HOTEL AUTOMATION SOFTWARE

PROJECT REPORT

A Project report submitted for the course CS3074-Software Engineering Lab

by

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Table of Contents

1. Title of the Project
2. Team Members (Name and Registration Number)
3. Problem Statement
4. Introduction – Description of the Project
5. SRS Document
6. Module Description
7. Sample Code – Github Link
8. Output Screenshots
9. References

Problem Statement

The hotel industry requires an efficient and automated management system to handle room reservations, occupancy tracking, catering services, and billing. The hotel offers single and double rooms, both air-conditioned and non-air-conditioned, with pricing that fluctuates based on room type and seasonal occupancy trends. To optimize revenue management, the system must calculate the average occupancy rate for each month, enabling the manager to adjust room tariffs dynamically for the following month.

Guests should have the flexibility to book rooms in advance or on the spot, depending on availability. The system must record guest details such as arrival time, advance payment, expected duration of stay, and room preference. Based on room availability, the system should automatically allocate a room and generate a unique token number for each guest. If no suitable room is available, the system should issue an automated apology message.

Additionally, the hotel's catering services should be seamlessly integrated, allowing staff to log details of food consumption, including item type, quantity, guest token number, date, and time. Upon check-out, the system should generate an itemized bill, displaying all charges and the final balance payable. Guests should also have the option to enroll in a frequent guest program, which assigns them a unique identity number, enabling them to receive exclusive discounts on future stays.

This hotel automation system aims to enhance operational efficiency, improve customer experience, and provide data-driven insights for better decision-making in hotel management.

Introduction

The hospitality industry is constantly evolving, with customer expectations rising and competition increasing. Efficient hotel management is essential for ensuring a seamless guest experience while maximizing operational efficiency and revenue. Traditional methods of managing reservations, tracking occupancy, and handling billing can be time-consuming, error-prone, and inefficient. To address these challenges, a Hotel Automation System is needed to streamline hotel operations through advanced digital solutions.

This system will revolutionize hotel management by automating reservations, optimizing room allocation, integrating catering services, and enhancing billing accuracy. With real-time occupancy tracking, hotel managers can dynamically adjust room tariffs based on demand, leading to better revenue optimization. Additionally, automated room allocation minimizes errors and reduces the time taken for check-ins, improving guest satisfaction.

One of the most significant impacts of this system is its ability to enhance the guest experience. Guests can book rooms easily, receive prompt service, and enjoy a hassle-free checkout process with an itemized digital bill. Furthermore, the integration of a Frequent Guest Program encourages customer loyalty by offering exclusive discounts and personalized experiences.

From a business perspective, the system provides valuable data insights, enabling hotel managers to analyze booking trends, optimize pricing strategies, and improve resource allocation. The automation of catering services ensures accurate tracking of food consumption, reducing wastage and improving cost management.

By implementing this Hotel Automation System, hotels can reduce manual workload, minimize errors, and elevate customer satisfaction. It is a step towards modernizing the industry, making hotel management more efficient, data-driven, and customer-focused.

SRS Document

GitHub Link:

https://github.com/shadan1234/se-project/blob/master/SRS.pdf

Google Docs Link:

https://docs.google.com/document/d/1wpm3qZYWXBwbOKH62eCtiZNO0RZytj6K4vC3Zcc0Z1k/edit?tab=t.0

Module Description

A hotel automation system consists of multiple interconnected modules that streamline various operations, from room reservations and guest management to billing and catering services. Below are the key modules that form the core of the system:

1. Room Management Module

- Maintains records of available rooms, categorized by type (Single/Double, AC/Non-AC).
- Tracks real-time room occupancy status.
- Allows dynamic tariff adjustment based on monthly occupancy rates.
- Allows changing the Room type and the capacity of the Room.

2. Reservation and Booking Module

- Enables guests to book rooms in advance or on the spot, subject to availability.
- Records guest details, including arrival time, expected stay duration, and room preference.
- Automatically allocates rooms and generates unique token numbers for guests.
- Issues an apology message if no suitable room is available.

3. Guest Management Module

- Stores and updates guest information throughout their stay.
- Tracks special requests, additional services, and modifications to reservations.
- Manages the frequent guest program, generating unique IDs and discount eligibility.

