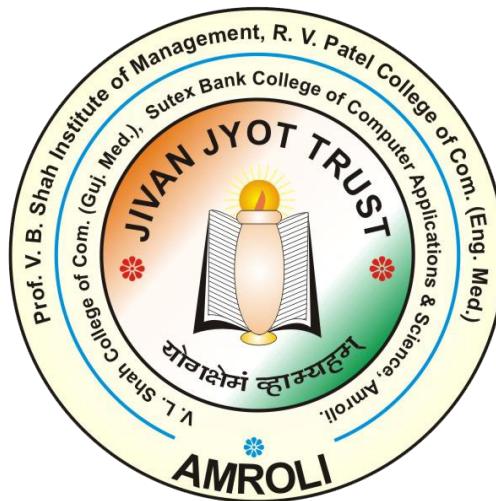


Prof. V. B. Shah Institute of Management,
R. V. Patel College of Commerce (ENG. MED.),
V. L. Shah College of Commerce (GUJ. MED.) &
Sutex Bank College of Computer Application & Science

(Accredited 'B' (CGPA 2.55) by NAAC Dec.-2009)

Veer Narmad South Gujarat University, Surat



Bachelor of Computer Application

(5th Semester) Year 2025-26

AIRSTRO

Guided By:

Mrs. Sanskruti Ramani

Submitted By:

647 - Nishil Chavda

658 - Deep Sorathiya

678 - Rahul Gadhiya

INDEX

NO	CONTENT	PAGE NO
1	Introduction	2
2	Project Profile & Feature	4
3	System Flow Diagram	8
4	DFD/UML Diagram	10
5	ER Diagram	13
6	Database Dictionary	14
7	System Design	18
8	Conclusion	23
9	Annexures	25

1. Introduction

1.1 Overview of The Project

The **Airstro – Online Flight Booking System** is a web-based platform developed using **React.js, TailwindCSS, and JavaScript for the frontend, Node.js and Express.js for the backend, and MongoDB as the database**. The system allows users to register and log in to search for available flights, book flight tickets, view their bookings, and cancel them if required. The **Admin** can manage and update flight details, such as scheduling, rescheduling, cancellation, and pricing through full CRUD operations. The project supports **two main roles: Admin and User**, ensuring secure authentication and separate dashboards for each. Additionally, making online flight reservation faster and more user-friendly.

1.2 Overview of The System

- To digitize the complete flight booking and management process.
- To provide secure login and role-based access for Admin and User.
- To allow administrators to manage flights through add, update, schedule, and cancel operations.
- To enable users to search available flights, book tickets, and cancel bookings.
- To provide users access to view booking history and ticket details.

- To improve accuracy, transparency, and efficiency in the online flight reservation process.

1.3 Problem Statement

In traditional flight booking, passengers often need to visit travel agencies or airline counters physically to check flight availability and purchase tickets. This process is time-consuming, inconvenient, and lacks transparency in pricing and schedule updates. Manual management of flight schedules makes it difficult for administrators to update flight information, which may lead to booking errors and miscommunication. Users cannot easily track their booking history or cancel tickets without lengthy procedures. There is no centralized system to manage flight details, user records, and booking data, which may result in data duplication, loss, or mismanagement. To overcome these issues, we developed a digital **Online Flight Booking System – Airstro**.

2. Project Profile & Feature

2.1 Project Profile

Project Title	Airstro
Frontend	React.js, TailwindCSS
Backend	Node.js, Express.js
Database	MongoDB
Browser	Chrome, FIREFOX, SAFARI
Platform	VS Code, MongoDB Compass
Internal Guide	Mrs. Sanskruti Ramani
Submitted To	Mrs. Sanskruti Ramani

2.2 Features of Admin/User

Admin Panel

- Login is required using admin email and password.
- Admin can add new flights, update flight details, or delete flights.
- Admin can view all flights available in the system.
- Admin can view all user bookings along with passenger details.
- Admin can update booking status or delete bookings if necessary.
- Admin dashboard provides a centralized flight & booking management interface.

User Panel

- Users can Register/Login using email and password for authentication.
- Main navigation includes: Home, Deals & Offers, My Trips, About Us, Login, Signup
- Home Page displays Hero section, booking widget, offers, and recommended destinations.
- About Page describes Airstro's mission and international network along with loyalty benefits.
- Flight Search Page allows users to search for flights based on:
 - From / To
 - One-Way / Round-Trip

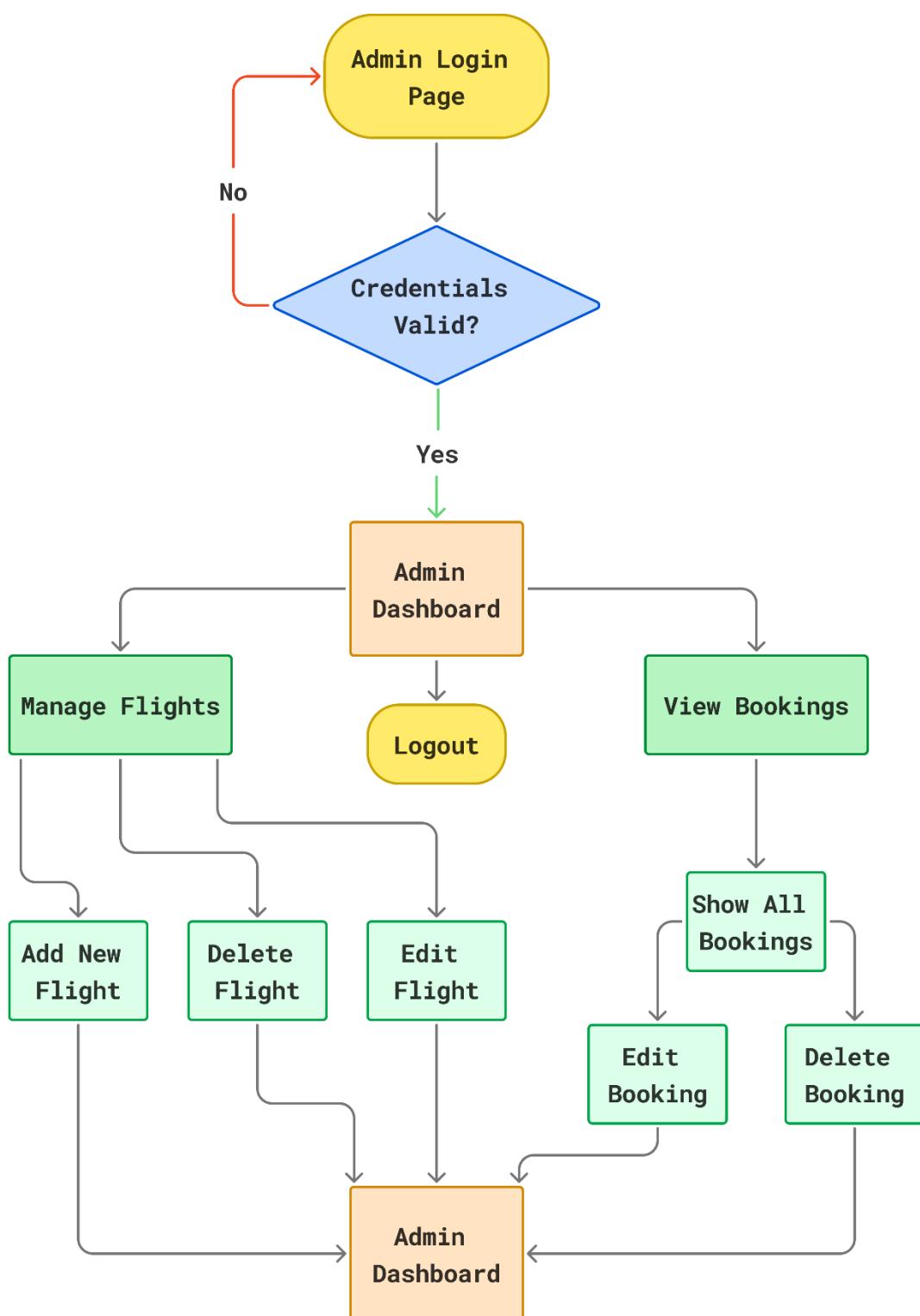
- Travel Date(s)
- Number of Passengers
- Class Type (Economy / Business)
- Flight Results Page shows available flights with:
 - Filters (airlines, stops, time slots)
 - Sorting (price, duration, time)
 - Expandable details & price comparison
- Users can select a flight and complete the booking instantly.
- My Trips Page displays:
 - All booked flights
 - Total fare
 - Booking status
 - Users can cancel flights anytime
- Users cannot book or manage flights without logging in.

