

Project Report: Flight Finder

TEAM ID: LTVIP2025TMID58003

1. INTRODUCTION

1.1 Project Overview

FlightFinder is a web app that helps users search and book flights easily. Users can choose flights by date, destination, and class, then book seats and paysecurely. Admins can add and manage flights and view all user bookings. The app is built using React, Node.js, Express, and MongoDB. It makes flight booking fast, simple, and convenient for everyone.

1.2 Purpose

- To make flight booking easier and faster for users through a simple and secure web app.
 - To help admins manage flights and user bookings efficiently from one place.
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2. IDEATION PHASE

2.1 Problem Statement

Booking flights online can be confusing and time-consuming, as users often need to check multiple websites to compare prices, flight options, and availability. This leads to frustration and wasted time. There is a need for a single platform where users can search, compare, and book flights easily, and where admins can manage flights and bookings efficiently.

2.2 Empathy Map Canvas

1. THINKS: Will this app show me the most suitable and comfortable flight?"
2. FEELS: Anxious about making a wrong booking or missing a better deal. Desires clarity and trust in the system.
3. SAYS: I need a reliable app that helps me book quickly and manage everything in one place.
4. DOES: Searches and filters flights based on preferences like time, price, airline, and seat type; proceeds to secure booking and payment.
5. Goal: To make flight booking **simple, fast, and stress-free**—with clear options, secure payment, and full booking management..

2.3 Brainstorming

- Users need a quick and easy way to search and book flights in one place.
 - The app should allow filtering flights by date, destination, airline, and class.
 - Admins must be able to add and manage flights through a secure dashboard.
 - Users should be able to view, cancel, and manage their bookings easily.
 - The system should offer a clean UI with secure login and future payment integration.
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3. REQUIREMENT ANALYSIS

3.1 Customer Journey Map

- User searches for a flight booking app to find and compare flights.
- User opens FlightFinder and browses flights using filters like date and destination.
- User selects a flight, picks a seat, and completes the booking with payment.
- User receives confirmation and booking details via email or app.
- User can view or cancel bookings later if plans change.

3.2 Solution Requirement

Functional Requirements

These define what the system **should do**:

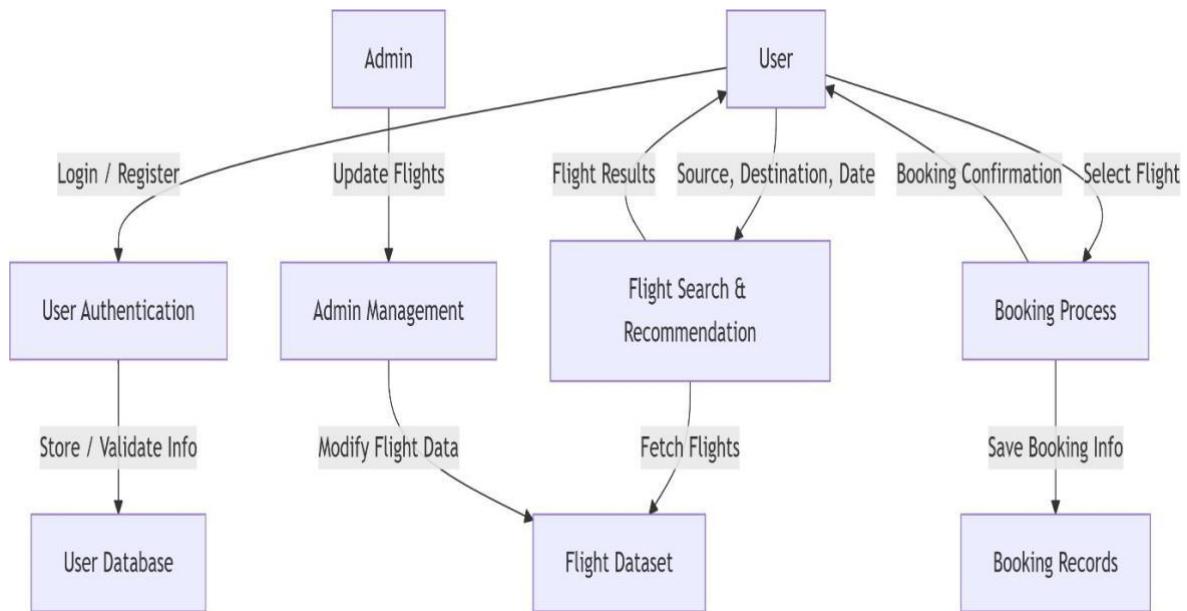
1. Users can register and log in securely.
2. Users can search for flights using filters (source, destination, date, class).
3. Users can book flights and select seats.
4. Users can view, manage, or cancel their bookings.
5. Admins can add, update, or delete flight details.
6. Admins can view all bookings and user activity.
7. System sends email confirmations for booking and cancellation.

