

## SAVEETHA SCHOOL OF ENGINEERING

#### SAVEETHA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCES

**CHENNAI-602105**

## ONLINE FLIGHT RESERVATION SYSTEM

#### A CAPSTONE PROJECT REPORT

*Submitted in the partial fulfillment for the award of the degree of*

#### BACHELOR OF ENGINEERING

**COMPUTER SCIENCE (dept)**

#### Submitted by

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#### Under the Supervision

#### of

#### K. RAJAGOPAL

**OCTOBER 2024**

## DECLARATION:

We are **B. Pooja, U. Sujala Reddy, D. Sai Charmitha, B. Meghana** students of Bachelor of Engineering Department of Computer Science and Engineering, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, hereby declare that the work presented in this Capstone Project Work entitled “**ONLINE FLIGHT RESERVATION SYSTEM**” is the outcome of our own bonafide work and is correct to the best of our knowledge and this work has been undertaken taking care of Engineering

**B. Pooja (192211757)**

**U.Sujala Reddy (192211737)**

**D. Charmitha (192211761)**

**B. Meghana (192211562)**

Date:

Place:

# CERTIFICATE

This is to certify that the project entitled **“ONINE RESERVATION SYSTEM”** submitted by **B. Pooja, U. Sujala Reddy, D. Sai Charmitha, B. Meghana** has been carried out under our supervision. The project has been submitted as per the requirements in the current semester of B. Tech Computer Science and Engineering.

Faculty Incharge

**TABLE OF CONTENTS:**

|  |  |
| --- | --- |
| **S.NO** | **TOPICS** |
| 1 | **Abstract** |
| 2 | **Introduction** |
| 3 | **Project Description**  About your project |
| 4 | **Problem Description**  Program to build a simple Software for < > |
| 5 | **Tool Description**  User interface  Features |
| 6 | **Operations**  Store the First name of the student.  Store the Last name of the student.  Store the unique Roll number for every student.  Store the CGPA of every student.  Store the courses registered by the student. |
| 7 | **Approach / Module Description / Functionalities**  The idea is to form an individual functions for every operation. All the functions are unified together to form software. |
| 8 | **Implementation**  Coding |
| 9 | **Output**  Output with Screenshots |
| 10 | **Conclusion**  Future Enhancement  **References** |

## ABSTRACT:

This project details the creation of an online flight reservation system website designed to revolutionize the air travel booking experience. The system offers an intuitive user interface that allows customers to search for flights based on various criteria, such as departure and arrival locations, travel dates, and budget preferences. Key functionalities include real-time flight availability, advanced filtering options, secure payment gateways, and user account management for personalized travel itineraries.

The architecture of the system is built on robust web technologies, including a relational database for efficient data storage and retrieval, RESTful APIs for third-party service integrations (such as payment processors and flight data providers), and front-end frameworks to ensure a responsive design across devices. Security measures, including encryption and secure user authentication, are implemented to protect sensitive user information.

This paper also addresses challenges encountered during development, such as ensuring system scalability to handle high traffic volumes and maintaining data integrity amidst frequent updates. User feedback mechanisms are incorporated to continually refine the platform based on traveler preferences.

## INTRODUCTION:

## In recent years, the travel industry has undergone a dramatic transformation, driven largely by advancements in technology and the rise of the internet. Online flight reservation systems have become integral to this evolution, allowing travelers to easily search for, compare, and book flights from the comfort of their own homes. Traditional booking methods, such as travel agencies and telephone reservations, are increasingly being supplanted by user-friendly online platforms that provide instant access to a wealth of information and options.

## This project aims to develop a comprehensive online flight reservation system website that addresses the needs of modern travelers. With features such as real-time flight availability, secure payment processing, and personalized user accounts, the proposed platform seeks to enhance the overall travel planning experience. By leveraging contemporary web technologies, the system promises a responsive design that caters to users on various devices, from desktops to mobile phones.

## Moreover, the system is designed to simplify the complexities associated with flight booking. It allows users to filter options based on specific criteria, compare prices, and receive immediate confirmation of their reservations. In addition, the platform prioritizes security and data protection, addressing critical concerns that travelers face when sharing personal and financial information online.

## This introduction outlines the objectives and significance of the online flight reservation system, emphasizing its potential to improve accessibility and efficiency within the travel industry. Through this project, we aim to create a platform that not only meets the current demands of travel

## but also positions itself for future growth and innovation in an increasingly competitive market. This project presents the development of an online flight reservation system website aimed at providing a seamless and user-friendly platform for booking air travel.

## PROBLEM STATEMENT:

This project aims to address these challenges by developing a comprehensive online flight reservation system that prioritizes user experience, security, and reliability. By creating a platform that streamlines the booking process, enhances customer support, and ensures data protection, we seek to improve accessibility and satisfaction for travelers while positioning the system competitively within the travel industry.

## PROBLEM DESCRIPTION:

## The online flight booking landscape is characterized by several persistent issues that negatively impact both user experience and operational efficiency. Many existing flight reservation systems struggle with the following key challenges:

## Complex User Interfaces: Users often find current platforms difficult to navigate due to cluttered interfaces and confusing layouts. This complexity can lead to frustration and abandonment of bookings, particularly for those who are not tech-savvy.

## Limited Personalization: Most systems provide a one-size-fits-all approach, lacking personalized recommendations based on user preferences, past travel behavior, and search history. This impedes the ability of travelers to quickly find options that best suit their needs.

## Inadequate Real-Time Data: Many platforms do not effectively integrate real-time flight data, resulting in outdated information regarding availability, pricing, and schedules. This can lead to erroneous bookings and customer dissatisfaction.

## Security Concerns: Users are increasingly wary of sharing personal and financial information online due to rising cybersecurity threats. Many existing systems do not adequately address these concerns, leading to decreased trust and lower conversion rates.

## Insufficient Customer Support: While online systems offer convenience, they often fall short in providing effective customer support. Travelers may struggle to find assistance when issues arise, such as flight changes or payment problems, leading to further frustration.

## Payment Processing Issues: Inconsistent and unreliable payment systems can create obstacles during the booking process. Users may experience transaction failures, which not only disrupt the booking experience but also diminish confidence in the platform.

## By addressing these challenges, the proposed online flight reservation system aims to create a streamlined, secure, and user-friendly platform. This will enhance the overall travel planning experience, foster greater customer trust, and ultimately improve booking conversion rates.

## TOOL DESCRIPTION:

The online flight reservation system will leverage a range of modern tools and technologies to ensure functionality, security, and user satisfaction. The following components are integral to the development and operation of the platform:

1. Front-End Technologies:
   * HTML/CSS: For structuring and styling the website, ensuring an intuitive and responsive design that works seamlessly on desktops and mobile devices.
   * JavaScript Frameworks (e.g., React, Angular): To create a dynamic user interface that allows for real-time updates, interactive elements, and a smooth user experience.
2. Back-End Technologies:
   * Node.js: A JavaScript runtime that enables server-side scripting, allowing for fast and scalable network applications.
   * Express.js: A web application framework for Node.js that simplifies the development of server-side logic, routing, and middleware management.
3. Database Management:
   * MongoDB or PostgreSQL: For efficient data storage and retrieval. MongoDB (NoSQL) is ideal for handling large volumes of unstructured data, while PostgreSQL (SQL) provides robust relational data management.
4. APIs:
   * Flight Data APIs: To integrate real-time flight information, pricing, and availability from various airlines, ensuring users have access to the latest data.
   * Payment Processing APIs (e.g., Stripe, PayPal): For secure handling of transactions, allowing users to make payments with confidence.
5. Security Tools:
   * SSL Certificates: To encrypt data exchanged between users and the server, ensuring secure communication and protecting sensitive information.
   * OAuth 2.0: For secure user authentication and authorization, enabling users to create accounts and log in without compromising their credentials.
6. User Feedback Mechanisms:
   * Surveys and Feedback Forms: Integrated tools to collect user feedback post-booking, allowing continuous improvement based on traveller experiences.
7. Testing and Deployment:
   * Jest or Mocha: For unit and integration testing, ensuring the functionality of both front-end and back-end components before deployment.
   * Docker: To create containerized applications, facilitating consistent environments for development, testing, and production.

