

**A**  
**PROJECT REPORT**  
**ON**  
**AIRLINE RESERVATION SYSTEM**  
Submitted in partial fulfillment for the award of  
**Post Graduate Diploma in Advance Computing**  
**(PG-DAC) from**  
**INSTITUTE OF EMERGING TECHNOLOGIES**  
**Authorized Training Centre**



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## CERTIFICATE

This is to certify that the project report entitled **AIRLINE RESERVATION SYSTEM** is a bonfire work carried out by **AJAY BARKALE, PURSHOTTAM KAHADE, NIKHIL JADHAV, NIKHIL ANAPT** and submitted in partial fulfillment of the requirement for the C-DAC ACTS, DAC course in Institute of Emerging Technology in the batch of March 2023.

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External Examiner

## ACKNOWLEDGEMENT

This project **Airline Reservation System** was a great learning experience for us and we are submitting this work to the Advanced Computing Training School (CDAC).

..

We are very glad to mention **Mr. Saleel Bagde sir** for her valuable guidance in working on this project. Her guidance and support helped us to overcome various obstacles and intricacies during the course of project work.

Our most heartfelt thanks goes to **Mr. Sangram Patil (Director, IET)** who gave all the required support and kind coordination to provide all the necessities like required hardware, internet facility, and extra lab hours to complete the project and throughout the course up to the last day here in C-DAC ACTS, Pune.

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## **Abstract**

The **Airline Reservation System** is an essential component of the aviation industry, enabling efficient management of flight bookings, passenger information, and seat allocation. This project presents the design and development of an advanced Airline Reservation System that aims to streamline the booking process, enhance passenger experience, and improve operational efficiency for airlines.

The proposed system encompasses a user-friendly web-based interface for passengers to search, select, and book flights according to their preferences. It incorporates a comprehensive database that stores information about flights, airports, available seats, and passenger details.

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## **1. INTRODUCTION TO PROJECT**

The web-based “Airline Reservation System” project is an attempt to stimulate the basic concepts of airline reservation systems. The system enables the customer to do things such as search for airline flights for two travel cities on a specified date, choose a flight based on the details, and reservation for the flight

The system provides you Quick Search facility that provides you details about flights without login. But if the user wants to book a ticket then it must require login into your account.

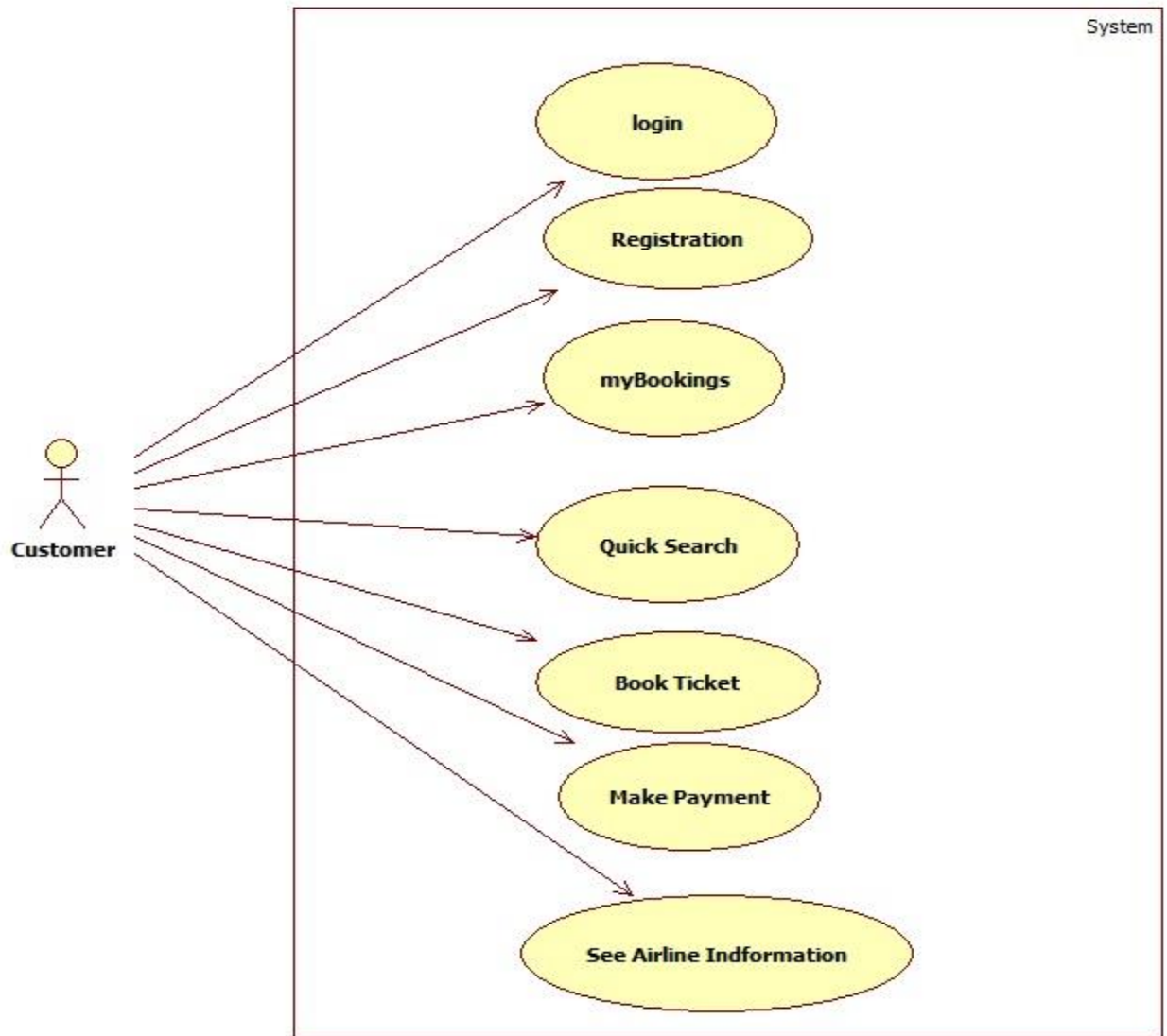
The system allows the airline passenger to search for flights that are available between the two travel cities, namely the “Departure city” and “Destination city” for a particular departure and arrival dates. The system displays all the flight’s details such as flight no, name, price time of journey, etc.