Non-Functional Requirements

These define **how** the system should behave:

1. The app should be **user-friendly** and easy to navigate.
2. System must be **secure**, especially for login and data handling.
3. Response time should be **fast** for flight searches and booking.
4. Data should be **stored reliably** using MongoDB.
5. The system should be **scalable** to support more users and features in the future.

3.3 Data Flow Diagram



3.4 Technology Stack

- Frontend: HTML, CSS, JavaScript, Bootstrap
- Backend: Node.js and Express
- Database: MongoDB
- Deployment: Localhost

4. PROJECT DESIGN

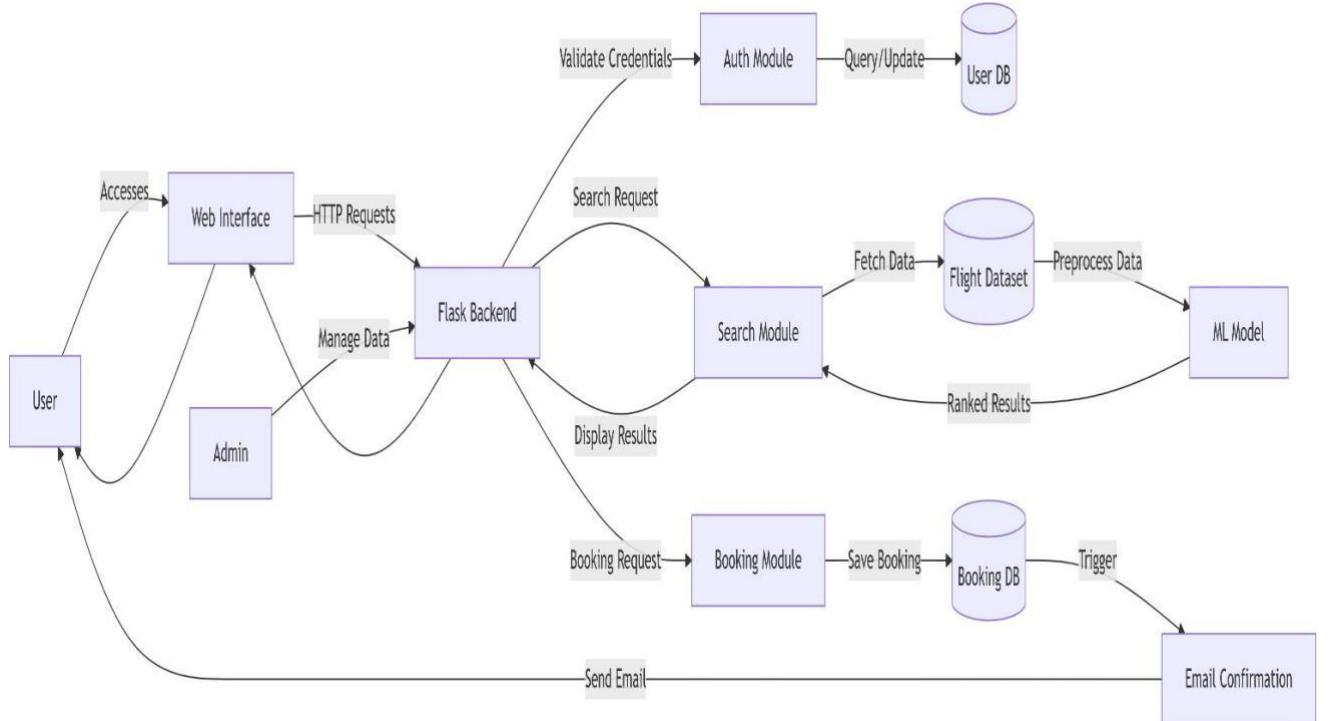
4.1 Problem Solution Fit

FlightFinder provides a single, user-friendly platform where users can search, compare, and book flights easily. It also offers an admin dashboard to manage flights and monitor user activity—all in one place.

