MERN stack powered by MongoDB
Project Documentation

Introduction

Project Title: **Flight Booking App**

Team Members:

S.No	Student Name	Register No.	Naan Mudhalvan ID	Role
1.	Karuppusamy P	412721104301	D44A88C66031CF4B8A0446EC00FE9EC9	Backend
2.	Vimaleshwaran V	412721104058	91CE2C883B058F1B9E14F3D6E551FB5F	Frontend
3.	Kathiravan K	412721104018	FB8958CFD2D3DDD95AF4FEA49705C375	Frontend
4.	Manoj M	412721104025	9C0AEBE0EADBBB6A6EE4E008937E1409	Frontend

Project Overview

Purpose:

Skylar flight Booking is a seamless flight booking platform designed to connect travelers with airlines, enabling effortless flight searches, bookings, and management. The platform provides user-friendly navigation and secure payment integration to enhance the overall booking experience.

Features

Traveler/User:

- **Account Management:**
  - Signup/login with email verification and OTP-based password reset.
  - Editable profile (except email).
- **Flight Booking:**
  - Search flights by date, origin, and destination.
  - Filter results by airline, price, and travel time.
  - Book and manage flight reservations.
- **Post-Booking Services:**
  - View booking details and check-in options.
  - Generate and download e-tickets.
  - Cancellation and refund requests.

Airline/Operator:

- Create and manage flight schedules.
- View and manage bookings.
- Generate passenger reports.

Admin:

- View and manage all users, airlines, and bookings.

- Approve or deny refund requests.
- Manage platform content (e.g., promotions, banners).

Architecture

Frontend:

- Developed with React and styled using TailwindCSS for modern UI/UX.
- Responsive design for cross-device compatibility.

Backend:

- Built with Node.js and Express.js for scalable API handling.
- Middleware includes:
    - bcryptjs for password encryption.
    - jsonwebtoken for authentication.
    - Multer for file uploads.

Database:

- MongoDB for managing user data, flight schedules, and bookings.
- Mongoose ORM for schema design.

Setup Instructions

Prerequisites:

- Node.js
- MongoDB Atlas account
- Stripe account for payment processing

Installation:

1. **Clone the repository:**
    - git clone https://github.com/Karuppusamy03/Flight-booking-app.git
    - cd online-learning-platform
2. **Install dependencies:**
    - **Frontend**:

      cd client

      npm install

    - **Backend:**

      cd server

      npm install

3. **Set up environment variables:**

   mongodb+srv://karuppusamykanesh1503:Pass%40123@cluster0.mbe0l.mongodb.net/Flight Booking?retryWrites=true&w=majority&appName=Cluster0'

   JWT_SECRET='779be02d34a54dc5e3799fdac87632aa564fa841bc59d0fe7b96639948fb6384'

   EMAIL_USER='karuppusamykanesh1503@gmail.com'

   EMAIL_PASS='szlv xili ndrw qasg'

   CLOUDINARY_CLOUD_NAME=' Flight Booking App '

   CLOUDINARY_API_KEY=' 61480c69-29d6-477a-be79-edfc71eea4b7 '

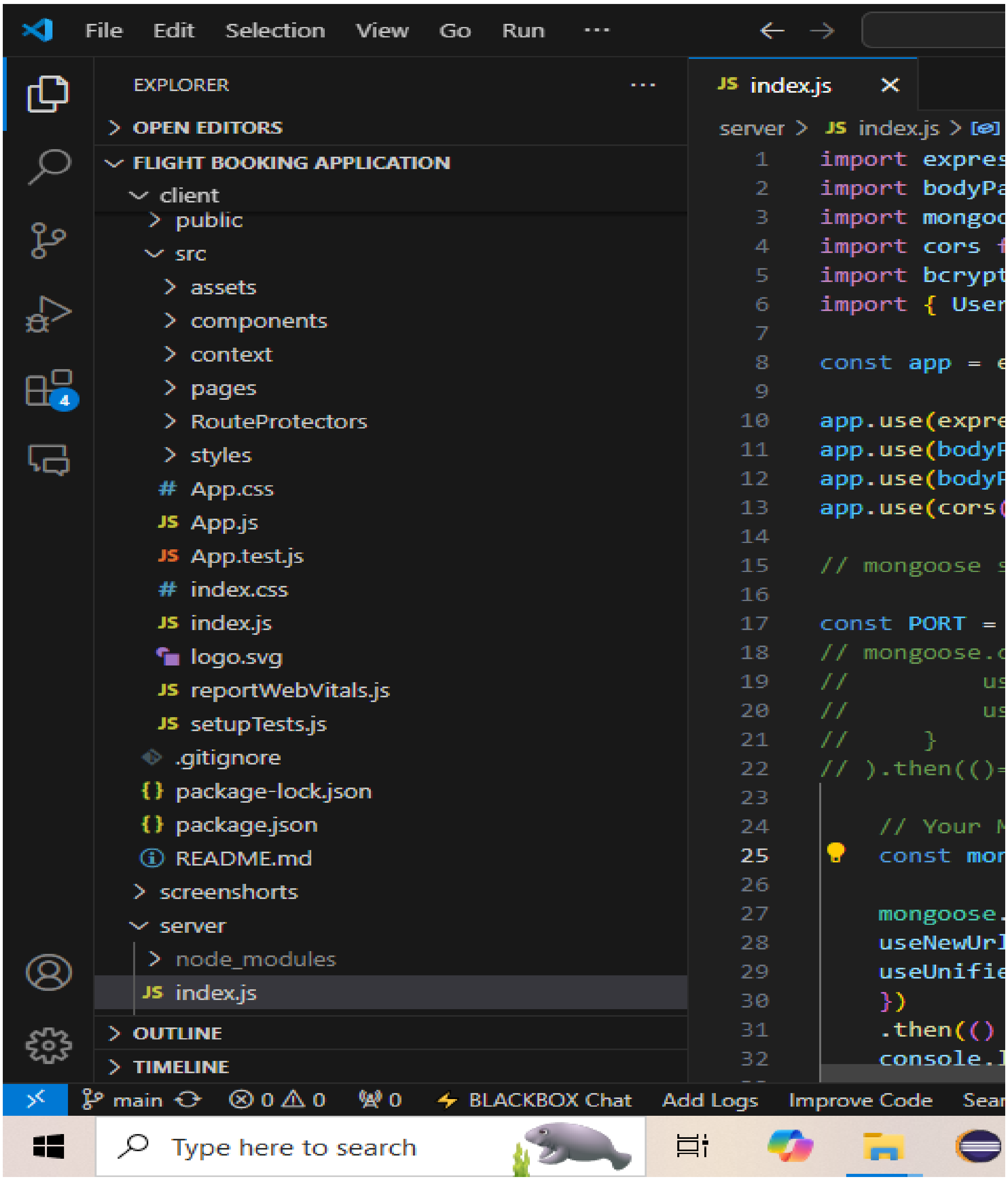
4. Create .**env.local** file in the **client** folder with the following:

   VITE_REACT_APP_BACKEND_BASEURL=http://localhost:5000

Folder Structure

Client (Frontend):

