



INSTITUTE FOR ADVANCED COMPUTING AND SOFTWARE DEVELOPMENT AKURDI, PUNE

Documentation On

"ONLINE RAILWAY RESERVATION" PG-DAC SEP 2021

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1. OBJECTIVE

Our project introduces railway reservation system with an objective to make the reservation system more efficient, easier and fast. This project explores how computer technology can be used to solve the problem of user.

The main objectives provided by this software are as follows:

- We can enquire about availability of trains
- We can reserve and cancel their seats
- We can modify the information related to
- a) Trains
 - Train Schedule
 - Train Name

b) Ticket Fare

This project is dedicated to model existing railway reservation systems that aim at development of Railway Reservation System that facilitates the railway customer to manage their reservations and the railway administrator to modify the backend database in a user-friendly manner.

2. INTRODUCTION

In this emerging world of computers, almost all-manual system has switched to automated and computerized system. Therefore, we are developing the software for "Railway Reservation System" to model the present system and to remove the drawbacks of the present system. This project explores how computer technology can be used to solve the problem of user.

This being a big step in terms of improvement in the railway system it is widely accepted across the country. Rather than designing manually, we have made use of computer. Use of computer has solved many problems, which are faced during manual calculation. Once data are fed, it can perform accurate functions. Therefore, to reduce the complexity and efficiency a versatile and an outsourcing railway reservation system has been developed. This project introduces railway reservation system. It explains how reservation is being done in Indian Railways. The systematic procedure is explained. This project is developed in java language. All most all the header files have been used in this project. Proper comments have been given at desired locations to make the project user friendly. Various functions and structures are used to make a complete use of this language.

The customers are required to register on the server for getting access to the database and query result retrieval. Upon registration, each user has an account that is essentially the 'view level' for the customer. The account contains comprehensive information of the user entered during registration and permits the customer to get access to his/her past reservations, enquire about travel fare and availability of seats, make fresh reservations, and update his account details. Each passenger is allotted a unique ticket no. through which one can access his/her account.

The railway administrator is another member involved in the transactions. The administrator is required to login using a master password, once authenticated as an administrator, one has access and right of modification to all the information stored in the database. This includes the account information of the customers, attributes and statistics of stations, description of the train stoppages and physical description of coaches, all the reservations that have been made. The railway administrator has the right to modify any information stored at the server database.

This project is dedicated to model the existing railway reservation system that aims at development of Railway Reservation System that facilitates the railway customer to manage their reservations and the railway administrator to modify the backend database in a user-friendly manner. The customer and the railway administrator are two parties that interact with the database, who have different 'view level schemas' to the database information. The software provides a comprehensive set of features to enhance the operational limits.

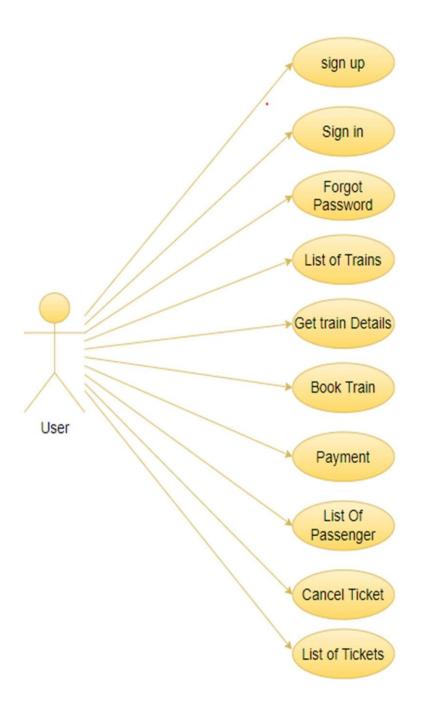
Now one can easily plan the journey comfortably as the process is efficient and fast with being easy to access. The efficiency of the railway will increase result of computerization.

3. Purpose of project:

The Indian Railways (IR) carries about 5.5 lakhs passengers in reserved accommodation every day. The Computerized Passenger Reservation System (PRS) facilitates the booking and cancellation of tickets from any of the 4000 terminals (i.e. PRS booking window all over the countries). These tickets can be booked or cancelled for journeys commencing in any part of India and ending in any other part, with travel time as long as 72hours and distance up to several thousand kilometers. In the given project we will be developing a website which will help users to find train details, book and cancel tickets and the exact rates of their tickets to the desired destination. With the help of online booking people can book their tickets online through internet, sitting in their home by a single click of mouse. Using their credit cards people can easily get their tickets done within minutes.

