

SB FLIGHTS - FLIGHT BOOKING APP

1. INTRODUCTION

1.1 Project Overview

SB Flights is a full-stack flight booking web application built using the MERN stack (MongoDB, Express, React, Node). It allows users to search, book, and manage flight tickets with role-specific features for admins and flight operators.

1.2 Purpose

The purpose is to digitize flight booking, offer real-time search, and provide seamless management for flight operators and administrators.

2. IDEATION PHASE

2.1 Problem Statement

Users struggle with fragmented flight booking systems and lack centralized management for operators.

2.2 Empathy Map Canvas

Captured user needs: wants easy, fast, trustworthy bookings. Pain: too many options, slow systems.

Gain: clear filters, real-time booking.

2.3 Brainstorming

Explored concepts around user-friendly booking, admin control panel, approval workflow for operators, and role-based dashboards.

3. REQUIREMENT ANALYSIS

3.1 Customer Journey map

Covers all user interactions from login, search, booking, to post-flight actions.

3.2 Solution Requirement

Functional: Register, Login, Search, Book, Cancel. Non-Functional: Secure, scalable, usable.

3.3 Data Flow Diagram

Level 0 DFD shows interaction between user, frontend, backend, and MongoDB.

3.4 Technology Stack

Frontend: React.js

Backend: Node.js + Express

Database: MongoDB

Other: JWT Auth, Axios, CSS

4. PROJECT DESIGN

4.1 Problem Solution Fit

Matches user needs for fast, easy bookings.

4.2 Proposed Solution

Role-based system: users, admins, operators. Real-time search + booking + management.

4.3 Solution Architecture

Three-layered architecture: React frontend, Express backend, MongoDB database. JWT for auth.

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Sprint-based: Sprint 1 - Auth & search, Sprint 2 - Booking & admin dashboard.

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

Tested using Postman, JMeter, and Lighthouse. Evaluated response time, load handling, and UI responsiveness.

7. RESULTS

7.1 Output Screenshots

(Screenshots of flight search, booking, dashboards, etc. to be attached separately.)

8. ADVANTAGES & DISADVANTAGES

Advantages:

- Real-time flight booking
- Easy admin/operator control
- Responsive UI

Disadvantages:

- Requires internet
- No payment gateway integration yet

9. CONCLUSION

SB Flights streamlines flight booking, giving users a clear, role-driven, full-featured experience. It is scalable, secure, and well suited for real-world applications.

10. FUTURE SCOPE

- Add payment gateway integration
- Email/SMS reminders
- User reviews & ratings
- Flight tracking integration

11. APPENDIX

- Source Code: Included in submission
- Dataset Link: Not applicable (uses live data entry)