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

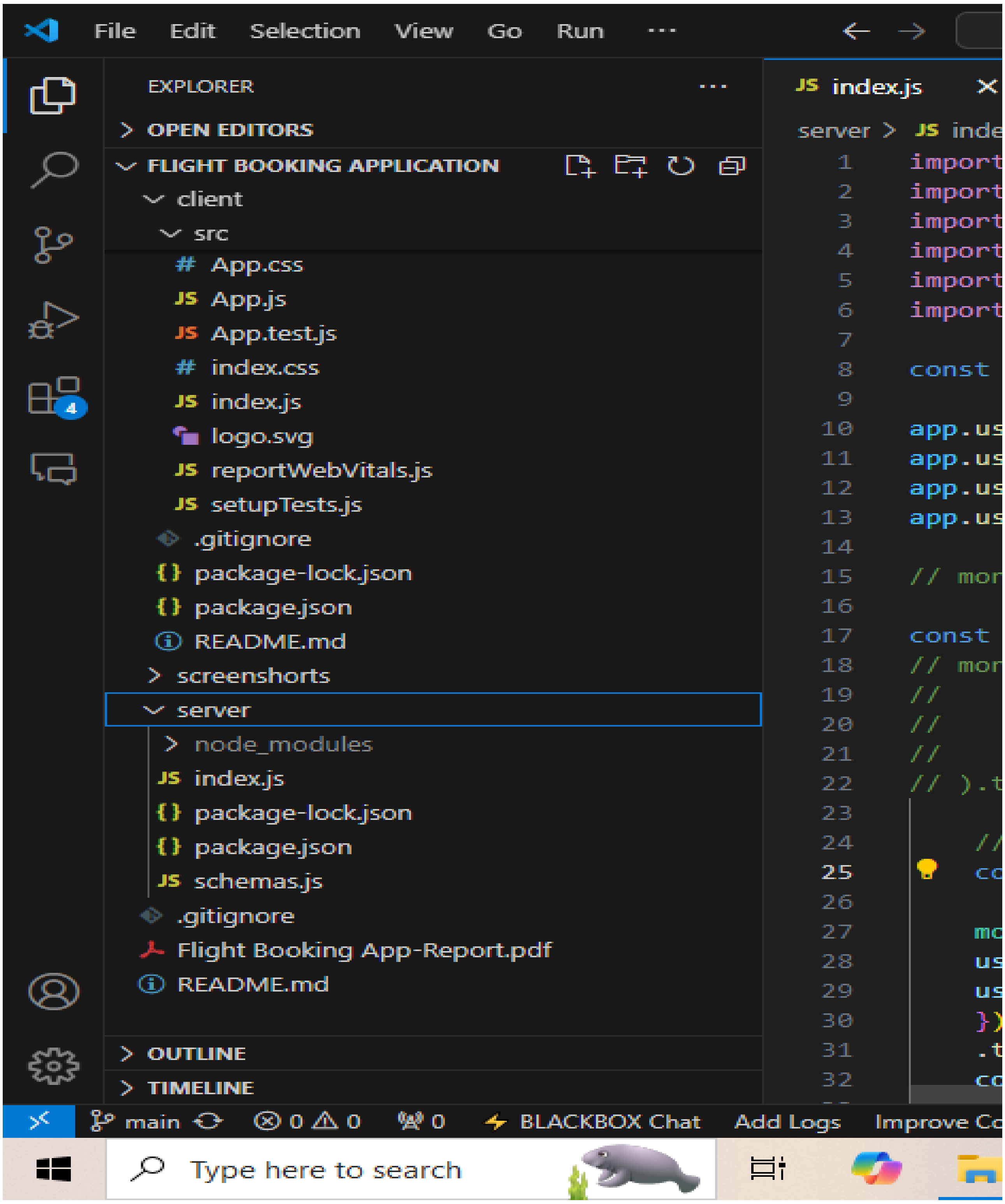


```
> OPEN EDITORS
v FLIGHT BOOKING APPLICATION
  v client
    > public
    v src
      > assets
      > components
      > context
      > pages
      > RouteProtectors
      > styles
      App.css
      App.js
      App.test.js
      index.css
      index.js
      logo.svg
      reportWebVitals.js
      setupTests.js
    .gitignore
    package-lock.json
    package.json
    README.md
  > screenshorts
  v server
    > node_modules
    index.js
```

```
import expres
import bodyPa
import mongoo
import cors f
import bcrypt
import { User

const app = e

app.use(expre
app.use(bodyP
app.use(bodyP
app.use(cors(

// mongoose s

const PORT =
// mongoose.c
//         us
//         us
//     }
// ).then(()=

    // Your M
    const mon

    mongoose.
    useNewUrl
    useUnifie
    })
    .then(()
    console.l
```

Server (Backend):

- **routes/:** Defines API routes for users, instructors, forums, and admin
- **models/:** MongoDB schemas for Users, Courses, Instructor, Thread and OTP.
- **middleware/:** Authentication using jwt token.
- **utils/:** Contains the Cloudinary API and Certificate Generation code



```
FLIGHT BOOKING APPLICATION
  client
    src
      App.css
      App.js
      App.test.js
      index.css
      index.js
      logo.svg
      reportWebVitals.js
      setupTests.js
    .gitignore
    package-lock.json
    package.json
    README.md
  screenshorts
  server
    node_modules
    index.js
    package-lock.json
    package.json
    schemas.js
  .gitignore
  Flight Booking App-Report.pdf
  README.md
```

API Documentation

User Routes:

- **POST /signup**: Register a new user.
- **POST /login**: User login.
- **GET /verify-email**: Verify the newly registered user.
- **POST /forgot-password**: Send OTP for password reset.
- **POST /verify-otp**: Verify OTP to change password.
- **POST /update-password**: Update the user's password.

- **GET /user/**

  : Fetch user profile details.

- **PUT /user/**

  : Update user profile.

- **POST /upload-profile-image**: Upload a new profile image.
- **GET /user-name**: Get the user's name using email ID.
- **GET /user-dashboard/bookings**: Get all past and upcoming bookings.
- **GET /user-dashboard/favorites**: Get the user's saved favorite destinations.
- **POST /add-to-favorites**: Add a destination to the user's favorites.
- **GET /bookings/**

  : Fetch booking details by booking ID.

- **POST /generate-invoice**: Generate and download the invoice for a booking.

Flight Routes:

- **GET /flights**: Fetch available flights based on search criteria (dates, destinations, etc.).
- **GET /flights/**

  : Get details of a specific flight.

- **POST /book-flight**: Book a flight for the user.
- **POST /cancel-booking**: Cancel an existing booking.
- **GET /flights/**

  /available-seats: Check available seats between two cities.

- **POST /add-passenger-details**: Add passenger details for a booking.

Admin Routes:

- **GET /users**: View all registered users.
- **GET /flights**: View all available flights.
- **POST /flights**: Add a new flight.
- **DELETE /flights/**

  : Delete a specific flight.

- **GET /flights/**

  /bookings: View all bookings for a specific flight.

- **GET /bookings/**

: View a specific booking’s details.

- **POST /update-flight-status**: Update the status of a flight (e.g., on-time, delayed, etc.).

Authentication:

- **JWT (JSON Web Tokens)**:
  - Tokens are generated upon successful login.
  - Middleware checks token validity for protected routes.
- **Email Verification**:
  - Verification link sent during signup using Nodemailer.
- **OTP-based Password Reset**:
  - OTP sent via email for secure password reset.

User Interface:

- **User Dashboard**: View current bookings, past bookings, favorite destinations, and flight search.
- **Admin View**: Manage users, flights, and bookings through an intuitive admin panel.
- **Booking Flow**: Simple, guided flow for booking flights and adding passenger details.

Testing:

- **Manual Testing**: Verified all major functionalities, including user signup, flight booking, and profile management.
- **Postman**: Used for API endpoint testing.