By utilizing these tools and technologies, the online flight reservation system aims to deliver a robust, efficient, and user-centric platform that addresses the existing challenges in the flight booking process, enhances security, and provides a superior travel planning experience.

### OPERATIONS:

The user operations within the online flight reservation system focus on providing a smooth and efficient experience for travelers. Key user operations include:

1. **Account Creation and Management**:
   * Users can create accounts using secure registration forms.
   * Profile customization allows users to save personal information, travel preferences, and payment methods for future bookings.
2. **Flight Search and Selection**:
   * Users can enter departure and arrival locations, travel dates, and passenger details to search for available flights.
   * Advanced filtering options enable users to narrow down results based on criteria like price, duration, and airline.
3. **Booking Process**:
   * Users select preferred flights from the search results and proceed to a booking page.
   * A simple interface guides users through entering passenger details and choosing extras (e.g., baggage, seat selection).
4. **Payment Processing**:
   * Users can complete their bookings securely using various payment methods, including credit/debit cards and digital wallets.
   * Secure payment gateways ensure the protection of financial information during transactions.
5. **Confirmation and Itinerary Management**:
   * After payment, users receive instant email confirmations with detailed itineraries.
   * Users can access and manage their bookings through their accounts, including making changes or cancellations.
6. **Customer Support Access**:
   * Users can access a help center with FAQs, guides, and contact options for customer support.
   * Live chat support is available for real-time assistance during the booking process.
7. **Feedback and Review**:
   * Users are encouraged to provide feedback on their booking experience, which helps improve the system.
   * Reviews and ratings for airlines and services can enhance community trust and assist future travelers.

## MODULE DESCRIPTION

The online flight reservation system is structured into several key modules, each responsible for specific functionalities that collectively enhance the user experience. Below is a description of each module:

1. User Account Module:
   * Functionality: Manages user registration, authentication, and profile settings.
   * Features:
     + Secure account creation and login.
     + Profile management (personal information, preferences, payment methods).
     + Password recovery and security settings.
2. Flight Search Module:
   * Functionality: Allows users to search for available flights based on their travel criteria.
   * Features:
     + Input fields for departure and arrival locations, travel dates, and passenger details.
     + Advanced filtering options (price, duration, airline preferences).
     + Display of search results with key flight details.
3. Booking Module:
   * Functionality: Facilitates the booking process once a flight is selected.
   * Features:
     + Detailed flight information with options for add-ons (baggage, seat selection).
     + Input fields for passenger details.
     + Summary of booking before confirmation.
4. Payment Processing Module:
   * Functionality: Handles secure payment transactions for bookings.
   * Features:
     + Integration with payment gateways (e.g., Stripe, PayPal).
     + Multiple payment options for user convenience.
     + Confirmation of payment and transaction security.
5. Itinerary Management Module:
   * Functionality: Allows users to view and manage their bookings.
   * Features:
     + Access to booking history and current itineraries.
     + Options for modifying or canceling bookings.
     + Sending of email confirmations and updates.
6. Customer Support Module:
   * Functionality: Provides users with access to support resources and assistance.
   * Features:
     + Help center with FAQs, guides, and contact information.
     + Live chat functionality for real-time support.
     + Feedback collection for continuous improvement.
7. Analytics and Reporting Module:
   * Functionality: Gathers and analyzes user behavior and system performance.
   * Features:
     + Tracking of user interactions, bookings, and feedback.
     + Reporting tools for identifying trends and areas for improvement.
     + Data-driven insights to inform future enhancements.
8. Marketing and Engagement Module:
   * Functionality: Manages user engagement and promotional efforts.
   * Features:
     + Email marketing for promotions and updates.
     + Personalized recommendations based on user preferences.
     + Integration of loyalty programs or referral incentives.

Each module is designed to work seamlessly together, ensuring that users can efficiently navigate the flight reservation process while having their needs met at every stage. This modular approach allows for easier maintenance and scalability as the platform evolves.

## IMPLEMENTATION:

### <!DOCTYPE html>

### <html lang="en">

### <head>

### <meta charset="UTF-8">

### <meta name="viewport" content="width=device-width, initial-scale=1.0">

### <title>Online Flight Reservation System</title>

### <style>

### body {

### font-family: Arial, sans-serif;

### margin: 0;

### padding: 0;

### background-color: #F3F4F6;

### }

### header, nav, section {

### padding: 20px;

### }

### header {

### background-image:

### url(data:image/jpeg;base64,);

### text-align: center;

### }

### nav {

### background-color: #f4be68;

### text-align: center;

### }

### nav a {

### color: white;

### text-decoration: none;

### margin: 0 15px;

### font-size: 18px;

### }

### .content-section {

### 

### box-shadow: 0 0 10px rgba(0, 0, 0, 0.1);

### border-radius: 8px;

### }

### .form-group {

### margin: 15px 0;

### }

### label {

### display: block;

### margin-bottom: 5px;

### }

### input, select, textarea, button {

### width: 100%;

### padding: 10px;

### margin: 5px 0;

### border-radius: 4px;

### border: 1px solid #CCCCCC;

### }

### button {

### background-color: #efa630;

### 

### color: white;

### border: none;

### cursor: pointer;

### }

### button:hover {

### background-color: rgb(247, 197, 61);

### }

### .hidden {

### display: none;

### }

### </style>

### <script>

### function showSection(sectionId) {

### const sections = document.querySelectorAll('.content-section');

### sections.forEach(section => {

### section.classList.add('hidden');

### });

### document.getElementById(sectionId).classList.remove('hidden');

### }

### function handleFormSubmit(event, sectionId) {

### event.preventDefault();

### showSection(sectionId);

### }

### </script>

### </head>

### <body>

### <header>

### <h1>Online Flight Reservation System</h1>

### <nav>

### <a href="#" onclick="showSection('home')">Home</a>

### <a href="#" onclick="showSection('search-flight')">Search Flight</a>

### <a href="#" onclick="showSection('admin-login')">Admin Login</a>

### <a href="#" onclick="showSection('feedback')">Feedback</a>

### </nav>

### </header>

### <!-- Home Section -->

### <section id="home" class="content-section">

### <h2>Welcome</h2>

### <p>Welcome to the Online Flight Reservation System. Use our platform to search for flights, book tickets, and manage your reservations.</p>

