

An Online-Based Hotel Booking and Room Rental Web Application - TourStay

By
MD. MOSTAK AHAMED MRIDUL
ID: 202-15-14424

FINAL YEAR DESIGN PROJECT REPORT

This Report Presented in Partial Fulfillment of the
Requirements for the **Degree of Bachelor of Science in
Computer Science and Engineering**

Supervised by

Tapasy Rabeya

**Lecturer (Senior
Scale)**

Department of Computer Science and
Engineering Daffodil International
University

Co-Supervised by

**Ms Sadia Jannat
Mitu**

Lecturer

Department of Computer Science and
Engineering Daffodil International
University



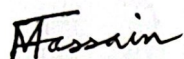
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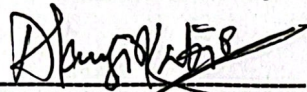
This Project titled “An Online-Based Hotel Booking and Room Rental Application - TourStay”, submitted by MD. MOSTAK AHAMED MRIDUL, ID No: 202-15-14424 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 14 May, 2025.

BOARD OF EXAMINERS



Dr. Md. Fokhray Hossain (MFH)
Professor
Chairman, Department of CSE
Faculty of Science & Information Technology
Daffodil International University

Chairman



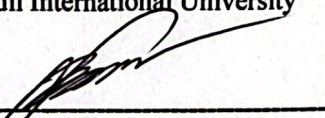
Dr. Md Alamgir Kabir (DMAK)
Assistant Professor
Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner



Ms. Aliza Ahmed Khan (ADK)
Sr. Lecturer
Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner




Nazibur Rahman
Technical Lead – Database Administrator
Telenor – Grameen Phone Account

External Examiner

DECLARATION

We hereby declare that this project has been done by us under the supervision of **Tapasy Rabeya, Lecturer (Senior Scale)**, Department of Computer Science and Engineering, Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

Supervised by:



Tapasy Rabeya

Lecturer (Senior Scale)

Department of Computer Science and Engineering
Daffodil International University

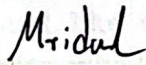
Co-Supervised by:

Ms Sadia Jannat Mitu

Lecturer

Department of Computer Science and Engineering
Daffodil International University

Submitted by:



MD. MOSTAK AHAMED MRIDUL

Student ID: 202-15-14424

Department of Computer Science and Engineering
Daffodil International University

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ABSTRACT

In the midst of the fast growth of technology, online hotel and room reservations are already a necessity among many travelers. The culmination of this academic year presents a Hotel Booking and Room Rental Web Application that soothes the booking process for the owner and for those looking for place to stay. Owners can easily manage their listings, pricing, and booking on the asset, without needing to spend big bucks on the systems or expensive technical training. In this manner, small hotel businesses are managed to conserve costs and increase the potential guests. This website makes it so easy for travelers to search for each hotel and room by a single platform. Users need just a few clicks and be able to view price comparisons, review amenities such as Wi-Fi or parking and see live availability. In addition, travelers are able to make their payment on the bookings securely and conveniently when using the built-in secure payment options available on the platform. With smart search and filter tools, customers can find the best deals that match their needs quickly. This web application aims to improve the hospitality industry by making bookings easier, reducing costs for hotel owners, and saving time for travelers. Designed with a focus on user-friendly features, scalability, and strong performance, it meets the growing demands of modern travelers and hotel businesses, creating a smoother and more efficient booking experience.

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Chapter 1

Introduction

1.1 Introduction

We live in an era where technology plays a vital role in shaping our lifestyle, communication, and business activities. The rapid growth of digital platforms has significantly influenced sectors like education, healthcare, and especially e-commerce. Recent studies show that approximately 80.69% of the global population is engaged with e-commerce platforms, highlighting a strong global shift toward online services.

In Bangladesh, this digital transformation is evident. By 2020, around 53.3 million people were smartphone users out of a total population of 164.69 million. Additionally, Android holds a 75% share of the global mobile market, with over 2.8 billion active users. The Google Play Store had 2.95 million apps in 2020, with projections estimating over 3.48 million by 2021.[1] These statistics reflect a significant rise in mobile and web-based applications, including platforms for travel and accommodation.

The demand for flexible and accessible lodging solutions has led to the popularity of hotel booking and room rental platforms. This project, titled "Hotel Booking and Room Rental Web Application," aims to develop a platform that combines both traditional hotel bookings and peer-to-peer room rentals under one system. Through a feature called "Quick Stay," users can rent out rooms directly to others, making the system more community-driven and accessible.

Built with the MERN stack, this project offers a modern, scalable solution to address the growing need for smart accommodation services in the digital age.

1.2 Motivation

When planning trips or short stays, users often struggle to find affordable accommodation options that suit their needs. Most hotel booking platforms only focus on commercial hotels, leaving out the potential of private, unused rooms that many individuals could offer for short-term rent. At the same time, many people have spare rooms in their homes that remain unused. These rooms could easily be turned into a source of income if there were an easy, trusted platform to rent them out.

This idea motivated me to create a Hotel Booking and Room Rental Web Application that not only allows users to book hotel rooms but also includes a dedicated “Quick Stay” section for peer-to-peer room rentals. This feature is especially useful for budget travelers, backpackers, and travel bikers, who often look for flexible and cost-effective accommodation options. By connecting them with local people willing to rent their extra rooms, the platform provides mutual benefit travelers get affordable stays, and room owners earn extra income.

Additionally, I am motivated by the opportunity to empower ordinary people with a simple way to participate in the sharing economy. They don't need to build a website or understand complex technology. With just a few clicks, they can post their room, manage bookings, and earn money making the platform useful for both service seekers and providers.

This project aims to solve real-world problems and offer a practical, scalable solution for both travelers and local hosts.

1.3 Objectives

Without a clear objective, we cannot achieve proper results. Therefore, before implementation, we must establish the purpose of this website. The purpose of this website is to provide an all-in-one platform for both hotel bookings and peer-to-peer room rentals, aiming to serve travelers as well as individuals who want to rent out their unused rooms.

For Hotel Administrators (TourStay Management):

- Manage and maintain hotel listing directly through the TourStay admin panel.
- Add, Update, or Remove hotel rooms with details such as price, location, and availability.
- Monitor all customer bookings and manage their status efficiently.
- Ensure quality control and consistency across all listed hotels.

For Room Owners (Individual Users):

- Offer a simple and free platform to rent out unused rooms without technical knowledge.
- Post room details, set availability, and manage rental requests.
- Monitor booking activity and receive payments securely.
- Earn extra income by sharing underutilized space.

For Travelers (Customers):

- Search and book hotel rooms or peer-to-peer rentals based on location, budget, and preferences.
- Access reliable information, pricing, and availability in one place.
- Enjoy a convenient, affordable, and user-friendly booking experience.
- Communicate with hosts and leave feedback after their stay.

Overall Features:

- Bridge the gap between professional hotel services and budget-friendly room rentals.
- Promote smart and efficient use of available resources.
- Create financial opportunities for individuals and affordable solutions for travelers.

1.4 Expected Outcome

- **User Registration & Login:**

- Both travelers and room owners will be required to register and log in to access platform features.
- After login, room owners can post their available rooms for rent, while travelers can browse and book rooms or hotels.
- Each user's dashboard will allow them to view and manage their bookings, room listings, and profile information.
- The system will ensure that all users follow platform policies, including providing valid contact details and complying with terms of use.

- **Hotel & Room Listing Management (By TourStay & Users):**

- TourStay administrators will be able to add, update, and manage hotel listings through a secure admin panel.
- Individual users can list their personal rooms for rent in the "Quick Stay" section with details like pricing, availability, and location.
- All listings will be categorized and monitored for accuracy and quality assurance.

- **Room & Hotel Booking System:**

- Users can search for hotels and rooms using filters such as location, price range, and availability.
- Bookings will be processed in real time, with confirmation details sent to both parties.
- The system supports secure transactions through a payment gateway such as SSLCommerz ensuring convenience for users.

- **Mutual Benefit & Economic Impact:**

- Room owners can generate income from unused space, while travelers enjoy affordable lodging options.
- The platform promotes local economic participation by enabling individuals to engage in short-term rental services.

- **Overall Impact:**

- The application will deliver a user-friendly and efficient experience for booking

hotels and rooms.

- It bridges the gap between traditional hotel services and the growing demand for flexible, peer-to-peer rentals, supporting both business and community needs.

1.5 Report Layout

- In Chapter 1, we introduced the concept of "An Online-Based Hotel Booking and Room Rental Application -TourStay." This chapter provided an overview of the topic, including its motivation, objectives, expected outcomes, and an outline of the report's structure.
- Chapter 2, will detail the "Background" of An Online-Based Hotel Booking and Room Rental Application -TourStay, outlining the Terminologies, Related work, scope of the problem and Challenges.
- Chapter 3, will detail the "Requirement Specifications" of An Online-Based Hotel Booking and Room Rental Application -TourStay, outlining the necessary technical and functional requirements.
- In Chapter 4, we will present the "Design Specifications" for the software, describing the architecture and design elements that support the system's functionality.
- Chapter 5, will focus on the "Implementation and Testing" phase, where we will discuss the development process and the methods used to test the software.
- Chapter 6, will examine the "Impact on Society, Environment, and Sustainability," exploring the broader implications of the software's use and its contributions to these areas.
- Finally, in Chapter 7, we will outline the "Future Scope" of the software and provide our concluding thoughts on the project.

Chapter 2

Background

2.1 Terminologies

For Room Owners (Individual Users), the platform offers a cost-effective way to rent out unused rooms without the need for creating a personal website. It allows those users to very easily list their rooms, manage their bookers, and inform when those rooms are available. Listing managers for rooms can easily modify their data and monitor changes like booking applications, verified bookings, and accumulated profits. With this feature users can leverage their underutilized property's more actively and contribute to improving the local sharing economy.

The platform helps customers request accommodation by stating the location, budget, and what type it is, whether from the hotels or from an individual's private listing. Using flexible search filters, travelers can find the best available alternatives in a few short moments. Bookings are being supported by trusted online payment services such as SSLCommerz which ensures hassle-free and secure transaction process. There is customer review once a stay has been completed, where people can give ratings and reviews to help others in their planning.

With the integration of hotel stay and peer-to-peer rentals, the platform creates a single easily navigable platform for accommodation search. The simplification of the process of registering and booking assists both hosts and travelers along with enhanced convenience, cheaper prices, and increased trust. By the heartening complement of conventional hospitality and community-based accommodations, the platform suggests an avant-garde, versatile approach to dealing with travel and accommodation requirements.

2.2 Related Works

Over the years, various online sites in the area of travel and accommodation have hugely benefited the travelers from posting their properties for an easy booking and renting

experience. As a world-wide service that is trusted, Booking.com [2] assists travelers in identifying and reserving rooms in hotels in a plethora of travel destinations. The platform offers a wide variety of accommodation options, engages users to sort out based on such factors as price, destination and amenities, accepts a wide variety of secure payment methods on the platform making it easy for both brief and extended stays.

Analogously, Airbnb[3] has changed the approach to finding and booking accommodation by opening a possibility for hosts to open their living spaces for people. This system offers budget travelers and backpackers unconventional, and usually lower cost places to stay vis a vis standard offering of conventional hotels. Airbnb includes host verification, guest reviews, and secure communication that helps its users to trust each other.

An approach adapted for its peculiar context in Bangladesh has been introduced by Travela.xyz[4] in Bangladesh. The platform allows users to find rental listings, especially with an eye to addressing the needs of bikers and travelers seeking flexible and affordable accommodations. By providing a simple and user-friendly service, Travela lets owners and users to take control, develop local usage of personal homes for temporary stays, and deepen the regional network for tourism.

2.3 Scope of the problem

The task is to develop an operational and intuitive system that can serve room owners and guests in the lodging industry. In developing countries like Bangladesh, many people own unused rooms yet do not even possess technical skills or the financial resources to efficiently exploit rental opportunities. By taking away the necessity for room owners to develop a website, the platform provides an affordable, no-cost platform for listing and management of rental accommodation. The system enables room owners to set room configuration, monitor bookings, and receive payments in a secure way.

Even the budget-conscious travelers, bikers and students, frequently have problems finding affordable and reliable accommodation. Many traditional hotel reservation sites do not work well enough, nor do they include peer-to-peer housing listings. This platform addresses the challenge by providing a combined service consisting of bookings at hotels together with user-posted room for rent – apart from the hotel directly booking and offering its own services. Users enjoy such settings as filtering by location and budget with the support of secure payment options by SSLCommerz.

Through its provision of the opportunity for people to leave evaluations after their stay, the platform promotes transparent communication and helps other people make decisions. Using this platform, unused living spaces connect with increasing need for easy travel accommodation, serving the interests of both accommodating homeowners and travelers.

2.4 Challenges

Building a hotel booking and room rental web application came with several challenges. Combining both hotel listings and peer-to-peer rentals into one platform required careful planning to ensure smooth functionality and user experience. Implementing secure user authentication and integrating reliable payment gateways like SSLCommerz was essential but technically demanding.

Ensuring the application was responsive across all devices and browsers also posed a challenge, as did protecting user data and maintaining privacy standards. Additionally, simulating real-world booking scenarios during testing was difficult due to limited access to diverse user-generated content.

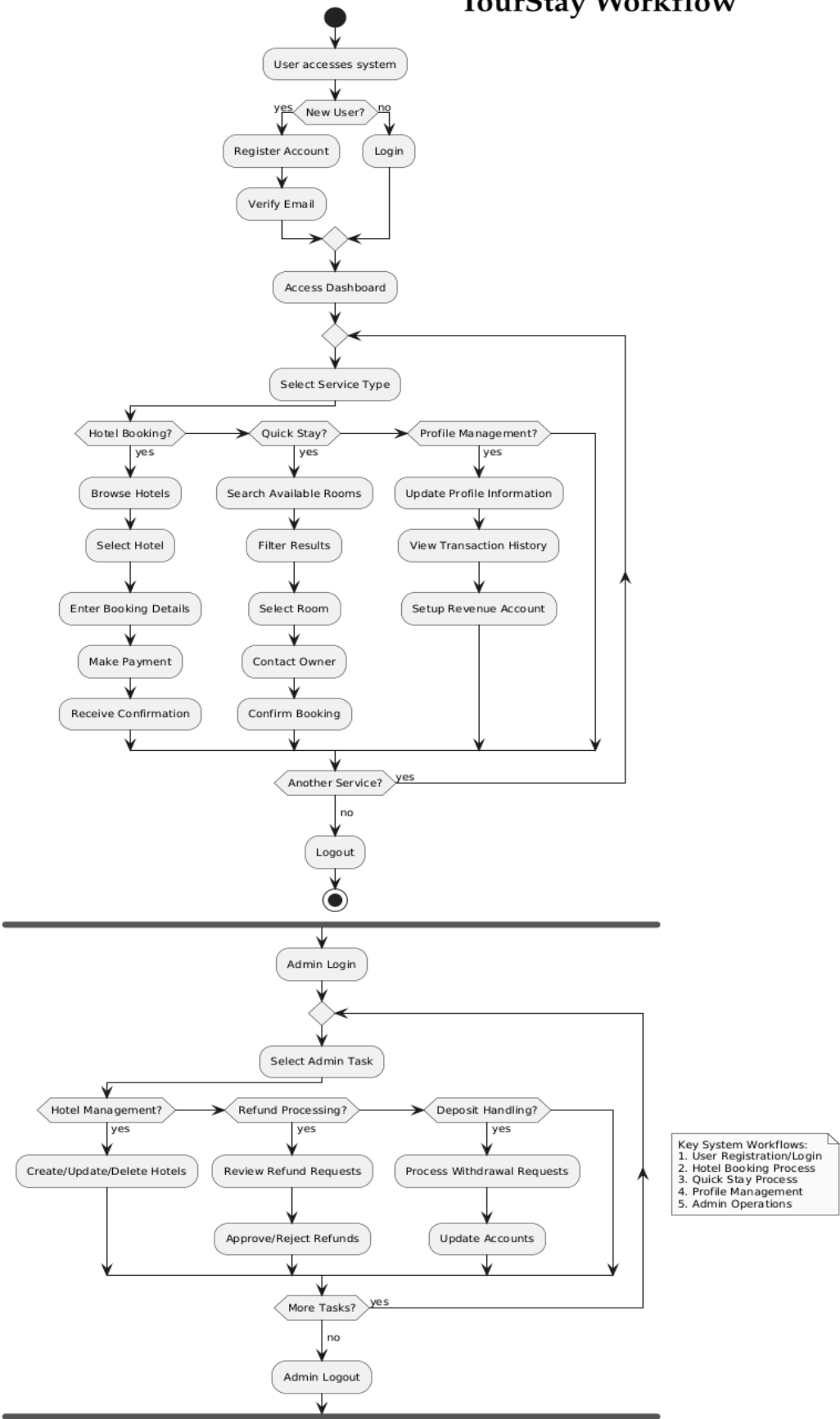
Chapter 3

Requirement Specification

3.1 Business Process Modeling

BPM involves representing and visualizing business processes in a graphical format. A workflow diagram is a visual depiction of the step-by-step process for a specific system or task. In the context of a Smart E-commerce Site, this diagram illustrates the various steps involved in posting, ordering, and delivering goods. The accompanying figure contains the workflow for Tour Stay.

TourStay Workflow



Key System Workflows:
 1. User Registration/Login
 2. Hotel Booking Process
 3. Quick Stay Process
 4. Profile Management
 5. Admin Operations

Figure 3.1 Workflow of TourStay

3.2 Functional and Non-Functional Requirement Analysis

Functional Requirements

Functional requirements indicate 'should' actions and responses to user interaction by the system. These establish, the necessary characteristics and behaviors that the system should support to address the needs of users and business.

Essential characteristics of the TourStay application are the following:

User Registration and Login: Customers need to be able to sign-up and sign in safely in order to use the platform.

Room Posting (Quick Stay): The registered users are able to post rooms for rent; upload room images and disclose prices and availability.

Room and Hotel Booking: Travelers can search, view and book rooms or hotels depending on their tastes.

Admin Dashboard: The admin can process all hotel listings, room posts, users and transactions, and be able to edit, approve, or delete the content.

Payment Integration: Users can use integrated gateways such as SSLCommerz to send secure payments online for bookings.

Search and Filter: Users can search rooms or hotels by location, price or availability and use filters on results.

Booking Management: Room owners and travelers can see booking history.

Review and Ratings: When users complete a stay they are able to review and rate rooms and hotels which is useful for visitors' decision making.

Non-Functional Requirements

Non functional requirements define the quality attributes and the quality operating standards to be fulfilled by the system. These guarantee that; the application runs reliably, securely, and efficiently.

Usability: The interface should be simple, easy to use for all classes of the user.

Performance: No page loading and booking processes delays should be experienced.

Scalability: The system needs to scale up to including a growing number of users, room listings and bookings while maintaining performance.