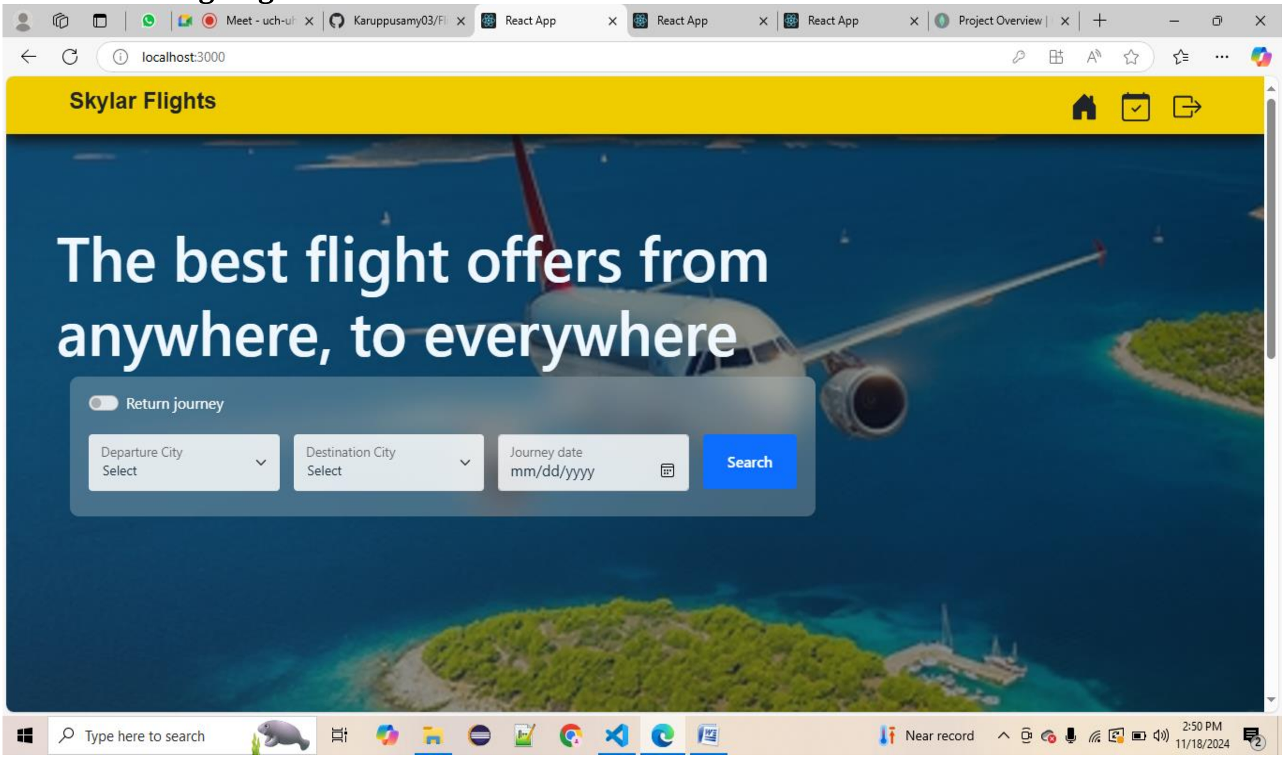
Screenshots or Demo

Demo Link:

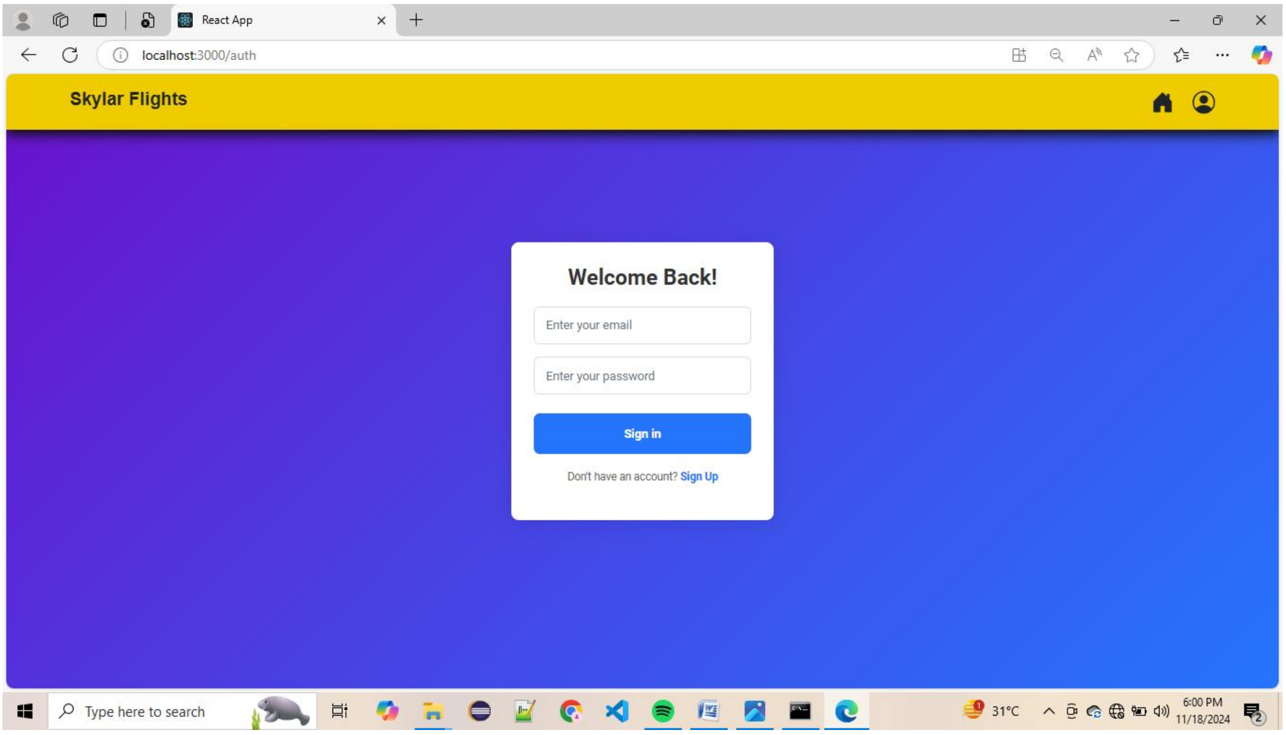
Screenshots:

1. **USER**

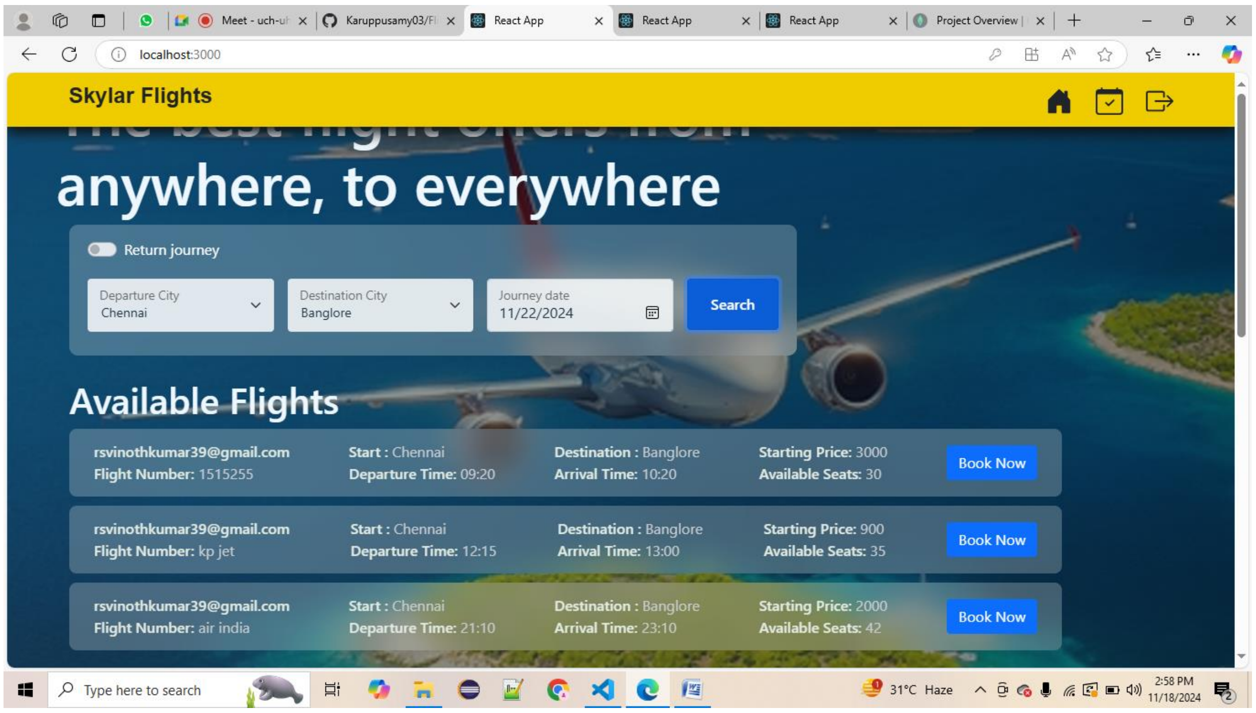
- **Landing Page**



- **UserLogin**



- **Available Flight**


Skylar Flights

anywhere, to everywhere

Return journey

Departure City: Chennai
Destination City: Banglore
Journey date: 11/22/2024
Search

