

MERN stack powered by MongoDB

Naan Mudhalvan - Project Documentation

Introduction

Project Title: Myflight (Flight Booking Application)

College: Tagore Engineering College – 4127

Department: B.E CSE IV Year 7th Sem

Team ID: NM2024TMID02021

Team Members:

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Project Overview

Purpose:

This Flight Booking Application is designed to provide users with an intuitive platform to search, book, and manage flight reservations efficiently. It eliminates the use of JWT for authentication, relying on session-based authentication for secure user sessions.

Features:

The application includes the following features:

- - **User Authentication:** Session-based login and signup with secure password handling.
- - **Flight Search:** Search for flights by destination, date, and price range.
- - **Booking Management:** View, confirm, and manage flight bookings.
- - **Payment Integration:** Seamless and secure payment processing using a payment gateway.
- - **Admin Dashboard:** Manage flights, user accounts, and monitor bookings.
- - **Responsive Design:** Ensures compatibility across devices.

Architecture

The application leverages the MERN stack for efficient development and deployment:

- - **Frontend:** Developed using React.js, styled with Bootstrap for responsiveness.
- - **Backend:** Implemented with Node.js and Express.js for APIs and session handling.
- - **Database:** MongoDB for storing flight details, user data, and bookings.
- - **Middleware:** Uses bcrypt for password hashing and session-based authentication for security.

Setup Instructions

Prerequisites:

- Node.js
- MongoDB Atlas Account
- Cloudinary account for image and video storage.

Installation:

1. Clone the repository:

```
git clone https://github.com/tomroger1823/Flight-Booking-App-MERN
```

```
cd online-learning-platform
```

2. Install dependencies:

○ Frontend:

```
cd client
```

```
npm install
```

○ Backend:

```
cd server
```

```
npm install
```

3. Set up environment variables:

- Create **.env** file in the **server** folder with the following:

```
MONGODB_URI='mongodb+srv://tomroger1823:flight%40123@cluster0.cwt4c.mongodb.net/?retryWrites=true&w=majority&appName=Cluster0'
```

```
JWT_SECRET='t9843yt8hg0h8y834th893hy89h'
```

```
EMAIL_USER='tomroger1823@gmail.com'
```

```
EMAIL_PASS='szlv xili ndr w qasg'
```

```
CLOUDINARY_CLOUD_NAME='dgosdgcem'
```

CLOUDINARY_API_KEY='695861773226449'

CLOUDINARY_API_SECRET='H7QShPl9ouKwmBTdrmnFihgaIIU'

- Create **.env.local** file in the **client** folder with the following:

VITE_REACT_APP_BACKEND_BASEURL=http://localhost:6001

Folder Structure

Client (Frontend):

- **src/**: Contains all React components, pages, and assets.
 - **Components/**: Reusable UI components such as Footer, Header, HeaderStudent and SideBar
 - **Pages/**: Folders such as Admin, User, Instructor and Navs containing Pages for different aspects of the application.

Server (Backend):

- **routes/**: Defines API routes for users, instructors, forums, and admin.
- **models/**: MongoDB schemas for Users, Courses, flights and booking.
- **middleware/**: Uses bcrypt for password hashing and session-based authentication for security.
- **utils/**: Contains the Cloudinary API.

Running the Application

- **Frontend:**

cd client

npm run dev

- **Backend:**

cd server

nodemon server.js (or) node server.js

API Documentation

The following API endpoints are available:

User Routes

- **POST /signup**: Register a new user.

- - **POST /login:** Login user with session-based authentication.
- - **POST /logout:** End user session.
- - **GET /profile:** Fetch user profile details.

Flight Routes

- - **GET /flights:** Retrieve all available flights.
- - **POST /book:** Book a flight.
- - **GET /bookings:** View user booking history.
- - **DELETE /bookings/:id:** Cancel a booking.

Admin Routes

- - **POST /add-flight:** Add a new flight.
- - **PUT /edit-flight/:id:** Edit flight details.
- - **DELETE /remove-flight/:id:** Remove a flight.
- - **GET /all-bookings:** View all bookings.

