

Functional Requirements Specification Document

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1. Introduction

1.1 Purpose:

The purpose of this document is to outline the functional requirements of the Flight Management System (FMS). It aims to provide a comprehensive overview of the system's functionalities, features, and user interactions to serve as a guide for development, testing, and stakeholder understanding.

1.2 Scope:

The Flight Management System encompasses a suite of functionalities tailored to facilitate efficient flight search, booking, and management. It covers user authentication, flight search, booking processes, as well as user interactions related to flight details, bookings, and ancillary services. This document explicitly defines the boundaries and functionalities expected within the FMS.

1.3 Document Conventions:

- **User Stories:** Each functional requirement is presented as a user story outlining specific user actions and system responses.
- **Acceptance Criteria:** Criteria defining the conditions that must be met to consider a user story complete.
- **Constraints:** Any limitations or restrictions that influence system design or functionality.
- **Dependencies:** Components, systems, or functionalities upon which the FMS relies for proper operation.

2. System Overview

2.1 System Description:

The Flight Management System (FMS) is a comprehensive software solution designed to streamline and enhance the process of flight search, booking, and management. It serves as a centralized platform facilitating interactions between users, airlines, and relevant third-party services.

The FMS enables users to efficiently search for available flights based on various parameters such as destination, date, and preferences. Additionally, it provides a seamless

booking experience, allowing users to select flights, manage bookings, and access ancillary services.

2.2 Key Objectives:

Primary Goals of the Flight Management System:

Efficient Flight Search: Enable users to search for flights using diverse criteria and view detailed flight information.

Seamless Booking Experience: Facilitate a user-friendly booking process with comprehensive options for passenger details, preferences, and additional services.

Reliable Flight Management: Ensure accurate and timely management of flight details, bookings, and associated data.

Integration and Interoperability: Collaborate with third-party services to integrate flight data, ensuring a wider selection and better user experience.

3. Functional Requirements

3.1 User Authentication and Access Control (Milestone 1)

GROFlight Home About

Login

Continue with Google

Continue with Mobile OTP

OR

Email address or Phone Number

example@example.com

Password [Forgot password?](#)

Continue

New user? [Create an account](#)

Login

Login



Email address

example@gmail.com

Password

[Forgot password?](#)

Continue

[New user? Create an account](#)

Mobile Login



Enter Your Phone Number

6789037647

Send OTP

Mobile Login

The screenshot displays the 'Account information' page of the GRO-light application. At the top, there is a navigation bar with the GRO-light logo, 'Home', 'About', and a user profile icon. Below the navigation bar, there are links for 'Account info', 'Booking History', and 'Change password'. The main content area is titled 'Account information' and contains a profile picture placeholder with a 'Change Image' button. To the right of the profile picture, there are four sections of form fields: 'Basic Information' (Name: Mr. Sanjay Kumar, Gender: Male, Date of Birth: 1992-07-05, Email: tech.fms123@gmail.com, Mobile: 8960290450), 'Address Information' (Address: C 138 sector A mahanagar, Pin: 226006, Country: India, State: Uttar Pradesh, City: Lucknow), 'GST Information' (GSTIN: Kushagra Infotech Services, Company Address: sanjay@kistechtechnology.org), and a blue 'Update info' button at the bottom.

User Profile

Objective: Enable secure user registration, login, and access control.

User Story 1: User Registration

Description: As a new user, I want to register for an account by providing my first name , last name , email address , mobile number and password.

Acceptance Criteria:

- The system should verify that the email address provided is unique.
- Password creation should follow defined security standards (length, complexity).

Constraints: None

Dependencies: Database for storing user credentials

User Story 2: User Login

Description: As a registered user, I want to log in using my email and password.

Acceptance Criteria:

- Successful login should grant access to the user's account dashboard.

Constraints: None

Dependencies: Valid user credentials stored in the database

User Story 3 : Social Login

Description: As a user, I want to log in using my google account, mobile and facebook account.

Acceptance Criteria:

- Successful login should grant access to the user's account dashboard.

Constraints: None

Dependencies: Google Outh, Facebook Outh, mobile otp service provider.

User Story 4: User Profile

Description: As a user, I want to access and update my profile information after logging in.

Acceptance Criteria:

- Users should be able to view and edit profile details such as name, contact information, and preferences.
- Changes to the profile should reflect across the system after confirmation.

Constraints: None

Dependencies: User data storage and retrieval mechanisms

User Story 5: Change Password

Description: As a logged-in user, I want the ability to change my password securely.

Acceptance Criteria:

- The system should authenticate the user before allowing a password change.
- Successful password changes should update the login credentials immediately.

Constraints: Password change security measures must meet defined standards

Dependencies: Password management and encryption mechanisms

User Story 6: Forgot Password

Description: As a user who has forgotten the password, I want a secure process to reset it.

Acceptance Criteria:

- Users should receive a reset link via email for password recovery.
- Resetting the password should require confirmation before implementation.

Constraints: Secure and verifiable identity confirmation

Dependencies: Email and mobile verification services for password recovery

User Story 7: Email and Mobile Verification

Description: As a user, I want to verify my email and mobile number to check whether the email and mobile provided is correct or not.