Security: The secure authentication, HTTPS and encrypted storage should be used to secure all user data and transactions.

Availability: The platform should be around the clock and for a few hours.

Maintainability: The codebase should be nicely modularly designed with clear documentation and contain resources for future enhancement.

Compatibility: The system should work fine in all the significant desktop and laptop browsers such as Chrome, Firefox, Edge and Safari.

3.3 Features

We have various characteristics in the suggested system. These are the primary attributes.

- Register using Valid Email and Valid Phone Number
- Login using valid credentials.
- Home Page.
- Profile Update.
- Create, Update and Delete room for rent
- Room owner can easily change the room availability from update room section.
- Room owner can check balance statement.
- For the getting revenue user can set their withdrawal information.
- Search hotel through the place name, check-in, check-out and guest information.
- Search Quick rooms through only the place name.
- View hotel and room information.
- View Quick rooms details for QuickStay.
- Reservation option.
- Online Payment.
- Sorted list for hotels and quickroom orders.
- Easy Cancellation.
- Review both section.
- Sign out.
- Chatbot

3.4 UML Diagram

The UML (Unified Modeling Language) Diagram for TourStay application offers a structured state of affairs with regards to the important components that make up the system and their relation to one another. It visually describes the interaction of the different classes like User, RoomOwner, Traveler, Admin, Booking, Room, Hotel, and Payment. Each class contains attributes and methods within it, which defines the system's functionality clearly. For instance, login credentials and a role may belong to the User class, while the Room class could have information like the price, availability, and images. Booking class links users with rooms or hotels, saves the status, date, and

payment information of booking. Admin can manage hotels, users, and transactions and the room owners can manage their own listings. Relationships such as associations, generalizations, and dependencies are applied to demonstrate the way in which components relate. With the UML diagram, we can gain a better understanding of the architecture of the application as well as a blueprint that can support design, development, and scalability in the future.

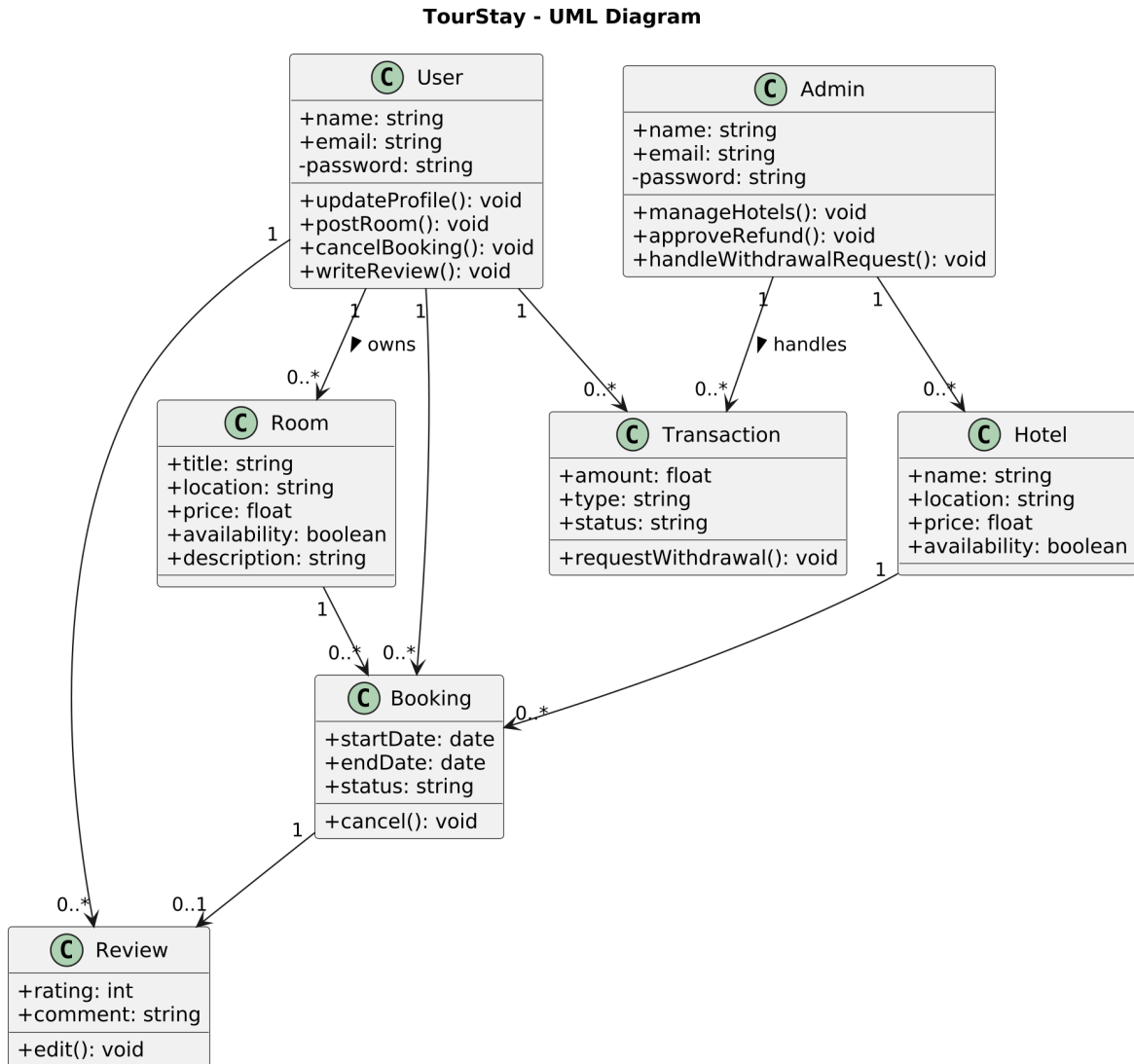


Figure 3.2 UML Diagram

3.5 Sequence Diagram

The Sequence Diagram of the TourStay application shows the interactions between users, web interface, backend server, and database in sequence while logging in, booking a room, and posting a room. It visually demonstrates the process of a traveler’s search for rooms, a booking request, and confirmation. The process starts when the user makes an entry through the interface and the entry travels to the server. The server requests the required data from the database and processes the booking and updates the appropriate records. In turn, a confirmation response is sent back to the user. On the same note, when a room owner creates a new room, the sequence displays how the

data is being submitted, stored and passed to other users. The diagram also includes payment processing with the help of the third-party services such as SSLCommerz to guarantee safe handling of transactions. This sequence-based representation aids in the clarification of how communication flows and what events follow the others, in a way that all system interactions are processed in a logical and effective manner.

3.5.1 Hotel Booking Process

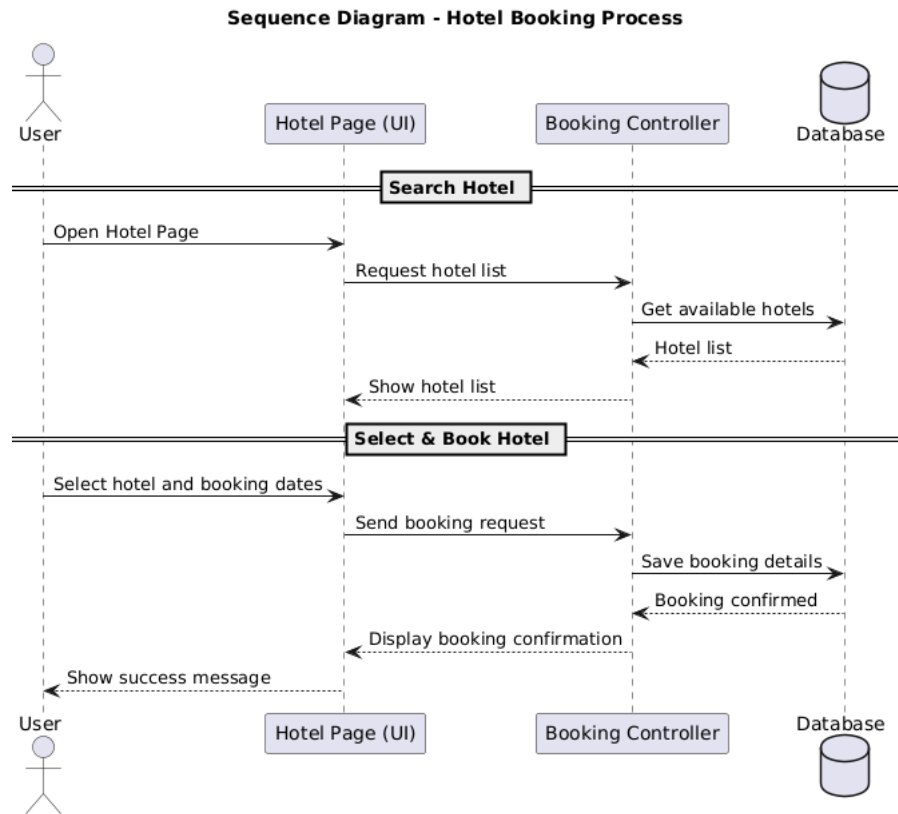


Figure 3.3: Sequence Diagram for Hotel Booking Process

3.5.2 QuickStay Booking Process

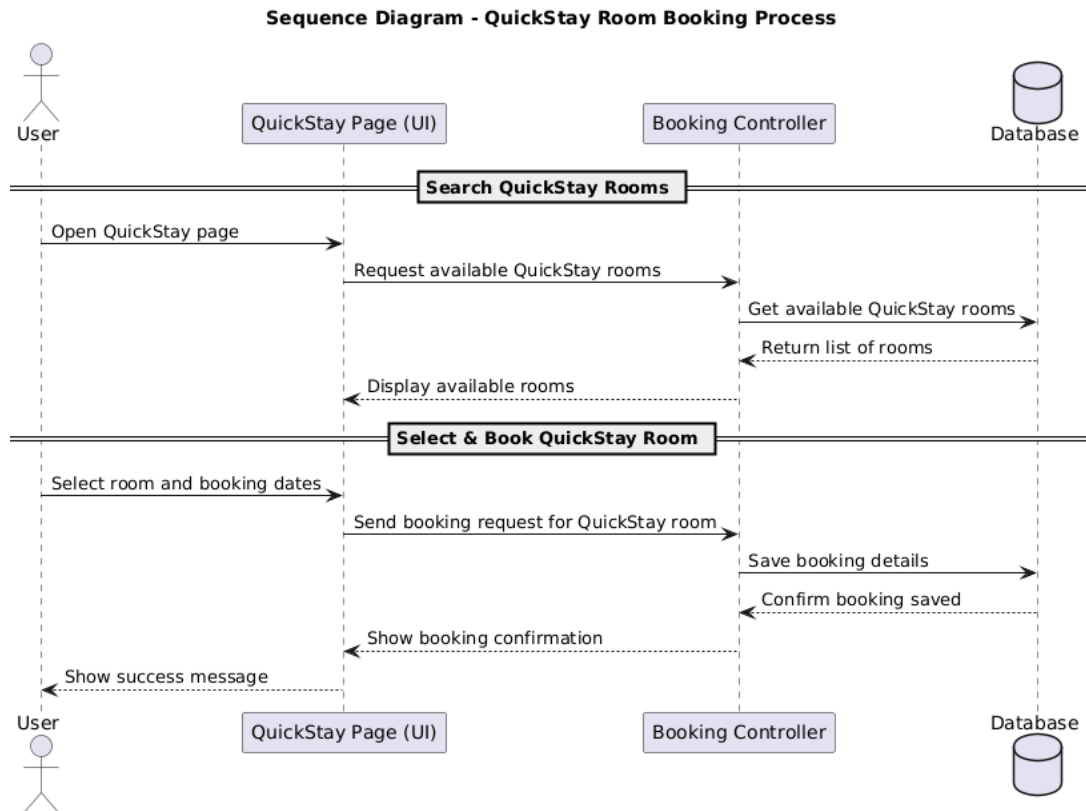


Figure 3.4 Sequence Diagram for QuickStay Room Booking Process

3.6 Data Flow Diagram

Data Flow Diagram (DFD) helps show how data moves in the TourStay system. It depicts the interactions between users, administrators, and system components, having information on how data is received, processed, and stored. The DFD highlights major modules including user's registration and login, booking of rooms and hotels, posting rooms (Quick Stay), processing payments, and admin management. It shows how travelers search for rooms, make bookings and payments while room owners manage rooms listings and bookings. The admin manages all the user activity, room data, and transactions. Through such demarcation of these flows the diagram guarantees a complete understanding of movement of data and efficient system designing and development.

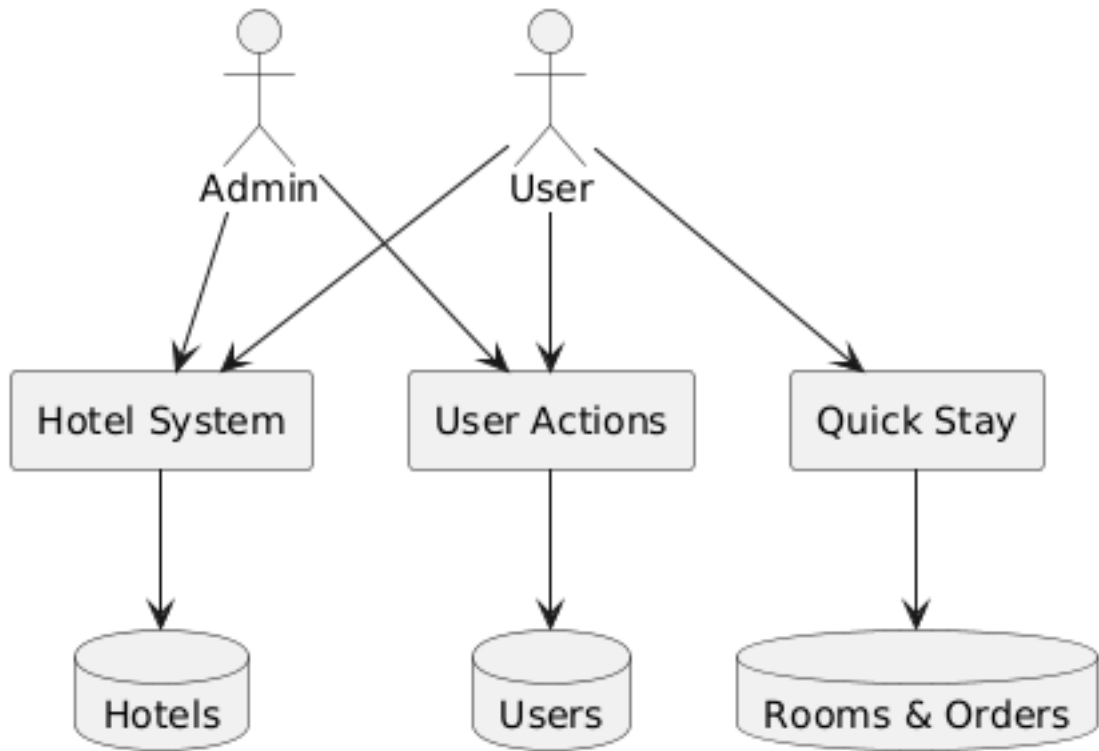


Figure 3.5: First Level DFD

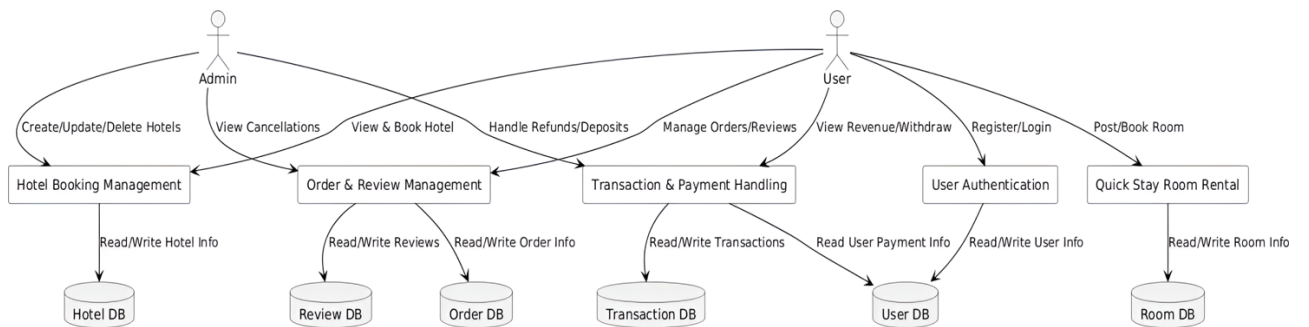


Figure 3.6: Second Level DFD

Chapter 4

Design Specification

4.1 Front-end Design

The Front end of a web application is the client-side interface where users interact directly. It includes the visual elements such as buttons, forms, images, typography, and layout that contribute to the overall user experience. A well-designed front end is essential to attract users and ensure their satisfaction by making navigation intuitive and visually engaging.

In this project, front-end development is done using a JSX + CSS combination, which allows for clear structure and styling of components. JSX (JavaScript XML) enables writing HTML-like syntax directly in JavaScript, making it easier to manage components using React.js, which is the primary framework used. This approach promotes modularity and reusability across the application.

To enhance styling and layout, CSS is used along with components from MUI (Material UI). MUI provides a responsive and consistent design system, which is especially helpful in building the admin panel, where data is displayed in organized tables. For icons, MUI Icons are used to improve UI clarity and accessibility.

Interactive feedback and alerts are managed with React Toastify, which provides non-intrusive notifications for user actions like bookings, form submissions, and errors. To further improve user engagement, a chatbot feature is implemented using react-chatbot-kit, allowing users to receive real-time assistance directly from the interface.

Overall, the front-end is designed to be fully responsive, visually appealing, and functional across different devices and screen sizes, ensuring a seamless experience for both admins and customers.

4.2 Back-end Design

The back end of a web application refers to the server-side architecture that handles all the background processes, including data processing, storage, authentication, and communication between the client and the database. While users interact with the visual interface on the front end, the back end ensures that all operations are executed securely and efficiently.

For this project, the back-end development is built using Node.js and Express.js, structured with the MVC (Model-View-Controller) design pattern. This approach ensures clean, organized, and maintainable code by separating business logic, application routes, and database models.

MongoDB is used as the primary database, and Mongoose serves as the Object Data Modeling (ODM) tool to manage schema definitions and data relationships. To enhance functionality, several essential libraries are integrated:

- **Lodash:** for utility functions and efficient data handling.
- **Bcrypt:** for securely hashing user passwords during registration and login.
- **JWT (JSON Web Token):** for implementing secure user authentication and session management.
- **Cloudinary API:** for efficient image uploads and deletions, ensuring media files are managed securely in the cloud.

For payment processing, the application integrates SSLCommerz Sandbox API, which allows users to make secure and reliable online transactions during room or hotel bookings.

