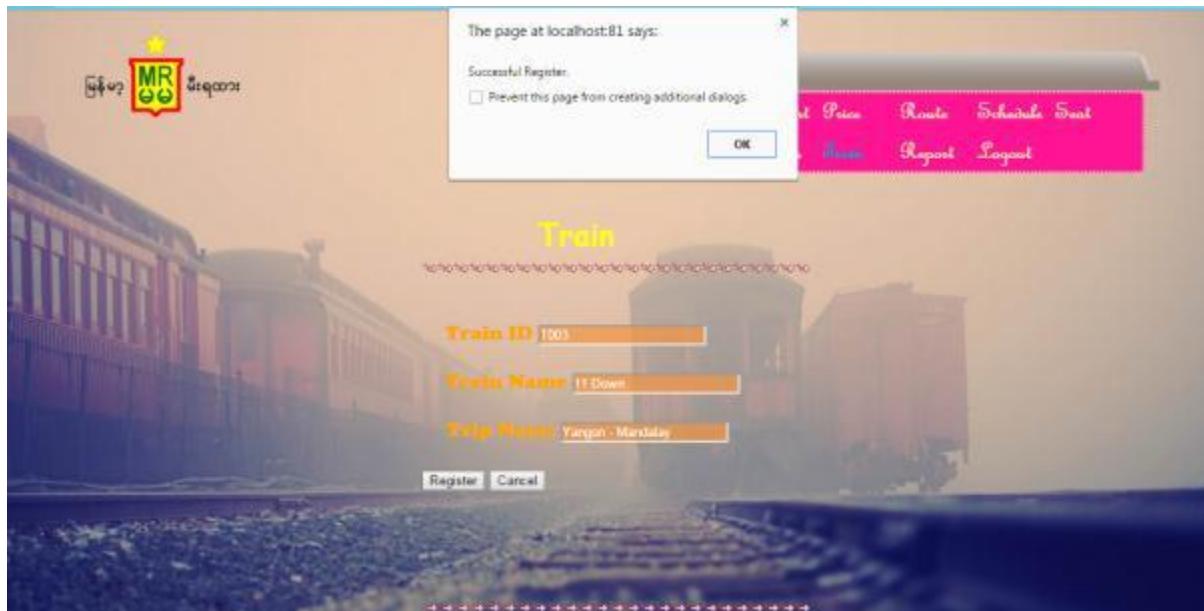


Fig. manual - 51

If you want to update the row, click update link and insert the data that is want to update

