

# **Indian Railway Reservation Management System(IRRMS)**

## **Project Report**

Indian Institute of Information Technology, Allahabad

## **DBMS Project 2021**

### **Group-12**

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### **1. About**

Indian Railway reservation Management System is a Prototype for Railway reservation system. In this paper we have elaborated the steps to use this application with some screenshots or ease, ER-Diagrams associated with it and the last but not least the Database Design

## 2. Project Structure

There are 2 users in the system: User and Admin

Module Name	Applicable Roles	Description
Register	User	<b>User:</b> User can register himself on the website using email id and phone number with a security password.
Login	Admin User	<b>Admin:</b> An admin can login with his unique username and password. <b>User:</b> A User can login with his unique mobile number and password
Logout	Admin User	<b>Admin:</b> An admin can logout from the application. <b>User:</b> A sub-admin can also logout from the application as admin.
Enquiry and Ticket Booking	User	<b>User:</b> A user can login and enquire for trains available on the entered date and starting and destination point, and then a list of it is displayed. User can selected then train and meter details for booking tickets!
Ticket History and Cancellation	User	<b>User:</b> A user can see the tickets booked by him, and can cancel them, by entering the PNR of Reservation
Show and Manage all Trains	Admin	<b>Admin:</b> Admin can see call trains and can add a new train from a given list of stations.
Show and Manage all stations	Admin	<b>Admin:</b> Admin can see call stations and can add a new station and can also edit it.
Show and Manage all Users in applications	Admin	<b>Admin:</b> Admin can see, edit and delete all the users in system
Enter New Trains	Admin	<b>Admin:</b> Admin can add a new train from the list of stations

Enter Train schedule	Admin	<b>Admin:</b> Admin can schedule a new train from a particular time, starting and ending point, number of seats for AC1, AC2, AC3, SL, EC, etc
View all booked tickets	Admin	<b>Admin:</b> Admin can view all the tickets booked
View all cancelled tickets	Admin	<b>Admin:</b> Admin can see all the tickets cancelled