2.3 Directory Structure

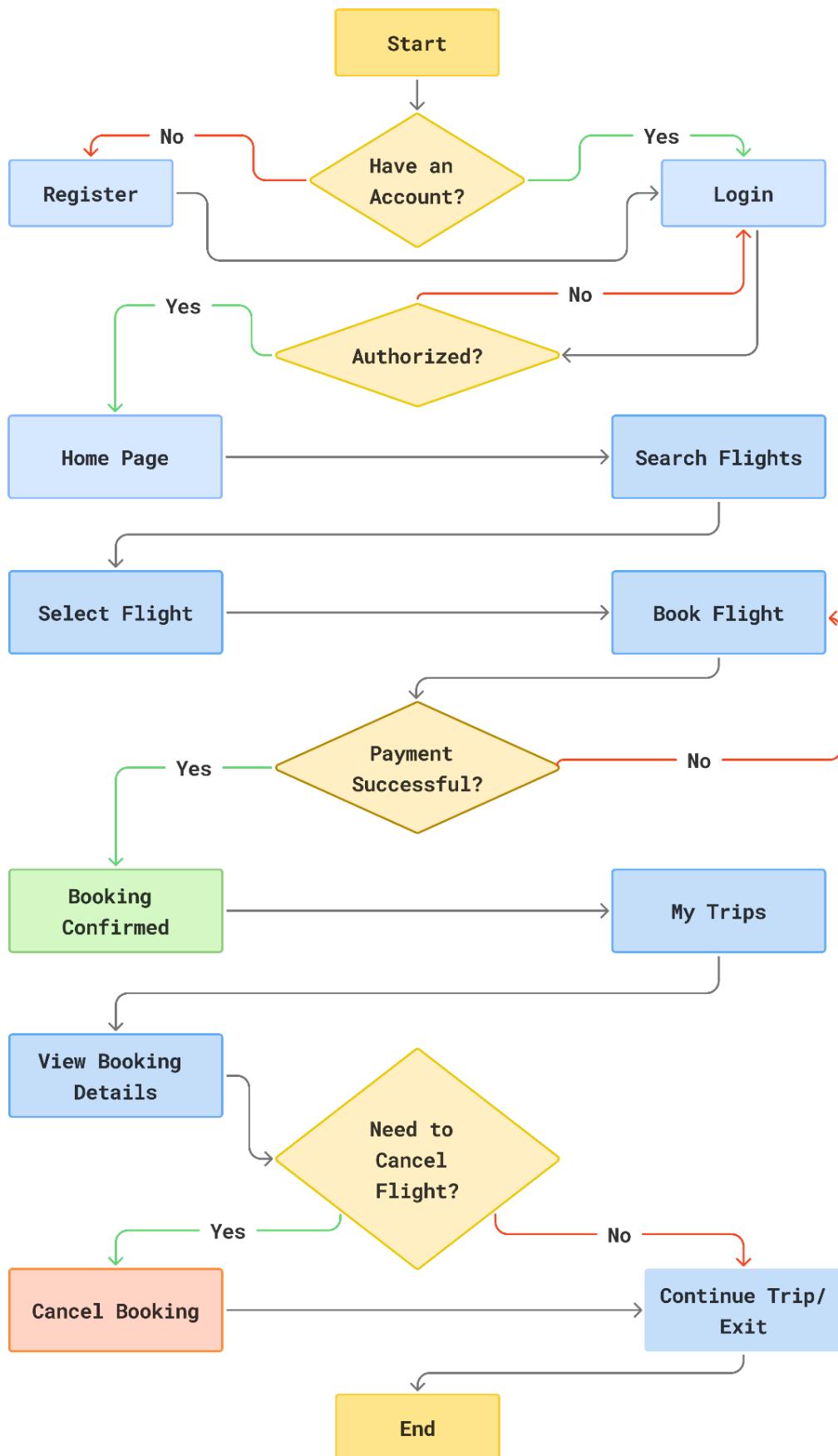
```
AIRSTRO/
|
|   |-- backend/
|   |   |-- config/
|   |   |-- controllers/
|   |   |-- middleware/
|   |   |-- models/
|   |   |-- routes/
|   |   |-- utils/
|   |   |-- uploads/
|   |   |-- .env
|   |   |-- package.json
|   |   └── server.js
|
|   |-- frontend/
|   |   |-- public/
|   |   |-- src/
|   |   |   |-- components/
|   |   |   |-- pages/
|   |   |   |-- services/
|   |   |   |-- context/
|   |   |   |-- assets/
|   |   |   └── App.jsx
|   |   |-- package.json
|   |   └── vite.config.js
|
|   └── README.md
```