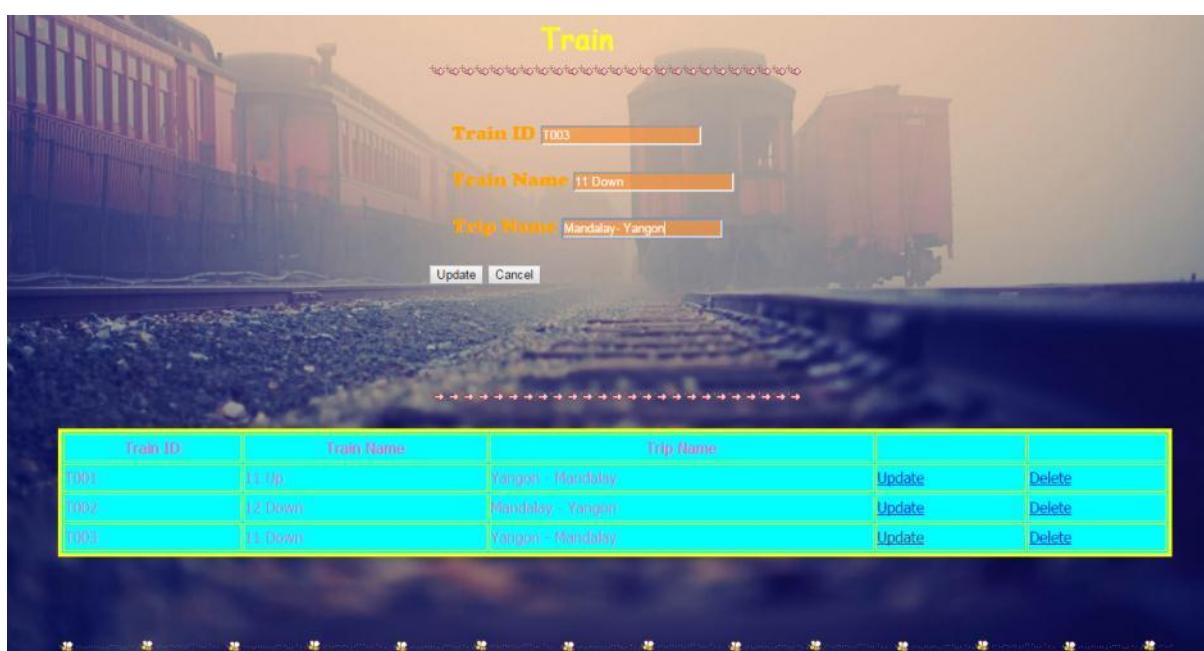


Fig. manual - 52

After clicking the Update button, the successful message is shown as follow

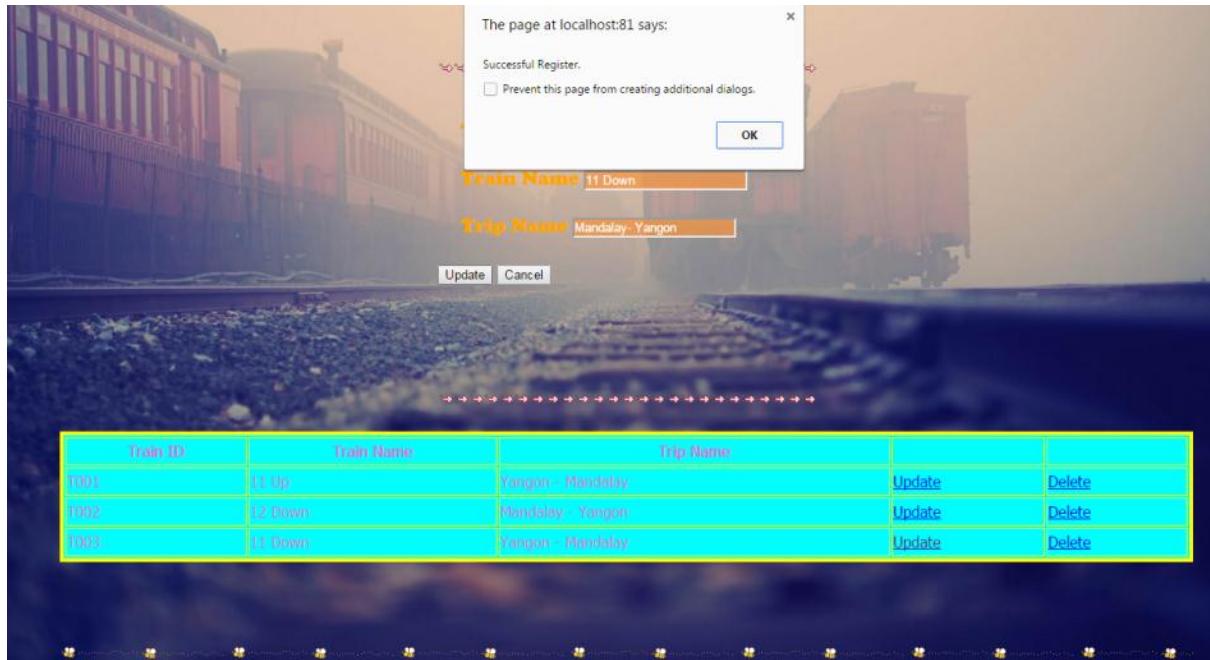


Fig. manual - 53

If you want to delete the row, click delete link and the confirm message which is delete or not is shown as follow

