



Phoenix Airline

Detailed Report

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Team Member Table

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03	B.A.A.V Karunathilake	MIS (UGC)	20895
04	S.H.A.S Shyamal	MIS (UGC)	21178
05	R.S Dalpethado	MIS (UGC)	21833
06	M.T.D Samarasekara	CS (UGC)	21181

Note:- All the members have contributed to the project. All of the work has been submitted to the git hub. An overall detailed report has also been created.

Git Hub Link- <https://github.com/lakshithaonline/Phoenix-Airline-System>

The screenshot shows the GitHub repository page for 'lakshithaonline / Phoenix-Airline-System'. The repository is public and has 1 branch and 0 tags. The README.md file contains the following content:

```

Phoenix Airline PVT

Web-based fully responsive Flight Booking System for Phoenix Airline based on the Model View Controller (MVC) Architecture made using Java Servlets and Java Server Pages. Moreover, authentication and authorization for users are implemented using GlassFish Roles. The web application is also secured against SQL Injection and Cross-Site Scripting attacks.

Phoenix Airline PVT is an airline with a small online flight booking system. So the application has ticket booking and

```

The screenshot shows the GitHub repository page for 'lakshithaonline / Phoenix-Airline-System', specifically the README.md file. The content includes:

- Workflow (Functionalities)**
- Phoenix-Airline is a multifunctional web application that customers can use to book a flight and search & find flights without booking a ticket.
- Following are the steps of work flow:
 - Airline Admin will add & can approve the airline management staff.
 - There are two types of staff categories:
 - Grade one Staff (G1)
 - G1 Staff can view, update and delete user information & flight section, and booking section
 - Grade two Staff (G2)
 - G2 Staff can view information and only add new flight details
 - Public users can't enter the system without registration on the system, so the user needs to register and log in using the registered user name and email.
 - After login into the system public user can book a ticket for a flight, and without booking user can search or find flight details like arrival and departure date/time and user can view the reserved ticket list in the profile section and also can update profile details & contact the airline management to clarify anything about Phoenix-Airline
 - Ticket Booking procedure The user needs to select the type (compulsory)
 - Return trip
 - One Way

Introduction

Phoenix Air is an Initially situated and upcoming airline company with a limited number of flights. At the moment there are only two methods of booking a flight.

1. Over the phone,
2. Visiting the office.

The current process is very inconvenient to both customers and the staff working at the Phoenix air. Therefore, Phoenix air has decided to make a website, a reservation portal, and a management portal.

By using the website customers can get information about the airline service and book their seats in their desired flights.

Purpose

Building a very convenient method of flight booking system is the main objective of the given project. By going through an automated flight booking system Phoenix air will be able their resources efficiently and effectively.

Overview

Functionality

Requirements -

1. **User management,**

Users of the system (customers, Staff, and Administrators) have to be managed within the system itself.

2. **Flight management,**

Flights that have been connected with phoenix air have to be managed according to a timetable, considering their arrival and departing time.

3. **Ticket management,**

Customer reservations have also needed to manage according to their requirements. Such as seating arrangements, classes, and other special requirements (age and medical)

Key features -

Customer registration

Customers need to register to the Phoenix air system, in order to search or make reservations. Only the authenticated customers can be in the system. Filtration will be done by the staff members by reviewing the provided information and they

have the authority to remove and add customers to the system.

Search and booking

Customers can search for and reserve their tickets to desired destinations on available dates. Customers are able to get informed about the respective flight from the system.

Messenger Tool

Customers can send messages to the staff members for support and further clarifications while booking and, searching for flights.

System management

System administrators and staff members are responsible for updating and maintaining the system.

A separate

Roles and Activities -

Customers

Customers can register to the system by entering their information. Also, they can manage their accounts by updating and editing their information.

Search flights and seat reservations are the two most important customer activities under the customer role.

Staff

The staff has its own responsibilities. Therefore staff has been divided into grade 1 and grade 2 based on the duties. Both staffs can create their own accounts.

- Grade 1: Members in grade 1 are responsible for adding deleting and updating both ticket and flight information.

- Grade 2: Members in grade 2 can only view information and add fight details to the system.

Admin

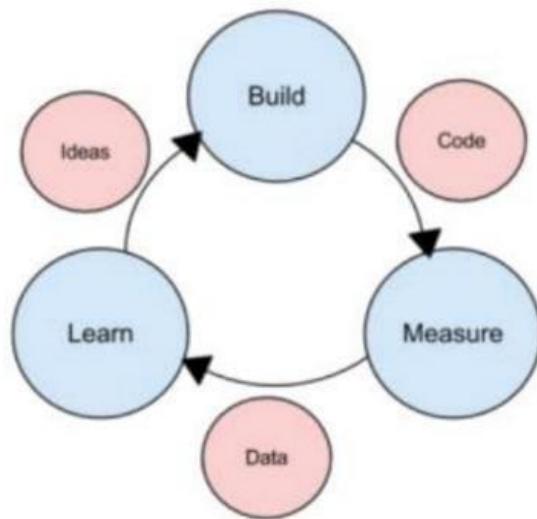
Admins have been assigned from the company and default credentials have been given to log into the system.

Admins are responsible for accepting and denying staff accounts. Also, the admin can add staff members to the system.

Design consideration

Development methodology

Lean Methodology was been used to implement the web application.

