

# **VNR TICKET RESERVATION SYSTEM**

## **ANALYSIS AND DESIGN DOCUMENT**



**Group member :**

- YOUR NAME
- 
- 
- 

**Faculty**

**Course : ACCP1506**

This is to certify that

Mr. / Ms.: .....  
.....  
.....  
.....

Has successfully  
designed, developed and  
hosted

## **VNR- TICKET RESERVATION SYSTEM**

Submitted by:

Mr.

(Faculty instructor's Name and Signature)

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## ***PART I: INTRODUCTION***

### **1. Acknowledgement**

During the time developing the project, we would like to express deep thanks to our teacher, Mr. Phan Huu Tri, who gives us knowledge and experience to complete the project.

The VNR - Ticket Reservation System also helped us in doing a lot of Research and we came to know about so many new things. We are really thankful to them. Secondly we would also like to thank my friends who helped us a lot in finalizing this project within the limited time frame.

### **2. Introduction**

Vietnam Railways (Đường sắt Việt Nam) is the state-owned operator of the railway system in Vietnam. The principal route is the 1,600 km (990 mi) single track North-South Railway line, running between Hanoi and Ho Chi Minh City.

### **3. Existing Scenario**

In the existing system, Reservation is done manually by the staffs at railway reservation counters. Passengers have to wait for a long time in the queue to have a ticket in hand. Like this wasting time of passengers and for this lots of man power and paper works are also required.

### **4. Proposed Scenario**

Now, computerized system is the trends on over the world. We introduces the Railway Reservation System so that train information, routes, ticket details are all stored in the Reservation System.

The Admin updates Train Schedule, train status, Fare ... on the System. They also can check the Feedback from Agents under their management. View Monthly Report for the quantity of sold tickets and the revenue of the agent.

Agents therefore make reservation on the System and give ticket to passengers.

Passengers can check train availability by themselves on the booths. They can also check the ticket information through PNR Number.

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## 5. Harware

Admin (server):

- |          |            |
|----------|------------|
| i. PC    | Core 2 Duo |
| ii. HDD  | 200GB      |
| iii. RAM | 2GB        |

Agent (client):

- |          |            |
|----------|------------|
| i. PC    | Pentium IV |
| ii. HDD  | 50GB       |
| iii. RAM | 2GB        |

## 5. Software

Admin :

- SQL Server 2012
- JAVA JDK 1.8

Agent :

- SQL Server 2012
- JAVA JDK 1.8

## 6. Functional Requirements

It contains Information about the stations.

It contains information about the trains.

It contains the details of reservations fare.

It contains information about the passenger.

It makes entries for reservation, cancelled tickets.

It will update for uptime and downtime trains.

The passenger could search for trains from the booth at the train station.

The record of train status includes available dates for which tickets can be booked, total number of seats available.

It contains send Feedback from Sellers and receive feedback from Admin.

It contains monthly report for each agent.

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In details, there are:

	<b>ROLE: ADMIN</b>	
1	Log in	Log in system is required for Admin
2.	Create new Account/Delete/Update info	Admin is the only can create Account and Manage all accounts.
3.	Seller Account Management	Admin controls Seller Accounts.
4.	Create/Update routes	Input information for the route of the train
5.	Create/Update/Delete ticket fare	Input information for the fare based on distance.
6.	Create/Update/Delete Train info	Input Train Number, Departure Date, Class
7.	View feedback message	View Feedback from Seller

	<b>ROLE: SELLER</b>	
1.	Log in	Log in system is required for Seller.
2.	Search Train Schedule	Seller Input From/To/Departure Date to check Schedule of Train
3.	Ticket Reservation  Option for discount: - Children 6-10 years old, - Student, - Senior Citizen	Under reservation form, sellers will have to fill the necessary details such as passengers' name, phone number, ID, Date of Birth for children. System has option for discount based on passenger type.
4.	Ticket Cancelation  Optional: before 30 days-fee 15% before 7 days – 30% before 2 days – 50%	If passengers want to cancel their tickets then they have to provide their PNR number and after submitting it, this will display the entire information related to that particular PNR

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	1 day: cannot cancel	number. If users want to confirm their cancellation, in this case they have to press OK button.
5.	Check Ticket Number	Input PNR to view all details of the ticket.
6.	Feedback	Seller send feedback to Admin
7.	Monthly Report Amount of ticket Montly report revenue	

	<b>ROLE: PASSENGER</b>	
1.	Check Ticket Number	
2.	View Train Schedule	
3.	Check availability of seats	

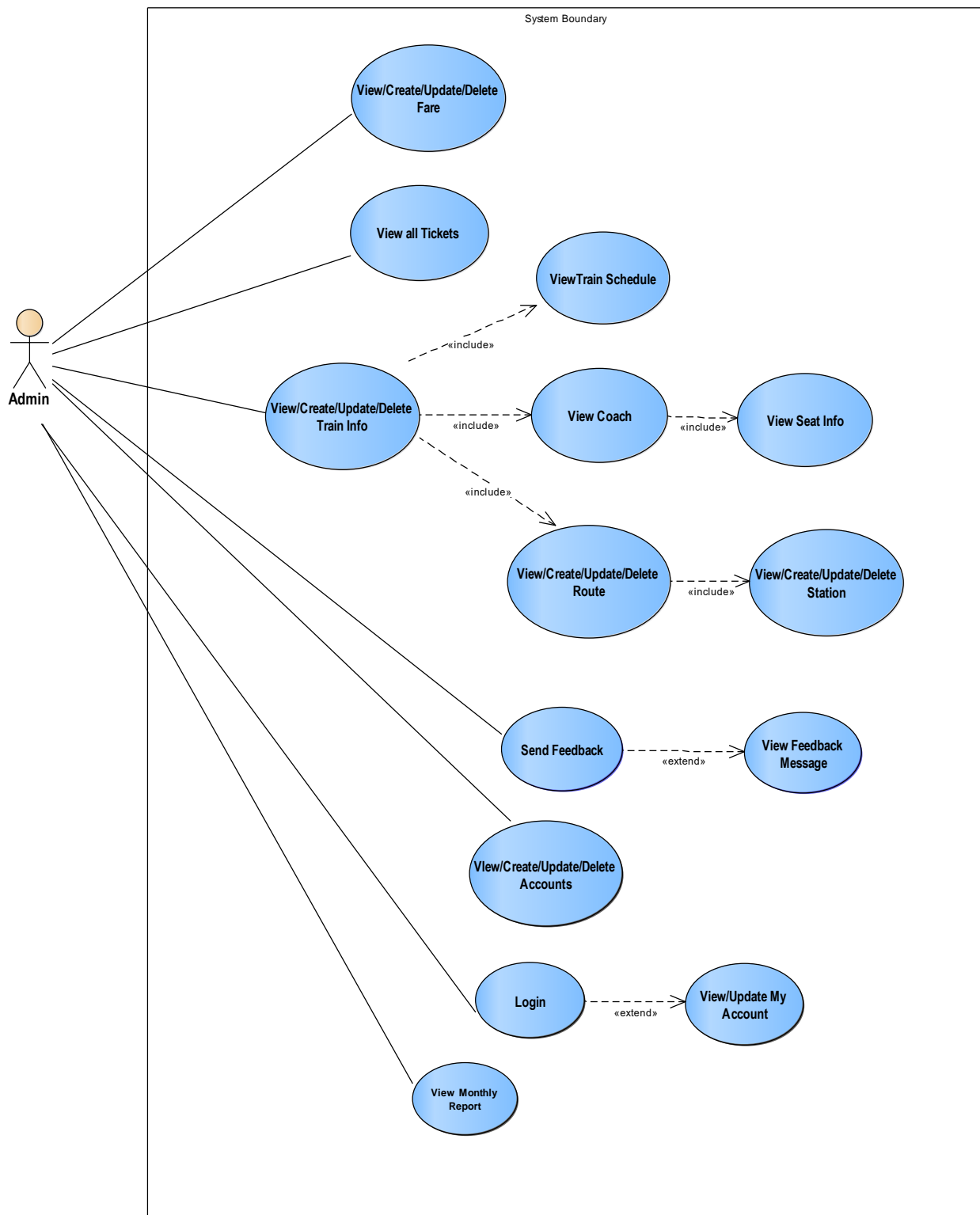
## ***PART II: ANALYSIS – DESIGN***

### **1. Functional Requirements**

#### **i. Use Case**

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**Figure 1: Admin Use Case Diagram**