4. REQUIREMENTS

4.1 FUNCTIONAL REQUIREMENTS



4.1.1 User Account

The passenger, who will henceforth be called the 'user', will be presented with 3 choices by the reservation system, as the first step in the interaction between them. A user can choose one of these and his choice would be governed by whether he is a guest or a registered user and whether he wants to check the availability of tickets or also buy them. The terms 'registered user' and 'guest' are described below.

A user who has traveled by the railway earlier would have been given a user id and a password. This 'personal information' would be henceforth referred to as 'profile'. Such a user with a profile in DB-user shall be called a 'registered user'. A registered user will be able to check the availability of tickets as well as buy a ticket by logging into the system.

A new user, on the other hand, would either have to

- a) register himself with the system by providing personal information or
- b) log into the system as a user.

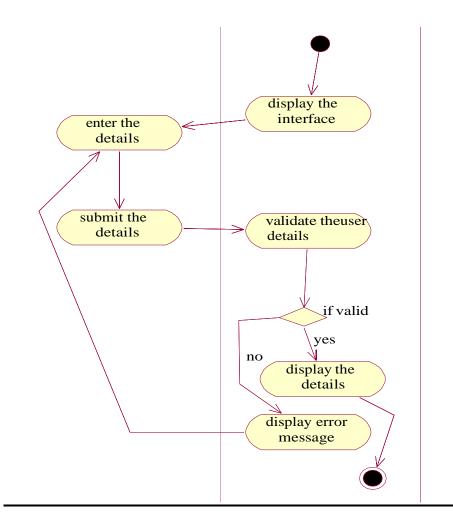
In case of 'a', the new user becomes a registered user.

A registered user can also act as a guest if he only wants to check the availability of tickets.

'Availability of tickets' always refers to viewing the train schedule for given days, the price of tickets. The system shall present the user with an option to exit from the system at any time during the following processes.

4.1.2 Registration and creation of user profile

The system shall require a user to register, in order to carry out any transactions. It will ask the user for the following information at the least – a user id, a password, first name, last name, address, phone number, email address, sex, age. The system will automatically create a 'role' field and initialize it to 'user' in the user's profile.



4.1.3 Search Train

Here we provided Search facility for any user to search train schedule with login into account. This will provide user an option for searching train and book for their journey. After logging in a user, the system shall request him to enter the following details – origin city and destination city. "City' is a generic term and refers to a city or town as the case may be.

After the origin and destination cities are ascertained, the system shall now access the train schedule database, referred to as 'train_schedule', and checks if there is a direct operational service between the two cities.

The system shall now ask the user to enter the following details - class departure date and add passengers. 'Class' refers to AC/NON-AC class. This choice shall be made by the user through a dropdown menu indicating all the possible combinations of choices. 'Departure date' refers to a single date, entered through text box.

Having taken all the above input from the user, the system checks for any false entries like the departure date & all. In case of incompatibility, the system will not display any train available.

The system queries the flights database 'train_schedule' to check which of the train on the schedule have seats available. The system displays the results in a suitable form .(a tabular form) with the following information depicted – for each trainId , departure time in origin city, arrival time in destination city, departure city, arrival city ,Ticket price and the number of seats available on that train.

There can be several trains of different types between two cities and from the Origin City. In case, the user has entered a range of dates, the system shall display all the trains for all those dates in the range. There will be a Book button in front of every row displayed n the table of flights searched.

The system will then ask for personal information of all passengers i.e. one registered user can book for multiple users. So all users will be added in the table.

The system shall now display the price of the ticket for the trip. This will be the sum of the prices for all the members of the travel party being represented by the user.

4.1.4 Making Reservations

After having taken the user through the step 2.2, Checking Availability, The system will now ask the user if he wishes to block/buy the ticket. If yes, and

- a) if the user has been a guest, he will have to first register and become a registered user and then log onto the system.
- b) If the user is already a registered user, and if he has logged on already, he can buy the ticket, but if he has been acting as a guest, he will have to log on.

Having ensured that the user is logged on validly according to 3.4.1, the system compares the departure date with the system date. If the departure date falls within 2 weeks of the

system date, the system informs the user that he has no option to block the ticket and asks him if he would like to buy it.

