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ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

Mini Project Report On

**Getaway Mansion: Hotel Reservation & Travel
Planner**

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

Bachelor of Technology

in

Computer Science & Business Systems

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CERTIFICATE

*This is to certify that the project report entitled "**Getaway Mansion: Hotel Reservation & Travel Planner**" is a bonafide record of the work done by **Aadarsh Suresh (U2109001)**, **David Vinoj (U2109023)**, **Megha Rajesh (U2109039)**, **Nedha Fathima (U2109048)**, submitted to the Rajagiri School of Engineering & Technology (RSET) (Autonomous) in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology (B. Tech.) in Computer Science & Business Systems during the academic year 2023-2024.*

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Abstract

In the ever-evolving hospitality industry, this abstract explores how this forward-thinking approach transforms the check-in process, making it more efficient, contactless, and guest-centric. After paying online, customers who book in advance obtain a digital pass on their smartphones that allows them to enter the hotel immediately. This is made possible by a sophisticated technology. Smart sensors positioned at the hotel entry are at the forefront of this revolutionary approach. These sensors quickly identify the arrival of guests and assign rooms in real time according to individual preferences and reservation details. A standout feature of this state-of-the-art system is the instantaneous creation of a fresh key pass and its rapid delivery to the visitor's mobile device. This eliminates the need for them to go to the conventional reception desk in order to easily access their assigned room. Notably, visitors who choose to make reservations online benefit from accelerated check-in procedures, which drastically cut down on wait times and in-person encounters. Using time-limited QR codes is a critical security feature built into this paradigm. These QR codes are created after the guest is assigned a room, which adds an extra degree of protection. They also automatically expire at the end of the guest's chosen stay duration.

This innovative system aims to provide comprehensive solutions to common traveller challenges, including long lines at reception desks, the need for extensive interaction with hotel staff, worries about misplacing physical room keys, trouble finding nearby attractions and activities, security concerns, and budgetary constraints.

Also presenting the Travel Plan Maker, a customized tool that lets visitors enter particulars like the length of their stay, their favourite places to go, what they want to eat, how much money they have to spend, and any other special demands. By utilizing advanced algorithms, the system generates customized and cost-effective travel schedules, maximizing overall visitor contentment. This comprehensive strategy not only expedites the check-in procedure but also improves visitors' overall travel experience.

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List of Abbreviations

PTPS - Personalized Travel Planning System

TF - time framework

TPM - Travel Planning Module

SRM - Schedule Reasoning Method

TRSs - Travel Recommendation Systems

TAM - Technology Acceptance Model

eWOM - electronic word of mouth

IDE - Integrated Development Environment

DFD - Data Flow Diagram

ER - Entity Relationship

UML - Unified Modeling Language

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Chapter 1

Introduction

This project aspires to create an efficient platform for users by combining a Hotel Reservation System with a Personalized Travel Planner. Emphasis lies in providing users with a streamlined process for booking rooms in a hotel, detailed information about accommodation options, and the convenience of personalized travel plans. This project addresses the evolving needs of travelers by leveraging technology to simplify their experience.

1.1 Background

The traditional check-in process in the hospitality industry has faced challenges, including extended wait times, interaction with hotel staff, and the reliance on physical room keys. The COVID-19 pandemic has highlighted the importance of minimizing physical touchpoints and prioritizing guest safety. This project aims to address these shortcomings by leveraging cutting-edge technologies and innovative systems to redefine the check-in experience.

The project prioritizes efficiency and convenience, focusing on minimizing wait times and reducing face-to-face interactions. The integration of contactless technologies aligns with evolving expectations, providing a safer and more hygienic check-in experience. Security considerations are paramount, with time-limited QR codes bolstering the safeguarding of guest accommodations. Real-time room assignments based on individual reservations and preferences contribute to a more personalized and satisfying guest experience.

The project positions itself as a forward-thinking response to industry trends, embracing technological innovations to resolve existing issues and anticipate future guest expectations. It strives to set a new standard for hospitality check-ins, ensuring hotels remain competitive and aligned with the evolving needs and preferences of modern travelers.

1.2 Problem Definition

Users face challenges as they navigate through multiple, separate platforms for reservations and travel planning. Hotels encounter difficulties in efficiently optimizing resource allocation and providing personalized services. There is a lack of comprehensive insights into personalized travel itineraries, highlighting a significant gap in efficient travel management.

1.3 Scope and Motivation

The project scope includes the creation of a user-friendly application designed for travelers, enabling them to seamlessly plan and book their trips, with the overarching goal of delivering a personalized and stress-free travel experience. It also involves developing a solution that can be seamlessly integrated into existing hospitality technology solutions, providing hotels with a valuable addition to their offerings. This project is centered around creating an application tailored specifically for the Travel & Hospitality Industry. This application aims to address industry challenges, streamline processes, and enhance user experiences within the realm of travel and hospitality.

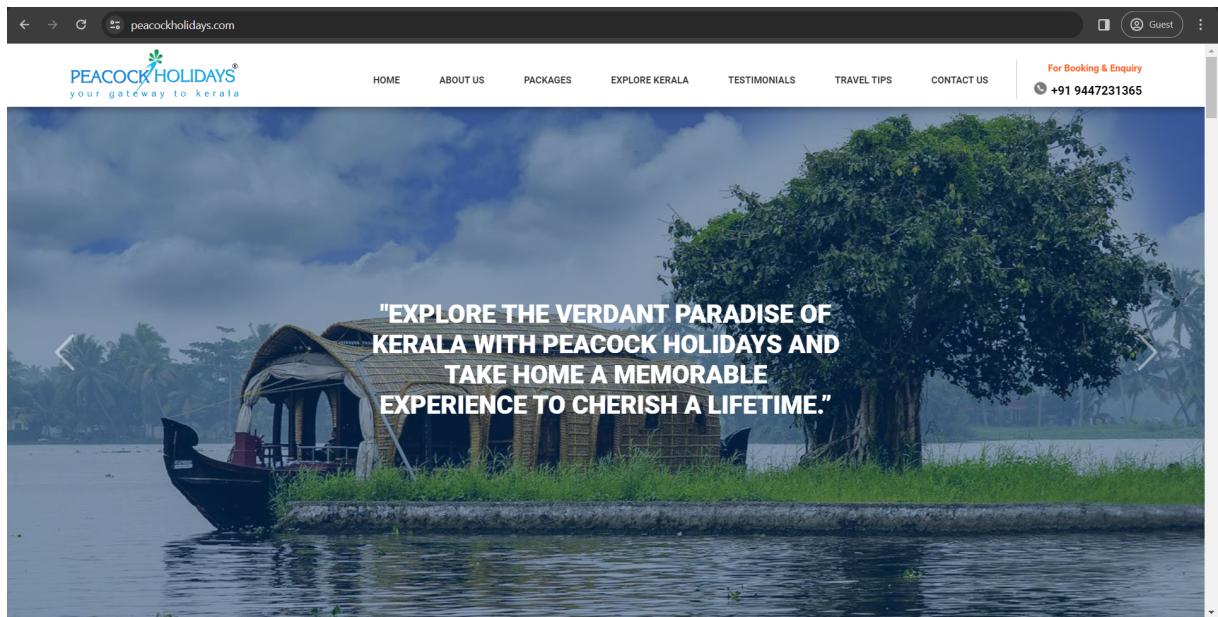


Figure 1.1: A glimpse into the website of "Peacock Holidays"

Our inspiration for undertaking this project stems from a personal connection within our team, where our teammate's family-run travel agency, 'Peacock Holidays', which not

only facilitates hotel bookings but also serves as a provider for transportation services for holiday destinations. Witnessing the positive impact and efficiency of their services has ignited our passion to contribute to the Travel & Hospitality Industry. By leveraging technology and innovation, we aspire to enhance the overall experience of travelers, drawing inspiration from the dedication and success exemplified by our teammate's family in their travel agency. This personal connection serves as a driving force behind our commitment to developing a comprehensive solution that aligns with the high standards set by industry professionals.

1.4 Objectives

- Cohesive Hotel Reservation System coupled with a Personalized Travel Planner
- Streamline the booking process
- Provide comprehensive information, personalized recommendations, and efficient travel management
- Aim to create an intuitive and user-friendly interface that enhances the overall experience for travelers and hotel administrators.
- Design the system with scalability in mind, allowing for future expansion and adaptation to accommodate a growing user base or additional features.

1.5 Challenges

Addressing the challenges inherent in our project involves tackling user input errors, mitigating user internet connectivity issues, and navigating potential hurdles in payment processing from customers' banks. Streamlining user input processes, implementing resilient connectivity solutions, and establishing robust communication with banks are paramount to ensuring a seamless and reliable experience for both travelers and hotel administrators in our hotel reservation system and travel planner.

1.6 Assumptions

We presume users will provide accurate information during the booking process, maintaining data reliability. Stable internet connectivity is expected for real-time interactions with the system, and potential payment processing issues will be promptly addressed in collaboration with banking institutions. Assumptions also include system compatibility across various devices, adherence to data privacy regulations, and positive user adoption of the new features and functionalities. These foundational assumptions guide our project's trajectory, with flexibility to adjust based on real-world feedback and evolving requirements.

1.7 Industrial Relevance

Our hotel reservation system and travel planner have broad applications, providing significant relevance to both the hospitality and the travel industry. In the societal context, the application facilitates streamlined and personalized travel experiences for individuals, contributing to stress reduction and enhancing overall satisfaction. Travelers gain access to a cohesive platform for efficient itinerary planning and booking, ultimately fostering a positive impact on their well-being.