3. System Flow Diagram (SFD)

Admin Process Flow Diagram

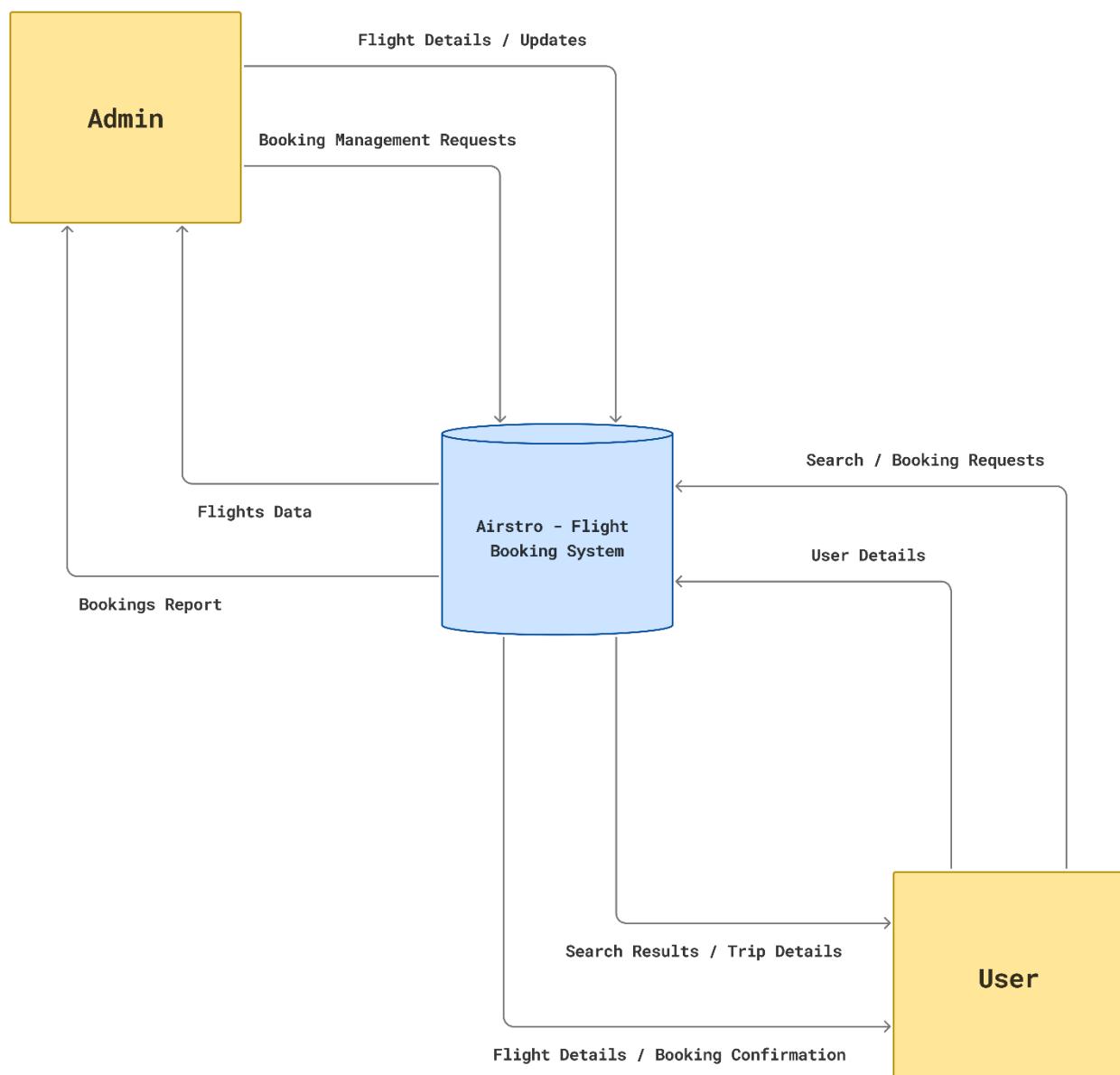


User Process Flow Diagram