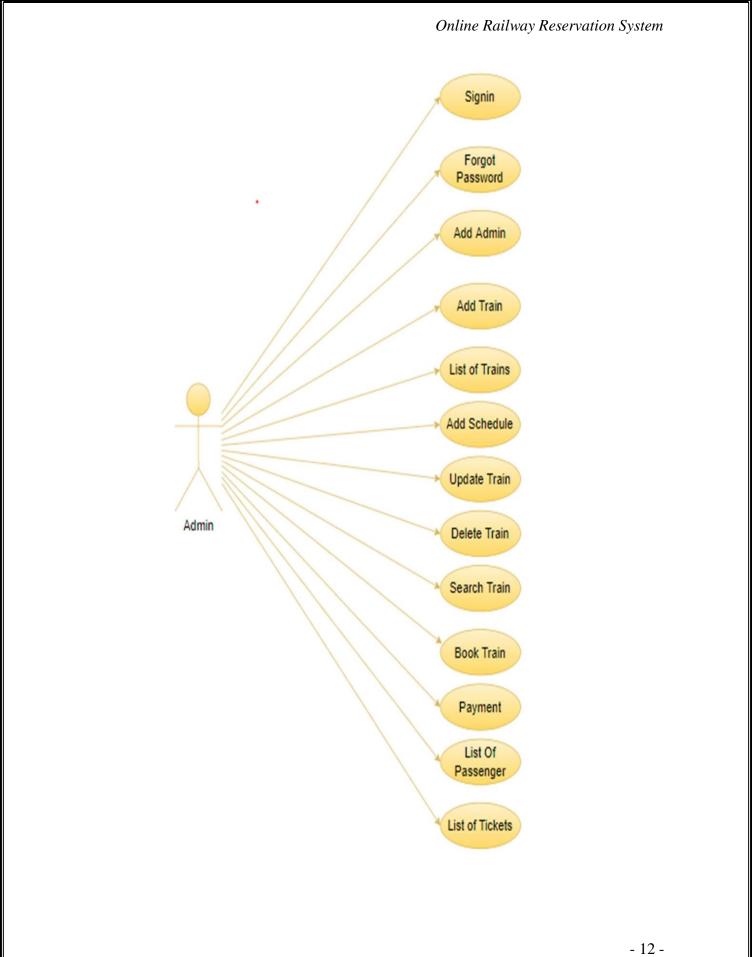
If the difference between the departure date and system date is more than 2 weeks, the system asks the user if he would like to buy the ticket. The system informs the user that he can block the ticket at no cost now. It also informs him that if he chooses to block the ticket, he should make a final decision before 2 weeks of the departure date. The system shall send an email to the user.

Having taken the input from the user in 3.4.2, the system shall now proceed to update the reservation database DB-reservation. It will decrement the number of available seats on the particular train for the particular class by the number of travelers being represented by the user.

In case the user buys the ticket, the system asks for entering his or her bank card information and then charges the price of the ticket to his debit card number.

4.1.5 View Booking History

The system shall allow a user to view all information about his previous bookings. It accesses Passenger table and retrieves the details of the trip and presents them to the user in a tabular format.



Admin should be able to login, add train information, add flight information, Delete train and see train details.

4.2 NON-FUNCTIONAL REQUIREMENTS

• Interface

Go to Appendix B for user interfaces

• Performance

Number of Concurrent Users:

ARS shall be able to handle at least 1000 transactions/inquiries per second

Booking of Tickets:

The system is susceptible to any temporary server failure since it uses the strong feature of Struts 2 and Hibernate. Hence the examination will be continued even if the sever gets disconnected in between the examination.

• Constraint

ARS shall be able to handle at least 1000 transactions/inquiries persecond

• Other Requirements:

Hardware Interfaces

The SPMS is expected to function on Intel PIII 900 MHz Processor equivalent or above, 128 MB RAM, 20 GB HDD.

Software Interfaces

The SPMS shall work on MS Windows operating systems family (MS Windows 98, MS Windows NT Workstation, MS Windows 2000, MS Windows XP). It configures to work with Oracle database. This System works on Apache Tomcat server. It uses browser IE 5.0 & above. It uses IIS 5.0 server.