Passenger Routes

- **POST /signup:** Register a new passenger.
- **POST /login:** Login user.
- **GET /verify-email:** To verify the newly registered passenger's email.
- **POST /book-flight:** Book a flight.
- **GET /bookings/:email:** Fetch all bookings for a specific passenger.
- **DELETE /bookings/:id:** Cancel a specific booking.
- **GET /booking-details/:id:** Get booking details by ID.

User Interface

1. Customer Dashboard:

- Displays available flights, booking history, and profile management.
- Search and filter options for flights based on destinations, dates, and price range.

2. Admin Dashboard:

- **Manage flights:** Add, update, or remove flight details (e.g., schedules, fares, seats).
- **User management:** View customer profiles, bookings, and manage refunds.
- **Analytics:** View insights like most popular routes, revenue reports, etc.

3. Airline-Operator Dashboard:

- Monitor booked flights and passengers.
- Seat assignment and updates on flight status (e.g., delays or cancellations).

Testing

1. Manual Testing:

- Verified functionalities such as:
 - User signup/login and profile updates.
 - Flight search and filtering options.
 - Booking confirmation and payment flow.
 - Viewing booking history and handling cancellations.

2. Postman: Used for API endpoint testing.

API Endpoint Testing:

User Authentication: Tested endpoints for login, signup, and validation.

Flight Operations:

GET /flights: Fetch available flights.

POST /bookings: Confirm bookings.

PUT /flights/:id: Update flight details.

Admin Operations:

POST /flights: Add new flights.

DELETE /flights/:id: Remove flights.