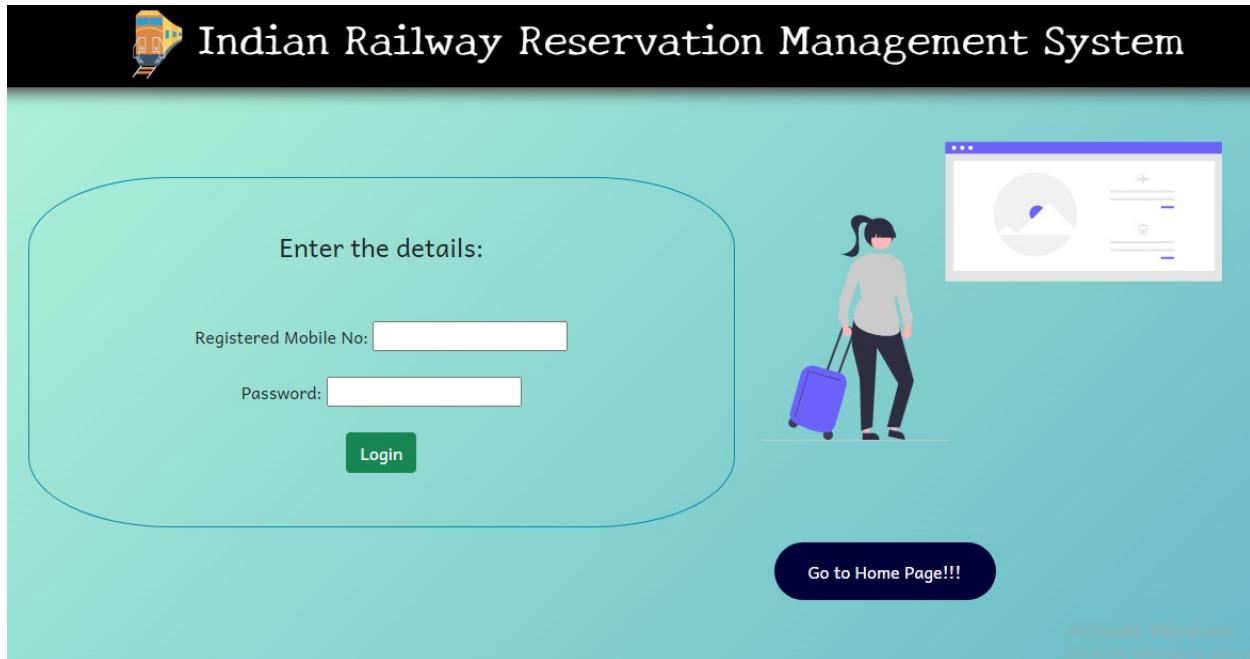
### 3. Steps to run

1. Download the source code file of this project and also download and install Xampp server.
2. Put the source code folder 'Railway\_Reservation\_Management\_System' in the htdocs folder in xampp in C drive, or wherever it is installed.
3. Open Xampp Control Panel and ON the Apache and MySQL Server.
4. Now open your browser and type in '[http://localhost/Railway\\_Reservation\\_Management\\_System/railway](http://localhost/Railway_Reservation_Management_System/railway)' and that's all! The Application will be opened!!

### 4. Use cases

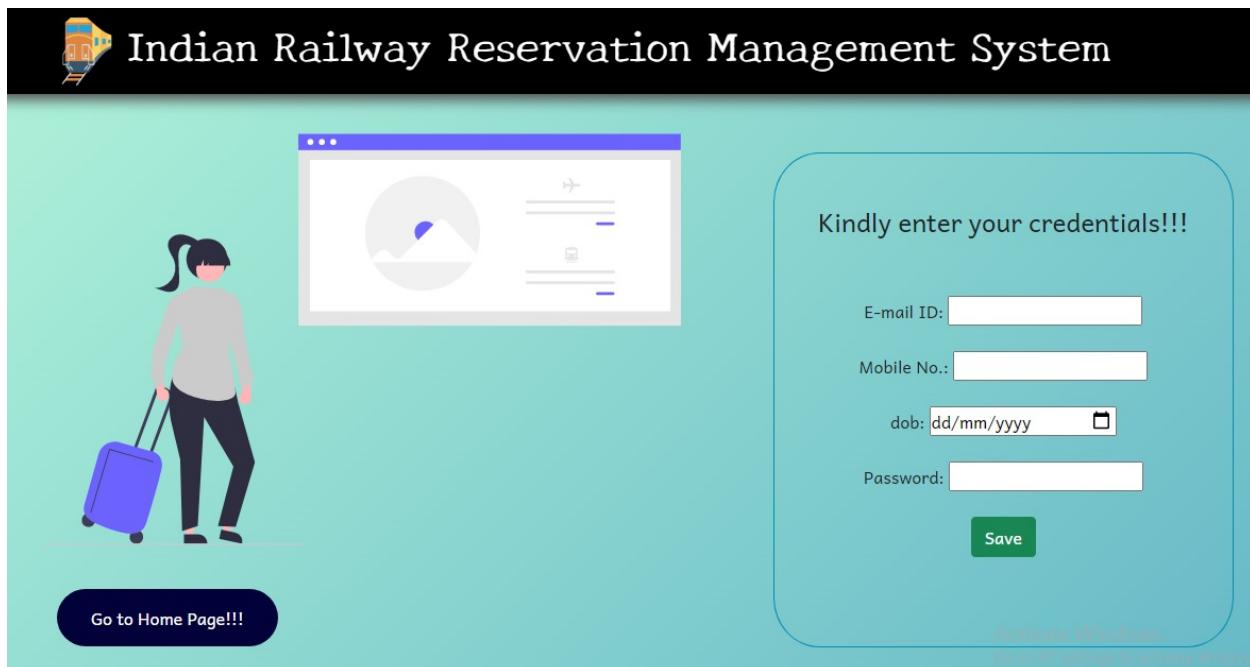
#### Use Case1- User Login:

This feature is available for both Admins and users. This is the initial login page to check if the user can log in or not. After the user has entered its login credentials, it must successfully log in the user to the corresponding page. The user can sign up if not already registered. If credentials are correct then a user would be redirected to the home page. The image below shows that the test case 1 is passed.



### Use Case2-Register:

This feature is available for only users after Admin logged in(as admin is already registered to the system so no need to register for admin). After adding the details for registration a new user will be added and now this new user can login to the respective home page if credentials are correct .The image below shows that the test case 2 is passed.