### </section>

### <!-- Admin Login Section -->

### <section id="admin-login" class="content-section hidden">

### <h2>Admin Login</h2>

### <form onsubmit="handleFormSubmit(event, 'admin-report')">

### <div class="form-group">

### <label for="admin-username">Username:</label>

### 

### <input type="text" id="admin-username" required>

### </div>

### <div class="form-group">

### <label for="admin-password">Password:</label>

### <input type="password" id="admin-password" required>

### </div>

### <button type="submit">Login</button>

### </form>

### <p><a href="#" onclick="showSection('forgot-password')">Forgot Password?</a></p>

### </section>

### <!-- Forgot Password Section -->

### <section id="forgot-password" class="content-section hidden">

### <h2>Forgot Password</h2>

### <form onsubmit="handleFormSubmit(event, 'home')">

### <div class="form-group">

### <label for="email">Enter your email address:</label>

### <input type="email" id="email" required>

### </div>

### <button type="submit">Reset Password</button>

### </form>

### </section>

### <!-- Search Flight Section -->

### <section id="search-flight" class="content-section hidden">

### <h2>Search Flights</h2>

### <form onsubmit="handleFormSubmit(event, 'book-ticket')">

### <div class="form-group">

### <label for="origin">Origin:</label>

### <select id="origin" name="origin">

### <option value="">Select Origin</option>

### <option value="New York">New York</option>

### <option value="Los Angeles">Los Angeles</option>

### <option value="Chicago">Chicago</option>

### <option value="Miami">Miami</option>

### <option value="San Francisco">San Francisco</option>

### </select>

### </div>

### <div class="form-group">

### <label for="destination">Destination:</label>

### <select id="destination" name="destination">

### <option value="">Select Destination</option>

### <option value="New York">New York</option>

### <option value="Los Angeles">Los Angeles</option>

### <option value="Chicago">Chicago</option>

### <option value="Miami">Miami</option>

### <option value="San Francisco">San Francisco</option>

### </select>

### </div>

### <div class="form-group">

### <label for="departure-date">Departure Date:</label>

### <input type="date" id="departure-date" required>

### </div>

### <div class="form-group">

### <label for="return-date">Return Date:</label>

### <input type="date" id="return-date">

### </div>

### <div class="form-group">

### <label for="passengers">Passengers:</label>

### <input type="number" id="passengers" min="1" max="9" required>

### </div>

### <button type="submit">Search</button>

### </form>

### </section>

### <!-- Book Ticket Section -->

### <section id="book-ticket" class="content-section hidden">

### <h2>Book Your Ticket</h2>

### <form onsubmit="handleFormSubmit(event, 'payment')">

### <div class="form-group">

### <label for="flight">Select Flight:</label>

### <select id="flight" name="flight">

### <option value="">Select Flight</option>

### <option value="indigo">IndiGo - $120</option>

### <option value="airindia">Air India - $150</option>

### <option value="spicejet">SpiceJet - $130</option>

### <option value="vistara">Vistara - $180</option>

### <option value="jetairways">Jet Airways - $160</option>

### </select>

### </div>

### <div class="form-group">

### <label for="name">Name:</label>

### <input type="text" id="name" required>

### </div>

### <div class="form-group">

### <label for="email">Email:</label>

### <input type="email" id="email" required>

### </div>

### <div class="form-group">

### <label for="phone">Phone:</label>

### <input type="tel" id="phone" required pattern="[0-9]\*" placeholder="Enter your phone number">

### </div>

### <div class="button-group">

### <button type="button" onclick="goBack()">Back</button>

### <button type="proceed payment">Next</button>

### </div>

### <script>

### function goBack() {

### window.history.back(); // Navigates to the previous page

### }

### </script>

### </form>

### </section>

### <!-- Ticket Payment Section -->

### <section id="payment" class="content-section hidden">

### <h2>Ticket Payment</h2>

### <form onsubmit="handleFormSubmit(event, 'my-ticket')">

### <div class="form-group">

### <label for="card-number">Card Number:</label>

### <input type="text" id="card-number" required pattern="[0-9]{13,16}" placeholder="Enter Card Number" maxlength="16" inputmode="numeric">

### </div>

### <div class="form-group">

### <label for="expiry-date">Expiry Date:</label>

### <input type="month" id="expiry-date" required>

### </div>

### <div class="form-group">

### <label for="cvv">CVV:</label>

### <input type="text" id="cvv" required pattern="[0-9]{3,4}" placeholder="Enter CVV" maxlength="3">

### </div>

### <div class="button-group">

### <button type="button" onclick="goBack()">Back</button>

### <button type="submit">Next</button>

### </div>

### <script>

### function goBack() {

### window.history.back(); // Navigates to the previous page

### }

### </script>

### </form>

### </section>

### <!-- My Ticket Section -->

### <section id="my-ticket" class="content-section hidden">

### <h2>My Ticket</h2>

### <p>Your ticket has been booked successfully. Below are your ticket details:</p>

### <ul>

### <li>Flight: Flight 1</li>

### 

### <li>Name: John Doe</li>

### <li>Departure: City A</li>

### <li>Destination: City B</li>

### <li>Date: 2024-08-01</li>

### </ul>

### <button onclick="window.print()">Print Ticket</button>

### </section>

### <!-- Cancel Ticket Section -->

### <section id="cancel-ticket" class="content-section hidden">

### <h2>Cancel Ticket</h2>

### <form onsubmit="handleFormSubmit(event, 'ticket-cancelled')">

### <div class="form-group">

### <label for="ticket-number">Ticket Number:</label>

### <input type="text" id="ticket-number" required>

### </div>

### <div class="button-group">

### <button type="button" onclick="goBack()">Cancel</button>

### <button type="Submit">Next</button>

### </div>

### <script>

### function goBack() {

### window.history.back(); // Navigates to the previous page

### }

### </script>

### </form>

### </section>

### <!-- Ticket Cancelled Confirmation Section -->

### <section id="ticket-cancelled" class="content-section hidden">

### <h2>Ticket Cancelled</h2>

### <p>Your ticket has been successfully cancelled.</p>

### </section>

### <!-- Customer Feedback Section -->

### <section id="feedback" class="content-section hidden">

### <h2>Customer Feedback</h2>

### <form onsubmit="handleFormSubmit(event, 'home')">

### <div class="form-group">

### <label for="feedback">Your Feedback:</label>

### <textarea id="feedback" rows="5" required></textarea>

### </div>

### <button type="submit">Submit Feedback</button>

### </form>

### </section>

### <!-- Admin Report Section -->

### <section id="admin-report" class="content-section hidden">

### 

<h2>Admin Report</h2>

### <p>Admin reports will be available here.</p>

### </section>

### </body>

### </html>

### RESULTS:

## Overall, the online flight reservation system is expected to significantly improve the booking experience for users while optimizing operational efficiency. By effectively integrating user-friendly features, advanced technology, and robust support mechanisms, the system positions itself as a competitive player in the travel market, ultimately driving customer satisfaction and business growth.

## CONCLUSION:

The online flight reservation system significantly improves the air travel booking experience. By combining an easy-to-use design, real-time data access, and strong security, the system effectively addresses common traveler challenges.