5. DESIGN

5.1 Database Design

The following table structures depict the database design.

Table1: User

Field	Туре	Null	Key	Default	Extra
id first_name last_name age gender email password mobile role address	int varchar(100) varchar(100) int varchar(10) varchar(100) varchar(500) varchar(20) varchar(100) varchar(100)	NO YES	PRI	NULL NULL NULL NULL NULL NULL NULL NULL	auto_increment

Table2: Train

+ Field	Type	Null	Key	Default	Extra
id train_name start_city dest_city departure_time reach_time ac_seating_seat_count ac_sleeper_seat_count non_ac_seating_seat_count non_ac_sleeper_seat_count ac_seating_seat_price ac_sleeper_seat_price non_ac_seating_seat_price non_ac_sleeper_seat_price total_seat_count	int varchar(100) varchar(100) varchar(100) time time int int int int int int int int int	NO YES YES	PRI	NULL NULL NULL NULL NULL NULL NULL NULL	auto_increment

Table3: Passenger

Field	Туре	Null	Key	Default	Extra
id user_id train_id ticket_id first_name last_name age gender seat_class_name inner_type date_of_travelling	int int int int varchar(100) varchar(100) int varchar(100) varchar(100) varchar(100) date	NO YES	PRI	NULL NULL NULL NULL NULL NULL NULL NULL	auto_increment

Table4: Tarin Schedule

Field	Туре	Null	Key	Default	Extra
id train_id date_of_travelling seat_class_name seating_seat_count sleeper_seat_price sleeper_seat_price total_seat_count	int int date varchar(100) int int int int int	NO YES	PRI	NULL NULL NULL NULL NULL NULL NULL NULL	auto_increment

Table5: Ticket

Field	Type	Null	Key	Default	 Extra
id no_of_passanger start_city dest_city departure_time reach_time ticket_amount	int int varchar(100) varchar(100) time time int varchar(100)	NO YES YES YES YES YES YES	PRI	NULL NULL NULL NULL NULL NULL NULL NULL	auto_increment

6. CODING STANDARDS IMPLEMENTED

Naming and Capitalization

Below summarizes the naming recommendations for identifiers in Pascal casing is used mainly (i.e. capitalize first letter of each word) with camel casing (capitalize each word except for the first one) being used in certain circumstances.

Identifier	Case	Examples	Additional Notes				
Class	Pascal	Person, BankVault, SMSMessage, Dept	Class names should be based on "objects" or "real things" and should generally be nouns . No '_' signs allowed. Do not use type prefixes like 'C' for class.				
Method	Camel	getDetails, updateStore	Methods should use verbs or verb phrases.				
Parameter	Camel	personName, bankCode	Use descriptive parameter names. Parameter names should be descriptive enough that the name of the parameter and its type can be used to determine its meaning in most scenarios.				
Interface	Pascal with "I" prefix	Disposable	Do not use the '_' sign				
Property	Pascal	ForeColor, BackColor	Use a noun or noun phrase to name properties.				
Associated private member variable	_camelCase	_foreColor, _backColor	Use underscore camel casing for the private member variables				
Exception Class	"Exception"	Exception,					

Comments

- Comment each type, each non-public type member, and each region declaration.
- Use end-line comments only on variable declaration lines. End-line comments are comments that follow code on a single line.
- Separate comments from comment delimiters (apostrophe) or // with one space.
- Begin the comment text with an uppercase letter.
- End the comment with a period.
- Explain the code; do not repeat it.

7. TEST REPORT

GENERAL TESTING:

SR-			ACTUAL	
NO	TEST CASE	EXPECTED RESULT	RESULT	ERROR MESSAGE
		Directed to the user functionalities		
	User Login	page (book ticket, list of trains		"please enter valid email and
1	Page	,search train ,cancel ticket)	OK	password"
		Directed too page showing admin		
	Admin	functionalities (add train ,edit train		"Please enter valid email and
2	Login Page	, delete train ,add admin)	Ok	password again ".
	Change	Users or admin password will be		
3	password	reset	Ok	Nothing
	Quick search			
4	Train	Gives start and destination city	Ok	Nothing
	Available train			
5	and dates	Fill date to be travelled on	Ok	"No details available"
	Booking	Passenger details and date to be		
6	Ticket	travelled on	Ok	nothing
	Add passenger	First Name, Last name, age,		
	details for	gender, seat type, Ac or Non-Ac		"Please add atleast one
7	tickets	should be filled	Ok	passenger''
		Add payment details like card		
	Go to	number, cvv number, card holder		"enter details for respective
8	Payment page	name, Date of expiry	Ok	feilds"
	Add passenger			
	in passenger	passenger details inserted into		
9	table in DB	passenger table in DB	Ok	Nothing
	Add Ticket			
	details to	Ticket details inserted into ticket		
10	ticket table	table in DB	Ok	Nothing
		Mail in the mailbox of user with		
	Confirmation	details train name, start city,		
	mail for ticket	destination city, reach time,		
	booking send	boarding time, date of travelling,		
11	to user	total fare	Ok	Nothing
	Add new	New train details inserted into		"enter valid details for
12	Train to the	table train in DB.	Ok	respective fields"