4.2 Proposed Solution

- **Users** to register, search for flights, book tickets, select seats, and manage their bookings with ease.
- **Admins** to add, update, and manage flight details and view all user bookings.
- The app will have a clean user interface, secure login, and use a reliable database (MongoDB) to store all data.
- It will be built using the **MERN stack** (MongoDB, Express.js, React.js, Node.js) for a fast and scalable solution.

4.3 Solution Architecture



5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Project Duration: 14 June 2025 – 26 June 2025 (13 days)

Development Approach: Agile methodology with 3 sprints

Sprint Breakdown:

- **sprint 1:** User registration, login, and UI setup
- **Sprint 2:** Flight search, booking flow, and seat selection
- **Sprint 3:** Admin dashboard, booking management, and testing

Tools & Technologies Used:

Frontend: React.js, Bootstrap, Axios

Backend: Node.js, Express.js, MongoDB, Mongoose

Version Control: Git and GitHub

IDE: Visual Studio Code

Deliverables:

Fully functional flight booking web app

Admin panel for flight management

Complete user flow from registration to booking and cancellation

Documentation and deployment-ready code

2. Velocity Tracking

Sprint Duration: 13 days total, divided into 3 sprints

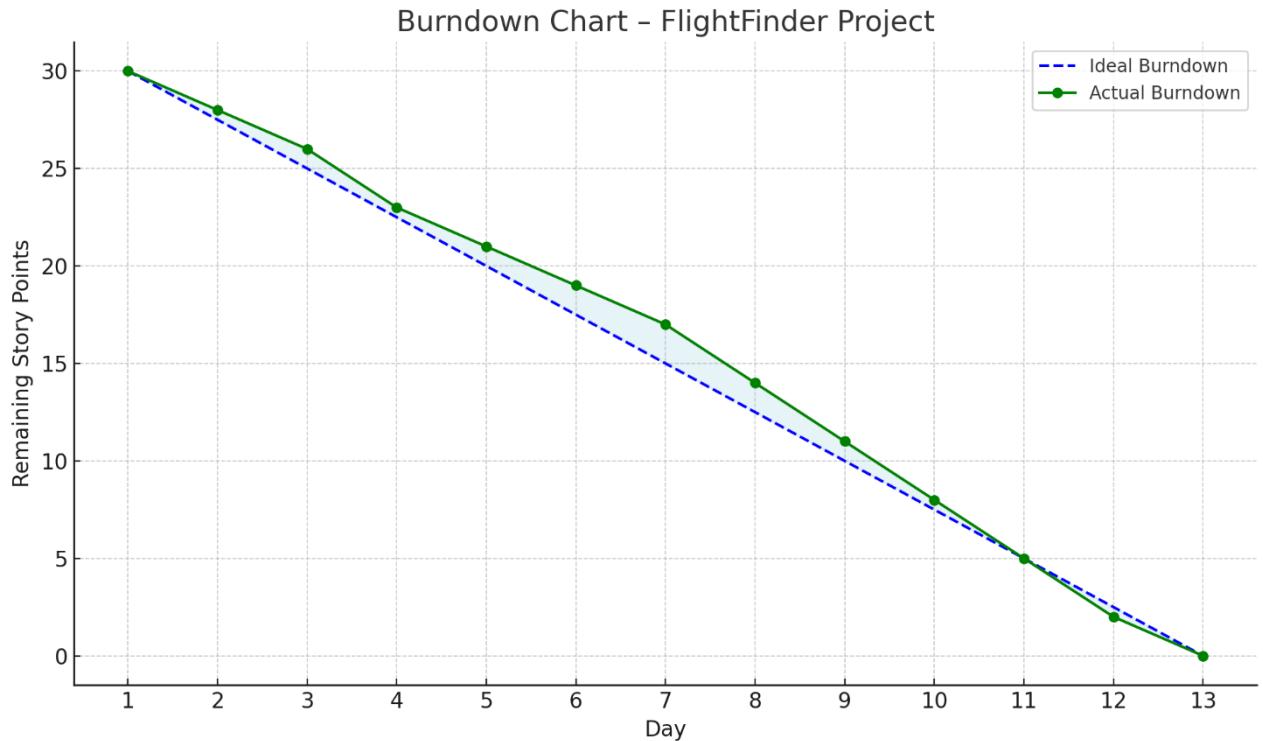
Story Points Completed per Sprint:

Total Story Points Completed: $8 + 10 + 12 = 30$ points

Total Sprint Days: 13

Average Velocity: $30 / 13 \approx 2.31$ story points per day

3. Burndown Chart



6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

Load Testing:

checked how the app performs when multiple users search and book flights at the same time.