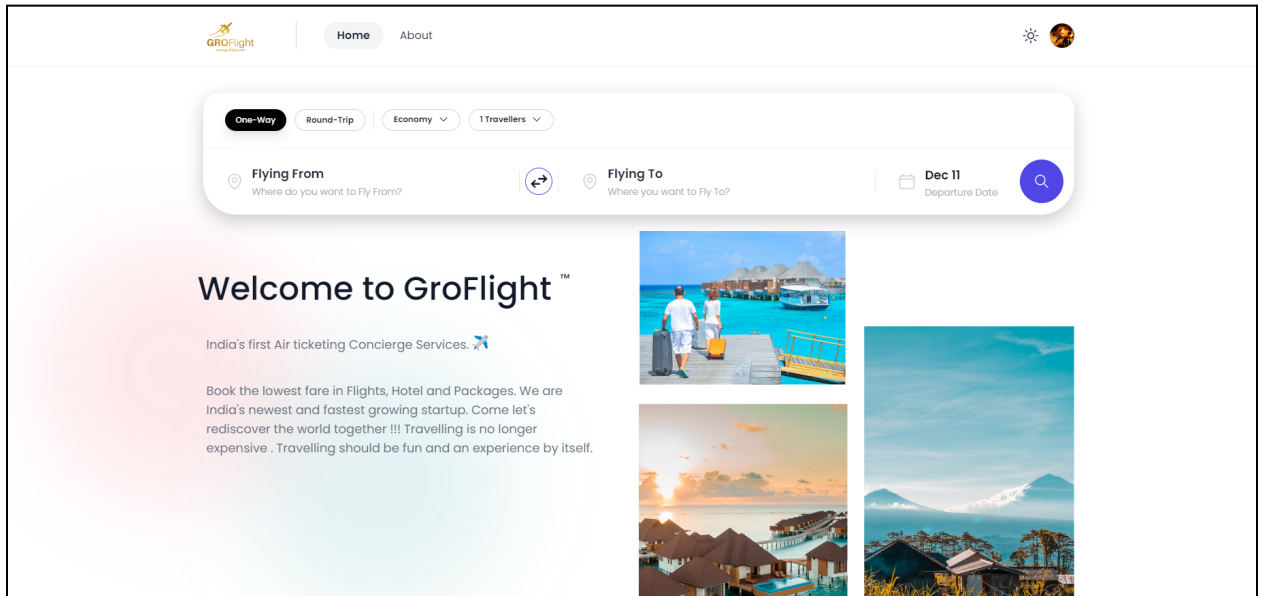
Acceptance Criteria:

- Users should receive an OTP (One-Time Password) via SMS for mobile verification.
- Users should receive an OTP (One-Time Password) via Email for email verification.

Constraints: Verification methods must be reliable and ensure accurate receipt OTP.

Dependencies: Email and mobile verification services for OTP verification.

3.2 Flight Search and Booking (Milestone 2)



The screenshot displays the GroFlight website interface. At the top, there is a navigation bar with the GroFlight logo, 'Home' and 'About' links, and a user profile icon. Below this is a search bar with tabs for 'One-Way', 'Round-Trip', 'Economy', and '1 Travellers'. The search bar contains fields for 'Flying From' (with a location pin icon and placeholder text 'Where do you want to Fly From?'), a swap button, 'Flying To' (with a location pin icon and placeholder text 'Where you want to Fly To?'), a date field set to 'Dec 11' (with a calendar icon and placeholder text 'Departure Date'), and a search button. Below the search bar, a large banner reads 'Welcome to GroFlight™' with the tagline 'India's first Air ticketing Concierge Services.' and a brief description of the service. To the right of the text are three images: a person walking on a beach, a sunset over a beach, and a view of a mountain range.

Search Form

Home About Login or Register

One-Way Round-Trip ECONOMY 1 Travellers

PNQ Flying From MAA Flying To Dec 12 Departure Date

Stops

- ☐ Non-stop
- ☐ 1 Stop
- ☐ 2 Stops

Price Range

Min price Max price

Airline Name	Departure	Duration	Arrival	Price
TRIPJACK IndiGo Flight Details	Dec 12, 2023 01:05 AM Pune	1Hr 35 Mins Non-Stop	Dec 12, 2023 02:40 AM Chennai	₹4,506 Book
TRIPJACK Air India Flight Details	Dec 12, 2023 12:40 PM Pune	2Hrs 50Mins 1 Stop	Dec 12, 2023 05:20 PM Chennai	₹5,198 Book
TRIPJACK Air India Flight Details	Dec 12, 2023 12:40 PM Pune	2Hrs 50Mins 1 Stop	Dec 12, 2023 08:05 PM Chennai	₹5,198 Book

List Page

Home About Login or Register

Complete Your Booking

Onward Flight

Pune 01:05 AM Dec 12, 2023 Lohegaon Arpt

Chennai 02:40 AM Dec 12, 2023 Chennai Arpt Terminal 1

1Hr 35 Mins

Enter Passenger Details

Please mention name same as govt ID

ADULT 1

Mr. Ms. Mrs.

First Name Last Name Save

Fare Breakup

Base Fare	₹3131
Taxes & Fees	₹1375
Total Airfare	₹4506
Platform Fee	₹00
Grand Total	₹4506

Proceed To Pay

Booking Page

Objective: Facilitate flight search, selection, and booking functionalities.

User Story 1: Flight Search - One Way

Description: As a user, I want to search for available flights one way journey based on specified criteria (e.g., date, destination, passenger preferences).

Acceptance Criteria:

- The system should display a list of available flights matching the search criteria.
- Users should be able to filter the search results.

Constraints: None

Dependencies: Integration with flight data APIs(Vendor APIs)

User Story 2: Flight Search - Round Trip

Description: As a user, I want to search for available flights for round trip based on specified criteria (e.g., date, destination, passenger preferences).

Acceptance Criteria:

- The system should display a list of available flights matching the search criteria.
- Users should be able to filter the search results.

Constraints: None

Dependencies: Integration with flight data APIs(Vendor APIs)

User Story 3: Flight Booking : One Way

- **Description:** As a user, I want to select a flight from the search results and proceed with the booking.
- **Acceptance Criteria:**
 - Users should be able to select preferred seats and add additional services (meals, baggage).
 - The booking process should require confirmation and payment details.
- **Constraints:** Booking process completion within a specified time frame.
- **Dependencies:** Integration with payment gateway for transactions.