### Use Case3- Train Enquiry:

This feature is available to users after logging in. In this page, whatever the user enters details of the train like starting point, destination point and day of journey, that train will be shown. And if not, then we can proceed with booking of same train

Indian Railway Reservation Management System

Starting Point:

Destination Point:

Date of Journey:  dd/mm/yyyy

Submit

Go to Home Page!!!

If you wish to proceed with booking fill in the following details:

Registered Mobile No:

Password:

Enter Train No:

Enter Class:

No. of Seats:

Proceed with Booking

[More Enquiry](#)

Go to Home Page!!!

## Use-Case4-Ticket Booking:

This feature is available for users after logging in. Through this page, users can enter details like the starting point, destination point, number of seats to be booked, etc. After entering all correct details, the ticket will be booked successfully.

### Indian Railway Reservation Management System

Train_no	Train_name	Starting_point	Starting_time	Destination_point	Destination_time	Day_of_arrival	Distance	Date_Of_Journey
17	Chandigarh Shatabdi	Delhi	00:00:14	Chandigarh	20:30:00	Day 1	1200	2021-05-18

Starting Point	Destination Point	AC1 seats	AC1 Fare	AC2 seats	AC2 Fare	Air
Delhi	Jaipur	<input type="text" value="0"/>				
Jaipur	Chandigarh	<input type="text" value="0"/>				

[Submit](#)

[Go Back to Admin Menu!!!](#)

Activate Windows  
Go to My Settings to activate Windows

### Indian Railway Reservation Management System

PNR	Id	Train_no	Date_Of_Journey	Fare	Train_Class	Seats	Status
51	4	12	2015-05-07	3300	AC1	2	BOOKED
59	10	12	2015-05-17	2200	EC	2	BOOKED

[Go Back to Admin Menu!!!](#)

## Use-Case5-Ticket Cancellation:

In this, the user needs to enter PNR number of booked ticket and ticket will be cancelled successfully.

The screenshot shows a table of a booking record:

PNR	Train_no	Date_Of_Journey	Total_Fare	Train_Class	Seats_Reserved	Status
61	16	2021-05-07	0	AC2	1	CANCELLED

Below the table, there is a text input field labeled "Enter PNR for Cancellation:" followed by a red "Cancel" button. At the bottom left, there is a link to "Home Page".

## Use Case6-Show all passenger details.

This feature is available for admins, where he can view all registered passenger details and their bookings.

The screenshot shows a table of registered passenger details:

ID	Email_Id	Password	Mobile_no	Date_Of_Birth	Edit	Delete
4	garvitjain@gmail.com	garvit	9312201852	1994-01-01	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
5	deepakgoel@hotmail.com	deepak	9312201853	1994-02-22	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
6	akhilkumar@yahoo.co.in	akhil	9872231234	1994-03-04	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
7	ayushjain@outlook.com	ayush	9810150525	1995-01-03	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
8	aakashbharadwaj@yahoo.com	aakash	9013452635	1993-12-30	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
10	abhinavsingh@gmail.com	abhinav	9876675567	1991-01-01	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
12	amanmalik@hotmail.com	aman	9878876654	1997-09-08	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
19	dhruvgosian@gmail.com	dhruv	9807890453	1965-04-01	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
20	chiragbansal@nsitonline.com	chirag	9123456789	1960-06-02	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
21	xyz@gmail.com	123456	1234567890	1996-01-29	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
22	yz@gmail.com	123	9632587410	1996-02-15	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
23	abc@gmail.com	123	1478523690	1998-03-18	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
25	yuk@gmail.com	123456	123456789	1999-06-09	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>

**Use Case7-Show all trains and their schedule :**

This feature allows the admin to view all trains and their seat plan. He can also change or reschedule the particular train.

Train_no	Train_name	Starting_Point	Arrival_Time	Destination_Point	Departure_Time	Day	Distance	<a href="#">Schedule</a>
6	Ashram Express	Jaipur	10:00:00	Lucknow	21:30:00	Day 1	700	<a href="#">Schedule</a>
12	Shatabdi Express	Chandigarh	01:00:12	Delhi	16:30:00	Day 1	600	<a href="#">Schedule</a>
13	Harijan Express	Jammu Kashmir	22:00:00	Madhya Pradesh	13:00:00	Day2	3600	<a href="#">Schedule</a>
14	Jammu Mail Express	Jammu Kashmir	01:00:12	Madras	22:00:00	Day 1	2500	<a href="#">Schedule</a>
15	Delhi Jaipur Double Decker	Delhi	16:00:00	Jaipur	22:45:00	Day 1	800	<a href="#">Schedule</a>
16	Jaipur Delhi Double Decker	Jaipur	03:30:00	Delhi	09:30:00	Day 1	800	<a href="#">Schedule</a>