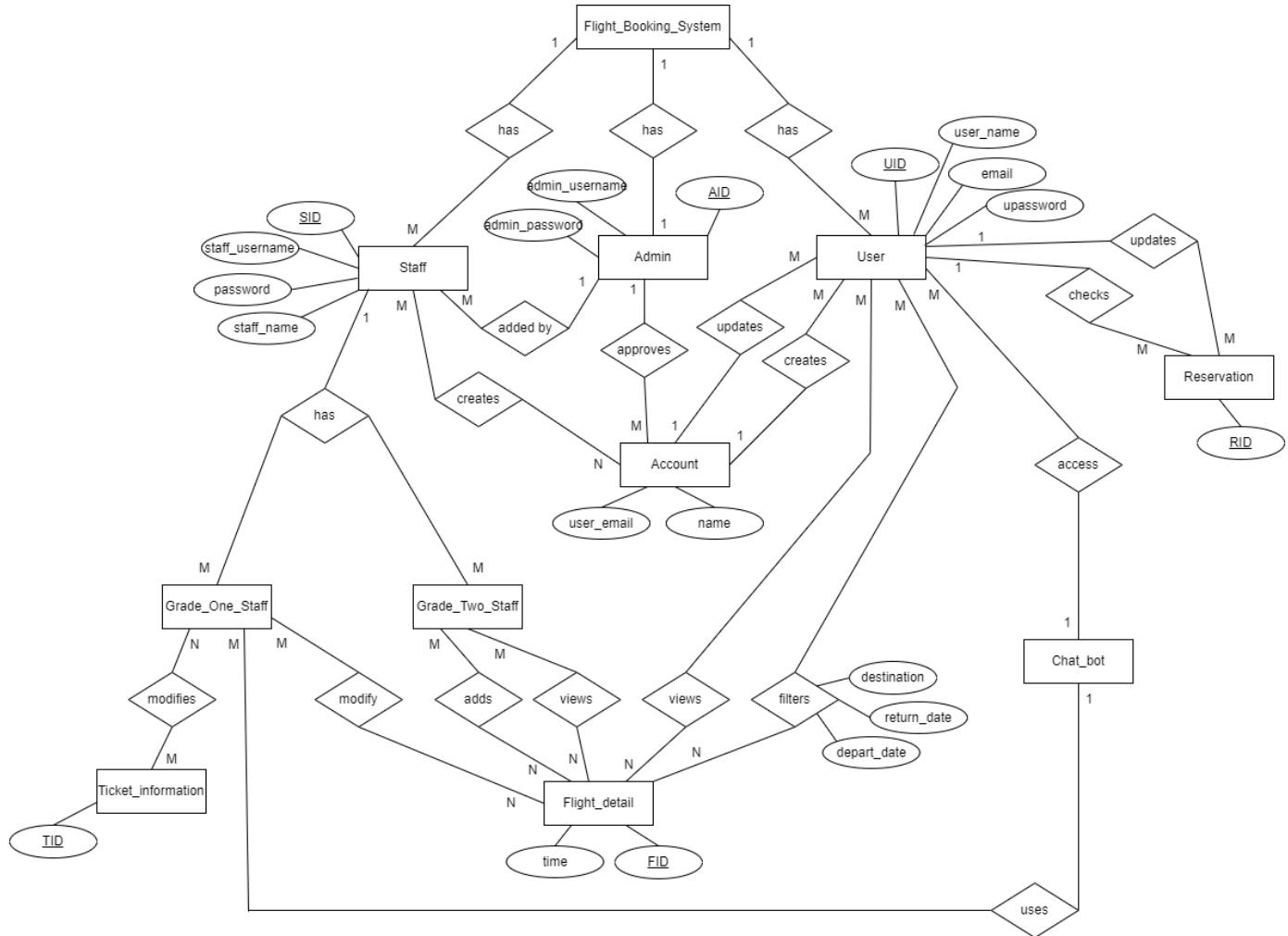


Lean is about focusing on the requirement and ideas of the customer and developing a minimum viable product. It is the most efficient and effective methodology when it comes to small scale and less time frame projects.

Followed principles and procedures.

1. Minimizing resource wastage
2. Less in time-consuming
3. More effective and efficient
4. Conceptual integrity

Entity relation diagram



Assumptions

Grade one staff Modifies =checking and updating or deleting ticket information

Grade one staff Modify = adding, updating, deleting flights

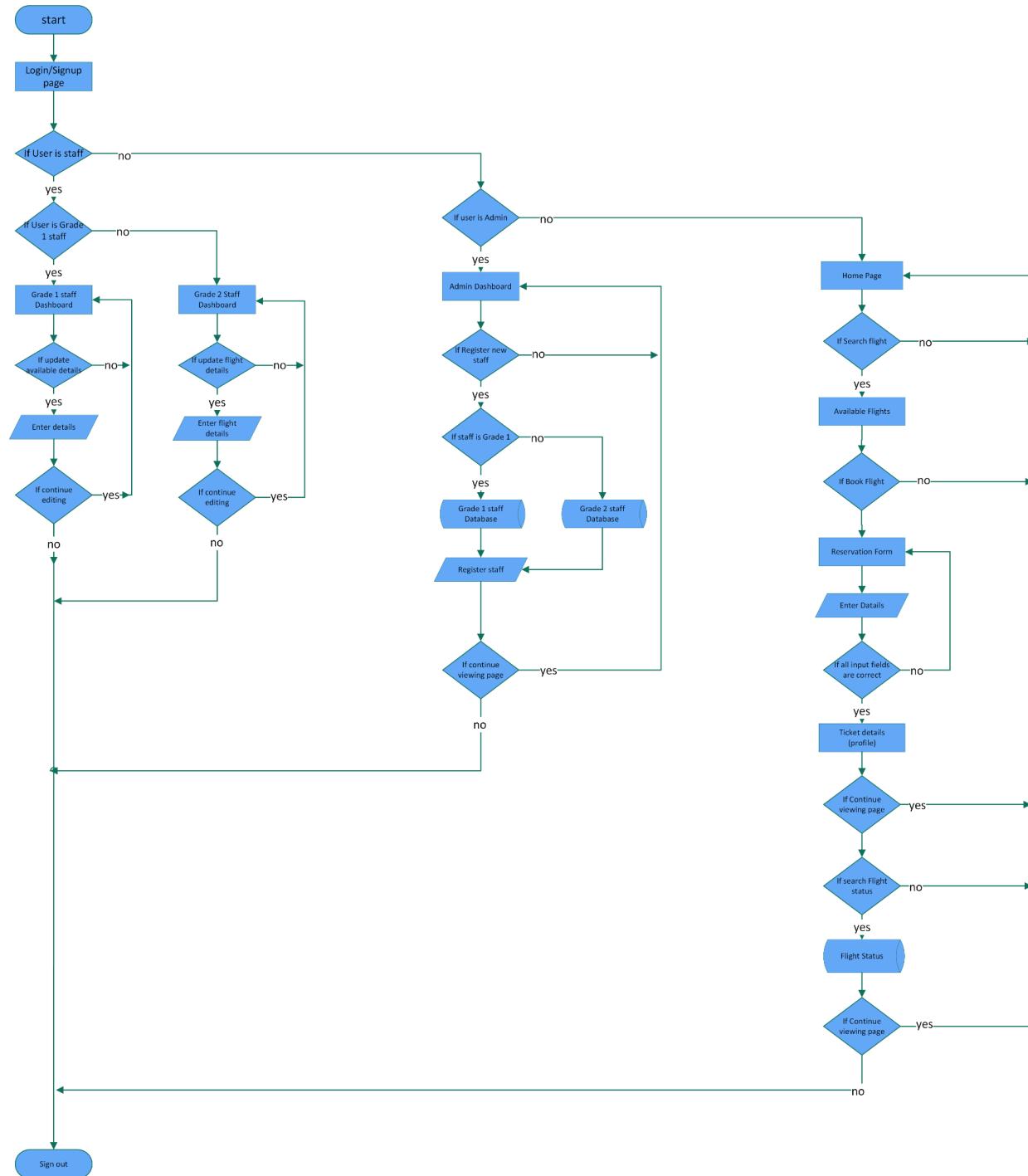
They can also reserve their seat and check their reservations. Users can update their profiles and reservations.

Staff accounts must be approved by the admin also the admin can add staff members to the system.

Above mentioned diagram depicts the relationships among the entities in the system.

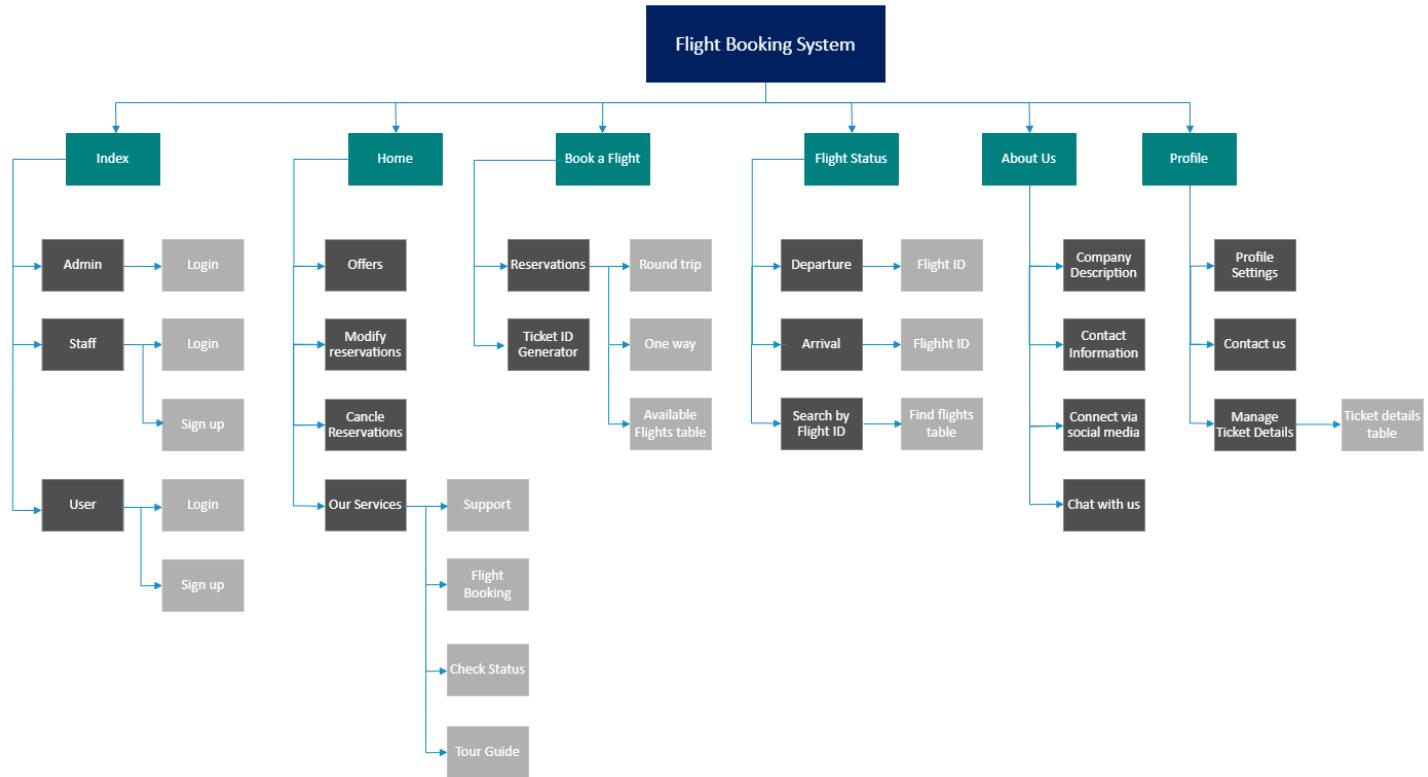
https://nsbm365-my.sharepoint.com/:u/g/personal/mtdsamarasekara_students_nsbm_ac_lk/Ea7DOQeWn-VKt3uBLuUMKwABI2nD9PcAStAFRYoZbCTbsw?e=jFsFB2