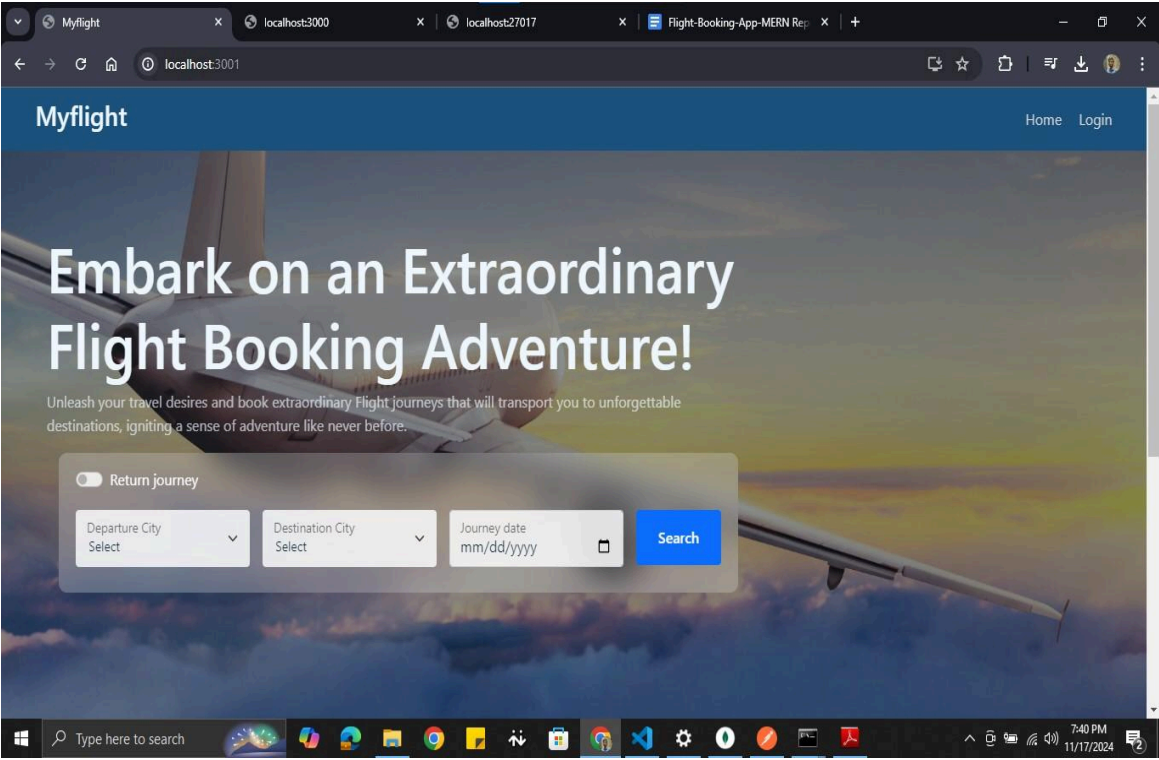
Screenshots or Demo

- **Demo Link:**

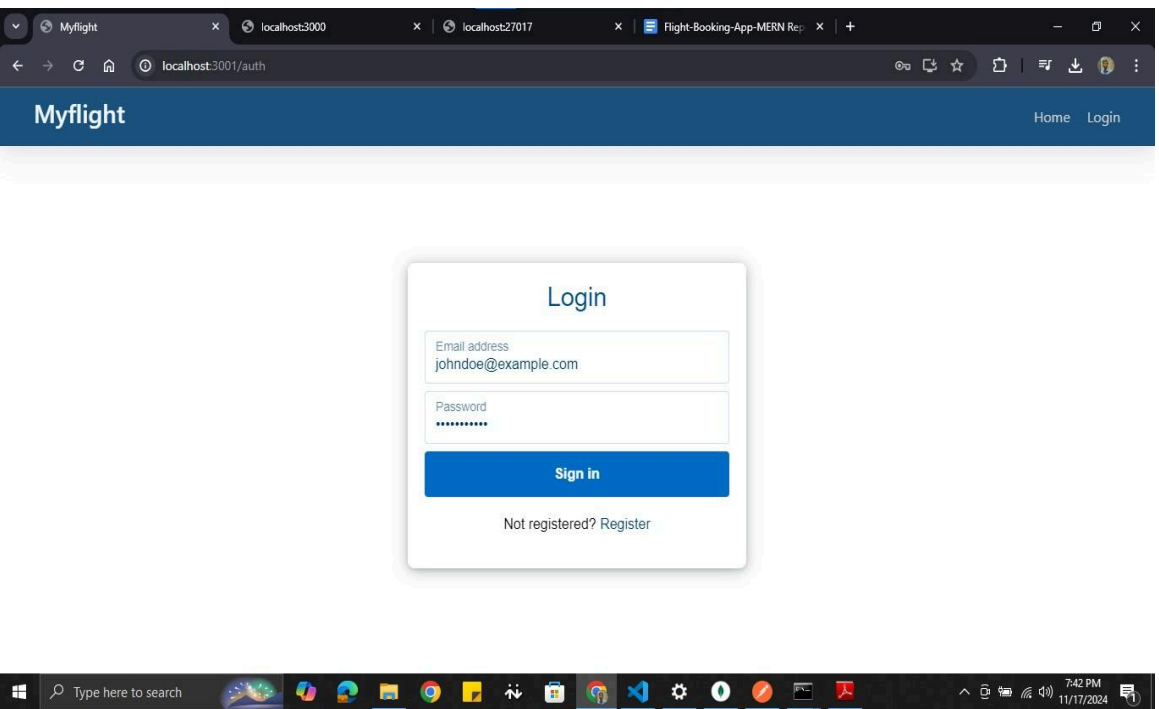
https://drive.google.com/file/d/14v_Tryei3f1Q_oX-utwA4_ATEgPfNM0C/view?usp=sharing

Screenshots:

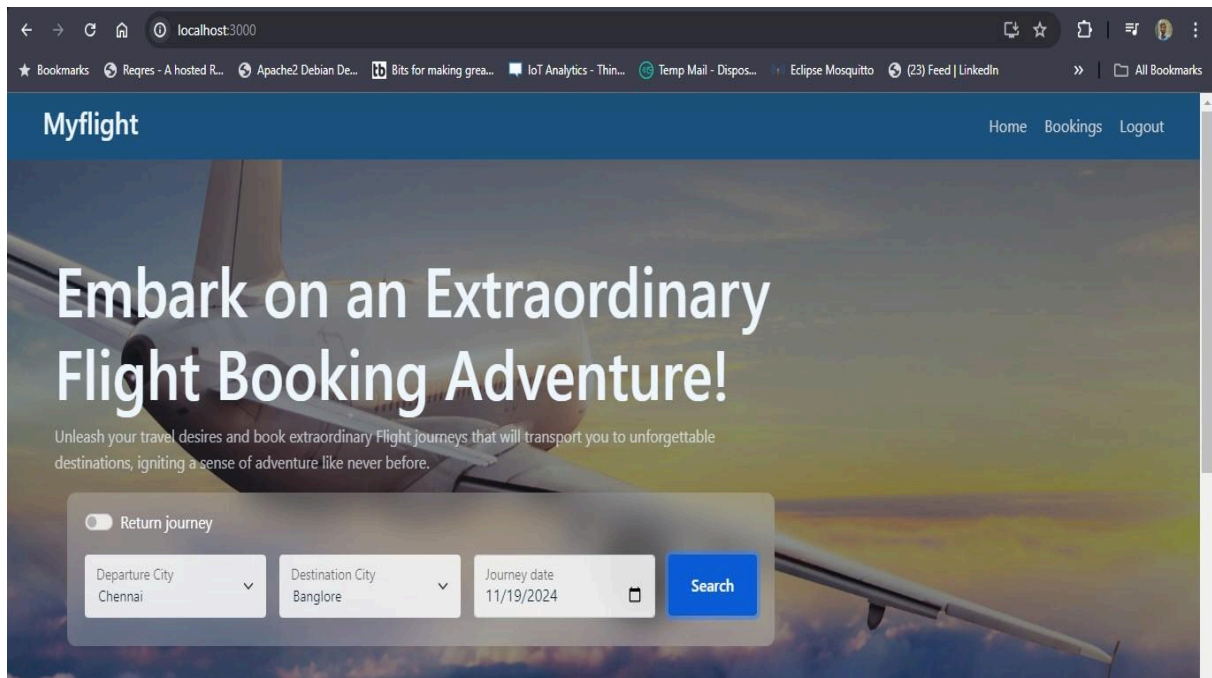
1. Landing Page



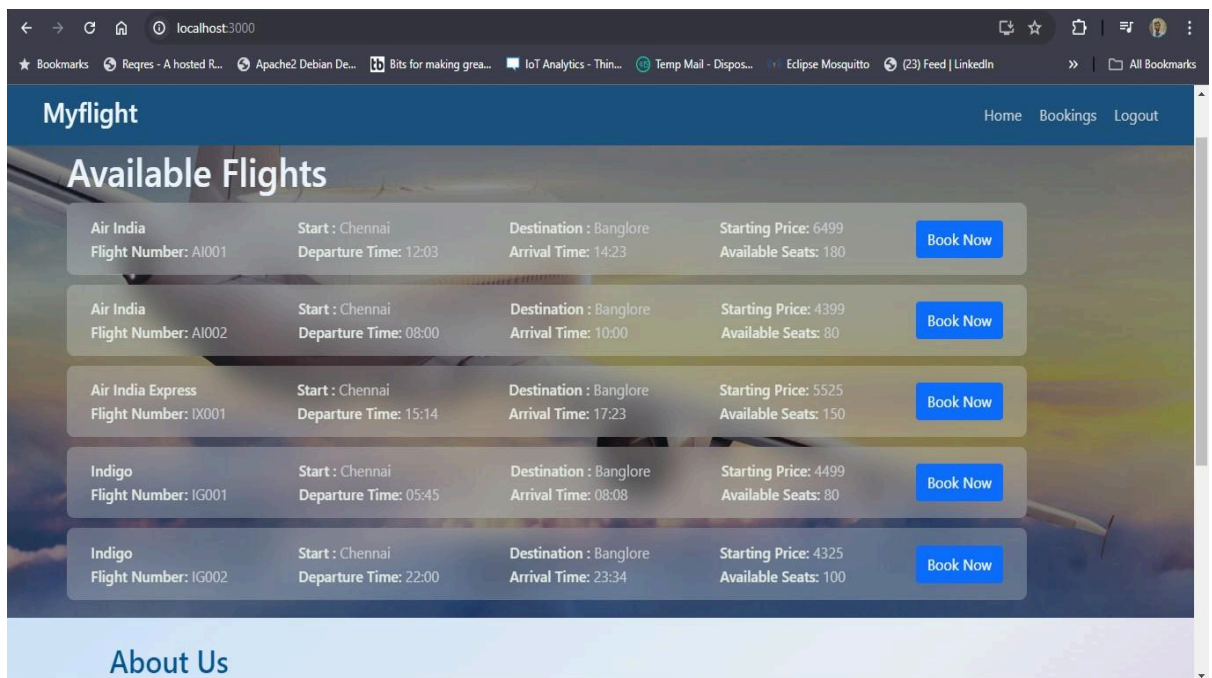
2. User Login



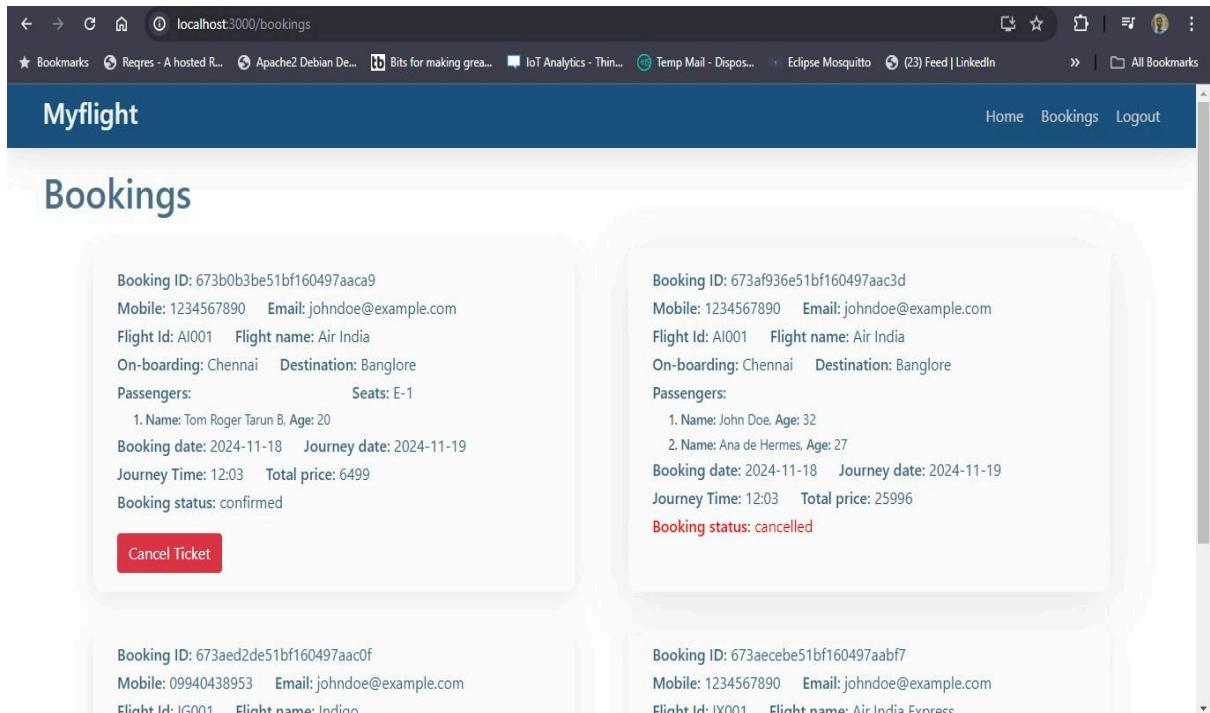
3. User Dashboard



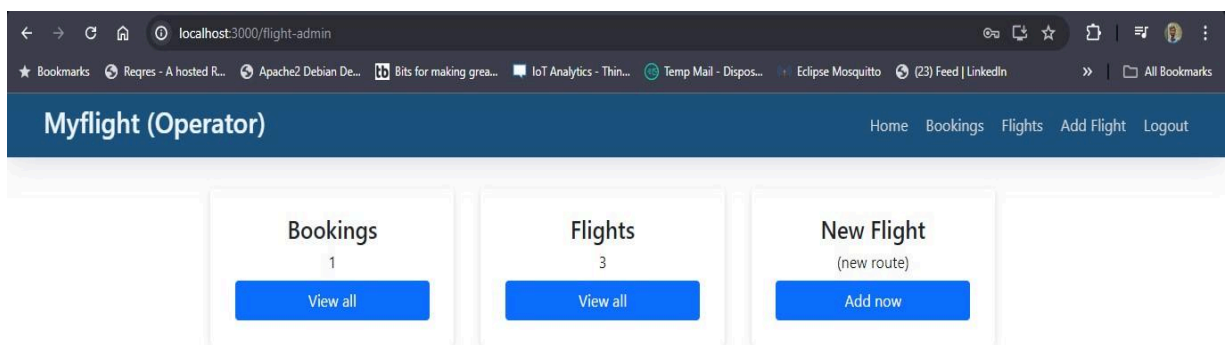
4. Flight Details



5. Bookings Page



6. Flight-Operator Dashboard



7. Add New Flight Page

The screenshot shows a web browser at localhost:3000/new-flight. The page has a dark blue header with 'Myflight (Operator)' and navigation links: Home, Bookings, Flights, Add Flight, Logout. The main content area is a light gray box titled 'Add new Flight'. It contains several input fields: 'Flight Name' (Indigo), 'Flight Id' (IG004), 'Departure City' (Chennai), 'Departure Time' (12:30 PM), 'Destination City' (Delhi), 'Arrival time' (03:15 PM), 'Total seats' (180), and 'Base price' (8425). There are also dropdown arrows for the city fields and clock icons for the time fields. A blue 'Add now' button is at the bottom.

Field	Value
Flight Name	Indigo
Flight Id	IG004
Departure City	Chennai
Departure Time	12:30 PM
Destination City	Delhi
Arrival time	03:15 PM
Total seats	180
Base price	8425

8. Admin Dashboard

The screenshot shows a web browser at localhost:3000/admin. The page has a dark blue header with 'Myflight (Admin)' and navigation links: Home, Users, Bookings, Flights, Logout. The main content area features three