Within the travel industry, our system is highly relevant as it addresses common challenges faced by hotels and travel agencies. The integrated platform streamlines the reservation process, optimizing resource allocation for hotels and improving overall operational efficiency. This not only enhances the competitiveness of individual establishments but also contributes to the growth and advancement of the travel industry as a whole.

1.8 Organization of the Report

This report consists of 8 chapters plus 2 appendices.

Chapter 1 covers the project's background, scope & motivation, objectives, challenges, assumptions and industrial relevance. This chapter serves as a primer for what follows in the report.

Chapter 2 gives literature review that contextualizes the development, and the methodology outlines the approach and chosen technologies. Critical analyses of existing systems

and technologies are presented to highlight the advantages and disadvantages addressed by the current project.

Chapter 3 talks about system architecture which is the core chapter of this report. It delves into the intricacies of the system architecture. It offers a detailed explanation of the various components and modules that constitute the system, elucidating their interrelationships. The chapter also justifies the chosen system architecture, detailing how it aligns with the project's goals and requirements.

Chapter 4 explains about requirements (both software and hardware requirements). The hardware and software requirements are meticulously outlined in this chapter. It provides specifications for the required hardware components and the software stack. The chapter also explains how the selected hardware and software configurations fulfill the specific needs of the project.

Chapter 5 provides a comprehensive overview of the design process. It includes detailed explanations and justifications for the employed design and modeling techniques. This encompasses Data Flow Diagram (DFD) and Entity-Relationship Diagram (E-R Diagram), alongside a suite of UML diagrams—Use Case Diagram, Sequence Diagram, Activity Diagram, and Class/Object Diagram.

Chapter 6 is dedicated to presenting the results of the project. It critically examines the outcomes, comparing them against the anticipated results. This chapter engages in a thorough discussion of the project's strengths and areas for improvement, offering valuable insights for future endeavors.

Chapter 7 summarizes the key findings of the project. It outlines the implications of the project for the organization and concludes with recommendations for future work. This chapter provides a comprehensive closure to the report, leaving readers with a clear understanding of the project's impact and potential future directions.

The chapter References lists all the sources referenced throughout the report, ensuring proper citation and acknowledgment of external contributions.

Appendix I includes the presentation slides used during project discussions, offering readers a visual supplement to the textual content of the report.

The appendix II provides an overview of the institution's and department's vision and mission. It also includes details on course outcomes, program outcomes, and their mapping, offering additional context for the project.

In summary, this chapter has provided a comprehensive overview of our project, ranging from its background and defined problem to the set scope, objectives, and inherent challenges. The chapter also outlined key assumptions, emphasized the societal/industrial relevance, and offered a glimpse into the organization of the forthcoming report. This groundwork primes us for a focused exploration of our integrated hotel reservation and travel planning website.

Chapter 2

Literature Review

This chapter navigates through an extensive collection of current knowledge by examining a variety of publications and studies that are pertinent to our website that combines travel planning and hotel reservations. In order to provide a strong foundation for our project, this literature analysis analyzes technologies, user expectations, and industry trends in order to synthesize insights from a variety of sources.

H.-S. Chiang and T.-C. Huang, “User-adapted travel planning system for personalized schedule recommendation,” Information Fusion, vol. 21, pp. 3–17, 2015. [Online]. Available:

<https://www.sciencedirect.com/science/article/pii/S1566253513000705>

The study on User-Adapted Travel Planning System addresses challenges in contemporary travel planning exacerbated by the abundance of online information. The authors propose a Personalized Travel Planning System (PTPS) with a time framework (TF) concept and an adjustable recommendation system. Users input preferences through an Internet platform, allowing the system to construct a preliminary travel schedule using a Travel Planning Module (TPM). The study incorporates a Schedule Reasoning Method (SRM) based on the time framework for optimal scheduling.

Features:

The article introduces a User-adapted Travel Planning System (PTPS) focused on personalized schedule recommendations. PTPS incorporates a Time Framework (TF) allowing users to adjust recommendation results, addresses challenges in travel schedule planning, and employs a Schedule Reasoning Method (SRM) considering various factors. Unlike traditional Travel Recommendation Systems (TRSS), PTPS enables users to actively ad-

just schedule planning results, enhancing user participation and satisfaction. The system includes a Feedback Mechanism to record user choices for future recommendations. The experimental design involves comparing PTPS with and without the Time Planning Module (TPM) to assess its effectiveness. Overall, PTPS stands out for its adaptability, personalized approach, and the incorporation of user feedback for improved travel planning outcomes.

Advantages:

The PTPS presents a novel approach by considering various user requirements, enabling the system to plan adjustable travel schedules. The TF concept, adjustable results, and feedback mechanism contribute to a more personalized and automated travel planning experience. The study conducted experiments demonstrating the system's superiority in schedule adjustment, personalization, and feedback compared to other travel recommendation systems.

Disadvantages:

The study highlights limitations in existing Travel Recommendation Systems (TRSs), emphasizing their focus on popular attractions without considering overall travel requirements. TRSs often lack schedule planning capabilities, detailed time-arrangement planning, and fail to provide effective feedback mechanisms. Fixed user input conditions in TRSs lead to similar recommendation results, reducing overall effectiveness. The proposed PTPS addresses these drawbacks but doesn't extensively discuss potential challenges or limitations of its own approach. [1]

C. Morosan and M. Jeong, “Users’ perceptions of two types of hotel reservation web sites,” International Journal of Hospitality Management, vol. 27, no. 2, pp. 284–292, 2008. [Online]. Available:
<https://www.sciencedirect.com/science/article/pii/S0278431907000643>

This study investigates users' perceptions of two types of hotel reservation websites, namely hotel-owned and third-party platforms, employing the Technology Acceptance

Model (TAM) framework. Through an experimental approach, the research explores the impact of perceived usefulness, ease of use, and playfulness on users' attitudes and intentions to use these reservation websites. Despite no significant differences in users' perceptions between the two types of websites, the findings highlight the importance of perceived usefulness for hotel-owned websites and perceived ease of use for third-party websites. The study offers insights into the complex dynamics of user adoption in the competitive online reservation landscape, suggesting implications for hotels and third-party companies in refining their online distribution strategies.

Features:

The article investigates user perceptions of hotel reservation websites, focusing on hotel-owned and third-party platforms using the Technology Acceptance Model (TAM). It examines the influence of perceived usefulness, ease of use, and playfulness on user attitudes and intentions. Despite hotels' efforts to promote direct reservations, no significant differences are found in user perceptions between the two types of sites. Users exhibit more favorable attitudes and intentions to revisit third-party platforms. The study emphasizes the importance of understanding user adoption and offers industry recommendations, employing a descriptive analysis with a sample of students and acknowledging limitations.

Advantages:

The study leverages the Technology Acceptance Model (TAM) framework to investigate users' perceptions of two types of hotel reservation websites: hotel-owned and third-party. By employing an experimental approach, the study examines whether a modified variant of TAM can effectively evaluate users' perceptions of these two reservation channels. Key findings include the identification of perceived usefulness as a significant predictor of users' attitudes toward hotel-owned websites and perceived ease of use as a key predictor for attitudes toward third-party websites. Additionally, perceived playfulness and attitudes emerge as crucial predictors of users' intentions to use hotel reservation websites. Despite these predictors, the study indicates no significant differences in users' perceptions between the two types of websites, with users expressing more favorable attitudes and higher intentions to revisit third-party websites.

Disadvantages:

While the study provides valuable insights into users' perceptions of hotel reservation websites, it has certain limitations. The sample size, consisting of 914 respondents, may pose challenges in generalizing the findings to a broader population. The use of a student sample, although common in exploratory studies, may limit the external validity of the results. The study acknowledges potential threats to interpretation due to sample choice. Additionally, the focus on specific constructs like perceived usefulness, ease of use, and playfulness may not capture the entirety of users' perceptions, necessitating a more comprehensive exploration of factors influencing users' adoption of reservation websites. [2]

B. A. Sparks and V. Browning, “The impact of online reviews on hotel booking intentions and perception of trust,” *Tourism Management*, vol. 32, no. 6, pp.1310–1323, 2011. [Online]. Available:

<https://www.sciencedirect.com/science/article/pii/S0261517711000033>

The study employs an experimental design to investigate the impact of four independent variables on perceptions of trust and consumer choice in the context of hotel reviews. The variables include the target of the review (core functional attributes or interpersonal service staff), overall valence of reviews (positive or negative), framing of reviews (presentation of negative or positive information first), and the presence of a consumer-generated numerical rating along with written text. The research aims to understand how these factors influence consumer decision-making in the evaluation of hotel reviews.

Features:

The article investigates the impact of online reviews on hotel booking intentions and trust perceptions, particularly focusing on electronic word of mouth (eWOM) in a hotel context. Through an experimental design, it explores variables such as the target of the review, overall valence, framing of reviews, and the presence of numerical ratings. Notably, consumers are more influenced by early negative information when the overall review set is negative. However, positive framing and the inclusion of numerical ratings enhance both booking intentions and consumer trust. The study underscores the importance of

comprehending eWOM, emphasizing the role of easy-to-process information in consumer evaluations when assessing hotels based on reviews, thus contributing to the understanding of factors influencing hotel booking decisions. The research is supported by funding from Griffith University's Tourism, Sport, and Service Innovation Research Centre.

Advantages:

The experimental design allows for the manipulation of specific variables, providing controlled conditions to isolate and test the effects of each factor. By focusing on four key variables within an online review of a hotel, the study offers insights into the nuanced dynamics of consumer decision-making. The inclusion of framing as a moderating variable contributes an additional layer of investigation compared to previous studies. The study also considers a set of reviews rather than individual reviews, providing a more comprehensive understanding of the impact of online reviews on consumer trust and booking intentions.