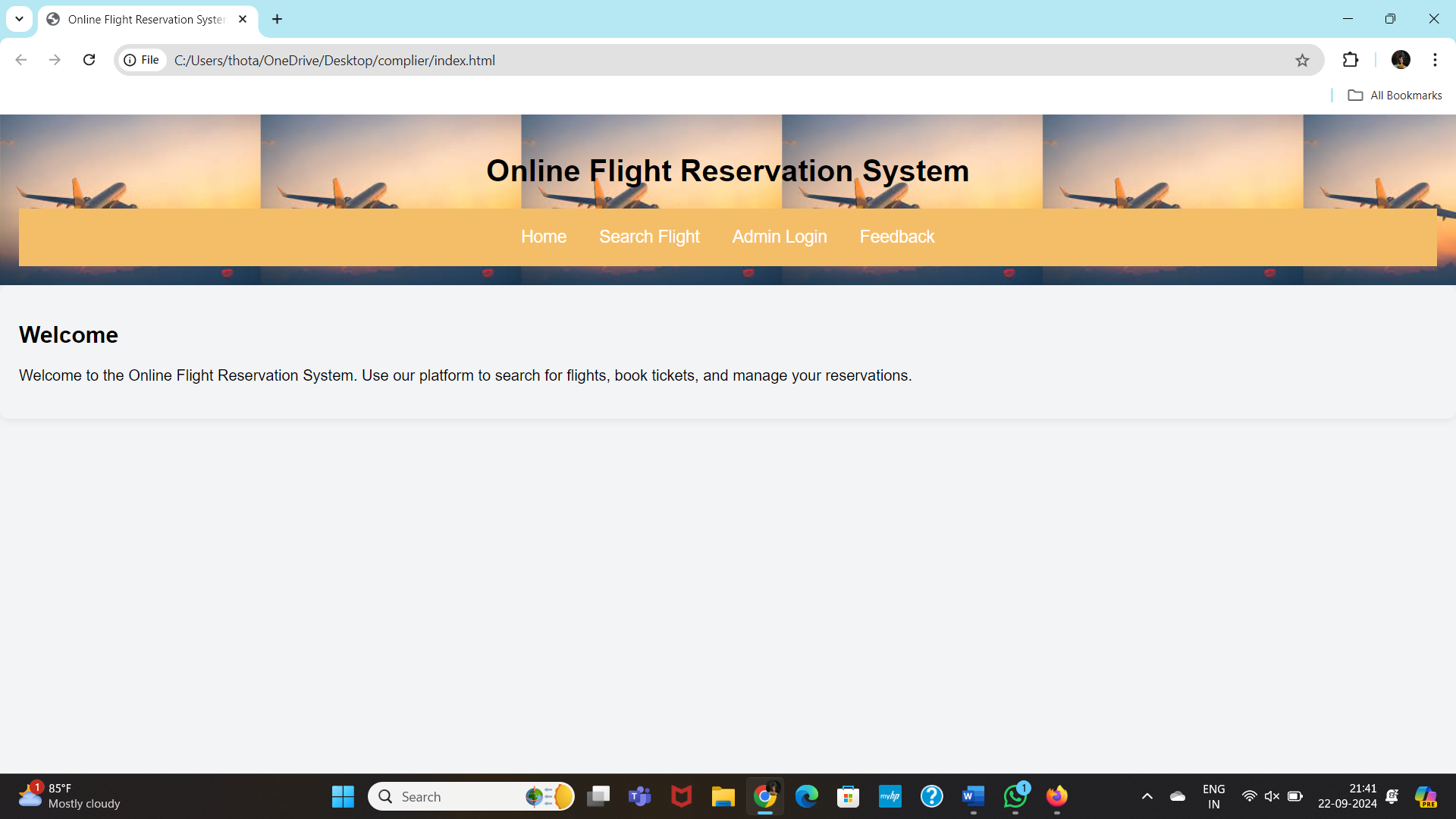
Key benefits include higher user satisfaction, a smoother booking process, and better customer support. The system's modular design allows for future growth and adjustments, ensuring it can adapt to changing market needs.

**FUTURE ENHANCEMENT:**

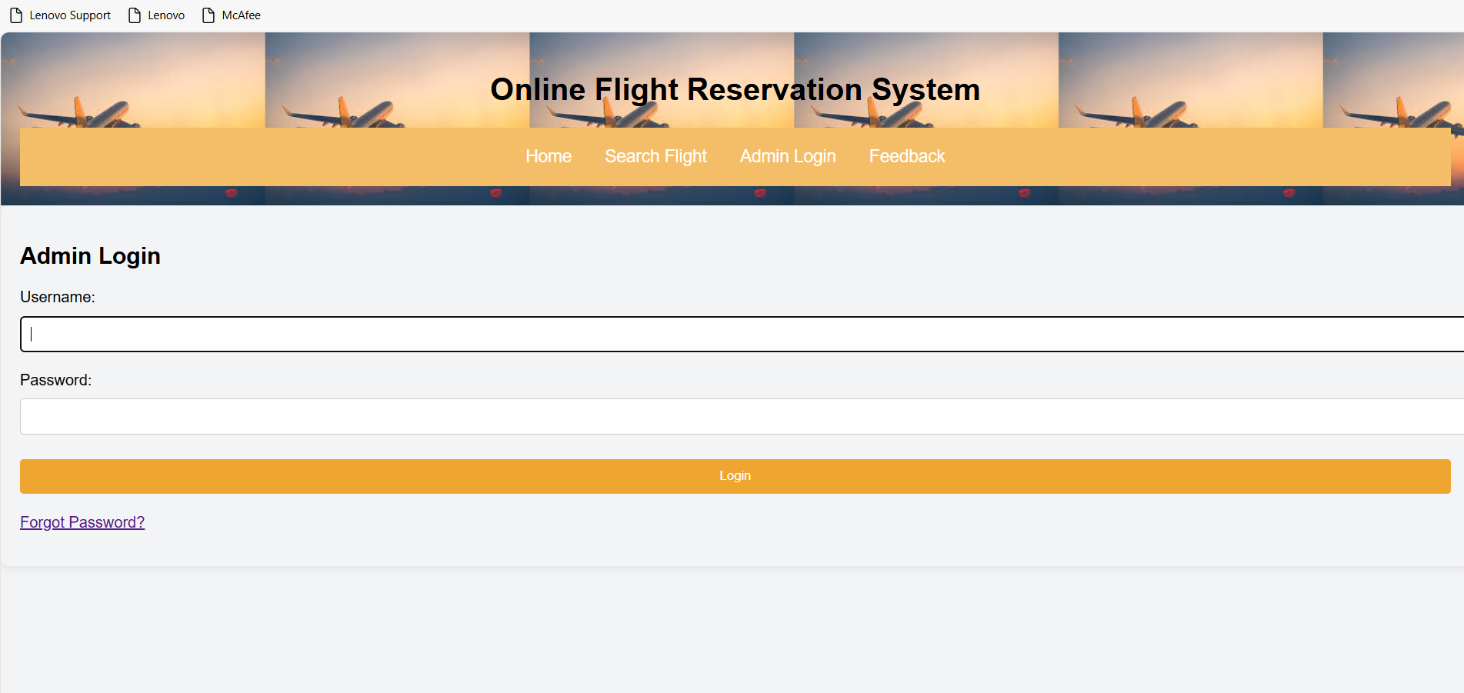
To ensure the online flight reservation system remains competitive and meets evolving user needs, several future enhancements can be implemented. First, integrating machine learning algorithms will allow for personalized flight and travel recommendations based on user behavior and preferences. Developing a dedicated mobile app will enhance accessibility, providing users with a convenient booking experience on their devices.

