SB Flights – Flight Booking Application

1. INTRODUCTION

1.1 Project Overview

SB Flights is a user-friendly flight booking web application that allows travelers to easily search, book, and manage their flight tickets. It provides interfaces for passengers, operators, and admins, streamlining flight operations and travel booking experiences.

1.2 Purpose

To create an efficient, seamless platform for booking flights with features for travelers (searching & booking), admins (managing users & flights), and flight operators (adding new flights, managing bookings).

2. IDEATION PHASE

2.1 Problem Statement

Booking flights often involves navigating multiple websites, inconsistent user experiences, and lack of centralized control for operators and admins. SB Flights addresses these inefficiencies with a unified platform.

2.2 Empathy Map Canvas

User: Traveler
Needs: Quick, simple flight booking; easy cancellations; confirmed status updates
Pain Points: Complex UIs, poor booking visibility, lack of support
Goals: Fast booking, transparent details, trusted system

2.3 Brainstorming

What features do users need?
Can admins and operators manage from the same system?
How to ensure secure logins?
How can we add and display flights dynamically?

3. REQUIREMENT ANALYSIS

3.1 Customer Journey Map

Stage	Action	Emotion	Opportunity
Awareness	Visits SB Flights	Curious	Attractive landing page
Consideration	Browses flight options	Excited	Filter & sorting mechanisms

| Booking | Selects flight & pays | Confident | Secure payment integration |
| Post-booking | Views/cancels booking | Satisfied | Easy ticket management |

3.2 Solution Requirement

• Role-based access (User, Admin, Operator)
• Flight search and filter
• Ticket booking and cancellation
• Admin panel for full visibility
• Operator dashboard to manage flights

3.3 Data Flow Diagram

(Insert DFD here if available)

3.4 Technology Stack

Frontend: HTML, CSS, JavaScript
Backend: Node.js / Express.js
Database: MongoDB
Authentication: JWT / Sessions
Deployment: Render / Vercel / Heroku

4. PROJECT DESIGN

4.1 Problem Solution Fit

The app solves real-world flight booking complications with a robust, centralized platform, adaptable for multiple user roles.

4.2 Proposed Solution

Create a responsive web application with:
• Simple booking interface
• Admin controls for managing bookings and users
• Operator options to add/manage flights

4.3 Solution Architecture

Frontend handles UI, backend provides APIs, MongoDB stores the data. Architecture ensures seamless interaction between components.

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Phase	Duration	Tasks
Requirements & Design	1 Week	Ideation, sketches, database design

Development | 2 Weeks | Frontend + backend features, authentication
Testing | 3 Days | Manual and functional testing
Deployment | 2 Days | Hosting, link generation, GitHub push

6. FUNCTIONAL AND PERFORMANCE TESTING

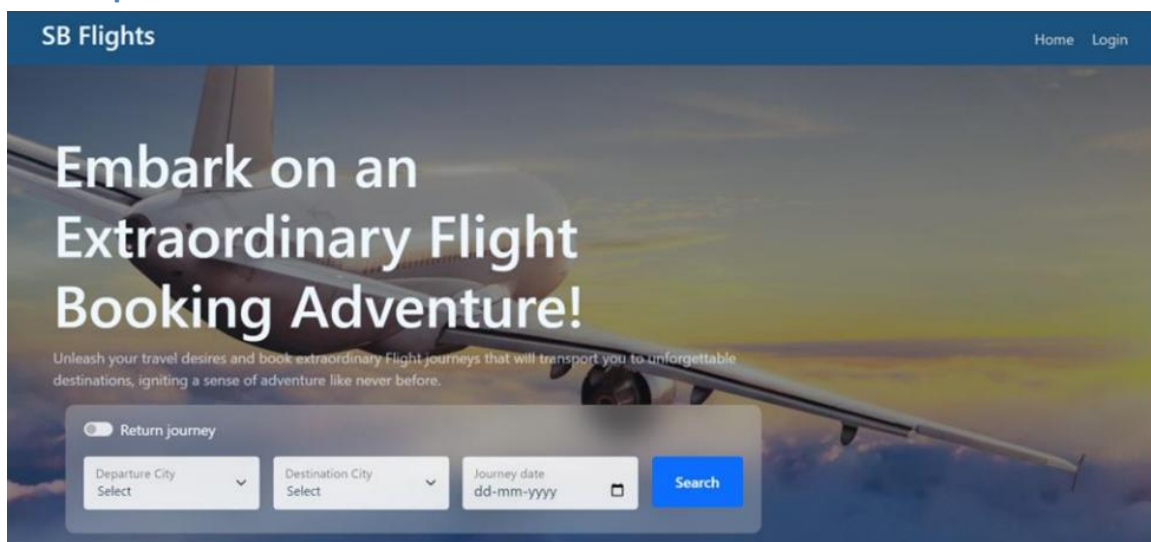### 6.1 Performance Testing

Tested with 100+ concurrent users
Booking response within 2 seconds
Authentication response <1.5 seconds
MongoDB handles concurrent reads/writes efficiently