Disadvantages:

While the experimental approach offers controlled conditions, it may lack the realism of actual consumer decision-making scenarios. The study acknowledges the limitation of using a simulation of a professionally designed website, which may not fully capture the diversity of online platforms and content. The research sample is limited to an experimental context, and the extent to which findings generalize to real-world online review scenarios is subject to further exploration. Additionally, the study acknowledges the need for future research to expand the application of the constructs across different types of websites to enhance the external validity of the findings. [3]

In conclusion, the reviewed studies provide crucial insights into the challenges of information overload, user perceptions of hotel reservation websites, and the impact of online reviews on trust and booking intentions. These findings are invaluable for businesses seeking to navigate the dynamic landscape of online consumer behavior in the hospitality sector.

Chapter 3

System Architecture

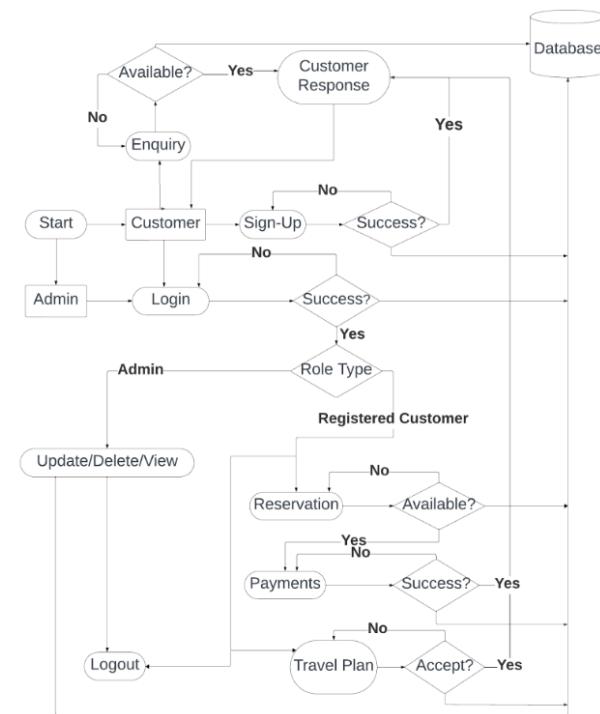


Figure 3.1: Block Diagram

The system architecture serves as the foundational framework that defines the structure, interactions, and flow of operations within the hotel reservation and travel planner project. This chapter delves into the intricacies of how the system is organized, illustrating the connections between its key components and detailing the functionalities of both user roles—admin and customer. The architecture is designed to ensure a seamless and efficient process, from user login to database updates, reflecting a user-centric approach and facilitating smooth interactions at every stage of the system's operation.

System Architecture Detailed Explanation:

The depicted figure 3.1: Block Diagram offers a detailed insight into the intricate system architecture governing the hotel reservation and travel planner project. This architecture revolves around two primary user roles: the admin, responsible for administrative functions, and the customer, engaged in the reservation and travel planning processes.

The system initiation is grounded in user interactions, guiding both admins and customers to the login block. Once initiated, a crucial aspect is the identification of the user role—admin or customer—following a successful login attempt. In cases of login failure, users are redirected to the login block for retrial, ensuring stringent security measures.

Admin Role:

The admin role is pivotal in executing key administrative functions efficiently. Upon a successful login, the admin gains access to a sophisticated dashboard equipped with features like information updating, deletion, and viewing. These dashboard actions are intricately linked to database manipulations, ensuring the accuracy and currency of the system's underlying data. The architecture places a strong emphasis on providing a secure and authenticated environment, empowering the admin to perform essential management operations with precision.

Customer Role:

The system architecture has been meticulously designed to offer customers a seamless and user-friendly experience throughout their reservation and travel planning journey. The interaction for customers begins with room inquiries, a process that doesn't necessitate signing up or logging in, as inquiry data is directly fetched from the database. A customer as the guest user can enquire about room details, like price and facilities provided, in the website without logging in and can decide on whether to sign in or not to make a reservation. It helps the user to quickly have a note on the room information without having a need to register unnecessarily if they are not intended to book a room.

For making reservations, customers are required to sign up and subsequently log in using their credentials. Post login, customers can effortlessly check room availability, proceed with reservations, and explore alternative options if their initially chosen room is

unavailable. Upon successfully making a reservation, customers transition to the payment stage, where failed payments prompt a retry option, while successful payments result in the generation of a QR code sent via email. This QR code serves as a digital key for room entry instead of the physical key so that the customer need not have to wait for long at the reception to get checked-in.

Customers also have the added functionality of generating a personalized travel plan by inputting parameters such as the number of days, preferred radius, and other preferences. The system responds by presenting an AI-generated travel plan for consideration. Furthermore, customers can request reservation cancellations, with corresponding refunds processed promptly.

A notable feature is the dynamic update of the database to reflect each customer interaction, ensuring that the information presented remains accurate and up-to-date in real-time. The overarching architecture prioritizes both user satisfaction and data integrity, ensuring that the entire user experience is not only efficient but also intuitive.

Both admin and customer roles are equipped with a user-friendly logout option, contributing to a modular and efficient system architecture. This architectural design ensures a seamless and well-defined flow of interactions, placing a strong emphasis on user convenience while seamlessly integrating with the underlying database. The goal is to provide users with an experience that is not only secure but also satisfying and efficient in its execution.

In summary, the system architecture outlined in this chapter is pivotal for the smooth functioning of our hotel reservation and travel planner project. It delineates distinct pathways for admin and customer roles, ensuring secure access, efficient interactions, and accurate database management. The user-centric customer role architecture streamlines the journey from sign-up to travel planning, while the admin role architecture provides essential tools for data management. This robust architecture establishes a foundation for a reliable, secure, and user-friendly platform in line with the project's objectives.

Chapter 4

Requirements

The system requirements chapter serves as a pivotal bridge between the design and implementation phases of our project. In this section, we articulate the specific needs and functionalities the system must fulfill, providing a comprehensive roadmap for developers and stakeholders alike.

4.1 Hardware Requirements

For optimal performance and seamless operation, our Hotel Reservation and Travel Planner system necessitates specific hardware requirements. A **multi-core processor** forms the computational backbone, ensuring efficient task handling and responsiveness. With a **minimum of 4GB of memory** (RAM), the system accommodates concurrent processes and data handling, promoting a smooth user experience. A **stable network** environment is paramount, facilitating real-time interactions between users and the system. **Compatibility with various operating systems** enhances accessibility and usability, allowing users to engage with the platform irrespective of their device preferences. These hardware prerequisites collectively contribute to the system's robustness, reliability, and overall effectiveness in delivering a streamlined hotel reservation and travel planning experience.

4.2 Software Requirements

IDE : Visual Studio Code

Mark-up Language : HTML & CSS

Programming Language : JavaScript & Python

Database : MySQL

The integrated development environment (IDE) for coding and development is Visual Studio Code, providing a user-friendly interface and powerful tools for our development

team. Markup languages HTML and CSS are employed for creating structured and visually appealing web pages, contributing to an intuitive user interface. The core functionalities and dynamic elements of the system are implemented using JavaScript, enabling interactive and responsive features that enhance the overall user experience. Python, a versatile programming language, is utilized to address various backend processes, ensuring the seamless integration of data and functionalities. For data storage and retrieval, MySQL serves as the database management system. Its reliability and scalability make it an ideal choice for managing diverse data related to room reservations, customer details, and travel plans.

4.2.1 Technological Tools

Web Framework : Flask

In conclusion, the outlined hardware and software requirements lay the foundation for a reliable and efficient hotel reservation and travel planner system. The specified multi-core processor, ample memory, stable network, and compatible operating system provide the necessary hardware support. On the software front, the selection of Visual Studio Code, HTML, CSS, JavaScript, Python, and MySQL ensures a well-rounded development environment. These requirements collectively contribute to the system's functionality, performance, and user experience, meeting the demands of a seamless and responsive application.

Chapter 5

Design and Modeling

In this chapter, we delve into the intricate design and modeling aspects of our hotel reservation and travel planner system. Designing an efficient and intuitive system requires a comprehensive approach, and we employ various models to illustrate the system's architecture and functionality. The models include Data Flow Diagrams (DFD), Entity-Relationship (E-R) Diagrams, and Unified Modeling Language (UML) diagrams, encompassing Use Case Diagrams, Sequence Diagrams, Activity Diagrams, and Class/Object Diagrams. Each model plays a crucial role in elucidating the system's structure, interactions, and data flow, contributing to a thorough understanding of its design principles and enhancing its potential for seamless operation.

5.1 Data Flow Diagram

Data Flow Diagrams (DFDs) serve as visual tools illustrating how information moves within our system. These diagrams aid in designing a streamlined data flow, contributing to the efficiency of our processes and enhancing user experiences.

5.1.1 Level 0 DFD

The Level 0 Data Flow Diagram (DFD) acts as a guiding map for future explorations into more detailed DFD levels, where each subsequent level will delve deeper into specific processes, subprocesses, and data flows. It provides a high-level overview of the interactions between two main users: the customer (User) and the administrator (Admin).

The figure 5.1: Level 0 DFD is pivotal in illustrating the interplay between the two main user roles: the customer (User) and the administrator (Admin), highlighting the core processes that define their interactions with the system.