Database Performance:

Verified that MongoDB handles queries efficiently for large amounts of flight and booking data.

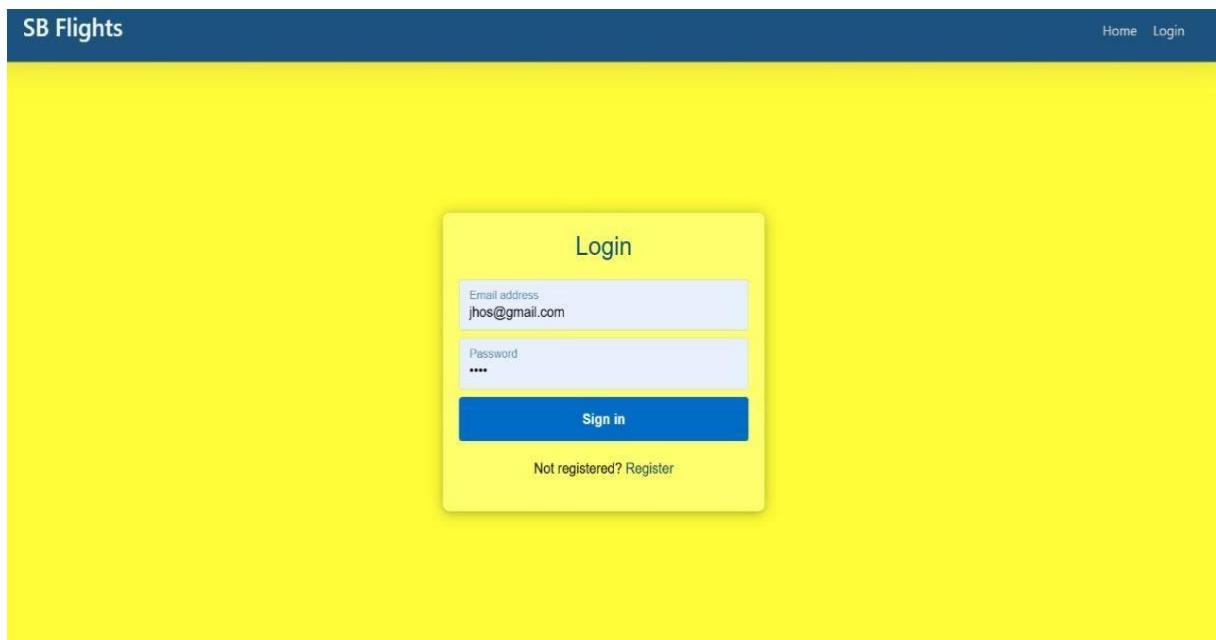
Scalability Testing:

Ensured that the app remains functional when more flights, users, and bookings are added.