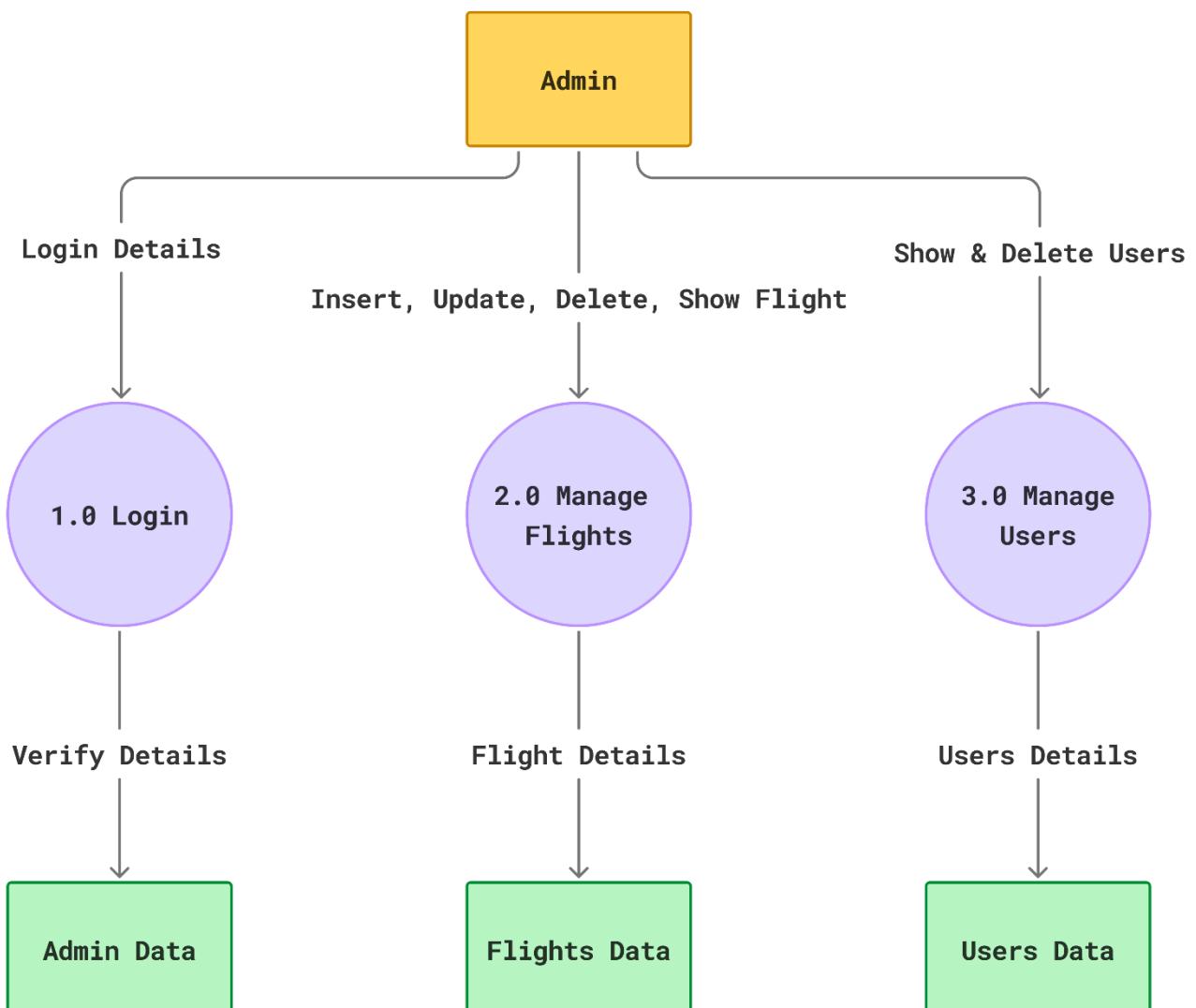


4. DFD and UML Diagram

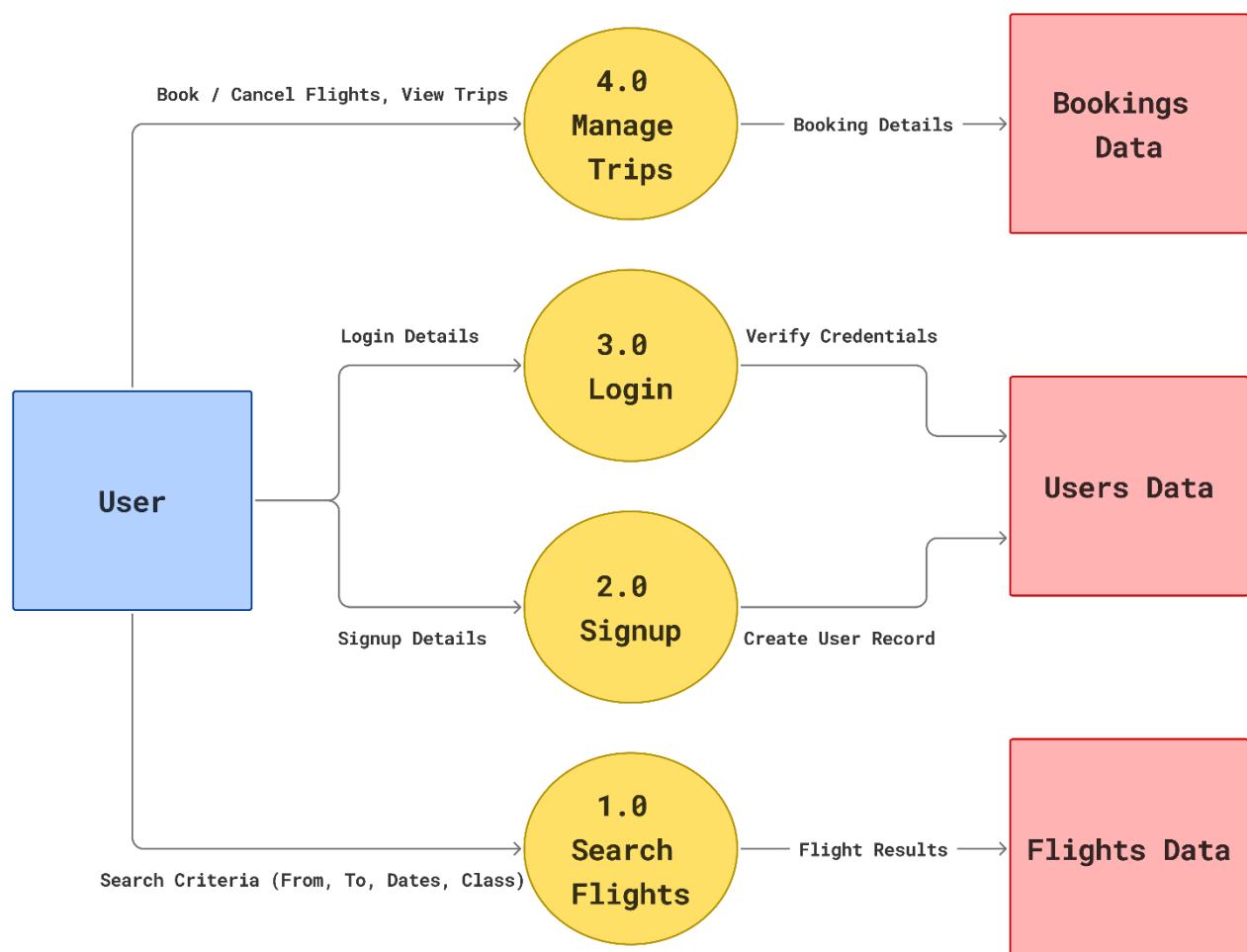
0 Level Diagram (Context Diagram)