Indian Railway Reservation Management System							
Train_no	Train_name	Starting_Point	Arrival_Time	Destination_Point	Departure_Time	Day	Distance
6	Ashram Express	Jaipur	10:00:00	Lucknow	21:30:00	Day 1	700
Train Route Details							
Id	Starting_Point	Arrival_Time	Destination_Point	Departure_Time	Distance	Seat Plan	
1	Jaipur	03:30:00	Allahbad	08:00:00	200	Seat Plan	
2	Allahbad	08:15:00	Lucknow	15:15:00	500	Seat Plan	

## Use Case8-Enter new train:

This feature allows the admin to add new train to the list with its all the details as shown in the picture below.

The screenshot shows the 'Indian Railway Reservation Management System' (RRMS) interface. At the top, there is a logo of a train and the text 'Indian Railway Reservation Management System'. Below this, a message says 'Enter a new Train Details!'. There are seven input fields arranged vertically: 'Train Name' (empty), 'Starting Point' (Allahbad), 'Starting Time' (empty), 'Destination Point' (Allahbad), 'Destination Time' (empty), 'Distance' (empty), and 'No Of Intermediate stations' (empty). Below these fields is a 'Day of Arrival' input field (empty). At the bottom left is a green button labeled 'Enter Train Details'. At the bottom right, there is a watermark for 'Activate Windows' and 'Go Back to Admin Menu!!!'.

## Use Case9-Enter new train schedule:

This feature is used by admin where he can enter new train and its schedule.

The screenshot shows the 'Indian Railway Reservation Management System' (RRMS) interface. At the top, there is a logo of a train and the text 'Indian Railway Reservation Management System'. Below this, there are two input fields: 'Train' (containing a dropdown menu with options like 'Ashram Express starting at Jaipur', 'Shatabdi Express starting at Chandigarh', etc.) and 'Date Of Journey' (a date picker input field). On the left side, there is a sidebar with a tree view showing various train routes and stations. At the bottom right, there is a watermark for 'Activate Windows' and 'RRMS'.

## Use Case10-View all booked tickets:

In this page, admin and view all the booked tickets of particular trains with a pnr number of passengers.

The screenshot shows a table of booked tickets with the following data:

PNR	Id	Train_no	Date_Of_Journey	Fare	Train_Class	Seats	Status
51	4	12	2015-05-07	3300	AC1	2	BOOKED
59	10	12	2015-05-17	2200	EC	2	BOOKED

[Go Back to Admin Menu!!!](#)

IRRMS Providing Safe and Secure journey to everyone!

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IRRMS

A is a wholly owned subsidiary of Indian Railways that provides ticketing, catering, and tourism services to the Indian Railways.

[f](#) [t](#) [i](#)

## Use Case11- View all cancelled tickets:

In this page, admin and view all the cancelled tickets of particular trains with a pnr number of passengers.

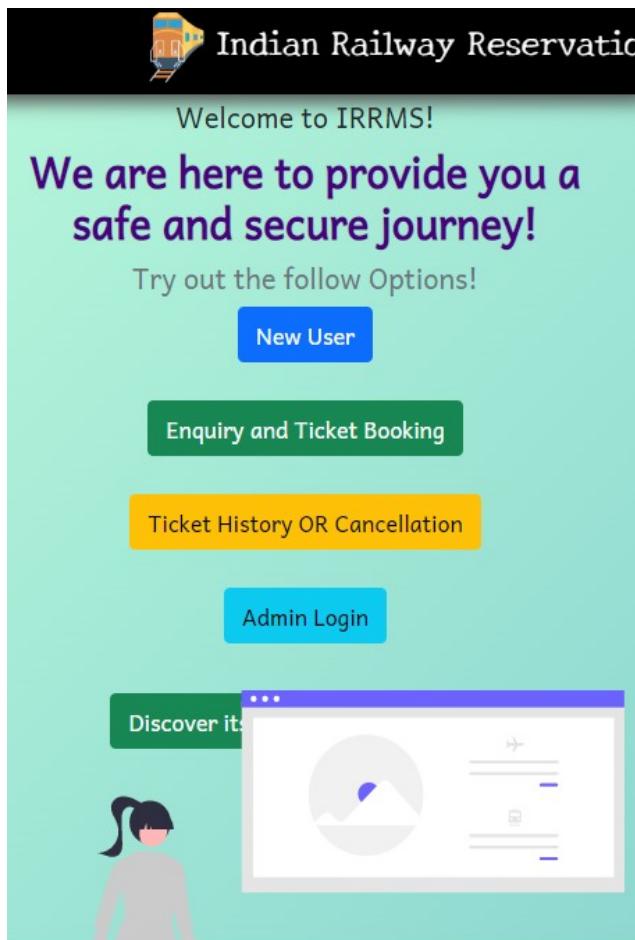
The screenshot shows a table of cancelled tickets with the following data:

PNR	Id	Train_no	Date_Of_Journey	Fare	Train_Class	Seats	Status
57	5	12	2015-05-07	2200	AC1	1	CANCELLED
58	6	20	2015-05-09	11200	AC2	4	CANCELLED
61	21	16	2021-05-07	0	AC2	1	CANCELLED
62	22	17	2021-05-10	0	AC3	2	CANCELLED

[Go Back to Admin Menu!!!](#)

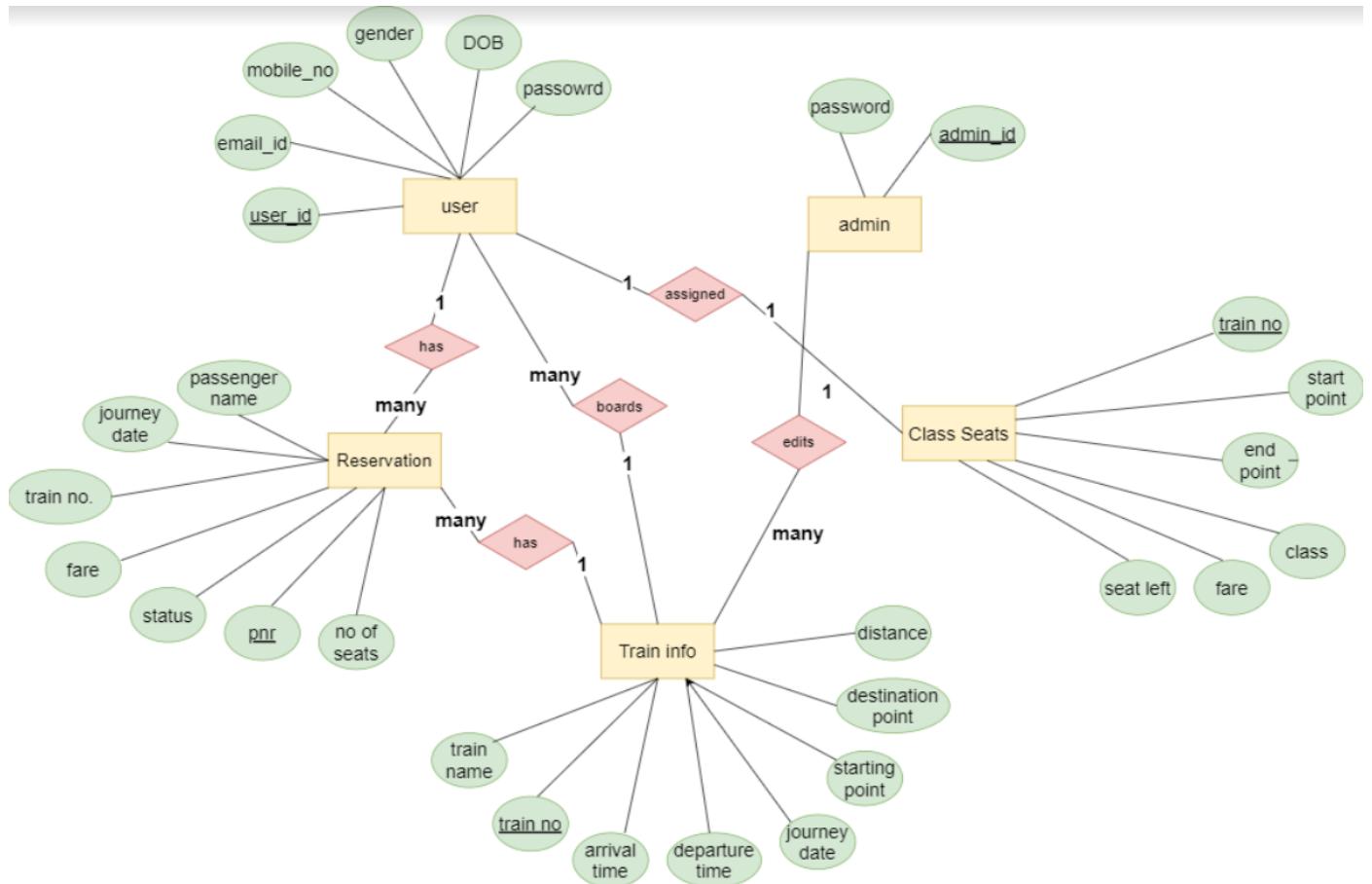
## **Mobile View**

For the ease to use in mobile, we have ensured that the website is mobile friendly too. This can be improved by developing an App for the same!