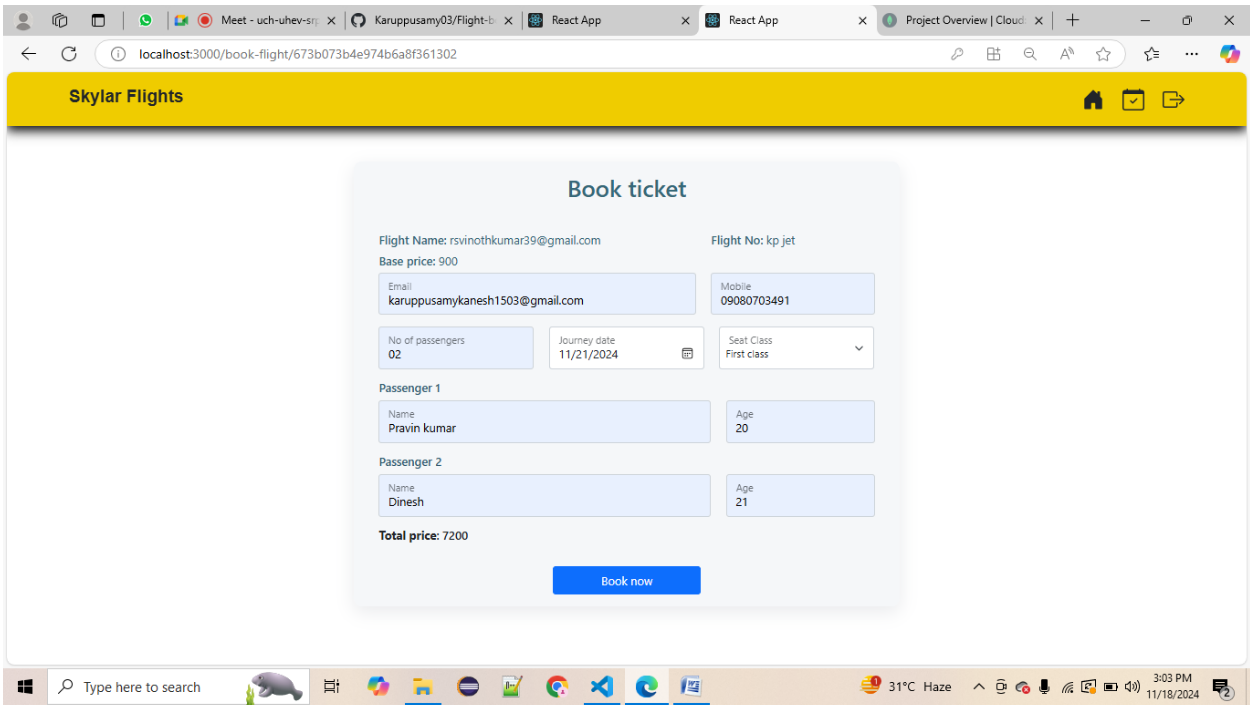
Available Flights

rsvinothkumar39@gmail.com
Flight Number: 1515255
Start : Chennai
Departure Time: 09:20
Destination : Banglore
Arrival Time: 10:20
Starting Price: 3000
Available Seats: 30
Book Now

rsvinothkumar39@gmail.com
Flight Number: kp jet
Start : Chennai
Departure Time: 12:15
Destination : Banglore
Arrival Time: 13:00
Starting Price: 900
Available Seats: 35
Book Now

rsvinothkumar39@gmail.com
Flight Number: air india
Start : Chennai
Departure Time: 21:10
Destination : Banglore
Arrival Time: 23:10
Starting Price: 2000
Available Seats: 42
Book Now

- **Flight Ticket Booking**


Skylar Flights

Book ticket

Flight Name: rsvinothkumar39@gmail.com
Flight No: kp jet
Base price: 900

Email: karuppusamykanesh1503@gmail.com
Mobile: 09080703491
No of passengers: 02
Journey date: 11/21/2024
Seat Class: First class

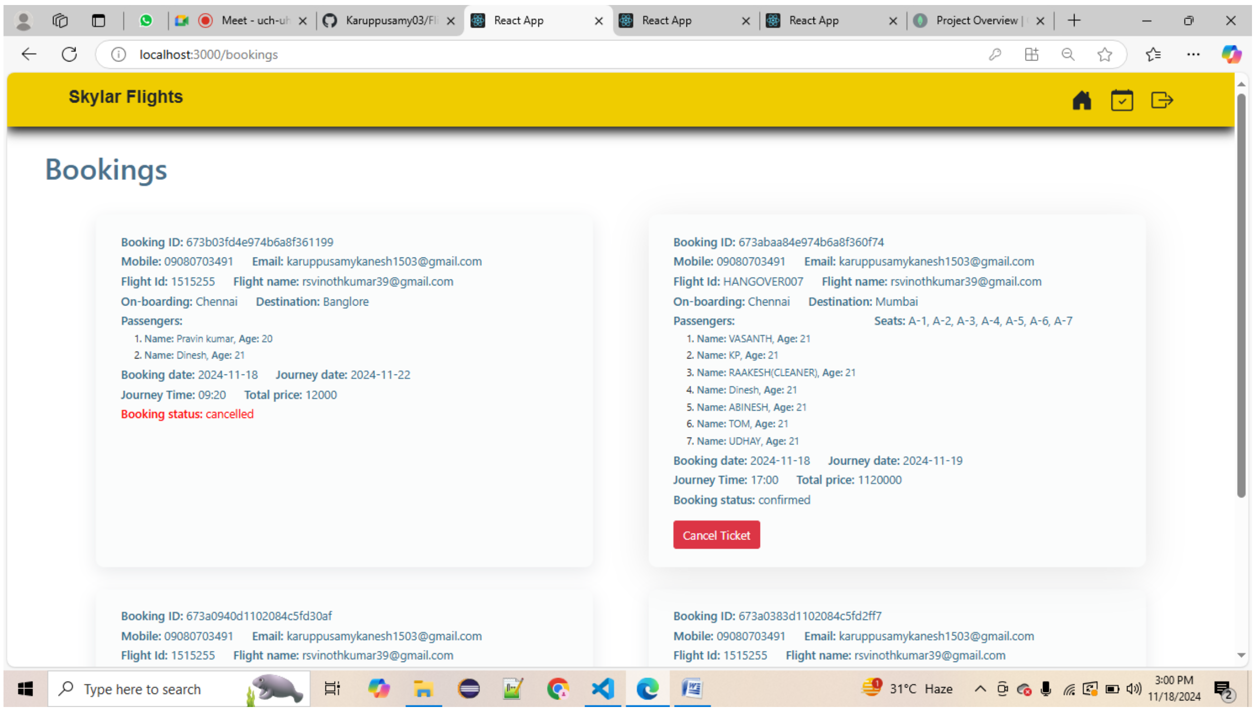
Passenger 1
Name: Pravin kumar
Age: 20

Passenger 2
Name: Dinesh
Age: 21

Total price: 7200

Book now

- **Booking Status**



Bookings

Booking ID: 673b03fd4e974b6a8f361199
Mobile: 09080703491 **Email:** karuppusamykanesh1503@gmail.com
Flight Id: 1515255 **Flight name:** rsvinothkumar39@gmail.com
On-boarding: Chennai **Destination:** Banglore
Passengers:
1. **Name:** Pravin kumar, **Age:** 20
2. **Name:** Dinesh, **Age:** 21

Booking date: 2024-11-18 **Journey date:** 2024-11-22
Journey Time: 09:20 **Total price:** 12000
Booking status: cancelled