4. Billing and Payment Module

- Calculates room charges based on stay duration and room type.
- Integrates additional charges for catering, extra services, and applicable taxes.
- Generates itemized bills and displays the final amount payable.
- Supports multiple payment modes, including cash, credit/debit cards, and digital payments.

5. Catering Management Module

- Allows hotel staff to record food and beverage consumption by guests.
- Tracks item quantities, order times, and guest token numbers.
- Integrates charges into the final bill automatically.

6. Occupancy and Revenue Analytics Module

- Computes monthly occupancy rates for managerial decision-making.
- Generates reports on peak and low-demand periods.
- Assists in setting room tariffs dynamically based on occupancy trends.

7. Check-Out and Feedback Module

- Facilitates smooth guest check-out by finalizing bills and updating room availability.
- Offers guests the option to register for the frequent guest program.
- Collects guest feedback for service improvement.

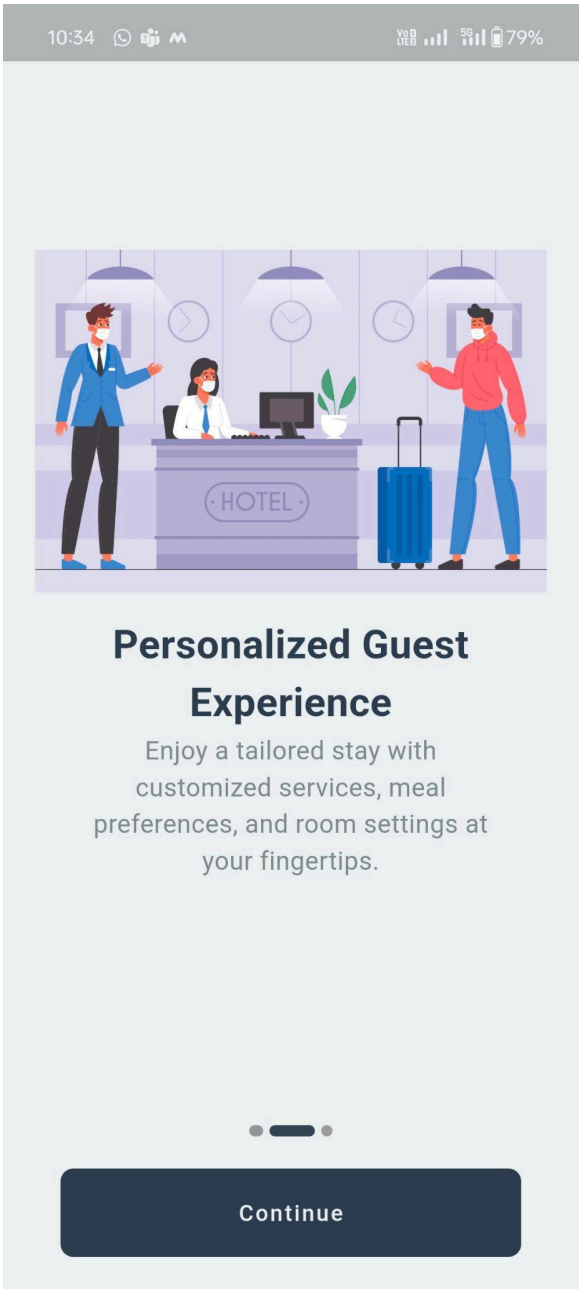
This modular approach ensures that the hotel automation software functions efficiently, improving operational workflow, enhancing the guest experience, and optimizing resource utilization.