Flowchart



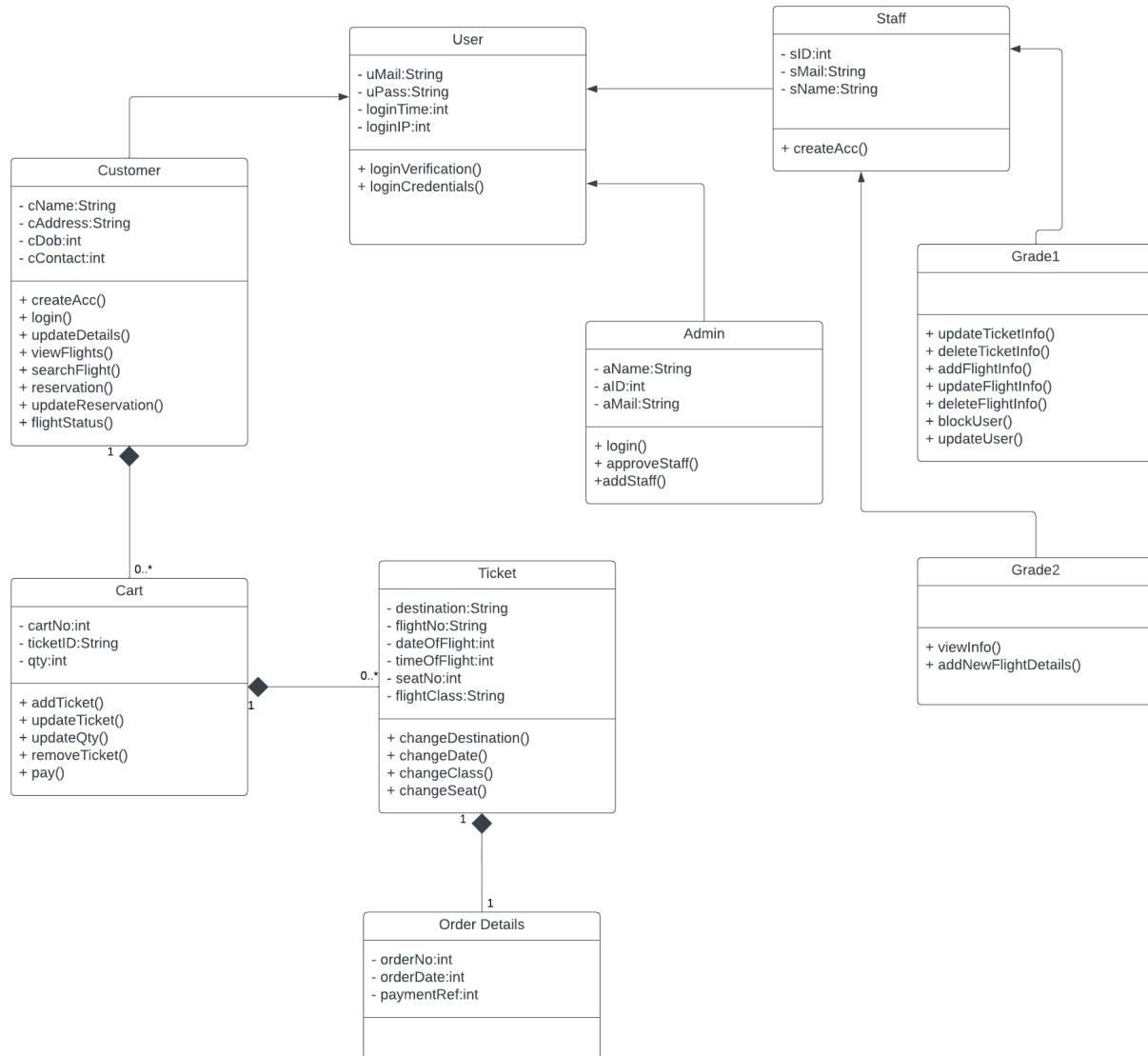
https://nsbm365-my.sharepoint.com/:u/g/personal/rsdalpethado_students_nsbm_ac_lk/EXNB1bstSj1AkuvmW3eU1NYB99u7eqAnra9VfsVYFtoWng?e=BpB2AQ

Site Map



https://nsbm365-my.sharepoint.com/:u/g/personal/shashyamal_students_nsbm_ac_lk/ESOTxTQNudhMtYW10EfZTQBHGryhyBlhgSqMbcndBA?e=oTIFbE

UML Diagram - Class Diagram



https://nsbm365-my.sharepoint.com/:u/g/personal/baavkarunathilake_students_nsbm_ac_lk/EQOSHOZErNREhMVlyttqVcBjwkgs8657unwSwRhtwbMow?e=6wqlJT

User Interfaces - UI

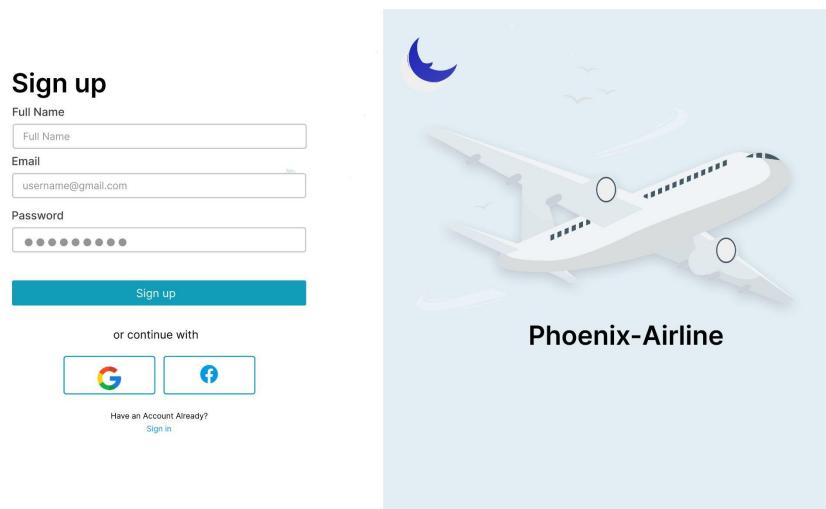
To increase and have better usability we have to utilize the user interfaces by using appropriate color variations according to the Phoenix Air company theme.

And also we have used the simplest form of language to give the perfect idea to everyone who is using the application. Images have also been used to give a better idea visually.