Online Railway Reservation System

	train table			
		Display all available trains on UI		
13	view all trains	page	OK	Nothing
		Display all available trains on UI		
		page and select train to be		
		scheduled and added to		
14	Schedule train	train_schedule table in DB	Ok	Nothing
		Display available train details and		
		option to edit train details (train		
		name , departure time , arrival		"enter valid details for
15	Edit train	time, seats, seat type)	Ok	respective fields"
		Display available train details and		
		option to delete train. After		
		clicking on delete button train gets		
		deleted from train table and		
16	Delete train	disappear from UI	OK	Nothing
		Display all the details of		
	List of	passengers from passenger table of		
17	Passenger	DB	Ok	Nothing
	Add new	Admin details inserted into user		"enter valid details for
18	Admin	table of DB	Ok	respective fields"

8. PROJECT MANAGEMENT RELATED STATISTICS

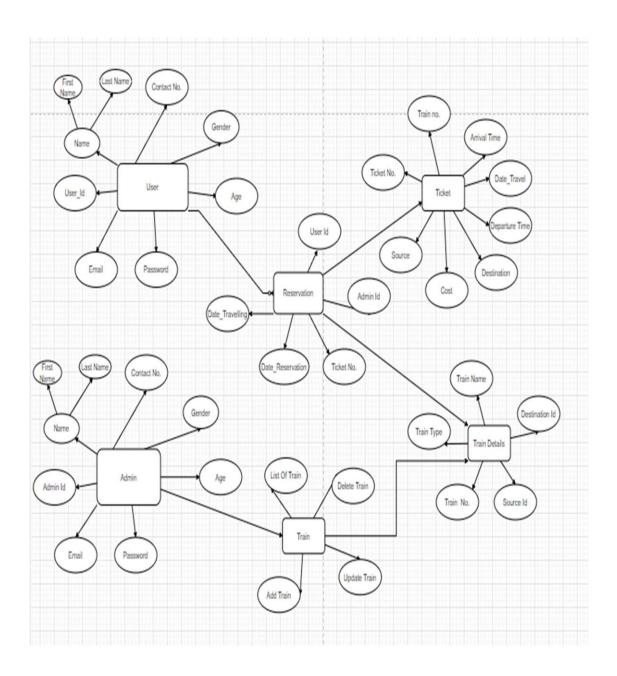
DATE	WORK PERFORMED	SLC Phase	Additional Notes
Dec 27,2021	Project Allotment and User Requirements Gathering	Feasibility Study	We had meet with our project mentor
Dec 29,2021	Initial SRS Document Validation And Team Structure Decided	Requirement Analysis (Elicitation)	The initial SRS was presented to the client to understand his requirements better
Jan 05,2022	Designing the use-cases, Class Diagram, Collaboration Diagram, E-R Diagram and User Interfaces	Requirement Analysis & Design Phase	Database Design completed
Feb 27,2022	Business Logic Component design Started	Design Phase	
Mar 02,2022	Coding Phase Started	Coding Phase	70% of Class Library implemented.
Mar 15,2022	Implementation of Web Application and Window Application Started	Coding Phase	Class Library Development going on.
Mar 26, 2022	Implementation of Web Application and Window Application Continued	Coding Phase and Unit Testing	Class Library Modified as per the need.
Mar 30, 2022	Implementation of Web Application and Window Application Continued	Coding Phase and Unit Testing	