For the Customer (User), the primary focus revolves around the reservation initiation

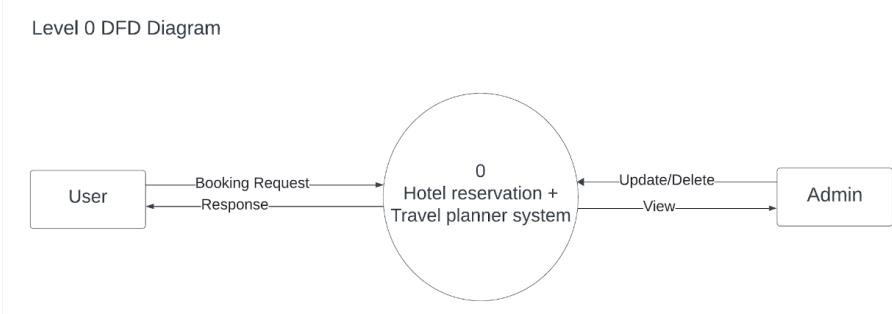


Figure 5.1: Level 0 DFD

process. Customers initiate a reservation by selecting specific dates, browsing available rooms, and confirming the booking. The Level 0 DFD elegantly captures the essence of this process by illustrating the flow of information from the customer to the system, triggering the reservation initiation. Furthermore, it portrays the subsequent interaction where the system responds promptly with relevant information, confirming the booking and providing details about the reserved room, along with additional information such as amenities and local attractions.

On the other hand, for the Administrator (Admin), the Level 0 DFD outlines core processes related to data management. Administrators are responsible for maintaining the integrity of the system's data, and the diagram succinctly illustrates how administrators can update or delete existing data. The data flow from the administrator to the system reflects the seamless integration of administrative actions within the overall system architecture. Additionally, the DFD depicts the process of information access for administrators, showcasing how they retrieve relevant details about reservations, users, and system performance to facilitate effective decision-making and system management.

5.1.2 Level 1 DFD

In the Level 1 Data Flow Diagram (DFD), depicted using figure 5.2: Level 1 DFD, gives a more detailed and intricate portrayal of the system's processes emerges, shedding light on the dynamic interactions between the customer (User), the administrator (Admin), and the underlying system components. One of the primary customer processes involves initiating a data flow to the "Room Reservation" process, effectively signaling a request for room information. This action triggers a sequence of events within the system, setting in motion the verification of the requested room information in the booking database.

This verification process stands as a distinct entity managed by the system, ensuring the accuracy and availability of room-related data for the customer.

Simultaneously, the administrator engages with the system through data flows directed towards the "Update/Delete/View" processes. These processes empower the administrator to make edits to the database as requested, thereby facilitating seamless database management. The Level 1 DFD captures the fluidity of these interactions, showcasing how the system serves as a mediator, allowing the admin to manipulate data effortlessly, ensuring that the database aligns with the evolving needs of the hotel reservation and travel planner system.

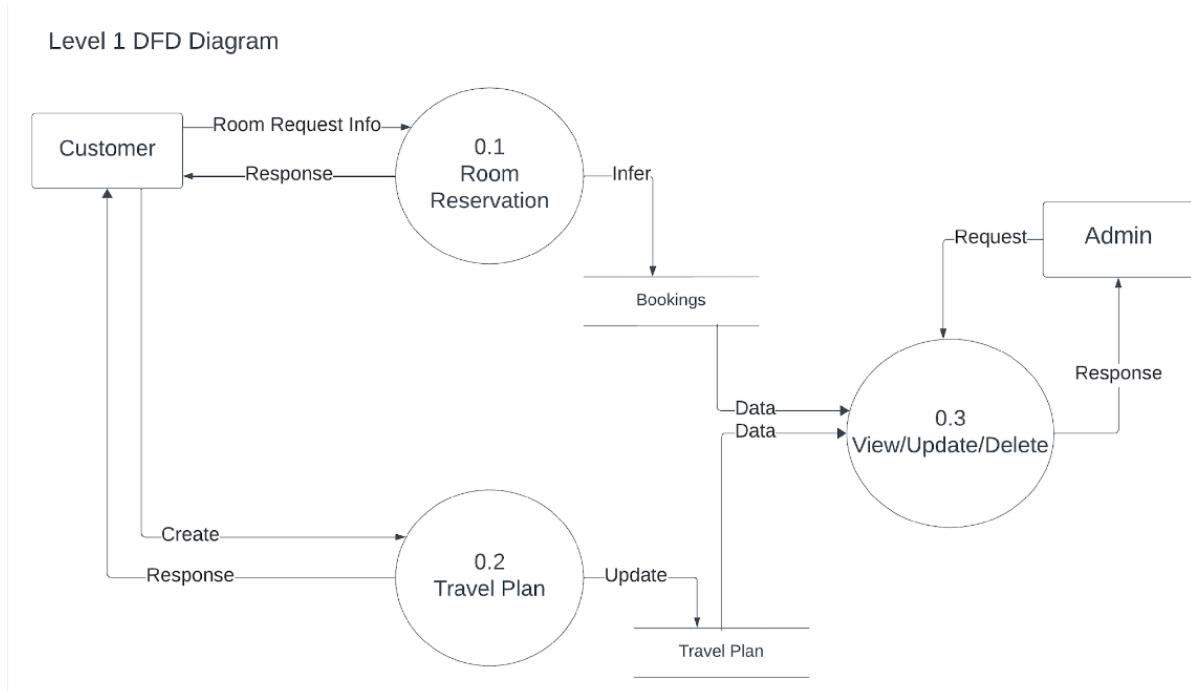


Figure 5.2: Level 1 DFD

Furthermore, the Level 1 DFD introduces another dimension to the customer experience through the "Travel Plan Generation" process. In this intricate phase, the customer provides relevant data flows, triggering the system to employ artificial intelligence algorithms to generate a personalized travel plan. This personalized plan is then seamlessly returned to the customer, enhancing their overall experience and showcasing the system's capacity to intelligently cater to user preferences.

5.1.3 Level 2 DFD

The Level 2 DFD delves into a more detailed perspective, breaking down the system's interactions into three distinct realms.

Level 2.1 DFD

In level 2.1, we focus on the intricate interactions between the customer and the "Room Reservation" process, elucidating the step-by-step data flows involved in requesting and managing room information.

Level 2.1 DFD Diagram

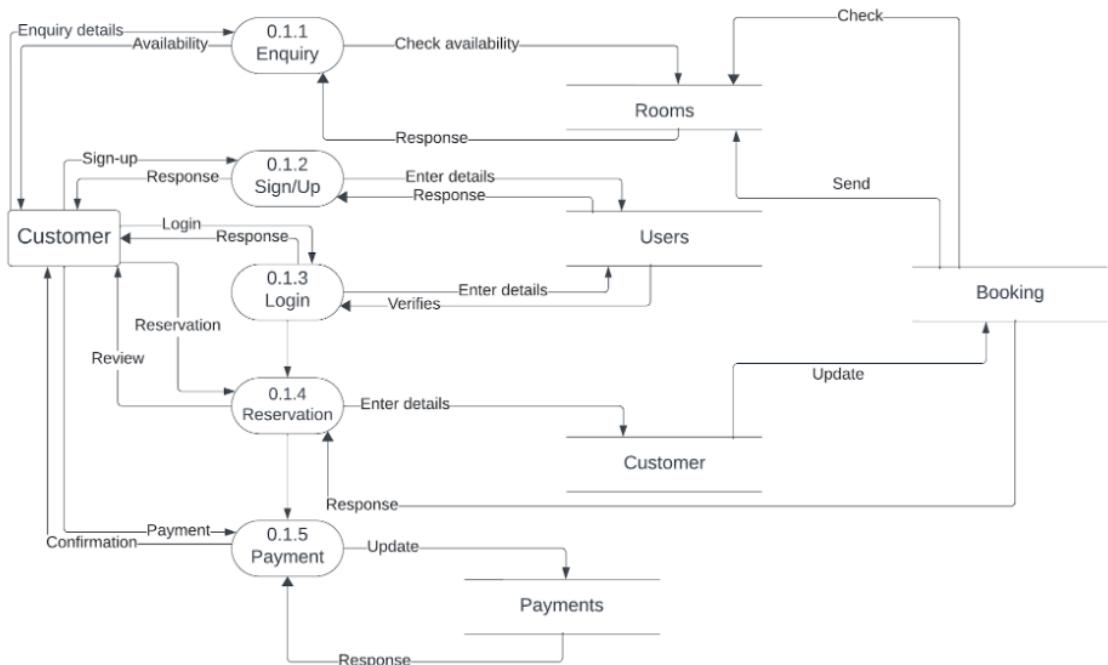


Figure 5.3: Level 2.1 DFD

In figure 5.3: Level 2.1 DFD, we can observe the initiation of the interaction is orchestrated by the customer, who actively engages with the system by providing data flows that outline their room reservation requirements. These data flows encapsulate crucial details such as the desired dates, room preferences, and any additional specifications the customer might have. This initiation marks the starting point of a series of processes embedded within the "Room Reservation" module.

The "Room Reservation" process allows customers to "Enquire" about room availability, directing the system to check the "Rooms" database . An appropriate response

is then provided to the customer. To reserve a room, customers are required to "Login" by entering necessary details which then cross-checked in "Users" database or "SignUp" if they do not have a registered account and hence their information is added "Users" database.

After logging in, customers can proceed with the "Reservation". The entered details are stored in the "Customer" database as well as in the "Booking" database and "Rooms" database. Subsequently, customers can proceed with the "Payment" process and the customer receives the QR code as room key and a payment receipt, which results in alterations to the information in the payments database.

Level 2.2 DFD

In Level 2.2, the focus sharpens on the customer's interaction with the "Travel Plan Generation" process, offering a detailed insight into the intricacies of the data flows that play a pivotal role in crafting an artificial intelligence-driven travel plan. In figure 5.4: Level 2.2 DFD we can observe, the customer actively engages in the "Travel Plan Generation" process by contributing essential data flows, which encompass their preferred travel details such as destination preferences, travel dates, and specific interests.