cards: 'Users' (5), 'Bookings' (4), and 'Flights' (6), each with a 'View all' button. Below these is a 'New Operator Applications' section with a table showing an application from 'Spice jet' with email 'spicejet@example.com'. There are 'Approve' and 'Reject' buttons for this application.

Section	Count	Action
Users	5	View all
Bookings	4	View all
Flights	6	View all

New Operator Applications		
Operator name:	Operator email:	
Spice jet	spicejet@example.com	Approve Reject

9. All Users page

Myflight (Admin)

HomeUsersBookingsFlightsLogout

All Users

UserId 673ae1c2e51bf160497aaad0

Username johndoe

Email johndoe@example.com

Flight Operators

Id 673ada8ae51bf160497aaa34

Flight Name Air India

Email airindia@example.com

Id 673adcd3e51bf160497aaa7e

Flight Name Indigo

Email indigo@example.com

Id 673ae0a0e51bf160497aaaa9

Flight Name Air India Express

Email airindiaexpress@example.com

10. All Flights Page

Myflight (Admin)

HomeUsersBookingsFlightsLogout

All Flights

_id: 673adc47e51bf160497aaa65

Flight Id: AI001 Flight name: Air India

Starting station: Chennai Departure time: 12:03

Destination: Bangalore Arrival time: 14:23

Base price: 6499 Total seats: 180

_id: 673ae188e51bf160497aaac9

Flight Id: IX001 Flight name: Air India Express

Starting station: Chennai Departure time: 15:14

Destination: Bangalore Arrival time: 17:23