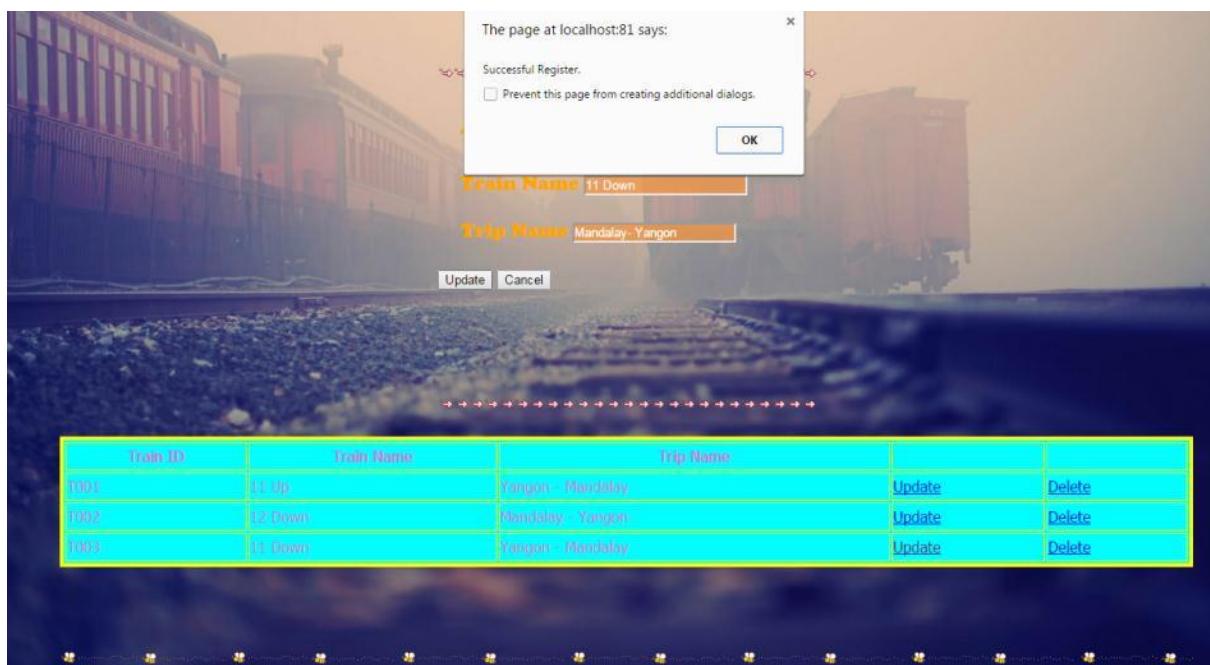


Fig. manual - 54

After clicking OK button, the delete process is successful as follow

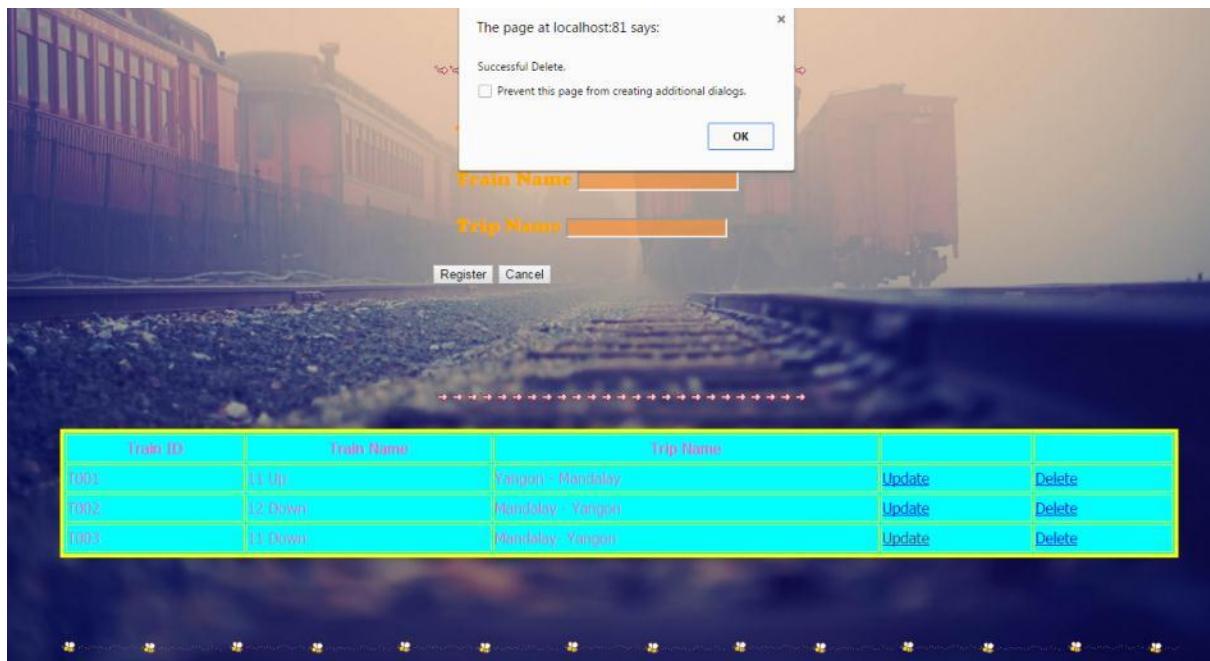


Fig. manual - 55

As for reports, there are four reports in this page.

