EAST WEST UNIVERSITY

Department of Computer Science and Engineering

Course Name: Software Engineering

Course Code: CSE412

Section: 02

Group: 06

Mini Project

Tourist Management System

Submitted By

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Chapter 1. Introduction

1.1. Description

The "Tourist Management System" is an innovative platform aimed at simplifying the management and booking of tourist destinations. It effectively combines three primary user roles—Admins, Agents, and Buyers—each contributing to the system's functionality. The Admin oversees the entire platform, ensuring smooth operations by managing users and maintaining the integrity of tour listings. This role involves verifying or deleting places, monitoring reported issues and removing unreliable users to uphold the system's reliability.

Agents are crucial in promoting tourism by adding new destinations and advertising them to potential buyers. Their listings automatically appear as "New Arrivals" on the home page, attracting attention and enhancing visibility for buyers seeking fresh travel experiences. Buyers, as the end-users, interact with the system by exploring available destinations, booking tours, and making payments. They can browse both new and established listings, process secure transactions, and track their booking status on their dashboard. Additionally, buyers can report any issues they encounter with the listed places.

Overall, the "Tourist Management System" fosters a user-friendly environment that streamlines the management of travel listings and the booking process. By integrating administrative oversight, agent promotion, and seamless buyer transactions, the platform enhances the overall tourism experience, making it accessible and efficient for all users involved.

1.2. Objectives

The main goal of the "Tourist Management System" is to make it easier for people to manage and book trips to different tourist places. The system connects three types of users—admins, agents, and buyers—who all have important roles.

Admins are responsible for managing the entire system. They can monitor the activities of both agents and buyers, ensuring that the places listed are reliable and well-maintained. Admins also have the power to verify or delete tourist spots and handle any problems reported by users.

Agents, on the other hand, can promote tourism by adding new places to the system. These places will be advertised on the home page for buyers to see. Agents can also manage the places they have listed by updating or deleting them when needed.

Buyers, who are tourists, can browse through the available places, book trips, and make secure payments through the system. They can also report any issues they find with the places listed and keep track of their booking and payment status.

Overall, this project aims to make the process of managing tourist spots smoother and more organized while offering a user-friendly experience for both agents and tourists. The Tourist Management System fosters a user-friendly environment that streamlines the management of travel listings and the booking process.

1.3. Functionality

In this project, there are three distinct roles, each with its own responsibility, and they have the following functions:

1) Admin Functions

- User Management:

i) View all buyers and agents.

ii) Delete faulty agents or buyers.

- Place Management:

i) View all reported places.

ii) Verify or delete places advertised by agents.

iii) Delete reported places.

2) Agent Functions

- Account Management:

i) Sign up and log in.

- Place Management:

i) Add new places (Nepal, Indonesia, etc.).

ii) Advertise places (shows up as new on the home page).

iii) Delete places from their dashboard.

3) Buyer Functions

- Account Management:

i) Sign up and log in.

- Place Browsing:

i) View newly arrived places on the home page.

ii) View all places (new and old) on the places page.

- Place Booking:

i) Book a place from the places page.

- Reporting:

i) Report a place from the places page.

- Payment Management:

i) View booking status (paid/unpaid) on their dashboard.

ii) Pay through different cards.

iii) Receive a transaction ID after successful payment.

1.4. Technology Details

In the context of software, "Technology Details" refers to the specific technologies, tools, frameworks, programming languages, libraries, and platforms used in the development, deployment, and maintenance of the software application. For the Tourist Management System, the technological details are divided into two main categories:

1) **Front-End**

- Framework: React Native (for building cross-platform mobile apps)
- Programming Language: JavaScript (ES6+), TypeScript (for type safety)
- State Management:

  i) Redux

  ii) Context API

  iii) MobX (alternative)
- Navigation: React Navigation (for screen routing)
- Styling:

  i) Styled Components

  ii) CSS-in-JS

  iii) NativeBase

  iv) React Native Paper
- Animations:

  i) React Native Reanimated

  ii) Lottie for React Native
- Form Management: Formik or React Hook Form

- Testing:

  i) Jest (Unit Testing)

  ii) Detox or React Native Testing Library (E2E Testing)

2) Back-End

- Back-End Framework: Node.js with Express.js or Nest.js (common frameworks for MongoDB)
- Database: MongoDB
- ODM (Object Data Modeling): Mongoose (for MongoDB interaction in Node.js)
- Hosted MongoDB Solutions: MongoDB Atlas (cloud-based MongoDB service)
- Authentication & Authorization:

  i) Firebase Authentication

  ii) Auth0

  iii) JWT (JSON Web Tokens)

- Cloud Services / Storage:

  i) AWS (S3, EC2, Lambda)

  ii) Google Cloud Platform (GCP)

  iii) Azure

  iv) Firebase Storage

- RESTful API of Technologies :

  i) Express.js (Node.js) or Nest.js

  ii) MongoDB integrated with Mongoose for handling database queries.

- RESTful API of Documentation:

  i) Swagger

  ii) Postman

- GraphQL API: A query language for APIs to fetch only the necessary data.

- Technologies:

  i) Apollo Server (with MongoDB via Mongoose)

  ii) GraphQL Subscriptions for real-time data

- API Security:

  i) OAuth 2.0

  ii) API Keys

  iii) JWT (JSON Web Tokens) for Authentication/Authorization

- Real-time Communication:

  i) WebSockets with Socket.io

  ii) Firebase Realtime Database.

The project uses React Native for building cross-platform mobile apps, ensuring smooth performance and a consistent user experience. It employs Node.js with frameworks like Express.js or Nest.js on the back-end, paired with a MongoDB database for flexible data storage. Firebase Authentication and JWT handle user login and security, while cloud services like AWS or Google Cloud provide robust hosting and storage solutions. For real-time updates, technologies like WebSockets and GraphQL Subscript.

Chapter 2. Software Design

2.1. Use Case Diagram

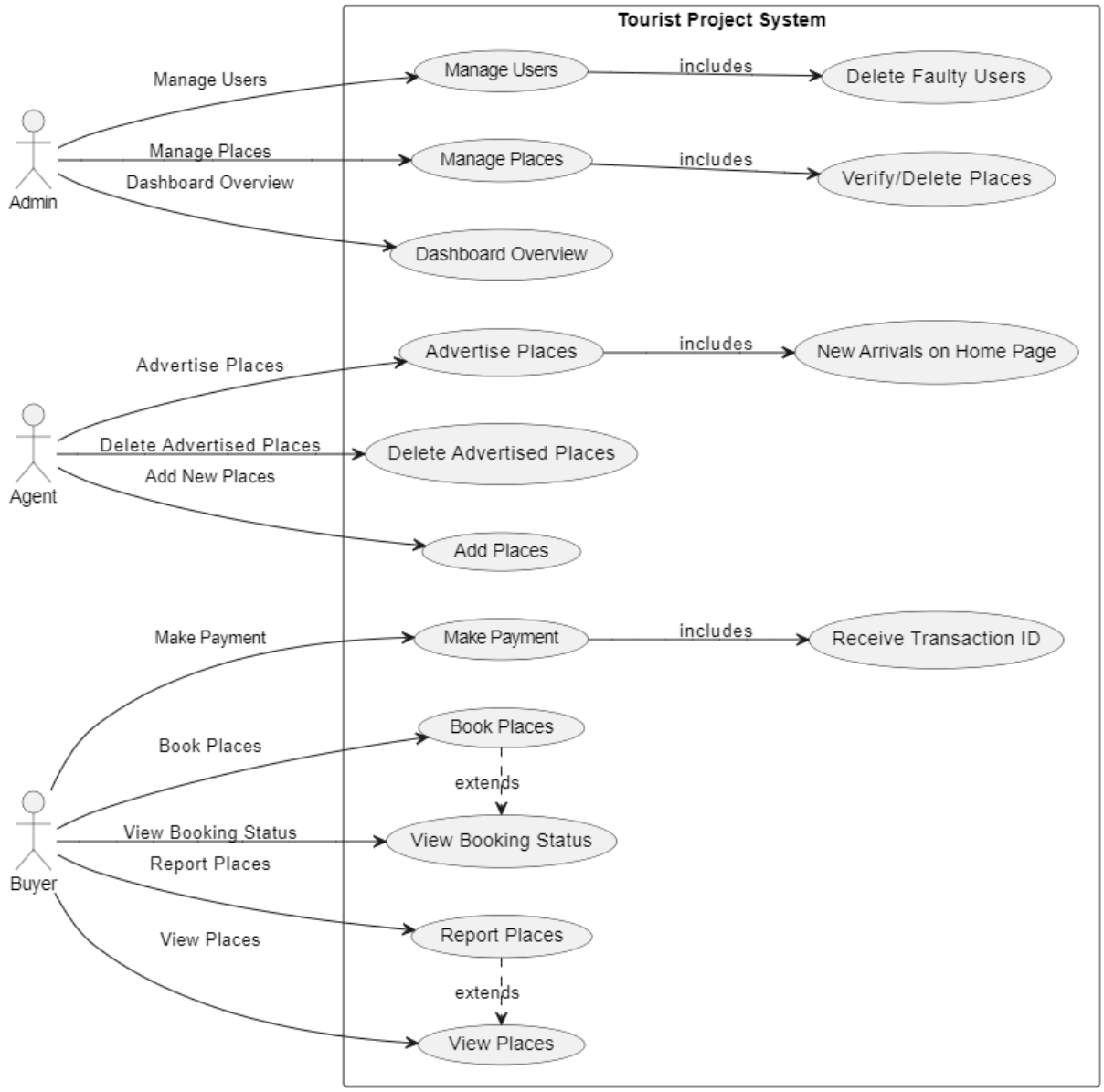

Figure 1: Use Case Diagram

This use case diagram for our Tourist Management System shows how three users interact: Admin, Agent, and Buyer. The Admin manages the system, overseeing users and places. Agents add and promote new places while also removing outdated listings. Buyers can view places, book them, report issues, check their booking status, and make payments. This diagram illustrates how each user contributes to the system, making it easier for everyone to plan their trips.