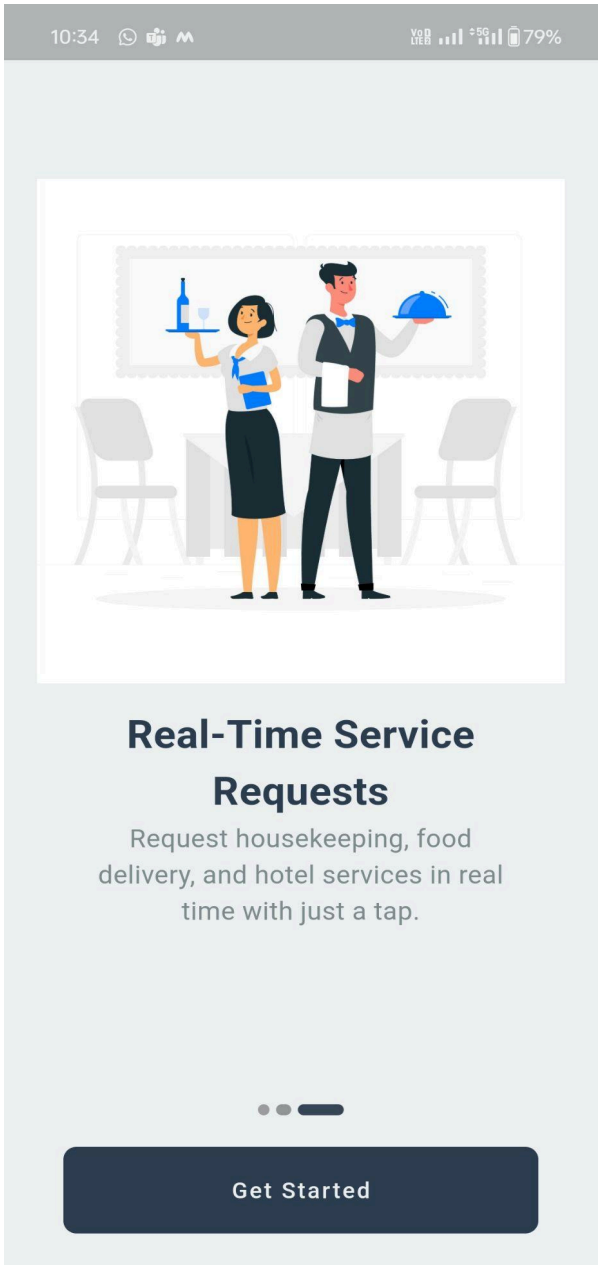
Sample Code

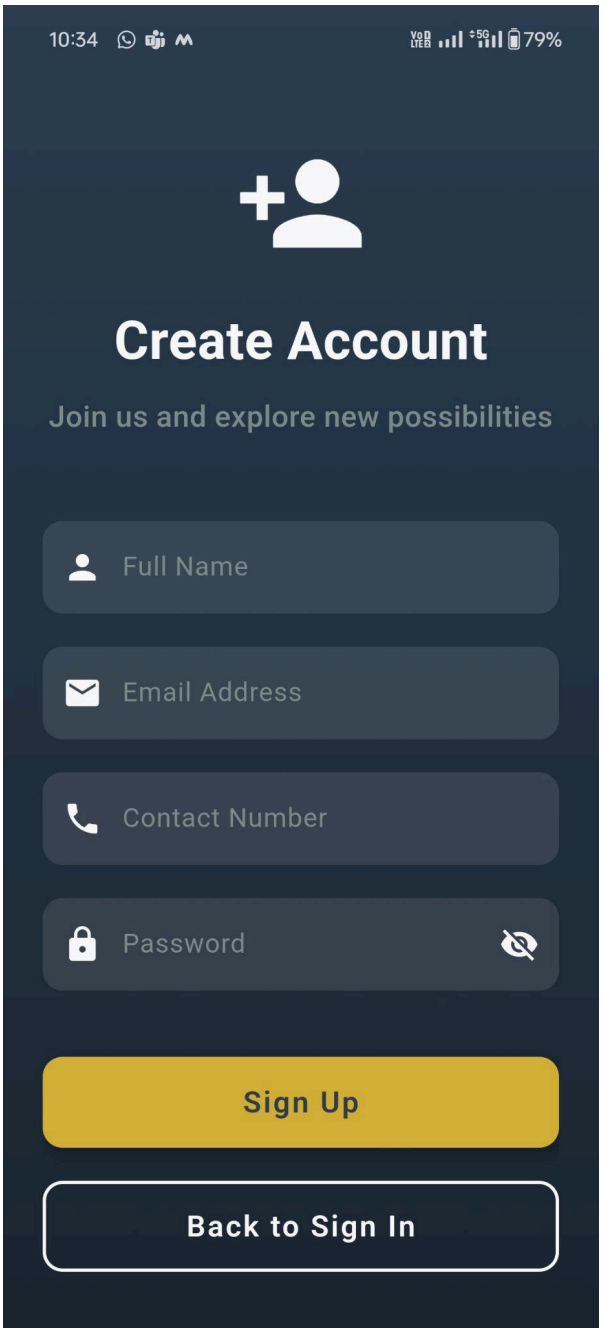
GitHub Link:

https://github.com/shadan1234/se-project

Output Screenshots



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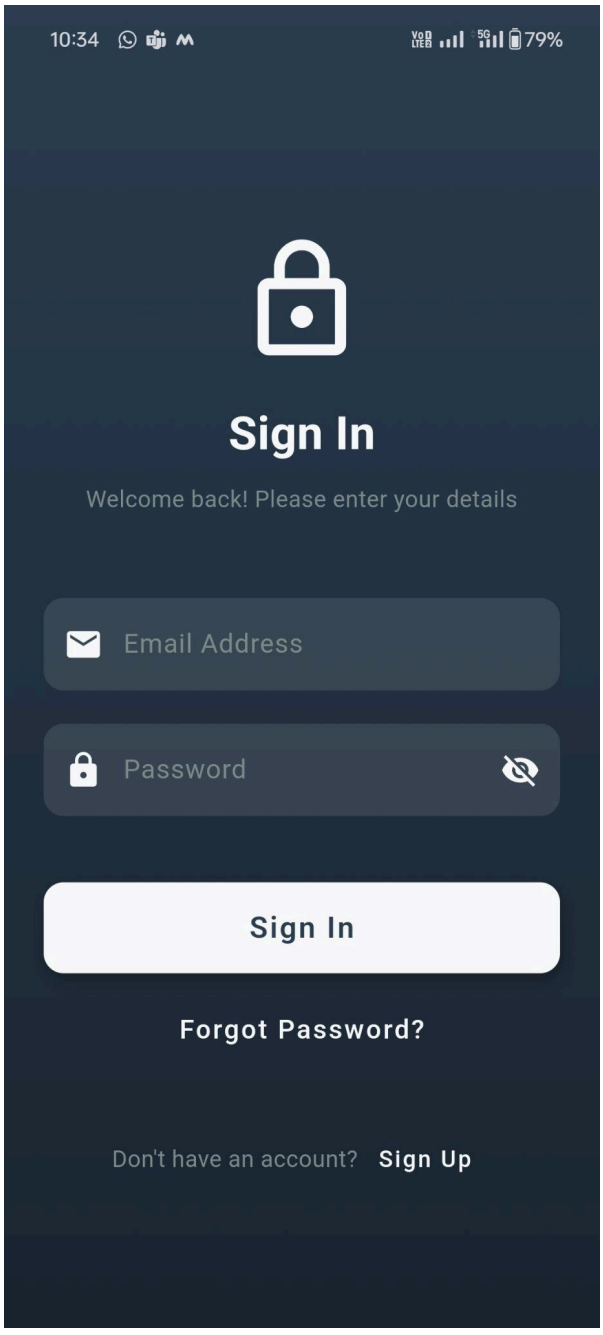
79%
Create Account
Join us and explore new possibilities
Full Name
Email Address
Contact Number
Password
Sign Up
Back to Sign In


10:34
79%
Sign In
Welcome back! Please enter your details
Email Address
Password
Sign In
Forgot Password?
Don't have an account? Sign Up

10:31

Welcome to Grand Hotel

Explore Our Services

Book Luxurious Rooms
Comfortable and premium stay options.

Fine Dining
Enjoy delicious meals from top chefs.

Wellness & Spa
Relax and rejuvenate with our spa treatments.

24/7 Concierge
Personalized services for a smooth stay.

Hotel Tour Video

Home Bookings Services Profile

10:32

Available Rooms

Room 102 - Deluxe
₹2000 / night
Capacity: 3 Person(s)