Firstly, you see the reports after you click Report Link



Fig. manual - 56

After clicking passenger list report link, insert the report date and click Produce button as follow

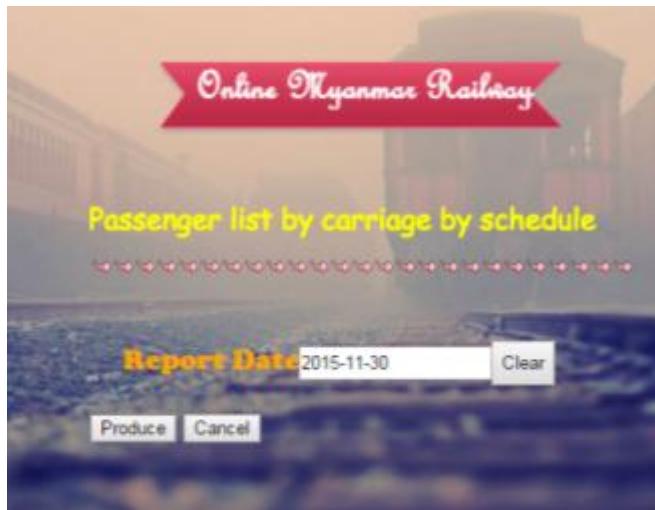


Fig. manual - 57

After clicking Produce button, you will see the result as follow

ID Number	Traveller Name	Carriage Serial No	From Station	To Station	Train Name	Seat Type Name	Seat No
111111	My My	1	Yangon	Mandalay	11 Up	Ordinary Class	13
445555	Ay Ay	1	Yangon	Mandalay	11 Up	Ordinary Class	14

Fig. manual - 58

As for daily ticket sale reports, insert the date as follow

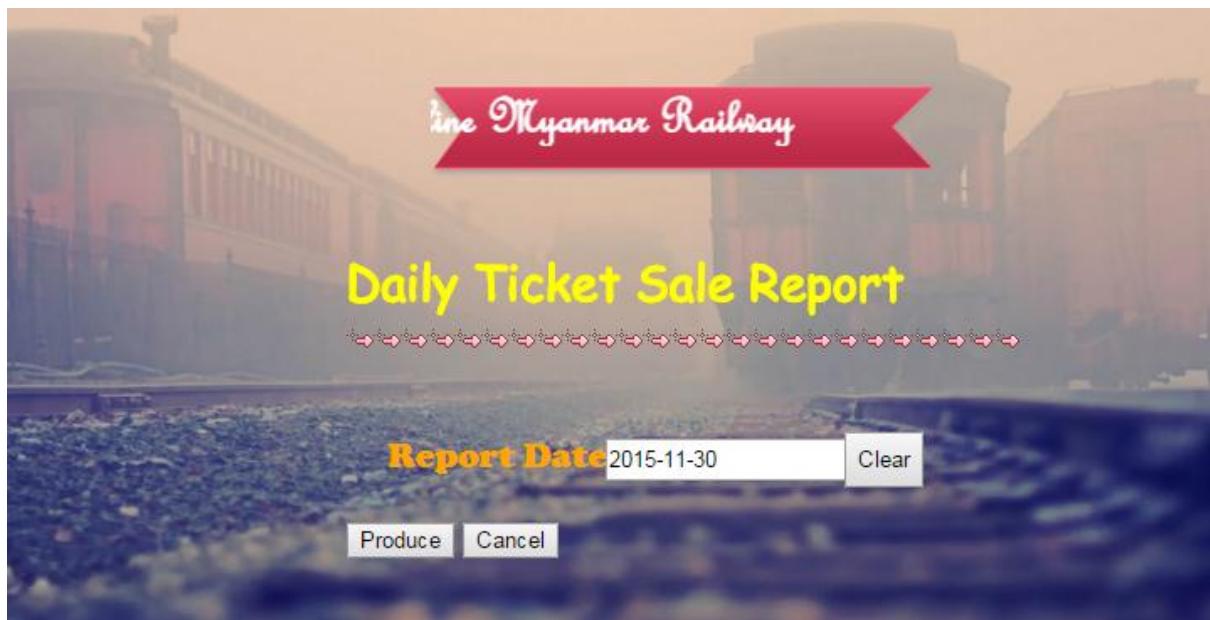


Fig. manual - 59

Click Produce button and see the result as follow

A screenshot of the software application showing the results of the ticket sale report. The table has four columns: "From Station", "To Station", "SeatType Name", and "Price".