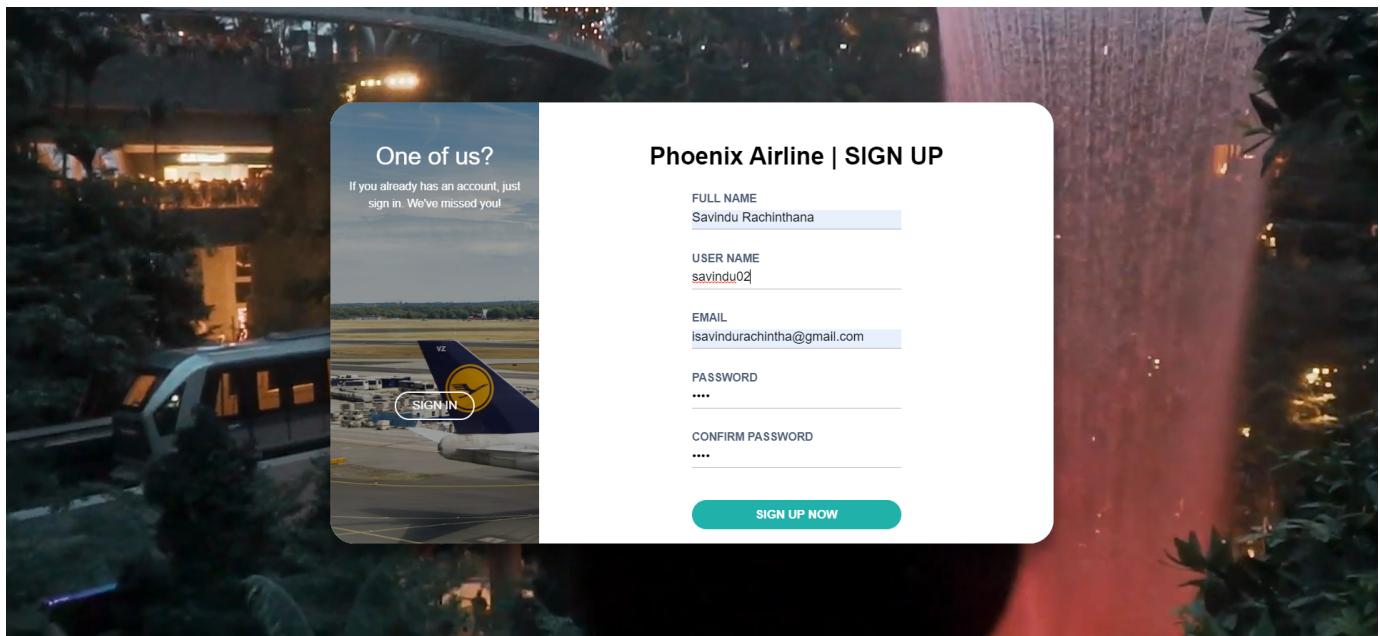
Initial layout designs and their output has been attached below in the document.

User interfaces from Customer's end

- Customer Sign-Up

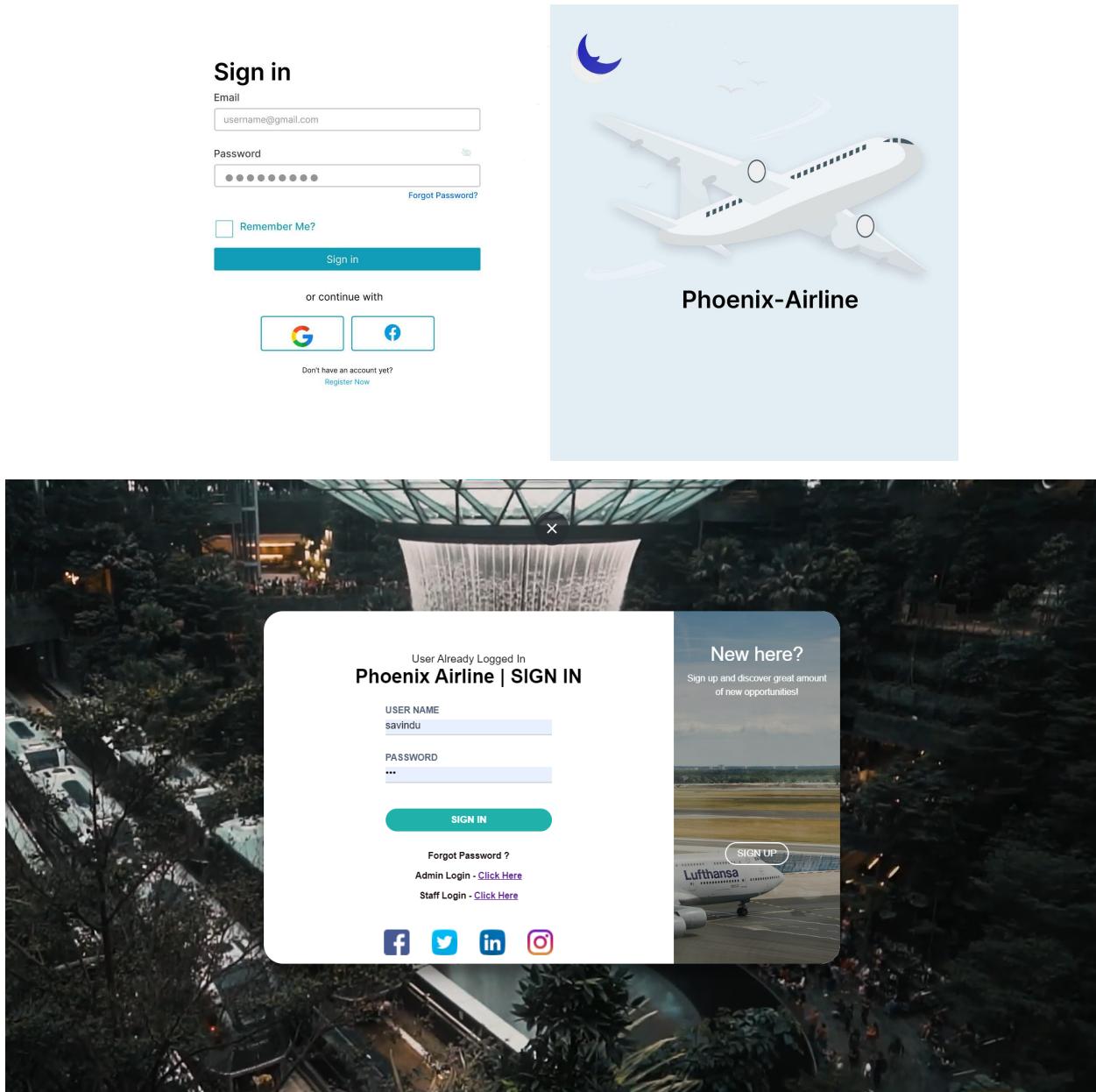


The image shows the sign-up interface for Phoenix-Airline. It features a light blue background with a white airplane silhouette and a crescent moon. The title "Sign up" is at the top. Below it are input fields for "Full Name", "Email" (containing "username@gmail.com"), and "Password". A teal "Sign up" button is at the bottom. Below the button, it says "or continue with" followed by Google and Facebook icons. At the bottom left is a link "Have an Account Already? Sign in".



A customer can register for the application by entering the necessary details. By clicking the signup button they can confirm and submit their details to the system. By then they can use the provided credentials to sign in to the system.

- Customer Sign-In



Customers can use their user name and the password which they entered into the signup data form to get access to board into the system by the SIGN IN button below. If a customer forgets his password, they will be guided to make a new password for him/her by validating the information that they have given before. After entering the credentials users will be redirected to Phoenix Airlines's website.

Phoenix Airline web interface

We have used basic three main languages to create the web interface.

- Navigation Bar



A simple standard navigation bar was created using only HTML, CSS, and javascript languages. Only the most essential segments were added to the navigation bar such as the functions, logo, and the signout button.