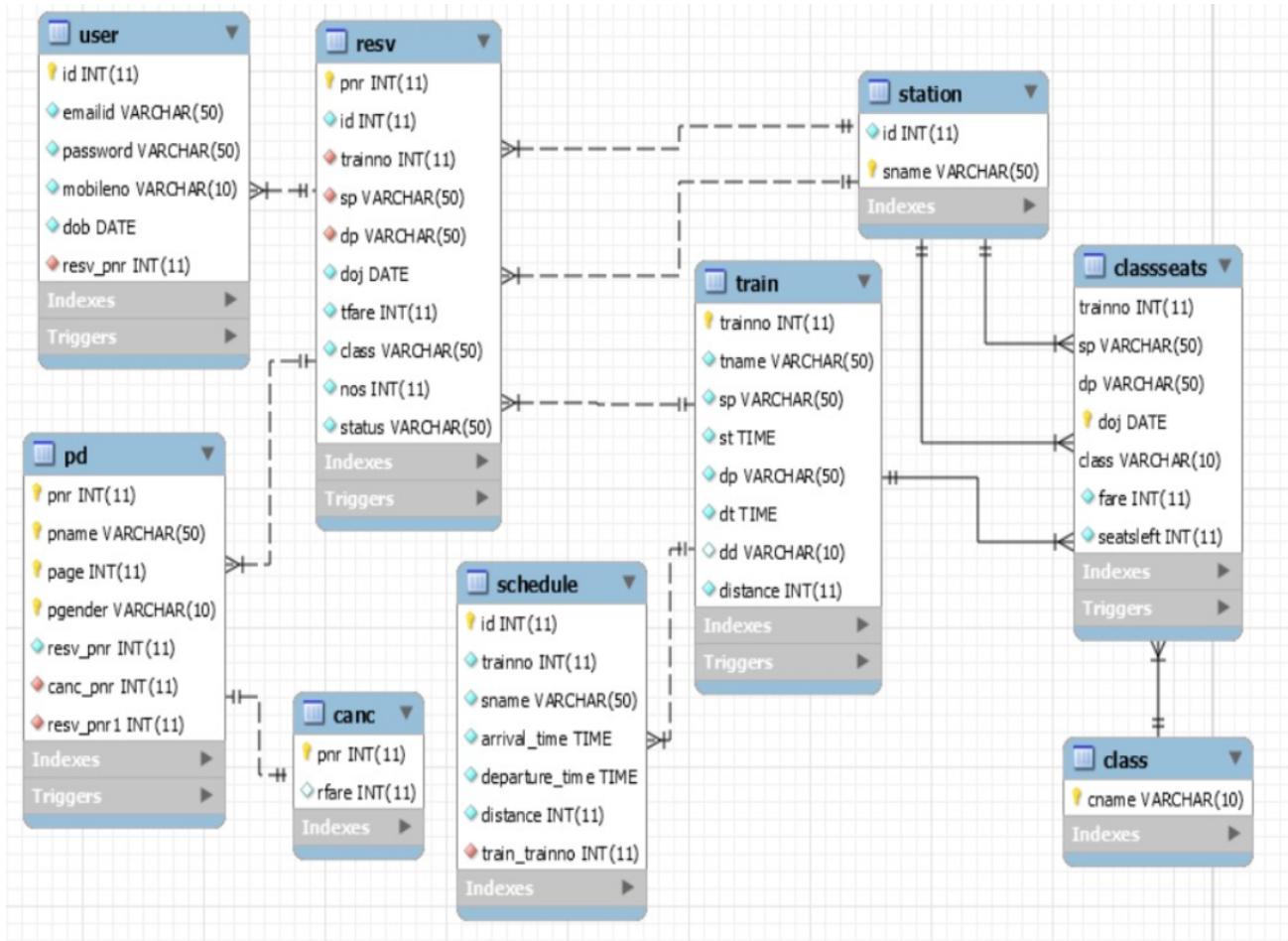
## 4. ER Diagram

Below given is the ER Diagram with user, admin, Reservation, Train info and class Seats as the entities and user\_id, admin\_id, pnr, train no. and train no. as their primary key respectively.



## 5. Database Design

Below given is the structure of the database made in our system. There are 9 tables with titles - user, resv, station, pd, canc, schedule, train, classeats, class.



# Normalization Techniques:

## 1. Stations

Primary key:{sname}

*Candidate key: {id,sname}* - there is one one mapping of two different stations for a particular train. All stations are uniquely identified with a 'id'

## 2. Train

Primary key: {trainno} - in the column of trainno, each row is uniquely identified and a particular data is not repeated and not transitively mapped, ensuring in 3NF. For its updation too, we need to only update one row in this table.

*Candidate key: {trainno, tname}*

## 3. Schedule

Primary key: {id} - train schedules are given a unique schedule number with a mapping of foriegn key, trainno. Schedule contains all the details of the scheduled train.

## 4. Class

This table contains all the available classes in the train like AC1, AC2, AC3, CC, EC, SL.

Primary Key : {cname} - every class name is unique.

Candidate Key: {cname}

## 5. Classeats

This class contains the starting point, destination point, all the class of seats available and number of seats in each class, which is a different value for each one. The vales like {sp(starting point), dp(destination point), doj(date of journey), class, fare, seatsleft}

Primary key: {trainno}

*Candidate keys: {traino, doj}*

## 6. resv(reservation)

This class contains the pnr, id, trainno(Train no.), sp(starting point), dp(destination point), doj(date of journey), tfare(train fare), class(AC,SL,etc.), nos(no. Of seats) , status(BOOKED / CANCELLED) as attributes.

*Primary key:{pnr}* - Every passenger has unique pnr no. corresponding to his/her reservations.

*Candidate keys:{pnr, id, doj}*