7. RESULTS

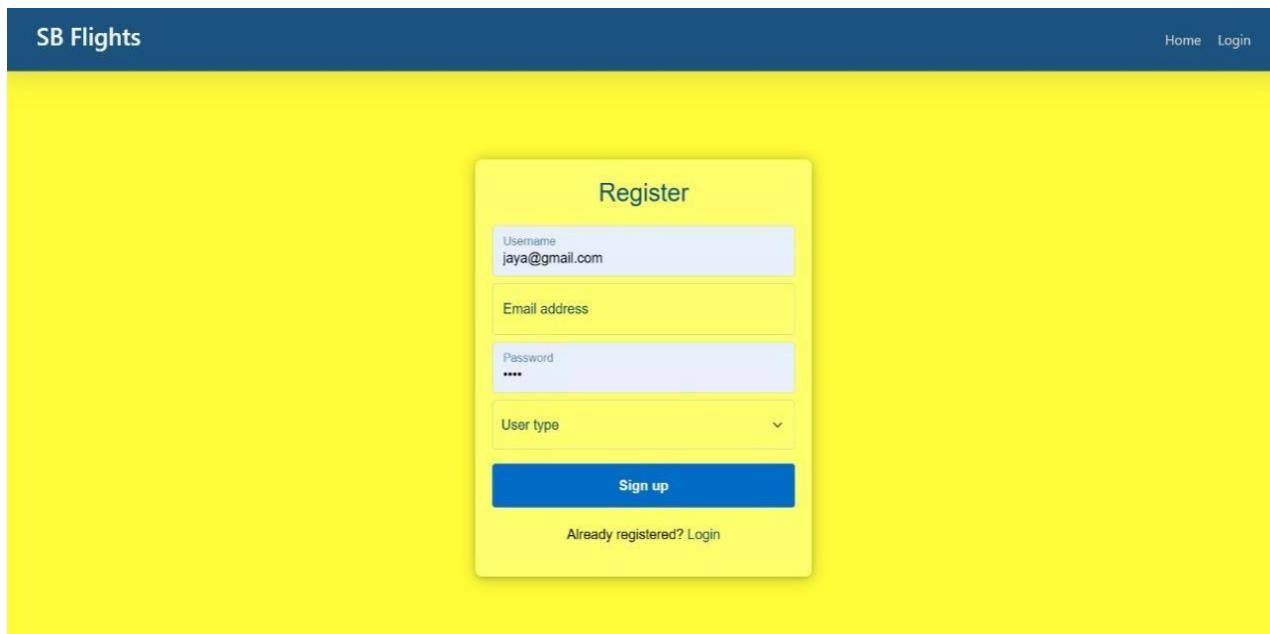
7.1 Output Screenshots

† Login



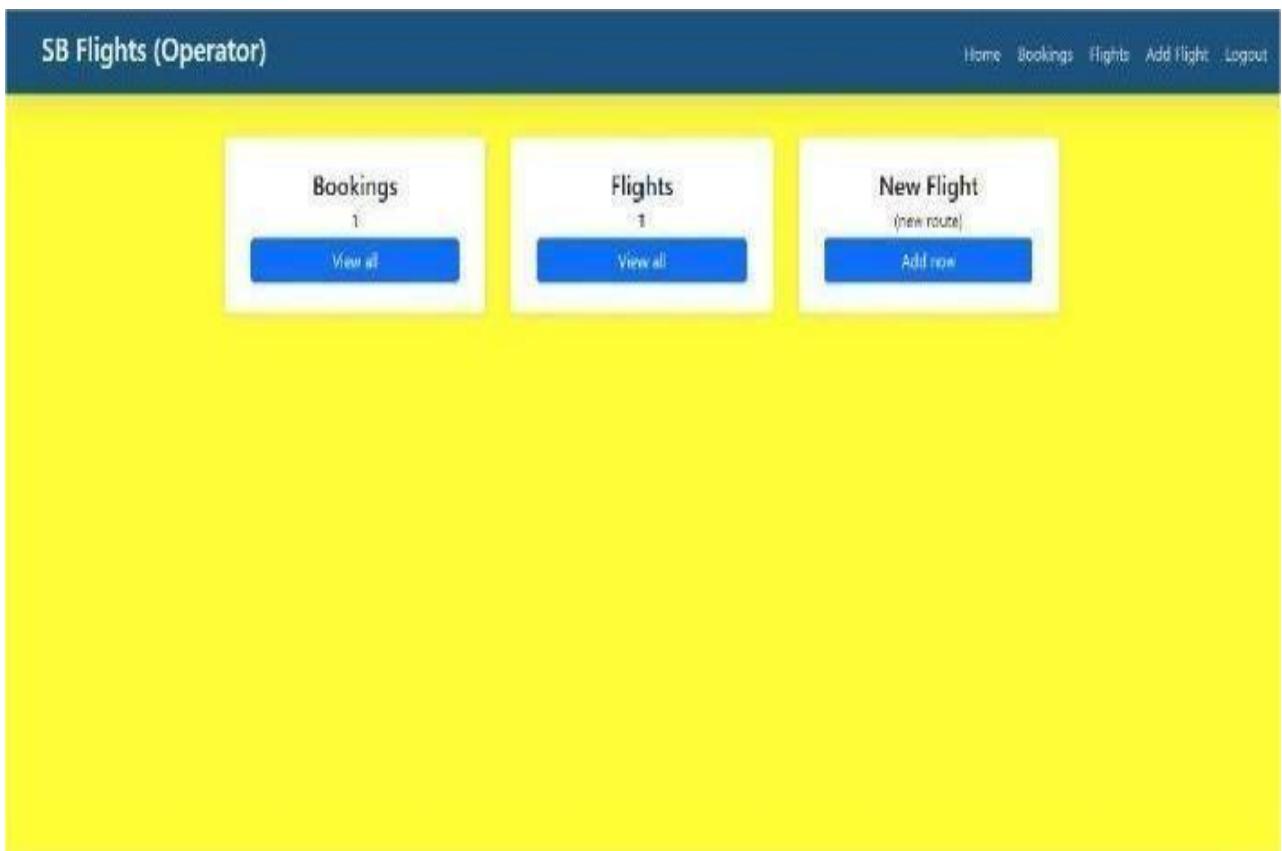
The screenshot shows the login page of the SB Flights application. At the top, there is a dark blue header bar with the text "SB Flights" on the left and "Home" and "Login" on the right. The main content area has a light yellow background. In the center, there is a white rectangular form titled "Login". It contains two input fields: "Email address" with the value "jhos@gmail.com" and "Password" with four asterisks. Below these fields is a blue button labeled "Sign in". At the bottom of the form, there is a link "Not registered? Register".