2.2. ER Diagram / DB Schema

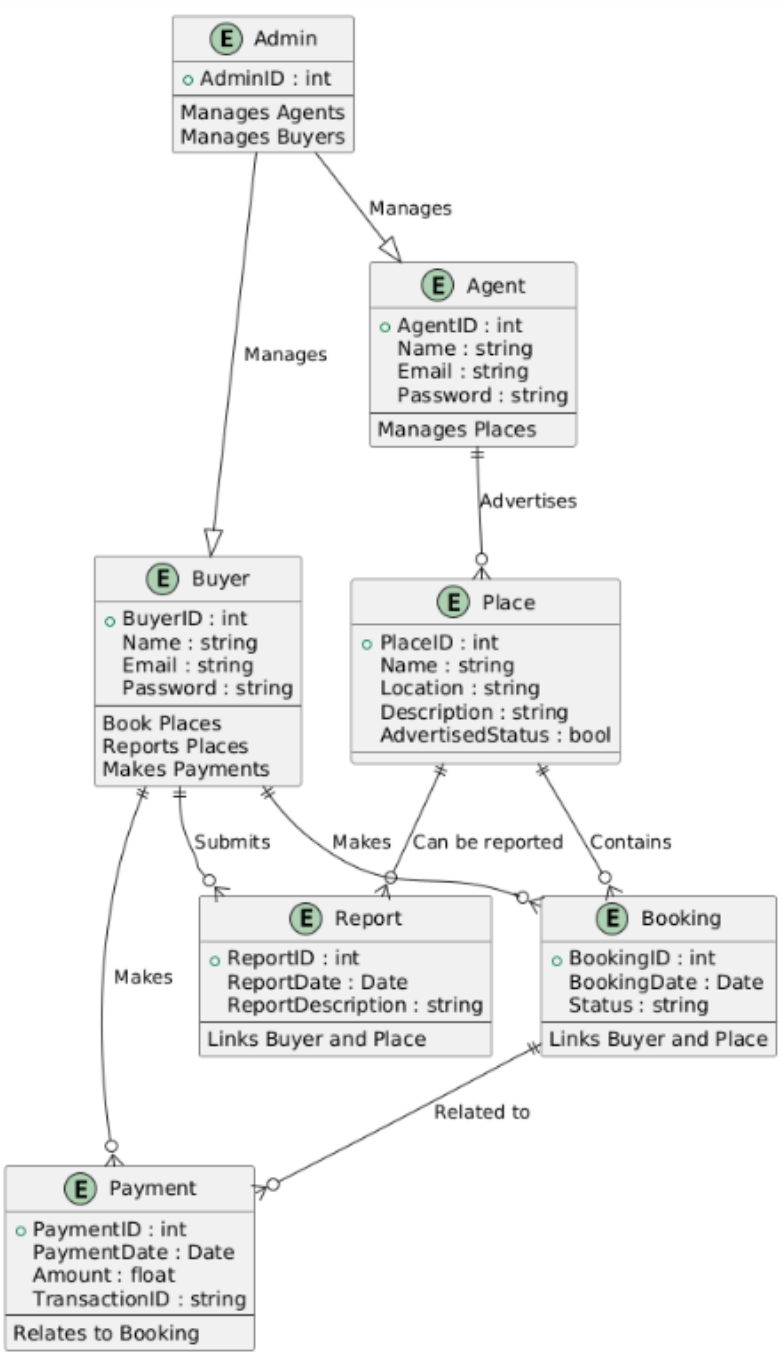

Figure 2: ER Diagram

This diagram represents the structure and relationships within the Tourist Management System. It includes three (03) main entities Admin, Agent, and Buyer. Summary of Relationships: One Admin manages many Agents and many Buyers. One Agent can advertise many Places. One Buyer can: Submit many Reports. Make many Bookings and many Payments. One Place can have: Many Reports and many Bookings. One Booking is linked to one Payment.

2.3. Activity Diagram

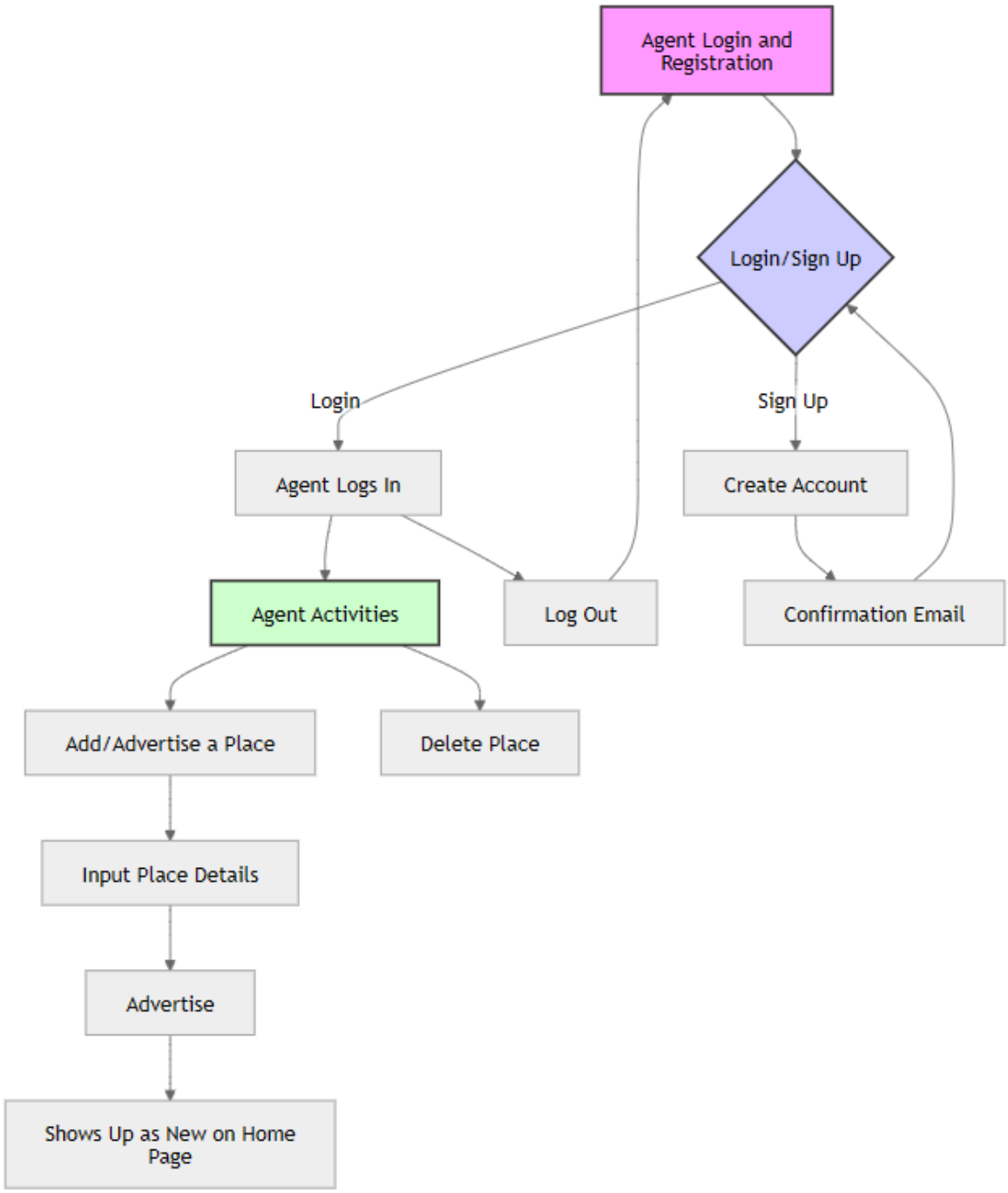

Figure 3: Activity Diagram for Agent

In the activity diagram, agents can either log in or sign up. After logging in, they can perform actions like adding or advertising a place (which involves inputting details and showing the place on the home page) or deleting a place. They can also log out after completing their tasks.