**SCREENSHOTS:**

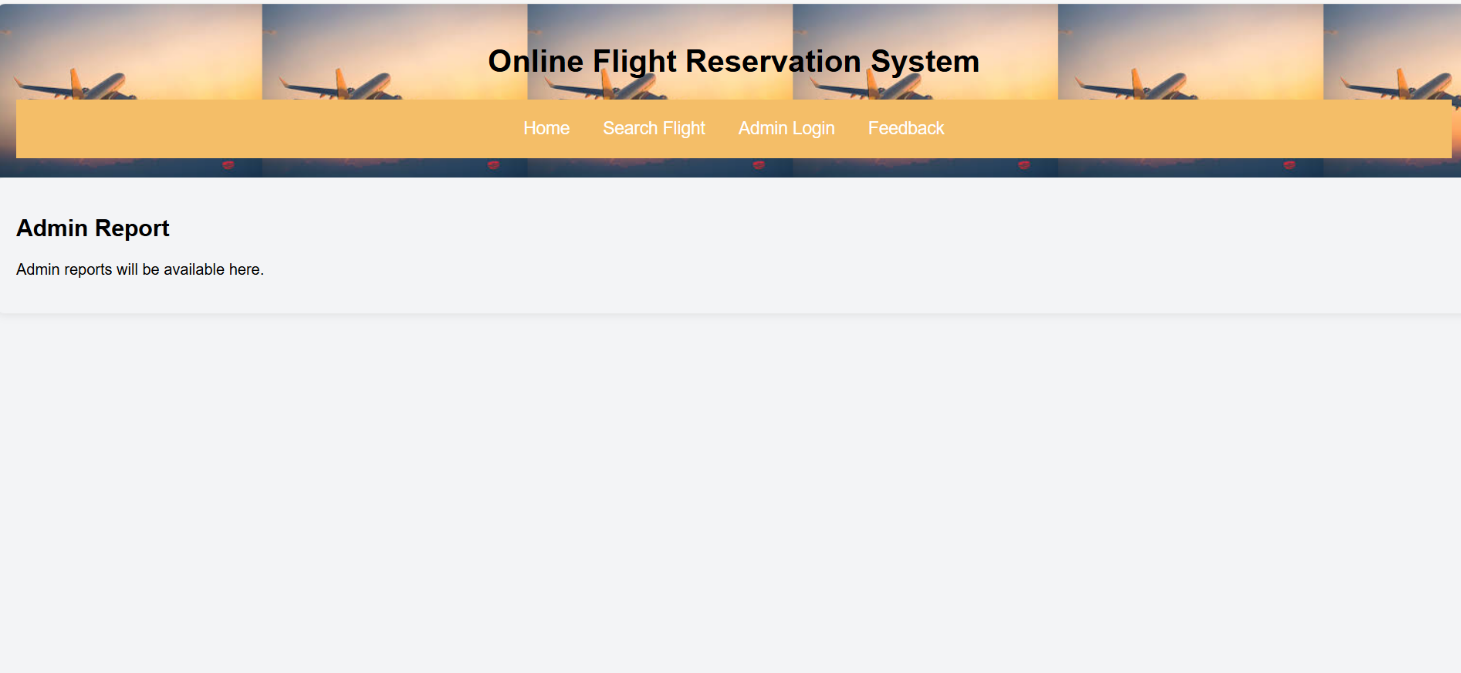
**HOME PAGE:**



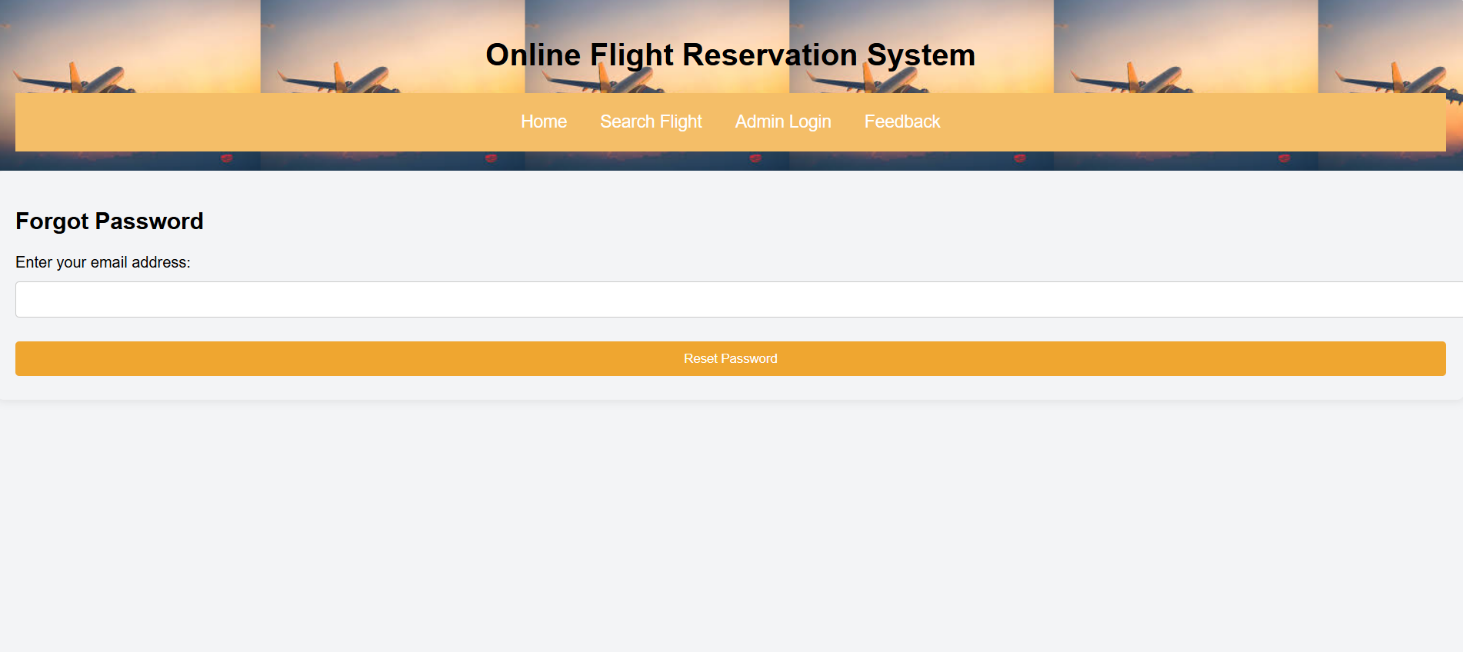
**USER LOGIN PAGE:**

****

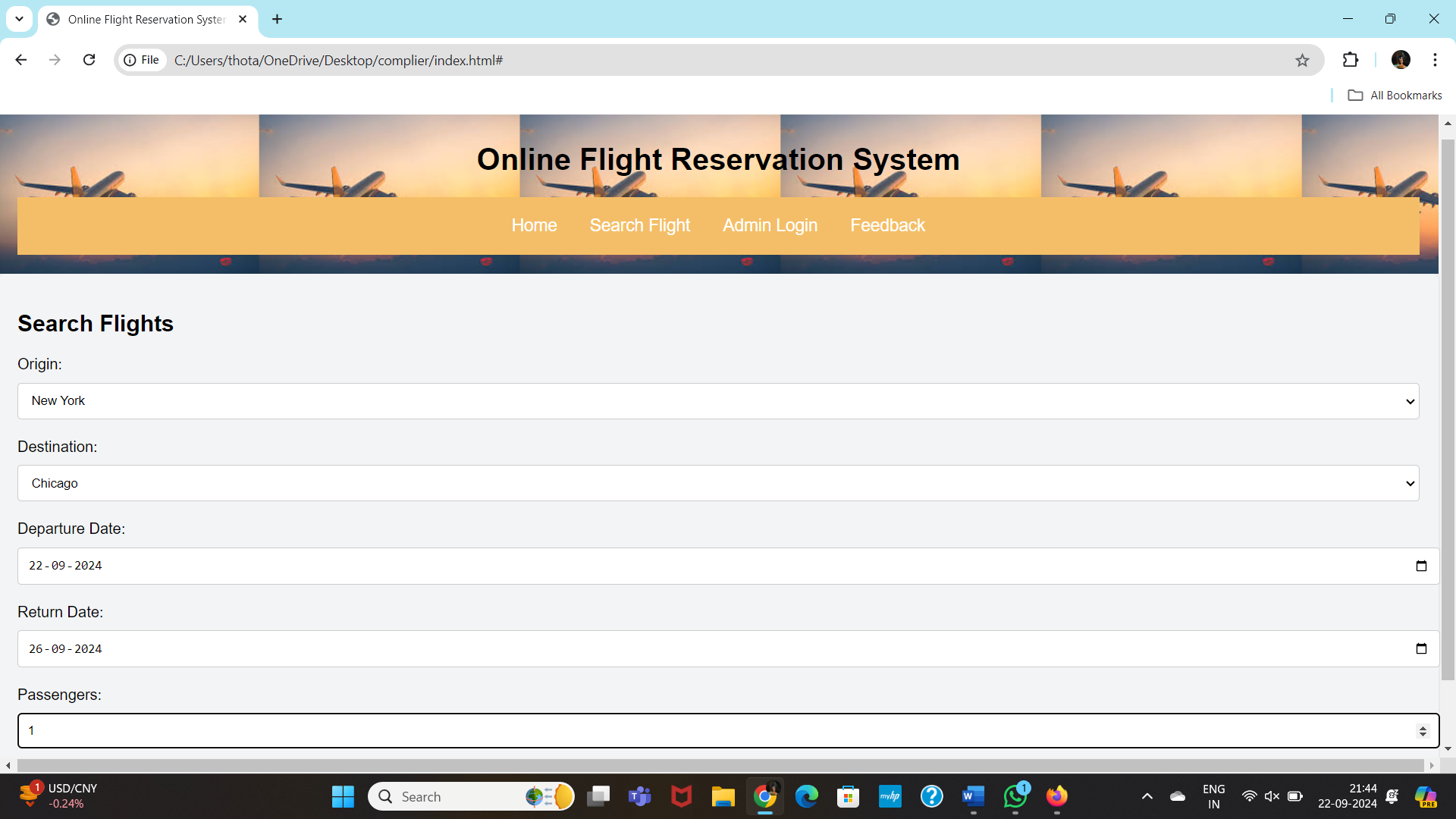