† Registration



The screenshot shows the registration page of the SB Flights application. At the top, there is a dark blue header bar with the text "SB Flights" on the left and "Home" and "Login" on the right. The main content area has a light yellow background. In the center, there is a white rectangular form titled "Register". It contains four input fields: "Username" with the value "jaya@gmail.com", "Email address", "Password" with four asterisks, and "User type" with a dropdown arrow. Below these fields is a blue button labeled "Sign up". At the bottom of the form, there is a link "Already registered? Login".

† Dashboard



† Available flights:

This screenshot displays a flight booking website. At the top, there's a dark blue header with the "SB Flights" logo on the left and "Home Login" on the right. Below the header is a large banner featuring a photograph of an airplane wing against a cloudy sky. The banner contains the text "Embark on an Extraordinary Flight Booking Adventure!". Below the banner is a search bar with fields for "Return journey", "Departure City" (set to Mumbai), "Destination City" (set to Chennai), "Journey date" (set to 28-06-2025), and a "Search" button. A semi-transparent overlay box is overlaid on the banner, containing flight details: "Indigo Express Flight Number: 6E105", "Start: Mumbai Departure Time: 08:30", "Destination: Chennai Arrival Time: 10:45", "Starting Price: 3200 Available Seats: 180", and a "Book Now" button. At the bottom of the page, there's an "About Us" section with a "High UV Now" status indicator, followed by a standard Windows taskbar with various icons and system status information.

† Booking ticket

SB Flights

Book ticket

Flight Name: priya
Base price: 9000
Flight No: 534

Email: sai@gmail.com
Mobile: 1234567890

No of passengers: 2 Journey date: 27-06-2025 Seat Class: Economy class

Passenger 1
Name: YARLAGADDA NEHAPRIYA Age: 20

Passenger 2
Name: aarthiri Age: 22

Total price: 18000

Book now

⊕ Total bookings

SB Flights (Admin)		Home	Users	Bookings	Flights	Logout
Bookings						
Booking ID: 685d2e658646b7666c76296 Mobile: 765938819 Email: jaya@gmail.com Flight Id: 906 Flight name: opera On-boarding: Bangalore Destination: Jaipur Passengers: Seats: 0, 1, 0, 2 1. Name: jayashri, Age: 54 2. Name: neha, Age: 45 Booking date: 2025-06-26 Journey date: 2025-06-29 Journey Time: 07:00 Total price: 19200 Booking status: confirmed						
Cancel Ticket						
Booking ID: 685d2a904b40d6a59f19dxaab2 Mobile: 7679818819 Email: jaya@gmail.com Flight Id: 61102 Flight name: IndiGo Express On-boarding: Hyderabad Destination: Mumbai Passengers:						
Booking ID: 685d25da59d8af9b1a4730ac Mobile: 9491567980 Email: vaishnavi@gmail.com Flight Id: 61101 Flight name: IndiGo Express On-boarding: Hyderabad Destination: Mumbai Passengers:						

All users:

SB Flights (Admin)			Home	Users	Bookings	Flights	Logout
All Users							
UserId: 6857a17e44f4012ae3a2239f Username: bavireddy Email: vaishnavi@gmail.com UserId: 6857a5ac44f4012ae3a22413 Username: jaya Email: jaya@gmail.com UserId: 685b84fb01fb96cad67c3f0 Username: navya Email: navya@gmail.com UserId: 68542300677753hf1a72chfa Username: prudhvi Email: prudhvi@gmail.com							
Flight Operators							
Id: 6857a84844f4012ae3a22432 Flight Name: jhos Email: jhos@gmail.com							
Id: 685b955d01fb96cad67c577 Flight Name: operatorsree Email: sree@gmail.com							
Id: 685d1ef5ab2e56403a1635d8 Flight Name: anjali Email: anjali@gmail.com							
Id: 6854248a677753hf1a72chfa Flight Name: oon Email: oon@gmail.com							

Total Flights:

All Flights

`_id: 6857a0fcbb3fa569b4a657464`
 Flight Id: SG102 Flight name: SpiceJet SG102
 Starting station: Hyderabad Departure time: 08:00 AM
 Destination: Mumbai Arrival time: 10:30 AM
 Base price: 3000 Total seats: 180

`_id: 6857a55bb3fa569b4a657466`
 Flight Id: 6E105 Flight name: Indigo Express
 Starting station: Mumbai Departure time: 08:30
 Destination: Chennai Arrival time: 10:45
 Base price: 3200 Total seats: 180

`_id: 6857a6cbb3fa569b4a657468`
 Flight Id: 6E101 Flight name: IndiGo Express
 Starting station: Hyderabad Departure time: 08:30
 Destination: Mumbai Arrival time: 10:45
 Base price: 3200 Total seats: 180

`_id: 6857a6cbb3fa569b4a657469`
 Flight Id: AI202 Flight name: Air India Regional
 Starting station: Chennai Departure time: 11:00
 Destination: Delhi Arrival time: 13:30
 Base price: 4000 Total seats: 200

`_id: 6857a6cbb3fa569b4a65746a`
 Flight Id: SG303 Flight name: SpiceJet Connect
 Starting station: Bangalore Departure time: 15:15
 Destination: Kolkata Arrival time: 18:00

`_id: 6857a6cbb3fa569b4a65746b`
 Flight Id: UK404 Flight name: Vistara Sky
 Starting station: Delhi Departure time: 09:00
 Destination: Jaipur Arrival time: 10:00

8. ADVANTAGES & DISADVANTAGES

Advantages:

- Easy-to-use interface
- Scalable Architecture (MERN Stack)
- Reusable & Modular Code

Disadvantages:

- No Integration with Real-Time Airline APIs
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6. CONCLUSION

The **FlightFinder App** successfully provides a complete solution for booking and managing flights online. It simplifies the travel experience by offering features like flight search, seat selection, booking, and cancellations—all in one place. The admin panel helps manage flight data and user activity effectively.

Using the **MERN stack**, the app delivers a responsive, secure, and scalable platform. Through this project, we gained hands-on experience in full-stack development, database integration, and agile project planning.

Final Thoughts

- The development of the *FlightFinder* app has been a rewarding journey in applying full-stack web development skills to solve a real-world problem. From designing a user-friendly frontend with React.js to building a robust backend with Node.js, Express, and MongoDB, this project has demonstrated the power and flexibility of the MERN stack in creating dynamic, interactive, and scalable applications.
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10. FUTURE SCOPE

1. Live Flight Updates

- Show real-time delays, cancellations, and gate changes.
- *Example:* "Flight AA123 is now boarding at Gate B12."

2. Easy Payments

- Add credit/debit card and UPI payments.
- *Options:* Stripe, PayPal, or Razorpay.

3. Instant Tickets via SMS/Email

- Send e-tickets (PDF) to email.
- SMS alerts for booking confirmations.

4. Admin Control Panel

- Manage users, bookings, and flights in one place.
 - View sales reports and adjust flight details.
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11. APPENDIX

Source Code: <https://github.com/Bavireddyvaishnavi18/Flightfinders>

GitHub link: <https://github.com/Bavireddyvaishnavi18/Flightfinders>

DemoLink: <https://drive.google.com/file/d/19mbpjTRWXBSkBS65RN-x7Nhy36Pw90TP/view?usp=sharing>