Booking ID: 673abaa84e974b6a8f360f74
Mobile: 09080703491 **Email:** karuppusamykanesh1503@gmail.com
Flight Id: HANGOVER007 **Flight name:** rsvinothkumar39@gmail.com
On-boarding: Chennai **Destination:** Mumbai
Passengers: **Seats:** A-1, A-2, A-3, A-4, A-5, A-6, A-7
1. **Name:** VASANTH, **Age:** 21
2. **Name:** KP, **Age:** 21
3. **Name:** RAAKESH(CLEANER), **Age:** 21
4. **Name:** Dinesh, **Age:** 21
5. **Name:** ABINESH, **Age:** 21
6. **Name:** TOM, **Age:** 21
7. **Name:** UDHAY, **Age:** 21

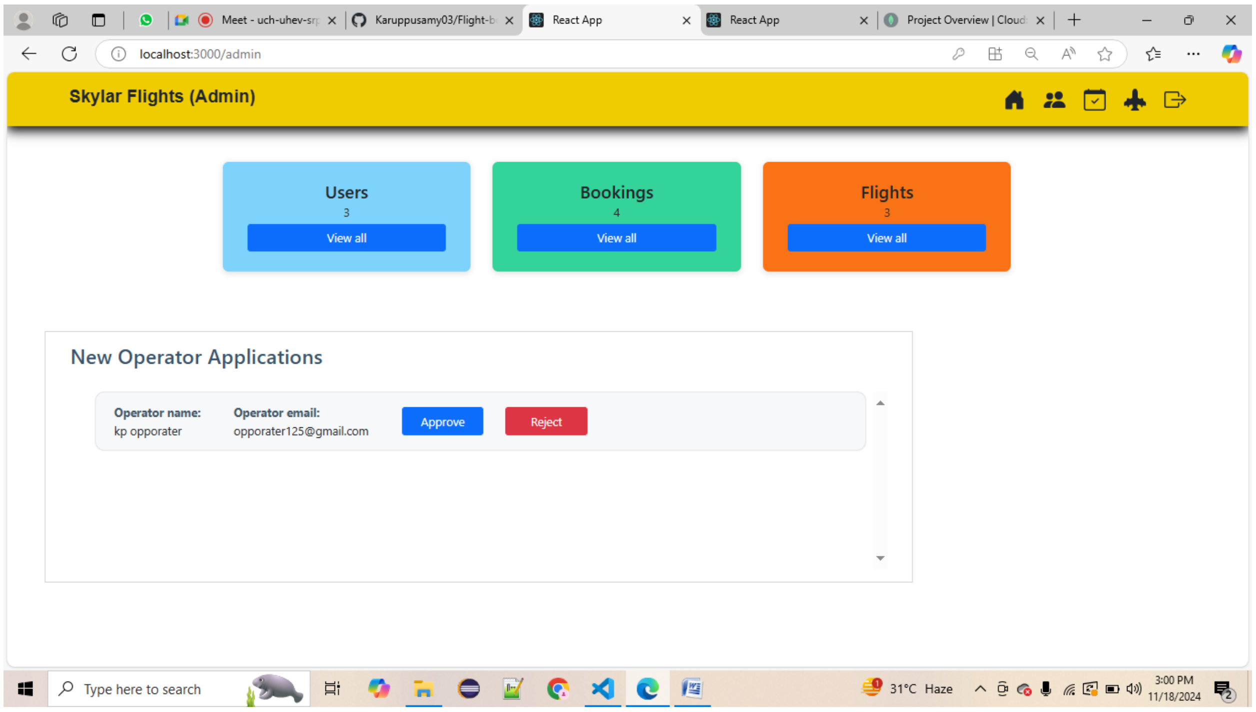
Booking date: 2024-11-18 **Journey date:** 2024-11-19
Journey Time: 17:00 **Total price:** 1120000
Booking status: confirmed

Booking ID: 673a0940d1102084c5fd30af
Mobile: 09080703491 **Email:** karuppusamykanesh1503@gmail.com
Flight Id: 1515255 **Flight name:** rsvinothkumar39@gmail.com

Booking ID: 673a0383d1102084c5fd2ff7
Mobile: 09080703491 **Email:** karuppusamykanesh1503@gmail.com
Flight Id: 1515255 **Flight name:** rsvinothkumar39@gmail.com