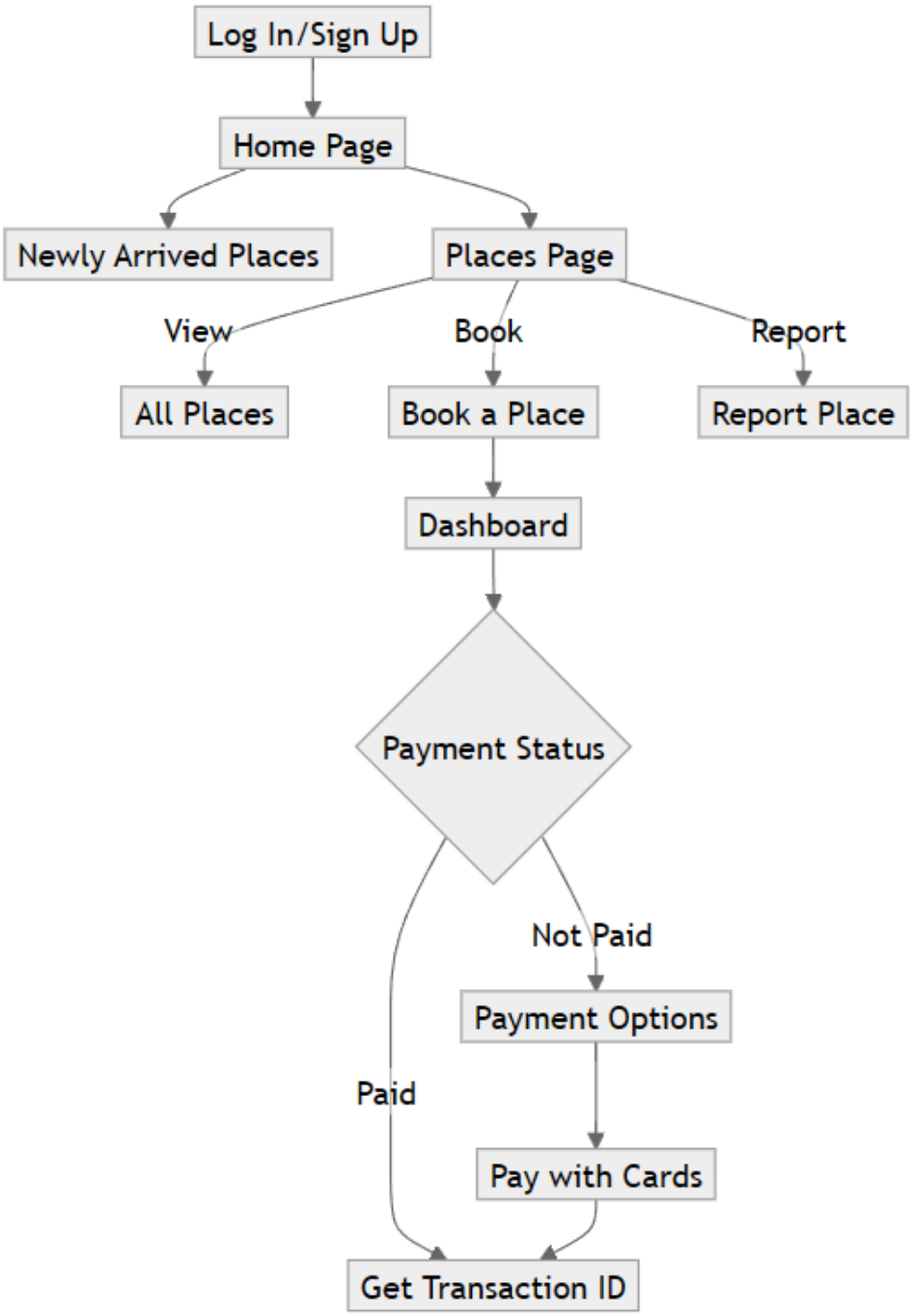

Figure 4: Activity Diagram for Buyer

The activity diagram for the buyer in the tourist project management system shows the steps a buyer takes. After logging in or signing up, the buyer can view newly arrived or all available places, book a place, or report a place from the homepage. Upon booking a place, they are directed to a dashboard where the payment status is checked. If payment has not been made, the buyer is presented with payment options and can pay using cards. Once the payment is completed, the transaction is confirmed, and the process concludes.

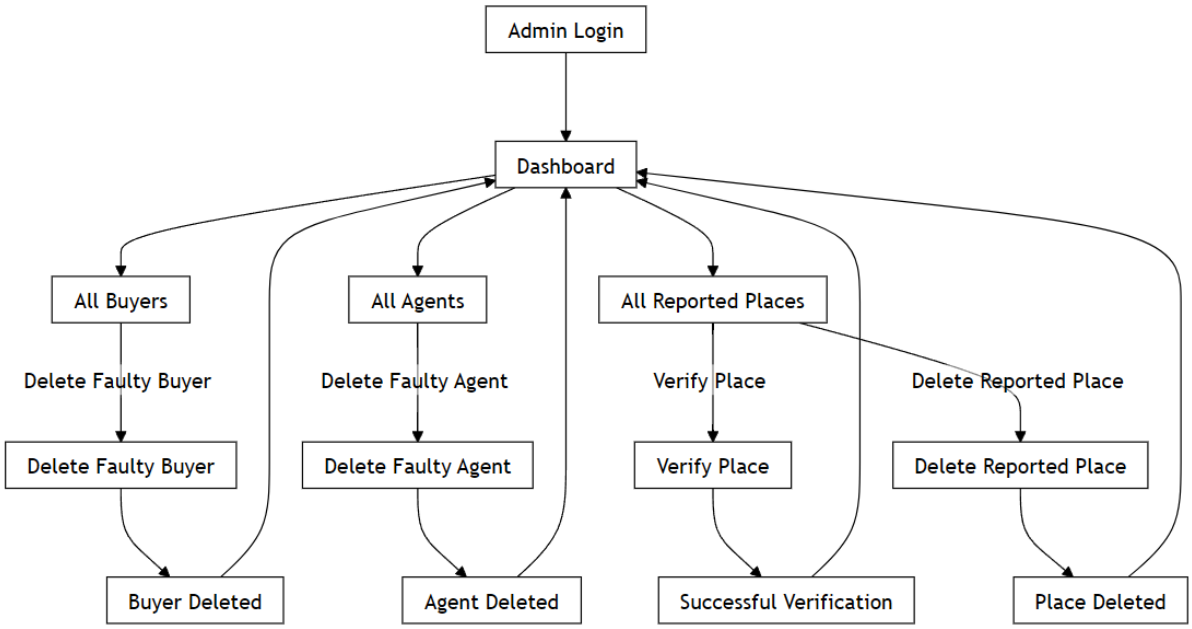

Figure 5: Activity Diagram for Admin

The activity diagram shows the workflow of an admin in a tourist project management system. After logging in, the admin accesses the dashboard, where they can manage buyers, agents, and reported places. For buyers and agents, the admin can view all and delete any faulty ones, leading to confirmation messages like "Buyer Deleted" or "Agent Deleted." For reported places, the admin can either verify or delete them, with statuses like "Successful Verification" or "Place Deleted." All actions loop back to the dashboard for further management tasks.

2.4. Deployment Diagram

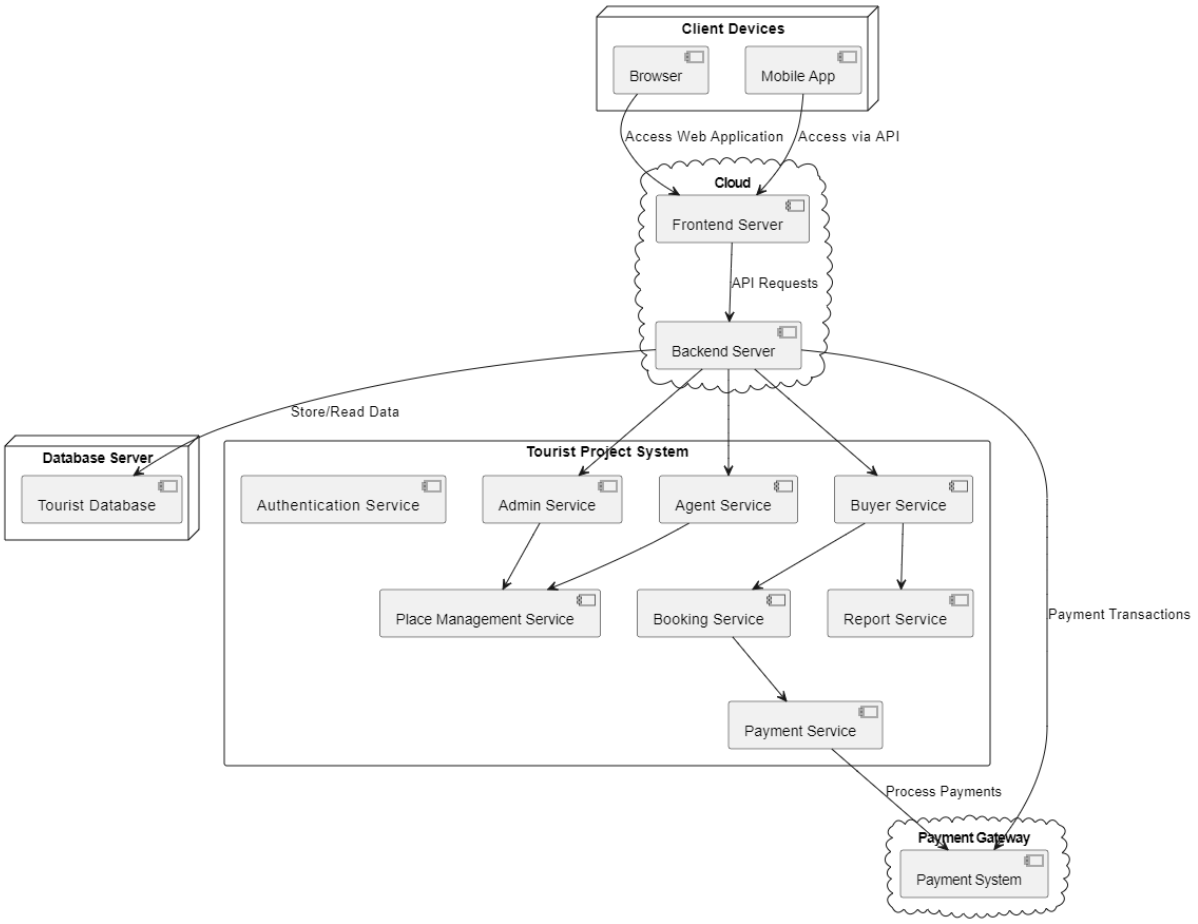

Figure 6: Deployment Diagram

This deployment diagram shows how the Tourist Project Management System operates. Users access the system via browsers or mobile apps, interacting with a cloud-based frontend and backend server. The system consists of services like Authentication, Admin, Agent, Buyer, Place Management, Booking, Report, and Payment, which manage different platform aspects. A database server stores all user and place information, while a payment gateway securely processes transactions.

Chapter 3. Software Implementation

This project aims to simplify the management and promotion of tourism through a system involving three primary user roles: agent, buyer, and admin. In this document, we provide screenshots showcasing all the features included in our project:

3.1. Agent

Here, the agent Creates an account for registration.

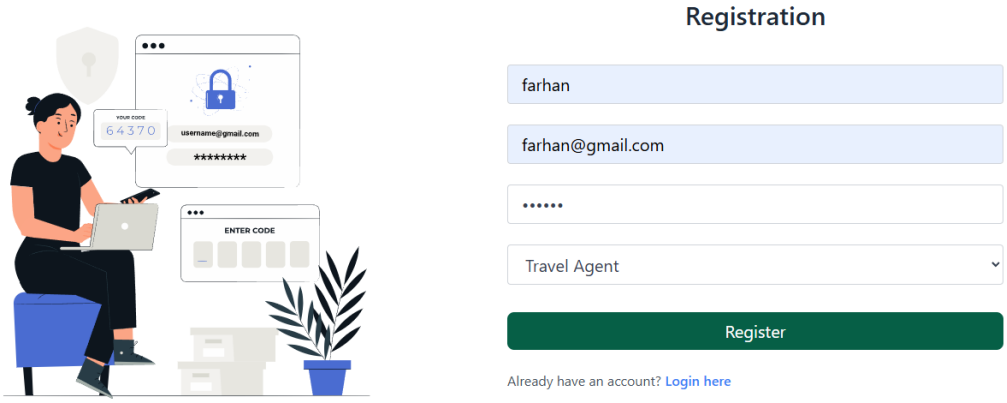

Figure 7: Account creation page for registration

After completing the registration process, the agent can log in to the system.