By combining these tools and technologies, the back-end system ensures scalability, performance, and security, creating a stable environment that supports all the essential operations of the application.

4.3 Implementation Requirements

In below mentioned the requirements for implementing this project:

Hardware specification

Table 4.1: Hardware specification

Processor	Apple Silicon M1
Disk Space	256GB SSD
RAM	8GB
Display	External 1920*1080
Graphics Card	N/A

Software specification

Table 4.2: Software specification

Operating System	MacOS Sequoia 15.2
IDE	Visual Studio Code
Database	MongoDB
Web Browser	Google Chrome
API Testing	Postman

Chapter 5

Engineering Standards and Design Challenges

5.1 Compliance with the Standards

There are some relevant industry standards that were considered, and followed in the development of the Hotel Booking & Room Rental Web Application in order to provide security, performance and maintainability. The software and communication standards, as well as alternative approaches taken into consideration during the development process, are presented in this section.

ISO/IEC 25010 standard was quoted for the software quality. In addition to being systematic, this standard is a model for the assessment of usability, security, performance efficiency, and reliability of a software. It facilitated the development to develop a stable application that is friendly for use. Although Agile approaches like Scrum and Kanban were contemplated for development flow as a result of flexibility they feature, they were neither established as formal standards, but as practices employed in managing tasks distribution and iteration cycles.

In perspective of security and data communication, the application employs HTTPS with TLS 1.2+, for secure data availability between the client and server. This standard is important to encourage sensitive data like login details and payment details. Frontend and backend systems communication was done using RESTful APIs.

For payment integration, the application is compliant to local requirements by integrating with SSLCommerz payment gateway that works by Bangladesh Bank's Digital Transaction Standards. Equivalents such as Stripe, or PayPal were reviewed, but not selected where they lacked geographical support, or issues of support.

Together, these decisions give a rock-solid, secure, and expandable base for the application, and to its long-term usability, and local flexibility.

5.1.1 Software Standards

Software standards are necessary in substantial obligation that the TourStay application meets the criteria of the industry regarding quality, speed, and security. Following its fundamental software standard, the TourStay project follows ISO/IEC 25010, which concerns the assessment of the quality of software with regard to such aspects as functionality, usability, maintainability, and performance. This standard makes an application not only functional, but user-friendly, scalable and able to change with the future. An alternative standard was considered: the Agile Software Development, in particular the Scrum, which gives focus on iterative development, and flexibility. However, Scrum was not selected to serve as the main approach to software quality determination as it does not suggest specific quality measurements on structure as ISO/IEC 25010 does. As well, RESTful APIs were used for integration of the system to make certain the application conforms to contemporary web communication protocols for scalability and ease of use. All API interactions are SSL encrypted using HTTPS to ensure a secure, encrypted environment with which to transfer data. These standards for software guarantee that the TourStay platform provides high quality user experience, security, and it is designed following best practices of modern software development.

5.1.2 Hardware Standards

It is imperative therefore to employ certain hardware standards in order to maintain sufficient performance levels and consistency in the TourStay application operating environment in different desktop and laptop environments. Being a completely web-based application specifically created for browser utilization, Tourstay requires no integration with mobile or native device. It has been designed to work in optimum form on modern OS's like Windows 10 or later, macOS, and compatible Linux versions, accessed best through recent versions of the major browsers such as Google Chrome, Mozilla Firefox, Microsoft Edge, or Safari. To maintain good performance, the minimum requirement is 2GB of ram and dual-core processor when browsing rooms, reservation and admin duties. Development of the interface is performed using React.js, MUI, CSS which allows making the interface compatible with different screen resolutions, including standard HD and full-HD displays. These are hardware standards that aim at ensuring TourStay platform provides everybody using the platform from desktop or laptop browsers, with a stable, secure and easy to use

platform.

5.1.3 Communication Standards

In order for fast, reliable, and secure data to be transferred between users and the TourStay system, there is the need for communication standards. In order to keep data integrity and secure user information, HTTPS (HyperText Transfer Protocol Secure) was employed as a master communication protocol. It guarantees that all the data transmitted between the user's browser to the server will be encrypted hence blocking unauthorized access into sensitive elements like login, and payment details. RESTful APIs were developed in the backend communication to facilitate easy communication between the frontend and the server. RESTful APIs provide a light weight and scalable means of communication and is very suitable in cases of bookings data, user profiles, and transaction records. JSON (JavaScript Object Notation) was selected as a standard of data exchange between client and server because of ease-of-reading, brevity, and interoperability with latest JavaScript-oriented technologies. JSON also permits fast parsing, and easy data management, which is convenient for real-time processes including viewing the details of a room and change of booking status. During the planning phase, alternatives, such as WebSockets, to real-time protocols, were considered but not applied, since the current system demands did not prescribe real-time two-way exchange of data. With these standards, TourStay guarantees that the users enjoy a rapid and secure experience interacting on the platform, at high compatibility, and system reliability with up-to-date web communication protocols.

5.2 Impact on Society, Environment and Sustainability

The TourStay application is beneficial to society, the environment in the long-term. Socially, it promotes local communities because people can earn an income by renting out unutilised rooms, which stimulates economic activity at a grass roots level. Apart from that, it encourages cheap travel, making short term visits easier for the students and travelers on a budget as well as bikers. In terms of environment, through utilising the existing residential spaces, TourStay reduces the demands for large-scale hotels building and thereby, decreases the carbon footprint in building materials, energy, and land use. Sustainability wise the platform is digital meaning there will be less need for paper booking systems and reduced physical use of resources. Its structure

underpinnings continued use and future scalability without a heavy infra-structural injection. By bringing travelers closer to local hosts on a secure and user-friendly platform, TourStay helps to promote responsible travel and economic empowerment while creating smarter use of already existing resources making it a sustainable and socially beneficial solution in the travel and hospitality sector.

5.2.1 Impact on Life

The TourStay application enhances the life of its users positively as it becomes a very convenient and cheap way of booking an accommodation. It allows travelers; particularly students, lone explorers and budget conscious travelers to get accommodation that suits them without the trouble of high hotel bills or complex booking systems. For room owners the platform is a simple way to monetize unused space by renting it out in order to stabilize their finances. Through technology, TourStay also creates trust and interaction amongst guests and hosts; hence cultural exchange and community participation. The platform ensures that it is easier, and cheaper to have more people travel to new places, attend events or take up opportunities that previously were impossible because of lodging restrictions. By doing so, TourStay enables the increase of mobility, economic opportunity and personal freedom across people's everyday life.

5.2.2 Impact on Society & Environment

At the societal level, TourStay encourages inclusivity because through it, a variety of users stand to benefit from the platform, including; travelers, students, and people with rooms that are not in use. Enabling individuals to do renting out of spare spaces, the application allows for the local income generation, and the possibility of taking part in the digital economy no matter where the person is located and his or her background. Such an all-encompassing attitude towards a customer helps to create more stable communities and promote culture of sharing and collaboration. TourStay makes a contribution to sustainability environmentally by saving existing residential spaces rather than depending wholly on new hotel infrastructure. This contributes to mitigate the ecological footprint by mega-construction, consumption of resources and spending of energy. As a computerized system it also reduces the need for printed receipts, booking forms and advertising and thus paper wastage. By following a practical and eco-aware model, TourStay complies with wider trends to encourage

environmental responsibility while working for the benefit of society.

5.2.3 Ethical Aspects

Ethically, TourStay tend to ensure fairness, privacy and responsible usage is kept throughout the platform. It guarantees that all user-generated room listings are in tandem with platform policies and local rules thereby bringing transparency and credibility on the site between hosts and travelers. The system ensures safety of the data belonging to the users by secure login, encrypted negotiations, and role based access control, at all times maintaining privacy and confidentiality. TourStay also management excludes discriminatory practices as there is equal provision of services disregarding user backgrounds. Listings and user interactions are monitored to avoid abuse or exploitation creating a safe environment free of disrespect to all participants. By promoting responsible hosting and honest guest behavior, TourStay enforces ethical sources that develop trustful and inclusive digital community.

5.2.4 Sustainability Plan

The sustainability plan of TourStay is aimed at making the platform long term successful and impactful economically as well as from the environmental perspective. The application is set up to function as an affordable solution that enables users to post and book rooms without facility infrastructure, limiting new construction environmental impact. Economically TourStay helps sustainability as it develops avenues for one to make a living from the available resources meaning a circular sharing economy. The platform is developed with scalable web technologies and cloud hosting services that are able to lessen energy consumption and lessen server volume. TourStay is also built on being maintainable and adaptable allowing for future improvement and inclusion of eco-friendly characteristics such as energy efficient room listings, or green travelling options. Over the course, the platform is planning to contribute to a more sustainable travel ecosystem, by encouraging responsible tourism, minimizing the strain on the environment and encouraging digital innovation in accommodations.

5.3 Project Management and Financial Analysis

Effective Project management and financial planning are essential for the success and sustainability of the TourStay application. This section provides an overview of the estimated cost, budget alternatives.

Table 5.1: Financial Analysis of this project

Expenses Category	Cost (BDT)
Hosting and Domain	10,000
API Services & Payment	20,000
Marketing & Promotion	10,000
Total	40,000

5.4 Complex Engineering Problem

The TourStay development forces solutions to complex engineering challenges that range over multiple categories in web application programming. It entails provision of secure user authentication and role-based access for various user types -admin, room owners and travelers. The system needs to process the data on real time booking, avoid double booking and provide the availability updates correctly. It also includes third party incorporations such as SSLCommerz for secure online payments and Cloudinary for image management which increases system complexity. The platform would need to feature conflictual requirements, e.g., simplicity of use for the general users, but at the same time strict security and administrative control. Besides, it must follow web development standards without losing performance and data integrity and scalability as the number of users and listings increases. These inter-dependent elements need to be highly coordinated in order to produce a smooth, secure, and scalable solution.

5.4.1 Complex Problem Solving

Table 5.2: Mapping with complex problem solving.

EP1 Dept of Knowledge	EP2 Range of Conflicting Requirements	EP3 Depth of Analysis	EP4 Familiarity of Issues	EP5 Extent of Applicable Codes	EP6 Extent of Stakeholder Involvement	EP7 Inter- dependence
✓	✓	✓			✓	✓

Mapping with knowledge Profile for EP1

Table 5.3: Mapping with knowledge Profile

K3 Engineering Fundamentals	K4 Specialist Knowledge	K5 Engineering Design	K6 Engineering Practice	K8 Research Liturature
✓	✓	✓	✓	

5.4.1.1 Justification for EP Attributes Mapping

- **EP1 – Depth of Knowledge:**

Needs strong knowledge of full-stack development (MERN), secure authentication, third-party payment interface integration and database design for up-to-date booking information.

- **EP2 – Conflicting Requirements:**

Kind of balancing affordability for travelers and vs. earnings for room owners. providing a basic UI to the users but still providing an advanced admin control; secure handling of transactions – vs. ease of access to data.

- **EP3 – Depth of Analysis:**

The real time management of availability, booking status and user roles is required. Data integrity enforcing, double booking prohibiting and secure logins handling need logical complexity.

- **EP6 – Stakeholder Involvement:**

There are different roles for admins, travelers and room owners. Both need individual features, and behavior of system should be modified to meet their demands but providing data security and consistency of flow.

- **EP7 – Interdependence:**

The platform integrates multiple components: user authentication, payments, management of rooms, notifications, chatbot and admin control. The dysfunction in one can wreck the entire experience.

5.4.1.2 Justification for Knowledge Profile Mapping (linked to EP1):

- **K3 – Engineering Fundamentals:**

Understanding client-server architecture, database design (MongoDB), and RESTful API logic are required.

- **K4 – Special Knowledge:**

Integration of SSLCommerz for payments, Cloudinary for image handling, and chatbot frameworks like react-chatbot-kit demonstrate specialist tool usage.

- **K5 – Engineering Design:**

Requires system architecture planning, user role segregation, route-level permission control, and future implementation of live map-based room browsing.

- **K6 – Engineering Practice:**

Implementation of best practices in MVC structure, token-based authentication (JWT), middleware use, testing, version control (Git), and deployment on platforms like Render.

5.4.2 Engineering Activities

Table 5.4: Mapping with complex engineering activities

EA1 Range of resource	EA2 Level of Interaction	EA3 Innovation	EA4 Consequences for social and environment	EA5 Familiarity
✓	✓	✓	✓	✓

5.4.2.1 Justification for Engineering Activities Mapping:

- **EA1 – Range of resource:**

Uses multiple technologies: MongoDB, Express.js, React, Node.js, SSLCommerz, Cloudinary, MUI, chatbot libraries, etc.

- **EA2 – Level of Interaction:**

Interaction required between frontend/backend modules, third-party services, user types, and admin panel functionalities.

- **EA3 – Innovation:**

Combines hotel booking and peer-to-peer room rental in one system. Planned live map-based Quick Stay display adds novelty.

- **EA4 – Consequences for social and environment:**

Encourages local tourism, helps people earn through empty spaces, and supports low-budget travelers — promoting digital and economic inclusion.

- **EA5 – Familiarity:**

Adapts known web technologies in a new context (local room rental), solving region-specific challenges (e.g., integrating local payments like bKash /SSLCommerz).

5.5 Summary

In this chapter the engineering standards and ethics, and technical difficulties experienced in the development of the TourStay web application are described. It addresses compliance to software and communication standards as well as covering the project's social, ecological, and moral implications. The sustainability plan is indicating the sustainable nature of the platform over the long run through economic inclusion and prudent use of digital practices. The chapter continues its examination of challenging engineering issues behind secure user management, data integrity, and third-party integration. It correlates the project to fundamental knowledge areas and engineering actions that reveal compliance with professional criteria and the technicality and inventiveness to produce a scalable and user-friendly accommodation solution.

Chapter 6

Implementation

6.1 Implementation of Front-end Design

Admin panels consist of a set of web pages designed for the backend user interface of a web application, utilizing HTML, CSS, JavaScript, and MongoDB or other JavaScript libraries. These pre-built pages are integrated into the web application to facilitate various operations, including website maintenance, user and content management, software installation and configuration, as well as data tracking such as network traffic and user visits. This helps enhance website performance. In Below mentioned the UI design for this application.

TourStay Landing Page

This landing page display Navigation bar, Hotel search bar and many features.

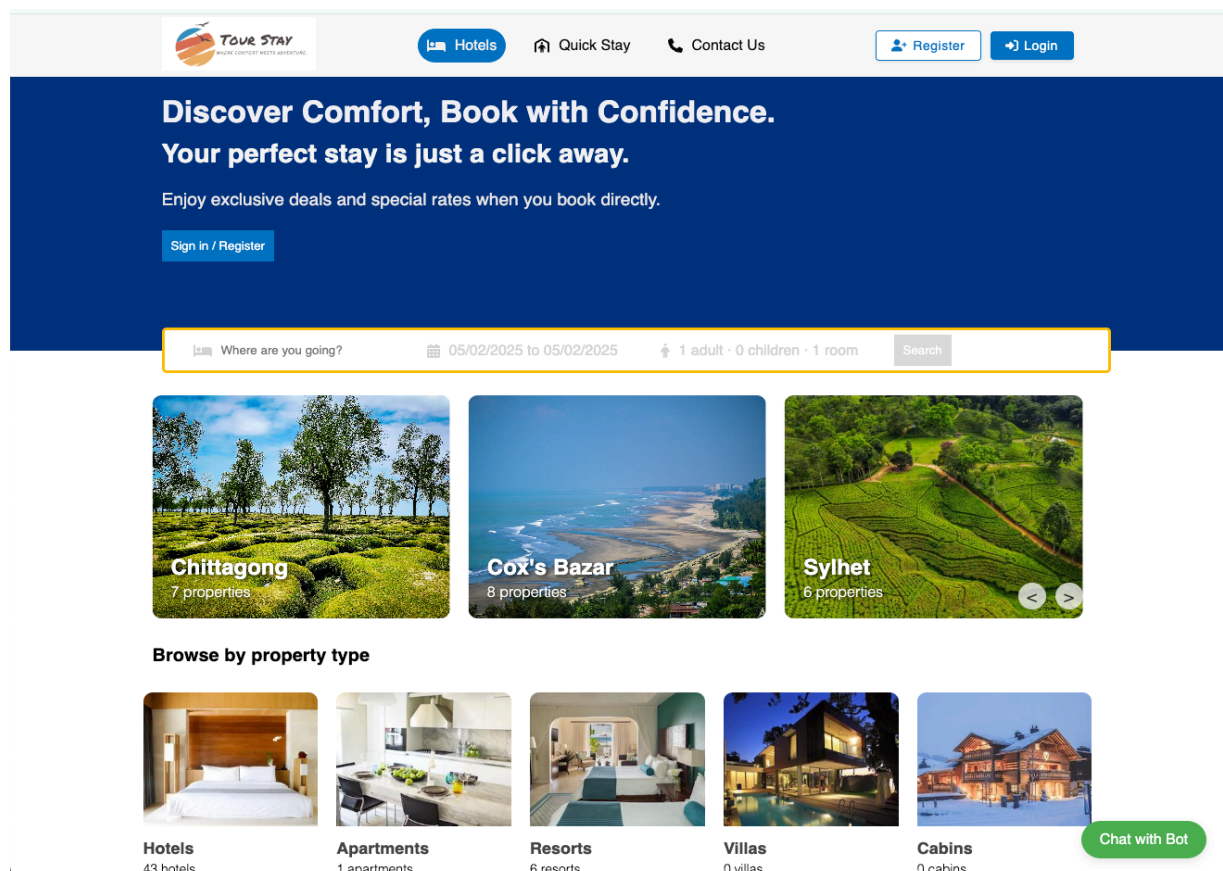



Figure 6.1: Landing Page

TourStay Registration Page

This is the registration page for the site. If the user doesn't have account than the user creates their account from the register page.

Create Account

 **TOUR STAY**
WHERE COMFORT MEETS ADVENTURE.

Full Name *
Enter your full name

Username *
Enter username

Email *
Enter email address

Password *
Enter password

Confirm Password *
Confirm your password

Phone Number *
Enter phone number

City
Your city

Country
Bangladesh

Register

Already have an account? [Login](#)

Figure 6.2: Registration Page

Tour Stay Login Page

This is a login page. On this page, user can enter their valid credentials for login.