Level 2.2 DFD Diagram

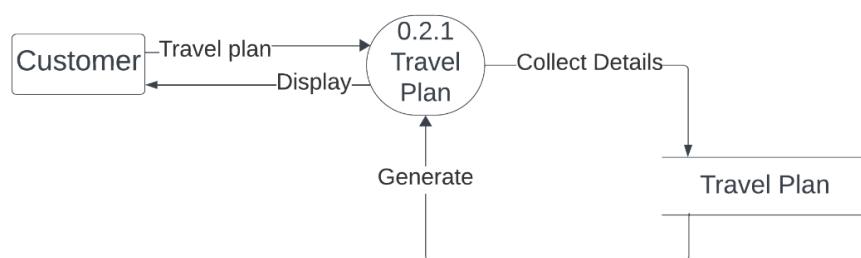


Figure 5.4: Level 2.2 DFD

The system, operating at the heart of this process, leverages artificial intelligence algorithms to process the customer's inputs and generate a highly personalized travel plan. This involves sophisticated analysis and consideration of various factors, including travel preferences, historical user data, and possibly real-time information on local attractions and events.

Once the AI-driven travel plan is crafted, the system seamlessly communicates it back to the customer. This communication ensures that the customer receives the travel plan, enhancing their overall experience by offering not only a convenient travel plan but also incorporating personalized recommendations based on their preferences.

Level 2.3 DFD

Lastly, in Level 2.3, the details of the admin's engagements with the system come to the forefront, particularly focusing on the "View/Edit/Delete" process and the associated data flows. The administrator actively interfaces with the system using specific data flows dedicated to viewing, editing, or deleting information within the database. Each of these processes is executed in response to the administrator's actions, ensuring a streamlined approach to effective database management.

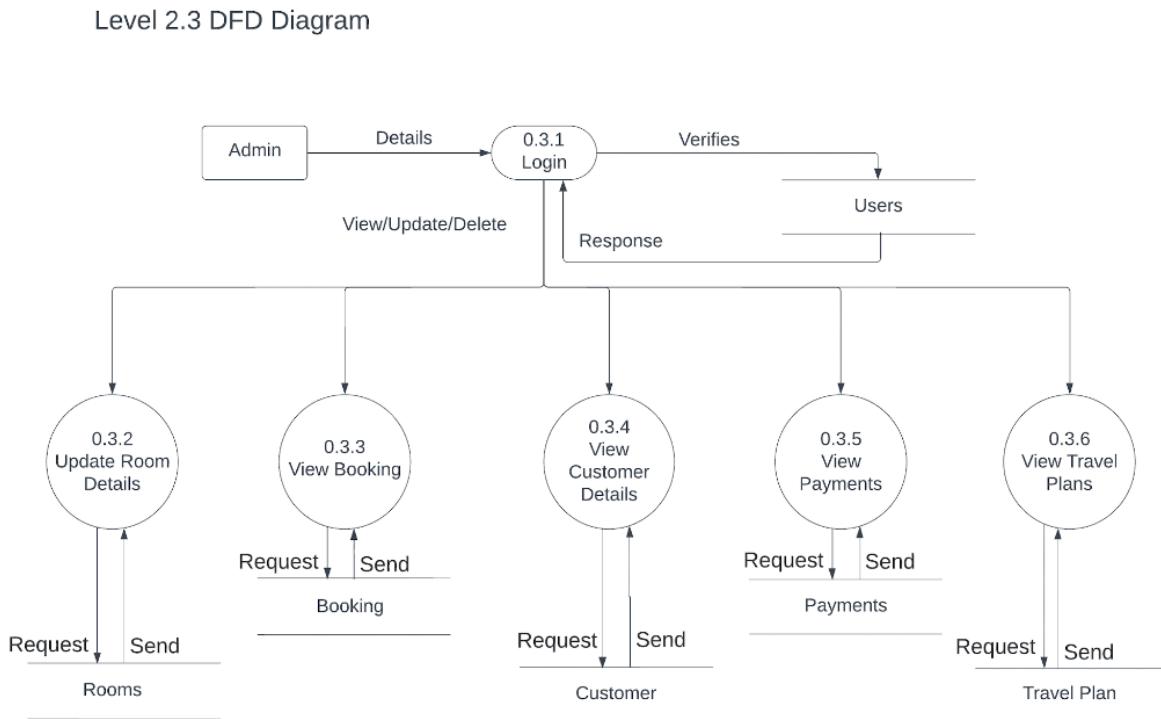


Figure 5.5: Level 2.3 DFD

During the "View" process, the administrator leverages data flows to access and review relevant information within the system. This could include details about reservations, user accounts, or other pertinent data points. The "Edit" process involves the modification of existing data, such as updating reservation details or user information. Simultaneously,

the "Delete" process allows the administrator to remove outdated or unnecessary data, contributing to the maintenance of a clean and organized database.

The Level 2.3 expansion encapsulates the systematic flow of data as the admin interacts with the system, emphasizing the dynamic nature of database management within our hotel reservation and travel planner system. The responsiveness of the system to the admin's actions ensures not only efficient data manipulation but also contributes to the overall integrity and accuracy of the information stored in the database.

5.2 ER Diagram

The figure 5.6: ER Diagram represents ER Diagram for our hotel reservation and travel planner system encompasses eight entities: "Rooms," "Booking," "Payments," "User," "TravelPlan," "RoomAllocation," "Cancellation," and "Customer." In the "Rooms" en-

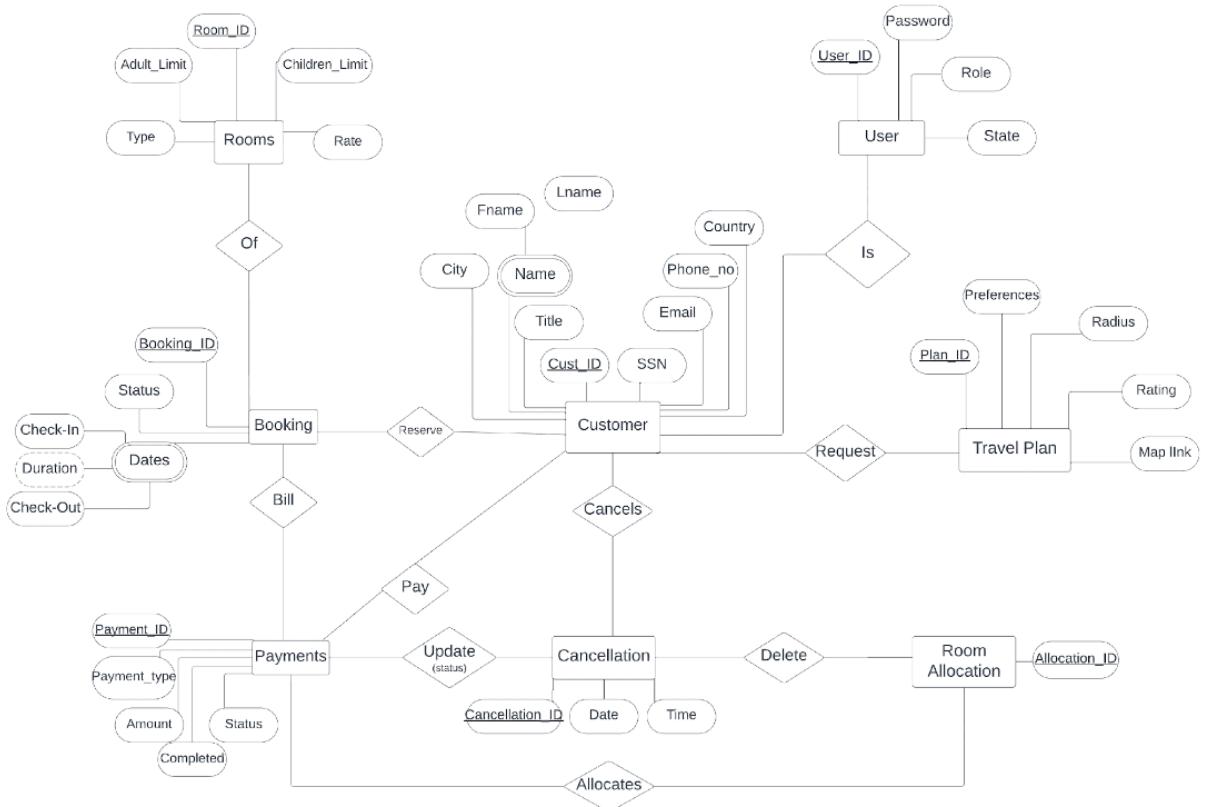


Figure 5.6: ER Diagram

ity, room details are stored, uniquely identified by RoomID. The "Bookings" entity captures reservation specifics, linking customers to their booked accommodations. Payments associated with bookings are recorded in the "Payments" entity. The "User" entity

represents system users, including both customers and administrators. The "TravelPlan" entity stores AI-generated travel plans tailored to customer preferences. Facilitating room allocations, the "RoomAllocation" entity is vital. The "Cancellation" entity logs details of booking cancellations. The "Customer" entity represents end-users.

The relationships within the ER Diagram define intricate connections, such as the association between rooms and bookings, customers and various system entities, bookings and payments, payments and cancellations, and cancellations and room allocations. These relationships establish a structured framework for managing reservations, payments, cancellations, and customer details, ensuring the efficient functioning of the hotel reservation and travel planner system.