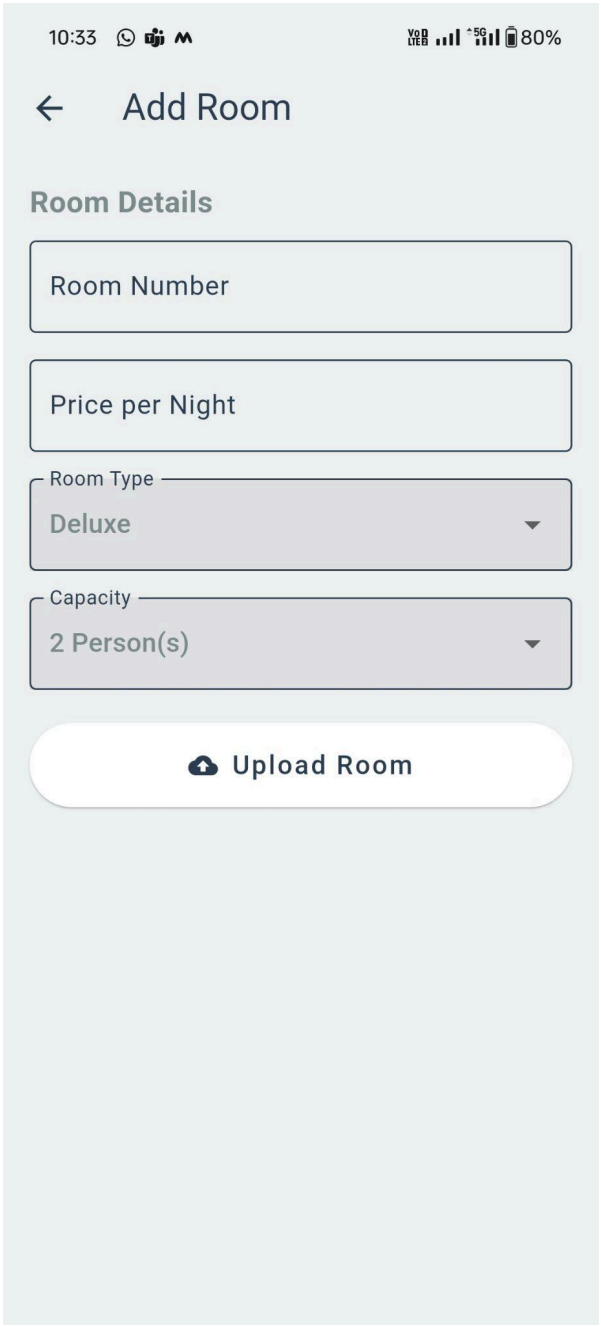
Room 500 - Suite
₹580 / night
Capacity: 5 Person(s)

Room 101 - Deluxe
₹2000 / night
Capacity: 2 Person(s)

Room 201 - Standard
₹500 / night
Capacity: 5 Person(s)

Room 108 - Deluxe
₹150 / night
Capacity: 3 Person(s)