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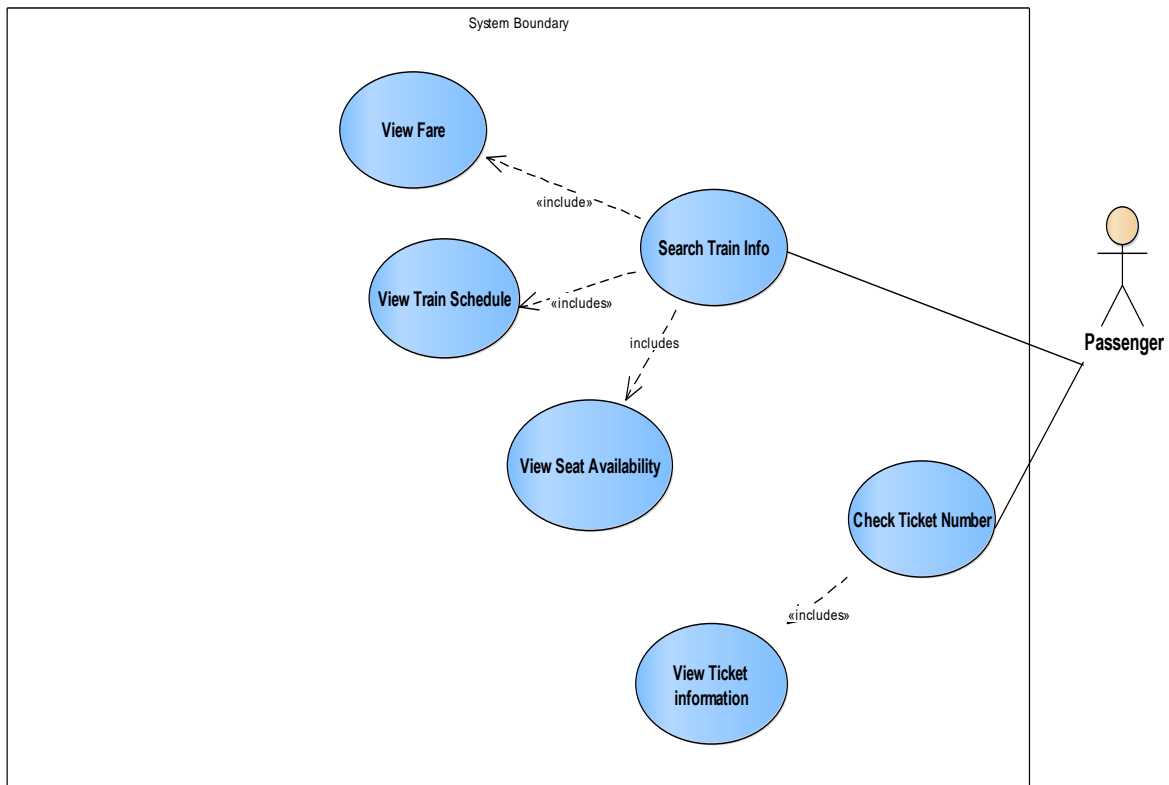
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**Figure 2:** Seller User Case

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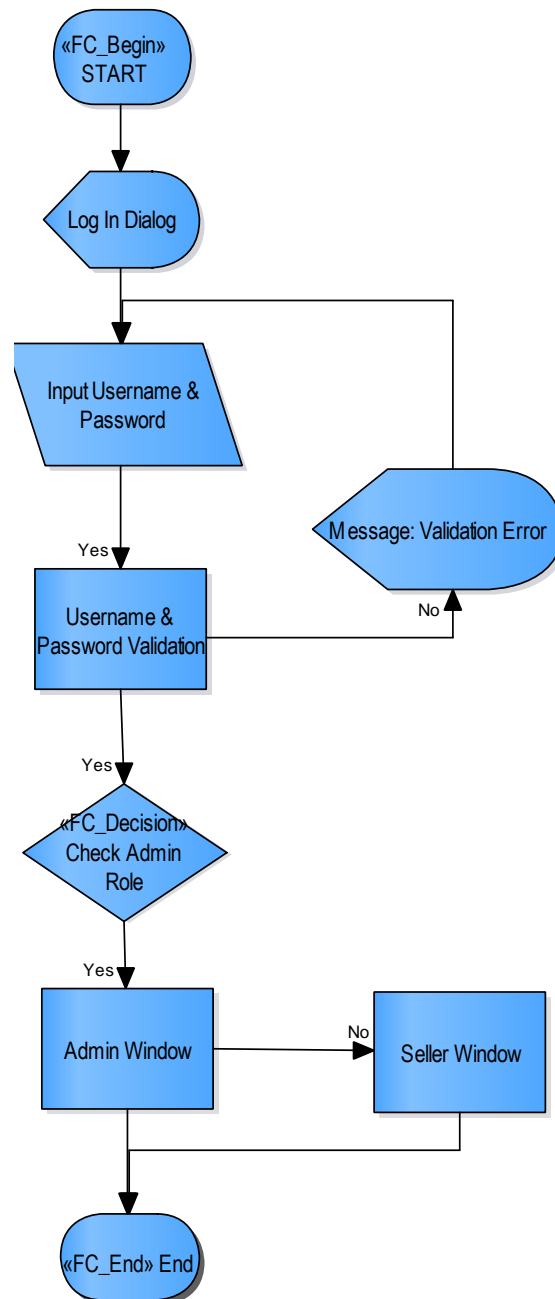


**Figure 3:** Passenger Use Case

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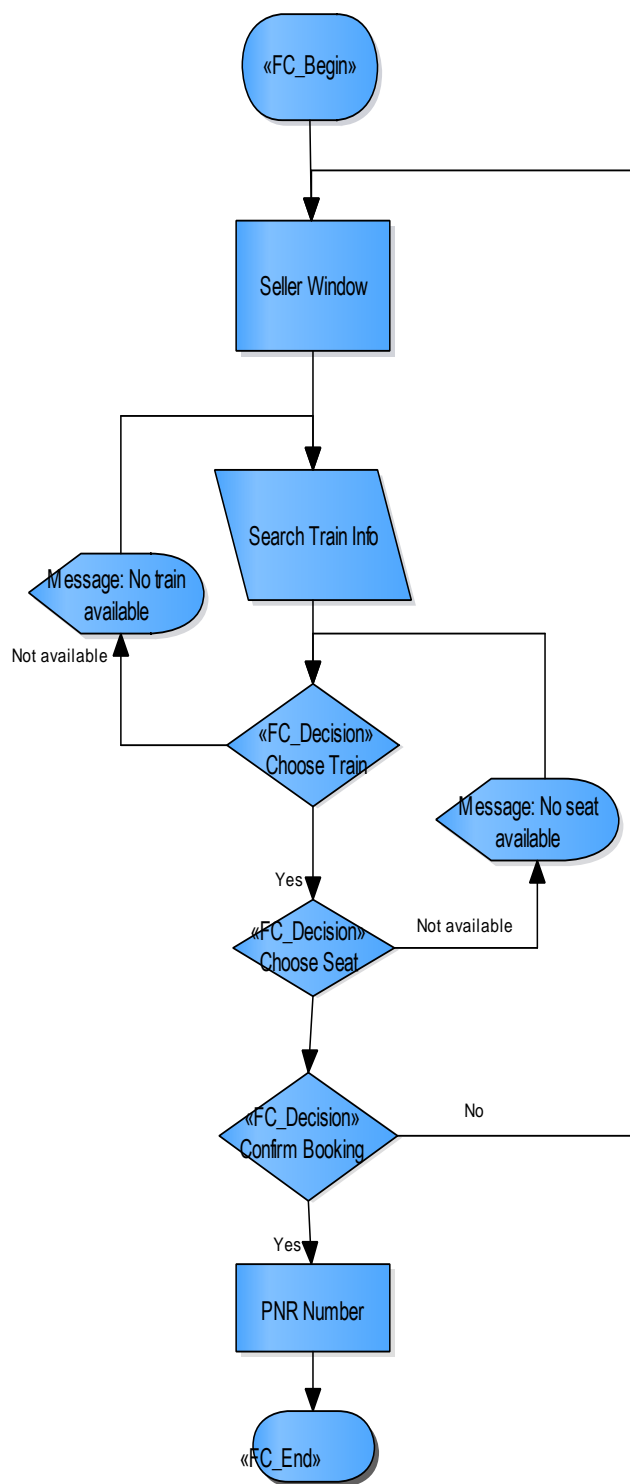
ii. Flow chart:



**Figure 4: Log In Flow Chart**

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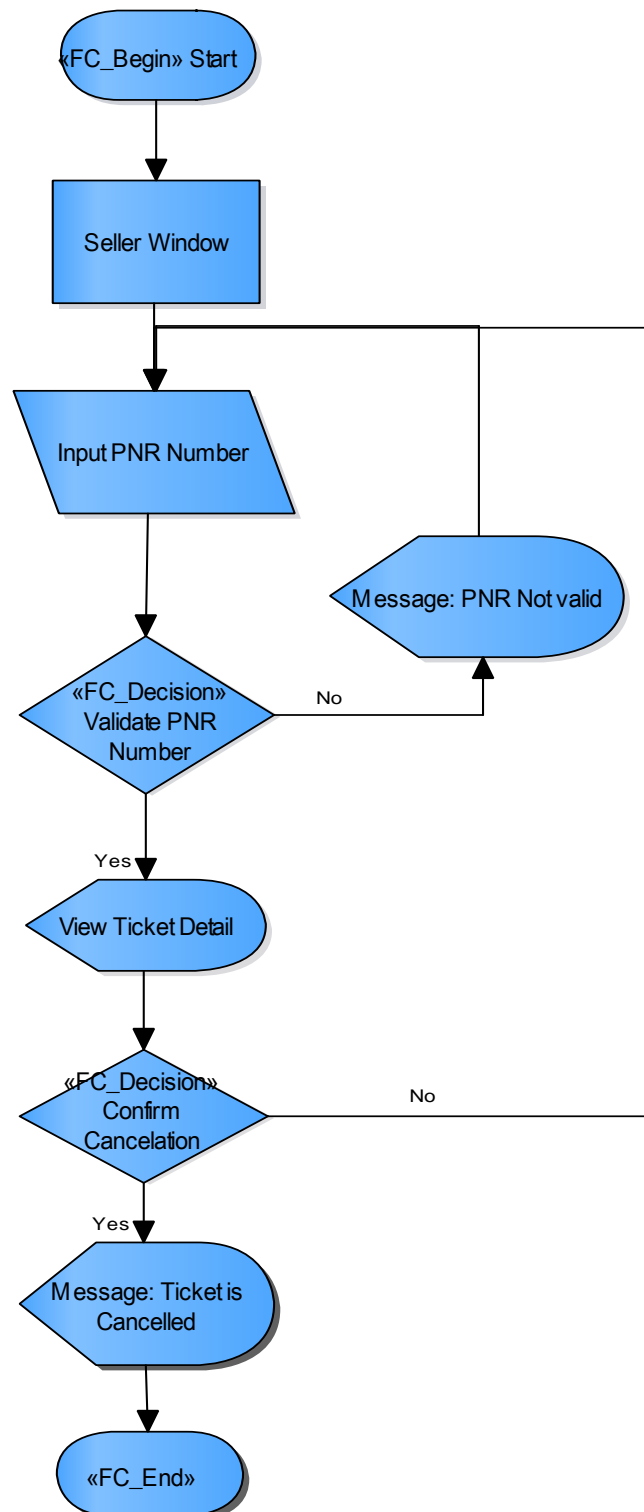
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**Figure 5:** Ticket booking Flow Chart

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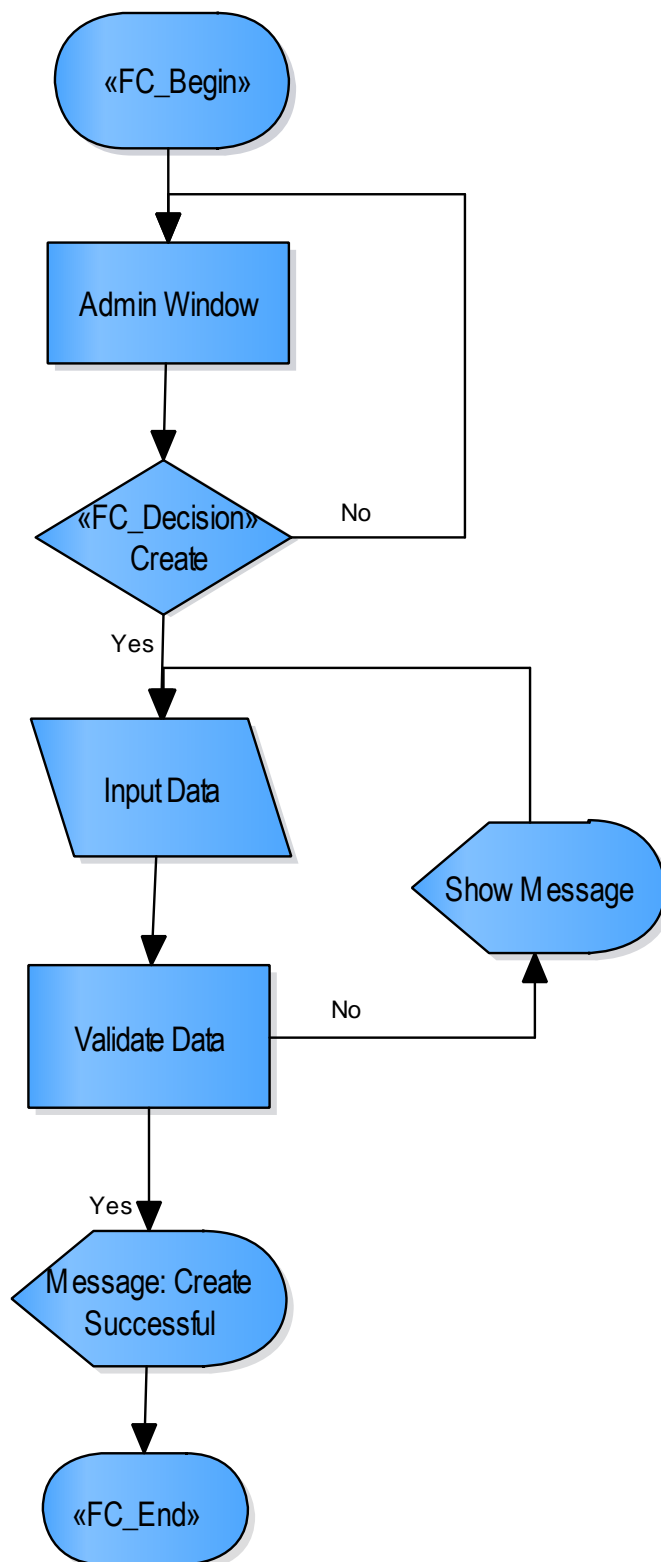
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**Figure 6:** Ticket Cancellation Flow Chart