Here we provide a quick search facility that displays the list of available flights and allows customers to choose a particular flight. Then the system checks for the availability of seats on the flight. If the seats are available then the system allows the passenger to book a seat. Otherwise, it asks the user to choose another flight.

To book a flight the system asks the customer to enter his details such as name, address, city, state, credit card number, and contact number. Then it checks the validity of the card books the flight and updates the airline database and user database.

## 2. REQUIREMENTS

### 2.1 FUNCTIONAL REQUIREMENTS



#### 2.1.1 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 block/buy them. The terms 'registered user' and 'guest' are described below.



A user who has traveled by the airline 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 block/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 guest.

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

In case of 'b', the new user would remain a guest.

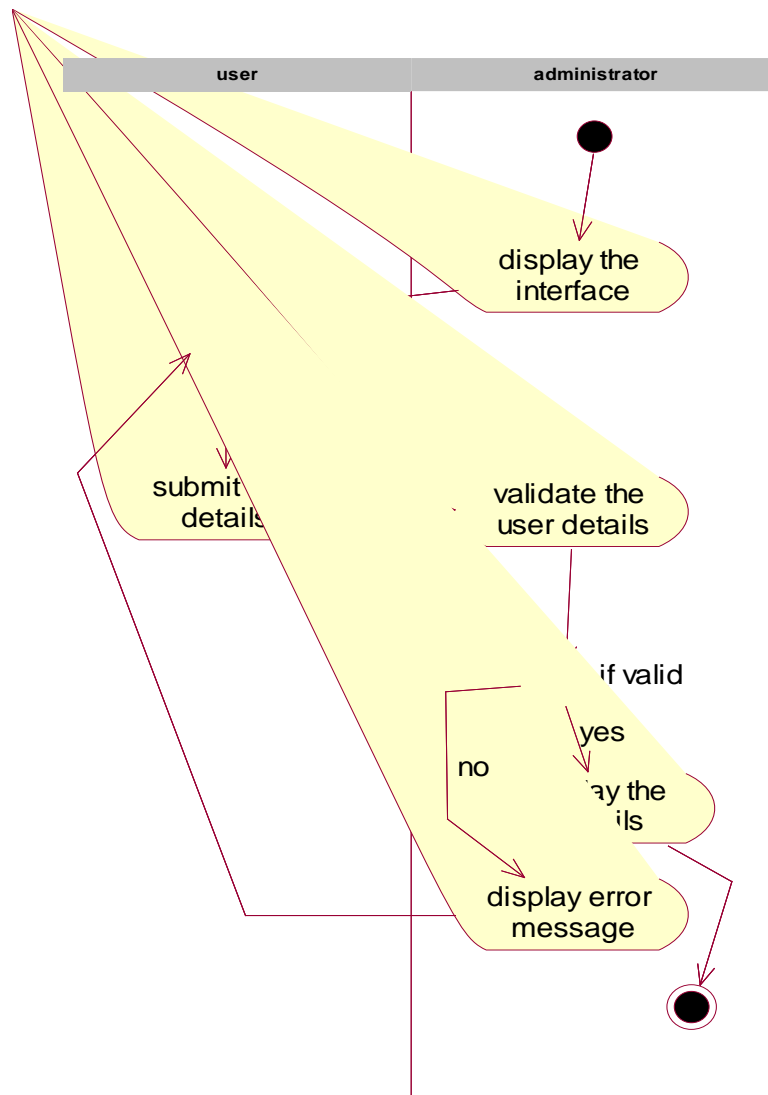
A guest can only check the availability of tickets and cannot block or buy tickets.

But 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 flight schedule for given days, the price of tickets and any discount offers. The system shall present the user with an option to exit from the system at any time during the following processes.

### **2.1.2 Registration and creation of user profile**

The system shall require a user to register, in order to carry out any transactions with it except for checking the availability of tickets. 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, preferred credit card number. The system will automatically create a 'sky miles' field and initialize it to zero in the user's profile.



### 2.1.3 Quick Search

Here we provided Quick Search facility for any user to search flight schedule without login into account. This will provide user an option for searching flight and comparing their prices of all companies.

After logging in a user (either a registered user or a guest), 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. The original destination cities would be entered as text.

After the origin and destination cities are ascertained, the system shall now access the flight schedule database, referred to as 'flight master', 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, one-way, Are

round trip, departure date and the number of adult passengers, children and senior citizens. 'Class' refers to Business class/Economy class. This choice shall be made by the user through a drop-down menu indicating all the possible combinations of choices.

One-way/round trip shall be a button selection. 'Departure date' refers to either a single date or a range of dates, entered through text box.. In case, the trip is a round trip, the system shall also ask the user to enter the return date

Having taken all the above input from the user, the system checks for any false entries like the departure date on the return trip being earlier than the departure date on the onward trip. In case of incompatibility, the system will not display any flights available.

The system queries the flight database 'flight master' to check which of the flights 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 airline, flight number, departure time in origin city, arrival time in destination city, departure city, arrival city, Ticket price and the number of seats available on that flight.

There can be several flights of different airlines between two cities and all of them will be listed for the particular date that the user wants to depart from the Origin City. In case, the user has entered a range of dates, the system shall display all the flights for all those dates in the range. There will be a Book button in front of every row displayed in 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 to 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.