**ADMIN REPORT PAGE:**

****

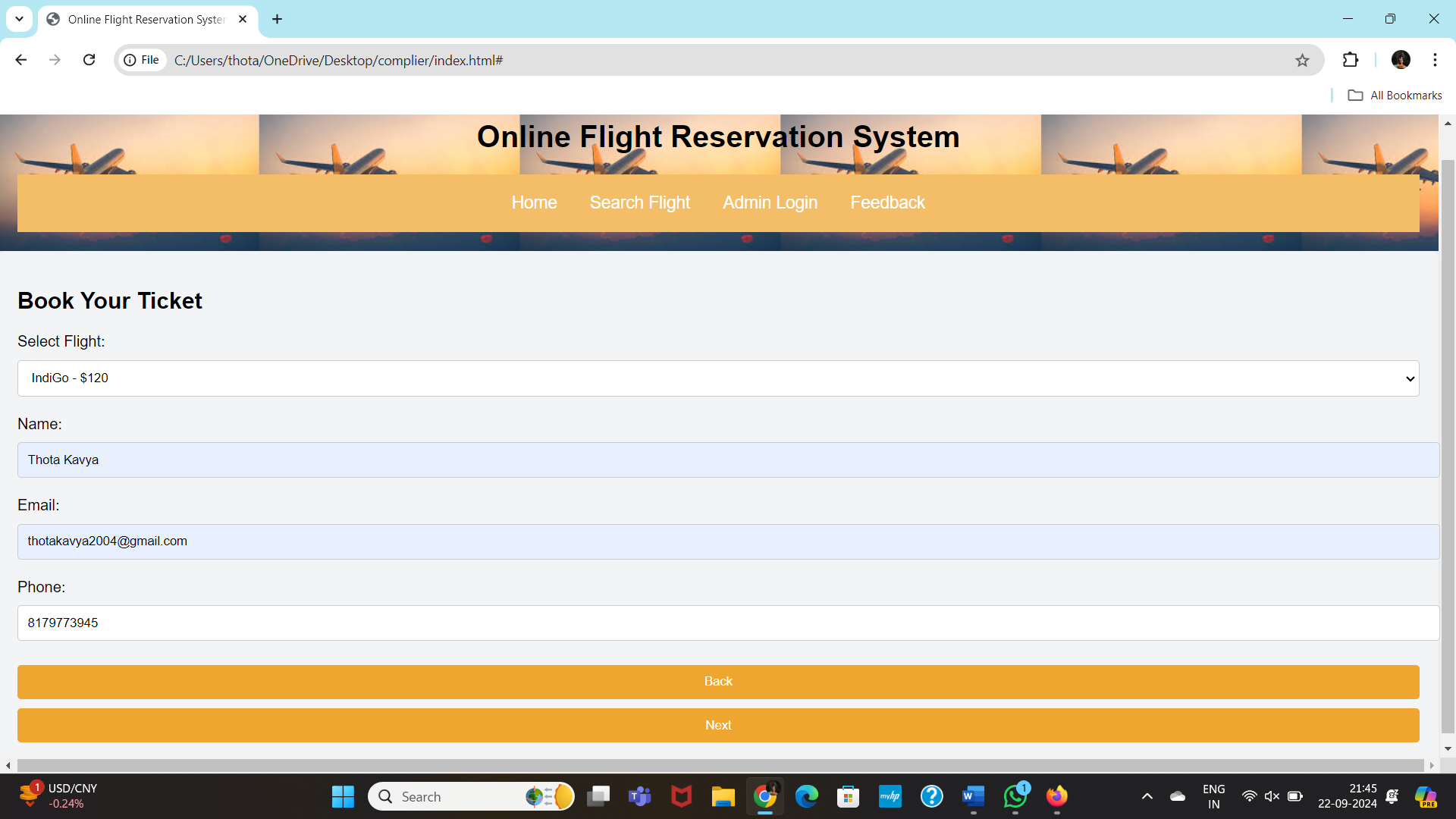
**FORGOT PASSWORD PAGE:**

****

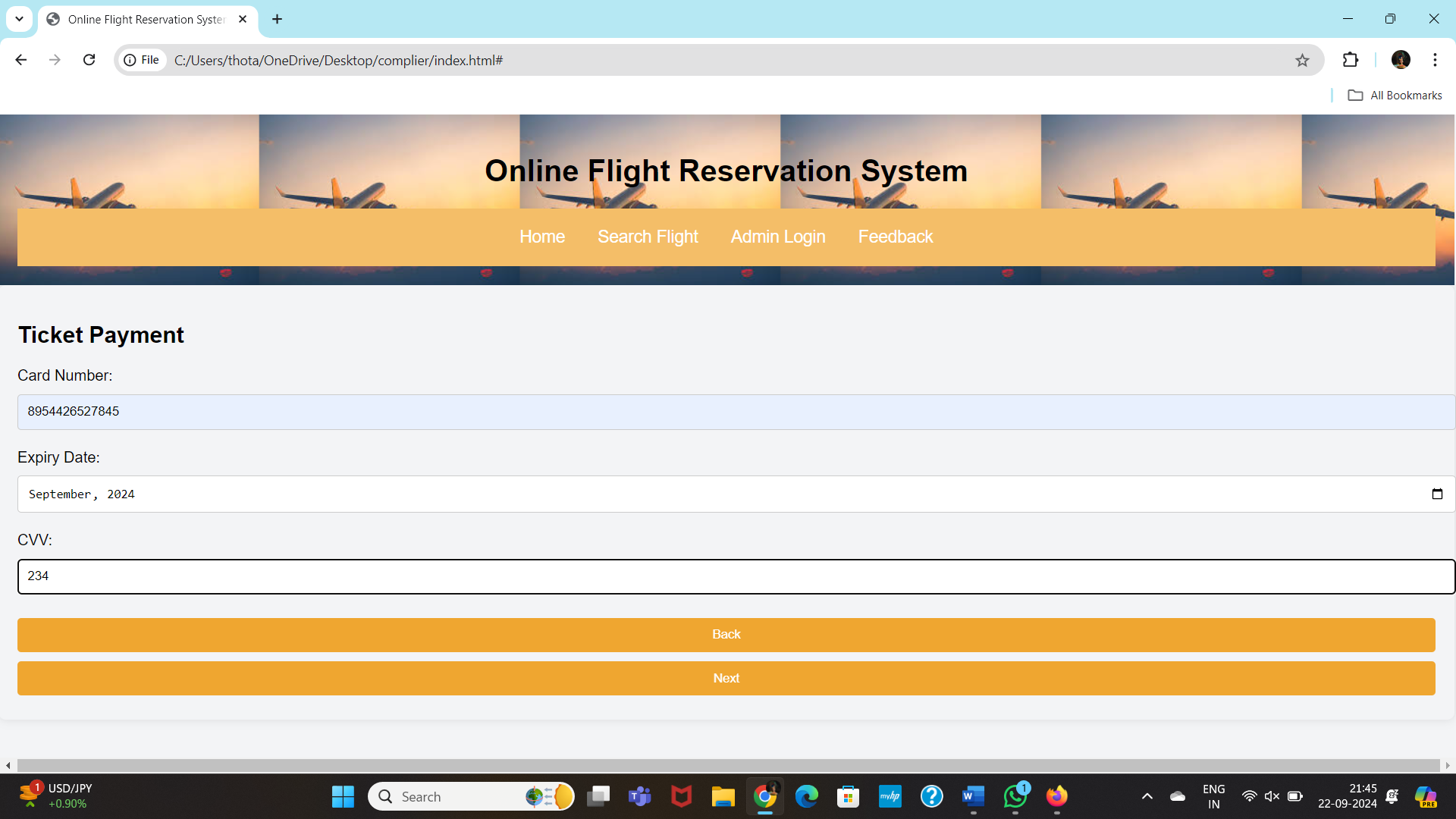