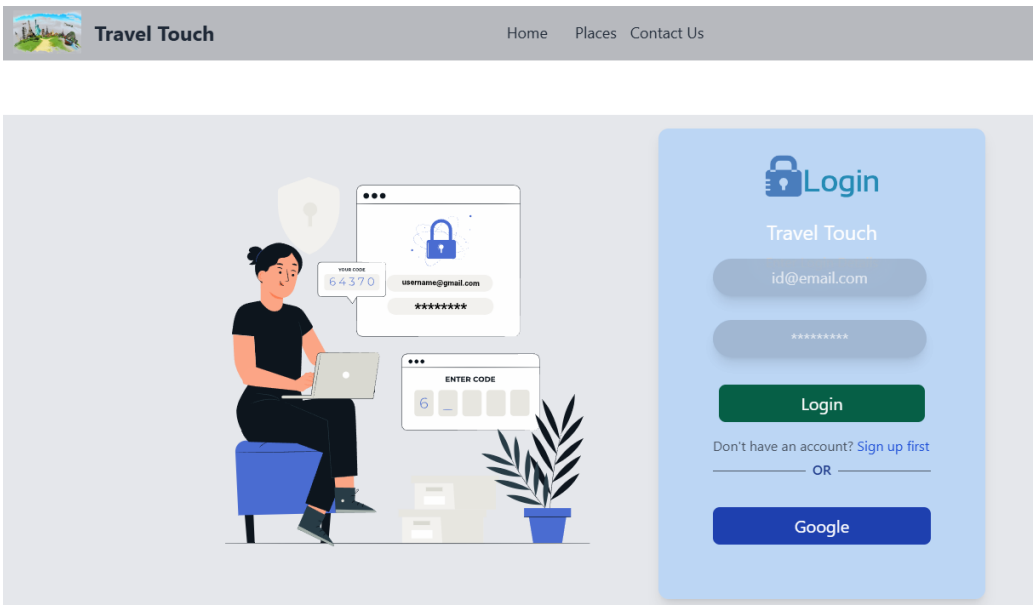

Figure 8: Agent login page after completing registration

The agent can then access the dashboard panel.

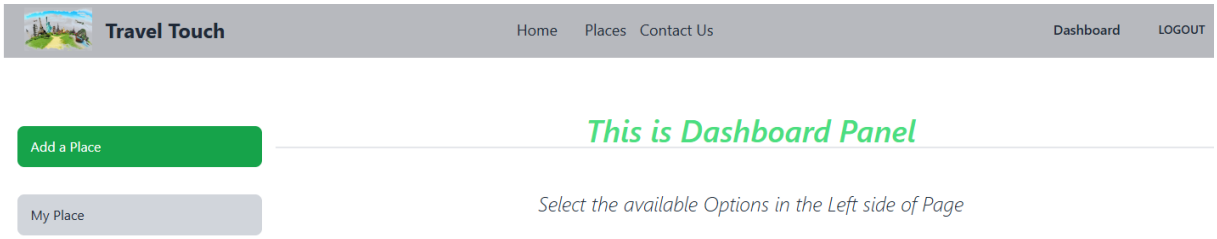

Figure 9: Agent dashboard panel after login

Within this dashboard, the agent can add a new destination for their customers.

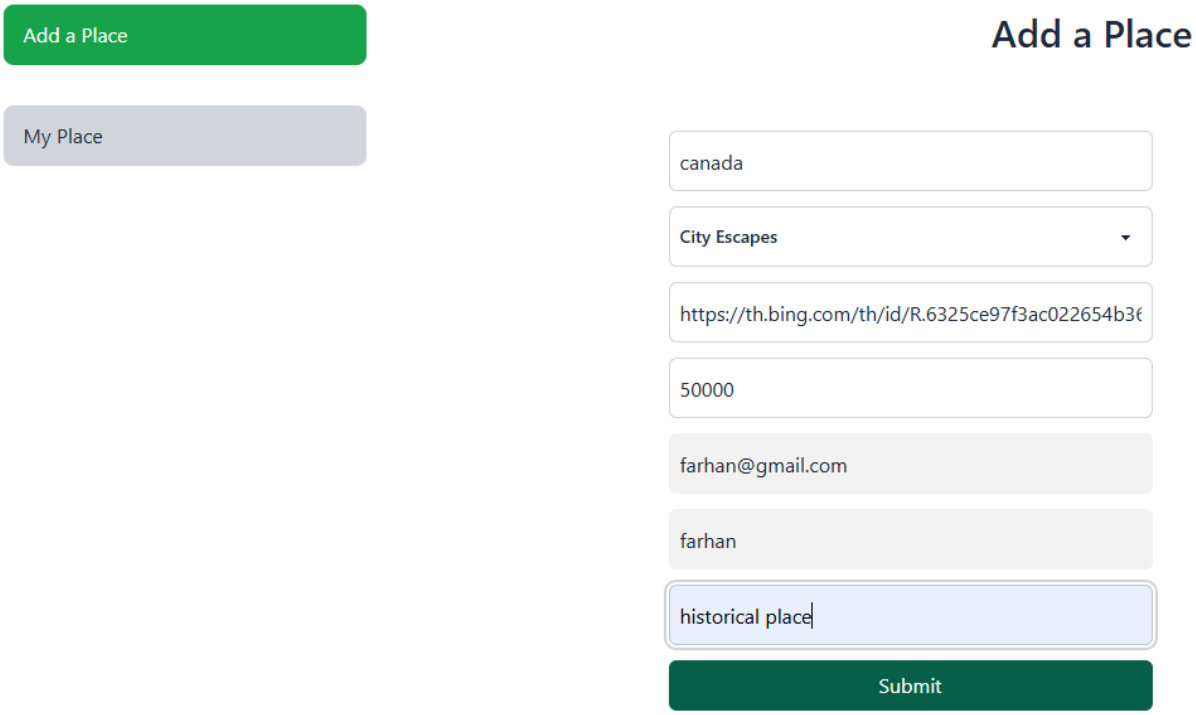

Figure 10: Agent dashboard for adding a new destination

In the "My Place" function, the agent can view all the destinations they have added and monitor the sales status, whether sold or unsold.

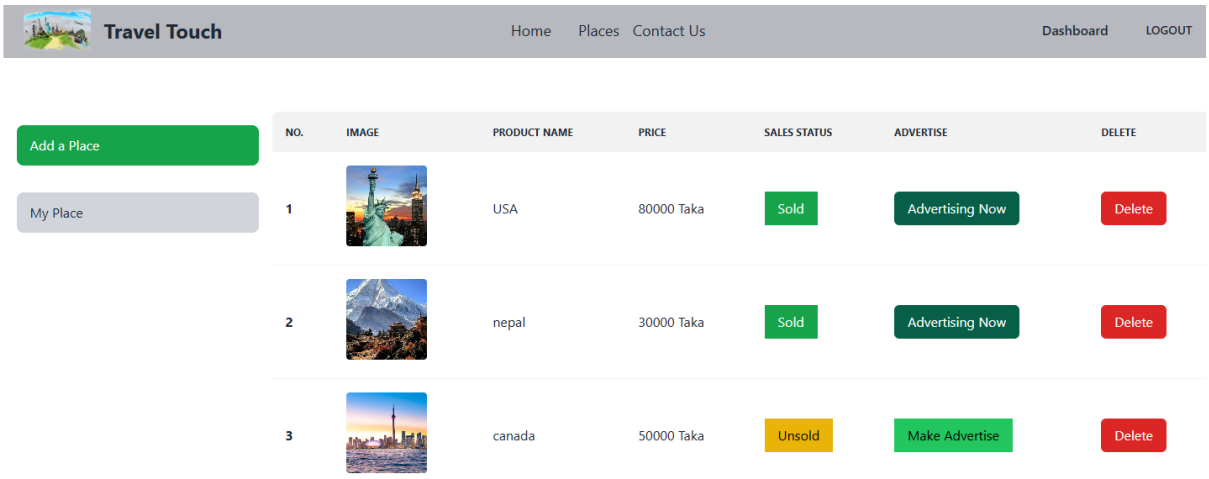

Figure 11: "My Place" section showing added destinations and sales status

If a destination remains unsold, the agent can create advertisements for those places.

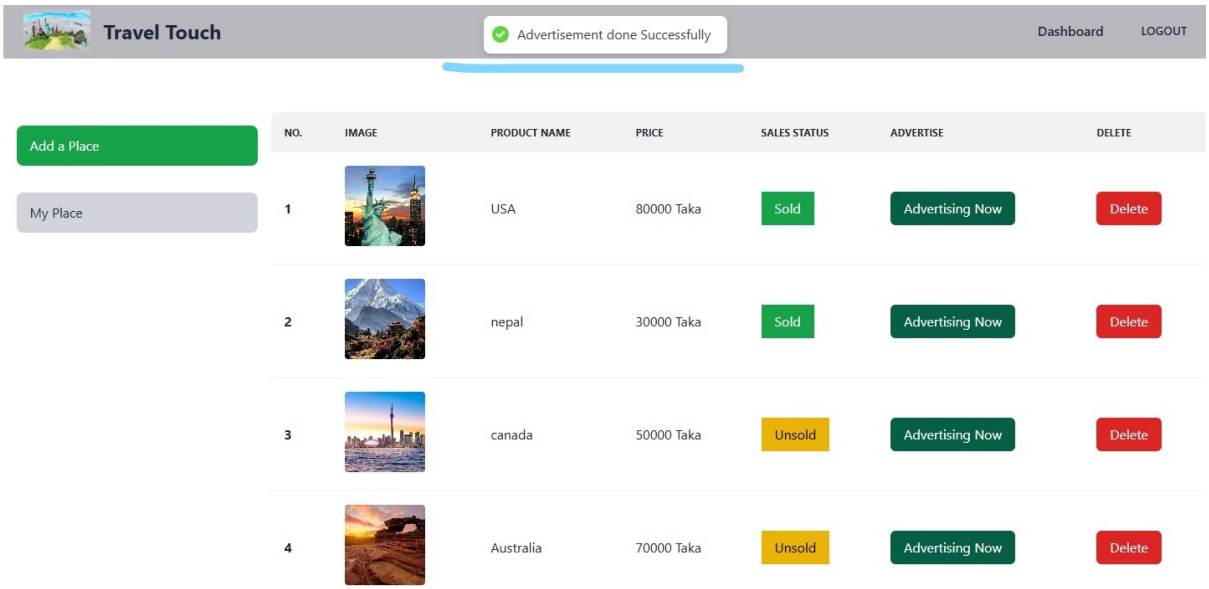

Figure 12: Agent dashboard to create advertisements for unsold destinations

Advertisement done Successfully!

