

Flight Plan

By Tarif Khan, Jatesh Joshi, and, Nguyen Chau

Project# 2, Group# 7

To fulfill the requirements of this project, we created a simple airline reservation system called “Flight Plan”. The project was coded using Java and JavaFX. We also created a version of this project using React.js. All contributions of the team members are described in detail below:

1. Member contribution towards the project proposal:

- a. Tarif Khan: Wrote the problem statement, high-level solution, and functionality sections of the project proposal. Worked on the state UML diagram.
- b. Jatesh Joshi: Wrote the assumptions/operating environment/intended usage section of the project proposal. Constructed the UML diagrams including the use-case diagram, and class diagram.
- c. Nguyen Chau: Wrote the previous works done section of the project proposal. Worked on the Sequence UML diagram. Worked on the React.js version of the project

2. Member contribution towards project presentation

- a. Tarif Khan: Created presentation slides for the flight search page, preference page, and confirmation page. Performed the project demonstration and explained the different features to the audience as well as how those features were implemented.
- b. Jatesh Joshi: Built presentation slides up regarding the trip details page. Introduced the group and presented the audience with features up to the trip details page and explained how user input is processed.
- c. Nguyen Chau: Created presentation slides for the React version of the project and did the formatting of all the presentation slides. Demonstrated the React version and explained its features.

3. Member contribution towards project code

a. Tarif Khan:

- i. Implemented the flight search function with leaving from/arriving to and departure/arrival date selection functionality.
- ii. Implemented the preference screen with seat choice, meal choice, special accommodations, and luggage accommodations functionality
- iii. Implemented the confirmation screen with a confirmation number
- iv. Created UI for flight search, preference, and confirmation screens
- v. Created flight database

- vi. Used the features of FXML to create an appealing background
- vii. Used JavaFX features such as grid pane, Vbox, Hbox, listview, date-picker class, etc
- viii. Design pattern used: Strategy
- ix. OOP concepts used: Inheritance, encapsulation, abstraction.

All of the UI parts were done using JavaFX. The search functionality, preference functionality, confirmation number, and flight database were made using Java.

b. Jatesh Joshi:

- i. Used JavaFX to make the welcome, login, and signup pages as well as the trip details page—utilized features such as Vbox buttons, and grid pane for the stage for all these screens.
- ii. Validated user data with if-else conditions but was inspired by a class assignment to validate the password using user-defined exceptions.
- iii. The username is generated by the system in the format first name initial, last name initial, and 4 random numbers.
- iv. OOP concepts utilized: Inheritance, encapsulation, abstraction, and polymorphism. (The four pillars).
- v. UI backgrounds were PNG and JPG extension images that were integrated using the FXML background feature.
- vi. The UML diagrams were created with reference to the tutoring center and the UML diagram slides.
- vii. Keeping the Single Responsibility design principle in mind. All the functions from password, generating username, login pages, etc are constructed in separate classes.
- viii. User info is stored using a hashmap as a key-value pair.
- ix. Regex was used for most validation statement conditions

JavaFx was the recently learned concept at the time of the project which led to it being the go-to choice for the group.

c. Nguyen Chau:

- i. Created a React version of the project
- ii. Implemented the React Form for users to insert their inputs for flight destination, arrival, date, and time.
- iii. Each flight number is generated by the first 2 capital letters of the destination and arrival city and followed by 3 random digit numbers.
- iv. Implemented the switch route component that helps users to quickly see their round trip flight with one click button.

- v. Using react icons library and CSS to create a user-friendly application, which is responsive for both mobile and desktop versions.

Problem and Issues:

Ever since COVID-19, the airline business has become more about recovering lost revenue rather than helping the masses travel more. So many airlines have retired their jumbo jets which crowd the usual travel routes due to flight shortages. Potential airline ticket booking scams also scare away the customers and ticket booking has become that part of the journey that everyone dreads nowadays. Our airline system is made to guide you through this jungle of flight management and planning.

Diagrams:

1. [Usecase diagram](#)
2. [Class diagram](#)
3. [Sequence diagram](#)
4. [State diagram](#)

Functionality:

Primary functionalities are as follows:

1. Create user profile: Users will input their name, email, and desired password to create their profile. They can then use the auto-generated username to log into the system.
2. Search for flights: Users can search for flights based on these criteria: Departure/arrival location, departure/arrival date, layover preference, aircraft type, airline preference, etc.
3. Select flight preferences: Users can select meal preferences, seat preferences, special accommodations, or luggage accommodations
4. Reserve flight: Users can reserve their flights and receive a confirmation number.