- Content (Body)

A screenshot of the homepage content area. At the top, there is a large banner with the text "Explore, Discover, Travel" and "TRAVEL AROUND THE WORLD" overlaid on a background image of an airplane wing against a blue sky. Below the banner, there is a section titled "OFFERS" featuring three cards: "Enjoy A Rewarding Stay", "Couple Packages", and "Adventure & Tour". Each card has a small image, a title, a brief description, and a "Book Now" button.

A screenshot of the flight booking search form. It includes fields for "Flying from:" and "Flying to:", "Depart Date:" and "Return Date:", and two date input fields. There are also "Search" and "Cancel" buttons at the bottom.A screenshot of the flight status search form. It features fields for "From" and "TO", and two search options: "Search By Only Flight ID" and "Search By Only From & To". There are "Search" and "Cancel" buttons at the bottom.

A screenshot of a promotional section titled "BEST OFFERS WITH PHOENIX AIRLINES". It features a large image of a coastal landscape and text encouraging users to discover package deals including hotel offers and special offers for charter flights, yachts, and exclusive spas. There is a "Find More" button at the bottom.

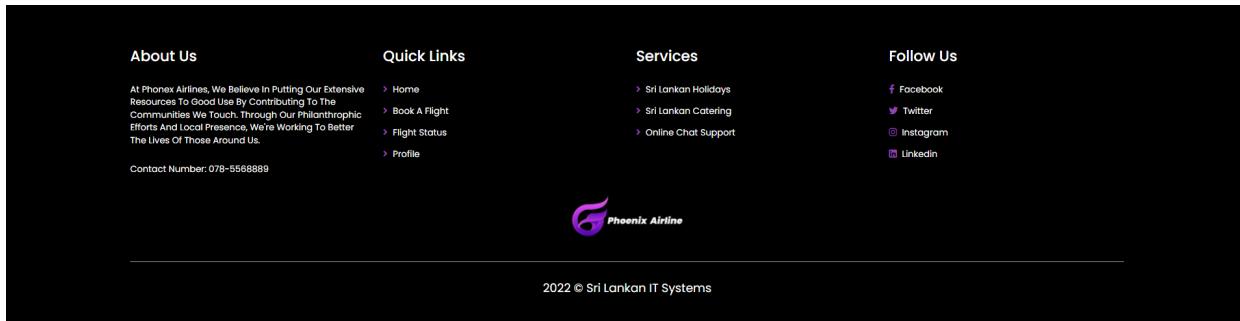
OUR SERVICES



We have designed the Home page as one single scrollable page containing all the segments in the navigation bar. If a user clicks any segment he will scroll down to the exact location on the page instead of redirecting to another page.

We have done this to improve the usability and also to minimize the RAM consumption in the computer. Because of this, any device with the internet will be able to view Phoenix Airlines.

- Footer



All the Information related to Phoenix Airlines and its services can be seen in the footer section of the website. Quick links to access within the footer and social media links to view social media profiles of Phoenix Airlines.

- Customer Profile

A customer is able to view his profile and also change its information except for the username.

A screenshot of the Account Settings page. The top navigation bar has a dark header with the text "Manage Tickets Booking Details" and a light-colored body with the title "Account Settings" and the subtitle "Manage, Altere And View Your Account Details With Ease!".

The main content area shows a user profile summary:

- Contact Us:** Savindu Rach (Full Name), Isavindurachi (Email), Online status.
- Edit Profile:** Buttons for "Edit Profile", "Full Name" (Savindu Rach), and "Email" (Isavindurachi).
- SAVE PROFILE:** A button at the bottom right.

A user can also see his/her reservations that have been placed through the system by clicking "Manage ticket booking details" inside the profile.

The screenshot shows a mobile application interface. On the left is a vertical navigation bar with options: "Manage Tickets Booking Details", "Account Settings", and "Contact Us". The main content area has a title "Manage Tickets Booking" and a subtitle "Manage Your Ticket Booking Details, Conveniently. Enjoy More Freedom And Flexibility When You Book With Phonex Airlines! View Your Travel Dates, Add Optional Extras, Upgrade To Business Class Or Simply Update Your Details." Below this is a table with three columns: "Ticket ID", "Flight ID", and "User Name". The data in the table is as follows:

Ticket ID	Flight ID	User Name
TI0.4013164754366556	A280	Savindu
TI0.6390552948425833	A7003	Savindu

Ticket identification, the number of the flight, and the name of the user can be seen in the table.

- Messenger tool

The screenshot shows a mobile application interface. On the left is a vertical navigation bar with options: "Manage Tickets Booking Details", "Account Settings", and "Contact Us". The main content area has a title "Contact Us" and a subtitle "We Are Committed To Providing Our Customers With A Memorable Experience, And Your Feedback Is Important For Us To Make That Possible." Below this is a message input field with three text input boxes: "Savindu Rachinthana", "Isavindurachintha@Gmail.Com", and "0766031056". To the right of the input fields is a message: "Can You Please Help Me? I Have An Issue With Flight A7003." At the bottom right is a green circular icon with a white letter "G" and a small "Send" button.

We have provided an internal chatting tool to communicate with staff members regarding customer issues. Staff members are able to see the messages from their end.

Messenger tool is available inside the profile.

User interfaces from Staff members' end

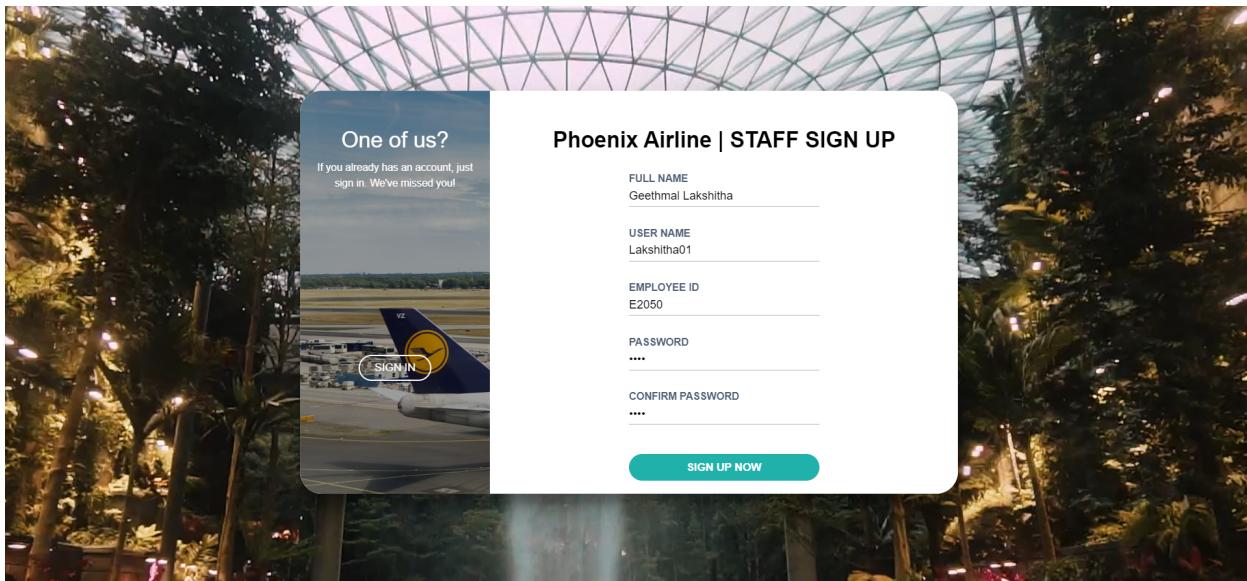
Staff members have been divided into 2 parts according to their grades. Each grade has its own responsibilities.

- Grade 1
- Grade 2

- Staff Sign up



The image shows a screenshot of a web-based sign-up form titled "Sign up". The form is for "Phoenix-Airline Staff". It includes fields for "Full Name", "Email" (with "username@gmail.com" entered), "Employee ID" (with "xxxxxemp" entered), "Password" (with a masked password), and "Grade" (with "Grade One" selected). A "Sign up" button is at the bottom, and a link "Have an Account Already? Sign in" is at the very bottom.