Home Bookings Services Profile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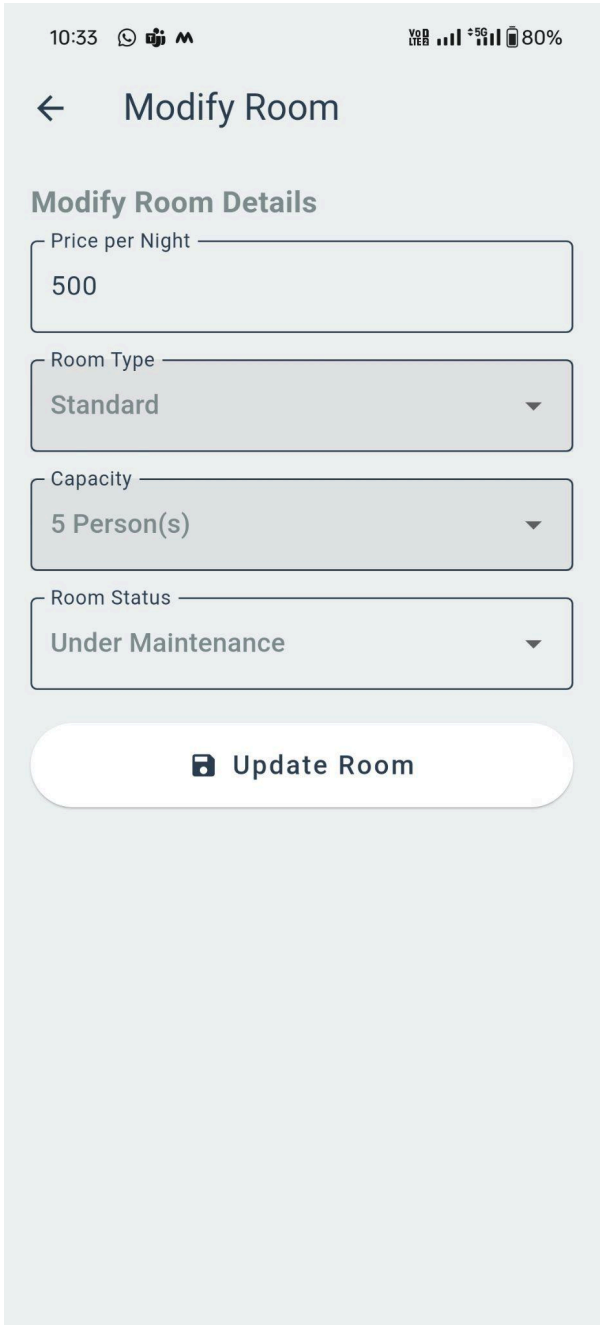
Add Room
Room Details
Room Number
Price per Night
Room Type
Deluxe
Capacity
2 Person(s)
Upload Room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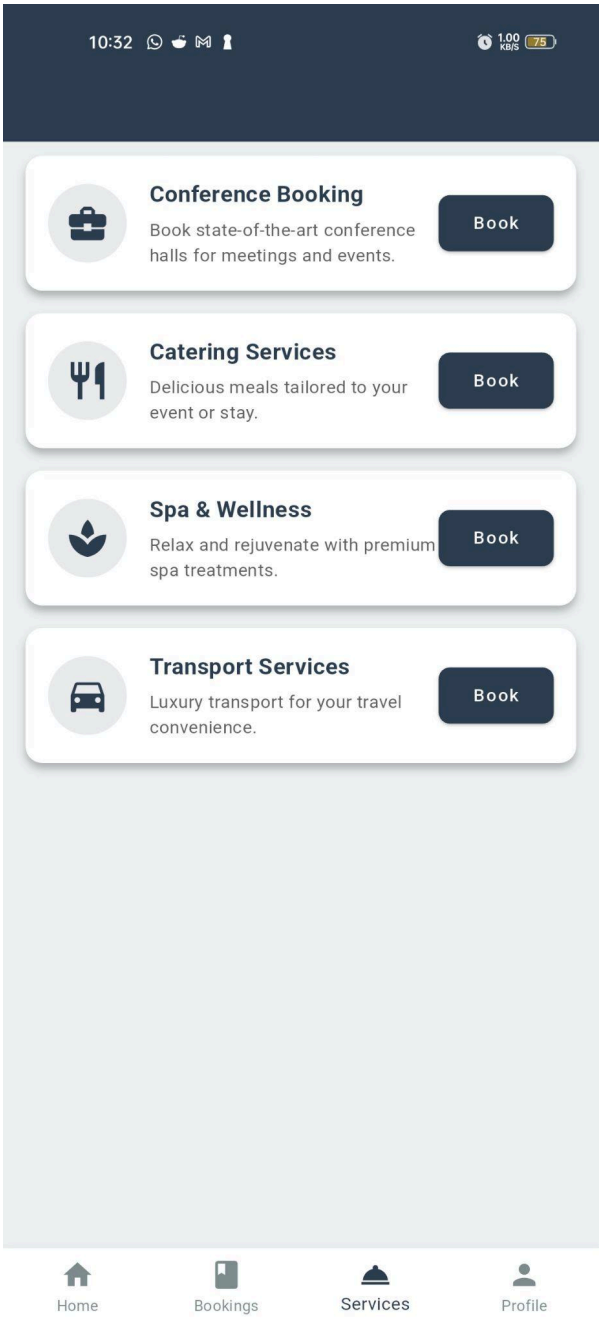
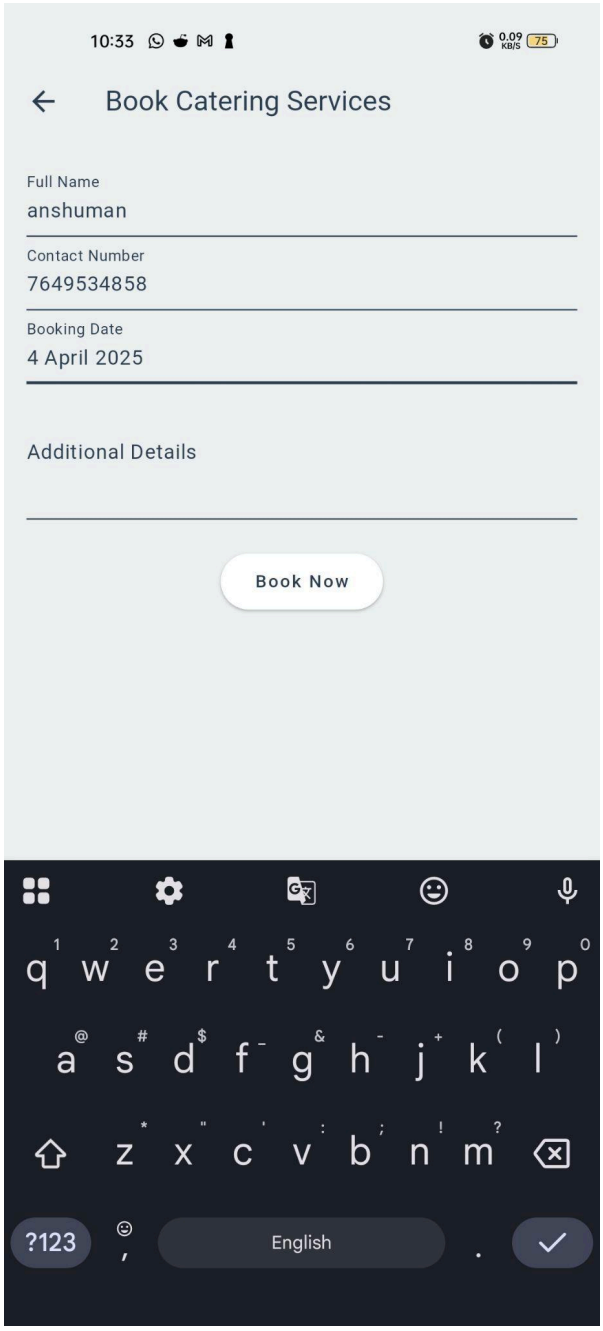
Modify Room
Modify Room Details
Price per Night
500
Room Type
Standard
Capacity
5 Person(s)
Room Status
Under Maintenance
Update Room