Operations:

These are the operations our users will be able to perform:

1. Select preferred airline
2. Select preferred aircraft
3. Select preferred layover duration
4. Search flights based on different criteria
5. Set flight preferences
6. Reserve flight

Solution:

We at Flight Plan Softwares (name of the program) understand that your time is well spent somewhere else rather than booking tickets. So, with our system. Once you create an account and log in. You can use our intuitive and simple design to search and book flights the traditional way from databases across the globe

OR you can simply chat with your steward AI (to be later implemented) and tell it your preferences such as your airline choice, legroom choice, and your layover preference, etc. Then pick one of the plans that is tailored as close to your preferences as it can be.

We will also have a top-flight deals section coming in later updates where you can see specific routes and packages and how their prices have changed in case you are interested in booking one.

We currently only support 3 of the safest airlines as well as three of the safest jet choices whose ratings we keep updating as the Federal Aviation Authority designates it on international routes but more domestic routes and more airlines are to be introduced in later updates as well. So, gear up for a vacation as well as a smooth takeoff with sky seats as your partner.

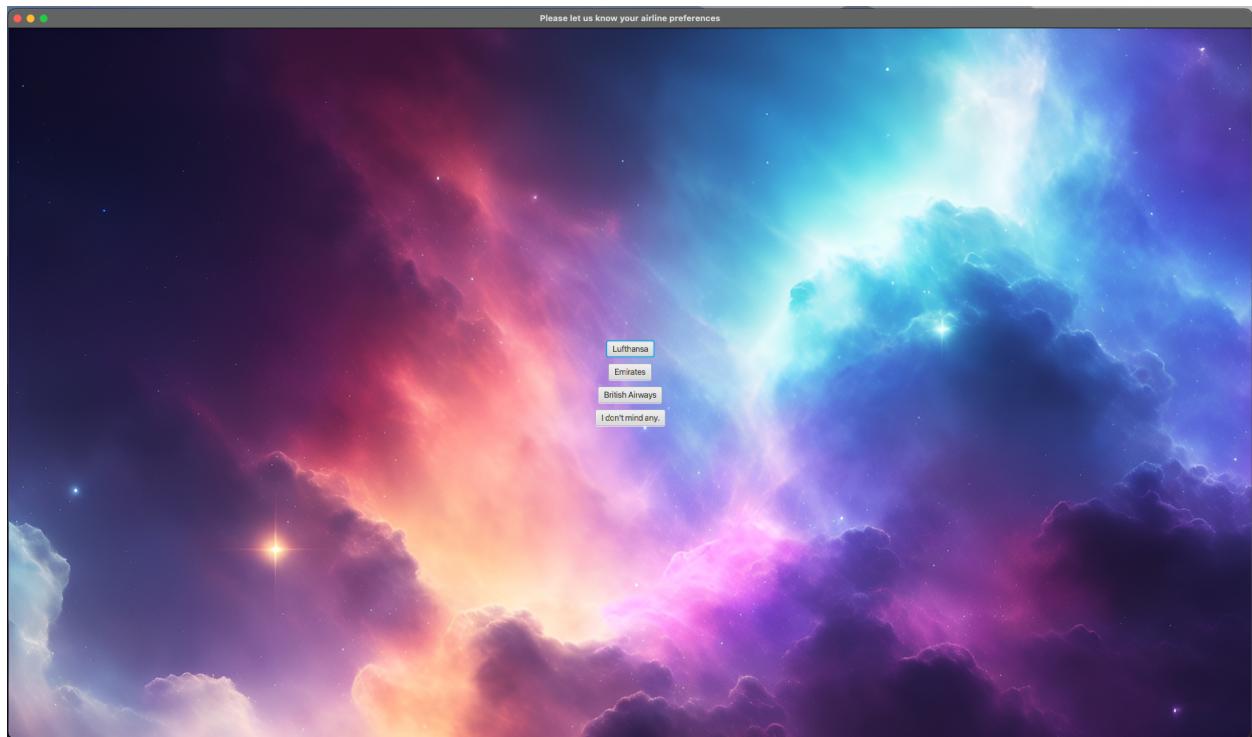
Assumptions/Operating Environments/Intended Usage:

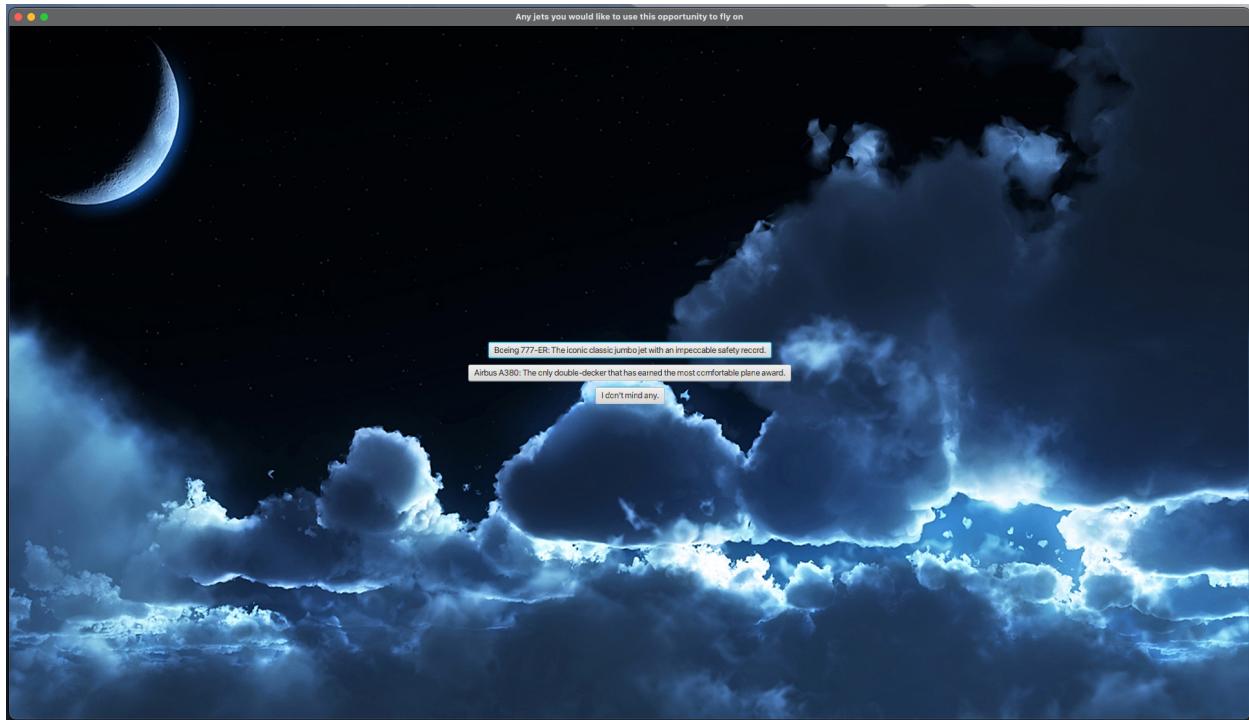
The process of airline bookings can be a complex one if not properly kept track of. The intended usage of the Airline Ticketing System can be extended to both the clients and the implementing parties. The providers who are various airlines, private broker flight businesses, etc can use this system to provide schedules and fares along with a database of information including meal plans, packages, etc to their clients who will then decide what service they want to utilize based on their specific needs and preferences. The intended users can range from any common civilian to organizations that specialize in flight booking and managing operations.

Steps to run the code:

1. Download the zip file containing the code.
2. Open the source and then the Java folder.
3. Click the UiDesign folder and open the file.
4. Make sure your JDK is configured correctly.
5. Click build and everything should work as expected.
6. All the other files are exception files, user info files, and more backend files.

Snapshot of the running program:





Leaving from:

Going to:

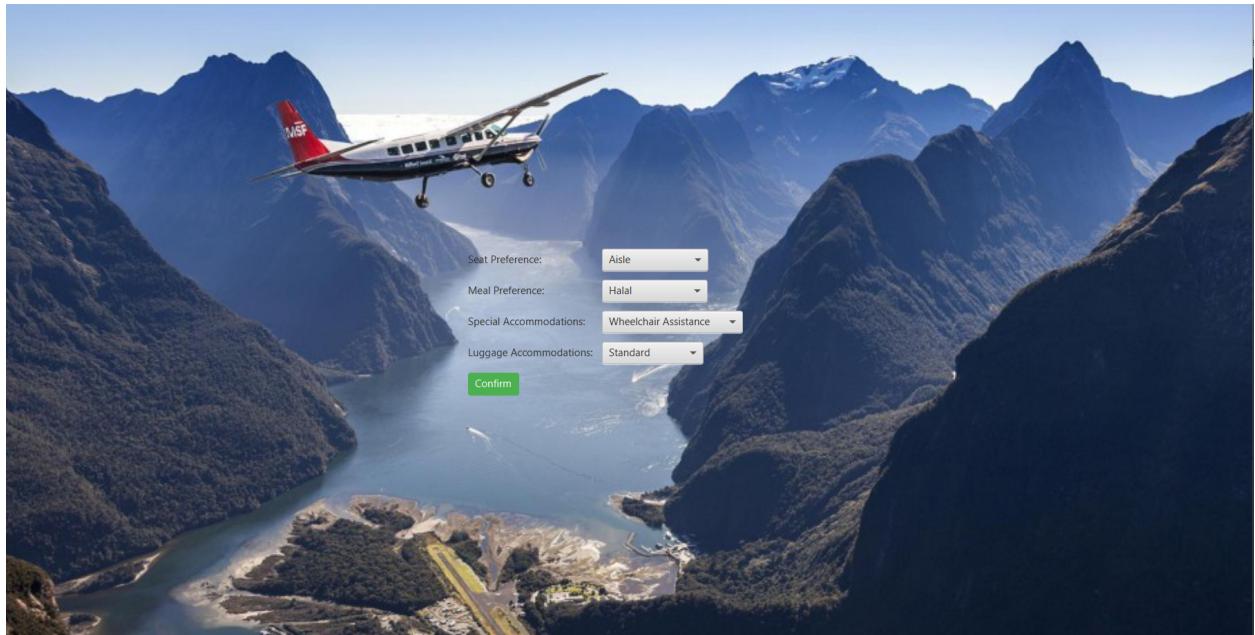
Leaving on:

Coming back on:

Layover Preference (For Non-Stop: Enter 0) ->

British Airways - Boeing 747 - \$1800.0 Layover: 7 hours
Emirates - Airbus A380 - \$1500.0 Layover: Overnight
Lufthansa - Boeing 747 - \$1800.0 Layover: 2 hours

UP IN THE CLOUDS
ON MY WAY TO
UNKNOWN THINGS.



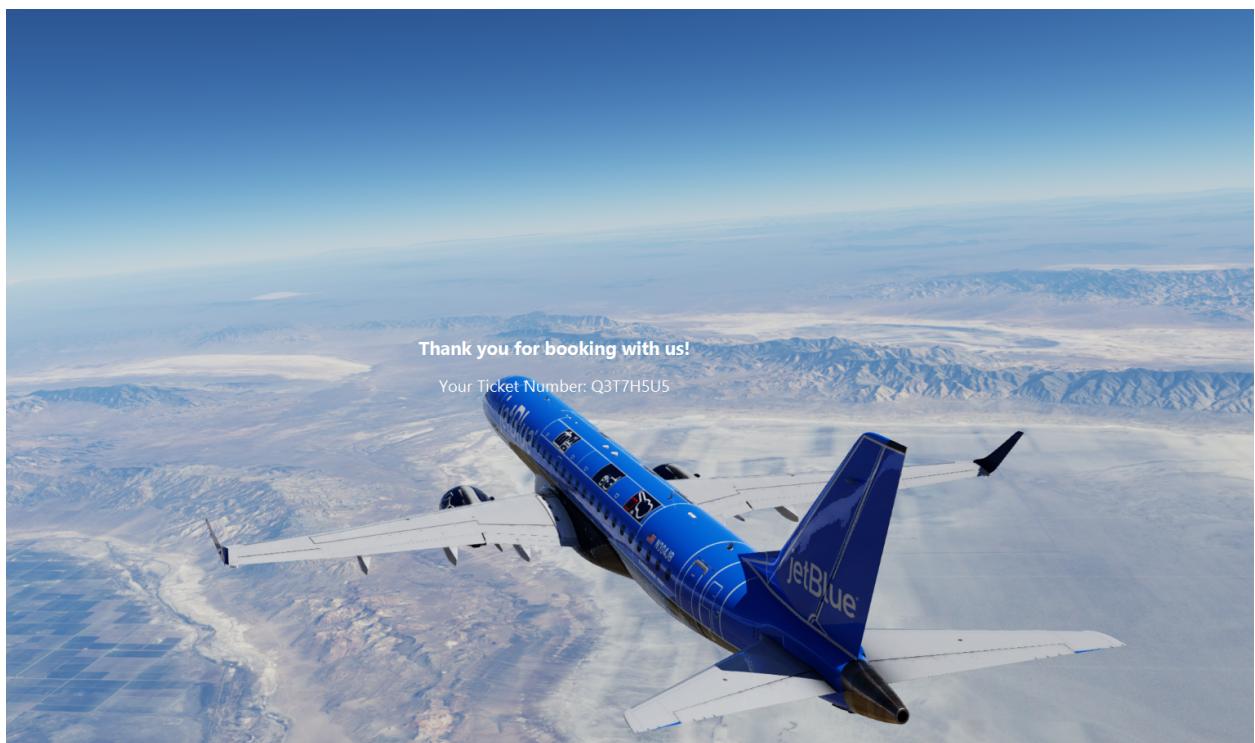
Seat Preference: Aisle

Meal Preference: Halal

Special Accommodations: Wheelchair Assistance

Luggage Accommodations: Standard

Confirm



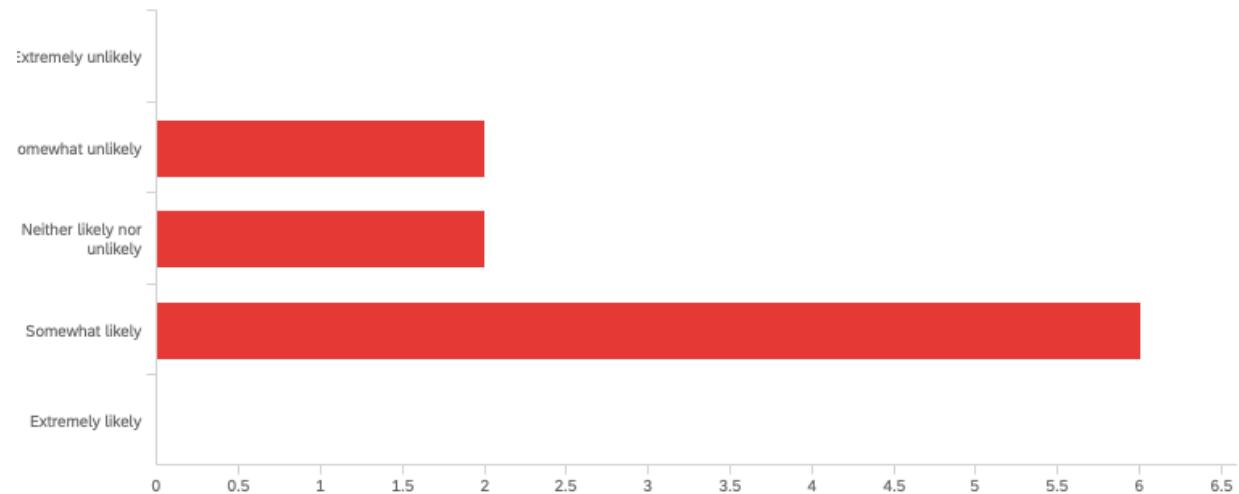
Thank you for booking with us!

Your Ticket Number: Q3T7H5U5

Conducted a survey about our product amongst our peers to give us a sense about the market and what users are looking for:

· How likely are you to use the flight management system?

Page Options ▾



Q1 - How often do you travel?

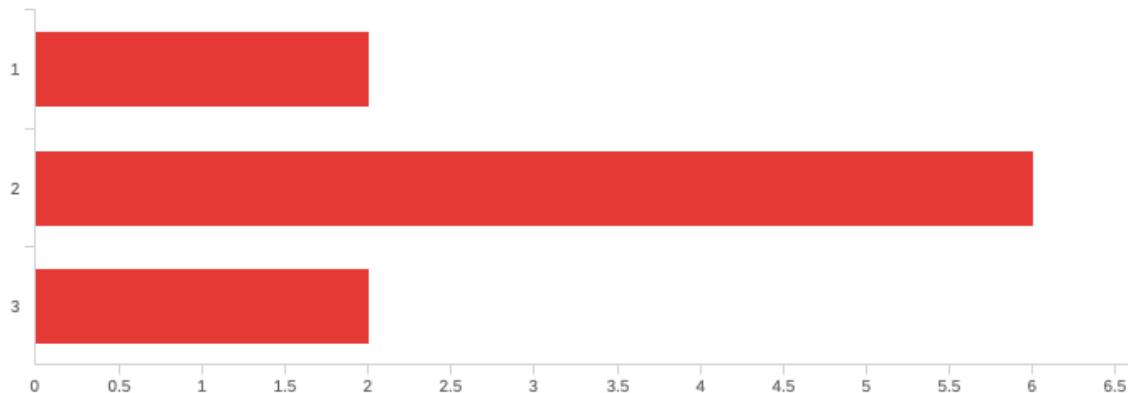
Page Options ▾



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	How often do you travel?	1.00	2.00	1.20	0.40	0.16	10

Rate the flow of the website from 1 to 3 with 1 being the worst and 3 being t...

Page Options



How useful do you find apps and websites like bookmyticket and google flights, etc?

Page Options ▾



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	How useful do you find apps and websites like bookmyticket and google flights, etc?	1.00	5.00	3.30	1.42	2.01	10