### **2.1.4 Making Reservations/Blocking/Confirmation**

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 block/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.

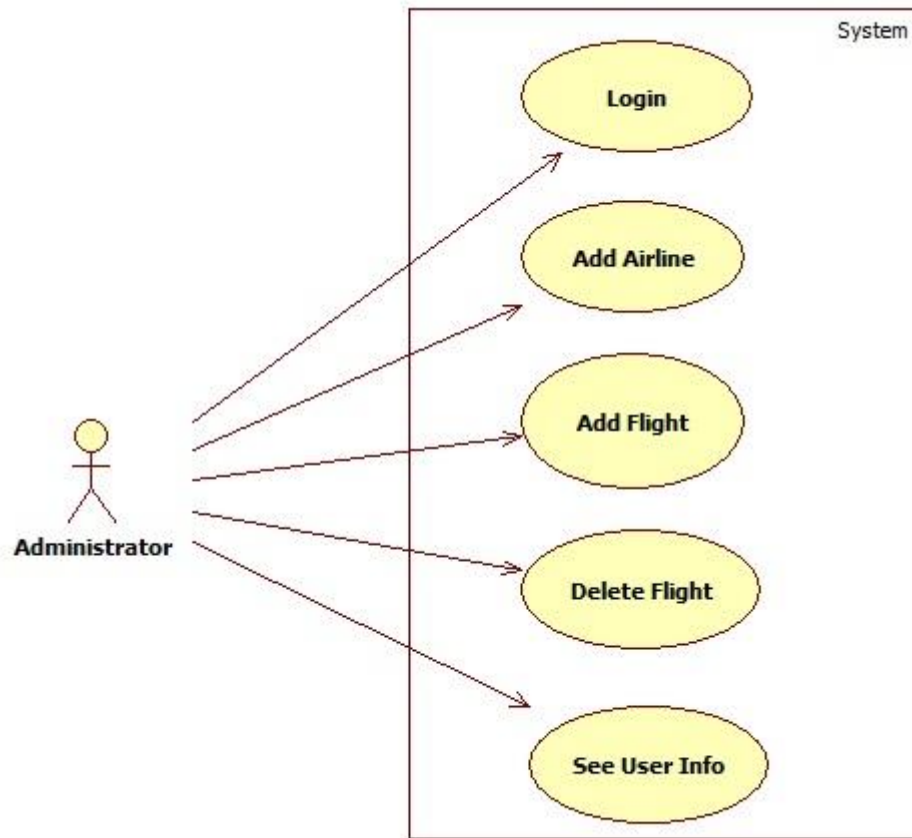
If the difference between the departure date and the system date is more than 2 weeks, the system asks the user if he would like to block or buy the ticket. The system informs the user that he can block the ticket at no cost now. It also informs him that if he chooses to block the ticket, he should make 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 decrease the number of available seats on a particular flight 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 information i.e. debit card or credit card information, and then charges the price of the ticket to his debit card number.

### **2.1.5 View Booking History**

The system shall allow a user to view all information about his previous bookings. After logging him on, it asks for his blocking number or his confirmation number. It accesses User Booking 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 airline information , add flight information, Delete flight and see user Information according to user Id.

## **2.2 NON-FUNCTIONAL REQUIREMENTS**

### **2.2.1 Interface**

Go to Appendix B for user interfaces

### **2.2.2 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.

### **2.2.3 Constraint**

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

### **2.2.4 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.

### **3. DESIGN**

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#### **3.1 Database Design**

The following table structures depict the database design.

**Table1: User\_Info**

<b>Key Type/ Constraint</b>	<b>Column Name</b>	<b>Data Type</b>	<b>Length</b>	<b>Allow Null (1=Yes;0=No)</b>
3	UserID	Number	4	0
0	Birthdate	Date	6	1
0	City	Varchar2	255	1
0	Phonenumber	Varchar2	255	1
0	Country	Varchar2	255	1
0	Email	Varchar2	255	1
0	Firstname	Varchar2	255	1
0	State	Varchar2	255	1
0	Lastname	Varchar2	255	1
0	Gender	Char	1	1
0	Username	Varchar2	255	1
0	Password	Varchar2	255	1

**Table2: Administrator\_Login**

3	Adminname	Varchar2	15	0
0	adminpassword	Varchar2	15	1

**Table3: AirlineMaster**

3	AirlineID	Number	5	0
0	AirlineName	Varchar2	25	1
0	AirlineDetail	Varchar2	2000	1
0	ImageURL	Varchar2	30	1

**Table4: FlightMaster**

3	FlightID	Number	5	0
3	AirlinesID	Number	10	0
0	Fromsrc	Varchar2	255	1
0	Todest	Varchar2	255	1
3	Fromdate	Date	8	0
0	Todate	Date	8	1
0	Fromtime	Date	15	1
0	Destime	Date	15	1
0	Bussinessseats	Number	3	1
0	Economicseats	Number	3	1
0	Bsprice	Float	126	1
0	Discount	Float	126	1
0	Ecprice	Float	126	1



**Table5: Bank**

3	BankId	Number	5	0
0	Cardtype	Varchar2	10	1
3	Cardnumber	Number	15	0
0	Pinnumber	Number	4	1
0	Validfrom	Date	7	1
0	Validthrough	Date	7	1

**Table6: User Booking**

3	AirlineID	Number	10	0
0	FlightID	Varchar2	255	1
0	SeatNo	Number	15	1
0	UserID	Number	4	1
0	ResID	Nimber	5	1
0	FlightID	Varchar2	255	1
0	AirlineID	Number	10	1
0	PersonFirstName	Varchar2	15	1
0	PresonMiddleName	Varchar2	15	1
0	PersonLastName	Varchar2	15	1
0	Age	Number	2	1
0	Gender	Char	1	1
0	VisaID	Varchar2	12	1
0	PassportID	Varchar2	15	1

## 4. CODING STANDARDS IMPLEMENTED

### 4.1 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 <b>nouns</b> . No ‘_’ signs allowed. Do not use type prefixes like ‘C’ for class.
Method	Camel	getDetails, updateStore	Methods should use <b>verbs</b> 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	Pascal with "Exception" suffix	WebException,	

## **4.2 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.

## 5. TEST REPORT

Another group called Linux did the testing and the report of the testing is given hereunder.