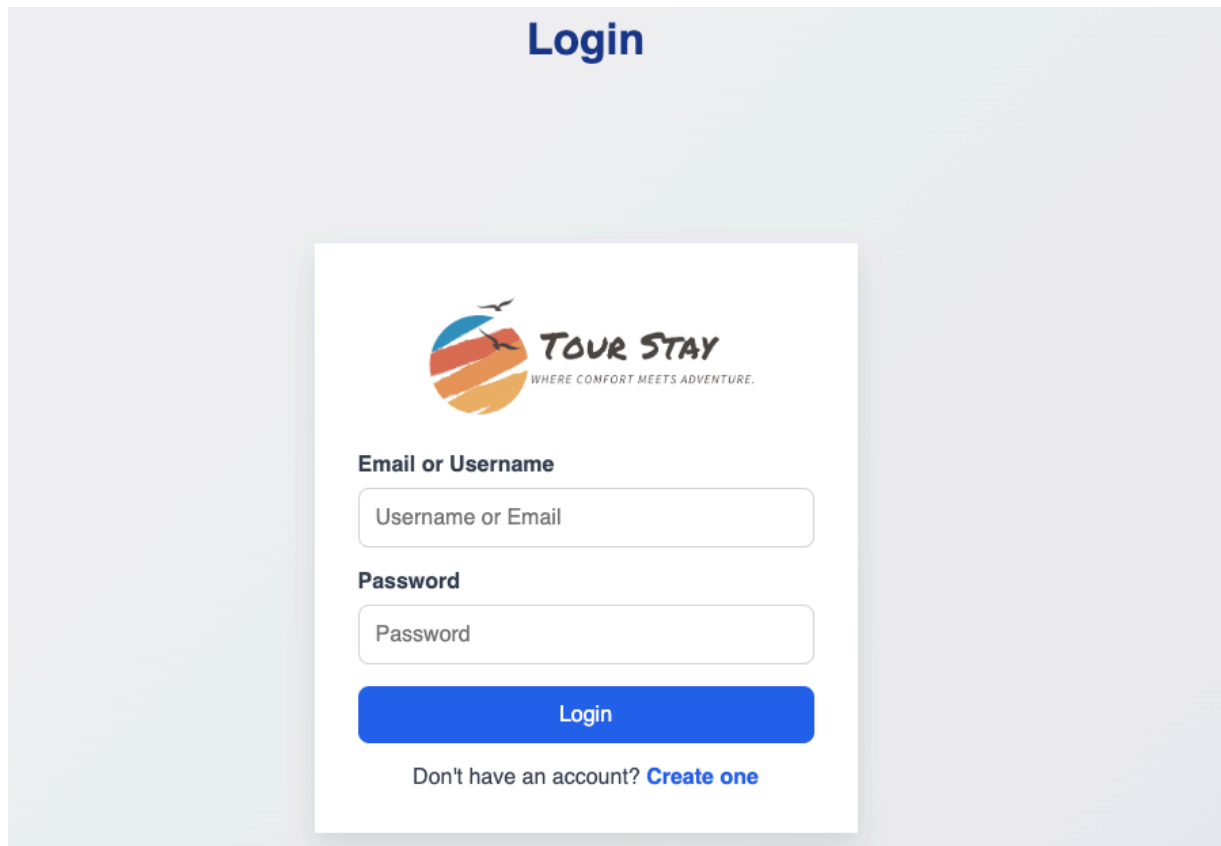


Figure 6.3: Login Page

Input Hotel Searched Data

For searching hotel input data to the search bar

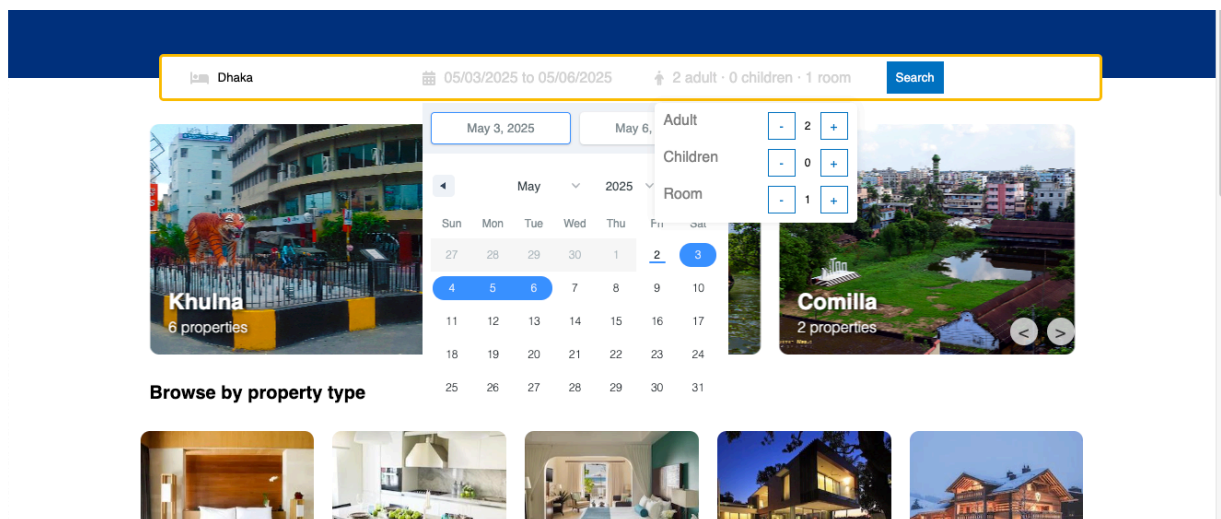


Figure 6.4: Inputting data for search hotel

Searched result for hotels

In this page user can choose hotel for themselves.

The screenshot displays the TOUR STAY website interface. At the top, there is a navigation bar with 'Hotels', 'Quick Stay', and 'Contact Us' buttons, along with user profile and 'Orders', 'Logout' options. A search filter on the left allows users to specify 'Destination' (Dhaka), 'Check-in Date' (05/03/2025 to 05/06/2025), and 'Options' (Min price per night: 100, Max price per night: 100000, Adult: 2, Children: 0, Room: 1). The main content area features three hotel listings:

- Le Méridien:** 6.6km from airport railway station. Price starts from BDT 40000. Amenities include WiFi, Pool, Parking, and +10 more.
- Pan Pacific Sonargaon:** 1.6km from Bashundhora Shopping Complex. Price starts from BDT 16000. Amenities include WiFi, Pool, Parking, and +8 more.
- InterContinental Dhaka by IHG:** 1.2km from Bangladesh National Museum. Price starts from BDT 28000. Amenities include WiFi, Pool, Gym, and +10 more.

Each listing includes a 'See availability' button and a 'Chat with Bot' button at the bottom right.

Figure 6.5: Search Result for Hotel

Hotel Detailed Page

When any user tap to the “See availability” button from the searched page then this page will come.

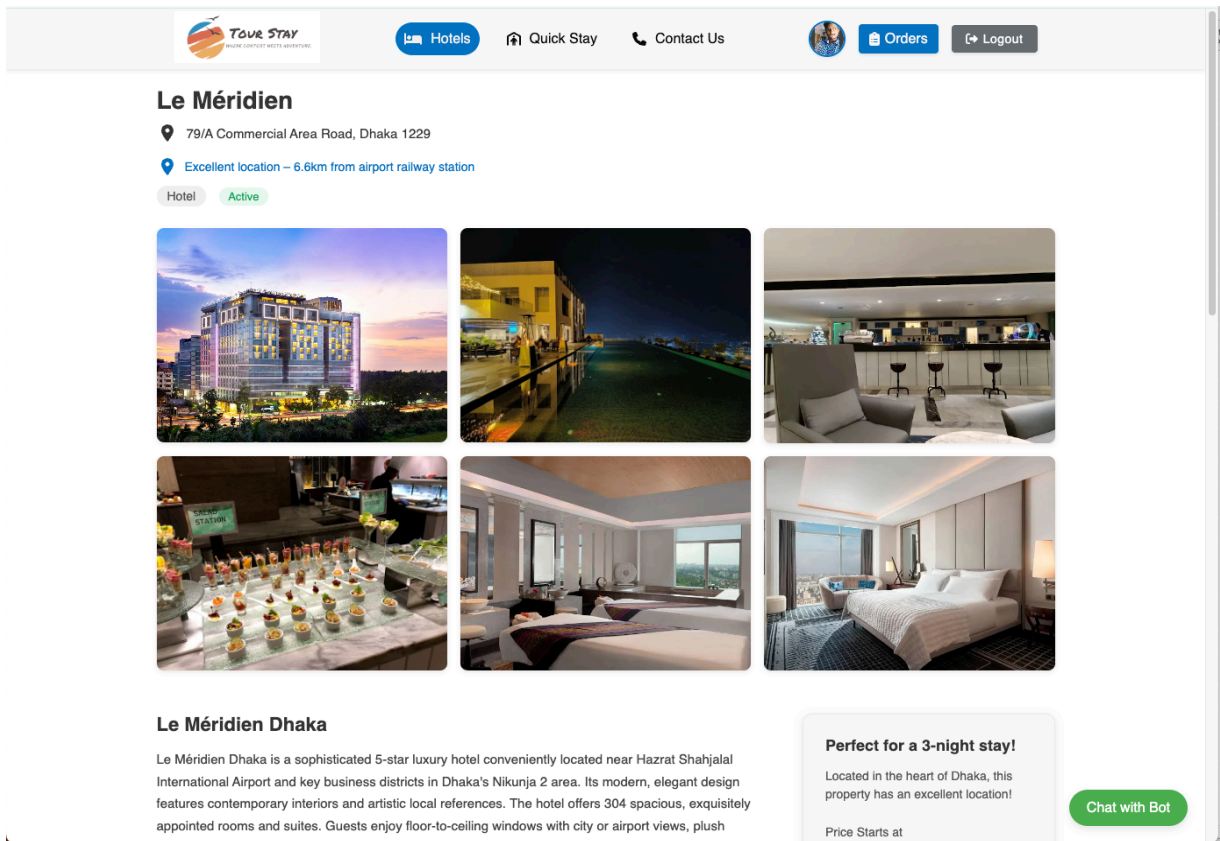


Figure 6.6: Hotel Detailed Page

Rest of this page

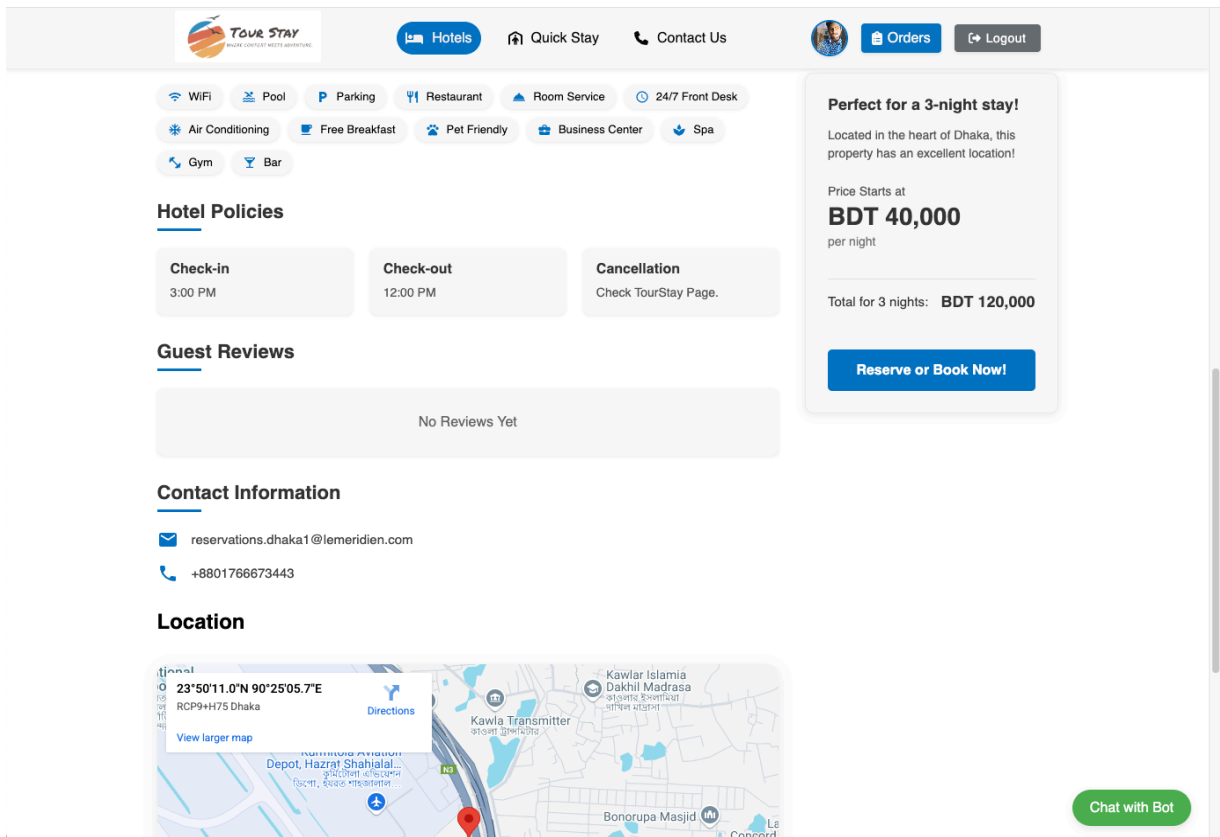


Figure 6.7: Rest of the hotel detailed page

Tap to the 'Reserve or Book Now' button

When any user taps to the button then this page will come.

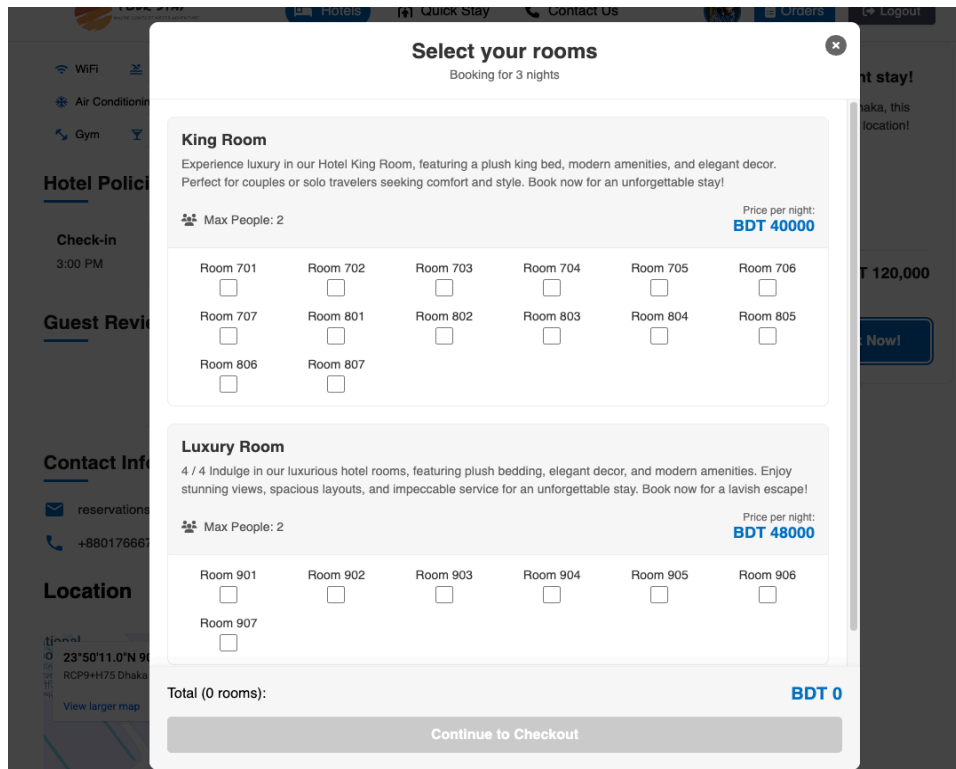


Figure 6.8: Room selection page

Room selects and tap to 'Continue to Checkout' button

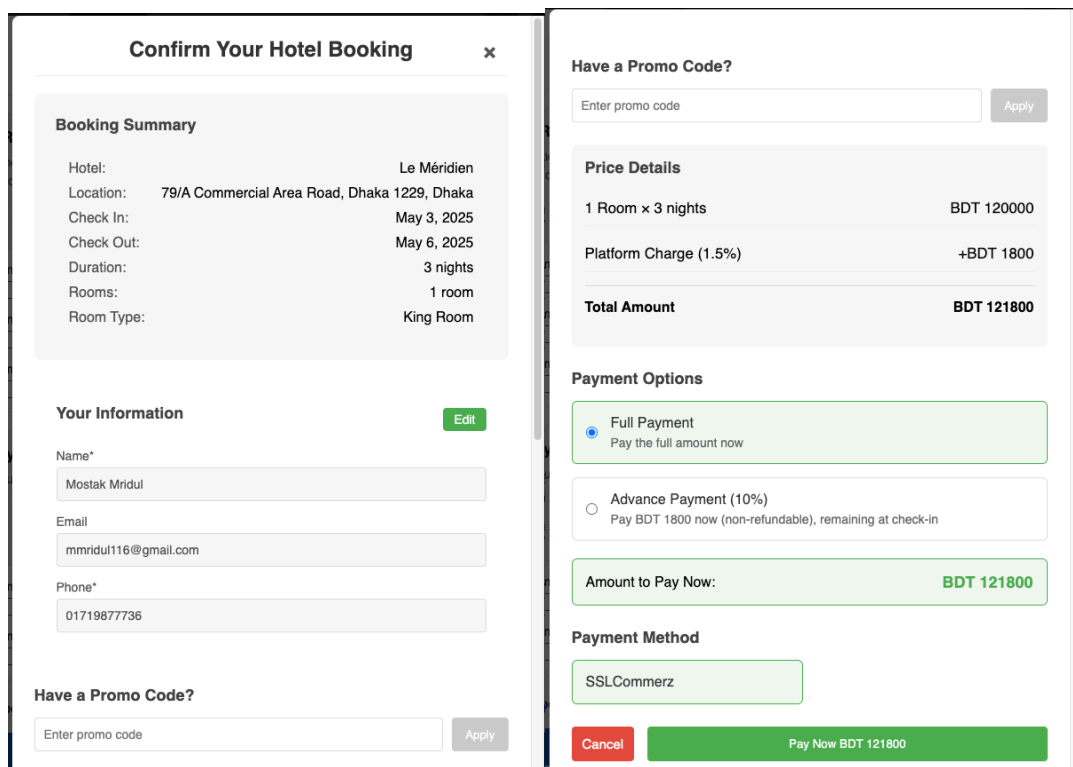


Figure 6.9: Hotel Order Confirmation

Tap to cancel to go back to the hotel page and if user tap to “Pay Now” button and successfully pay then these pages will be come.