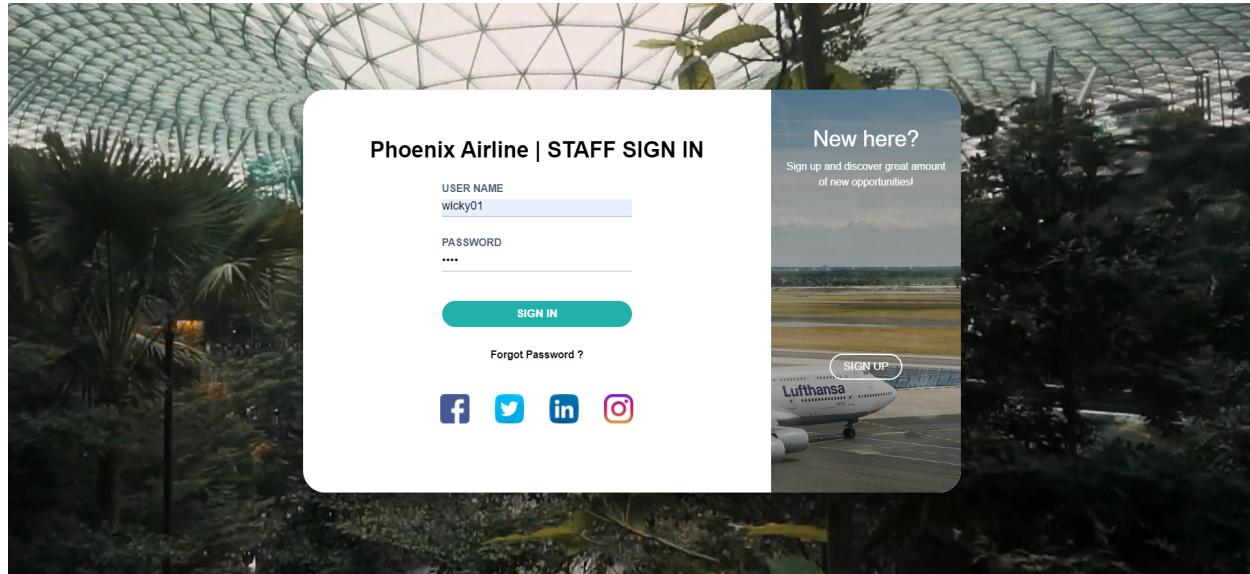


Staff members can create their own account by providing the necessary information but unlikely the customers, staff members cannot use the staff portal until the admin approves the request to join.

- Staff Sign In



The image shows a placeholder for the Staff Sign In form, represented by a light blue rectangular area.



With the approval of the admin, Staff members can access the staff portal by entering their username and password.

Here staff members don't need to enter their respective grades when entering the portal. They will be sent to their respective portal according to their ranks automatically. This has been done to improve usability and to utilize every process to its maximum speed by using automation functions.

- Staff Dashboard

The screenshot shows a top navigation bar with 'Phoenix Airline' and 'Staff Account - Grade Two'. Below it are two grey boxes: 'Total Active User 105' and 'Total Flights 40'. Underneath are two empty tables: 'User Account Status' and 'Flight Status', each with three columns.

Full Name	Email	Status

Flight ID	Arrive Time	Departure Time

The screenshot shows a left sidebar with 'Phoenix Airline' and links for 'User Details', 'Flight Details', 'Ticket Details', 'Messages Box', and 'Home'. It also has a 'Log out' button at the bottom. The main area is titled 'Grade 01 Staff Dashboard' with a search bar and a user profile icon. It displays four cards: 'Total G1 Staff Members 6 (Up from now)', 'Total Bookings 2 (Up from now)', 'Total Users 3 (Up from now)', and 'Total G2 Staff Members 5 (Up from now)'. Below is a section titled 'User Details' with a table:

USERNAME	FULLNAME	EMAIL	Update	Delete
savindu	Savindu	savin@gmail	[Update]	[Delete]
digital	Lokshitha	Lokshitha@gmail.com	[Update]	[Delete]
savindu02	Savindu	isavindurachintha@gm	[Update]	[Delete]

Staff dashboard consists of 4 cards showing,

1. Total grade 1 staff members - ***This will provide information about how many members are in grade 1 and will be able to manage workload easily among them.***
2. Total Bookings - ***Total number of bookings that have been done through our system.***
3. Total Users - ***Total number of users that have registered into our system.***
4. Total Grade 2 Staff Members - ***Total number of staff members in the grade to section.***

- Staff Messenger tool

The screenshot shows the Grade 01 Staff Dashboard for Phoenix Airline. On the left, a sidebar has links for User Details, Flight Details, Ticket Details, and Messages Box. The main area displays four cards with real-time data: Total G1 Staff Members (6, up from now), Total Bookings (2, up from now), Total Users (3, up from now), and Total G2 Staff Members (5, up from now). Below these is a table titled 'Reservation Ticket Details' with three rows of customer information:

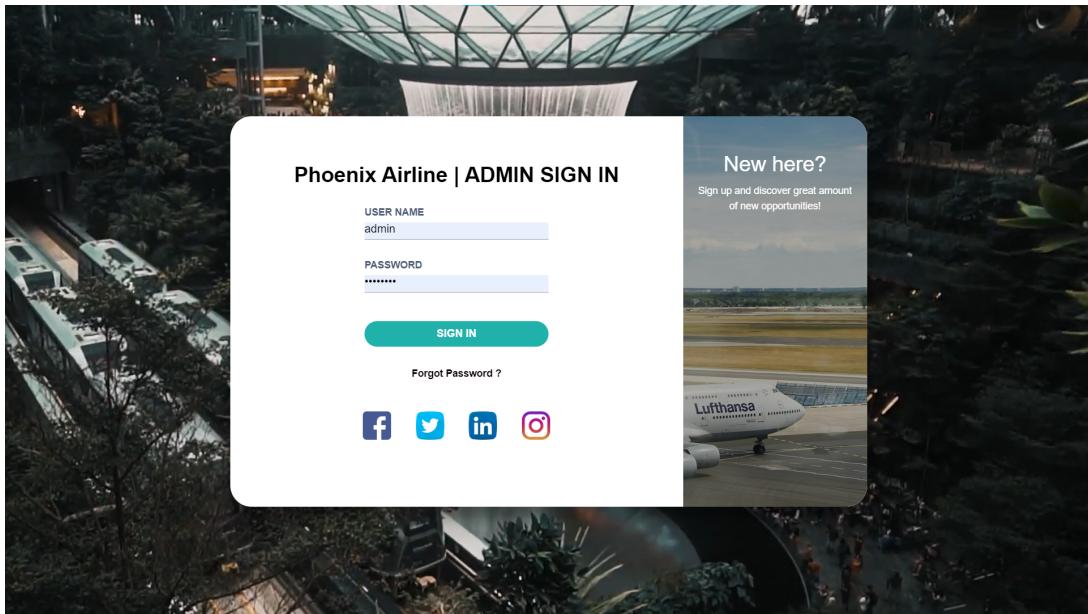
NAME	EMAIL	PHONE NO	MESSEGE
Savindu Rachinthana	isavindurachintha@gmail.com	0766031056	plz help me!!sufsfsgfysgsb sisfhf sfsufsufsf
Getthmal	geethmal@gmail.com	0766031056	plssshfusfhnsifsthffaff
Savindu Rachinthana	isavindurachintha@gmail.com	0766031056	Can you please help me? I have an issue with flight A7003.

Staff will receive the messages that are sent by the customers using the messenger tool from their end. Staff members will be able to manage their issues by referring to this table and contacting them. Messages will update in real-time in order to reduce any delays between customers and staff.

User interfaces from the admins' end

Admins have full authority in maintaining the system. Therefore, the admin can access both grade 1 and grade 2 staff.