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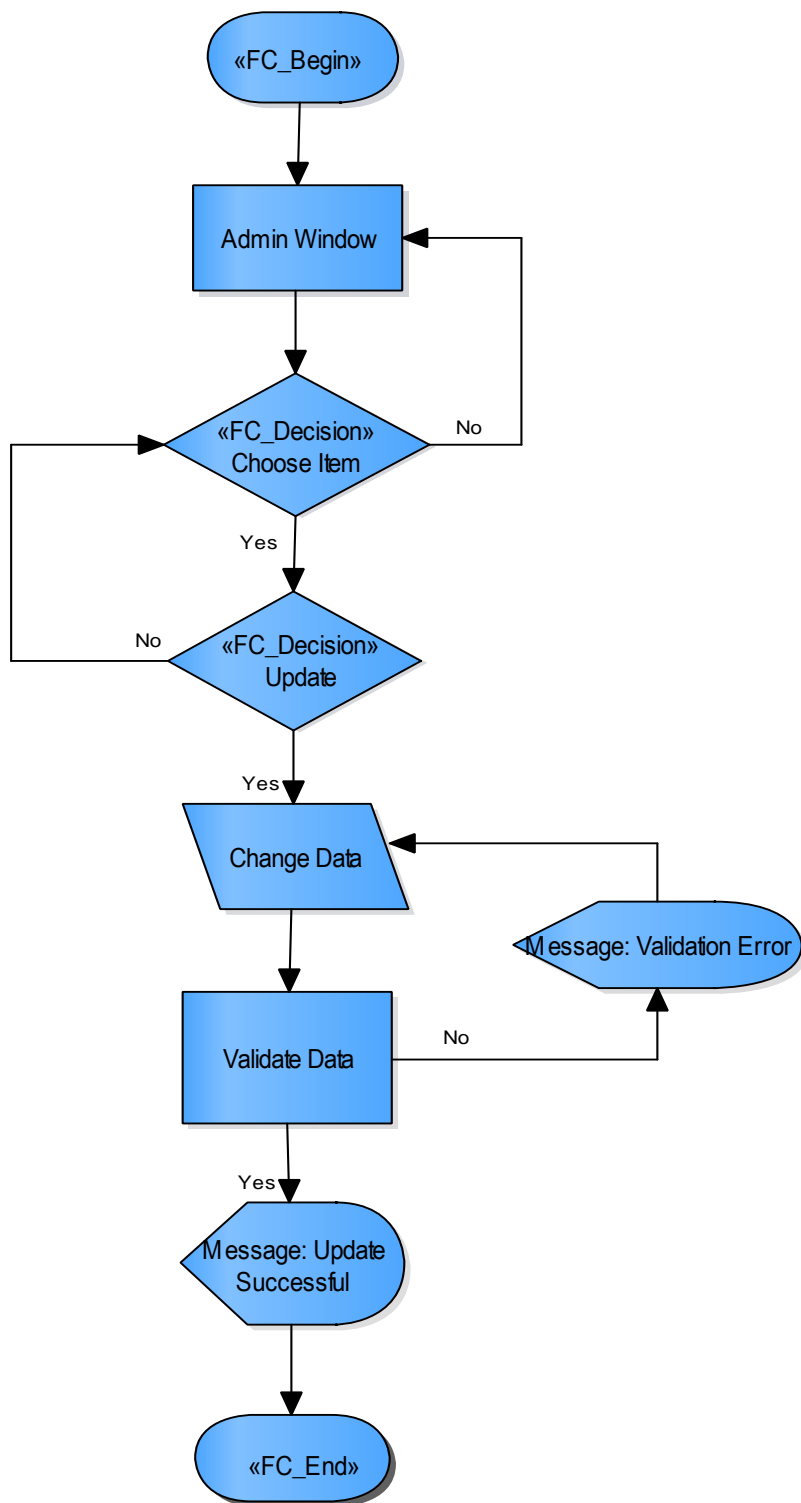
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**Figure 7 :** Create Procedure Flow Chart

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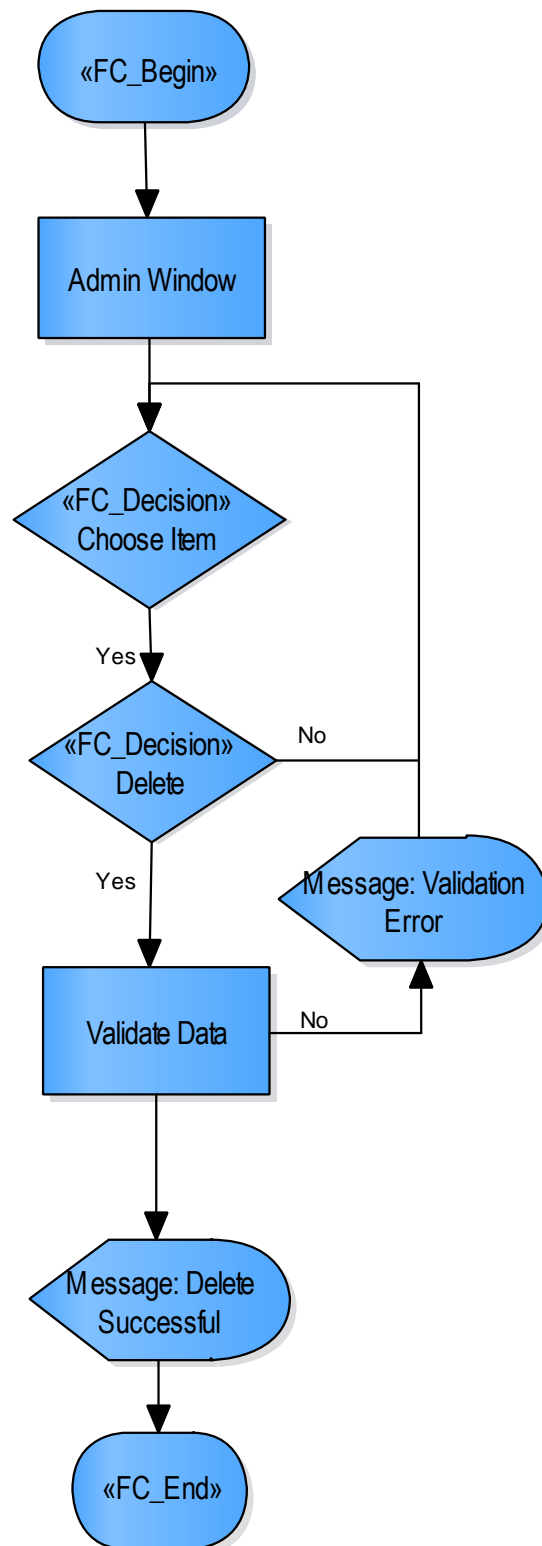
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**Figure 8:** Update Procedure Flow Chart

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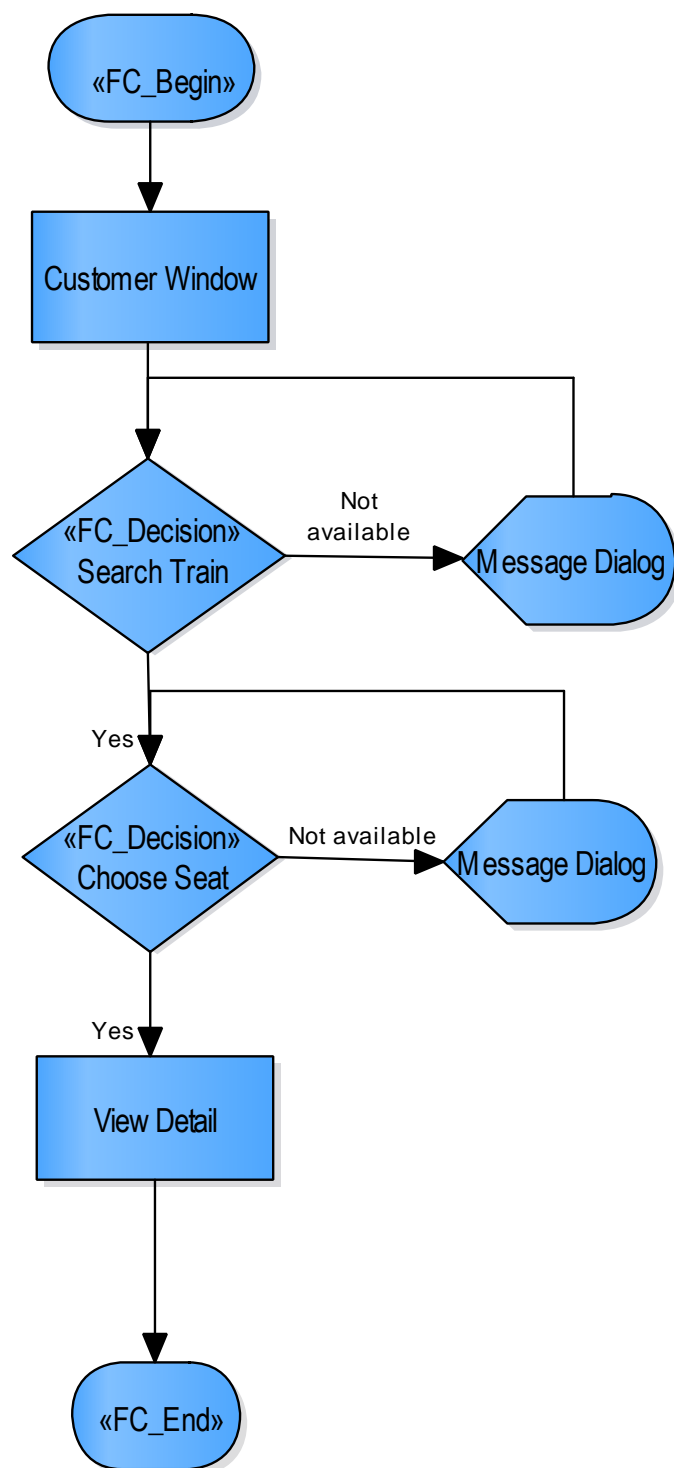