10:32
Conference Booking
Book state-of-the-art conference halls for meetings and events.
Book
Catering Services
Delicious meals tailored to your event or stay.
Book
Spa & Wellness
Relax and rejuvenate with premium spa treatments.
Book
Transport Services
Luxury transport for your travel convenience.
Book
Home
Bookings
Services
Profile


10:33
Book Catering Services
Full Name
anshuman
Contact Number
7649534858
Booking Date
4 April 2025
Additional Details
Book Now
?123
English

10:32 0.00 KB/S 76

Book Room

Standard - Room 201

₹500 per night

Check-In	Check-Out
07 Apr 2025	14 Apr 2025

Guests 3

Total Price ₹3500

Pay Now | Pay at Hotel

10:32 0.45 KB/S 75

Room Booking History

Room No: 201

Room ID: S1Z3el8HlS85uO5Wac5B

Check-in: 2025-04-07T00:00:00.000

Check-out: 2025-04-14T00:00:00.000

Price per Night: ₹500

Status: pending

10:33 80%

Admin Dashboard

Overview

6
Total Bookings

3
Available Rooms

₹4800.0
Revenue

4
Total Staff

Recent Activity

- Room 201 booked by anshuman
- Room 102 booked by gg
- Room 108 booked by shad

Dashboard | Rooms | Staff | Reports | Profile

10:33 80%

Available Rooms

Room 102 ...
₹2000 / night
Capacity: 3 Person(s)
Edit

Room 500 ...
₹580 / night
Capacity: 5 Person(s)
Edit

Room 101 ...
₹2000 / night
Capacity: 2 Person(s)
Edit

Room 201 ...
₹500 / night
Capacity: 5 Person(s)
Edit

Room 108 ...
₹150 / night
Capacity: 3 Person(s)
Edit

+ Add Room

Dashboard | Rooms | Staff | Reports | Profile

References

1. GitHub
2. GeeksForGeeks
3. www.wordpress.com
4. www.scribd.com
5. https://firebase.google.com/docs/
6. https://docs.flutter.dev/