User Story 4: Flight Booking : Round Trip

- **Description:** As a user, I want to select a flight from the round trip search results and proceed with the booking.
- **Acceptance Criteria:**
 - Users should be able to select preferred seats and add additional services (meals, baggage).
 - The booking process should require confirmation and payment details.
- **Constraints:** Booking process completion within a specified time frame.
- **Dependencies:** Integration with payment gateway for transactions.

4. External Interfaces

4.1 Third-Party Integrations:

Flight Data Providers API:

Description: Integration with external flight data providers to fetch real-time flight information, including schedules, availability, and pricing.

API Provider: Tripjack, TBO and Go Fly

Purpose: To retrieve and display up-to-date flight details for users.

Payment Gateway Integration:

Description: Integration with a secure payment gateway for processing flight bookings and transactions securely.

Gateway Provider: Cashfree

Purpose: To facilitate secure payment processing for flight bookings.

Google OAuth for Authentication:(Pending)

Description: Integration with Google OAuth for allowing users to log in using their Google accounts.

API Provider: Google

Purpose: To provide users with an alternative and secure authentication method.

Facebook OAuth for Authentication:(Pending)

Description: Integration with Facebook OAuth for allowing users to log in using their Facebook accounts.

API Provider: Facebook

Purpose: To provide users with an alternative and secure authentication method.

Email Service Provider (ESP):

Description: Integration with an Email Service Provider for sending transactional emails, including booking confirmations, password resets, and notifications.

Provider: Pending

Purpose: To deliver essential communications to users regarding their bookings, account activities, and system updates.

API Usage: Utilizing the ESP's API or SMTP settings to send automated emails triggered by specific system events.

SMS/Messaging Service Provider:

Description: Integration with an SMS/Messaging Service Provider for sending text messages or notifications to users' mobile phones.

Provider: Pending

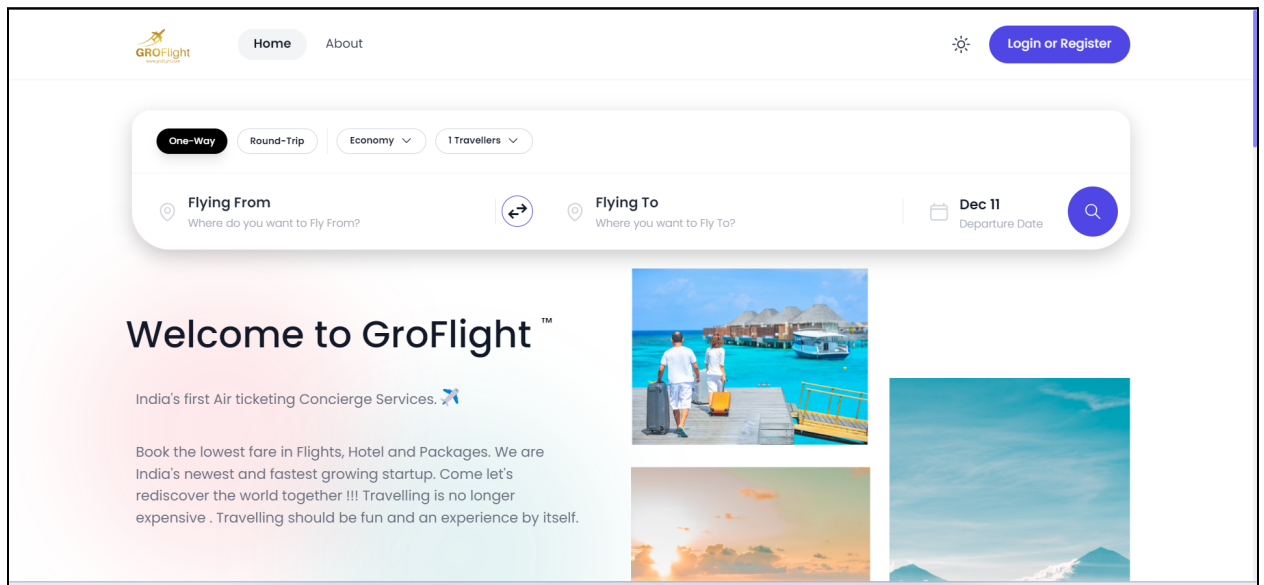
Purpose: To deliver urgent updates, reminders, or notifications to users' mobile devices.

API Usage: Using the provider's API to send SMS messages triggered by specific system events or user actions

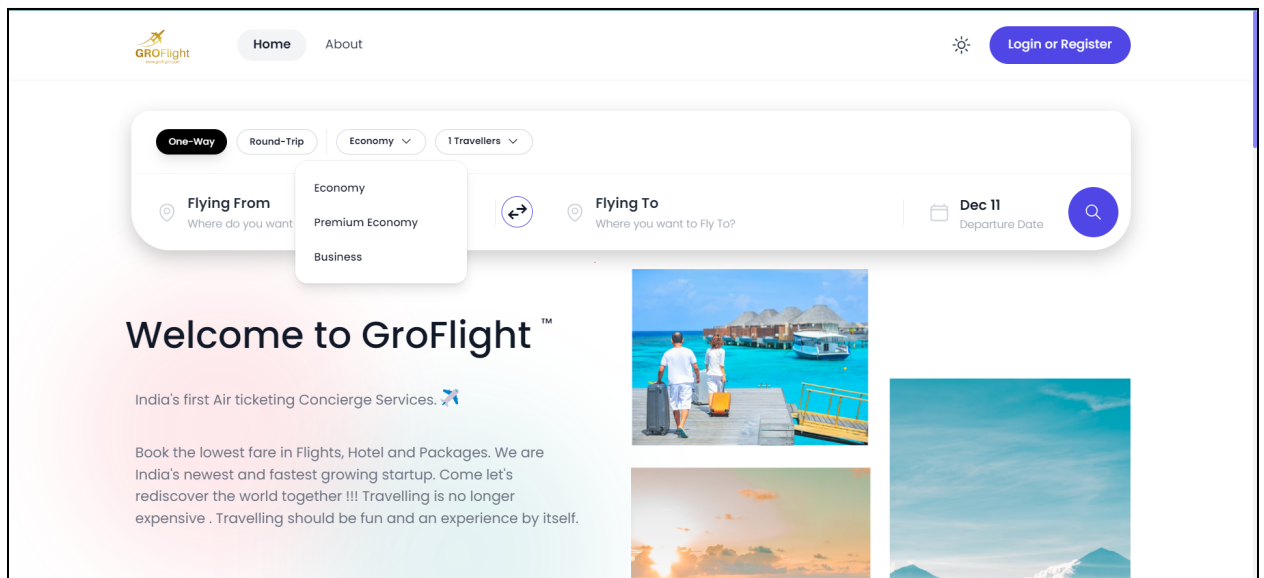
4.2 User Interfaces:

Search Interface:

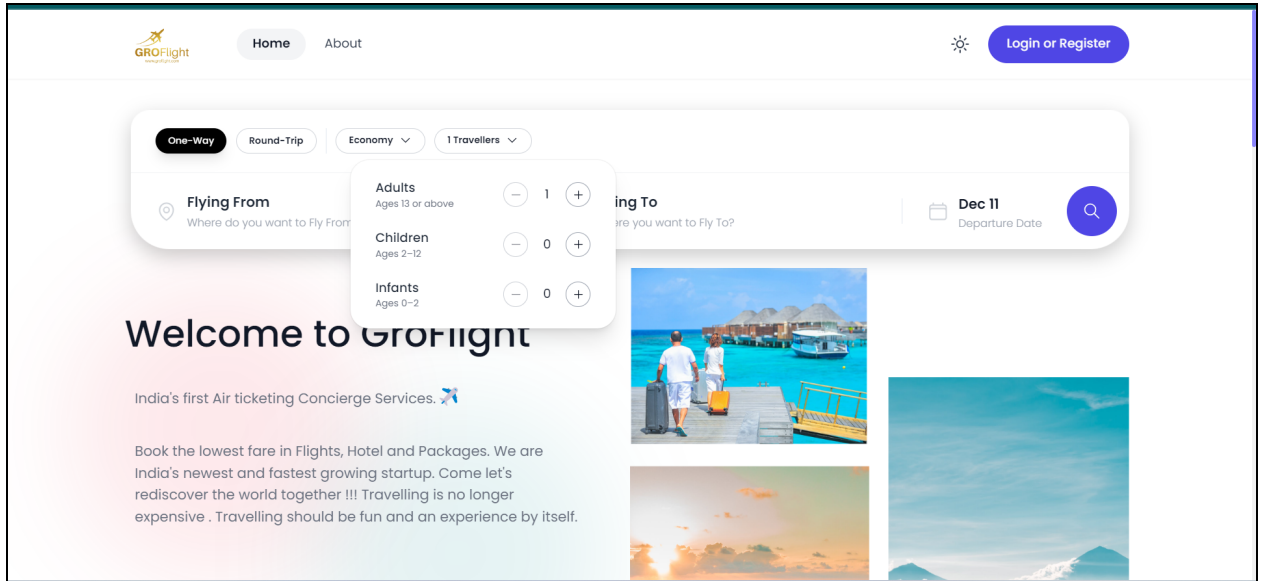
- **Description:** A user-friendly interface allowing users to input search criteria (Flying from, Flying to, dates) and also allow users to search round trip flights.
- **Interactions:** Input fields for Flying From and Flying To, date selection, class selection, travelers selection, round trip and search button.