- Admin Sign in



Admin credentials have been given to the system administrator. Admins can insert them and sign in to the admin portal.

- Admin's dashboard

The screenshot shows the Admin Dashboard interface. On the left, a sidebar menu includes options like 'Phoenix Airline', 'Register Staff Details', 'User Details', 'Booking Details', 'Grade 01 Staff Details', 'Grade 02 Staff Details', 'Home', and 'Log out'. The main dashboard area features four cards: 'Total G1 Staff Members' (5, up from now), 'Total Bookings' (26, up from now), 'Total Users' (3, up from now), and 'Total G2 Staff Members' (5, up from now). Below these is a section titled 'Temp Staff Details' containing a table with four rows:

USERNAME	FULL NAME	EMP ID	PASSWORD	GRADE
xdsd	Savindu Rachinthana	daadd	3def184ad8f4755ff269862ea77393dd	Grade 01
savindu	Ameesha shyni	ofslf	35f4a8d465e6e1edc05f3d8ab658c551	Grade 01
amee shyti	Ameesha shyni	savindu	c2f7ab46df3db842040a86a0897a5377	Grade 01
wicky01	John Wick	E2051	4c144c47ecba6f831b128703ca9e2601	Grade 01

Architectural strategies and functionality

The screenshot shows the Apache NetBeans IDE interface. The left pane displays the project structure for 'Phoenix_Airline_System' with various Java files listed. The central pane shows the code for 'filterlights.jsp'. The code prints flight information based on filters. The right pane shows the 'Output' tab with deployment logs for GlassFish Server, indicating a successful deployment and run. The bottom status bar shows '107.9 INS Unix (LF)'.

```

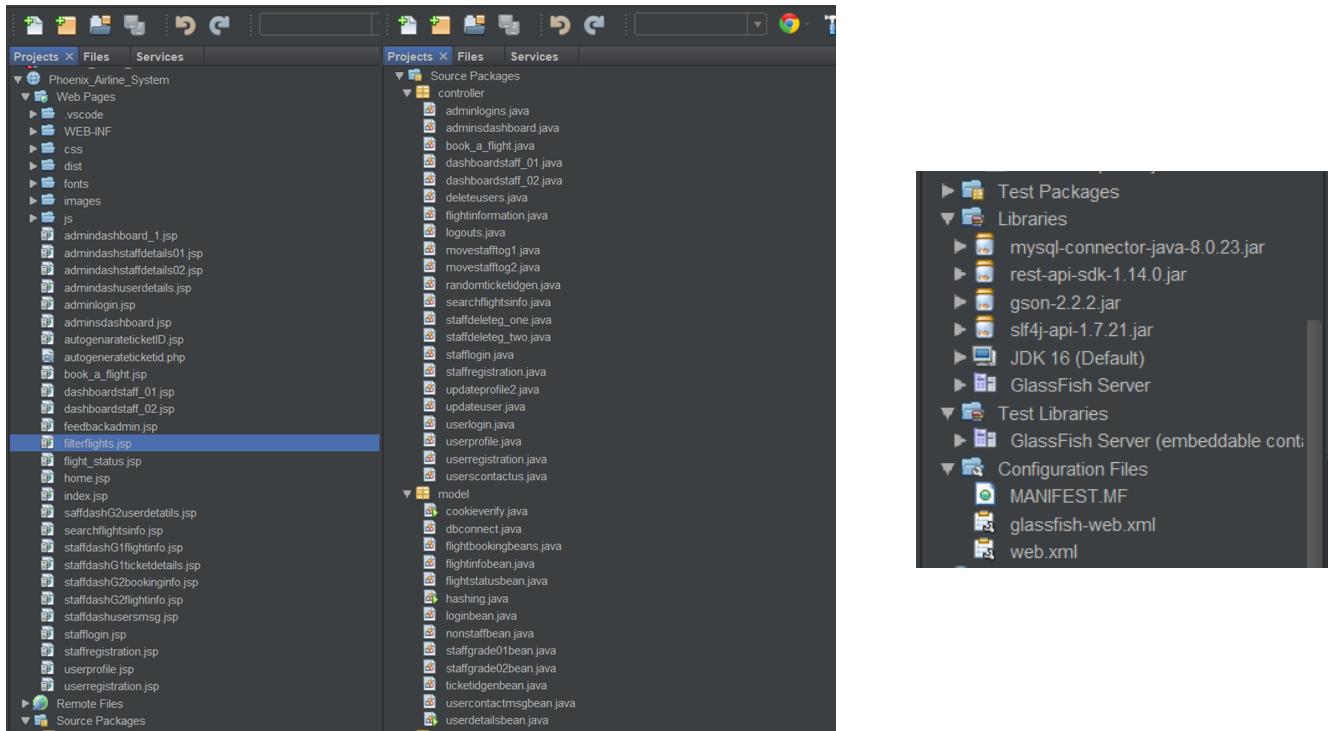
out.println("Flight Type");
if(!flightype1.equals("on")){
List<model.flightinfobean> list=model.dbconnect.getAllflightfilter(flightfrom,flightto, departdate,returndate);

out.print("<table border='1' width='100%'>");
out.print("<tr><th>Flight ID</th><th>From</th><th>To </th><th>Depart Date</th><th>Return Date</th><th>Time</th><th>Section</th></tr>");
for(model.flightinfobean e:list){
out.print("<tr><td>" + e.getflightid() + "</td><td>" + e.getflightfrom() + "</td><td>" + " " + e.getflightto() + "</td><td>" + " " + e.getdepartdate() + "</td><td>" + " " + e.getreturndate() + "</td><td>" + " " + e.gettime() + "</td><td>" + " " + e.getsection() + "</td></tr>");
}
/*<form action="/movestaffto2" method="post"><input type="hidden" name="username" value=""> <input type="submit" value="Move Staff" /></form>*/
}
else{
List<model.flightinfobean> list=model.dbconnect.getAllflightfilter2(flightfrom,flightto, departdate);

out.print("<table border='1' width='100%'>");
out.print("<tr><th>Flight ID</th><th>From</th><th>To </th><th>Depart Date</th><th>Return Date</th><th>Time</th><th>Section</th></tr>");
for(model.flightinfobean e:list){
out.print("<tr><td>" + e.getflightid() + "</td><td>" + " " + e.getflightfrom() + "</td><td>" + " " + e.getflightto() + "</td><td>" + " " + e.getdepartdate() + "</td><td>" + " " + e.getreturndate() + "</td><td>" + " " + e.gettime() + "</td><td>" + " " + e.getsection() + "</td></tr>");
}
/*<form action="/movestaffto2" method="post"><input type="hidden" name="username" value=""> <input type="submit" value="Move Staff" /></form>*/
}
out.print("</table>");
out.print("in else");
}

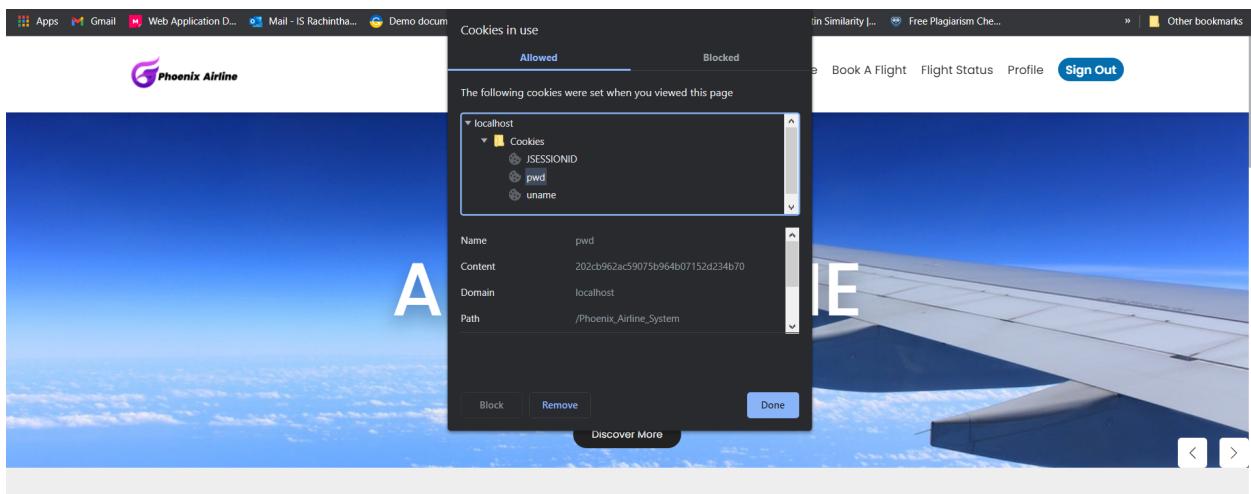
```

In order to make the connection between the pages and the system, we have used JSP, JAVA, and servlets with CSS. All the necessary attributes, headers, and conditions has build originally after considering the given requirements by the client.