**Figure 9:** Delete Procedure Flow Chart

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**Figure 10 : Search Procedure**

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## 2. Database Design

### a. Table Design:

#### a.1. Account:

ACCOUNT			
Column Name	Data Type	Specification	PK/FK
Username	varchar(50)	Identity, Not Null	Primary Key, FK_Feedback_Account
Fullname	nvarchar(100)		
Password	varchar(50)	Not Null	
Address	nvarchar(250)		
DOB	date	Not Null	
Phone	varchar(50)	Not Null	
Email	varchar(100)	Not Null	
RoleID	int	Not Null	FK_Account_Role
Status	bit	Not Null	

#### a.2. Role:

ROLE			
Column Name	Data Type	Specification	PK/FK
RoleID	int	Identity, Not Null	Primary Key, FK_Account_Role
Name	varchar(250)		

#### a.3. Train:

TRAIN			
Column Name	Data Type	Specification	PK/FK
ID	int	Identity, Not Null	Primary Key, FK_Schedule_Train, FK_Coach_Train,
Name	varchar(50)	Not Null	
Status	bit	Not Null	

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a.4. Class:

CLASS			
Column Name	Data Type	Specification	PK/FK
ID	int	Identity, Not Null	Primary Key, FK_class_coach, FK_Fare_Class
Name	varchar(50)	Not Null	

a.5. Coach:

COACH			
Column Name	Data Type	Specification	PK/FK
ID	int	Identity, Not Null	Primary Key
SeatQuantity	int		FK_Seat_Coach
ClassID	int	Not Null	FK_class_coach
TrainID	int	Not Null	FK_Coach_Train
Status	bit	Not Null	

a.6. Fare:

FARE			
Column Name	Data Type	Specification	PK/FK
ID	int	Identity, Not Null	Primary Key
Distance	int	Not Null	
ClassID	int	Not Null	FK_Fare_Class
Fare	money		

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a.7. Feedback:

FEEDBACK			
Column Name	Data Type	Specification	PK/FK
ID	int	Identity, Not Null	Primary Key
Subject	ntext	Not Null	
[Content]	ntext	Not Null	
Username	varchar(50)	Not Null	FK_Feedback_Account
Status	bit	Not Null	

a.8. PaxType:

PAXTYPE			
Column Name	Data Type	Specification	PK/FK
ID	int	Identity, Not Null	Primary Key, FK_Ticket_PaxType
Name	varchar(50)	Not Null	
Discount	float		

a.9. Route:

ROUTE			
Column Name	Data Type	Specification	PK/FK
ID	int	Identity, Not Null	Primary Key, FK_ShortRoute_Route, FK_Schedule_Route, FK_Route_Station_Route
Name	nvarchar(250)	Not Null	
Status	bit	Not Null	

a.10. Route\_Station:

ROUTE_STATION			
Column Name	Data Type	Specification	PK/FK
RouteID	int	Not Null	Primary Key, FK_route_routestation
StationID	int	Not Null	Primary Key, FK_station_routestation

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a.11. Schedule:

SCHEDULE			
Column Name	Data Type	Specification	PK/FK
ID	int	Identity, Not Null	Primary Key, FK_Ticket_Schedule
RouteID	int	Not Null	FK_route_schedule
TrainID	int	Not Null	FK_train_schedule
[From]	int	Not Null	
[To]	int	Not Null	
DepDate	datetime	Not Null	

a.12. Seat:

SEAT			
Column Name	Data Type	Specification	PK/FK
ID	int	Identity, Not Null	Primary Key, FK_Ticket_Seat
Name	varchar(50)	Not Null	
CoachID	int	Not Null	FK_coach_seat
Status	bit	Not Null	

a.13. Section :

SECTION			
Column Name	Data Type	Specification	PK/FK
ID	int	Identity, Not Null	Primary Key
Name	nchar(50)	Not Null	
[From]	int	Not Null	
[To]	int	Not Null	
RouteID	int	Not Null	FK_route_section
Distance	int		
Duration	int		
Status	bit	Not Null	

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a.14. Station :

STATION			
Column Name	Data Type	Specification	PK/FK
ID	int	Identity, Not Null	Primary Key, <u>FK_station_routestation</u>
Name	nvarchar(250)	Not Null	
Status	bit	Not Null	

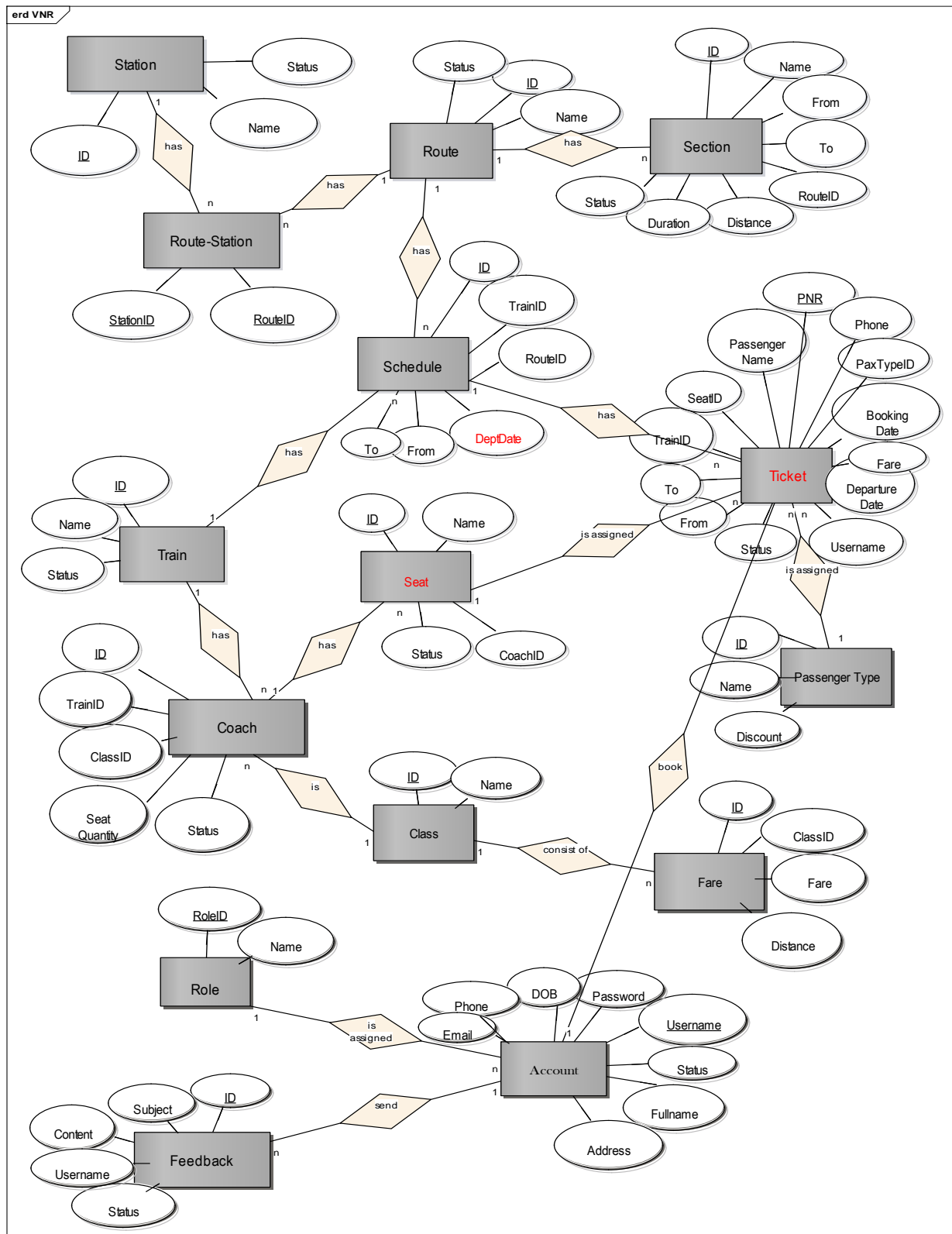
a.15. Ticket :