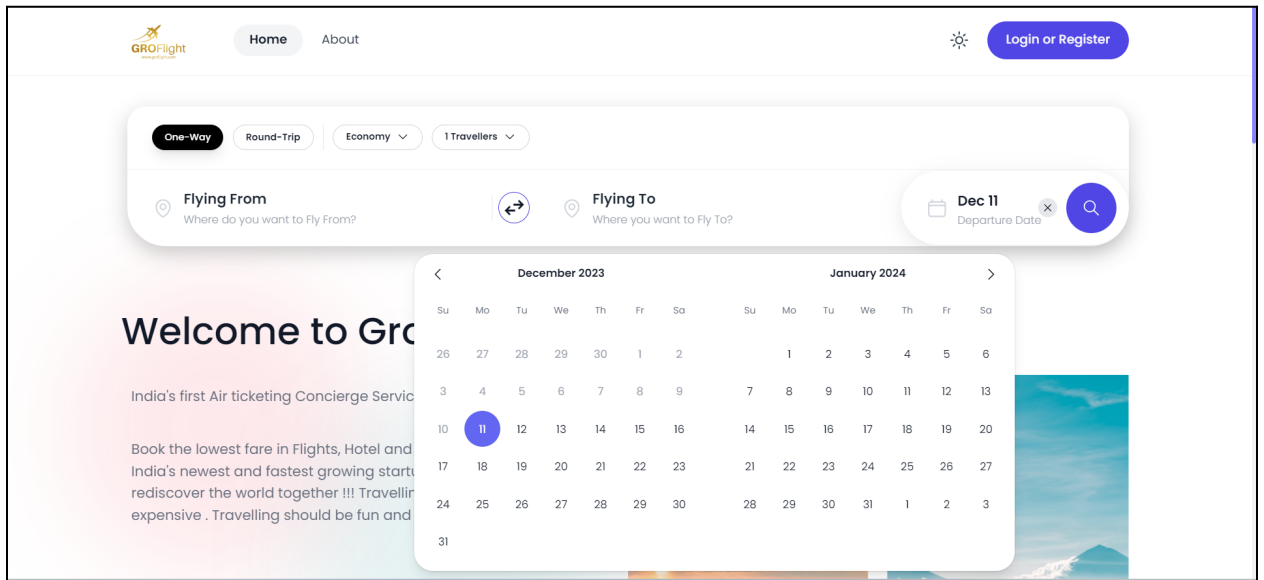
Search UI



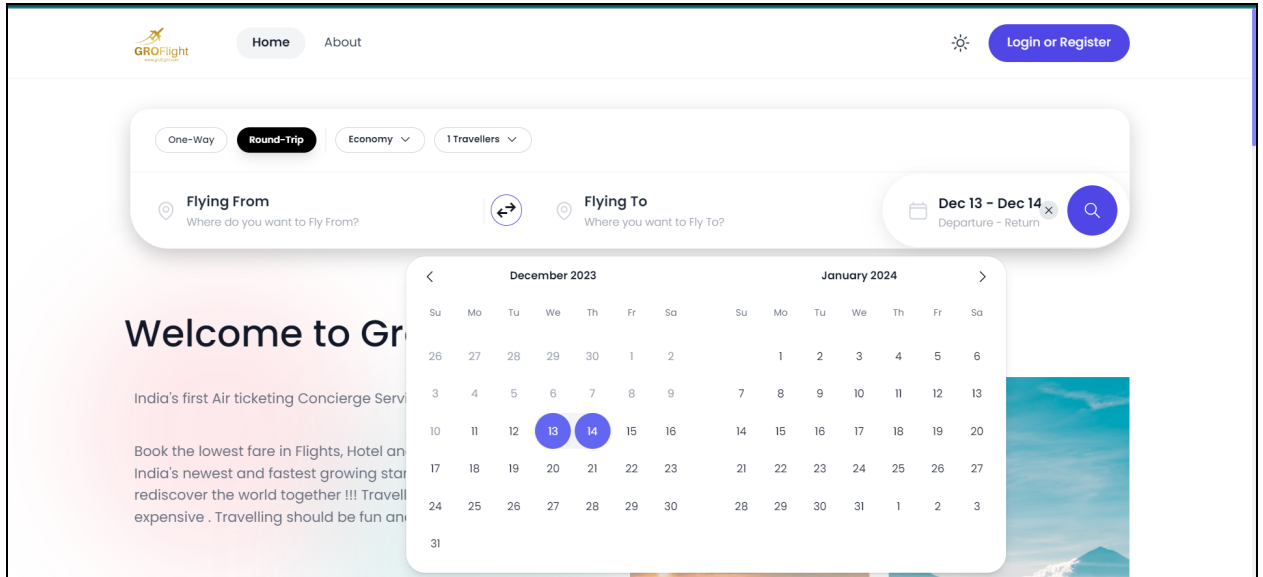
Journey Class drop down UI



Travelers Selection UI



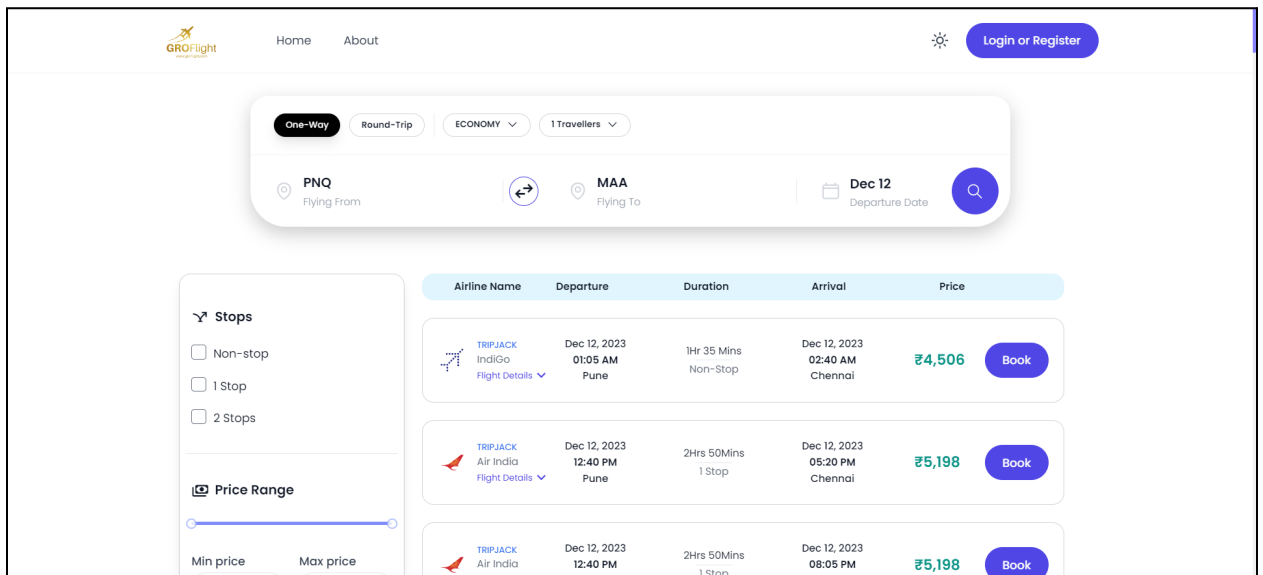
Date Picker UI



Round Trip Interface

Search Result Interface(Flight List Interface):

- Description:** A user-friendly interface allowing user to view the list of available flights(including information Airline name, logo, departure time , arrival time, duration , layover info, fare for one adult, source and destination city) , view the flight details , option to select flight , filter flights,
- Interactions:**Filters, flight details, Book Button.