After the advertisement, the place will appear as "New Available" on the homepage, and customers will also be able to see its rating.

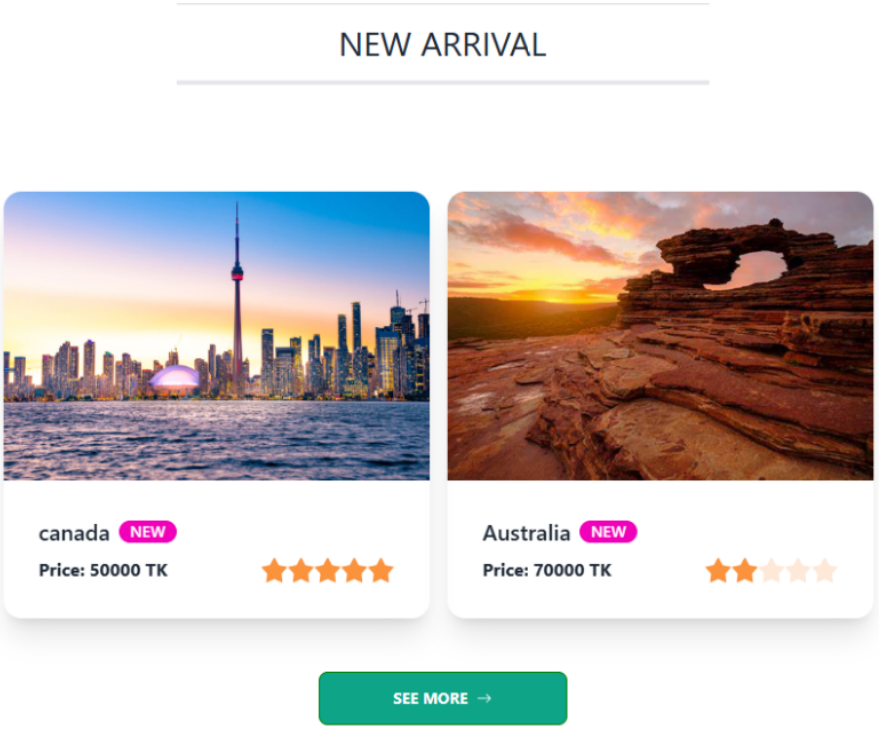

Figure 13: Post-advertisement status of the destination shown as "New Available".

3.2. Buyer

Here, the buyer creates an account for registration.

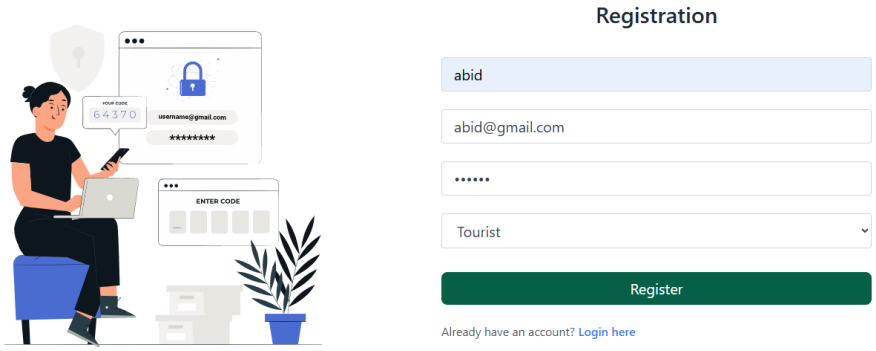

Figure 14: Buyer registration form for creating an account

After completing the registration process, the buyer can log in to the system.

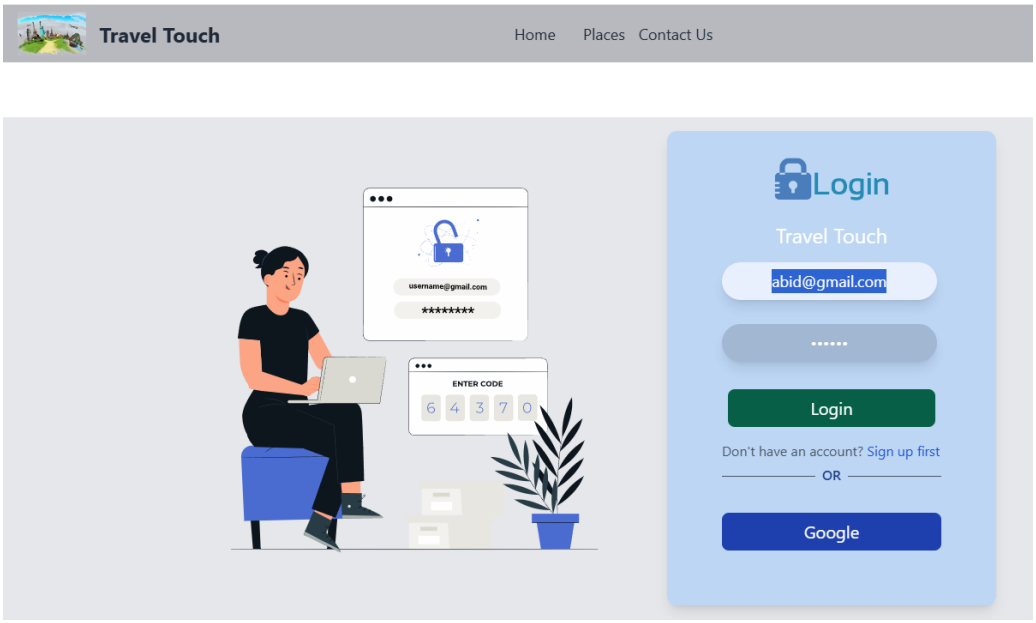

Figure 15: Buyer login page after registration

After logging in, the buyer can access the homepage.

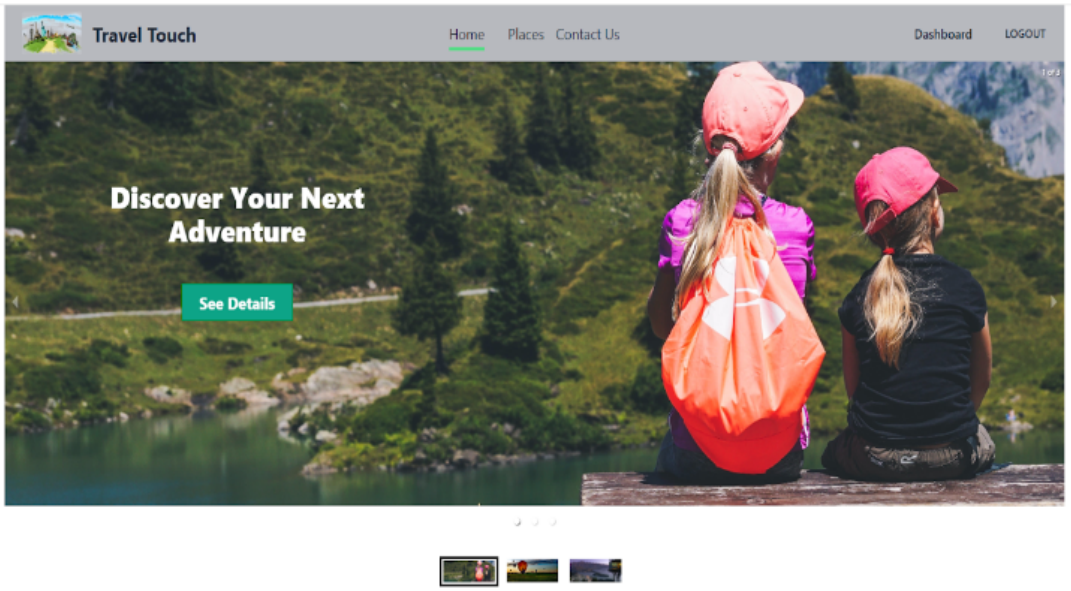

Figure 16: Buyer's homepage showing available destinations

In the "Place" section, buyers can view all the destinations they may be interested in visiting.