5.3 Sequence Diagram

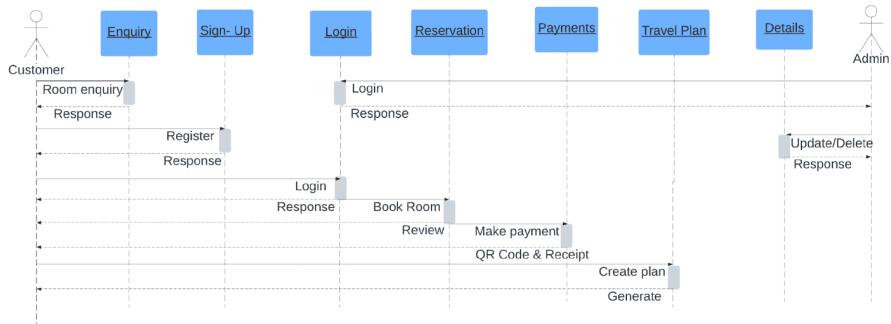


Figure 5.7: Sequence Diagram

The figure 5.7 gives sequence diagram for our hotel reservation and travel planner system intricately captures the interactions between two primary actors—the admin and the customer—depicted through seven lifelines, each representing a distinct stage in the system’s workflow: "Enquiry," "Signup," "Login," "Reservation," "Payment," "Travel Plan," and "Details."

The customer’s journey commences with an initial "Enquiry" phase, where they inquire about room availability. The system promptly responds by providing relevant information, facilitating an informed decision-making process for the customer. Following this, the customer progresses to the "Signup" lifeline, creating a registered account within the system.

Once registered, the customer utilizes the "Login" lifeline to access their account, marking the initiation of the reservation process. Through the "Reservation" lifeline, the customer navigates the selection of a room and gains access to room reviews, empowering them to make a well-informed decision. The subsequent "Payment" lifeline involves the customer completing the payment process, culminating in the generation of a QR code and receipt, ensuring a secure and documented transaction.

Optionally, the customer may explore the "Travel Plan" lifeline, where the system generates a personalized travel plan using artificial intelligence. This added feature enhances the overall customer experience by providing tailored travel recommendations based on their preferences.

On the admin side, the sequence diagram portrays the admin's interaction through the "Login" lifeline. The admin gains access to the system, marking the beginning of their engagement. The "Details" lifeline offers the admin a comprehensive view of information, allowing them to view, update, or edit various details within the system. The system responds dynamically to the admin's actions, ensuring that the database is reflective of the most current and accurate information.

5.4 Activity Diagram

The following figure 5.8 gives the activity diagrams for our hotel reservation and travel planner. Each diagram is explained below:

Enquiry: Shows the steps for a customer to inquire about room availability, receive information, and conclude the enquiry process.

Register: Illustrates the customer registration process, including information collection, validation, account creation, and confirmation.

Login: Depicts the customer authentication process, starting from login initiation to credential validation and successful login or error message.

Reservation: Outlines room reservation activities, from initiation to preference selection, availability check, confirmation, and receipt generation.

Payment: Illustrates the payment process, covering initiation, option selection, processing, confirmation, and receipt generation or handling payment failure.

Travel Plan: Details the steps for generating an AI-based travel plan, starting with initi-

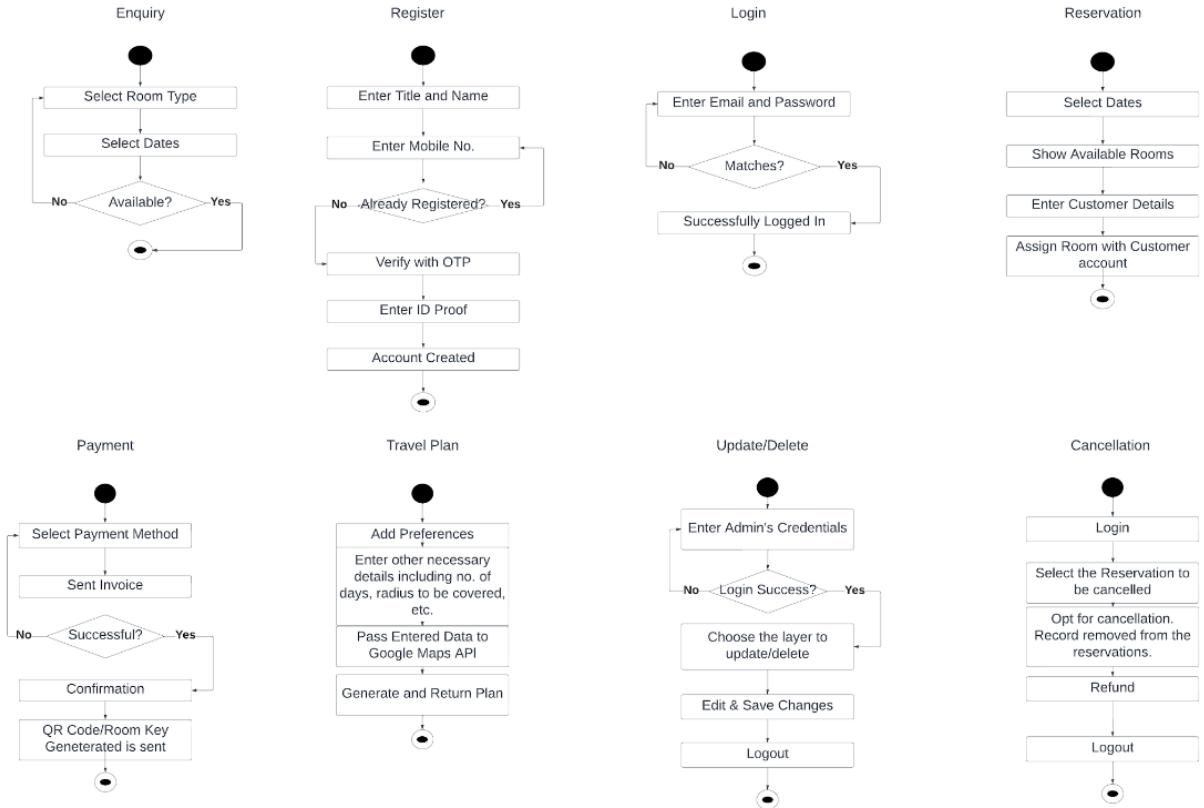


Figure 5.8: Activity Diagrams

ation, preference input, processing, plan generation, and customer receipt.

Update/Delete: Shows the process of updating or deleting information, including initiation, modification selection, changes, validation, and confirmation.

Cancellation: Depicts the cancellation process, from initiation to eligibility verification, processing, refund (if applicable), and confirmation.

5.5 Class Diagram

In the figure 5.9: Class Diagram, we've a class diagram featuring ten classes: Admin, People (a base class for Registered Customers and Admin), Registered Customer (for signed-up users), Booking (reservations by customers), Visitor (for non-logged-in inquiries), Rooms (available rooms), Cancellation (handling cancellations), Room Allocation (allocating rooms, accessed by Payments), Payment (transaction handling), and Travel Plan (AI-generated travel plans).

Crucial relationships within the class diagram include inheritance, showcasing a hierarchical structure between People, Registered Customer, and Admin classes. Access rela-

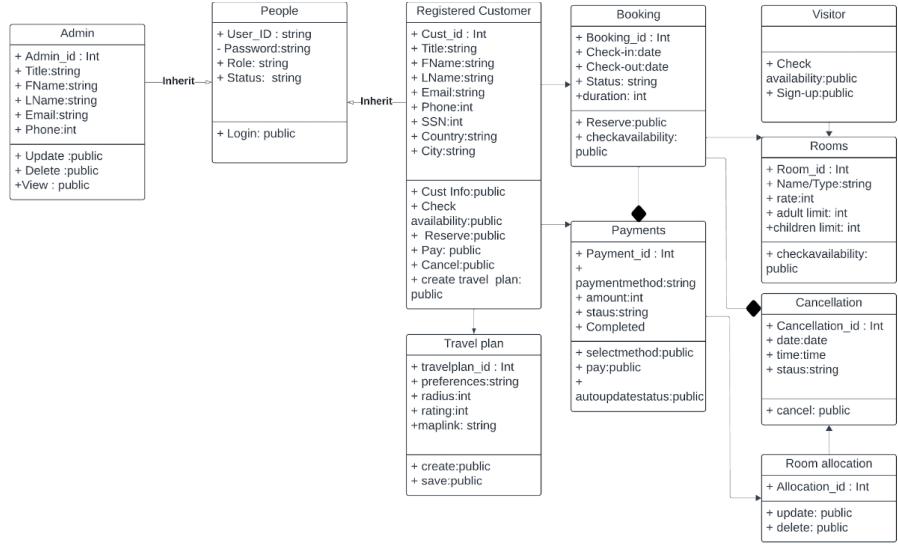


Figure 5.9: Class Diagram

tionships highlight how the Registered Customer class interacts with Booking, Payment, and Travel Plan functionalities, offering a direct connection between users and system features. Dependency relationships are evident in the Room Allocation class, which is accessed by Payments, indicating a level of dependence between these two classes. The composition relationship among Booking, Payments, and Cancellation emphasizes that a booking is composed of payment and cancellation details, illustrating the interdependence of these components within the system's architecture.

5.6 Use Case Diagram

The figure 5.10 gives the Use Case Diagram for our project. In the UML use case diagram for our hotel reservation and travel planner system, the spotlight is on two central actors: Admin and Customer. Both actors engage in common functionalities such as Login and Logout, establishing a shared foundation for their interactions within the system.