Flight List - One way

GRORlight

HomeAbout

☀

Login or Register

One-WayRound-TripECONOMY1 Travellers

PNQFlying From

↔

MAAFlying To

Dec 11 - Dec 12Departure - Return

🔍

PNQ-MAA

MAA-PNQ

✈ Stops

☐ Non-stop☐ 1 Stop

📏 Price Range

Pune-Chennai

Dec 11, 2023

Departure	Duration	Arrival	Price
<div><div>TRIPJACK</div><div>IndiGo</div><div>6E-238</div></div> <div>Dec 11, 2023 10:50 PM Pune</div>	1Hr 40 Mins Non-Stop	<div>Dec 12, 2023 12:30 AM Chennai</div>	₹7,346.5

Chennai-Pune

Dec 12, 2023

Departure	Duration	Arrival	Price
<div><div>TRIPJACK</div><div>IndiGo</div><div>6E-253</div></div> <div>Dec 12, 2023 03:05 AM Chennai</div>	1Hr 40 Mins Non-Stop	<div>Dec 12, 2023 04:45 AM Pune</div>	₹5,135.5

Onward • IndiGo

10:50 PM-12:30 AM

Flight Details

₹7346.5

Fare for 1 adult

Return • IndiGo

03:05 AM-04:45 AM

Flight Details

₹5135.5

Fare for 1 adult

Fare for 1 Traveller

₹12482

Continue

Flight List - Round Trip

GRORlight

HomeAbout

☀

Login or Register

PNQFlying From

↔

MAAFlying To

Dec 12Departure Date

🔍

✈ Stops

☐ Non-stop☐ 1 Stop

📏 Price Range

Min price

₹ 4506

Max price

₹ 56438

✈ Departure Time

0:00 - 23:00

Airline Name	Departure	Duration	Arrival	Price
<div><div>TRIPJACK</div><div>IndiGo</div><div>Hide Details</div></div>	<div>Dec 12, 2023 01:05 AM Pune</div>	1Hr 35 Mins Non-Stop	<div>Dec 12, 2023 02:40 AM Chennai</div>	₹4,506 <div>Book</div>
<div><div>Flight Details</div><div><div>Baggage Allowance</div><div>Fare Breakup</div></div><div><div>IndiGo</div><div>6745</div><div>Pune 01:05 AM Dec 12, 2023 Lohegaon Arpt</div><div>Chennai 02:40 AM Dec 12, 2023 Chennai Arpt Terminal 1</div></div></div>				
<div><div>TRIPJACK</div><div>Air India</div><div>Flight Details</div></div>	<div>Dec 12, 2023 12:40 PM Pune</div>	2Hrs 50Mins 1 Stop	<div>Dec 12, 2023 05:20 PM Chennai</div>	₹5,198 <div>Book</div>

Flight Details UI

✈ Stops

☐ Non-stop

☐ 1 Stop

Price Range

Min price

₹ 4506

Max price

₹ 56438

✈ Departure Time


0:00 – 23:00


✈ Arrival Time

0:00 – 23:00

🕒 Flight Duration <6 hours

Airlines

☐  IndiGo

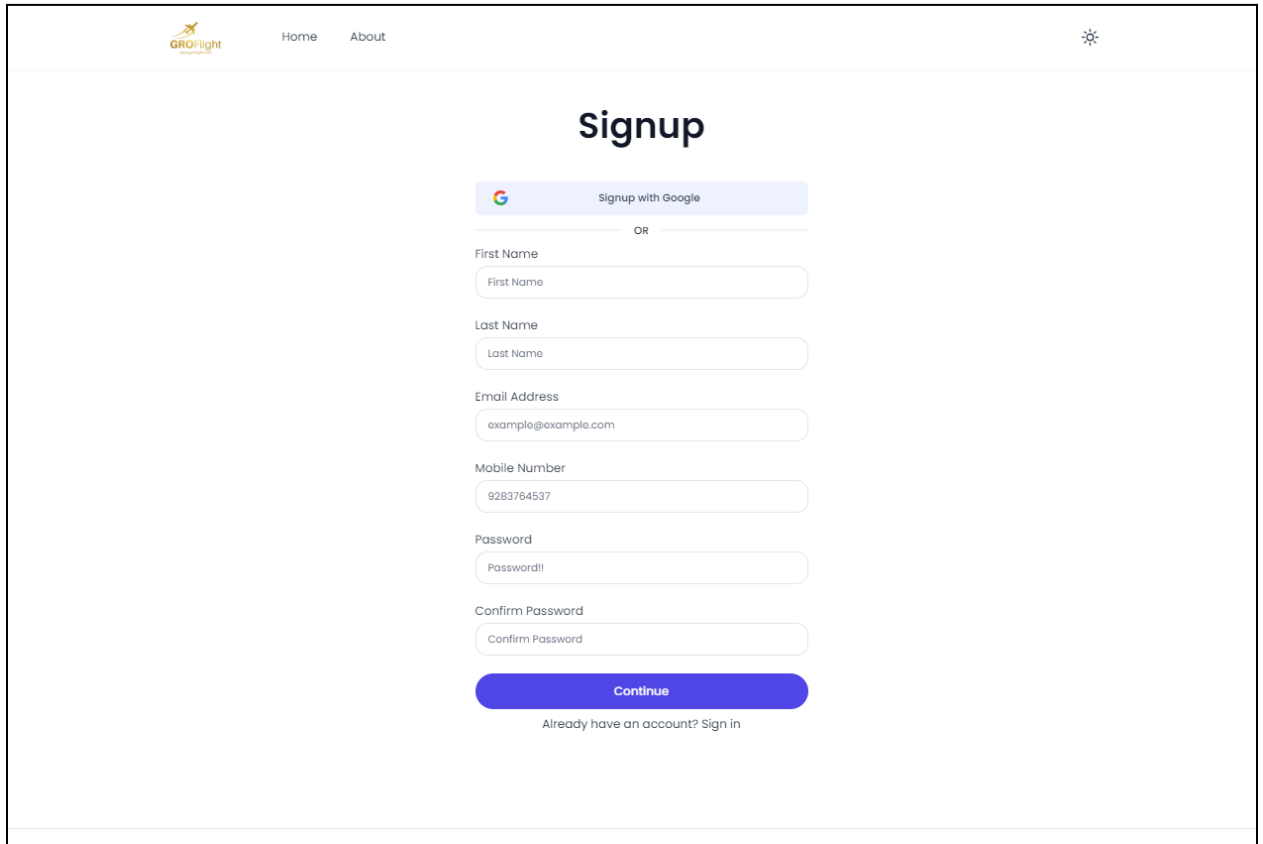
☐  Air India

Filter UI

User Registration Interface:

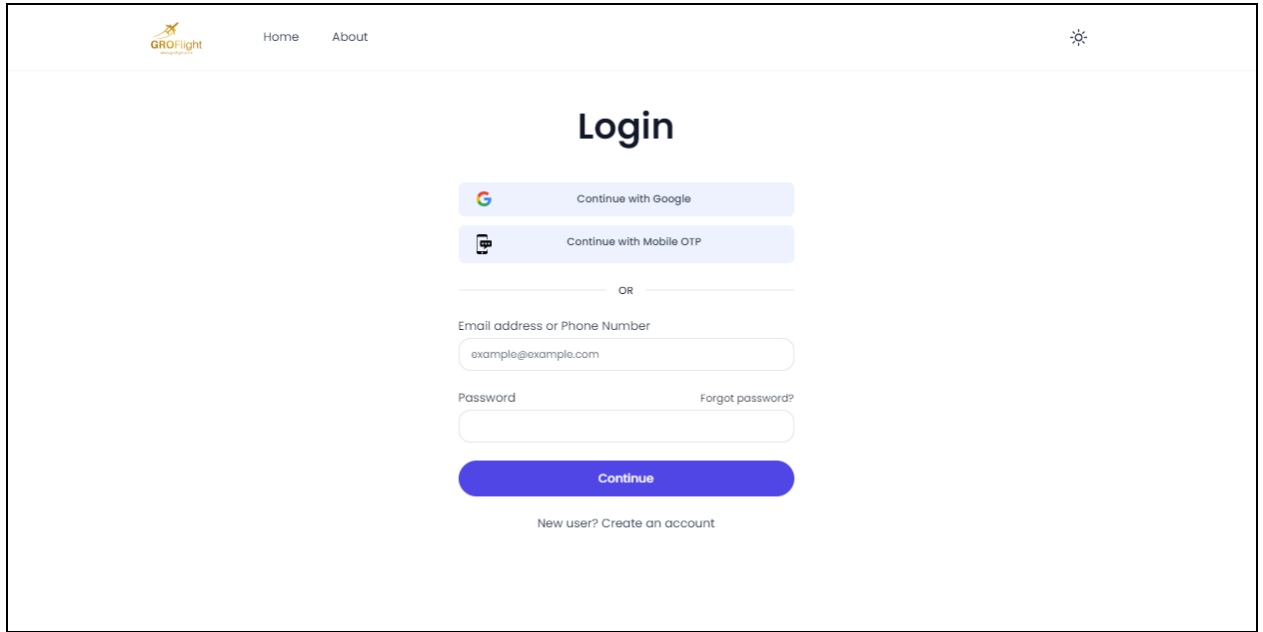
Description: A user-friendly interface allowing users to input first name, last name, email address, mobile number, password and confirm password.

Interactions: Input fields for first name, last name, email address, mobile number, password and confirm password, Signup With Google, Continue Button



The image shows a user registration interface for a website. At the top, there is a navigation bar with the logo "GROflight" on the left, and links for "Home" and "About" in the center. On the right side of the navigation bar is a settings icon. The main heading of the page is "Signup". Below the heading, there is a "Signup with Google" button with the Google logo. Underneath this button is an "OR" separator. The registration form consists of several input fields: "First Name", "Last Name", "Email Address" (with the placeholder "example@example.com"), "Mobile Number" (with the placeholder "9283764537"), "Password", and "Confirm Password". At the bottom of the form is a large blue "Continue" button. Below the "Continue" button is a link that says "Already have an account? Sign in".

User Registration UI

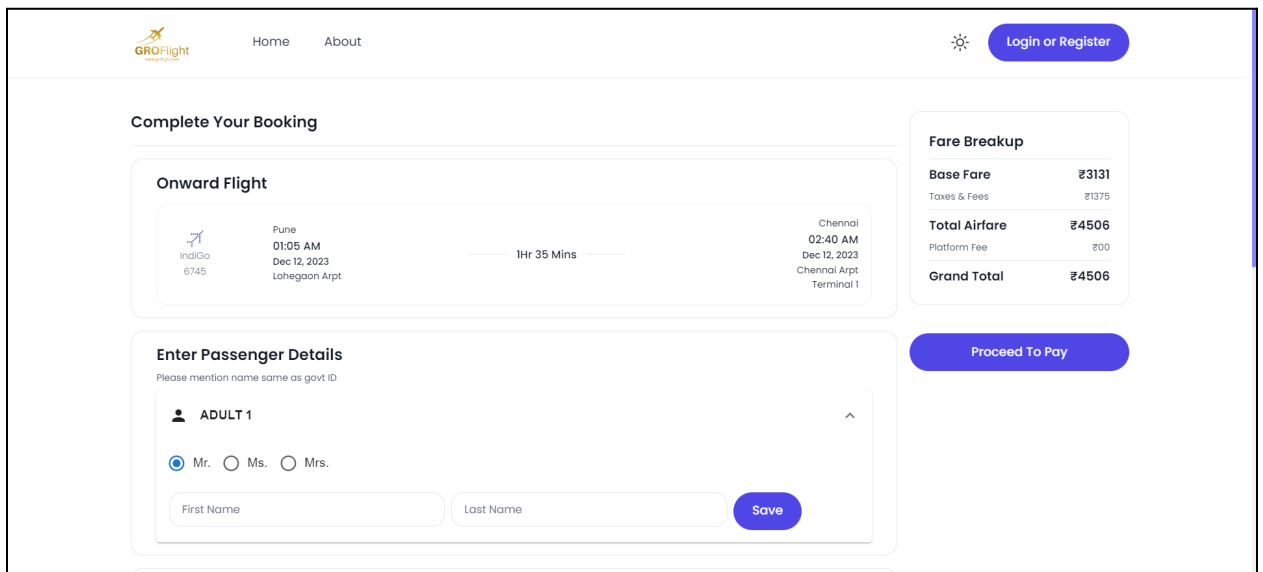


The login page features a clean, minimalist design. At the top, there is a navigation bar with the GROFlight logo, 'Home', 'About', and a settings icon. The main heading 'Login' is centered. Below it, there are two large, light blue buttons: 'Continue with Google' and 'Continue with Mobile OTP'. A horizontal line with 'OR' in the center separates these from the standard login fields. The 'Email address or Phone Number' field contains the placeholder 'example@example.com'. Below it is a 'Password' field with a 'Forgot password?' link to its right. A large blue 'Continue' button is positioned below the password field. At the bottom, a link reads 'New user? Create an account'.