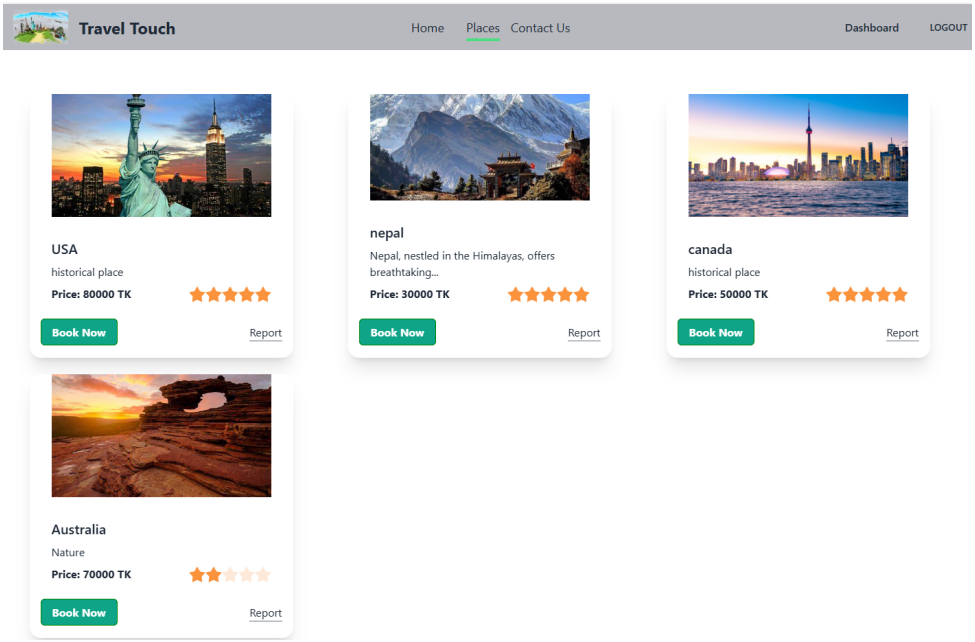

Figure 17: Buyer's destination list page

After that, buyers can reserve the destination and fill out the necessary form.

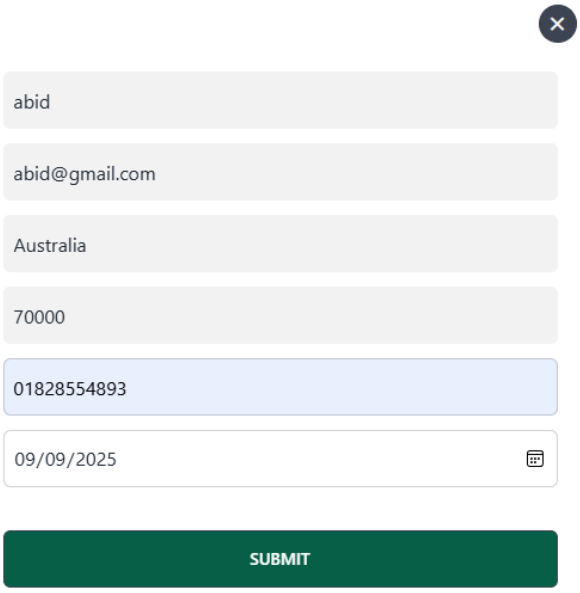

Figure 18: Reservation form for booking a destination

If the payment status shows "Paid," the buyer knows the payment is complete. Otherwise, they can proceed to the payment option to make the payment and confirm it.

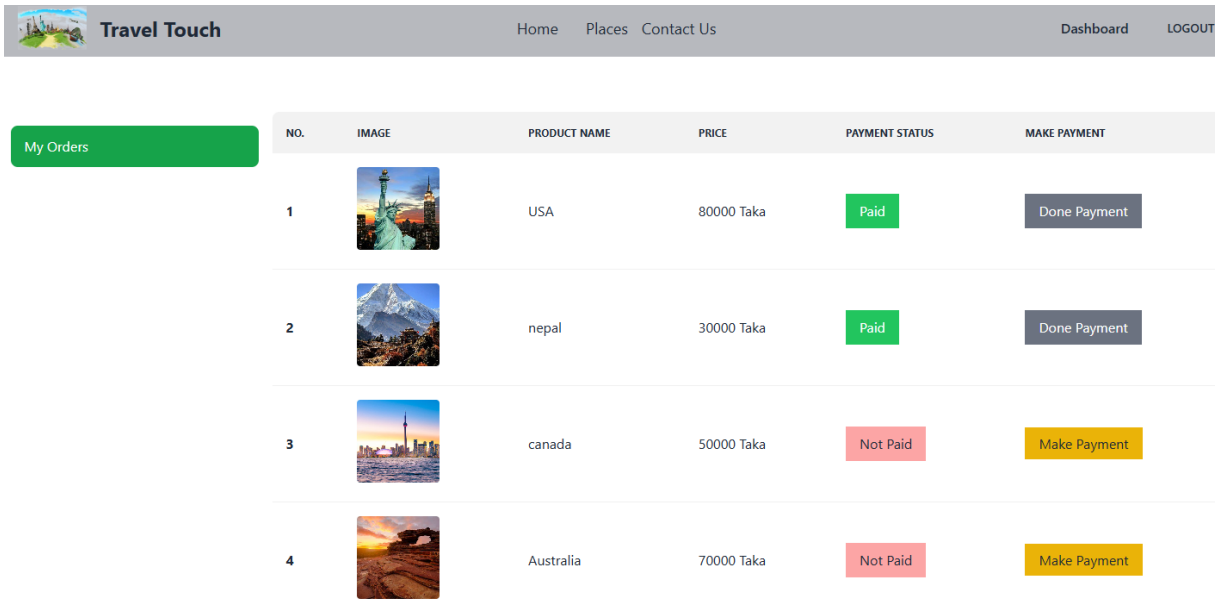

Figure 19: Payment status page for buyers after reservation

Buyers can make payments using Visa, MasterCard, or American Express. Upon successful payment, the buyer receives a confirmation message along with a transaction ID for verification.

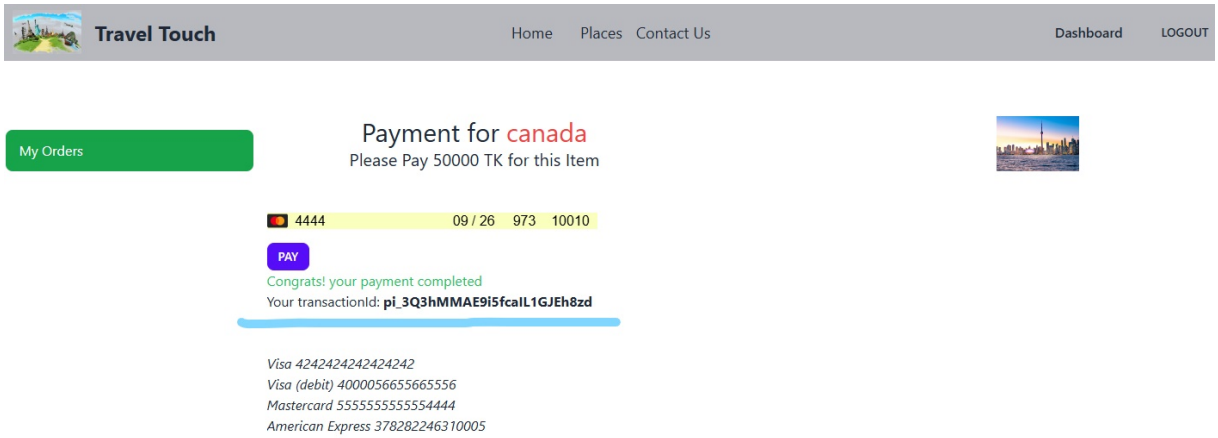

Figure 20: Payment methods for confirming the reservation

If a buyer has any issues, they can file a report.

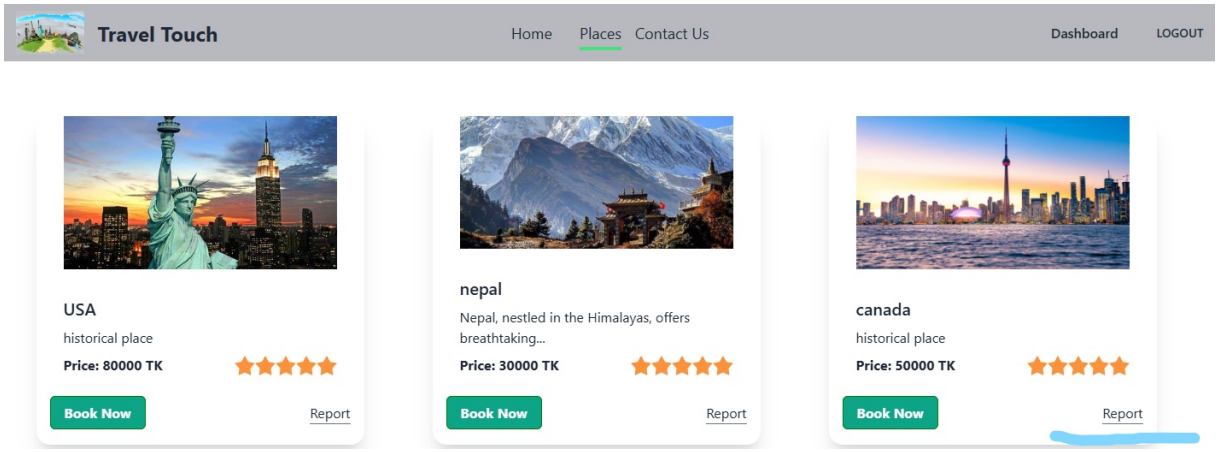

Figure 21: Buyer report submission page

If the report is successful, they will receive a confirmation message.