For Customers, a spectrum of use cases unfolds, encapsulating the entire customer journey. Starting with the "Search for Available Rooms" use case, customers can explore the options at their disposal. The subsequent "Make a Reservation" use case allows them to finalize their selection and book a room. The "Payment" use case manages the financial transaction, ensuring a seamless and secure process. The system further enriches the customer experience through the "Generate a Travel Plan" use case, employing artificial intelligence to craft personalized travel plans. Additionally, customers have the

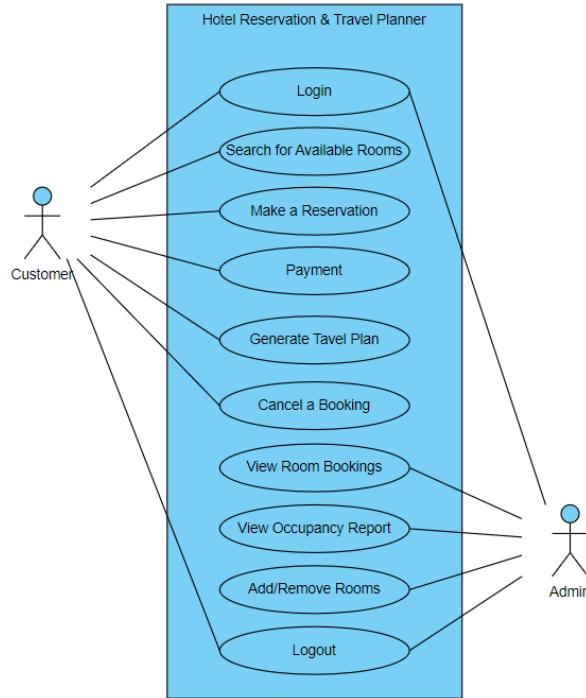


Figure 5.10: Use Case Diagram

flexibility to "Cancel a Booking," offering a comprehensive set of functionalities to handle cancellations if needed.

In contrast, the Admin actor has a distinct set of use cases tailored to their role within the system. The "View Room Bookings" use case provides administrators with insights into current reservations, facilitating effective management and coordination. The "View Occupancy Report" use case offers a comprehensive overview of occupancy details, enabling admins to make informed decisions. Additionally, the Admin actor possesses the ability to dynamically influence the system's room availability through the "Add/Remove Rooms" use case, ensuring flexibility in adjusting accommodations based on demand and operational requirements.

In the design and modeling phase establishes a robust foundation for our hotel reservation and travel planner project. Through DFDs, ER diagrams, and UML diagrams, we've delineated system architecture, dynamic interactions, and user functionalities. These models now guide the subsequent development stages, ensuring a systematic and comprehensive implementation approach.

Chapter 6

Results and Discussions

This chapter offers a visual overview and analysis of the hotel reservation and travel planner website. Through screenshots and brief descriptions, this section provides insights into the system's interface, functionalities, and overall output, showcasing the successful implementation of project objectives and highlighting key features for discussion.

6.1 Home Page

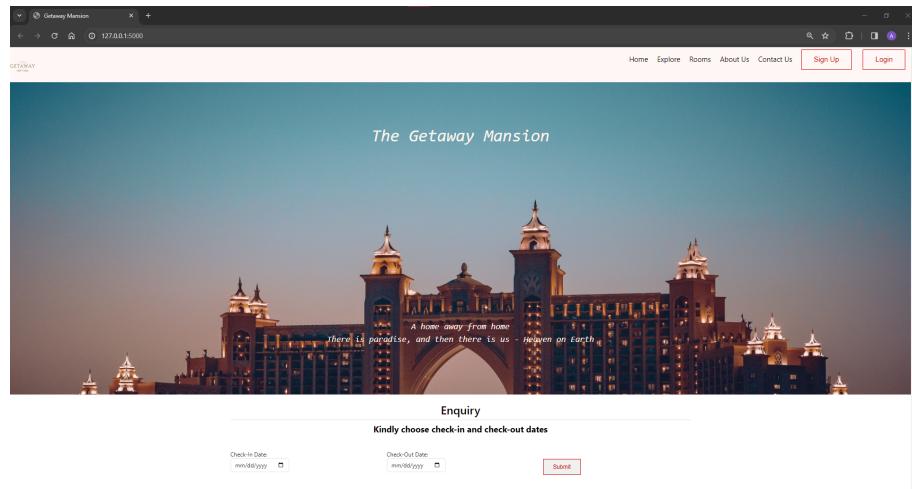


Figure 6.1: Home Page(1)

The figure 6.1 shows website's homepage features a navigation bar with menu options, a landing-hero image of the hotel's exterior, and a form for visitors to place an enquiry about the availability of rooms.

Figure 6.3 shows the part of the website's homepage, that provides visually appealing information about the hotel's facilities and nearby tourist attractions.

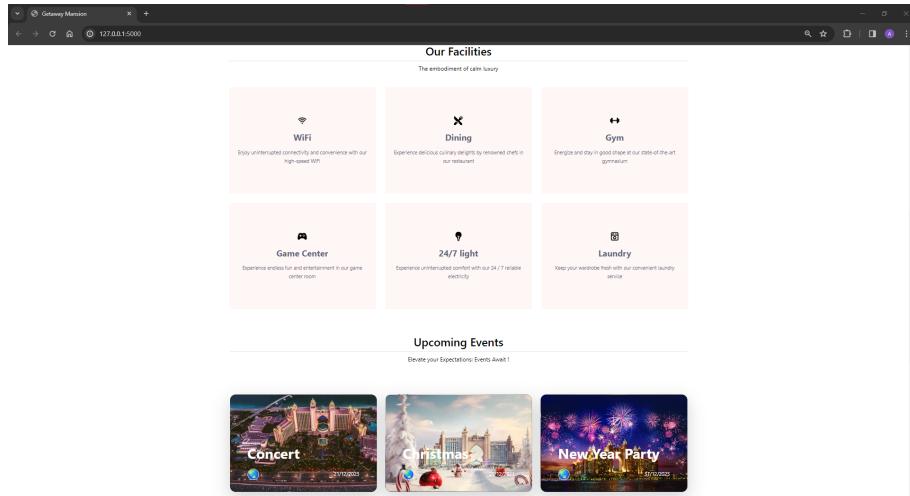


Figure 6.2: Home Page(2)

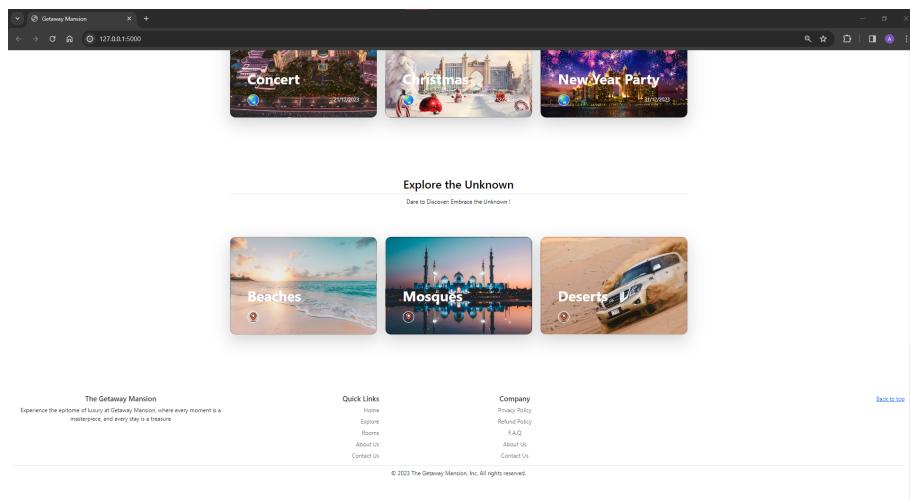


Figure 6.3: Home Page

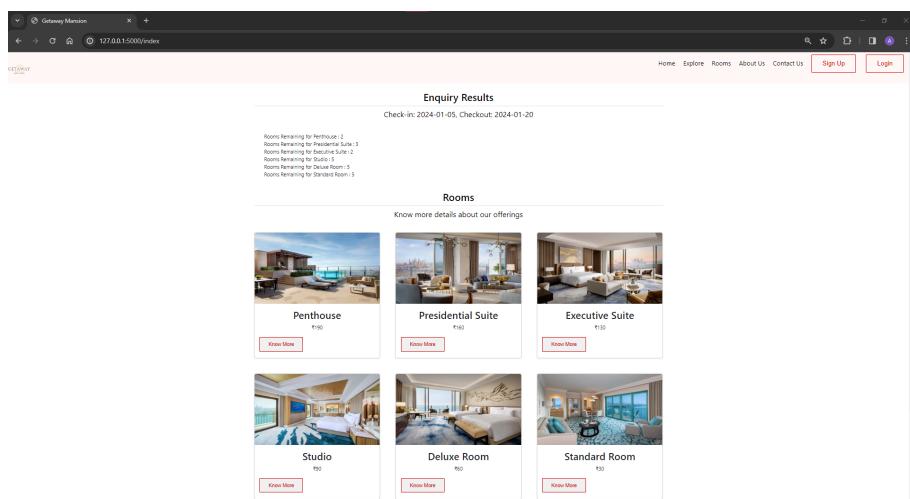


Figure 6.4: Home Page(4)

Upon submitting the enquiry form shown in Figure 6.1, Figure 6.4 shows the availability of rooms based on the selected check-in and check-out dates, displayed on this result page with the count of rooms remaining per room type. It also offers links to the respective room types for users to gather information about the amenities offered per room type.

6.2 Admin :Edit Room

The screenshot shows a web application interface for editing a room. At the top, there's a header with the title 'EDIT ROOM'. Below it, there are four input fields: 'New Type' (set to 'Penthouse'), 'New Rate' (set to '190'), 'New Adult Count' (set to '4'), and 'New Children Count' (set to '3'). A red-bordered 'Update Room' button is located at the bottom of the form. In the top right corner of the browser window, it says 'Welcome, admin1@gmail.com' and has a 'Logout' button. The bottom of the page contains a footer with the company name 'The Getaway Mansion', a brief description, and links to various pages like Home, Explore, Rooms, About Us, Contact Us, Privacy Policy, Refund Policy, F.A.Q., and About Us again. It also includes a 'Back to list' link and a copyright notice: '© 2023 The Getaway Mansion, Inc. All rights reserved.'