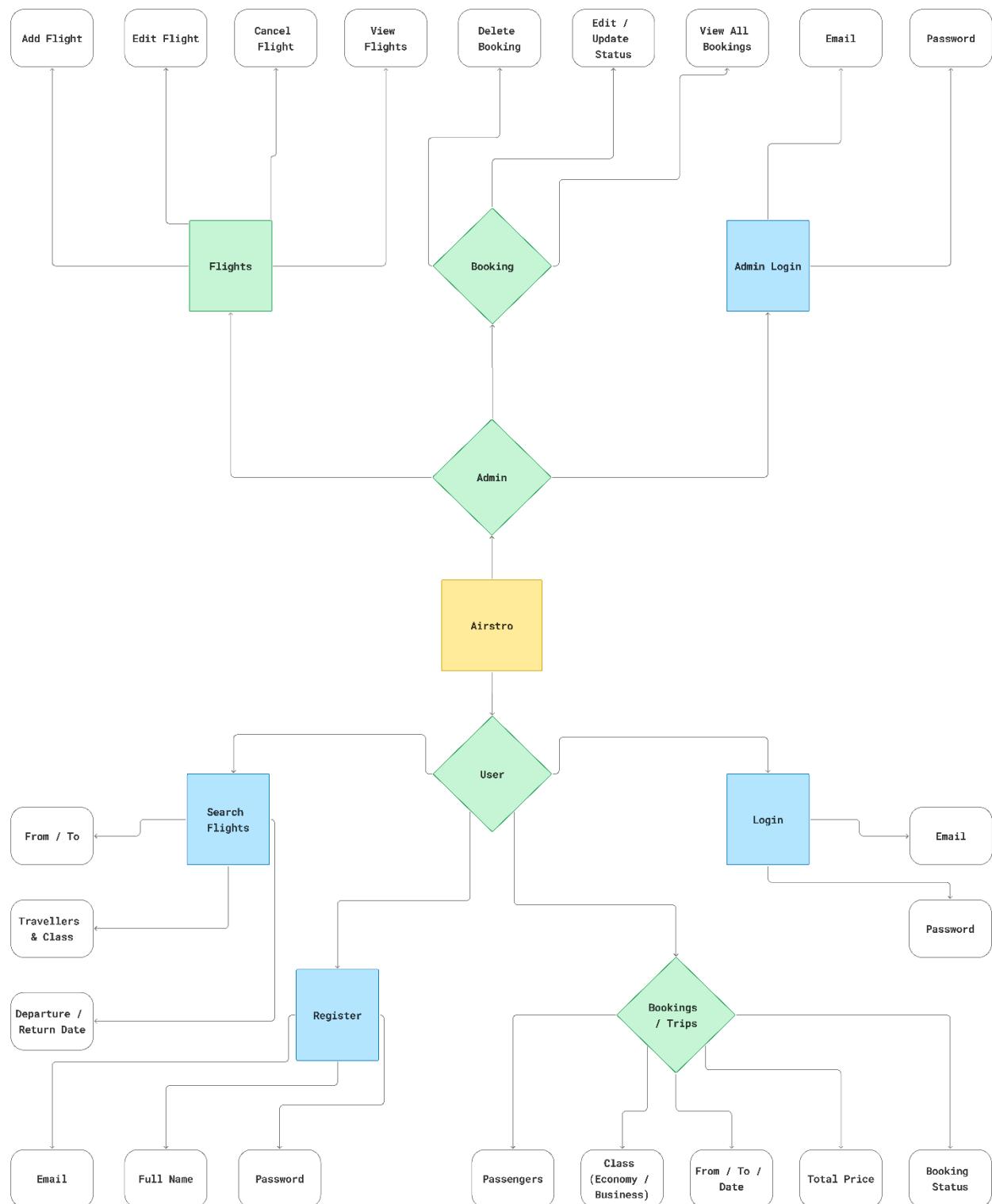
1 Level Admin Diagram



1 Level User Diagram



5. ER Diagram



6. Data Dictionary

User / Admin Table

fullName String	email String	password String	role String
"Admin"	"admin@airstro.com"	"\$2b\$10\$4codxFr06yuf4VQbR..."	"admin"
"Shah Rukh Khan"	"srk@gmail.com"	"\$2b\$10\$HM3PQNxnACcLgUyqR..."	"user"
"Amitabh Bachchan"	"amitabh.b@gmail.com"	"\$2b\$10\$wnWH4bLnttjJsiyBu..."	"user"
"Priyanka Chopra"	"priyanka.c@gmail.com"	"\$2b\$10\$bDku82ubf5yw9V0AV..."	"user"
"Ranbir Kapoor"	"ranbir.k@gmail.com"	"\$2b\$10\$8B/PDvAD0bZ23niel..."	"user"

Flight Table

airline	flightNo	fromCode	toCode	date	departTime	arriveTime	duration	nonStop	stops	economyPrice	businessPrice	seatsEconomy	seatsBusiness
Airstro	AS 201	DEL	BOM	29-11-25	2.44	2.44	02h 25m	TRUE	0	2999	4999	100	20
Airstro	AS 301	DEL	BLR	02-12-25	7.10	9.35	02h 25m	TRUE	0	3299	5299	120	18
SkyJet	SJ 112	BOM	DEL	03-12-25	11.20	13.40	02h 20m	TRUE	0	3199	5599	110	22
AirNova	AN 455	MAA	HYD	04-12-25	15.00	16.20	01h 20m	TRUE	0	2499	4599	140	16
Airstro	AS 410	HYD	BLR	05-12-25	6.40	7.45	01h 05m	TRUE	0	1999	3899	150	14
SkyJet	SJ 220	BLR	BOM	06-12-25	19.10	21.00	01h 50m	TRUE	0	2899	4999	130	20
AirNova	AN 552	DEL	MAA	07-12-25	8.00	10.45	02h 45m	TRUE	0	3499	5799	125	18
Airstro	AS 530	BOM	HYD	08-12-25	13.25	15.00	01h 35m	TRUE	0	2599	4799	115	20
SkyJet	SJ 330	MAA	DEL	09-12-25	17.15	20.00	02h 45m	TRUE	0	3399	5699	130	22
SkyJet	SJ 445	GOI	DEL	11-12-25	14.30	17.05	02h 35m	TRUE	0	2999	5399	135	18

Bookings Table

user	flight	tripType	classType	passengers	departureDate	totalPrice	status
Admin	AS 201	oneWay	economy	1	29-11-25	2999	booked
Shah Rukh Khan	SJ 330	oneWay	business	1	09-12-25	5699	booked
Amitabh Bachchan	AS 301	oneWay	business	4	02-12-25	21196	booked
Amitabh Bachchan	SJ 220	oneWay	economy	5	06-12-25	14495	booked
Priyanka Chopra	SJ 445	oneWay	economy	1	11-12-25	2999	booked
Ranbir Kapoor	AS 410	oneWay	business	1	05-12-25	3899	booked
Ranbir Kapoor	SJ 220	oneWay	economy	1	06-12-25	2899	booked
Ranbir Kapoor	AS 530	oneWay	business	2	08-12-25	9598	booked

7. System Design

Admin Login

The screenshot shows the Airstro website's login interface and footer information.

Header: The top navigation bar includes the Airstro logo, a search icon, and links for Book, Deals and Offers, My Trips, About Us, Login, and Sign Up.

Login Page: The central area features a "Login to Airstro" form with fields for Email (containing "you@example.com") and Password, followed by a "Login" button. Below the form is a link to "Sign up".