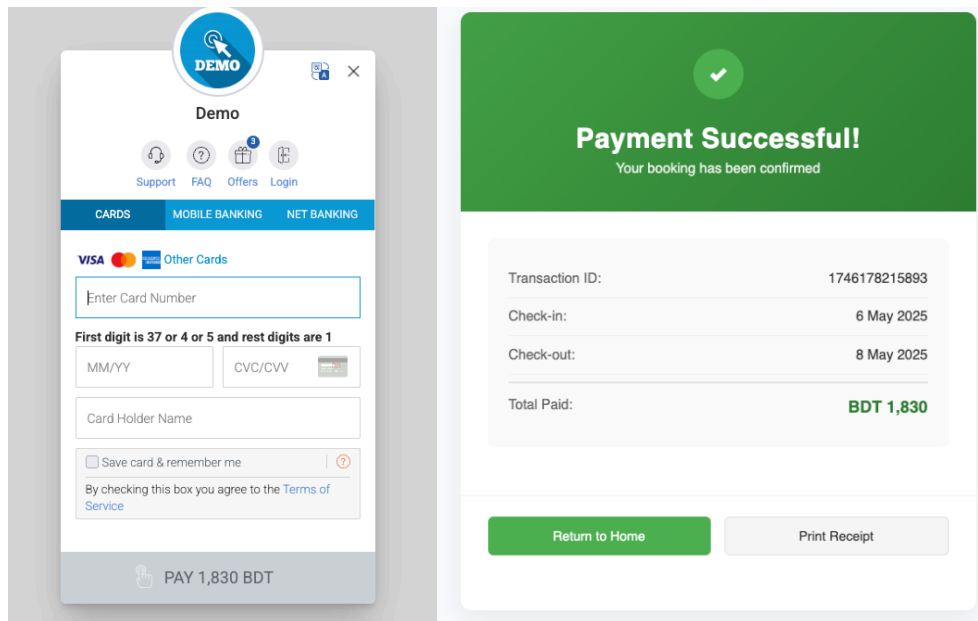


Figure 6.10: Payment gateway and successfully payment page

Now Quick Stay section

When any user taps to ‘Quick Stay’ option from the navigation bar. From this page user can find there nearest room by searching the place name.

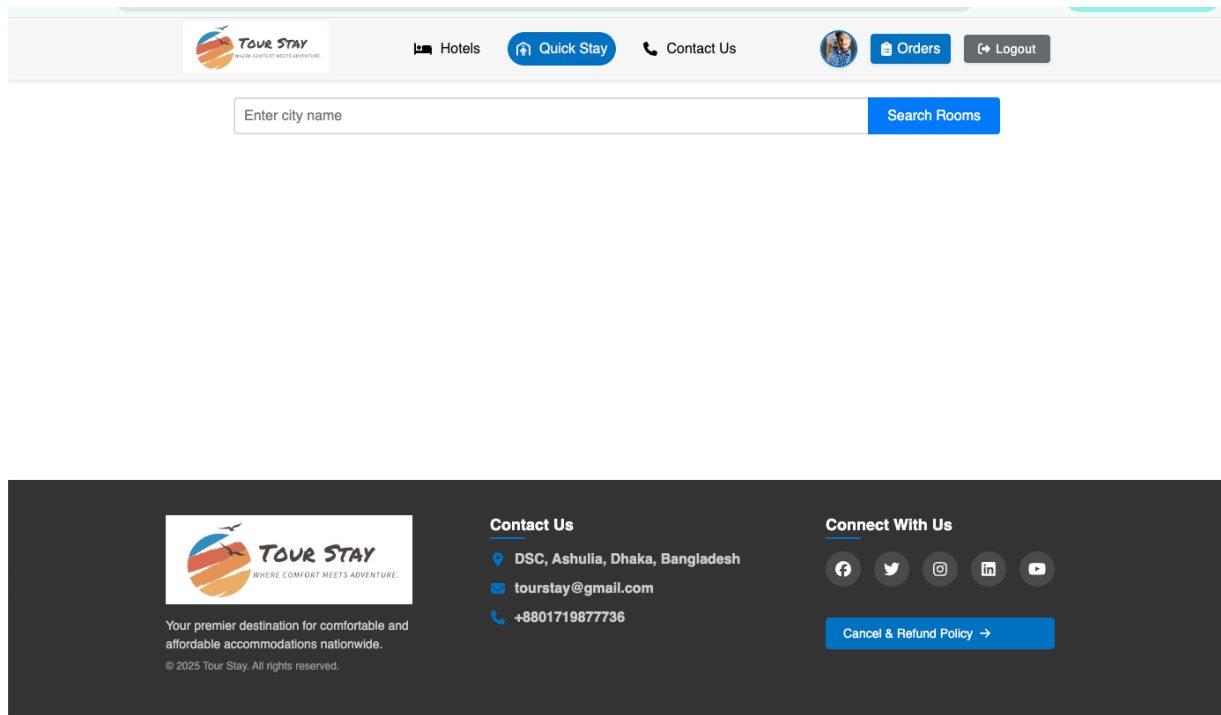


Figure 6.11: Quick Stay Search Page

Searched by place name in Quick Stay Section

The screenshot shows the Tour Stay website interface. At the top, there is a navigation bar with the Tour Stay logo and menu items: Hotels, Quick Stay (selected), Contact Us, Orders, and Logout. Below the navigation bar, a search bar contains the text 'Dhaka' and a 'Search Rooms' button. The search results are displayed in two columns. The first column shows a 'Peaceful Room' with a photo of a hotel building and pool. The second column shows a 'Luxury Room' with a photo of a modern interior. Each room listing includes the room type (AC), price (BDT 900/night for Peaceful Room, BDT 1100/night for Luxury Room), city (Dhaka), address (Mirpur-10 for Peaceful Room, Uttor Badda for Luxury Room), and availability status (Available). A 'See Details' button is located at the bottom of each listing. The footer contains the Tour Stay logo, contact information (DSC, Ashulia, Dhaka, Bangladesh; tourstay@gmail.com; +8801719877736), social media icons (Facebook, Twitter, Instagram, LinkedIn, YouTube), and a 'Cancel & Refund Policy' link.

Peaceful Room
Room Type: AC
Price: BDT **900**/night
City: Dhaka
Address: Mirpur-10
Available for Rent: **Available**
[See Details](#)

Luxury Room
Room Type: AC
Price: BDT **1100**/night
City: Dhaka
Address: Uttor Badda
Available for Rent: **Available**
[See Details](#)

CONTACT US
DSC, Ashulia, Dhaka, Bangladesh
tourstay@gmail.com
+8801719877736

CONNECT WITH US
[Facebook](#) [Twitter](#) [Instagram](#) [LinkedIn](#) [YouTube](#)
[Cancel & Refund Policy](#)

Your premier destination for comfortable and affordable accommodations nationwide.
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Figure 6.12: Searched by city name for Quick Stay Section

When any user chooses any room card the user tap to the 'See Details' Button

TOUR STAY
TRAVEL CONFIDANT BEST EXPERIENCE


Hotels Quick Stay Contact Us

Orders Logout

Peaceful Room

Mirpur-10, Dhaka

★ 4.0 ★★★★★ (1 reviews)



About this space

afkdfaiee

Amenities

- WiFi
- Parking
- Kitchen
- Refrigerator
- Oven
- Dining Room
- Gas

Room Details

Type:	AC	Max Guests:	2
Bedrooms:	2	Beds:	2
Bathrooms:	1	Bathroom Type:	Shared

Required Documents for Check-in

- ID Card

BDT 900/day

Check In	Check Out
02 May, 2025	02 May, 2025

Max 2 Guests

BDT 900 x 1 day	BDT 900
-----------------	---------

BOOK NOW

Chat with Bot

Figure 6.13: Detailed page of Quick Stay Rooms

Check-in and check-out date input for booking this room.

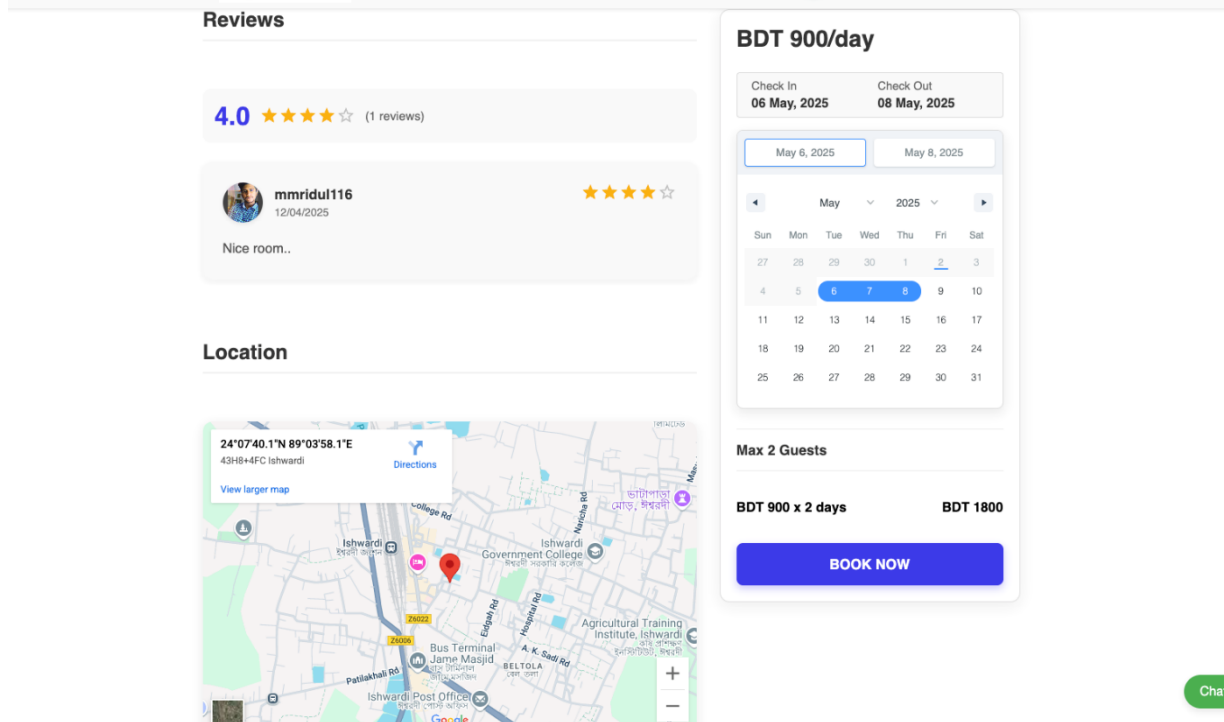


Figure 6.14: Check-in check-out date inputted for Quick Stay booking

Tap to the 'Book Now' Button:

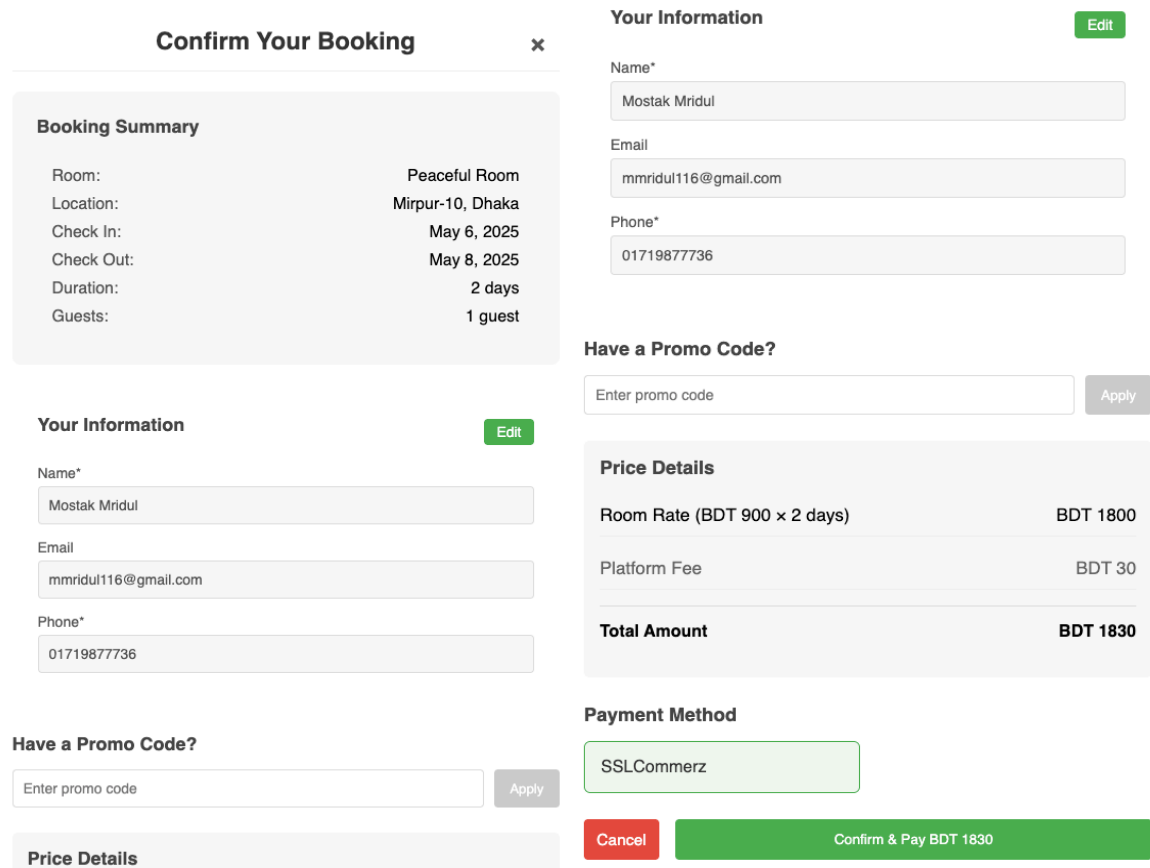


Fig 6.15: Confirmation page for Quick Stay section

For the confirm & pay it come the SSLCOMMERZ gateway to payment for this room. This process similar like hotel payment. After that User can find the order form Orders section by clicking “Orders” form the navigation.

S.No	Check-in	Check-out	Price	Payment Status	Order Status	Transaction ID	Owner Info	Review	View Room	Actions
1	06/05/2025	08/05/2025	1830tk	Completed	Confirmed	1746178215893	View Info	Review	View Room	Cancel Order
2	03/05/2025	05/05/2025	1830tk	Completed	Confirmed	1746096818540	View Info	Review	View Room	Cancel Order
3	01/05/2025	02/05/2025	945tk	Completed	Confirmed	1745605295091	View Info	Review	View Room	
4	01/05/2025	02/05/2025	945tk	Completed	Cancelled	1745604518734	View Info	Review	View Room	
5	01/05/2025	02/05/2025	945tk	Completed	Cancelled	1745604394909	View Info	Review	View Room	
6	01/05/2025	02/05/2025	945tk	Completed	Cancelled	1745604064331	View Info	Review	View Room	
7	01/05/2025	02/05/2025	945tk	Completed	Cancelled	1745603533171	View Info	Review	View Room	
8	28/04/2025	29/04/2025	1155tk	Completed	Confirmed	1745603290450	View Info	Review	View Room	
9	26/04/2025	27/04/2025	1155tk	Completed	Confirmed	1745550725754	View Info	Review	View Room	
10	30/04/2025	30/04/2025	945tk	Completed	Confirmed	1745522641359	View Info	Review	View Room	Chat with Bot

Figure 6.16: View user orders

If any user wants to view the Quick Stay room owner’s contact info, then user have to tap to the “View info” button.

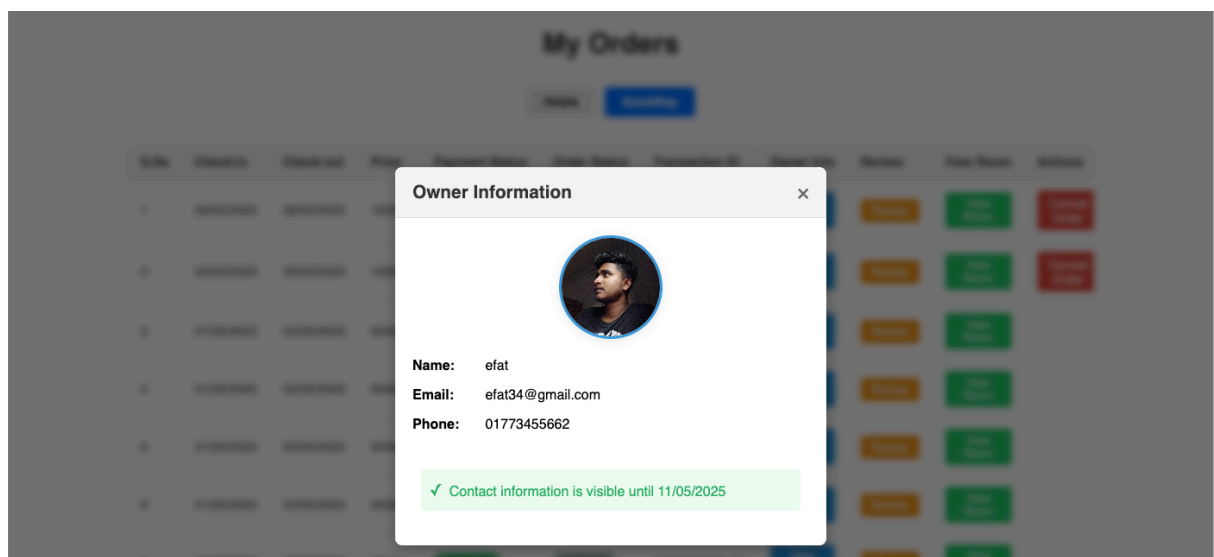


Figure 6.17: View QuickStay Owner info

If user want to review the room the user has to tap “Review” button.
 If user had already reviewed the room, then this window will be open

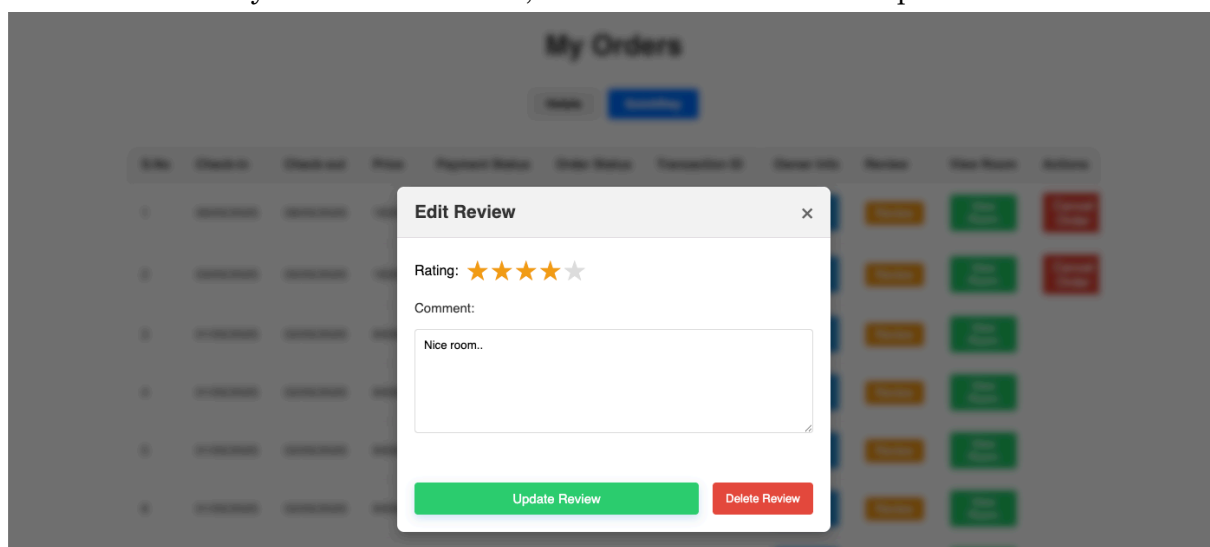


Figure 6.18 Review section

If user want to cancel the order, then user tap to the “Cancel Oder” button from the action field.