User Login UI

Booking Page Interface:

- Description:** An intuitive interface enabling users to See Selected flight, Option for entering passenger details, Option to enter contact details , Option to add GST information , fare breakup, option for meal, baggage and seats selection for each passenger(excluding infant), and Proceed to pay button for completing the booking process.
- Interactions:** Seat selection, service add-ons (meals, baggage), passenger details form, and payment processing.



The booking page is divided into several sections. At the top, the navigation bar includes the GROFlight logo, 'Home', 'About', a settings icon, and a 'Login or Register' button. The main heading 'Complete Your Booking' is centered. Below it, there are three main components:

- Onward Flight:** A box showing flight details for IndiGo 6745 from Pune to Chennai. The departure is at 01:05 AM on Dec 12, 2023, from Lohegaon Arpt. The arrival is at 02:40 AM on Dec 12, 2023, at Chennai Arpt Terminal 1. The flight duration is 1Hr 35 Mins.
- Fare Breakup:** A table showing the cost breakdown:

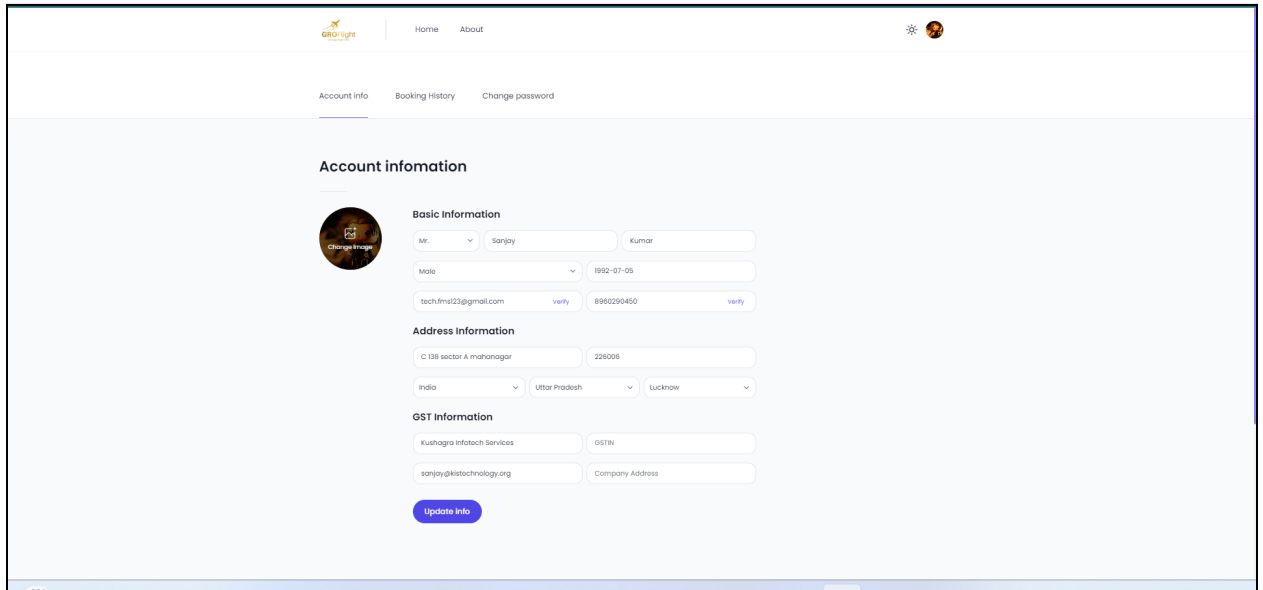
Fare Breakup	
Base Fare	₹3131
Taxes & Fees	₹1375
Total Airfare	₹4506
Platform Fee	₹00
Grand Total	₹4506
- Enter Passenger Details:** A section for adding passenger information. It includes a note 'Please mention name same as govt ID'. There is a dropdown for 'ADULT 1' and radio buttons for 'Mr.' (selected), 'Ms.', and 'Mrs.'. Below these are input fields for 'First Name' and 'Last Name', and a blue 'Save' button.

 A large blue 'Proceed To Pay' button is located to the right of the passenger details section.

Profile Management Interface:

Description: Interface for users to view and edit their profiles, including personal information and preferences.

Interactions: Editable fields for name, contact information, password change, and profile picture upload.



The screenshot displays a user profile management interface. At the top, there is a navigation bar with the 'GROhigh' logo, 'Home', and 'About' links. Below this, a secondary navigation bar contains 'Account Info', 'Booking History', and 'Change password' links. The main content area is titled 'Account information' and features a 'Change image' button next to a profile picture. The form is divided into four sections: 'Basic Information' with fields for Mr., Name (Sanjay Kumar), Gender (Male), Date of Birth (1992-07-05), Email (tach.fmr23@gmail.com), and Phone Number (8960290450); 'Address Information' with fields for Address (C 138 sector A mahanagar), Pincode (226006), Country (India), State (Uttar Pradesh), and City (Lucknow); 'GST Information' with fields for GSTIN (Kushagra Infotech Services) and Company Address (sanjay@kitechtechnology.org); and an 'Update info' button at the bottom.

User Profile UI

5. Glossary