From Station	To Station	SeatType Name	Price
5001	5002	Ordinary Class	1400

Fig. manual - 60

As for the Unpaid Ticket Report, insert the data as follow

The remain ticket per station by schedule

From Station: Yangon

To Station: Bago

Report Date: 2015-11-30

Produce Cancel

Fig. manual - 61

Click the Produce Button and see the result as follow

The remain ticket per station by schedule

From Station: Yangon

To Station: Bago

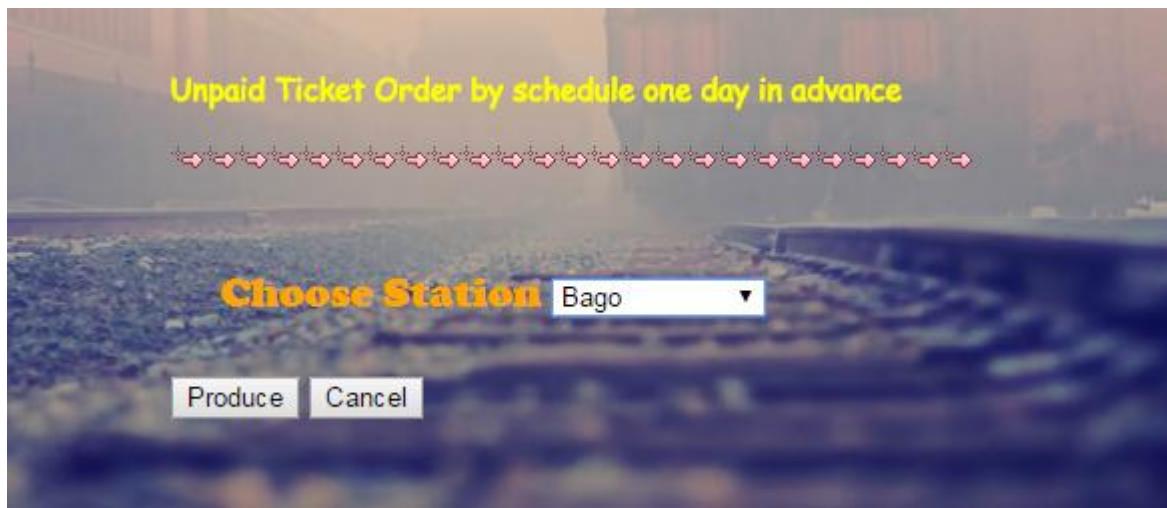
Report Date: 2015-11-30

Produce Cancel

Seat Type Name	Carriage Serial No	Total Seat	Sold Ticket	Remain Ticket
Ordinary Class	1	4	0	4
Ordinary Class	2	4	0	4
Open Class A	3	4	0	4

Fig. manual – 62

As for the unpaid ticket by station, insert the data as follow



After clicking Produce Button, the result is shown.

However, there is no unpaid ticket right now so there is not data for this reports

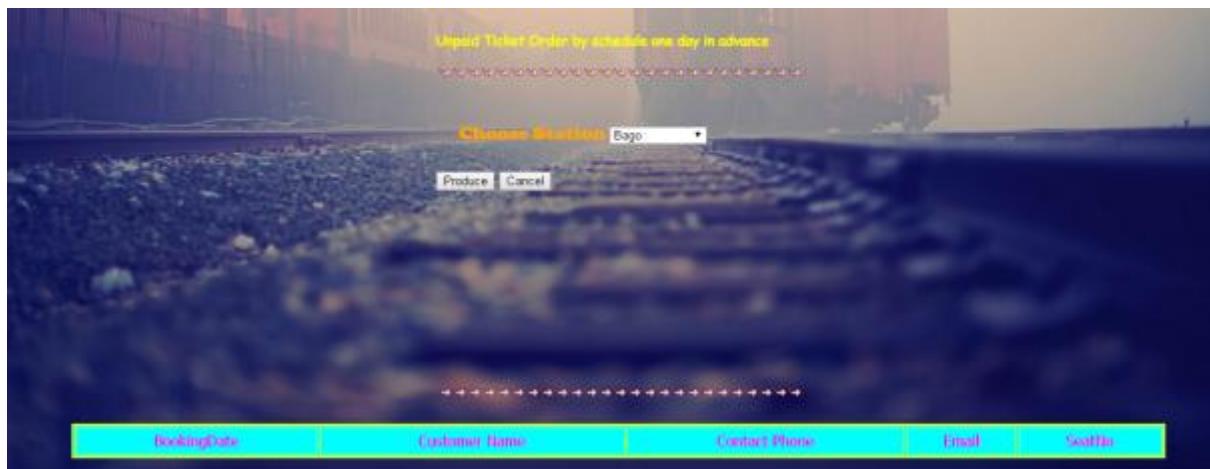


Fig. manual - 63

As for staff

According to authorities of staffs, they make tow positions such as payment process and close the station.