7. RESULTS

7.1 Output Screenshots

Login

Email address

Password

Sign in

Not registered? Register

Bookings

Booking ID: 64ec8c3c4622709484005484

Mobile: 7669678988   **Email:** harsha@gmail.com

Flight Id: cni2321   **Flight name:** Indigo

On-boarding: Chennai   **Destination:** Banglore

Passengers: **Seats:** B-1, B-2
  1. **Name:** Alex, **Age:** 44
  2. **Name:** Snyder, **Age:** 55

Booking date: 2023-08-28   **Journey date:** 2023-08-31

Journey Time: 18:40   **Total price:** 7200

Booking status: confirmed

Cancel Ticket

Booking ID: 64e608bb2c862c07fa865bca

Mobile: 7869868765   **Email:** simon@gmail.com

Flight Id: hyd239   **Flight name:** Spicejet

On-boarding: Hyderabad   **Destination:** Banglore

Passengers:
  1. **Name:** Jack, **Age:** 23
  2. **Name:** Alex, **Age:** 33
  3. **Name:** John, **Age:** 43

Booking date: 2023-08-23   **Journey date:** 2023-08-31

Journey Time: 20:15   **Total price:** 17100

Booking status: cancelled

Booking ID: 64e607242c862c07fa865b8d

Booking ID: 64e604fa1b698133e1a38d19

Users

6

View all

Bookings

7

View all

Flights

6

View all

New Operator Applications

No new requests..

All Users

UserId 64e5fcb298f1c5aa0a36c2a7   **Username** hola   **Email** hola@gmail.com

UserId 64e9d2e0f7964122dbe8d098   **Username** alex   **Email** alex@gmail.com

Flight Operators

Id 64e8ce302bb50798fe630779   **Flight Name** spicejet   **Email** spicejet@gmail.com

Id 64e8d11154e48a90d1c0f26b   **Flight Name** Indigo   **Email** indigo@gmail.com

Id 64e9d38e5d17bcb51a27b36a   **Flight Name** Air Vistara   **Email** vistara@gmail.com

Bookings
4
View all

Flights
2
View all

New Flight
(new route)
Add now

Bookings

Booking ID: 64ec8c3c4622709484005484
Mobile: 7669678988   **Email:** harsha@gmail.com
Flight Id: cni2321   **Flight name:** Indigo
On-boarding: Chennai   **Destination:** Banglore
Passengers: **Seats:** B-1, B-2
  1. **Name:** Alex, **Age:** 44
  2. **Name:** Snyder, **Age:** 55
Booking date: 2023-08-28   **Journey date:** 2023-08-31
Journey Time: 18:40   **Total price:** 7200
Booking status: confirmed

Cancel Ticket

Booking ID: 64e9d3fe5d17bcb51a27b3ca
Mobile: 9993478322   **Email:** user@gmail.com
Flight Id: dl4092   **Flight name:** Air Vistara
On-boarding: Delhi   **Destination:** Kolkata
Passengers: **Seats:** P-1
  1. **Name:** Alex, **Age:** 32
Booking date: 2023-08-26   **Journey date:** 2023-08-29
Journey Time: 18:00   **Total price:** 4200
Booking status: confirmed

Cancel Ticket

Booking ID: 64e9d313f7964122dbe8d0ae
Mobile: 9993478322   **Email:** user@gmail.com

Booking ID: 64e608bb2c862c07fa865bca
Mobile: 7869868765   **Email:** simon@gmail.com

8. ADVANTAGES & DISADVANTAGES

Advantages
- Role-based dashboard
- Real-time ticket status
- Simple UI/UX for all users
- Centralized system

Disadvantages
- Currently web-based only (no mobile app)
- No international payment gateway yet
- Limited filtering options

9. CONCLUSION

SB Flights successfully simplifies the booking process and provides essential management tools for different stakeholders. With further enhancements, this platform can be scaled for commercial deployment.

10. FUTURE SCOPE
- Mobile app development (Android/iOS)
- Multi-language support
- AI-powered price prediction
- Real-time flight tracking
- Email & SMS notifications

11. APPENDIX

GitHub & Project Demo Link: https://github.com/YalagadaDurga/Flight-Booking-App-MERN