Online Railway Reservation System

Apr 03,2022	After Ensuring Proper Functioning the Required Validations were Implemented		Module Integration was done by the Project Manager
Apr 04 ,2022	The Project was Tested by the respective Team Leaders and the Project Mentor	Testing Phase (Module Testing)	
Apr 08, 2022	The Errors Found were Removed	Debugging	The Project was complete for submission
Apr 14 ,2022	Final Submission of Project		

9. Appendix A

Entity Relationship Diagram

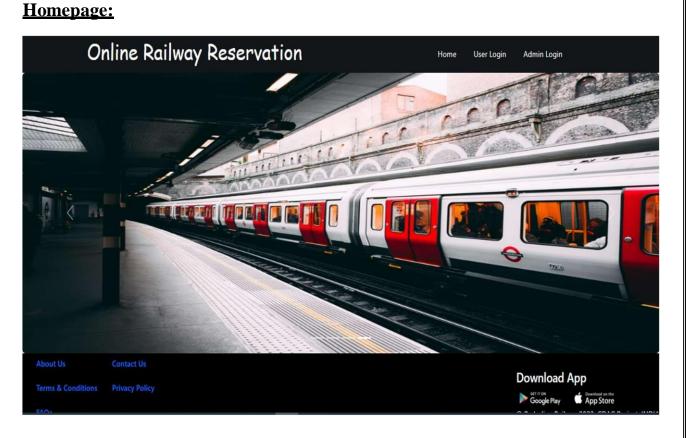


Class Diagram

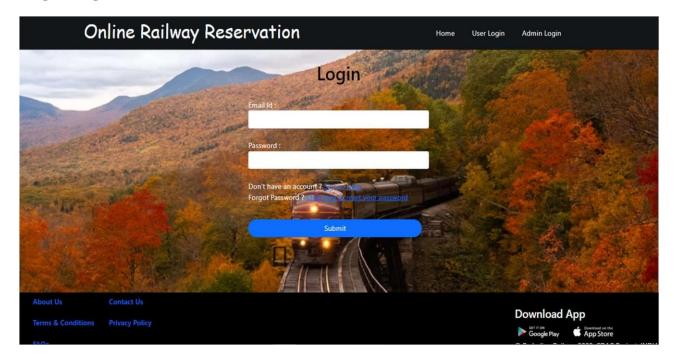


10.

Appendix B



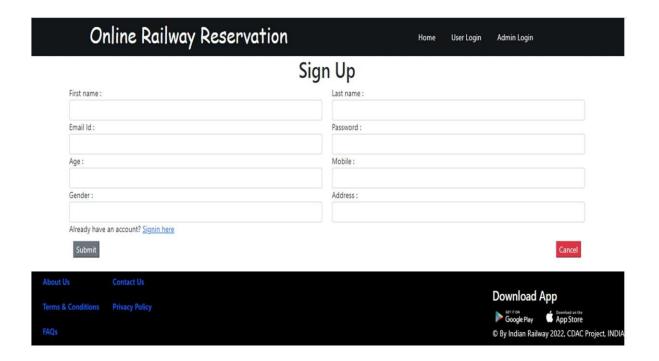
Login Page:



Forgot Password:



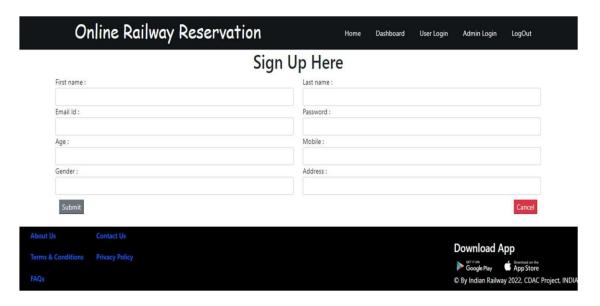
User Registration:



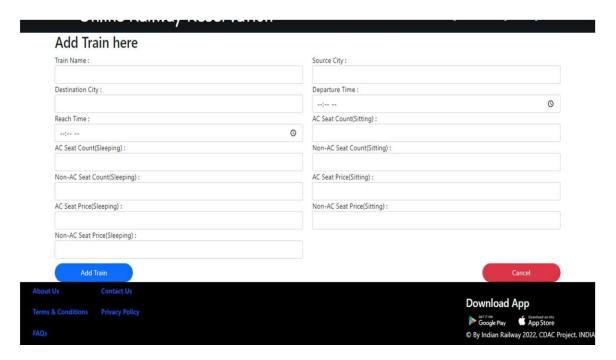
Admin Functionality:



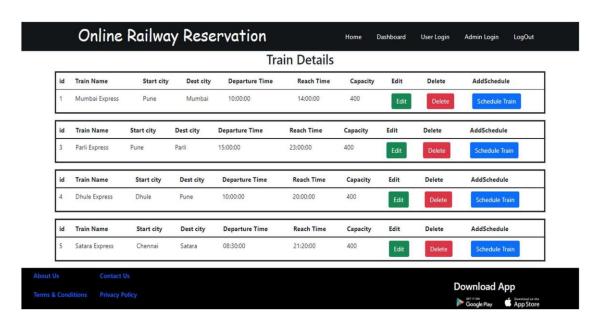
Add Admin



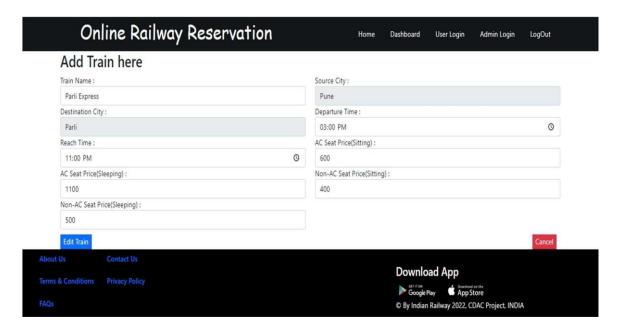
Add Train



Train Details:



Update Train:

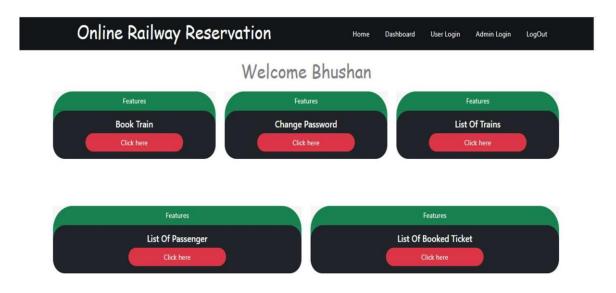


Passenger List:

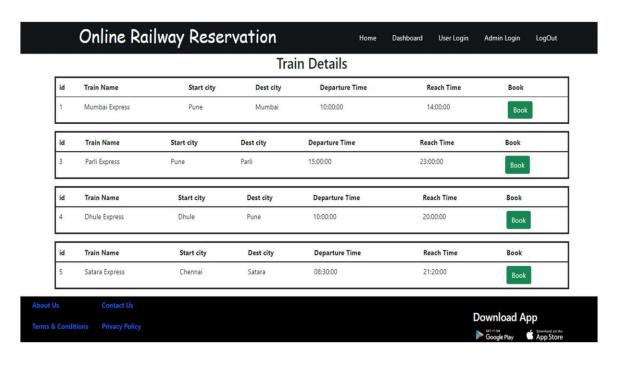




User Functionality

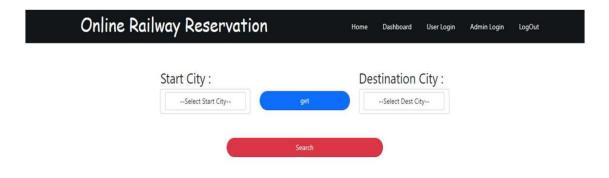


List of Trains



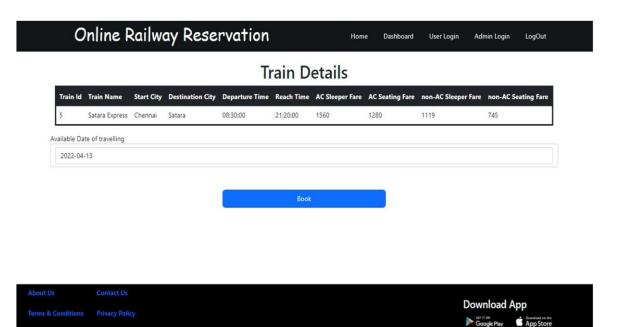
Online Railway Reservation System

Search Train

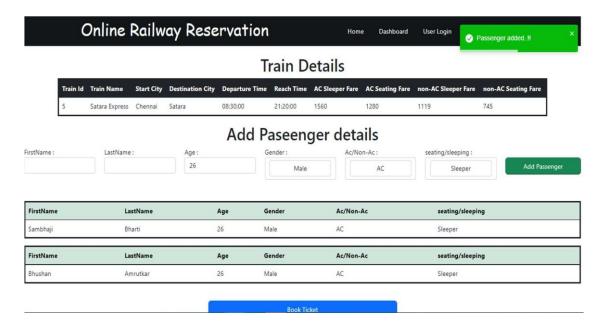




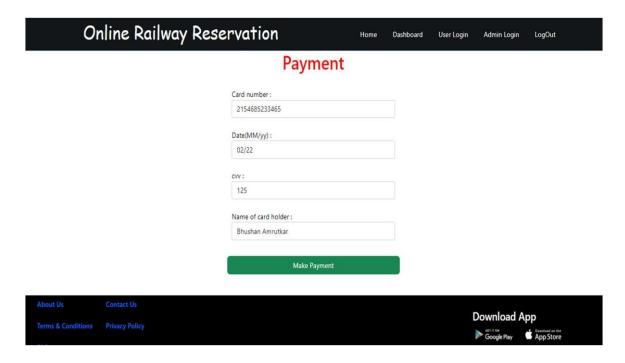
Train Details



Add Passenger



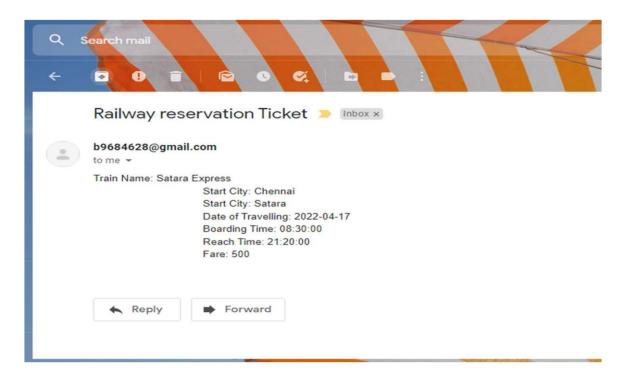
Payment Page



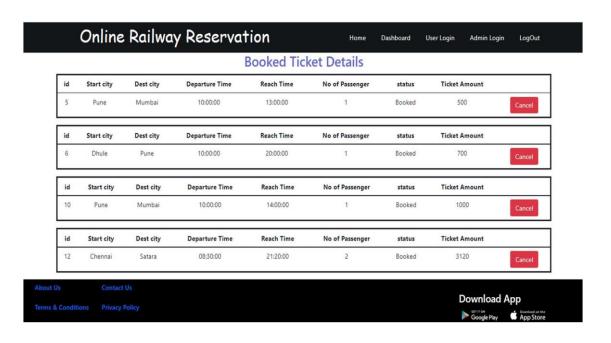
Ticket Details



Mail To User



Booked Ticket Details



Passenger List

Online Railway Reservation Dashboard Admin Login **Passenger List** First Name Last Name Gender Train Name Start City Dest City Seat Class Seat Type Date of Travelling Ticket Id Mumbai Express shubham patidar 26 Male Pune Mumbai AC Seating 2022-04-12 5 Dhule Express 2022-04-11 6 10 patil AC Hitesh Male Mumbai Express Pune Mumbai Sleeper 2022-04-16 Sambhaji Male AC 2022-04-13 12 Bharti Satara Express Chennai Satara Sleeper Bhushan Amrutkar 26 Male Satara Express Chennai AC Sleeper 2022-04-13 12



11. Scope:

The purpose of this source is to describe the railway reservation system which provides the train timing details, reservation, billing and cancellation on various types of reservation namely,

- Confirm Reservation for confirm Seat.
- Reservation against Cancellation.
- Online Reservation.
- Freight Revenue enhancement
- Passenger Revenue enhancement
- Improved & optimized service

12. REFERENCES:

https://www.google.com
https://www.irctc.co.in/
https://docs.oracle.com/en/java/javase/11/docs/api/
https://docs.spring.io/spring-data/jpa/docs/current/api/
https://sweetalert2.github.io/
https://unsplash.com/s/photos/train
https://reactjs.org/
https://getbootstrap.com/

https://www.npmjs.com/package/react-toastify