Footer: The footer is dark blue and contains the following sections:

- Airstro:** A brief description of the company as "Your seamless gateway to global travel. We make booking flights effortless, secure, and affordable. Explore the world with confidence." with social media links for Facebook, Twitter, and LinkedIn.
- Quick Links:** Book, Deals and Offers, My Trips, About Us.
- Services:** Group Bookings, Check-in Online, Baggage Info, Travel Insurance.
- Contact Us:** support@airstro.com, +1 (555) 123-4567, 101 AirstroPlex, Surat, Gujarat, India 394107.

At the bottom, there is a copyright notice: "© 2025 Airstro. All rights reserved." and links for Privacy Policy and Terms of Use.

Admin Dashboard

[Airstro](#) Book Deals and Offers My Trips About Us Admin Dashboard
Hi, Admin [Logout](#)

Admin Dashboard

[Manage Flights](#)
[View Bookings](#)
Add Flight

Airline

Airstro

Flight No

AS 201

Date (YYYY-MM-DD)

dd-mm-yyyy



From code

DEL

To code

BOM

Depart time

--:-- --



Arrive time



Duration

02h 25m

Economy Price

Business Price

 Non-stop

[Add Flight](#)
All Flights

Flight	Route	Date	Time	Economy	Business	Actions
AS 201 Airstro	DEL → BOM	2025-11-29	02:44 – 02:44	₹2999	₹4999	
AS 301 Airstro	DEL → BLR	2025-12-02	07:10 – 09:35	₹3299	₹5299	
SJ 112 Skyjet	BOM → DEL	2025-12-03	11:20 – 13:40	₹3199	₹5599	
AN 455 AirNova	MAA → HYD	2025-12-04	15:00 – 16:20	₹2499	₹4599	
AS 410 Airstro	HYD → BLR	2025-12-05	06:40 – 07:45	₹1999	₹3899	
SJ 220 Skyjet	BLR → BOM	2025-12-06	19:10 – 21:00	₹2899	₹4999	
AN 552 AirNova	DEL → MAA	2025-12-07	08:00 – 10:45	₹3499	₹5799	
AS 530 Airstro	BOM → HYD	2025-12-08	13:25 – 15:00	₹2599	₹4799	
SJ 330 Skyjet	MAA → DEL	2025-12-09	17:15 – 20:00	₹3399	₹5699	
SJ 445 Skyjet	GOI → DEL	2025-12-11	14:30 – 17:05	₹2999	₹5399	

Flight	Route	Date	Time	Economy	Business	Actions
AS 201 Airstro	DEL → BOM	2025-11-29	02:44 – 02:44	₹2999	₹4999	
AS 301 Airstro	DEL → BLR	2025-12-02	07:10 – 09:35	₹3299	₹5299	
SJ 112 Skyjet	BOM → DEL	2025-12-03	11:20 – 13:40	₹3199	₹5599	
AN 455 AirNova	MAA → HYD	2025-12-04	15:00 – 16:20	₹2499	₹4599	
AS 410 Airstro	HYD → BLR	2025-12-05	06:40 – 07:45	₹1999	₹3899	
SJ 220 Skyjet	BLR → BOM	2025-12-06	19:10 – 21:00	₹2899	₹4999	
AN 552 AirNova	DEL → MAA	2025-12-07	08:00 – 10:45	₹3499	₹5799	
AS 530 Airstro	BOM → HYD	2025-12-08	13:25 – 15:00	₹2599	₹4799	
SJ 330 Skyjet	MAA → DEL	2025-12-09	17:15 – 20:00	₹3399	₹5699	
SJ 445 Skyjet	GOI → DEL	2025-12-11	14:30 – 17:05	₹2999	₹5399	

Airstro

Your seamless gateway to global travel. We make booking flights effortless, secure, and affordable. Explore the world with confidence.

[f](#)
[t](#)
[in](#)
Quick Links

- [Book](#)
- [Deals and Offers](#)
- [My Trips](#)
- [About Us](#)

Services

- [Group Bookings](#)
- [Check-in Online](#)
- [Baggage Info](#)
- [Travel Insurance](#)

Contact Us

- [support@airstro.com](#)
- [+1 \(555\) 123-4567](#)
- 101 AirstroPlex, Surat
Gujarat, India 394107

Admin Dashboard

Airstro Book Deals and Offers My Trips About Us Admin Dashboard Hi, Admin Logout

Admin Dashboard

Manage Flights

View Bookings

All Bookings

User	Flight	Trip	Passengers	Dates	Total	Status	Actions
Ranbir Kapoor ranbir.k@gmail.com	AS 530 • BOM → HYD	oneWay / business	2	2025-12-08	₹9598	Booked	
Ranbir Kapoor ranbir.k@gmail.com	SJ 220 • BLR → BOM	oneWay / economy	1	2025-12-06	₹2899	Booked	
Ranbir Kapoor ranbir.k@gmail.com	AS 410 • HYD → BLR	oneWay / business	1	2025-12-05	₹3899	Booked	
Priyanka Chopra priyanka.c@gmail.com	SJ 445 • GOI → DEL	oneWay / economy	1	2025-12-11	₹2999	Booked	
Amitabh Bachchan amitabh.b@gmail.com	SJ 220 • BLR → BOM	oneWay / economy	5	2025-12-06	₹14495	Booked	
Amitabh Bachchan amitabh.b@gmail.com	AS 301 • DEL → BLR	oneWay / business	4	2025-12-02	₹21196	Booked	
Shah Rukh Khan shah.rukh.k@gmail.com	SJ 330 • MAA → DEL	oneWay / business	1	2025-12-09	₹5699	Booked	
Admin admin@airstro.com	AS 201 • DEL → BOM	oneWay / economy	1	2025-11-29	₹2999	Booked	

Airstro

Your seamless gateway to global travel. We make booking flights effortless, secure, and affordable. Explore the world with confidence.



Quick Links

- [Book](#)
- [Deals and Offers](#)
- [My Trips](#)
- [About Us](#)

Services

- [Group Bookings](#)
- [Check-in Online](#)
- [Baggage Info](#)
- [Travel Insurance](#)

Contact Us

- support@airstro.com
- +1 (555) 123-4567
- 101 AirstroPlex, Surat
Gujarat, India 394107

© 2025 Airstro. All rights reserved.

[Privacy Policy](#) | [Terms of Use](#)

User Sign Up

Airstro Book Deals and Offers My Trips About Us

Login

Sign Up

Create your Airstro account

Book flights, manage trips, and more.