### GENERAL TESTING:

SR-NO	TEST CASE	EXPECTED RESULT	ACTUAL RESULT	ERROR MESSAGE
1	Register Page	Redirected to Next page	OK	Nothing
2	Login Page	Pop-up will come	Ok	Please enter username and password again .
3	Reset login	Only users password will be reseted	Ok	Nothing
4	Quick search flight	Gives all flight details	Ok	Nothing
5	Booking Ticket	All the fields should be filled for submission	Ok	Nothing
6	Checking login or not	User is logged in or not	Ok	Nothing
7	Add person details for tickets	Add informations according to no of seats allocated	Ok	Nothing
8	Goto ticket page	Set added information about person	Ok	Nothing
9	Add information in booking table	Save this all data into booking table	Ok	Nothing
10	Transaction	On back it should be reverted to previous page	Ok	Nothing

11	View transaction done	It shows you all transactions done previously	Ok	Nothing
12	Logout	It will logout from user profile.	Ok	Nothing
	<b>STATIC TESTING</b>			
<b>SR-NO</b>	<b>Deviation</b>	<b>Program</b>		
1	Commenting not followed	All Web Application		

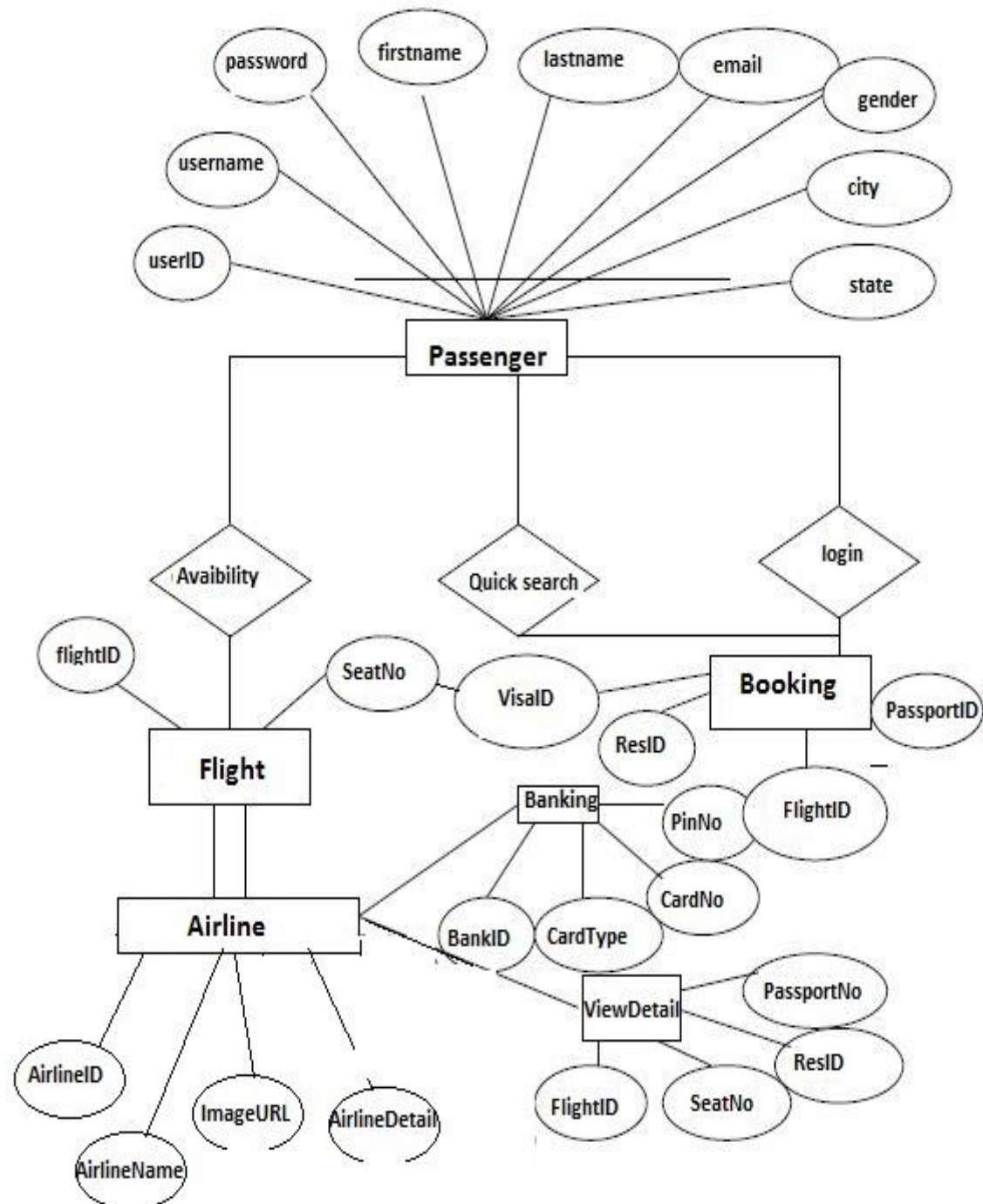
## 6. PROJECT MANAGEMENT RELATED STATISTICS

DATE	WORK PERFORMED	SLC Phase	Additional Notes
JAN 12,2015	Project Allotment and User Requirements Gathering	Feasibility Study	Our team met the client Mr. Nitinkudale (CEO, SIIT Pune) to know his requirements.
JAN 17,2015	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 18,2015	Designing the use-cases, Class Diagram, Collaboration Diagram, E-R Diagram and User Interfaces	Requirement Analysis & Design Phase	Database Design completed
JAN 19,2015	Business Logic Component design Started	Design Phase	-----
JAN 20,2015	Coding Phase Started	Coding Phase	70% of Class Library implemented.
JAN 21,2015	Implementation of Web Application and Window Application Started	Coding Phase	Class Library Development going on.
JAN 22, 2015	Off	Off	Off
JAN 23, 2015	Implementation of Web Application and Window Application Continued	Coding Phase and Unit Testing	Class Library Modified as per the need.