TICKET			
Column Name	Data Type	Specification	PK/FK
PNR	varchar(10)	Identity, Not Null	Primary Key
PassengerName	nvarchar(250)	Not Null	
Username	varchar(50)	Not Null	
Phone	varchar(50)	Not Null	
[From]	int	Not Null	
[To]	int	Not Null	
ScheduleID	int	Not Null	FK_schedule_ticket
SeatID	int	Not Null	FK_seat_ticket
PaxTypeID	int	Not Null	FK_paxtype_ticket
Fare	money	Not Null	
BookingDate	date	Not Null	
Status	bit	Not Null	

## b. ERD (Entity Relationship Diagram):

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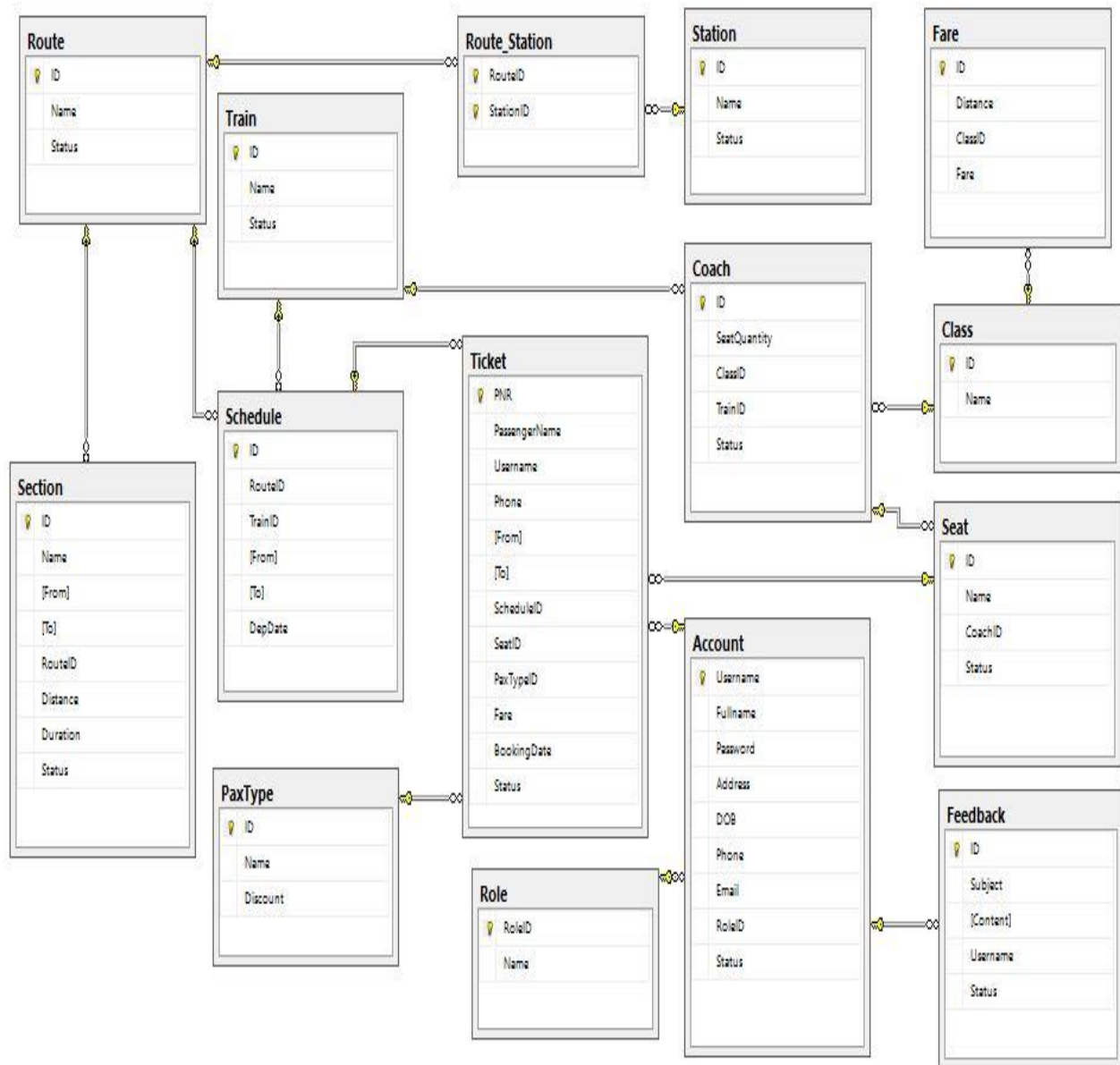


**Figure 9: Entity Relationship Diagram**

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### ***c. Database Diagram***



**Figure 10:** Database Diagram

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### 3. GUI DESIGN

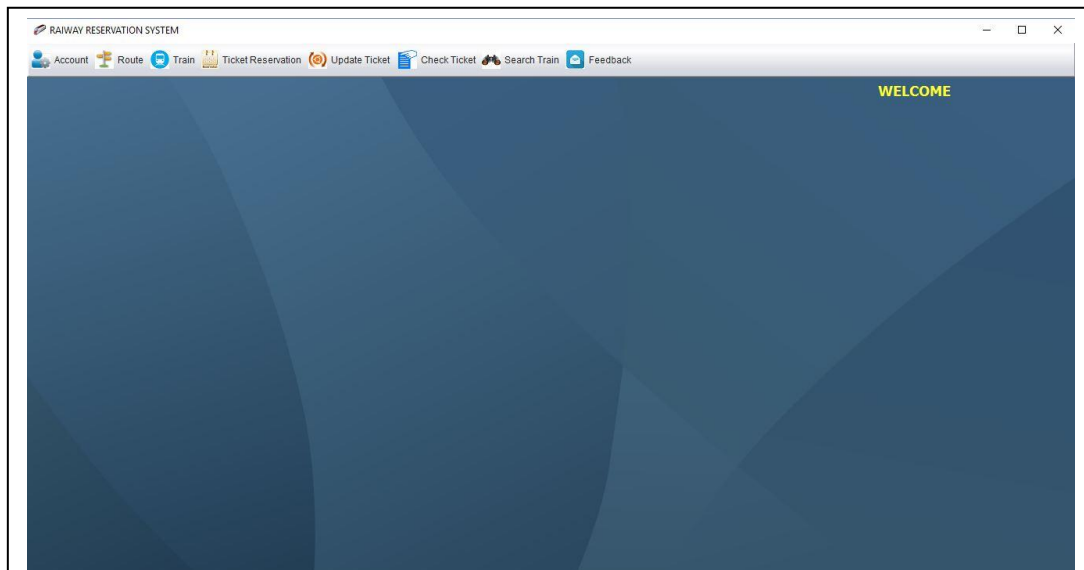


**Figure 11: LOGIN FORM**

- Content: Use to login system
- Input Data: Username, password
- Validation: Check with existed username, password in database.
- Output Data: Welcome Window