2. ADMIN

- **Admin Dashboard**

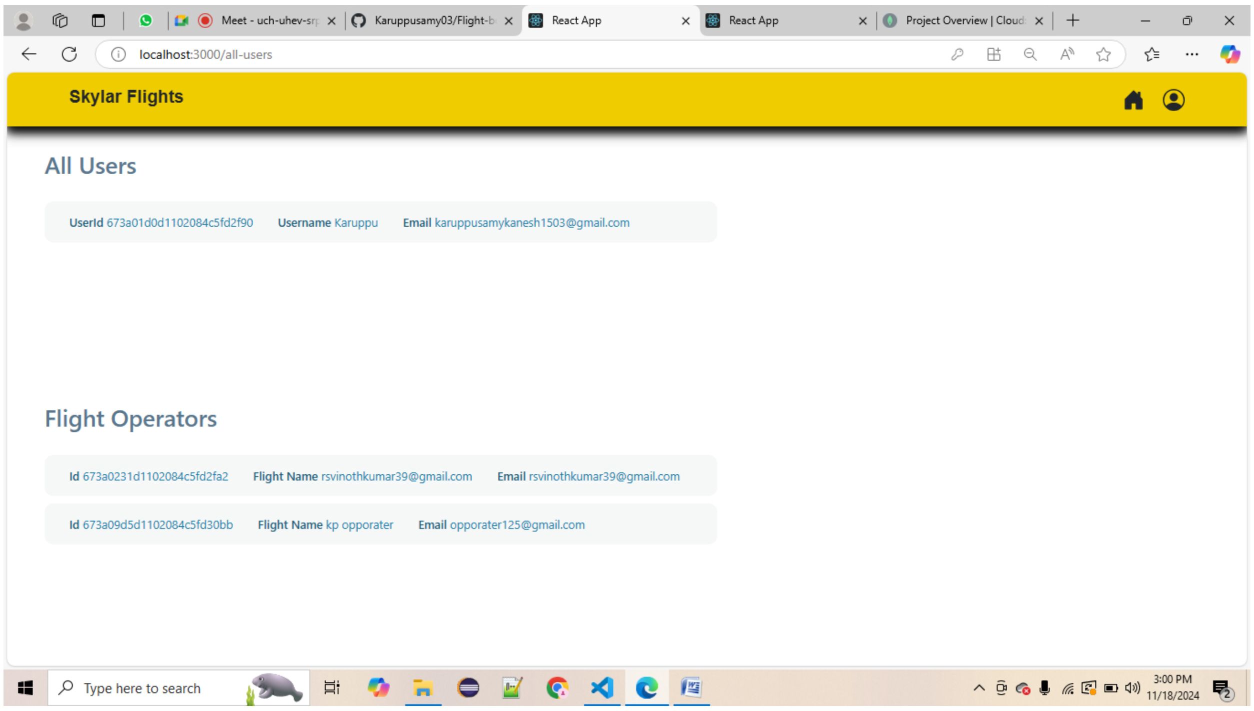


Users
3
Bookings
4
Flights
3

New Operator Applications

Operator name: kp opporater **Operator email:** opporater125@gmail.com

- **Login Details**



Skylar Flights

All Users

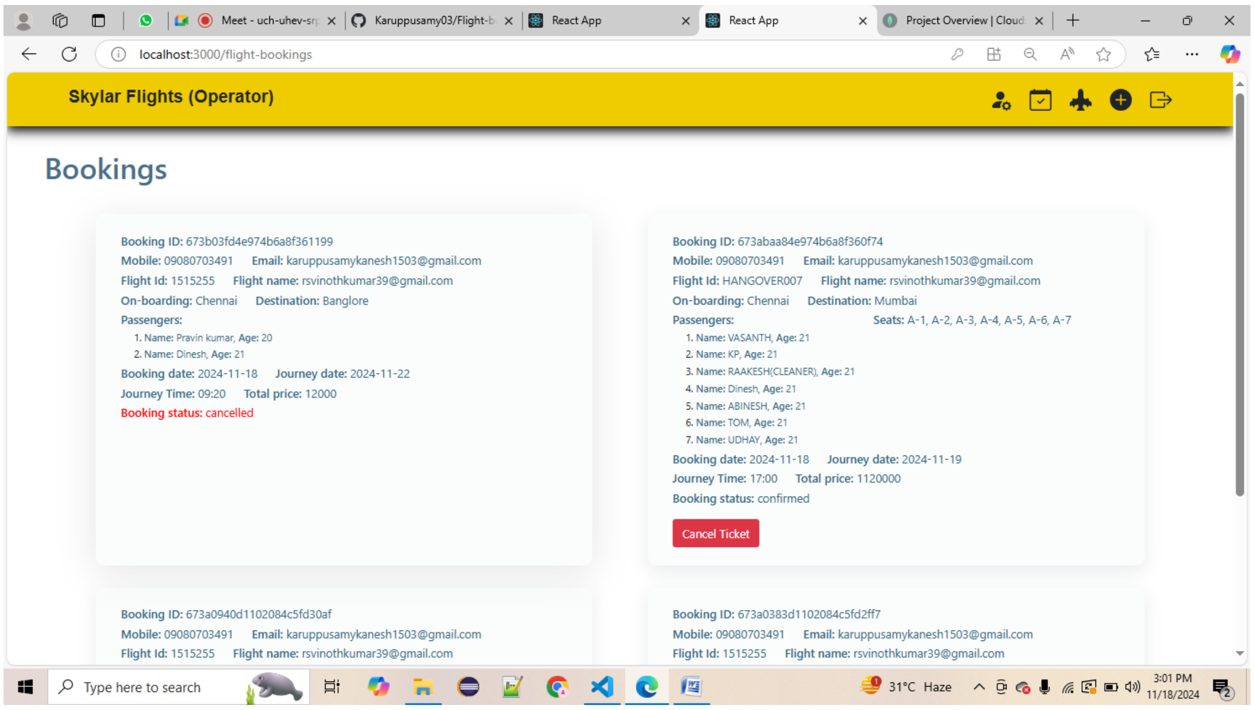
UserId 673a01d0d1102084c5fd2f90 **Username** Karuppu **Email** karuppusamykanesh1503@gmail.com

Flight Operators

Id 673a0231d1102084c5fd2fa2 **Flight Name** rsvinothkumar39@gmail.com **Email** rsvinothkumar39@gmail.com

Id 673a09d5d1102084c5fd30bb **Flight Name** kp opporater **Email** opporater125@gmail.com

- **Booking Status**



Skylar Flights (Operator)

Bookings

Booking ID: 673b03fd4e974b6a8f361199
Mobile: 09080703491 **Email:** karuppusamykanesh1503@gmail.com
Flight Id: 1515255 **Flight name:** rsvinothkumar39@gmail.com
On-boarding: Chennai **Destination:** Banglore
Passengers:
1. **Name:** Pravin kumar, **Age:** 20
2. **Name:** Dinesh, **Age:** 21

Booking date: 2024-11-18 **Journey date:** 2024-11-22
Journey Time: 09:20 **Total price:** 12000
Booking status: cancelled

Booking ID: 673abaa84e974b6a8f360f74
Mobile: 09080703491 **Email:** karuppusamykanesh1503@gmail.com
Flight Id: HANGOVER007 **Flight name:** rsvinothkumar39@gmail.com
On-boarding: Chennai **Destination:** Mumbai
Passengers: **Seats:** A-1, A-2, A-3, A-4, A-5, A-6, A-7
1. **Name:** VASANTH, **Age:** 21
2. **Name:** KP, **Age:** 21
3. **Name:** RAAKESH(CLEANER), **Age:** 21
4. **Name:** Dinesh, **Age:** 21
5. **Name:** ABINESH, **Age:** 21
6. **Name:** TOM, **Age:** 21
7. **Name:** UDHAY, **Age:** 21

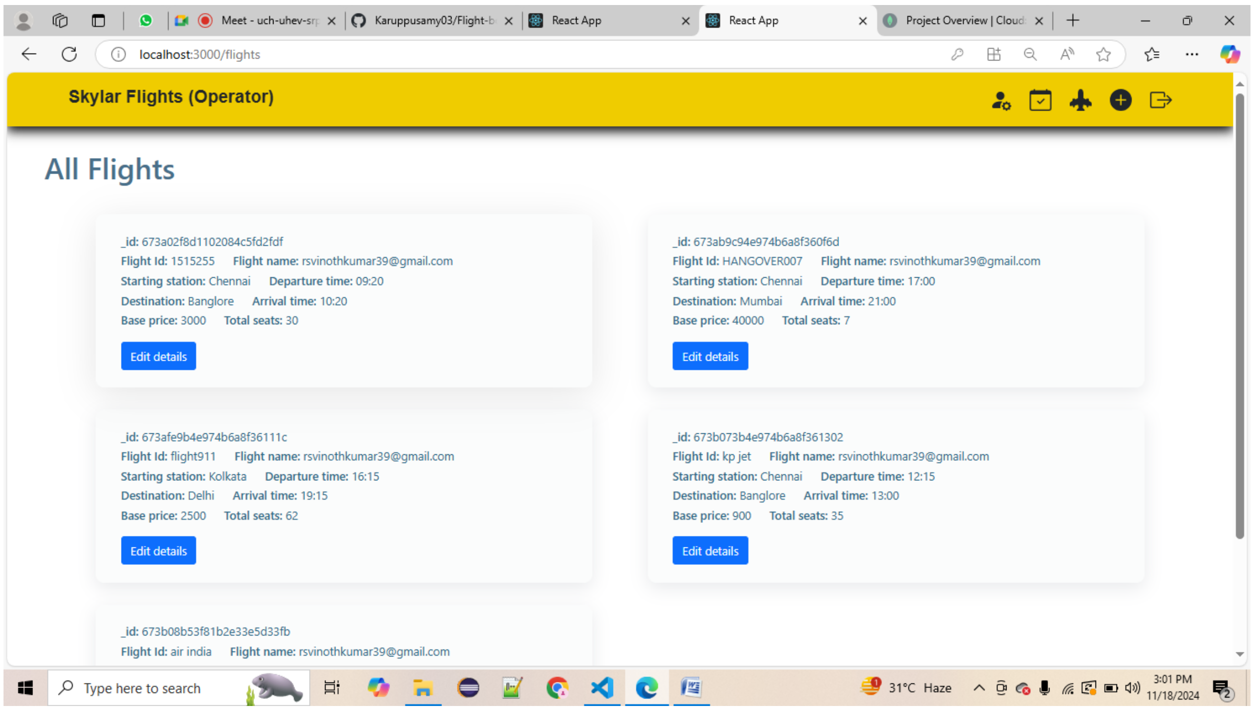
Booking date: 2024-11-18 **Journey date:** 2024-11-19
Journey Time: 17:00 **Total price:** 1120000
Booking status: confirmed

Cancel Ticket

Booking ID: 673a0940d1102084c5fd30af
Mobile: 09080703491 **Email:** karuppusamykanesh1503@gmail.com
Flight Id: 1515255 **Flight name:** rsvinothkumar39@gmail.com

Booking ID: 673a0383d1102084c5fd2ff7
Mobile: 09080703491 **Email:** karuppusamykanesh1503@gmail.com
Flight Id: 1515255 **Flight name:** rsvinothkumar39@gmail.com

- **Flight Details**


localhost:3000/flights

Skylar Flights (Operator)

All Flights

_id: 673a02f8d1102084c5fd2fdf
Flight Id: 1515255 Flight name: rsvinothkumar39@gmail.com
Starting station: Chennai Departure time: 09:20
Destination: Banglore Arrival time: 10:20
Base price: 3000 Total seats: 30
Edit details