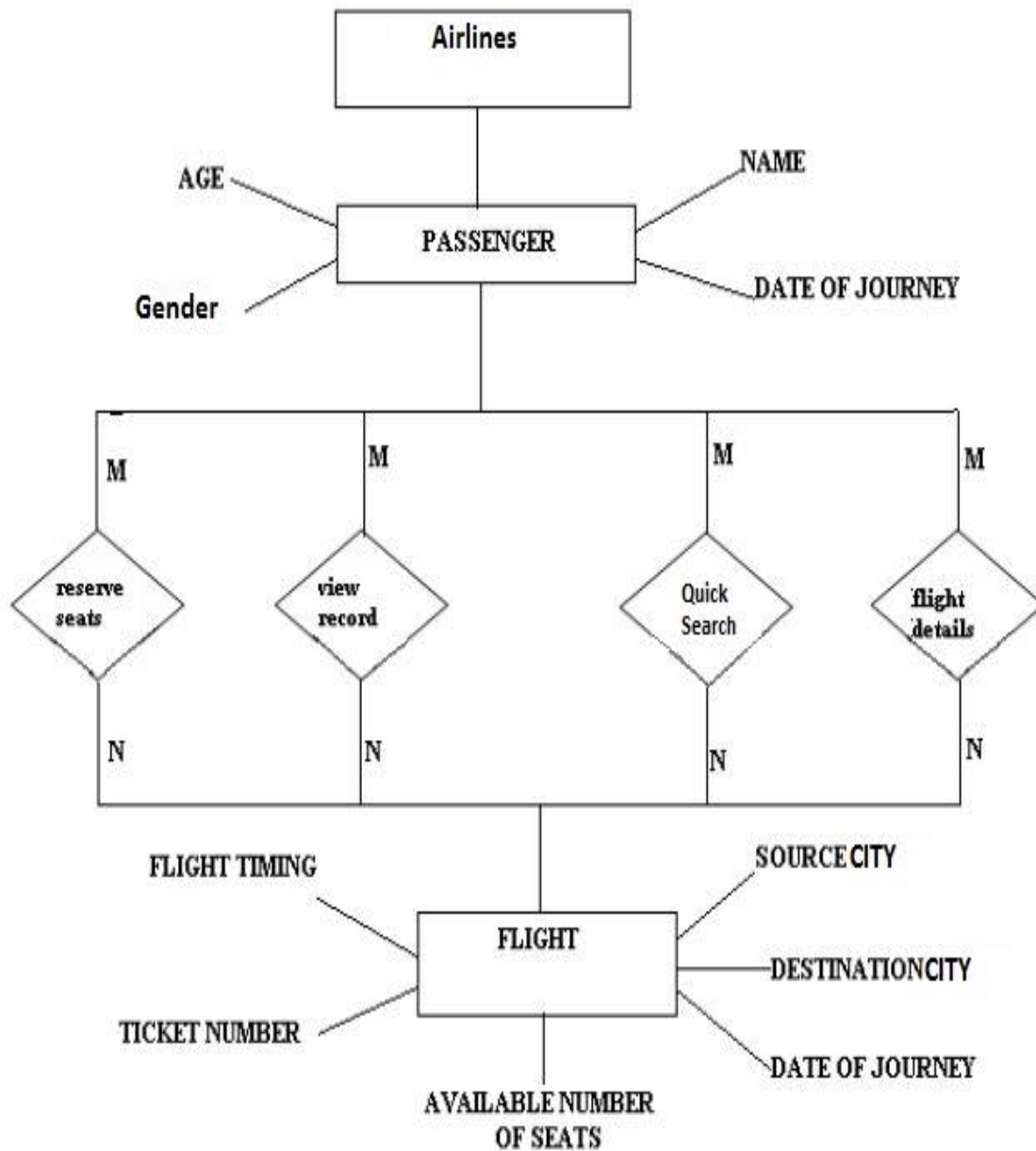
JAN 24, 2015	Implementation of Web Application and Window Application Continued	Coding Phase and Unit Testing	--
JAN 25, 2015	After Ensuring Proper Functioning the Required Validations were Implemented	Coding Phase and Unit Testing	Module Integration was done by the Project Manager
JAN 26, 2015	The Project was Tested by the respective Team Leaders and the Project Manager	Testing Phase (Module Testing)	--
JAN 27, 2015	The Project was Submitted to Other Project Leader of Other Project Group For Testing	Testing Phase (Acceptance Testing)	The Project of Other Team was Taken up by the Team for Testing
JAN 28-29, 2015	The Errors Found were Removed	Debugging	The Project was complete for submission
JAN 30, 2015	Final Submission of Project		