Cookies

To collect and manage user interactions with the system we have used cookies. Because of this users will be able to use auto-sign in or, save their login information. Another advantage is that we can use cookies for map users and also to manage the back-end database.



Password hashing

We have used the MD5 hashing method to hide customer passwords to protect their privacy and as a security measure to protect the data of customers.

The screenshot shows three separate database tables in MySQL Workbench:

- Table 1 (users):** Columns: uname, password. Data:

afg	3def184ad8f4755ff269882ea77393dd
savindu	202cb962ac59075b964b07152d234b70
vishwa	202cb962ac59075b964b07152d234b70
admin	202cb962ac59075b964b07152d234b70
vishwaaa	3def184ad8f4755ff269882ea77393dd
savi	202cb962ac59075b964b07152d234b70
ameee	9996535e07258a7bbfd8b132435c5962
ddd	779633b7a931377ad4ab5ad9a5cd718aa
ssd	d4576b3b305e1df6f8ef4517ec29f615
amee1	8a6499fe392a21c6b616ica9c2862b2
wicky01	4c144c47ecba6f8318128703ca9e2601
- Table 2 (staff):** Columns: uname, password. Data:

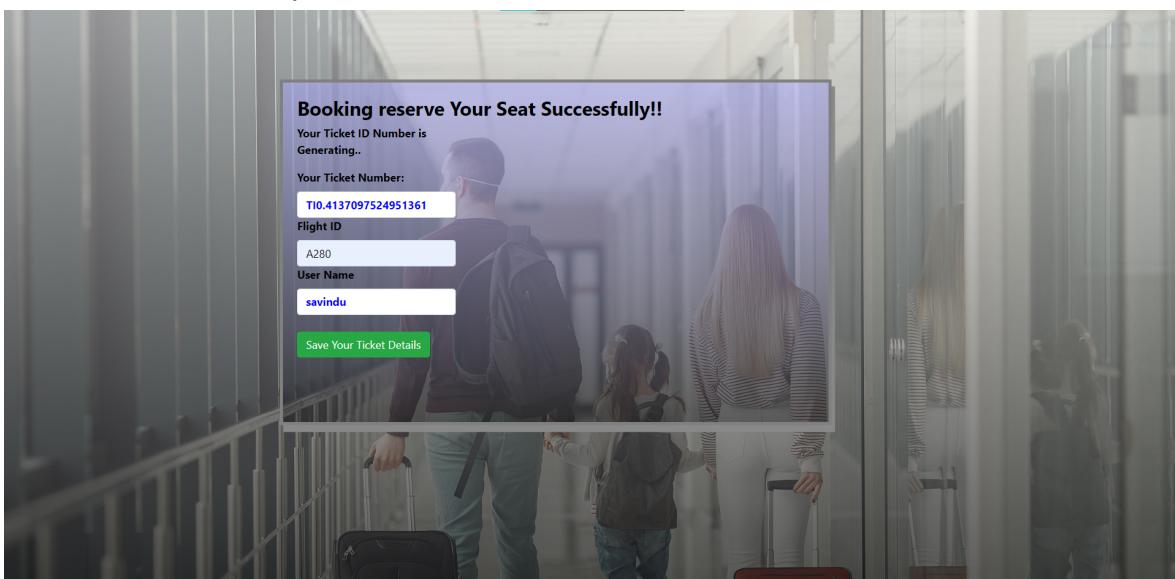
admin	0192023a7bbd73250516f069df18b500
-------	----------------------------------
- Table 3 (usersdetails):** Columns: uname, fullname, email, password. Data:

savindu02	Savindu Rachinthana	isavindurachinth@gmail.com	7b7a53e239400a13bd6be6c91c4f6c4e
digital	Lakshitha	Laksitha@gmail.com	81dc9bdb52d04dc20036dbd8313ed055
savindu	Savindu Ranga	savin@gmail	202cb962ac59075b964b07152d234b70

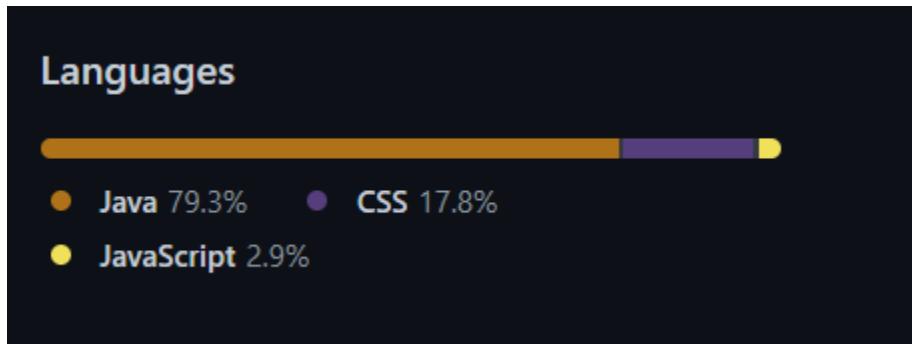
Not only customers, but we also have hash staff passwords as well as the admin's.

Random Ticket ID generator

Ticket IDs have no order. It generates automatically from the system. We have used a method to make unique ticket IDs to remove redundancies in the ticket data.



Languages and scripting



We have mainly used HTML, CSS, JAVA, and JavaScript in order to create this project.

Database

The screenshot shows the phpMyAdmin interface for the 'phoenix_airline_db' database. The left sidebar lists databases (mysql, performance_schema, phoenix_airline_db) and tables (Procedures, New, adminlogin, bookflight, contactmsg, flightsinformations, flightstatus, grade01staff, grade02staff, stafflogin, stafflogin02, temp_staff_details, temp_staff_login, ticketdetails, userdetails, userlogin). The main panel displays the 'userdetails' table with the following data:

uname	fullname	email	password
digital	Lakshitha	Lakshitha@gmail.com	81dc9bdb52d04dc20036dbd8313ed055
savindu	sfjjfjnd	savinsaad@gmail.com	202cb962ac59075b964b07152d234b70

Below the table are buttons for Print, Copy to clipboard, Export, Display chart, and Create view. A 'Query results operations' section includes a 'Bookmark this SQL query' button.

To manage all the data which flows through our system needs to be managed in a proper way. Data will be not useful if we weren't able to manage them. Therefore, to manage **Customers, Staff Members, and User details** we used an SQL database management system (tables and procedures) for a hassle-free data flow.

- Procedures

The screenshot shows the 'acceptg1' procedure configuration in phpMyAdmin. The 'Details' tab is selected, showing the routine name 'acceptg1' and type 'PROCEDURE'. Below this, there are tabs for Direction, Name, Type, Length/Values, and Options.

Procedures were created to divide staff members according to their grades.
Accept 1 is for grade 1 staff and,
Accept 2 is for grade 2 staff.

Admin is the one assigning staff members according to the grade when he is approving an account. Based on his decision staff will be divided into grade1 and 2.

System Preview - (Video)

https://drive.google.com/drive/folders/1azD2x4E0u-2hq_agRVV8fxzqK1Et9Na2