_id: 673ab9c94e974b6a8f360f6d
Flight Id: HANGOVER007 Flight name: rsvinothkumar39@gmail.com
Starting station: Chennai Departure time: 17:00
Destination: Mumbai Arrival time: 21:00
Base price: 40000 Total seats: 7
Edit details

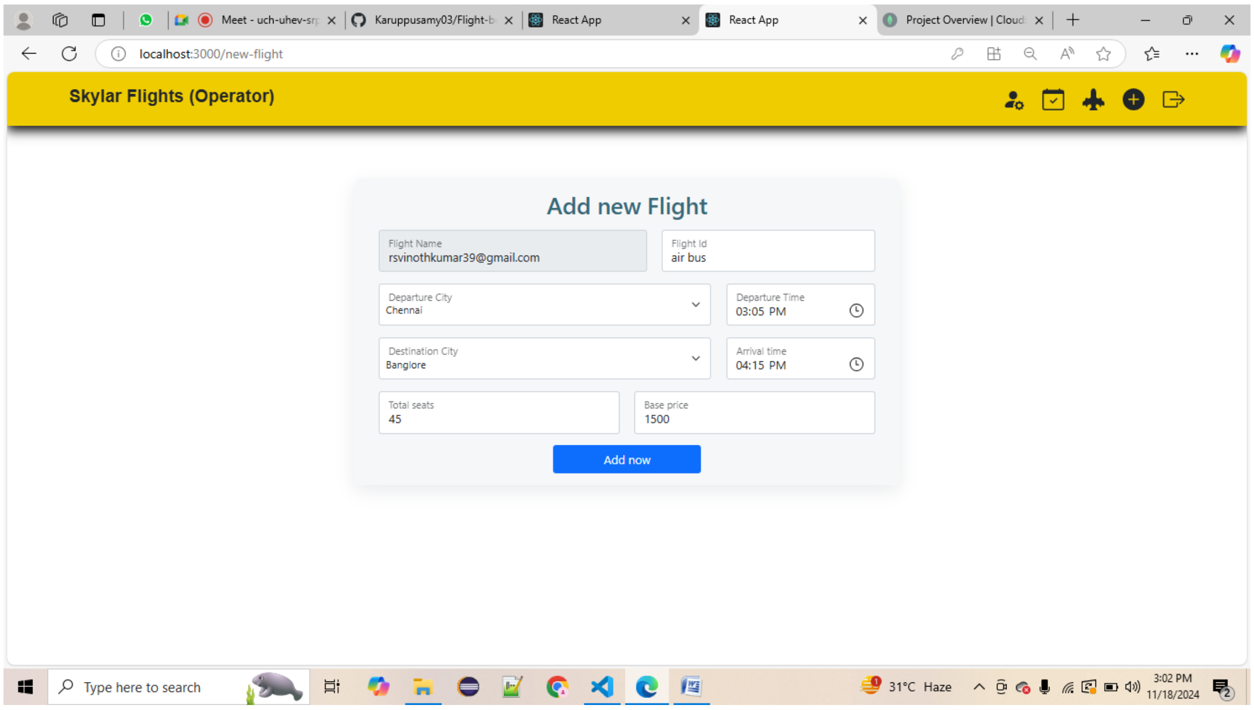
_id: 673afe9b4e974b6a8f36111c
Flight Id: flight911 Flight name: rsvinothkumar39@gmail.com
Starting station: Kolkata Departure time: 16:15
Destination: Delhi Arrival time: 19:15
Base price: 2500 Total seats: 62
Edit details

_id: 673b073b4e974b6a8f361302
Flight Id: kp jet Flight name: rsvinothkumar39@gmail.com
Starting station: Chennai Departure time: 12:15
Destination: Banglore Arrival time: 13:00
Base price: 900 Total seats: 35
Edit details

_id: 673b08b53f81b2e33e5d33fb
Flight Id: air india Flight name: rsvinothkumar39@gmail.com

3. **Flight Operator**

- **Add Flight**


localhost:3000/new-flight

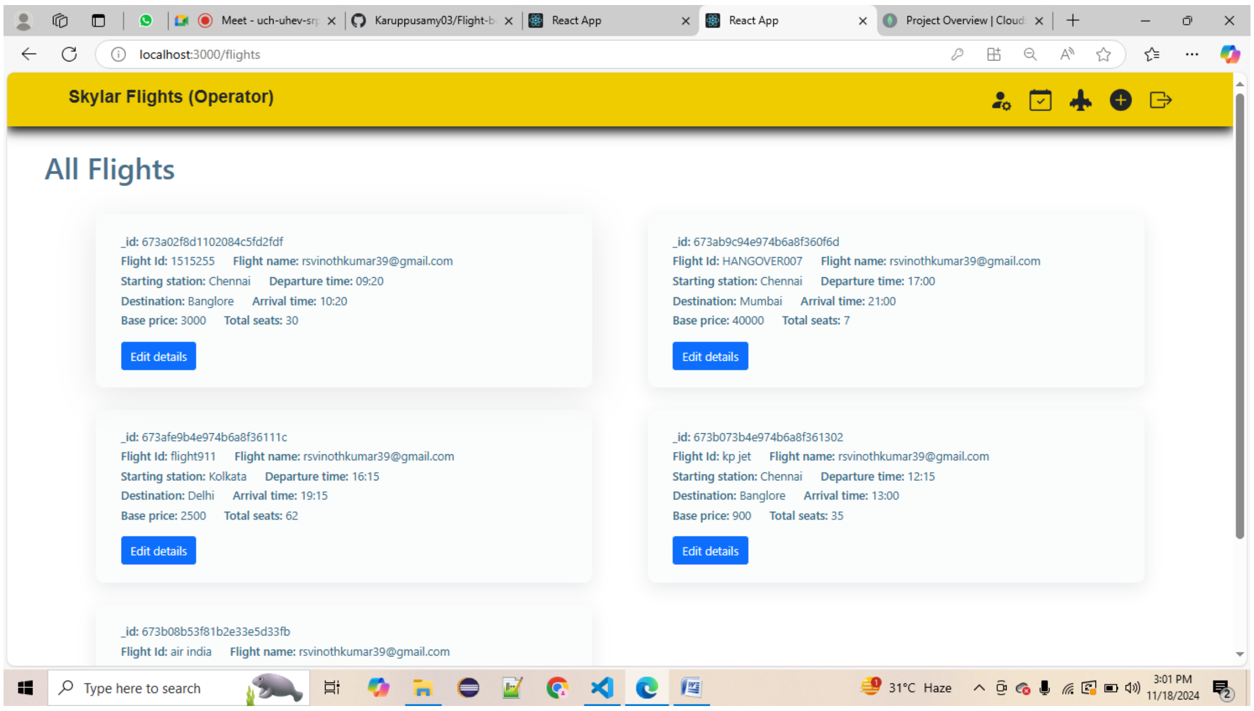
Skylar Flights (Operator)

Add new Flight

Flight Name: rsvinothkumar39@gmail.com
Flight Id: air bus
Departure City: Chennai
Departure Time: 03:05 PM
Destination City: Banglore
Arrival time: 04:15 PM
Total seats: 45
Base price: 1500

Add now

- **Flight Details**



Skylar Flights (Operator)

All Flights

_id: 673a02f8d1102084c5fd2fdf
Flight Id: 1515255 **Flight name:** rsvinothkumar39@gmail.com
Starting station: Chennai **Departure time:** 09:20
Destination: Banglore **Arrival time:** 10:20
Base price: 3000 **Total seats:** 30
Edit details