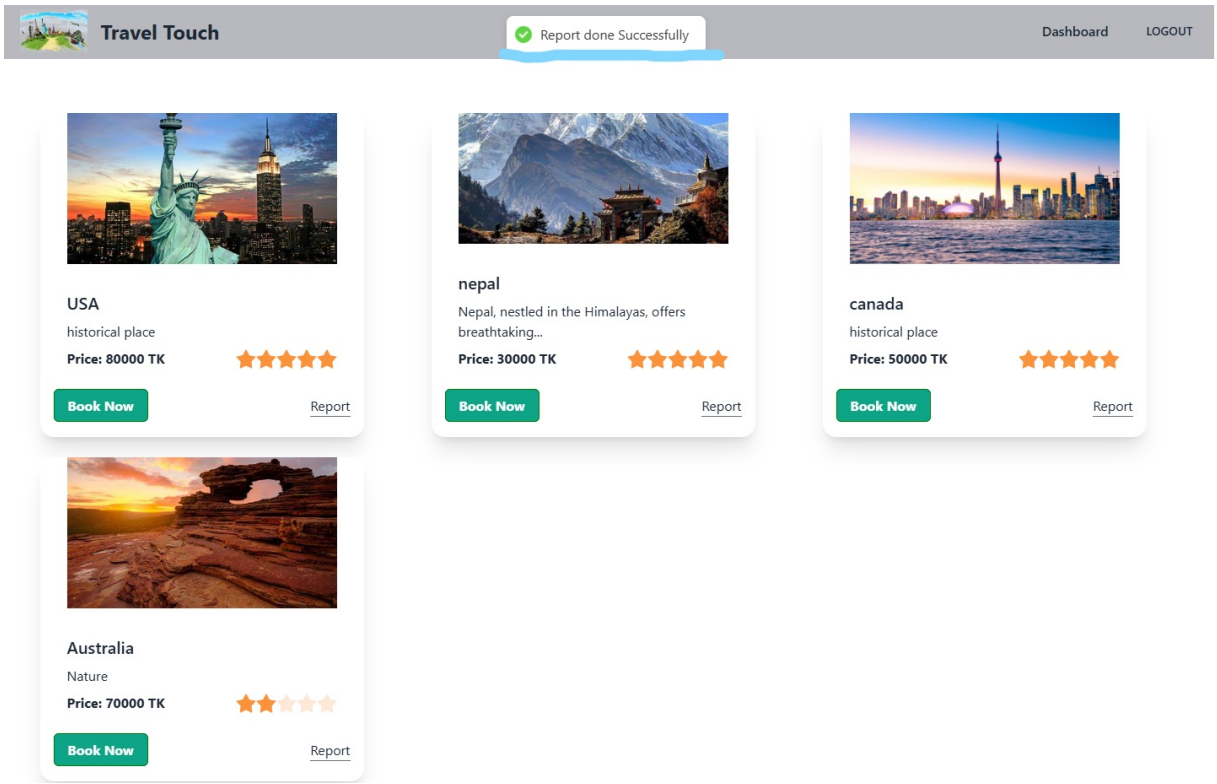

Figure 22: Confirmation page after a successful report submission

3.3. Admin

Here, the admin creates an account for registration.

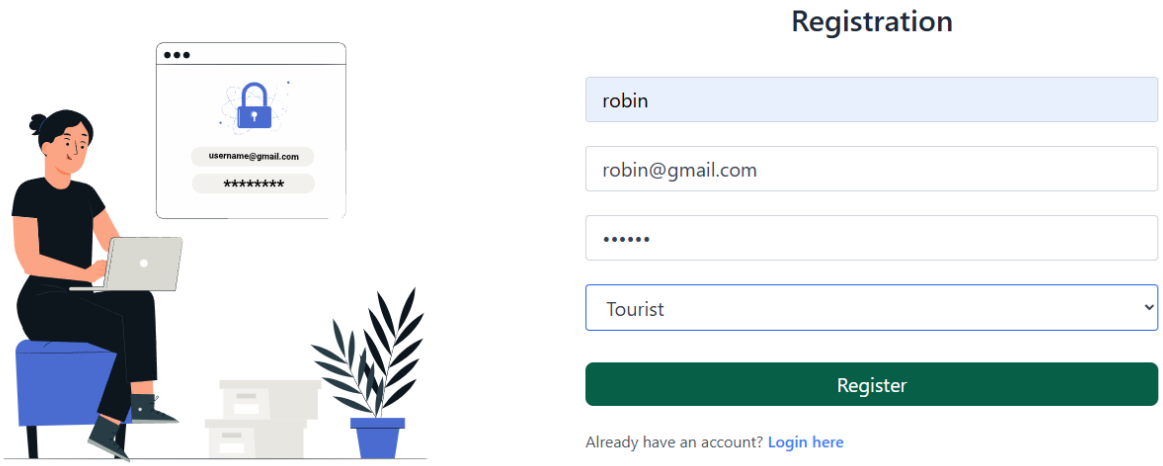

Figure 23: Admin registration form for creating an account

After completing the registration process, the admin can log in to the system.

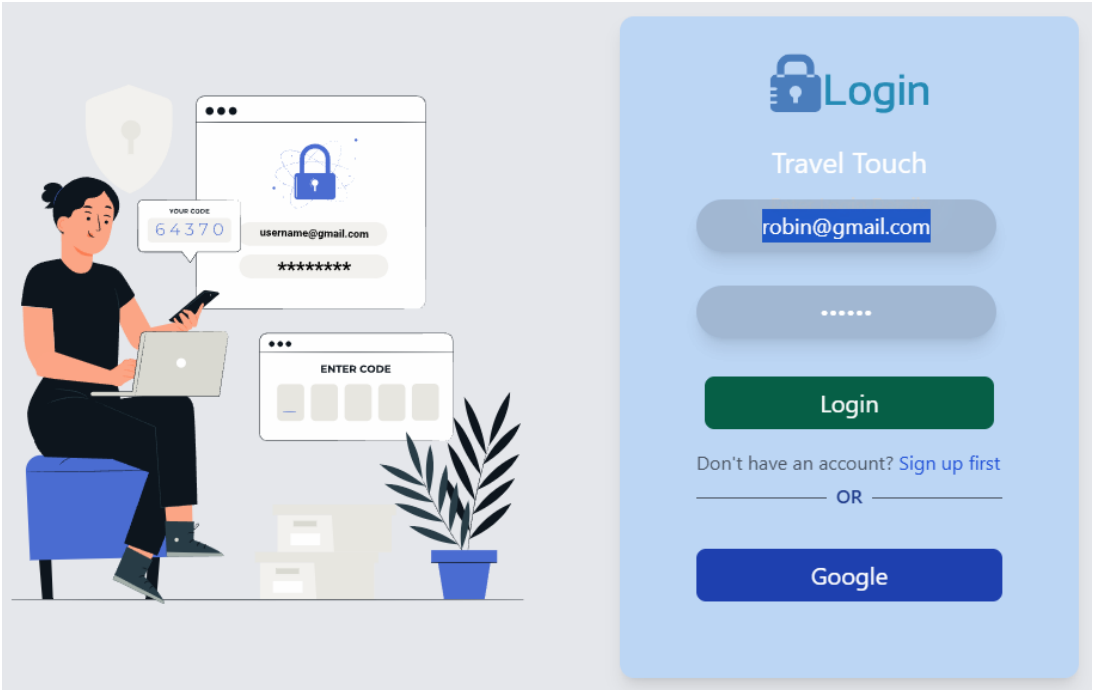

Figure 24: Admin login page after registration

After logging in, the admin can view all the travel agents. The admin also can verify and remove agents from the list.

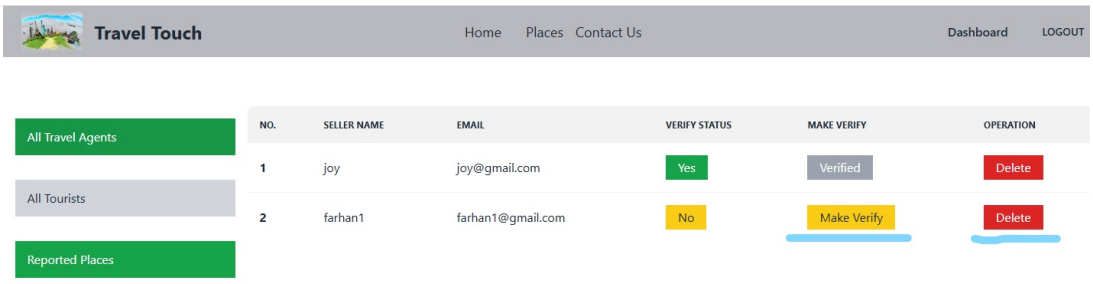

Figure 25: Admin dashboard showing agents with verification and removal options

After verification, the agent receives a confirmation message.

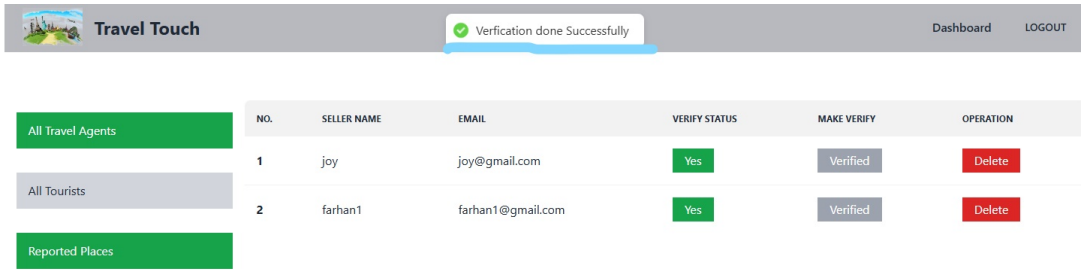

Figure 26: Confirmation message sent to agents upon verification

The admin can view all the tourists and can remove them.

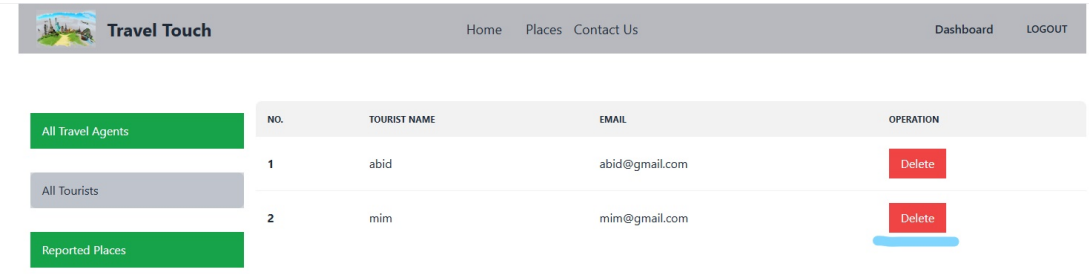

Figure 27: Admin dashboard showing tourists with removal options

The admin can see who submitted a report and the related places and can delete the report.