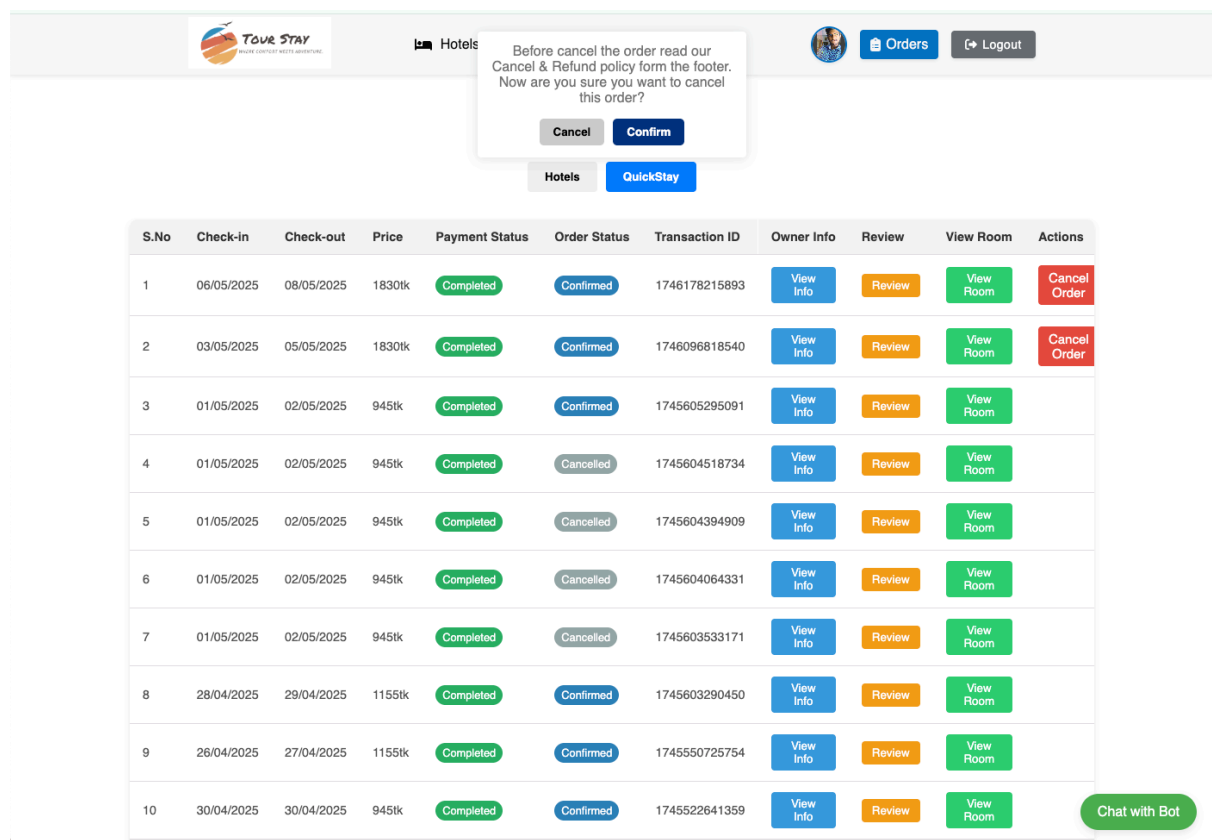


Figure 6.19: For the cancel operation

When user want to see their profile the tap to their profile picture icon or anonymous icon

Then profile page will be visible like that

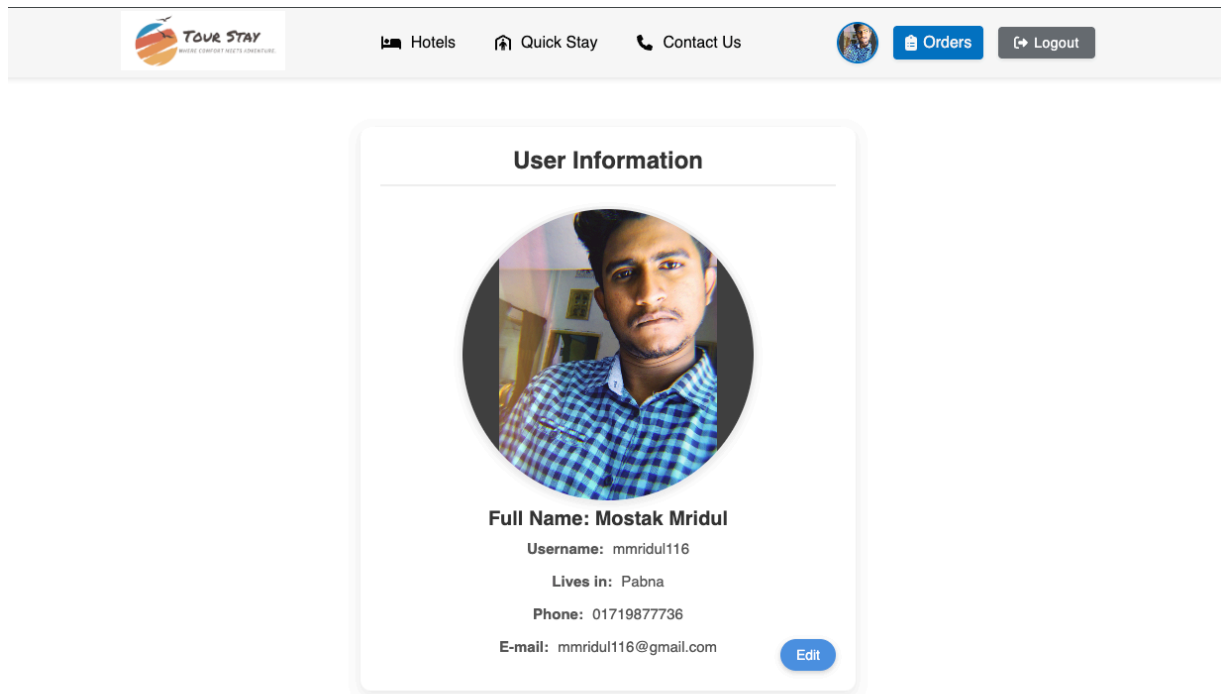


Figure 6.20: User Profile page

If user want to change their information, then tap to the “**Edit**” button

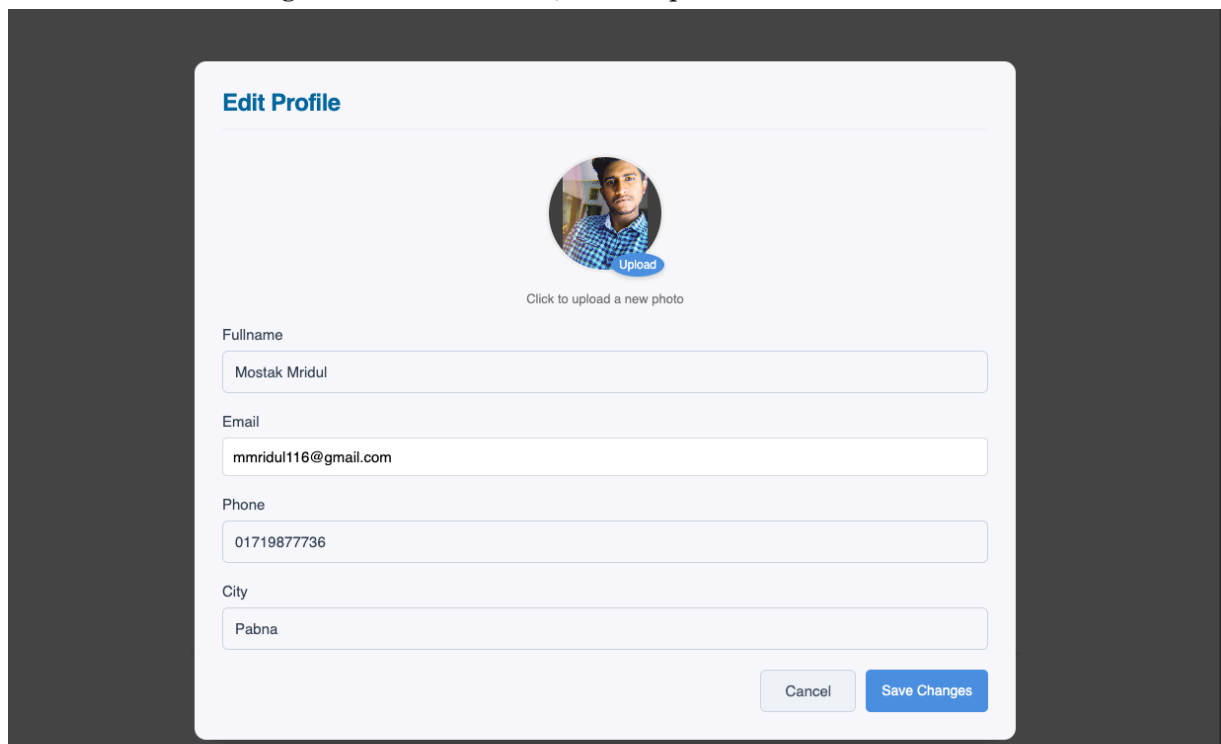


Figure 6.21: New window for update user profile

Scroll down to the profile section user can find a section which is “Your unused rooms” section from this section user can make unused room post and many things. In this section there have 2 sections more 1. Manage Rooms and 2. Transactions. These 2 sections are

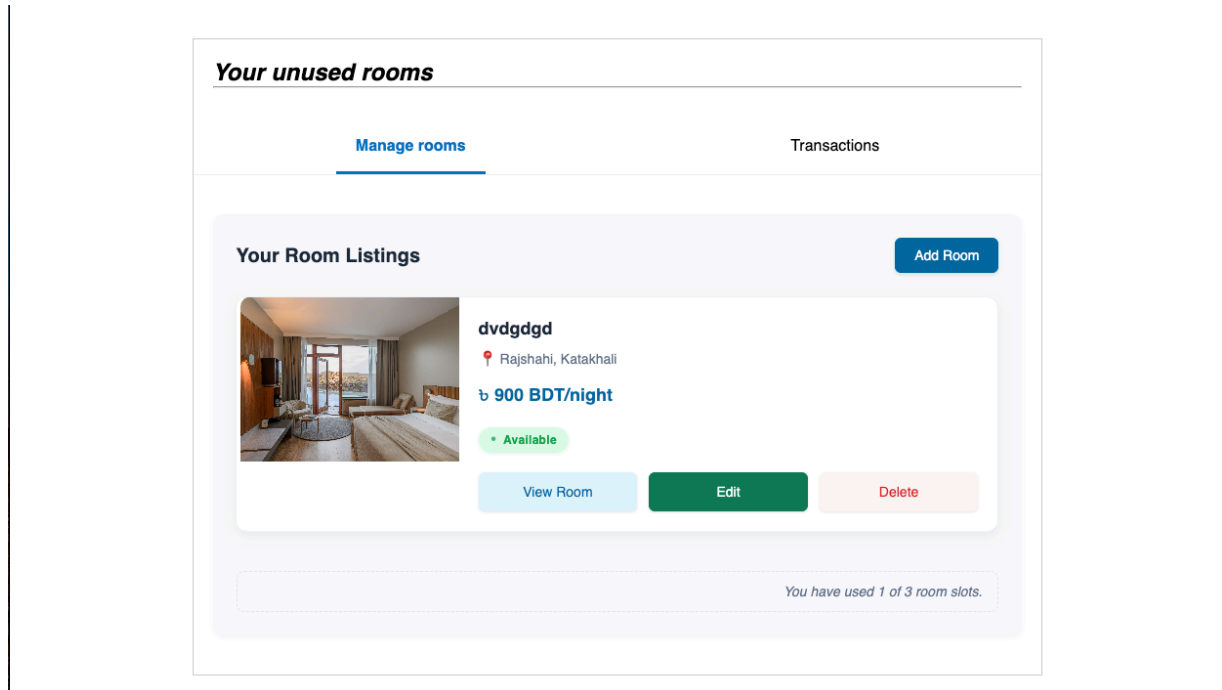


Figure 6.22: Your unused room sections

If room owner wants to create a new room post then tap to the “Add Room” button.

Owner can't post over 3 rooms.

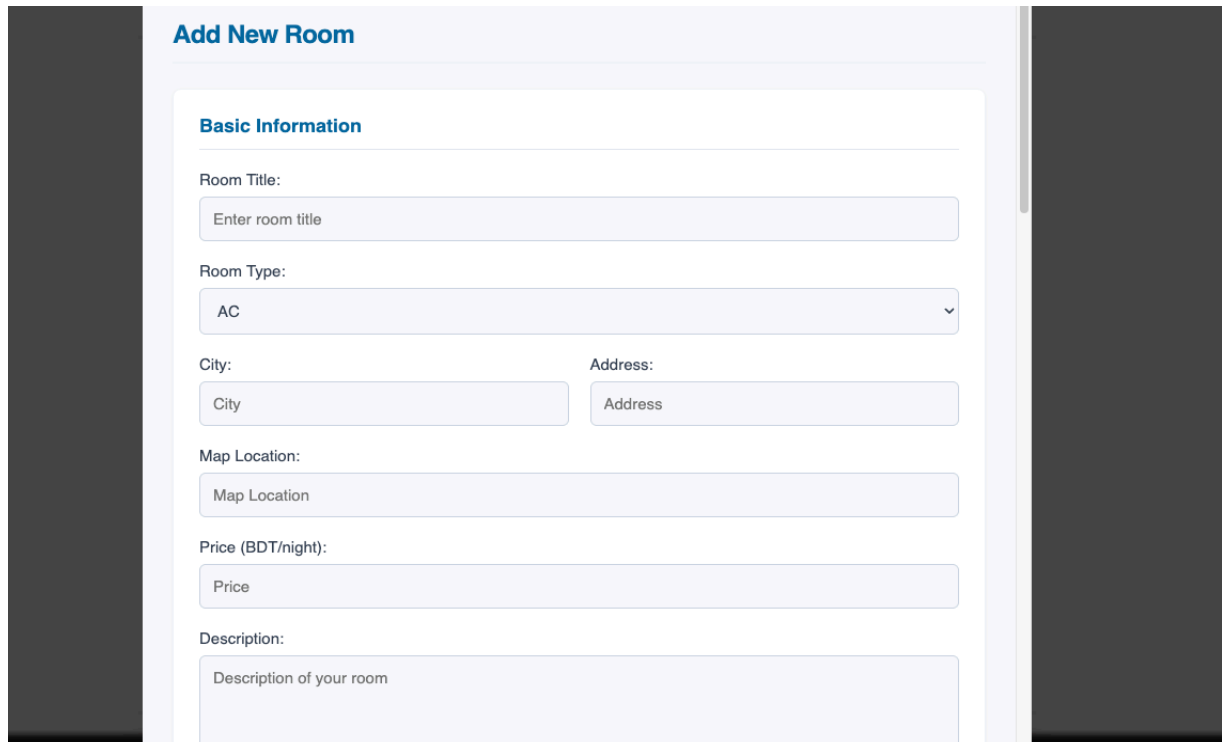


Figure 6.23: Open a new window for adding a new room

After inputting all the information user will be find a button “**Add Room**” then Room is ready for rent.

Room owner can able to update the room information any time buy tapping “**Edit Room**” button. By tapping this “**Edit Button**” Owner can easily change the room availability. Owner can change from the “**Available for Rent**” Section

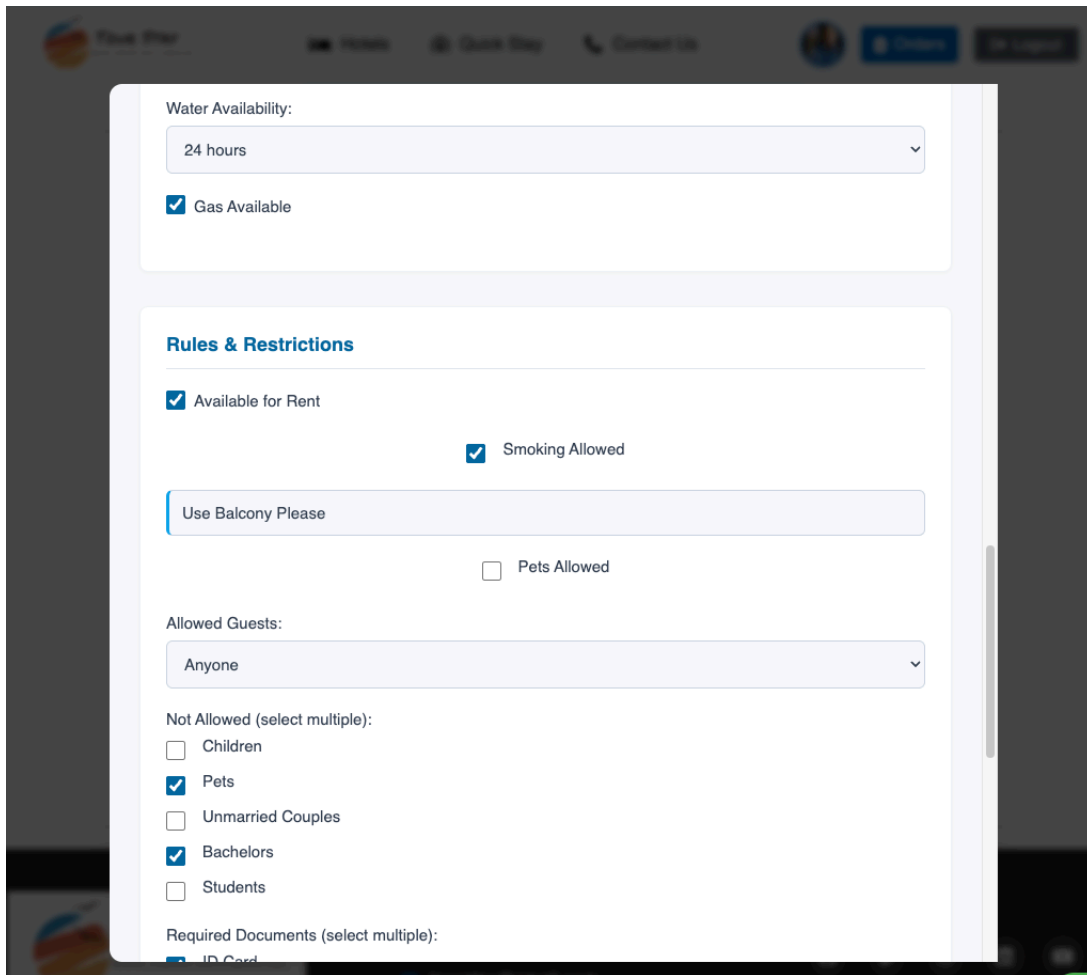


Figure 6.24: Edit Room Section

Room owner can easily delete room also to click “**Delete Room**” Button.