**SEARCH FLIGHTS PAGE:**



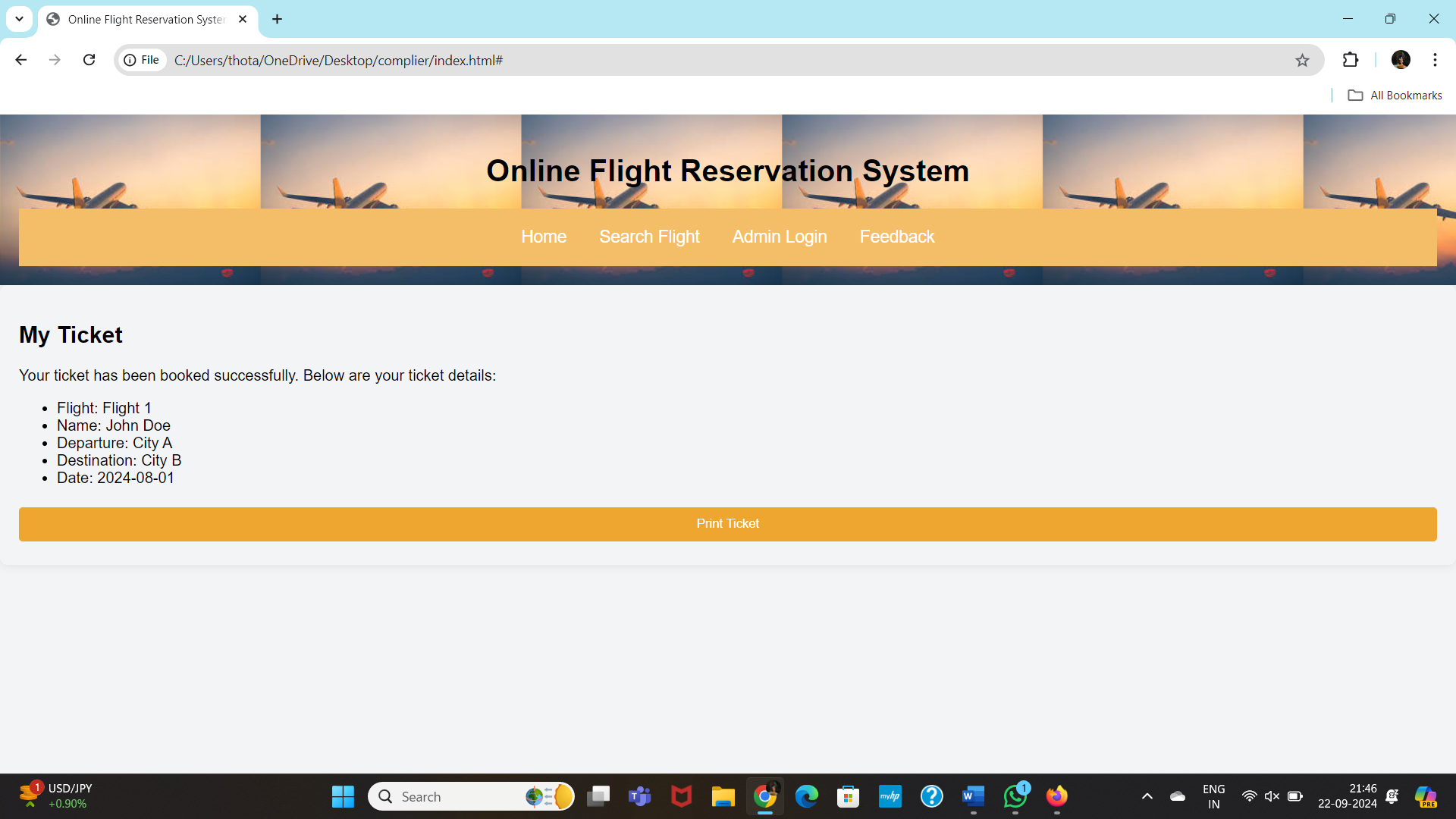
**BOOK TICKET PAGE:**



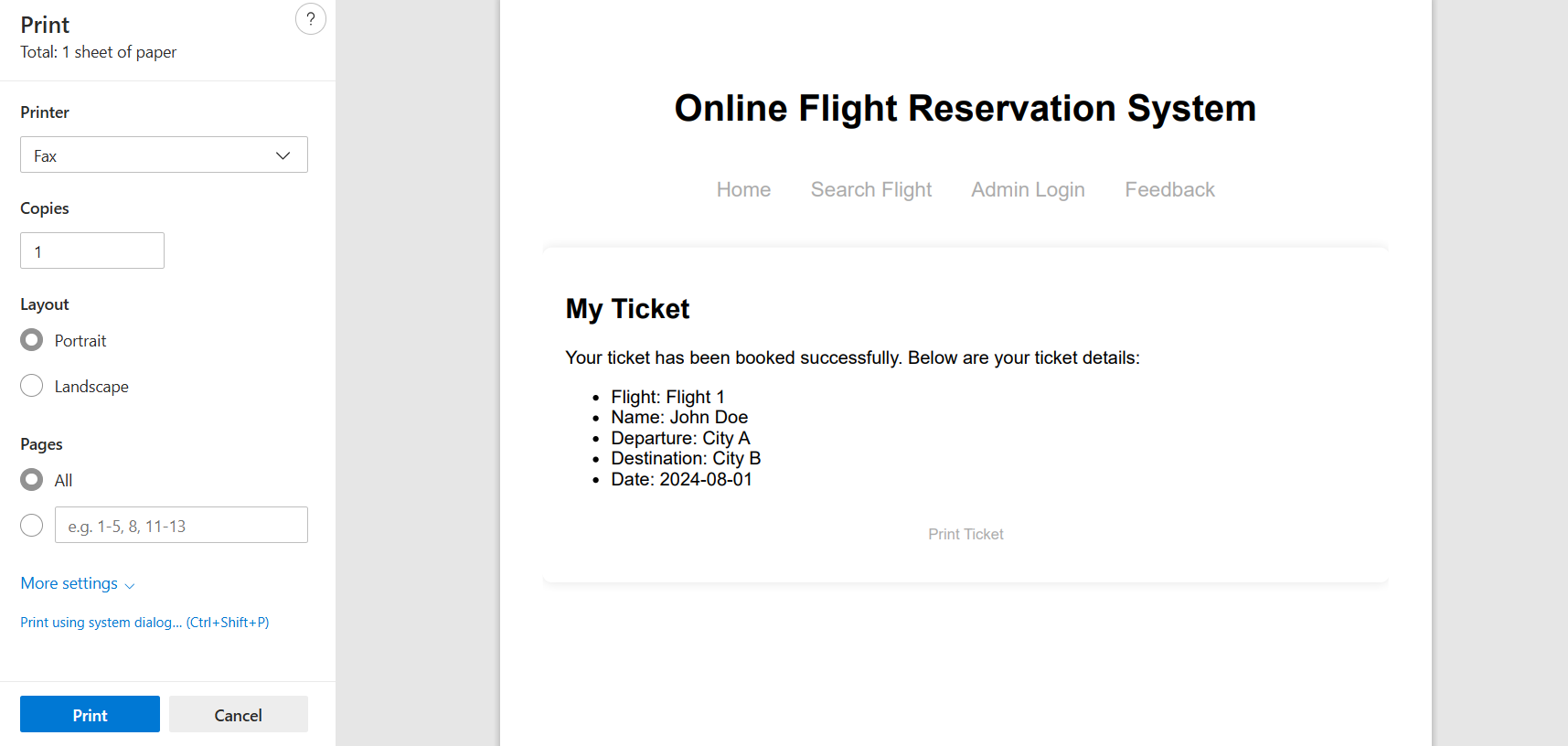
**TICKET PAYMENT PAGE:**