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**Figure 12: WELCOME WINDOW**

- Content: Menu Bar
- Input Data: From Login Form
- Validation: No.
- Output Data: Menu Bar

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**Figure 13: MY ACCOUNT**

- Content: View My account information.
- Input Data: input data to update.
- Validation:
  - +Password: must have at least 1 Upper case character, 1 Lower case character, 1 number, 1 special character. At least 8 characters.
  - +Reconfirm Rassword: must be the same as password.
  - + Date of Birth: over 18 years old
  - +Home Address: not null.
  - +Phone Number: must be digits, at least 6 numbers.
  - +Email: validation email format.
- Output Data: Message: Update successful/Update failed

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**CREATE NEW ACCOUNT**

Please fill up all the fields. Any blank field is not accepted.

Username :  \* Name length is at least 8 characters

Full Name :  \* Name length has least 10 characters

Password :  \* Password must be at least 6 characters

Reconfirm Password:

Home Address :  \* Field is blank

Birthday :  \* Age must be over 18 year...

Phone Number :  \* Phone number is not valid

Email Address:  \* Email is not valid

Role:  \* Please select Role

Status: ☐

**Message** X

i Register failed

**Figure 14: CREATE NEW ACCOUNT**

- Content: Use to create new account
- Input Data: input data to register new account.
- Validation:
  - + Username: 1<sup>st</sup> character cannot be a number, no special character.
  - + Password: must have at least 1 Upper case character, 1 Lower case character, 1 number, 1 special character. At least 8 characters.
  - + Reconfirm Password: must be the same as password.
  - + Home Address: not null.
  - + Date of Birth: over 18 years old.
  - + Phone Number: must be digits, at least 6 numbers.
  - + Email: validation email format.
- Output Data: Message: Create successful/Create failed

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**ACCOUNT INFORMATION**

Search Username:  Search

Search by Role :

Username	Fullname	Email	RoleID	Status
admin	Admin	admin@yahoo....	Admin	true
BBB	BoBo12	bo@gmail.com	Admin	true
CCC	CCCC		Admin	false
panda	Panda	panda@gmail....	Seller	true
phuong	Lan Phuong	lp@yahoo.com	Seller	true
<b>SELLER</b>	<b>SELLER</b>	<b>SELLER</b>	<b>Seller</b>	<b>true</b>
tuan	Minh Tuan	tuan@gmail.com	Admin	true

**ACCOUNT DETAIL**

Username :

Full Name :

New Password :

Reconfirm new Password:

Home Address :

Birthday :

Phone Number :

Email Address:

Role:

Status: ☒

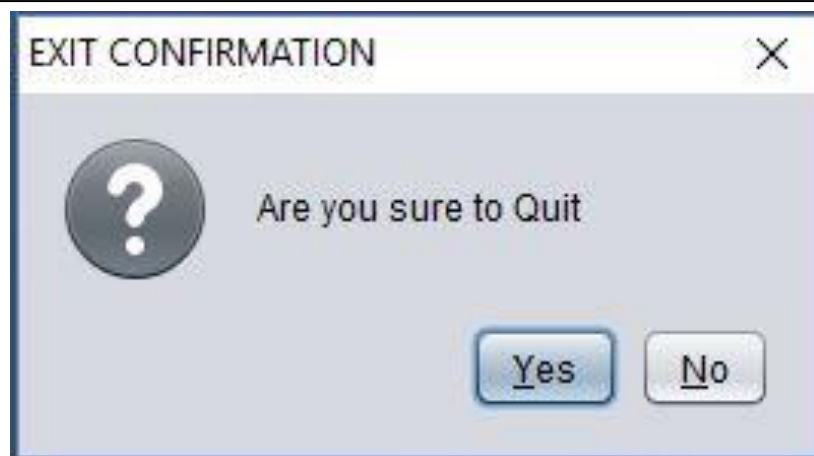
UPDATE DELETE CLEAR

**Figure15: ACCOUNT INFORMATION**

- Content: View All accounts in list, Update, Delete Account
- Input Data: From Login Form
- Validation:
  - + Password: must have at least 1 Upper case character, 1 Lower case character, 1 number, 1 special character. At least 8 characters.
  - + Reconfirm Rassword: must be the same as password.
  - + Home Address: not null.
  - + Date of Birth: over 18 years old.
  - + Phone Number: must be digits, at least 6 numbers.
  - + Email: validation email format.
- Output Data: Message Update Successful/Update Failed/ Delete Successful/Delete Failed

	Prepared by (student)	Approved by (Faculty)
Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		

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**Figure 16: DELETE CONFIRMATION**

- Content: Confirm Exit
- Input Data: Yes/No
- Validation: No
- Output Data: Close Window

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Signature of Group Leader		
Date: Aug 2016		

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**Figure 16: CREATE ROUTE**

- Content: Create Routes
- Input Data: Route Name
- Validation: Name at least 6 characters, no double "-" next to each other
- Output Data: Message Create Successful/Failed

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Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		

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ID	Name	Status
1	SAI GON - HA NOI	true
2	HA NOI - HAI PHONG	true
3	HA NOI - DONG DANG	true
4	HA NOI - LAO CAI	true
5	HANOI - SAI GON	true
6	HAI PHONG-HA NOI	false
7	DONG DANG - HA NOI	true
8	LAO CAI - HA NOI	true
9	TEST1-TEST2	true

**Figure 17: LIST OF ROUTES**

- Content: List of Routes
- Input Data: No
- Validation: No
- Output Data: List of Routes

	Prepared by (student)	Approved by (Faculty)
Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		



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**Figure 19: UPDATE ROUTE**

- Content: Update Route
- Input Data: new Data
- Validation: at least 6 characters, no double "-" next to each other
- Output Data: Message Upate Successful/Failed, Delete Success/Failed.

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Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		

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The screenshot shows a web application window titled 'SECTION'. It has three tabs: 'Add', 'List', and 'Update'. The 'Add' tab is active. The main content area is titled 'ADD SECTION' in blue. Below the title, there are several input fields and dropdown menus. The 'Name' field is a text input. The 'From Station' and 'To Station' fields are dropdown menus, both currently showing 'SAI GON'. The 'Route' field is a dropdown menu showing 'SAI GON - HA NOI'. The 'Distance' and 'Duration' fields are text inputs. The 'Status' field is a checkbox. At the bottom of the form is an 'Add' button.

**Figure 20: ADD SECTION**

- Content: Add Section
- Input Data: Section Data
- Validation: Name at least 6 characters, no double "-" next to each other; Distance must be digits, Duration must be digits
- Output Data: Message Add Successful/Failed.