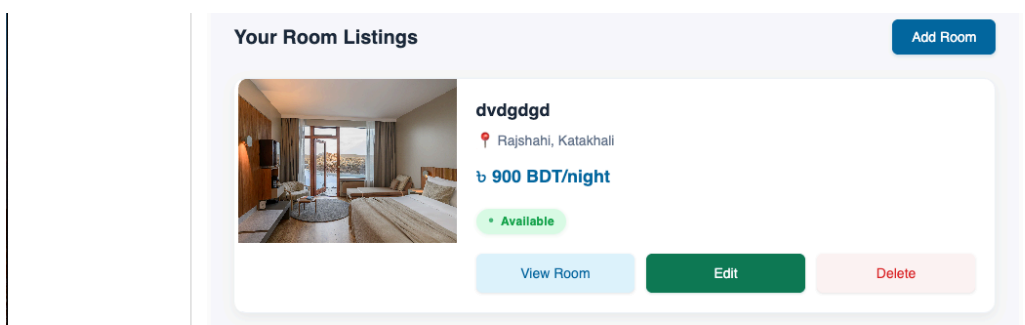


Figure 6.25: Delete button’s visibility

Now come to the Transaction section in the Your unused room section

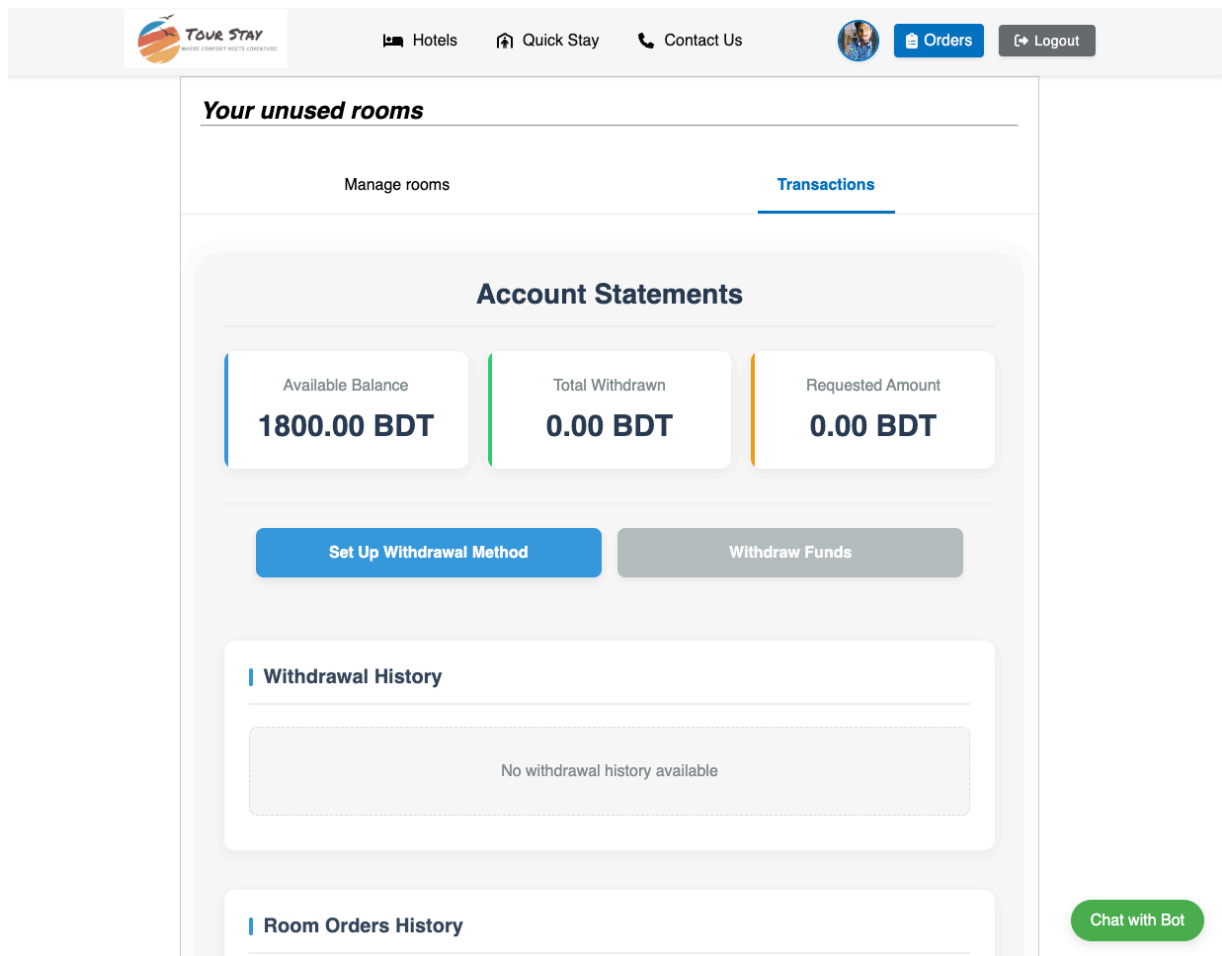


Figure 6.26: Transaction Section

Setup Withdrawal Method

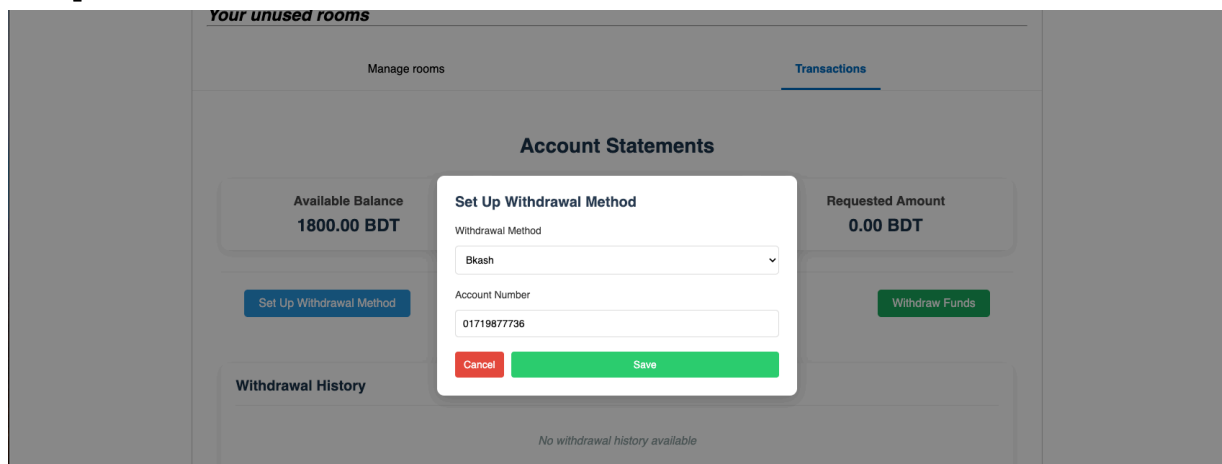


Figure 6.27: Setting up withdrawal method

After setting up the withdrawal method room owner will be able to get their revenue form the platform.

Making withdraw request

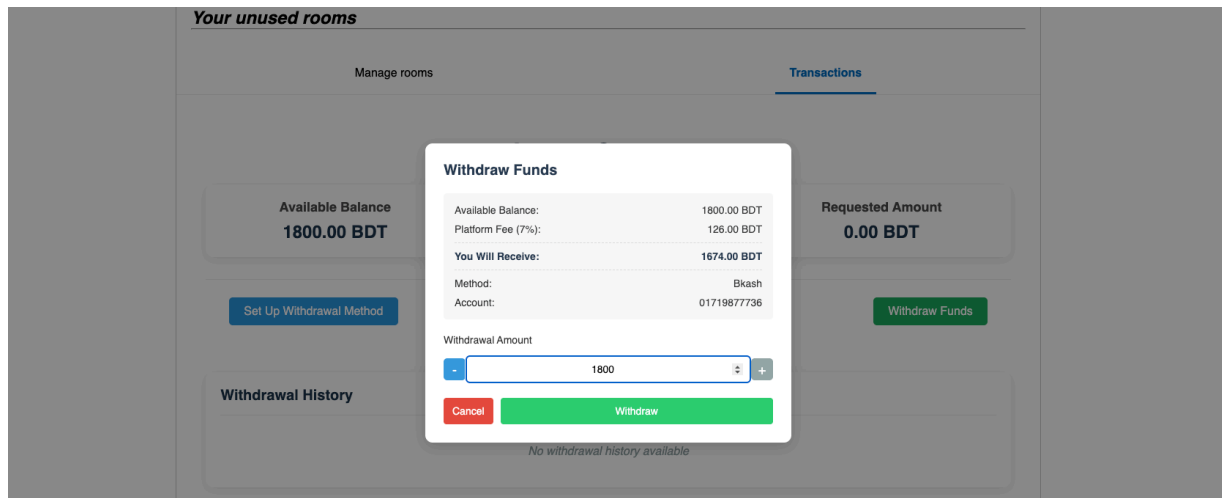


Figure 6.28: Withdraw request

Contact Us section

Contact Us

We're here to help you with your hotel booking needs in Bangladesh

About TourStay

TourStay is Bangladesh's premier hotel booking platform, connecting travelers with the finest accommodations across the country. From luxury hotels in Dhaka to beachside resorts in Cox's Bazar and charming stays in Sylhet, we make finding and booking the perfect accommodation simple and secure.

With our QuickHotel system, guests can instantly book verified properties with confidence, while hotel owners benefit from our streamlined management tools. Our dedicated support team is available to assist both travelers and property partners.

Hotel Registration

Want to list your hotel or property on TourStay? Our team will help you get set up with our platform and maximize your bookings potential.

Email: tourstay@gmail.com
Urgent Contact: mmridul116@gmail.com
Phone: +880 171-987-7736

QuickHotel Support

Experiencing issues with your booking? Need to report concerns about a property? Our customer support team is ready to assist you with any questions or issues.

Email: tourstay@gmail.com
Urgent Contact: mmridul116@gmail.com
Phone: +880 171-987-7736

Figure 6.29: Contact Us page

Cancellation and Refund Policy

Cancellation and Refund Policy

At TourStay, we understand that circumstances can change. Our refund policy is designed to be fair to both our accommodation partners and our customers. The refund amount you receive depends on how far in advance you cancel your reservation before the check-in date.

Cancellation Timing	Refund Percentage
On the check-in date	0% refund
1 day before check-in	20% refund
2-3 days before check-in	30% refund
3-6 days before check-in	50% refund
7+ days before check-in	100% refund

** N.B. You can't get back the platform fees.

How to Request a Refund

To cancel your booking and request a refund, please follow these steps:

1. Log in to your TourStay account
2. Navigate to "Orders"
3. Select the booking you wish to cancel
4. Click on "Cancel Booking"
5. Follow the prompts to complete the cancellation

The refund will be processed to your original payment method within 7-10 business days.

Special Circumstances

In case of natural disasters, national emergencies, or other exceptional circumstances that may affect your booking, please contact our customer support team at tourstay@gmail.com for assistance. We may offer more flexible cancellation options in such situations.

Chat with Bot

Figure 6.30: Cancellation and Refund policy page

Now come to the Admin Section

Login page for admin

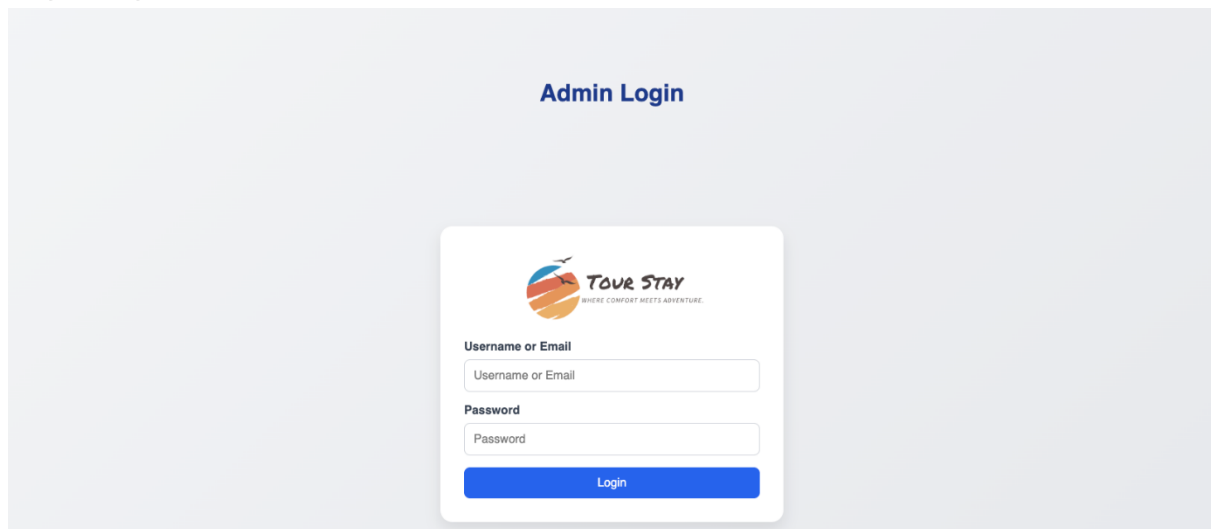


Figure 6.31: Admin Login page

Admin Dashboard

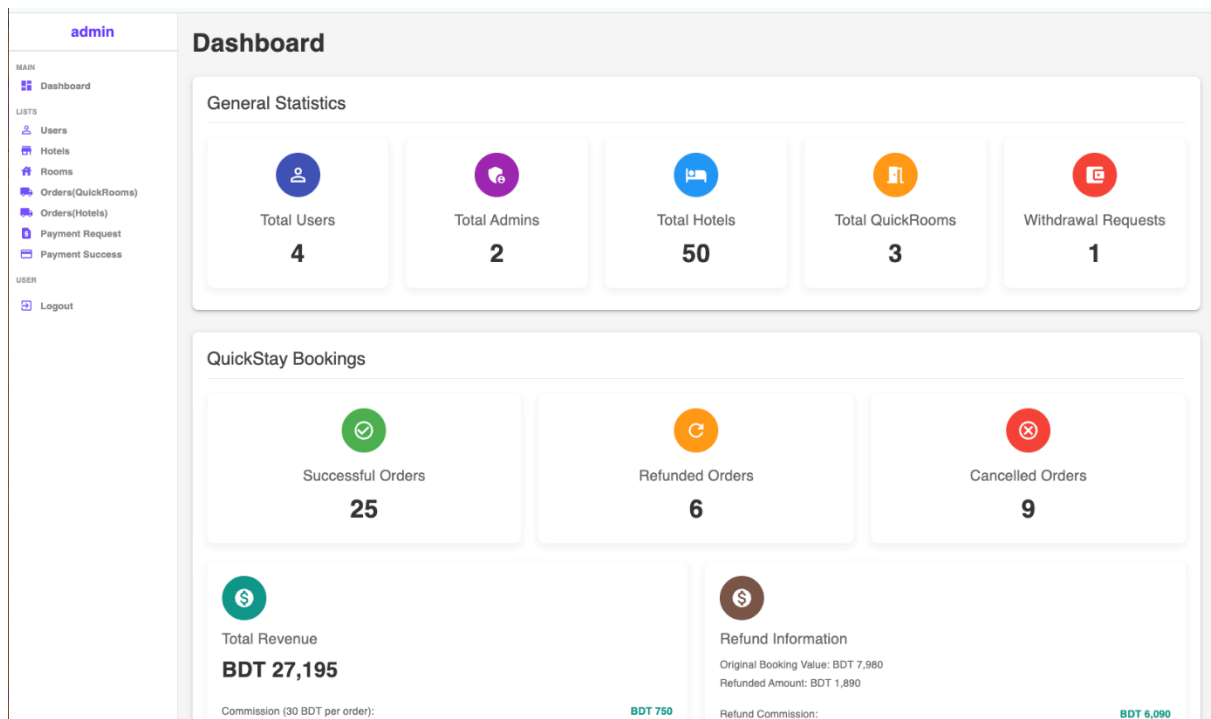


Figure 6.32: Admin Dashboard

Form the admin dashboard admin can see the all information in the short time. At the side bar there are some manageable options now we are seeing all the options.