## 7. DIAGRAMS

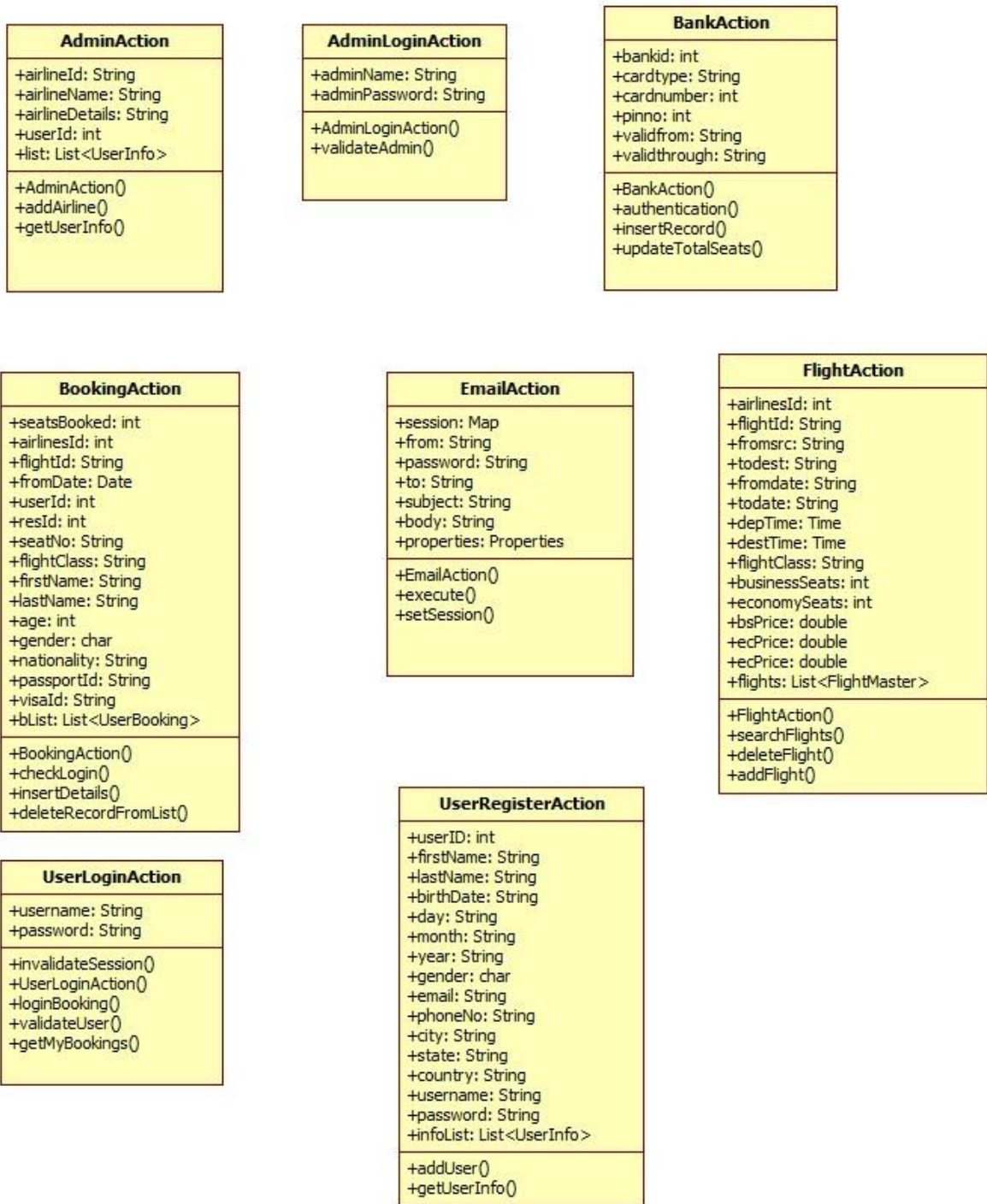
### 7.1 Entity Relationship Diagram





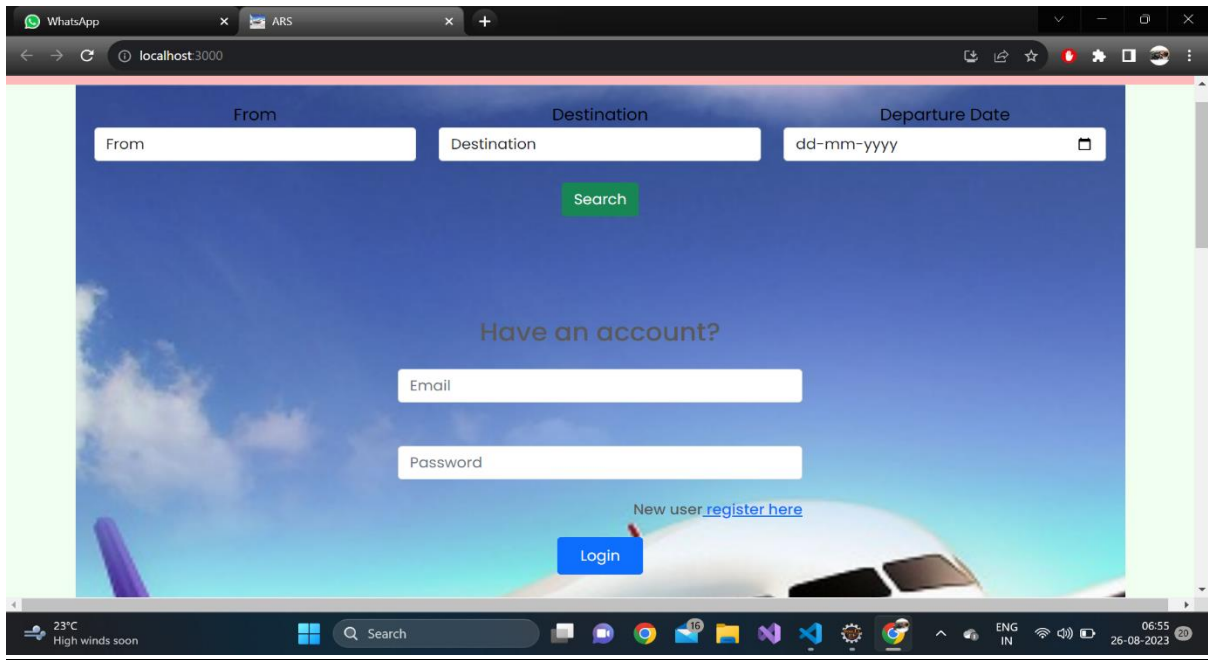
**7.2 Data Flow Diagram:**

### 7.3 Class Diagram



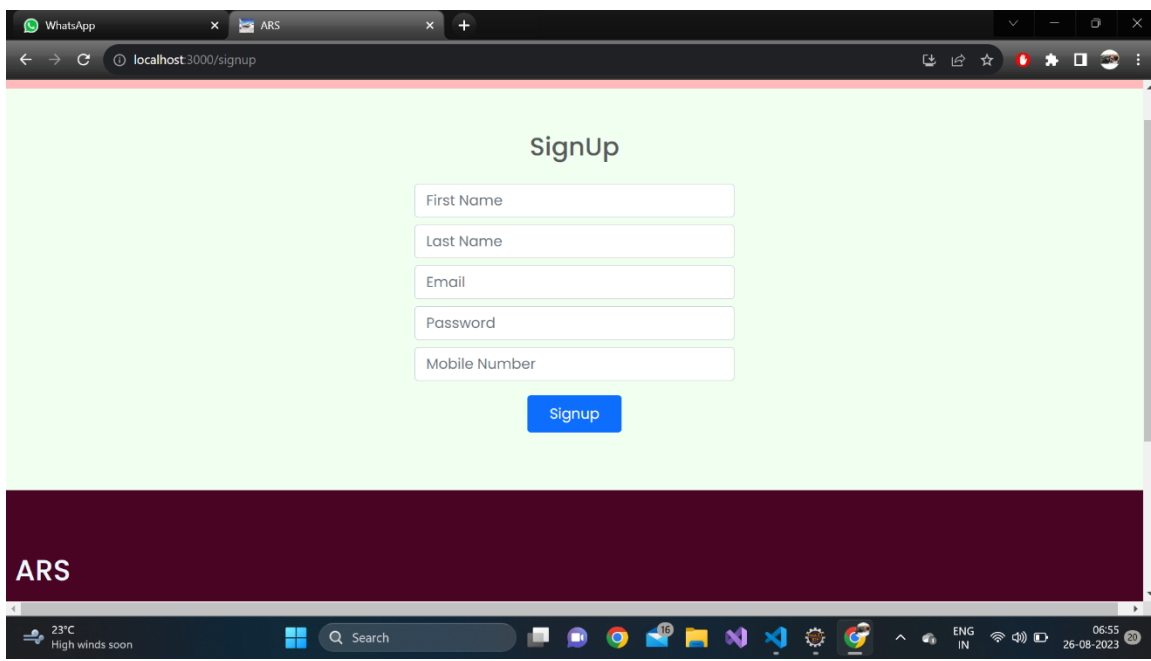
## 8. Screenshots

### Homepage:



A screenshot of a web browser displaying the ARS (Airline Reservation System) homepage. The browser's address bar shows 'localhost:3000'. The page features a search form with three input fields: 'From', 'Destination', and 'Departure Date' (with a date picker icon). Below these is a green 'Search' button. Further down, there is a section titled 'Have an account?' with 'Email' and 'Password' input fields, a blue 'Login' button, and a link for 'New user register here'. The background of the page shows a blue sky with clouds and the tail of an airplane. The Windows taskbar at the bottom indicates a temperature of 23°C and the date 26-08-2023.

### Signup Popup:



A screenshot of a web browser displaying the ARS signup popup. The browser's address bar shows 'localhost:3000/signup'. The popup has a light green background and is titled 'SignUp'. It contains five input fields: 'First Name', 'Last Name', 'Email', 'Password', and 'Mobile Number'. Below these fields is a blue 'Signup' button. At the bottom of the popup, there is a dark purple footer with the text 'ARS'. The Windows taskbar at the bottom shows the same system information as the previous screenshot.