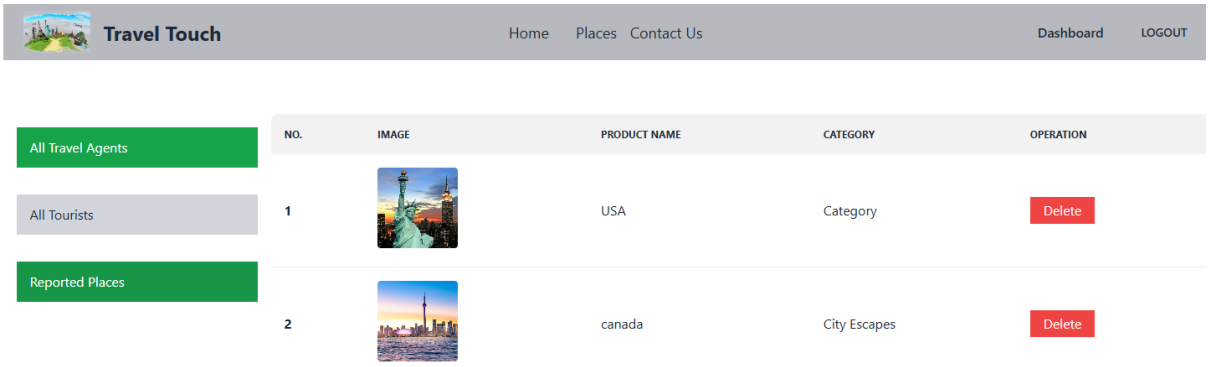

Figure 28: Admin dashboard showing submitted reports with deletion options

If an agent or buyer has a problem, they can contact the admin directly.

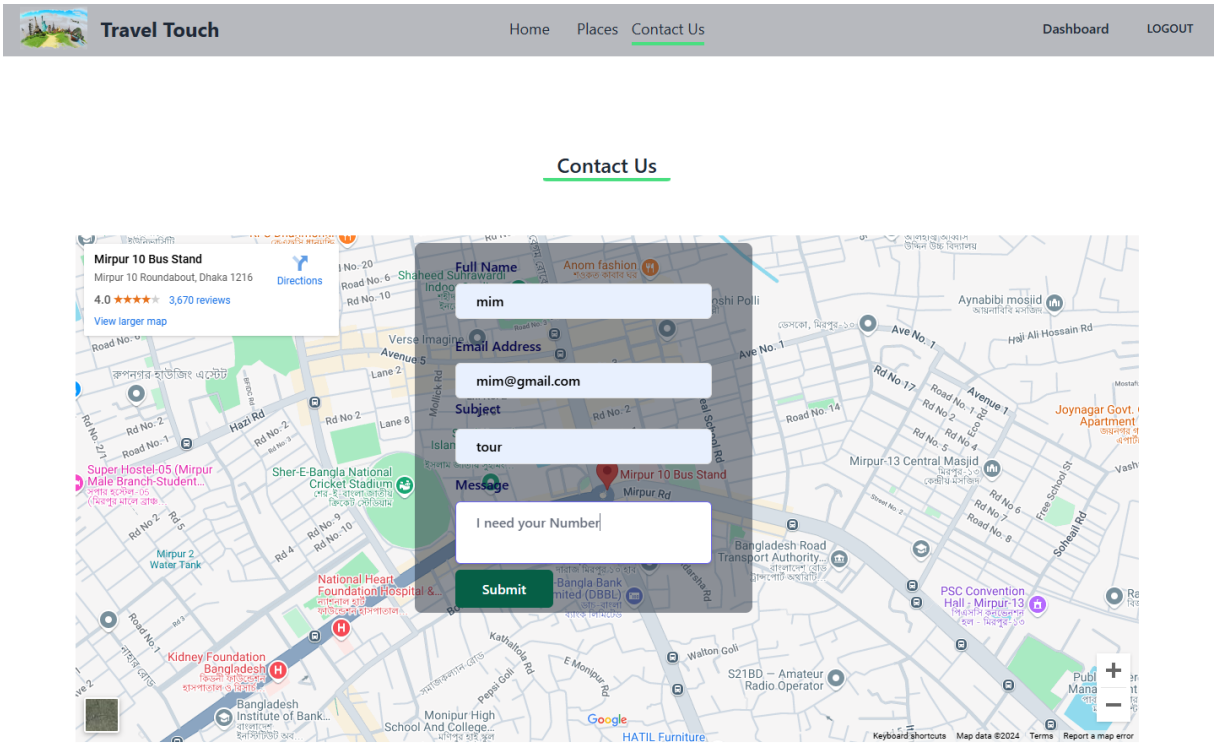

Figure 29: Contact page allowing agents and buyers to message the admin directly

4. Appendix

4.1. Group Responsibility

The group responsibility is to collaboratively develop the "Tourist Management System" by dividing tasks such as project management, front-end and back-end development, testing, and documentation, ensuring timely completion and high-quality results. Here's a structured table to represent the group responsibilities for our "Tourist Management System" mini-project:

Group Member	**Role**	**Responsibilities**
Mim Bin Hossain	- Project Manager - System Analyst - Report Writer	- Overall coordination - Ensure timelines are met - Communicate with lecturer - System analysis - Requirements gathering - Prepare LaTeX-based project report
Abidur Rahman	- Lead Developer (Back-end & Database)	- Back-end logic - Database management - Ensure data security and integration with front-end - System monitoring
Md. Farhan Tonoy	- Front-end Developer (UI/UX Design) - Tracer	- User interface design - Ensure a smooth user experience - Integration with backend - Tracking bugs/issues
Rahat Hasan Robin	- Testing - Quality Assurance (QA)	- System testing - Debugging - Ensure software performance
Joy Datta	- Documentation - UML Designer	- Project documentation - Creating diagrams (UML, flowcharts)

Table 1: Roles and Responsibilities of Group Members

4.2. Approximate Cost of the Project Deployment

The approximate cost of deploying a Tourist Management System can vary based on several factors, such as development costs, hosting & infrastructure, maintenance & support, and additional costs.

Development Costs

Category	Details	Cost Range (BDT)
Front-end Development	UI/UX, HTML, CSS, JavaScript	2,20,000 – 22,00,000
Back-end Development	API, database, security	55,000 – 77,000
Database Design	Schema design, integration	11,000 – 22,000
Testing & Quality Assurance	Bug fixes, testing	11,000 – 22,000

Table 2: Development Costs

Total Development Cost: 2,97,000 – 23,21,000 BDT

Hosting & Infrastructure Costs

Category	Details	Cost Range (BDT)
Web Hosting	Azure, etc. (Annual)	50,000 – 200,000
Domain Registration	Website domain (Annual)	800 – 1,800
SSL Certificates	Security for website (Annual)	4,000 – 8,000

Table 3: Hosting & Infrastructure Costs

Total Hosting & Infrastructure Cost: 54,800 – 209,800 BDT

Maintenance & Support Costs

Category	Details	Cost Range (BDT)
Ongoing Maintenance	Bug fixes, updates (Annual)	300,000 – 500,000
Customer Support	User support, issue resolution (Annual)	150,000 – 300,000

Table 4: Maintenance & Support Costs

Total Maintenance & Support Cost: 450,000 – 800,000 BDT

Additional Costs

Category	Details	Cost Range (BDT)
Third-Party Integrations	Payment gateways, Google Maps, etc.	40,000 – 80,000
Marketing & SEO	Initial setup and ongoing cost	50,000 – 300,000
Backup Solutions	Data backup services	8,000 – 30,000
Monitoring Tools	Tools for website performance and uptime	8,000 – 20,000

Table 5: Additional Costs

Total Additional Costs: 106,000 – 430,000 BDT

Overall Summary of Costs

This table provides a clear overview of the estimated costs of the Tourist Management System project.

Cost Category	Cost Range (BDT)
Total Development Cost	2,97,000 – 23,21,000
Total Hosting & Infrastructure Cost	54,800 – 209,800
Total Maintenance & Support Cost	450,000 – 800,000
Total Additional Costs	106,000 – 430,000

Table 6: Overall Summary of Costs

Total Estimated Cost: 907,800 – 3,760,800 BDT

Therefore, based on the provided data, we can accurately assess the overall costs associated with the project. To ensure efficiency and proper execution, we have deliberately chosen the most cost-effective options. This strategic approach allows us to minimize unnecessary expenditures while maintaining the necessary resources and quality standards for successful project completion. Our focus remains on balancing cost reduction with optimal project outcomes.

4.3. Benefits of the Project

The Tourist Management System offers several benefits that enhance the overall tourism experience for users (Admins, Agents, and Buyers). Some of these key benefits include:

1) **Efficient Management:** Admins can easily manage users (buyers and agents) and tourist destinations, ensuring smooth operations through monitoring and issue resolution. This helps maintain the quality and reliability of the system.

2) **Increased Visibility for Tourist Destinations:** Agents can promote their destinations through advertisements, which are highlighted as "New Arrivals" on the homepage. This increases exposure and helps attract potential buyers.

3) **Simplified Booking Process:** Buyers can browse, book, and pay for trips seamlessly through the platform. The system offers a user-friendly interface, making it easier for tourists to explore and plan their trips.

4) **Secure Transactions:** The platform ensures that all payments are securely processed through various payment options (Visa, MasterCard, American Express), providing buyers with confidence in making online bookings.

5) **Real-time Updates:** Buyers receive real-time updates on their booking status and payment confirmations, ensuring transparency and better communication throughout the booking process.

6) **User Reporting System:** Buyers can report any issues with listed places, allowing Admins to maintain system integrity by resolving problems or removing unreliable agents and places.

7) **Improved Tourism Experience:** By streamlining the process of finding and booking destinations, the platform creates a more enjoyable experience for travelers, contributing to better tourism management and satisfaction.

Therefore, these benefits make the Tourist Management System a robust solution for managing tourism efficiently, benefiting all involved parties.

Conclusion

In conclusion, the "Tourist Management System" is designed to simplify and enhance the experience of managing and booking tourist destinations. By providing a platform where admins can oversee operations, agents can promote new locations, and buyers can easily explore, book, and report issues, the system creates a more efficient and user-friendly environment for all. This project not only helps streamline the tourism industry but also improves accessibility and interaction between tourists, agents, and administrators, ensuring a smooth and reliable process for everyone involved.