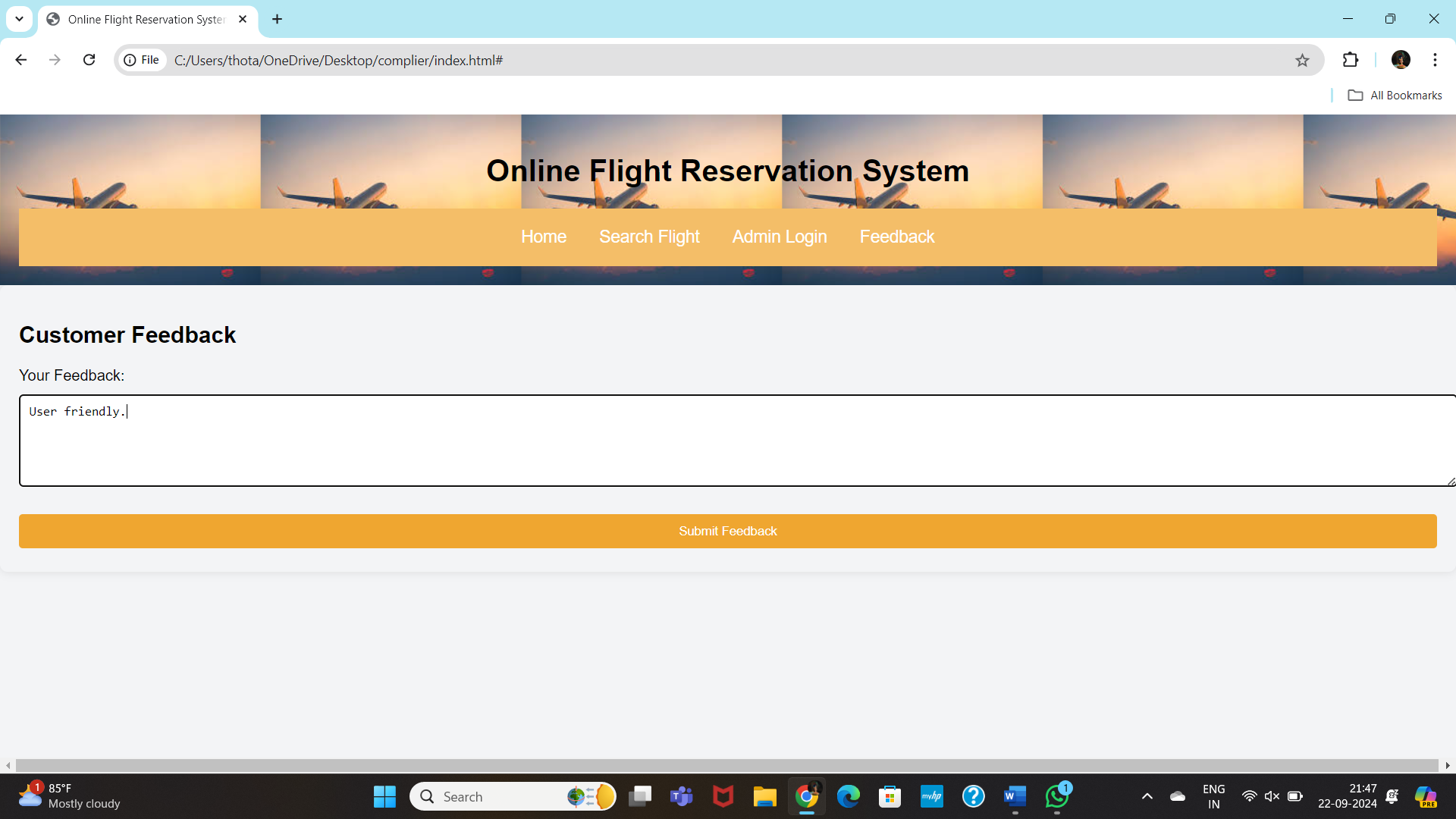
**MY TICKET PAGE:**



**PRINT TICKET PAGE:**

****

**CUSTOMER FEEDBACK PAGE:**



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