## Login For Booking:

The screenshot shows a web browser window with the URL `localhost:3000/customer/search_flight`. The page has a pink header with the text "Airline Reservation System" and navigation links: "Home", "Contact Us", "About", and "Other Options". A "Logout" button is in the top right. The main content area has a light green background and is titled "Search Flight". It contains several input fields: "From" and "Destination" (both with placeholder text "From" and "Destination" respectively), "Departure Date" (with placeholder "dd-mm-yyyy" and a calendar icon), "Passengers" (with placeholder "Select Passengers"), and "Type of Seat" (with placeholder "Select Type of Seat"). A green "Search" button is at the bottom. The Windows taskbar at the bottom shows the date as 26-08-2023 and the time as 06:56.

## Banking:

The screenshot shows the same web browser window, but the page content has changed to a banking section. The header and navigation links remain the same. The main content area has a light green background. At the top, it says "Total Fare: 259.5". Below this is a white box titled "Enter Card Details". Inside this box are four input fields: "Name on Card" (with placeholder "nameOnCard"), "Card Number" (with placeholder "....."), "Expiry Date" (with placeholder "dd-mm-yyyy" and a calendar icon), and "CVV" (with placeholder "CVV"). A blue "Confirm Booking" button is at the bottom of this box. Below the white box is a blue button that says "Make Payment and Confirm Booking". The Windows taskbar at the bottom shows the date as 26-08-2023 and the time as 07:06.