Users Section

ID	User	Email	City	Phone	Action
	sajid	sajid@gmail.com	Dhaka	0177334463	View Delete
	efat	efat34@gmail.com	Dhaka	01773455...	View Delete
	mmidul116	mmidul116@gmail.com	Pabna	01719877...	View Delete
	mridul14424	mridul15-14424@diu.edu.bd	Ashulia	01571780...	View Delete

Figure 6.33: Users section

Admin can add user also

Admin adding a user to the system:

Add New User

Profile Photo

[Upload Photo](#)
Max file size: 5MB

User Information

Username: Email:

Phone: Password:

City:

Admin Privileges
 Make this user an administrator

[Create User](#)

Figure 6.34: User adds by admin

Hotels Section

admin

ID	name	Type	Title	City	Action
6810df1ca476fc3351565a99	Le Méridien	Hotel	Le Méridien Dhaka	Dhaka	View Delete
6810ecb5f5c021e1fb74be3	Pan Pacifi...	Hotel	Pan Pacific Sonargaon Dhaka	Dhaka	View Delete
6810fe261b98ab94e7835dfb	InterConti...	Hotel	InterContinental Dhaka	Dhaka	View Delete
6811045c1b98ab94e7835e90	Radisson ...	Hotel	Radisson Blu Water Garden H...	Dhaka	View Delete
681118531b98ab94e7835f4d	Dhaka Re...	Resort	Dhaka Regency Hotel & Resort	Dhaka	View Delete
68111b821b98ab94e783602a	Hotel Sarina	Hotel	Hotel Sarina Dhaka	Dhaka	View Delete
68111fc01b98ab94e78361fd	Palm Tree...	Hotel	Palm Tree Hotel--孟加拉椰林...	Dhaka	View Delete
681126f61b98ab94e783648a	Hotel Taqwa	Hotel	Hotel Taqwa Dhanmondi	Dhaka	View Delete

1-9 of 50

Figure 6.35: Existing Hotel list

Admin can Add a new hotel, View, edit and delete hotel

Adding a hotel

admin

Add New Hotel

Basic Information

Hotel Name * Type *

Title * Price starts at (BDT) *

Description *

Location Information

City * Address *

Map Location(Google map coordinates) * Distance *

Amenities & Features

Contact Information

Contact Email Contact Phone

Additional Information

Status Featured

[Create Hotel](#)

Figure 6.36: Adding a hotel

View Hotel

admin

MAIN

- Dashboard

LISTS

- Users
- Hotels
- Rooms
- Orders(QuickRooms)
- Orders(Hotels)
- Payment Request
- Payment Success

USER

- Logout

Hotel Information

Pan Pacific Sonargaon active Edit

Hotel Type: Hotel **Title:** Pan Pacific Sonargaon Dhaka

Description: Discover unparalleled luxury at Pan Pacific Sonargaon Dhaka, a premier 5-star hotel in the heart of Dhaka's vibrant city center. Nestled close to the business district and iconic attractions, this urban oasis offers 278 elegantly appointed rooms and suites with stunning city or pool views, plush bedding, and modern amenities like high-speed Wi-Fi and flat-screen TVs. Indulge in world-class dining at six award-winning restaurants and bars, featuring authentic local and international flavors. Unwind at the expansive outdoor pool, rejuvenate at the spa, or stay active in the 24-hour fitness center. With impeccable service, a business center, and exclusive Pacific Club Lounge access, it's ideal for both leisure and business travelers. Located just 15 minutes from Hazrat Shahjalal International Airport and near Bashundhara City Mall, the hotel blends convenience with sophistication. Book now for a memorable stay filled with comfort, culture, and exceptional hospitality at Pan Pacific Sonargaon Dhaka

Price: 16000 BDT **City:** Dhaka

Address: 107 Kazi Nazrul Islam Ave, Dhaka 1215

Map: Available **Distance:** 1.6km from Bashundhara Shopping Complex

Rating: 0.5 **Total Rooms:** 2

Amenities: WiFi, Pool, Parking, Restaurant, Room Service, 24/7 Front Desk, Air Conditioning, Free Breakfast, Pet Friendly, Spa, Business Center

Check-in/out: Check-in: 3:00 PM | Check-out: 12:00 PM

Figure 6.37: Viewing hotel information

Edit hotel

Hotel Name: * Pan Pacific Sonargaon

Hotel Type: * Hotel

Title: * Pan Pacific Sonargaon Dhaka

Rating (0-5): * 0

Description: * Discover unparalleled luxury at Pan Pacific Sonargaon Dhaka, a premier 5-star hotel in the heart of Dhaka's vibrant city center. Nestled close to the business district and iconic attractions, this urban oasis offers 278 elegantly appointed rooms and suites with stunning city or pool views, plush bedding, and modern amenities like high-speed Wi-Fi and flat-screen TVs. Indulge in world-class dining at six

City: * Dhaka

Address: * 107 Kazi Nazrul Islam Ave, Dhaka 121

Map Location (Google map coordinates): 23.750009473012735, 90.394884624

Distance: * 1.6km from Bashundhara Shopping C

Price (BDT): * 16000

Status: * Active

Amenities: 11 amenities selected

Figure 6.38: Edit a hotel

At the bottom of the edit section there is an update button but tapping the button admin can changes the information of hotel.

Adding a room in the hotel

admin

MAIN
Dashboard

LISTS
Users
Hotels
Rooms
Orders(QuickRooms)
Orders(Hotels)
Payment Request
Payment Success

USER
Logout

Add New Room

Room Information

Title: Room Title | Description: Room Description

Price: Room Price | Max People: Enter maxPeople Number

Room Numbers

Room Numbers *

Enter room numbers separated by commas (e.g., 101, 102, 103)

Enter all room numbers separated by commas

Hotel Selection

Select Hotel *

-- Select a hotel --

Create Room

Figure 6.39: Adding a room in a hotel

Quick Stay Orders List

admin

MAIN
Dashboard

LISTS
Users
Hotels
Rooms
Orders(QuickRooms)
Orders(Hotels)
Payment Request
Payment Success

USER
Logout

QuickStay Orders

Order ID	Customer	Email	Phone	Check In	Check Out	Price	Payment Status	Status	Action
67f2264ac8a59f2...	Mostak Mridul	mmridul116@gmail.com	01719877736	07/04/2025	09/04/2025	BDT 1800	completed	confirmed	View
67f390c7b6a34dff...	Mostak Mridul	mmridul116@gmail.com	01719877736	10/04/2025	10/04/2025	BDT 900	completed	confirmed	View
67f439b7b6a34dff...	Mostak Mridul	mmridul116@gmail.com	01719877736	08/04/2025	09/04/2025	BDT 400	completed	confirmed	View
67f4ae3695e168c...	Mostak Mridul	mmridul116@gmail.com	01719877736	08/04/2025	09/04/2025	BDT 1100	completed	confirmed	View
67f4b02095e168c...	Mostak Mridul	mmridul116@gmail.com	01719877736	10/04/2025	11/04/2025	BDT 1100	pending	pending	View
67f4b03195e168c...	Mostak Mridul	mmridul116@gmail.com	01719877736	08/04/2025	08/04/2025	BDT 1100	pending	pending	View
67f4b3fb47b0130...	Mostak Mridul	mmridul116@gmail.com	01719877736	08/04/2025	08/04/2025	BDT 1100	completed	confirmed	View
67f937e247b0130...	Mostak Mridul	mmridul116@gmail.com	01719877736	11/04/2025	11/04/2025	BDT 900	completed	confirmed	View

1-9 of 34 < >

Figure 6.40: Quick Stay Order list

Hotel orders list similar to the Quick stay Order list. So, we are jump to the payment request.

Payment Request

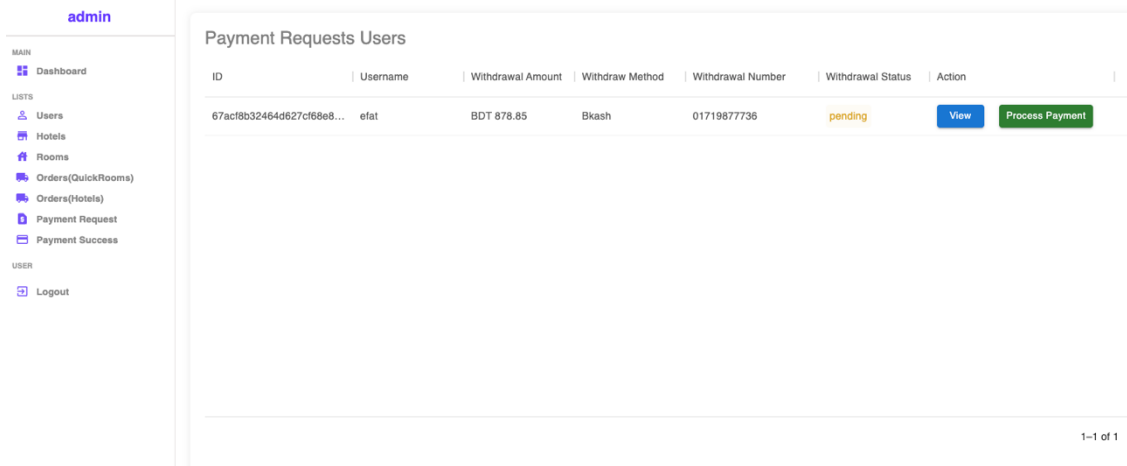


Figure 6.41: Withdraw request list form room owners

When admin tap to the “**Process Payment**” button then

Process Payment

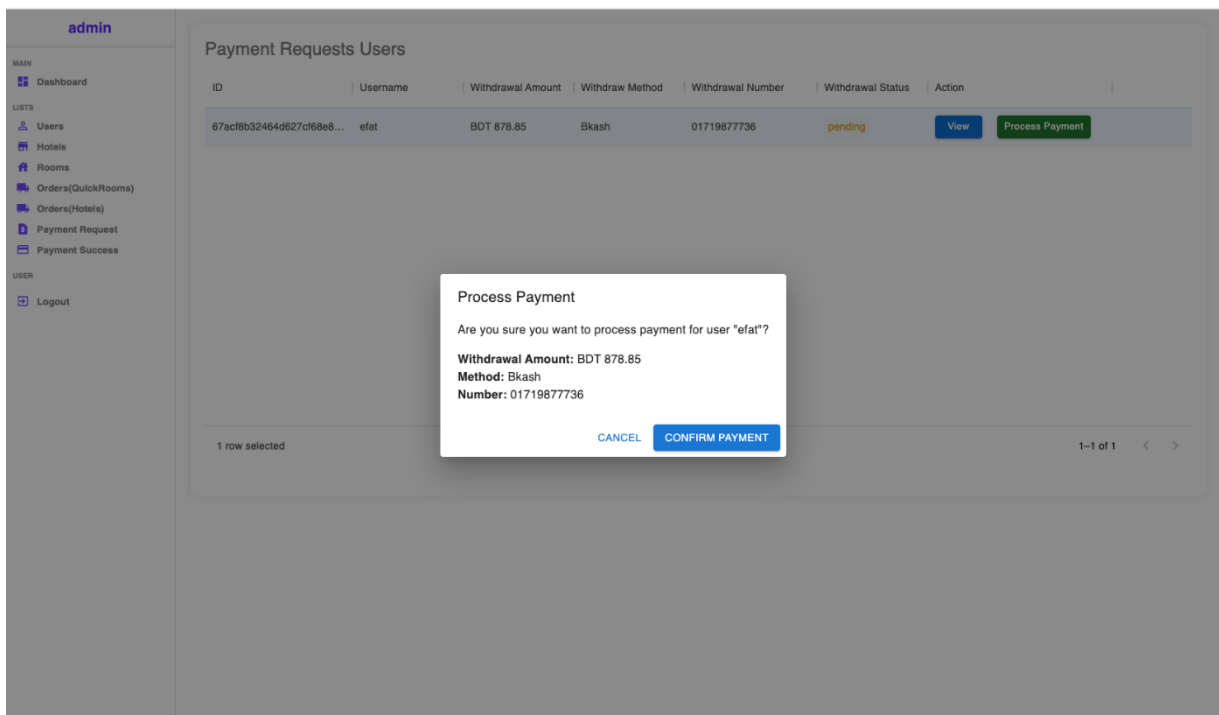


Figure 6.42: Process payment page

Payment Success

admin

Successful Payments

ID	Username	Withdraw Amount	Withdraw Method	Withdrawal Number	Withdrawal Status	Withdraw Date
680c929b52c9feabc8f324...	efat	BDT 850.95	Bkash	01719877736	success	26/04/2025, 14:00:27

1-1 of 1

Figure 6.43: Payment success to the user list

6.2 Implementation of Back-end Design

Generally, database design informs the back-end design of an application. In here using MongoDB which is do anything to do with the server-to-user connection. For managing data using MongoDB because MongoDB is a NoSQL Database.

+ Create Database

Search Namespaces

bookingApp

- bookings
- hotelbookings
- hotels
- paymentusers
- quickrooms
- roomreviews
- rooms
- users
- carDoctor
- coffeeDB
- test
- usersDB

bookingApp.hotels

STORAGE SIZE: 128KB LOGICAL DATA SIZE: 118.86KB TOTAL DOCUMENTS: 50 INDEXES TOTAL SIZE: 36KB

Find Indexes Schema Anti-Patterns Aggregation Search Indexes

Generate queries from natural language in Compass

INSERT DOCUMENT

Filter Type a query: { field: 'value' } Reset Apply Options

QUERY RESULTS: 1-20 OF MANY

```
{
  "_id": ObjectId('6818df1ca476fc3351565a99')
  "name": "Le Méridien"
  "type": "Hotel"
  "city": "Dhaka"
  "address": "79/A Commercial Area Road, Dhaka 1229"
  "mapLocation": "23.83638716044357, 90.4182361"
  "distance": "6.6km from airport railway station"
  "photos": Array (6)
  "title": "Le Méridien Dhaka"
  "desc": "Le Méridien Dhaka is a sophisticated 5-star luxury hotel conveniently ..."
  "amenities": Array (13)
  "rating": 0
  "rooms": Array (2)
  "cheapestPrice": 40000
  "policies": Object
  "featured": true
  "contact": Object
  "bookingType": "Hotels"
  "product_category": "Hotel"
  "status": "active"
  "refund": Array (3)
```

+ Create Database

Search Namespaces

- bookingApp
 - bookings
 - hotelbookings
 - hotels
 - paymentusers
 - quickrooms
 - roomreviews
 - rooms
 - users**
 - carDoctor
 - coffeeDB
 - test
 - usersDB

bookingApp.users

STORAGE SIZE: 36KB LOGICAL DATA SIZE: 1.95KB TOTAL DOCUMENTS: 4 INDEXES TOTAL SIZE: 144KB

Find Indexes Schema Anti-Patterns Aggregation Search Indexes

Generate queries from natural language in Compass INSERT DOCUMENT

Filter Type a query: { field: 'value' } Reset Apply Options

```

fullName: "MD. MOSTAK AHAMED MRIDUL"
balance: 1800

_id: ObjectId('68135588fb43c69ece05be6d')
username: "mridul14424"
fullName: "MD. MOSTAK AHAMED MRIDUL"
email: "mridul15-14424@du.edu.bd"
password: "52b518f3/R6Dghrz3CvMQQ457f0ugczah70Z/ebthoU/mCADTSrsHaA0Hu"
img: "https://wallpapers.com/images/hd/anonymous-profile-silhouette-b714qekh_"
city: "Ashulia"
country: "Bangladesh"
phone: "01571780640"
isAdmin: false
balance: 0
totalWithdraw: 0
withdrawMethod: ""
withdrawalNumber: ""
withdrawalStatus: ""
withdrawalHoldAmount: 0
withdrawHistory: Array (empty)
createdAt: 2025-05-01T11:05:44.364+00:00
updatedAt: 2025-05-01T11:05:44.364+00:00
__v: 0

```

+ Create Database

Search Namespaces

- bookingApp
 - bookings
 - hotelbookings
 - hotels
 - paymentusers
 - quickrooms**
 - roomreviews
 - rooms
 - users
 - carDoctor
 - coffeeDB
 - test
 - usersDB

bookingApp.quickrooms

STORAGE SIZE: 36KB LOGICAL DATA SIZE: 6.76KB TOTAL DOCUMENTS: 3 INDEXES TOTAL SIZE: 36KB

Find Indexes Schema Anti-Patterns Aggregation Search Indexes

Generate queries from natural language in Compass INSERT DOCUMENT

Filter Type a query: { field: 'value' } Reset Apply Options

```

_id: ObjectId('677f4adf595e168c3c9a26c8c')
title: "Luxury Room"
desc: "Very comfort and affordable rooms "
cheapestPrice: 1100
roomType: "AC"
photos: Array (1)
mapLocation: "23.779541504918335, 90.427429984293"
userID: "67acf8b32464d027cf66e801"
address: "Uttor Badda"
city: "Dhaka"
diningRoom: true
kitchen: true
refrigerator: true
oven: true
isSmokingAllowed: true
messageOfSmoking: "Use Balcony Please"
isPetAllowed: false
messageOfPet: ""
isWifiAvailable: true
isParkingAvailable: true
whichPeopleAreAllowed: "Anyone"
whichTypeOfPeopleAreNotAllowed: Array (2)
totalGuests: 1
totalRooms: 2
totalBedrooms: 2

```

SHOW 15 MORE FIELDS

Figure 6.44: Database Page

Chapter 7

Conclusion

7.1 Discussion and Conclusion

The initiative presents a complete hotel booking and room rental network scheme aimed at catering for the needs of travelers and individuals who have spare living spaces. This effort was triggered by the travelers' need for more budget travel opportunities, coupled by the fact that many properties go unused. Difference from traditional hotel services managed by massive suppliers, this platform allows hosts to post and rent rooms easily, on a simple peer-networking basis.

Management oversight through the admin makes all hotel information uniform, and it creates confidence among users. Alternatively, it could be one's option to advertise their room through the "Quick Stay" function which allows availability to numerous affordable and customizable accommodation for guests. It is a convenient solution for budget travelers as well as those who want to monetize their underused living areas.

Finally, this initiative simplifies the travel accommodation process through one central and user-friendly platform for everyone. The platform provides financial support to users, increases digital participation and the booking process is smoothed out with secure pay and verified accounts. On account of empowering individuals and controlling hotel information with admin oversight, this initiative has a status quo to maintain operations along with safety and constituting reliability.

In this project, one can see how technology can address real-world issues, engage local communities as well as promote alternatives for accessible travels, thus reinforcing global digital network.

7.2 Limitation

Perfection is difficult to achieve in any project, and this application has its own set of limitations. Despite its usefulness, the current version includes the following constraints:

- The platform is not yet optimized for mobile applications such as Android or iOS.
- A stable internet connection is required for users to access all features.
- Real-time chat between room owners and renters is not yet integrated.
- Booking cancellations or refund automation is currently handled manually.
- The system supports online payments only via SSLCommerz and cash payments are not yet included.

These limitations can be addressed in future updates to enhance the platform's reach, usability, and flexibility for all types of users.

7.3 Future Work

To enhance the platform and address its current limitations, several improvements are planned for future development:

- **Mobile Application Support:** Building dedicated Android and iOS apps to improve accessibility and user convenience.
- **Hotel Administration Portal:** A separate portal for hotel management to control bookings, manage rooms, and monitor analytics efficiently.
- **Integrated Real-Time Chat:** Enabling live communication between renters and room owners to streamline inquiries and negotiations.
- **Interactive Map-Based Booking:** Displaying available Quick Stay rooms directly on an interactive map, similar to services like Pathao, allowing users to easily locate and book nearby rooms.
- **Automated Refunds & Cancellations:** Introducing a system for users to manage booking changes and refunds without manual intervention.
- **Multiple Payment Options:** Adding more payment gateways and including a cash-on-delivery method for greater flexibility.

These future upgrades aim to deliver a more dynamic, user-friendly, and scalable system that meets the evolving needs of both travelers and service providers.

Appendix

Live Site Link:

- Client-Site: <https://tourstay.netlify.app/>
- Admin-Site: <https://tourstay-admin.netlify.app/>

Github Repository Link:

- Client-Side: <https://github.com/mmridul007/TourStay--Client>
- Admin-Side: <https://github.com/mmridul007/TourStay--Admin>
- Server-side: <https://github.com/mmridul007/TourStay--Server>

References

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<https://newzoo.com/insights/rankings/top-countries-by-smartphone-penetration-and-users/>
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<https://www.booking.com/>
- [3] Airbnb, “Online Accommodation Booking Platform” [Online]. Available:
<https://www.airbnb.com/>
- [4] TraveLa.xyz, “Unused Room Rental System” [Online]. Available:
<https://traveLa.xyz/>

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