Base price: 5525 Total seats: 150

_id: 673ae31be51bf160497aaae2

Flight Id: AI003 Flight name: Air India

Starting station: Chennai Departure time: 18:00

Destination: Bangalore Arrival time: 20:30

Base price: 6499 Total seats: 180

_id: 673adc98e51bf160497aaa69

Flight Id: AI002 Flight name: Air India

Starting station: Chennai Departure time: 08:00

Destination: Bangalore Arrival time: 10:00

Base price: 4399 Total seats: 80

_id: 673ae2c9e51bf160497aaade

Flight Id: IG001 Flight name: Indigo

Starting station: Chennai Departure time: 05:45

Destination: Bangalore Arrival time: 08:08

Base price: 4499 Total seats: 80

_id: 673b0bdae51bf160497aacfa

Flight Id: AI004 Flight name: Air India

Starting station: Chennai Departure time: 21:00

Destination: Bangalore Arrival time: 23:30

Base price: 6499 Total seats: 180

Known Issues

- Admin lacks a dedicated login functionality but only a route.
- No robust error handling for invalid uploads.
- No payment since, the instructor of the course, told us not to include any payment gateway.
- Doesn't fetch the image, video names while editing the profile.

Future Enhancements

- Add payment gateway for flight booking.
- Implement advanced analytics for admin insights.
- Include a recommendation engine for personalized suggestions.
- Integrate AI for automate special features.