## 7. pd(passenger details)

*Primary key: {pnr}* - Every passenger has unique pnr no. corresponding to his/her reservations. Here we have mapped a particular reservation via pnr.no. to its passengers details, which is a one to one mapping of rows over two tables.

*Candidate keys:{pnr}*

## 8. User:

This table contains information about user which includes user id, emailid, password, mobileno and dob.

*Primary key: {id}* - Every user is given an unique 'id' after registering.

*Candidate key: {emailid, mobileno} -*

## 9. Canc (Cancellation)

This table contains information about cancelled tickets with the pnr number of it.

*Primary key:{pnr}* - this table contains all the cancelled tickets mapped with its unique pnr.

In all of the above tables, all the non-prime transitively dependent attributes have been removed ensuring that these are placed in a new relation and there is no duplication of data. Thus the database is in third normal form (3NF). Before application of any event for change in data via triggers various checks and updates are done, which can be

verified in database SQL file in database folder. This ensure no redundant data stays back after updation, insertion and deletion in all tables.

## 6. Requirements

### Hardware Requirements

Should run on a computer or mobile device. Requires minimum 2gb ram, browser like Google Chrome, FireFox, Safari,etc and good internet connectivity for smooth functionality of the application/website.

### Environment Requirements

The Operating Environment of the occupancy application is user friendly. Works on all the android and computer devices. In order for the user to obtain the application, it will be available by website and the user must have access to an internet connection. client/server system

- Operating system: Any os.
- Database: MySql
- Platform: Xampp, Browser to view and good internet connection would allow the application to run smoothly.

## 7. Tech stack

Frontend: HTML, CSS, Bootstrap, Bootbox.

Backend: PHP, MySQL.