According to payment process, go to the payment page as follow



Fig. manual - 64

Insert the payment and click the confirm payment button to accomplish the this process

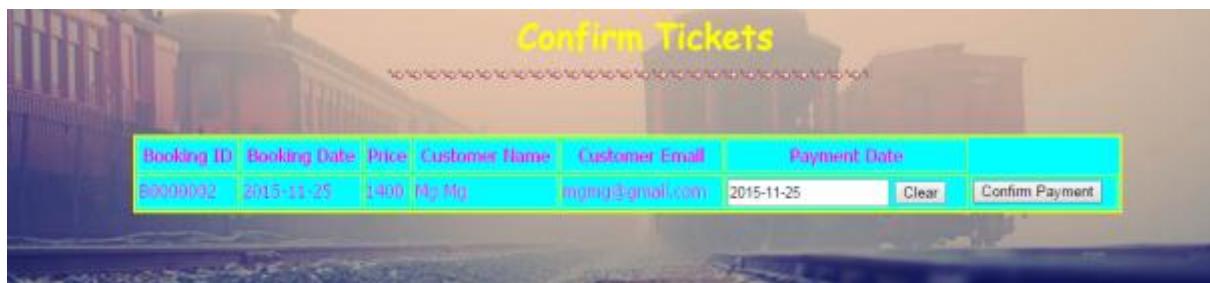


Fig. manual - 65

And then, payment process is successful.



Fig. manual - 66

According to second portion, go to the close station page



Fig. manual - 67

Fill the train and click "Prepare to Close" button

And See the table which is prepared to close the station

Train Number	Schedule ID	Station Name	Departure Date	Proposed Departure Time	
100	0001	Vijaywala	2019-11-30	06:00:00	Update
101	0002	Vijaywala	2019-11-30	07:00:00	Update

Fig. manual - 68

And Click the Update link to insert real departure time



Fig. manual - 69

And Insert the real departure time as follow



And Press the Close Button

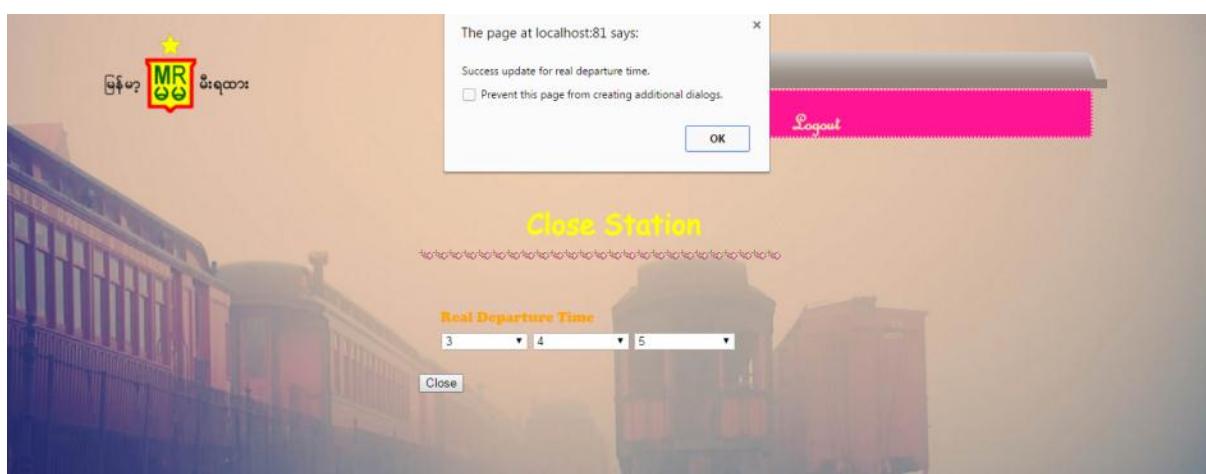


Fig. manual - 70

Closing the station process is successful and customer cannot buy the tickets



Fig. manual - 71

As for Customers,

As first authority of customer, they can register as a customer

A screenshot of a registration form for a customer. The form fields are labeled and filled as follows:

- Customer ID:** [redacted]
- Name:** phyo
- Contact Phone:** 09253104501
- Email:** phyo@gmail.com
- Password:** [redacted]
- Re-Password:** [redacted]

At the bottom of the form are two buttons: 'Update' and 'Cancel'.