Full Name

John Doe

Email

you@example.com

Password

At least 6 characters

Sign Up

Already have an account? [Login](#)

Airstro

Your seamless gateway to global travel. We make booking flights effortless, secure, and affordable. Explore the world with confidence.

f t in

Quick Links

[Book](#)
[Deals and Offers](#)
[My Trips](#)
[About Us](#)

Services

[Group Bookings](#)
[Check-in Online](#)
[Baggage Info](#)
[Travel Insurance](#)

Contact Us

support@airstro.com
+1 (555) 123-4567
 101 AirstroPlex, Surat
 Gujarat, India 394107

© 2025 Airstro. All rights reserved.

[Privacy Policy](#) | [Terms of Use](#)

User Log In

Airstro Book Deals and Offers My Trips About Us

Login

Sign Up

Login to Airstro

Welcome back! Please enter your details.

Email

you@example.com

Password

Login

Don't have an account? [Sign up](#)

Airstro

Your seamless gateway to global travel. We make booking flights effortless, secure, and affordable. Explore the world with confidence.

f t in

Quick Links

[Book](#)
[Deals and Offers](#)
[My Trips](#)
[About Us](#)

Services

[Group Bookings](#)
[Check-in Online](#)
[Baggage Info](#)
[Travel Insurance](#)

Contact Us

support@airstro.com
+1 (555) 123-4567
 101 AirstroPlex, Surat
 Gujarat, India 394107

© 2025 Airstro. All rights reserved.

[Privacy Policy](#) | [Terms of Use](#)

Home Page

Airstro Book Deals and Offers My Trips About Us

Hi, Ranbir Kapoor Logout

EXCLUSIVELY YOURS

Hi there, plan your journey with Airstro - Book Flights Now!

One Way Round Trip

From	To	Departure	Travellers	Class
Where from?	Going to?	dd-mm-yyyy	1 Passenger	Economy

Find exciting offers and best deals



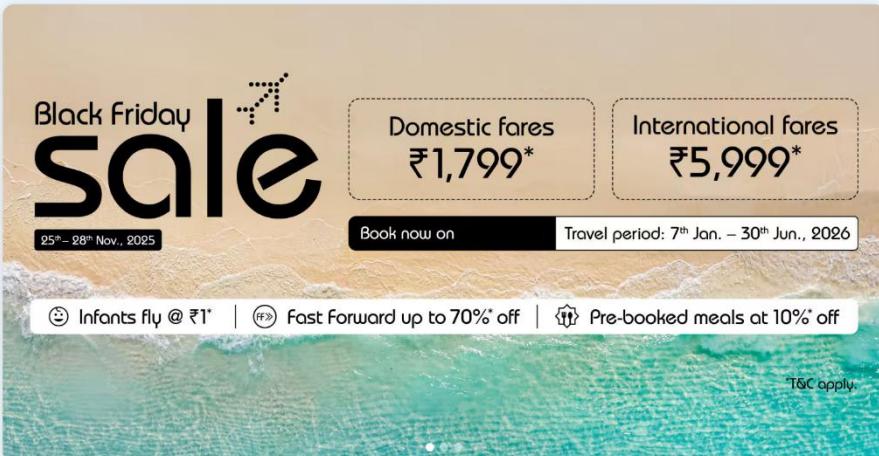
Black Friday Sale

25th – 28th Nov., 2025

Domestic fares ₹1,799*

International fares ₹5,999*

Book now on Travel period: 7th Jan. – 30th Jun., 2026



Infants fly @ ₹1* | Fast Forward up to 70% off | Pre-booked meals at 10% off

T&C apply.

Embark on a journey of inspiration with Airstro



Add more 6E Add-ons to your journey



Pre book Fast forward

Priority check-in and anytime boarding
up to 70% discount



Pre-paid excess baggage

Excess baggage and additional piece
starting at ₹1515



XL (Extra legroom) seat

Window, aisle or seat with extra legroom
starting at ₹500

Airstro

Your seamless gateway to global travel. We make booking flights effortless, secure, and affordable. Explore the world with confidence.

f t in

Quick Links

Book
Deals and Offers
My Trips
About Us

Services

Group Bookings
Check-in Online
Baggage Info
Travel Insurance

Contact Us

support@airstro.com
+1 (555) 123-4567
101 AirstroPlex, Surat
Gujarat, India 394107

Deals and Offer Page

Airstro Book Deals and Offers My Trips About Us

Hi, Ranbir Kapoor Logout

Find exciting offers and best deals



Black Friday Sale

25th – 28th Nov., 2025

Book now on Domestic fares ₹1,799* International fares ₹5,999*

Travel period: 7th Jan. – 30th Jun., 2026

Infants fly @ ₹1* | Fast Forward up to 70% off | Pre-booked meals at 10% off

T&C apply.

Embark on a journey of inspiration with Airstro



Add more 6E Add-ons to your journey



Pre book Fast forward

Priority check-in and anytime boarding up to 70% discount



Pre-paid excess baggage

Excess baggage and additional piece starting at ₹1515



XL (Extra legroom) seat

Window, aisle or seat with extra legroom starting at ₹500

Airstro

Your seamless gateway to global travel. We make booking flights effortless, secure, and affordable. Explore the world with confidence.

f t in

Quick Links

Book
Deals and Offers
My Trips
About Us

Services

Group Bookings
Check in Online
Baggage Info
Travel Insurance

Contact Us

support@airstro.com
 +1 (555) 123-4567
101 AirstroPlex, Surat Gujarat, India 394107

My Trips Page

Airstro Book Deals and Offers My Trips About Us

Hi, Ranbir Kapoor Logout

My Trips

Flight AS 530 • BOM → HYD
08 Dec 2025 • 2 Passengers
Class: BUSINESS

₹9598

[Cancel Flight](#)

Flight SJ 220 • BLR → BOM
06 Dec 2025 • 1 Passenger
Class: ECONOMY

₹2899

[Cancel Flight](#)

Flight AS 410 • HYD → BLR
05 Dec 2025 • 1 Passenger
Class: BUSINESS

₹3899

[Cancel Flight](#)

Embark on a journey of inspiration with Airstro



Ayodhya, Uttar Pradesh



Bangkok, Thailand



Bengaluru



Delhi



GOA



Hyderabad, Telangana

Find exciting offers and best deals



Earn up to 25 IndiGo BluChips on every ₹100 spent on flight bookings.
T&C apply.