_id: 673ab9c94e974b6a8f360f6d
Flight Id: HANGOVER007 **Flight name:** rsvinothkumar39@gmail.com
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Destination: Mumbai **Arrival time:** 21:00
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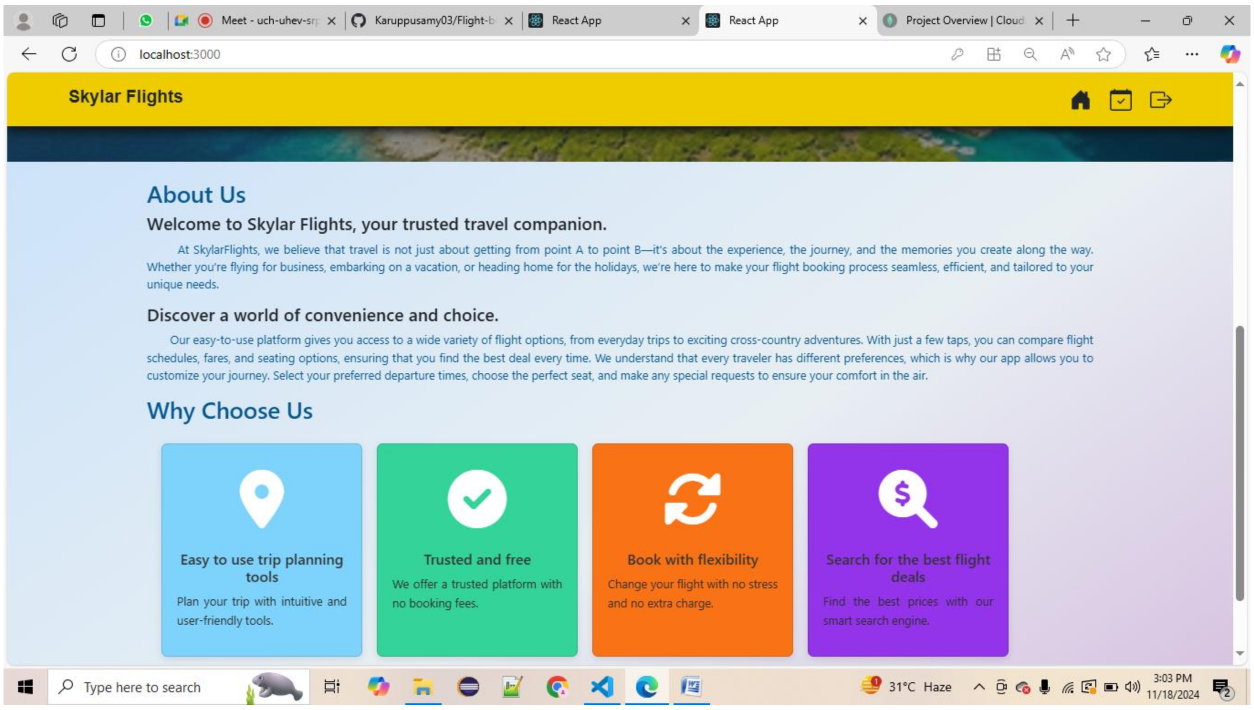
Edit details

_id: 673afe9b4e974b6a8f36111c
Flight Id: flight911 **Flight name:** rsvinothkumar39@gmail.com
Starting station: Kolkata **Departure time:** 16:15
Destination: Delhi **Arrival time:** 19:15
Base price: 2500 **Total seats:** 62
Edit details

_id: 673b073b4e974b6a8f361302
Flight Id: kp jet **Flight name:** rsvinothkumar39@gmail.com
Starting station: Chennai **Departure time:** 12:15
Destination: Banglore **Arrival time:** 13:00
Base price: 900 **Total seats:** 35
Edit details

_id: 673b08b53f81b2e33e5d33fb
Flight Id: air india **Flight name:** rsvinothkumar39@gmail.com

- **About Us**



Skylar Flights

About Us

Welcome to Skylar Flights, your trusted travel companion.

At SkylarFlights, we believe that travel is not just about getting from point A to point B—it's about the experience, the journey, and the memories you create along the way. Whether you're flying for business, embarking on a vacation, or heading home for the holidays, we're here to make your flight booking process seamless, efficient, and tailored to your unique needs.

Discover a world of convenience and choice.

Our easy-to-use platform gives you access to a wide variety of flight options, from everyday trips to exciting cross-country adventures. With just a few taps, you can compare flight schedules, fares, and seating options, ensuring that you find the best deal every time. We understand that every traveler has different preferences, which is why our app allows you to customize your journey. Select your preferred departure times, choose the perfect seat, and make any special requests to ensure your comfort in the air.

Why Choose Us

Easy to use trip planning tools
Plan your trip with intuitive and user-friendly tools.

Trusted and free
We offer a trusted platform with no booking fees.

Book with flexibility
Change your flight with no stress and no extra charge.

Search for the best flight deals
Find the best prices with our smart search engine.

Known Issues in the Flight Booking App

1. **Lack of Dedicated Admin Login Functionality:**

Currently, the admin interface does not have a dedicated login feature. The only access point is through a route-based system, which means administrators are not required to authenticate separately. This could potentially lead to security concerns or unintentional access issues if proper user roles and permissions aren't implemented robustly. A proper login system, with role-based access control (RBAC), should be introduced to ensure that only authorized users (administrators) can manage flight bookings, prices, and other sensitive data.

2. **No Robust Error Handling for Invalid User Input:**

   There is limited error handling in place when users provide incorrect input, such as entering invalid payment details, selecting non-existent flights, or failing to enter necessary details (like passport information for international flights). Without a clear system for capturing and responding to these errors, users might face confusion or unexpected behavior within the app. For example, the app might crash or display an unclear error message instead of providing users with helpful feedback. It’s crucial to implement more comprehensive error handling, including clear error messages and appropriate fallback actions, to improve the user experience and prevent unexpected behavior.

3. **Absence of Payment Gateway for Flight Bookings:**

   At this time, the app does not include a payment gateway for processing flight bookings or transactions. Although the initial business requirement may have excluded the need for this feature, the absence of a payment integration prevents users from completing bookings directly within the app. As a result, users may need to complete payment outside of the app, which complicates the booking process. A payment gateway should be integrated to allow users to seamlessly pay for flights directly within the platform using credit/debit cards, digital wallets, or other payment methods.

4. **Flight and Booking Information Missing in User Profile Editing:**

   When users attempt to edit their profile or modify booking details (such as selecting new flights or updating travel preferences), the app currently does not retrieve the existing flight or booking information. This lack of functionality can lead to a poor user experience as users might be unsure of their current booking details or might inadvertently overwrite important information. It is essential to implement a feature that fetches and displays the user's existing flight bookings, flight preferences, and personal details while editing their profile to make the process more intuitive.

Future Enhancements for the Flight Booking App

1. **Integration of a Payment Gateway for Secure Transactions:**

One of the most crucial features to be added is the integration of a secure payment gateway. This will allow users to complete flight bookings directly within the app by providing credit card details or using digital wallets. A reliable payment gateway such as Stripe, PayPal, or a regional service should be implemented to support various payment methods. Additionally, this would help the app comply with PCI-DSS standards, ensuring that payment data is securely processed.

2. **Advanced Analytics for Admin Insights:**

   Adding advanced analytics and reporting tools for the admin panel will allow administrators to gain better insights into user behavior, flight booking trends, peak travel periods, and financial performance. This data can be leveraged to improve operational efficiency, identify opportunities for promotions, and optimize the app's offerings. Metrics such as booking rates, payment failures, route popularity, and user demographics can provide valuable feedback to enhance the user experience and adjust marketing strategies accordingly.

3. **Personalized Recommendations for Flight Bookings:**

   Implementing a recommendation engine powered by machine learning algorithms would allow the app to suggest flights or vacation packages to users based on their past searches, booking history, and preferences. This personalized experience can enhance user engagement by presenting options that are more likely to match their interests. For instance, if a user frequently books flights to a particular destination or prefers certain airlines, the app can highlight relevant options for future travel, improving the overall user experience.

4. **Real-Time Flight Updates via WebRTC for Live Communication:**

   Integrating WebRTC (Web Real-Time Communication) into the app can facilitate live communication between users and customer support or airline staff. This could be particularly useful in scenarios where users need immediate assistance during the booking process, or for flight status updates. WebRTC enables seamless video and voice calls, so customers can get real-time information regarding delays, cancellations, or changes to their flight status. Additionally, WebRTC could be used for live webinars or informational sessions about destinations, travel tips, and airline policies, further enhancing the value provided to users.