Fig. manual - 72

If you want to edit the information, you can use the follow table in the page

Update Customer

Customer ID	<input type="text" value="0000001"/>
Name	<input type="text" value="phyo"/>
Contact Phone	<input type="text" value="09253104501"/>
Email	<input type="text" value="phyo@gmail.com"/>
Password	<input type="password"/>
Re-Password	<input type="password"/>
<input type="button" value="Update"/> <input type="button" value="Cancel"/>	

Customer ID	Customer Name	Customer Contact Phone	Email	Action	Action
0000001	phyo	09253104501	phyo@gmail.com	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>

Fig. manual - 73

Click "To Update" link and insert the data that you want to edit as follow

Update Customer

Customer ID	<input type="text" value="0000001"/>
Name	<input type="text" value="Khin Yatara Phyo"/>
Contact Phone	<input type="text" value="09253104501"/>
Email	<input type="text" value="phyo@gmail.com"/>
Password	<input type="password"/>
Re-Password	<input type="password"/>
<input type="button" value="Update"/> <input type="button" value="Cancel"/>	

Customer ID	Customer Name	Customer Contact Phone	Email	Action	Action
C0000001	phyo	09253104501	phyo@gmail.com	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>

Fig. manual - 74

Click Update button and success the process

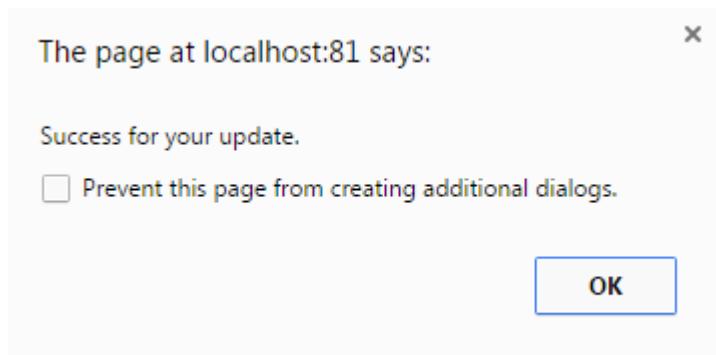


Fig. manual - 75

And go to log in



Fig. manual - 76

Log in and the system directly goes to search page if the log in is successful

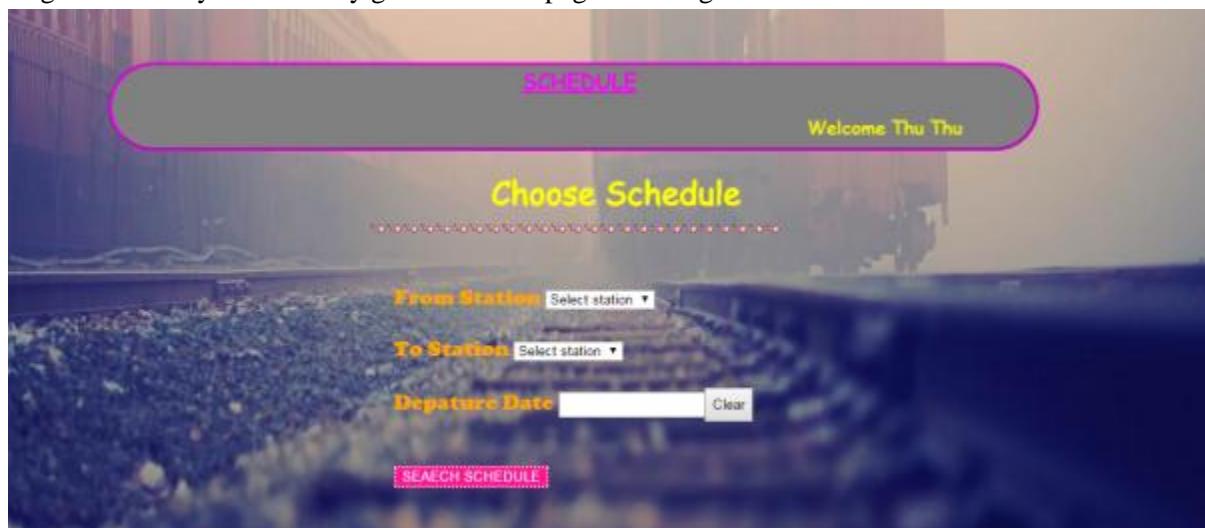


Fig. manual - 77

Select fromstation, tostation and depature date and search the schedule

Choose Schedule

From Station: Yangon

To Station: Bago

Departure Date: 2015-11-30

SEARCH SCHEDULE

Yangon-Mandalay			
TrainName	DepartureDate	DepartureTime	
11 Up	2015-11-30	06:00:00	Already Departed
11 Up	2015-11-30	07:00:00	Available
11 Up	2015-11-30	06:00:00	Booking
11 Up	2015-11-30	06:00:00	Available

Fig. manual - 78

Click the Booking link as you which

SEARCH

Welcome Thu Thu

Seat Type: Upper Class 3 **SEARCH SEAT**

BOOK Your Seat Here

Fig. manual - 79

Select the seattype and click search seat button

The page show the available seat as follow



Fig. manual - 80

And select the seat as you which as follow
And the page show the selected seat as yellow color