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Signature of Group Leader		
Date: Aug 2016		

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**Figure 21: CREATE STATION**

- Content: Create Station
- Input Data: Station Name
- Validation: Name at least.6 characters, no double "-" next to each other
- Output Data: Message Create Successful/Failed

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Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		

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**Figure 22: LIST OF STATIONS**

- Content: List of Stations
- Input Data: No
- Validation: No
- Output Data: List of Stations

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Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		

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**Figure 23: STATION UPDATE**

- Content: Station Update
- Input Data: Station Name
- Validation: Name at least 6 characters, no double "-" next to each other
- Output Data: Message Update Successful/Failed, Delete Successful/Failed

	Prepared by (student)	Approved by (Faculty)
Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		

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**Figure 24: ADD ROUTE FOR STATION**

- Content: Add Route for Station
- Input Data: Select Station for a Route
- Validation: Routes and Stations are connected or not
- Output Data: Add Successful/failed

	Prepared by (student)	Approved by (Faculty)
Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		

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**Figure 25: STATION – ROUTE UPDATE**

- Content: Update Stations for a route
- Input Data: Select Station, Select Routes
- Validation: Routes and Stations are connected or not
- Output Data: Add Successful/failed

	Prepared by (student)	Approved by (Faculty)
Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		

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**Figure 26: LIST STATIONS – ROUTES**

- Content: List of Station and Routes
- Input: No
- Validation: No
- Output: List of Station and Routes

	Prepared by (student)	Approved by (Faculty)
Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		



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**Figure 25: TICKET RESERVATION FORM**

- Content: Ticket Reservation Form
- Input Data: Passenger Name, Phone Number, Select Passenger Type for Discount, Select Date of Departure, Select Departure Station, Select Arrival Station, Select Train Number, Select Class
- Validation:
  - + Passenger Name: no digits allowed
  - + Phone Number: must be digits;
  - + Date of Departure: after now.
- Output Data: Ticket Fare. Booking Confirmation Form

	Prepared by (student)	Approved by (Faculty)
Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		

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**Figure 26: TICKET CONFIRMATION**

- Content: Ticket Information
- Input: No
- Validation: No
- Output: Ticket Information

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Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		

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The screenshot shows a software window titled 'CHECK TICKET'. Inside, there's a section titled 'TICKET INFORMATION'. At the top left of this section is a box with the text 'PLEASE INSERT PNR NUMBER :' followed by a text input field and a 'SEARCH' button. Below this is a larger form with various fields: 'Passenger Nam...' (text input), 'Phone Number :' (text input), 'Departure Station :' (dropdown menu showing 'Item 1'), 'Arrival Station :' (dropdown menu showing 'Item 1'), 'Train Number' (text input), 'Coach Number :' (text input), 'Class :' (dropdown menu showing 'Item 1'), 'Seat Number :' (dropdown menu showing 'Item 1'), 'Ticket Fare :' (text input), 'Booking Date :' (text input), and 'Status :' (checkbox). An 'UPDATE' button is located at the bottom center of the main form area.

**Figure 27: TICKET UPDATE**

- Content: Ticket Update
- Input Data: PNR Number. Input data need to be updated
- Validation:
  - + Passenger Name: no digits allowed
  - + Phone Number: must be digits;
  - + Date of Departure: after now.
- Output Data: Update successful/failed

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Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		

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**Figure 28: CHECK TICKET**

- Content: Customer check his ticket information
- Input: PNR Number
- Validation: No
- Output: Ticket Information

	Prepared by (student)	Approved by (Faculty)
Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		

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**Figure 29: SEARCH FARE**

- Content: Search Fare as Routes and Class
- Input Data: Select Departure Station, Select Arrival Station, Select Class
- Validation: No
- Output Data: Ticket Information

	Prepared by (student)	Approved by (Faculty)
Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		

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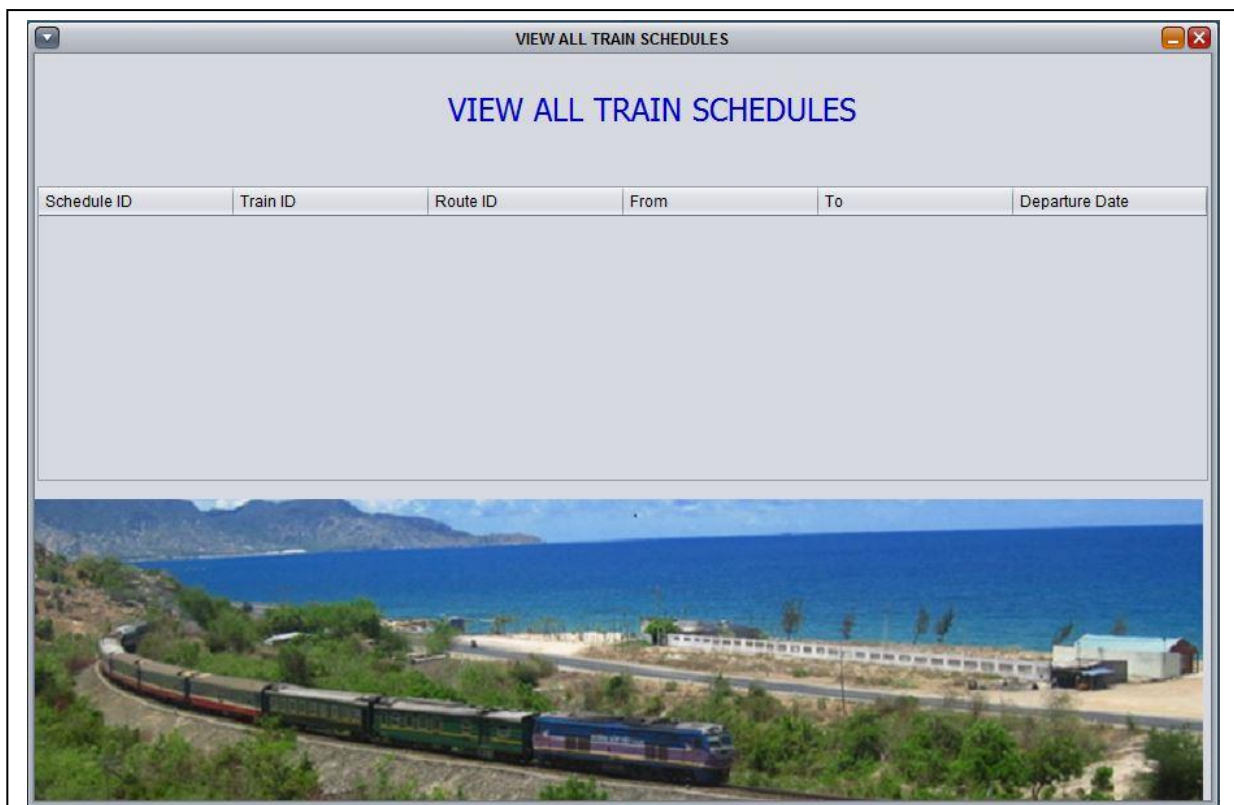


Figure 30 : VIEW TRAIN SCHEDULES

- Content: View Train Schedules
- Input Data: No
- Validation: No
- Output Data: Ticket Information

	Prepared by (student)	Approved by (Faculty)
Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		

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**Figure 28: SEND MESSAGE TO ADMIN**

- Content: Send Message to Admin
- Input Data: Subject, Content
- Validation: Not null
- Output: Message Dialog Send Success

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Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		

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### ***PART III: TIMETABLE***

<b>DUTY</b>	<b>START</b>	<b>END</b>	<b>MEMBER</b>	<b>STATUS</b>
Scenario Propose	19 <sup>th</sup> July 2016	24 <sup>th</sup> July 2016	Lan Phương Minh Tuấn	Completed
Datbase Design	22 <sup>nd</sup> July 2016	30 <sup>th</sup> Aug 2016	All members	Completed
Document Writing	1 <sup>st</sup> Aug 2016	04 Aug 2016	Lan Phương Tuấn Duy Đại Nhân	Completed
Form & Coding	1 <sup>st</sup> Aug 2016		Minh Tuấn	Processing

<b>DUTY</b>	<b>START</b>	<b>END</b>	<b>MEMBER</b>	<b>STATUS</b>
Scenario Propose	19 <sup>th</sup> July 2016	24 <sup>th</sup> July 2016	Lan Phương Minh Tuấn	Completed
Datbase Design	22 <sup>nd</sup> July 2016	30 <sup>th</sup> Aug 2016	All members	Completed
Document Writing	1 <sup>st</sup> Aug 2016	04 Aug 2016	Lan Phương Tuấn Duy Đại Nhân	Completed
Form & Coding	1 <sup>st</sup> Aug 2016		Minh Tuấn	Processing

	Prepared by (student)	Approved by (Faculty)
Project Group No. 1	Trần Thị Lan Phương	(Faculty Name & signature)
Signature of Group Leader		
Date: Aug 2016		