50%* off on Sight Seeing

- 3k+ tours and activities
- Free cancellation up to 24 hours
- Earn Airstro BluChips



Airstro Black Friday sale

Get up to 35% off on hotel bookings on Airstro for the flip

Use code: **BESTOF35%**



Destination of the week

10%* off on select international destinations

5 lucky flies will win 10,000* Airstro BluChips

Airstro

Your seamless gateway to global travel. We make booking flights effortless, secure, and affordable. Explore the world with confidence.

f t in

Quick Links

- [Book](#)
- [Deals and Offers](#)
- [My Trips](#)
- [About Us](#)

Services

- [Group Bookings](#)
- [Check-in Online](#)
- [Baggage Info](#)
- [Travel Insurance](#)

Contact Us

- support@airstro.com
- +1 (555) 123-4567
- 101 AirstroPlex, Surat Gujarat, India 394107

© 2025 Airstro. All rights reserved.

[Privacy Policy](#) | [Terms of Use](#)

About Us Page

Airstro Book Deals and Offers My Trips About Us

Hi, Ranbir Kapoor Logout

ABOUT US

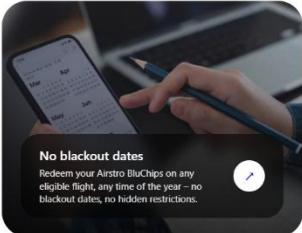
Airstro BluChips Loyalty Program

Fly, earn and enjoy exclusive travel rewards with Airstro BluChips – our simple and rewarding loyalty program designed for frequent flyers, family vacations and business trips alike.

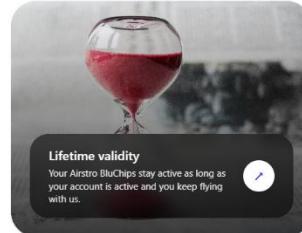
Sign up and get access to exciting privileges and benefits



Earn Airstro BluChips
Earn BluChips on every Airstro flight and select add-ons like seats, meals and baggage – turn every journey into rewards.



No blackout dates
Redeem your Airstro BluChips on any eligible flight, any time of the year – no blackout dates, no hidden restrictions.



Lifetime validity
Your Airstro BluChips stay active as long as your account is active and you keep flying with us.

Enrol Now

Learn More about Earning and Redeeming Airstro BluChips



Read more about earning Airstro BluChips
As a member, earn BluChips on every Airstro flight and on select add-ons such as seats, meals and baggage – the more you travel, the faster you earn.



Read more about redeeming Airstro BluChips
Redeem your BluChips on Airstro flights, upgrades and more – anytime, anywhere, for yourself and your loved ones.

Airstro at a glance

2,200+

Daily Flights



90+

Domestic Destinations

40+

International Destinations

750 Mn+

Happy Customers

400+

Fleet Strong

Airstro

Your seamless gateway to global travel. We make booking flights effortless, secure, and affordable. Explore the world with confidence.

f t in

Quick Links

Book
Deals and Offers
My Trips
About Us

Services

Group Bookings
Check-in Online
Baggage Info
Travel Insurance

Contact Us

support@airstro.com
 +1 (555) 123-4567
101 AirstroPlex, Surat
Gujarat, India 394107

8. Conclusion

8.1 Limitations

- The system does not include an integrated online payment gateway for ticket purchases.
- Analytics and reporting are limited, so admins cannot generate advanced insights such as most-booked routes, seasonal demand, or revenue reports.
- The platform is not fully optimized for mobile devices, which may reduce convenience for users accessing the system on smartphones.
- The system lacks advanced filtering options (e.g., filtering flights by airline, class type, number of stops, or date range).
- Currently supports only Admin and User roles; there are no separate modules for airline staff, travel agents, or super admin.
- No advanced statistics dashboard is available for admins (e.g., peak travel times, cancellation trends, or flight performance comparison).

8.2 Future Enhancement

- Develop a mobile application for users and admins to easily book flights, manage bookings, and monitor flight updates.
- Integrate a secure online payment gateway to allow users to make ticket payments through UPI, credit/debit card, and net banking.

- Add AI-based smart price prediction and travel suggestions to recommend the best time to book based on fare trends.
- Introduce additional roles (e.g., Airline Staff, Travel Agent, and Super Admin) with separate privileges and dashboard access.
- Enhance security features such as Two-Factor Authentication (2FA), CAPTCHA verification, and encrypted login sessions.
- Provide advanced analytics and visual dashboards for admins, including booking statistics, revenue trends, route popularity, cancellation charts, and flight performance insights.

8.3 Conclusion

The Airstro – Online Flight Booking System provides a modern and efficient solution for managing airline bookings digitally. It eliminates the need for traditional offline ticket reservations and offers a user-friendly platform where users can easily search flights, book tickets and manage their bookings. The admin can efficiently maintain flight schedules, update information, and oversee bookings through a centralized dashboard. By implementing digital automation, transparency, and role-based access control, Airstro improves the overall passenger experience and simplifies administrative operations. the system has high potential to evolve into a complete and scalable online airline reservation platform.

9. Annexures

A. Progress Timeline

- Weeks 1–2: Requirement gathering, planning, and system design (wireframes, ER diagram, DFD, database schema).
- Weeks 3–4: Backend development (Node.js/Express CRUD operations for users, flights, bookings, authentication).
- Weeks 5–6: Frontend development (React.js + TailwindCSS UI components, forms, dashboards, routing).
- Weeks 7–8: Integration (User flight booking workflow, Admin flight management).
- Weeks 9–10: Testing (functional & performance) and deployment.

B. Technology Reference

- React.js & TailwindCSS Documentation – Frontend user interface development
- Node.js & Express.js Documentation – Backend API logic and authentication
- MongoDB Documentation – Database schema design and queries
- JavaScript Documentation – Core scripting & component functionalities

- Vite Documentation – Project setup and frontend development server

C. Testing Results

- **Functional Testing**
 - User registration & login ✓ PASSED
 - User flight search and booking ✓ PASSED
 - Booking cancellation by user ✓ PASSED
 - Admin add/update/delete flights ✓ PASSED
 - Admin manage & schedule flights ✓ PASSED
 - User view booking history ✓ PASSED
- **Performance Testing**
 - Concurrent users supported: 50+ users successfully tested
 - Average API response time: 0.45 seconds
 - Average database query execution: 0.06 seconds

D. Deployment Information

- Platform: Localhost / Cloud-based deployment (Node.js server)
- Database: MongoDB Atlas / Local MongoDB instance
- Monitoring: Backend logs enabled for booking and flight activity tracking

E. User Guide

- **For User**

1. Register or Login
2. Search available flights
3. Select seat(s) and book ticket
4. View booking history or cancel bookings

- **For Admin**

1. Login as Admin
2. Add / Update / Delete flight details
3. Schedule or cancel flights
4. Monitor all bookings and users