Fig. manual - 81

And click "BOOK Your Seat Here" button and it show the tickets

Booking Information

Train Name	From Station	To Station	Departure Date	Seat Type	Price	Carriage No	Seat No	ID number	Traveller Name
11 Up	Yangon	Bago	2015-11-30	Ordinary Class	700	2	1		
11 Up	Yangon	Bago	2015-11-30	Ordinary Class	700	2	2		

Bank Name: Myanmar Economic Coop
Bank Title: 0110011

Fig. manual - 82

Insert the ID number and Traveller Name to book the ticket

Booking Information

Train Name	From Station	To Station	Departure Date	Seat Type	Price	Carriage No	Seat No	ID number	Traveller Name
11 Up	Yangon	Bago	2015-11-30	Ordinary Class	700	2	1	1234	BIG PHYO
11 Up	Yangon	Bago	2015-11-30	Ordinary Class	700	2	2	5678	SMALL PHYO

Bank Name: Myanmar Economic Coop
Bank Title: 0110011

Fig. manual - 83

Click the Purchase Button and it shows the successful booking message

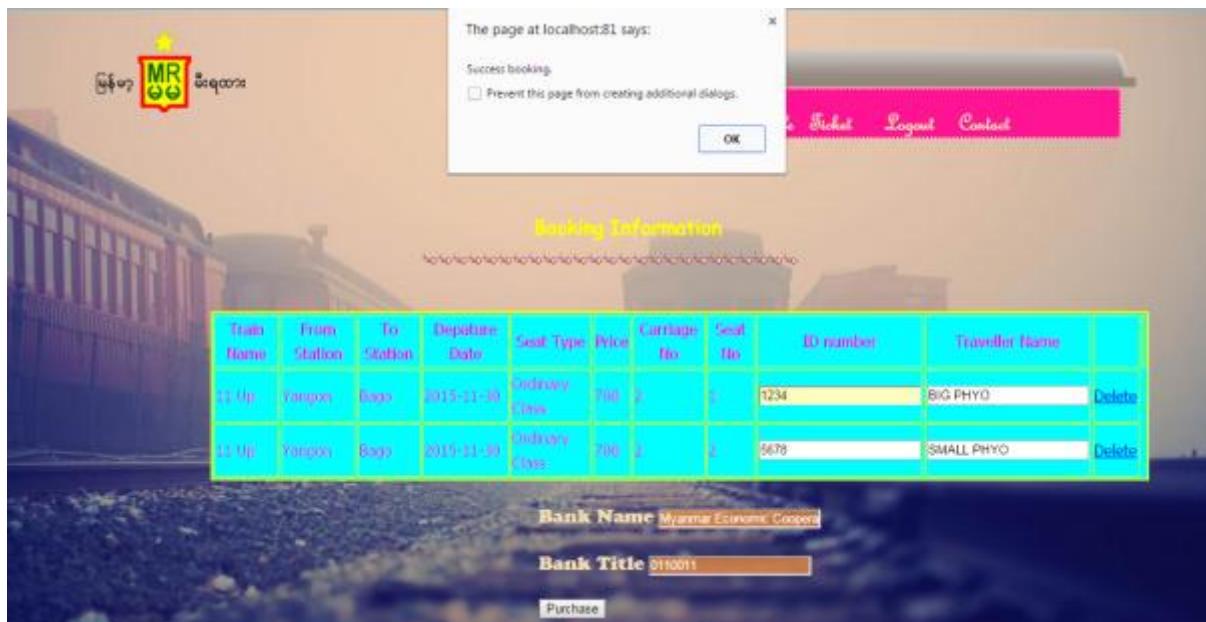


Fig. manual - 84

To check the paid ticket, firstly log in

After log in and see the paid tickets

From Station Select station ▾

To Station Select station ▾

Departure Date Clear

SEARCH SCHEDULE

Yangon-Mandalay

TrainName	DepartureDate	DepartureTime
11 Up	2015-11-30	10:00:00

Trip Details

ID Number	Traveller	From	To	Price	Seat	Carriage	Seat Type	Train	Trip	For Date	For Time	Action
1234	001234567890	Yangon	Bago	700	1	2	Ordinary Class	11 Up	Yangon-Mandalay	2015-11-30	10:00:00	Print
5678	00876543210987	Yangon	Bago	700	2	2	Ordinary Class	11 Up	Yangon-Mandalay	2015-11-30	10:00:00	Print

Fig. manual - 85

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