## Booking Details:

WhatsApp ARS localhost:3000/customer/search\_flight

Save

**Ticket Summary**

Airline Name: GoAir  
 Route : Pune---Hyderabad  
 Travellers: 1  
 Base Fare : 220  
 Taxes : 39.6  
 Total Fare: 259.6

**Enter Card Details**

Name on Card

23°C Mostly cloudy Search 26-08-2023

## Feedback:

WhatsApp ARS localhost:3000/feedback\_list

Airline Reservation System Home Contact Us About Admin Actions Logout

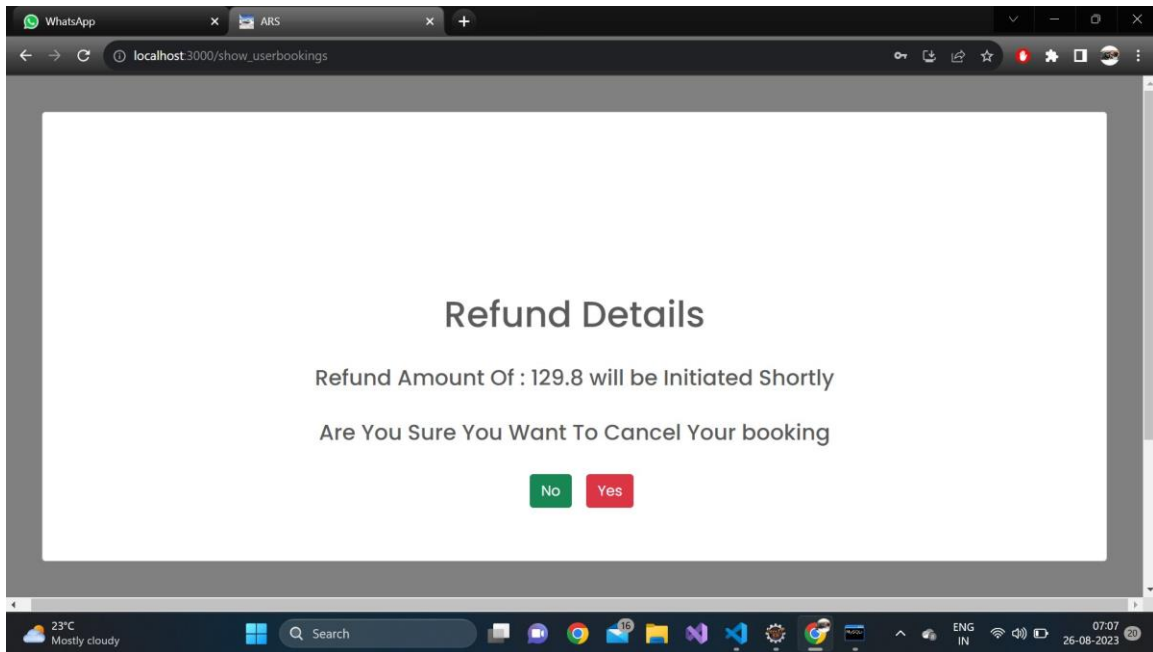
**Feedback List**

Airline ID	Booking ID	User ID	Customer Feedback
115	1	1	good
115	2	1	-
115	3	1	-
115	4	3	Nice
115	31	4	f***k off
115	32	1	-

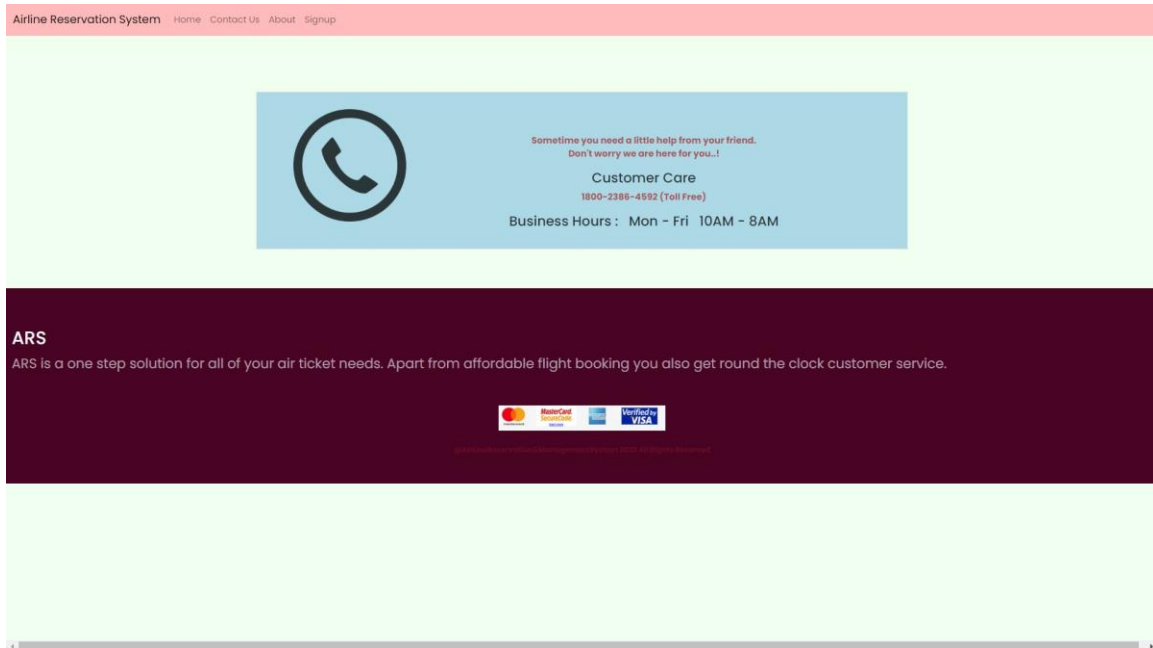
**ARS**  
 ARS is a one step solution for all of your air ticket needs. Apart from affordable flight booking you also

23°C Mostly cloudy Search 26-08-2023

## Refund Details:



## Contact Us:



## **9. REFERENCES:**

- <http://www.google.com>
- <http://www.airIndia.com>
- <http://www.webdevelopersjournal.com>
- <http://www.lufthansa.com>
- <http://www.w3.org>
- <http://www.wikipedia.org>
- <http://www.delta.com>
- <http://www.priceline.com>