Figure 6.5: Edit Room

Based on the display of existing rooms from the rooms table in the database, Figure 6.5 shows that the admin is provided the option to edit the room in this form. The room type, its pricing and count of adults and children can be modified according to the requirements of the admin. The new updates will automatically be saved into the database.

6.3 Admin : Add Room

The screenshot shows a web browser window titled "Gateway Mansion" with the URL "127.0.0.1:5000/admin/add_room". The page has a header with "Welcome, admin1@gmail.com" and a "Logout" button. The main content is a form titled "ADD ROOM" with the following fields:

| | |
|-----------------|-----------|
| Room Type: | Penthouse |
| Rate: | 150 |
| Adult Count: | 4 |
| Children Count: | 3 |

Below the form are links to "Add Room" and "Back to Room List". At the bottom, there's a footer with "The Getaway Mansion" logo, quick links (Home, Explore, Rooms, About Us, Contact Us), company links (Privacy Policy, Refund Policy, FAQ, About Us, Contact Us), and a copyright notice: "© 2023 The Getaway Mansion, Inc. All rights reserved."

Figure 6.6: Add Room

In Figure 6.6, the admin can utilize this form to add a new room by providing the room type, its pricing rate, and the number of adults and children respectively. The new addition gets saved into the database accordingly.

6.4 Cancel Booking

The screenshot shows a web browser window titled "Gateway Mansion" with the URL "127.0.0.1:5000/customer/bookings/2". The page has a header with "Welcome, john.doe@example.com" and a "Logout" button. The main content is a table titled "MY BOOKINGS" showing one entry:

| Booking ID | Check-in Date | Check-out Date | Status | Duration | Room ID | Room Type | Customer ID | Customer Name | Payment ID | Actions |
|------------|---------------------------------|---------------------------------|-----------|----------|---------|-----------|-------------|---------------|------------|------------------------|
| 1 | Thu 21 Dec 2023 00:00:00 GMT | Sun 31 Dec 2023 00:00:00 GMT | Cancelled | 10 | 1 | Penthouse | 1 | John Doe | 1 | Cancel |

Below the table, a message says "Showing 1 to 1 of 1 entries" and buttons for "Back to Dashboard" and "Book Now". At the bottom, there's a footer with "The Getaway Mansion" logo, quick links (Home, Explore, Rooms, About Us, Contact Us), company links (Privacy Policy, Refund Policy, FAQ, About Us, Contact Us), and a copyright notice: "© 2023 The Getaway Mansion, Inc. All rights reserved."

Figure 6.7: Cancel Booking

In Figure 6.7, customers can view their existing bookings once logged in. If required, they can cancel the booking by selecting the “Cancel” option. The status of the booking is updated to “Cancelled” and the user is flashed with an appropriate message.

6.5 Travel Planner Prototype

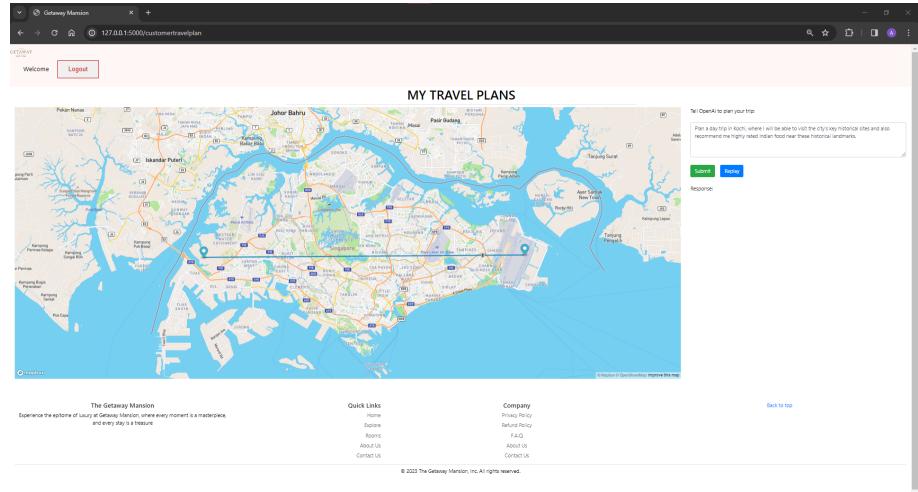


Figure 6.8: Travel Planner

Figure 6.8 shows a prototype for customers to create a travel plan using the interactive maps offered by Mapbox and the AI tool offered by OpenAI. Customers can give a prompt of their choice and click submit. The AI tool highlights key locations onto the map for the user.

6.6 Booking

The screenshot shows a booking form titled 'Customer Details'. It includes fields for Title (MR), First Name (Bruce), Last Name (Wayne), Email (testaadarsh2@gmail.com), Mobile Number (+919567992310), and Country (India). Below the form is a checkbox with the text: 'By proceeding, I acknowledge that I have reviewed the [Privacy Statement](#) and accept the [Rules and Restrictions](#) and [Terms of Use](#)'. There are 'Proceed' and 'Back to Dashboard' buttons. The footer includes the 'The Getaway Mansion' logo, quick links (Home, Explore, Rooms, About Us), company info (Privacy Policy, Refund Policy, FAQ, About Us), and a 'Back to top' link.

Figure 6.9: Booking(1)

Figure 6.9 shows an input form to collect the details of the customer whilst booking a

room. It collects information such as Title, Name, Email, Mobile Number, Country, and City. The user can then proceed onto the next stage in the booking process.

The screenshot shows a web browser window for 'The Getaway Mansion'. The title bar says 'Gateway Mansion' and the address bar shows '127.0.0.1:5000/customer/booking/12'. The page header includes 'Welcome, john.doe@example.com' and a 'Logout' button. The main content area is titled 'Booking For Customer:' and displays the following customer information:

- Title: MR
- Name: Bruce Wayne
- Email: testadarsh2@gmail.com
- Mobile Number: +919547992310
- Country: India
- City: Emaulam

Below this is a 'Select Dates' section with two input fields: 'Check-in Date' (01/01/2024) and 'Check-out Date' (01/18/2024), and a 'Submit' button. At the bottom of the page, there's a 'Back to Dashboard' button, a sidebar with 'Quick Links' (Home, Explore, Rooms, About Us, Contact Us) and 'Company' (Privacy Policy, Refund Policy, F.A.Q, About Us, Contact Us), and a footer with copyright information: '© 2023 The Getaway Mansion, Inc. All rights reserved.' and a 'Back to top' link.

Figure 6.10: Booking(2)

Figure 6.10 shows a review of the previously entered customer details. It also contains an input form for the customer to select the check in and check out dates. The dates are collected to check the availability of rooms.

This screenshot shows the same 'Booking For Customer' page as Figure 6.10, but with a different section visible. The 'Select Room' section is now active, displaying a table of room types and their availability:

| Room Type | Remaining Rooms | Price | Adult Limit | Children Limit | Action |
|-------------------|-----------------|-------|-------------|----------------|--------------------------|
| Penthouse | 2 | 190 | 4 | 3 | Book Now |
| Residential Suite | 3 | 160 | 4 | 3 | Book Now |
| Executive Suite | 2 | 130 | 4 | 3 | Book Now |
| Studio | 5 | 90 | 3 | 3 | Book Now |
| Deluxe Room | 5 | 60 | 3 | 3 | Book Now |
| Standard Room | 5 | 30 | 3 | 3 | Book Now |

At the bottom of the page, there's a 'Back to Dashboard' button, a sidebar with 'Quick Links' (Home, Explore, Rooms, About Us, Contact Us) and 'Company' (Privacy Policy, Refund Policy, F.A.Q, About Us, Contact Us), and a footer with copyright information: '© 2023 The Getaway Mansion, Inc. All rights reserved.' and a 'Back to top' link.

Figure 6.11: Booking(3)

Figure 6.11 shows the results of room availability based on the selected dates are dynamically displayed with details about the room type, its price, and adult and children count limit respectively. The customer has the option to book a particular room based on their choice and/or requirements.

Figure 6.12 is a checkout page for the room selected, implemented using Stripe Payment Gateway. It associates the payment with the provided customer email and collects

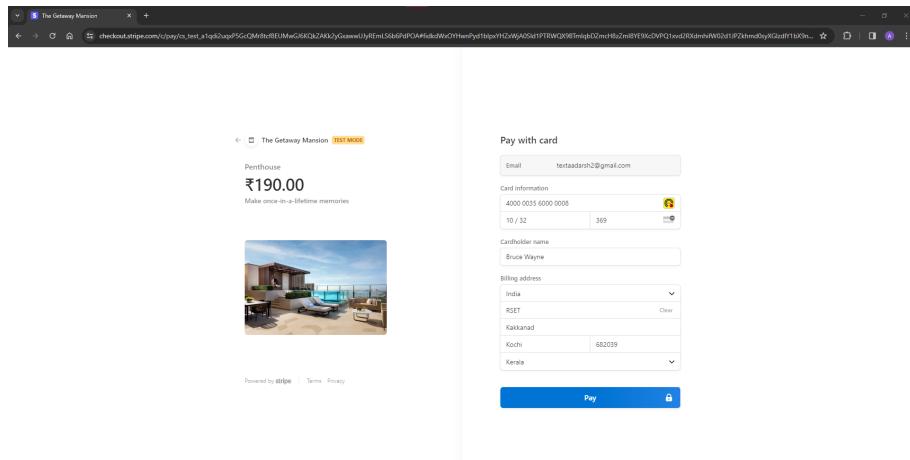


Figure 6.12: Booking(4)

card details and customer billing address information.

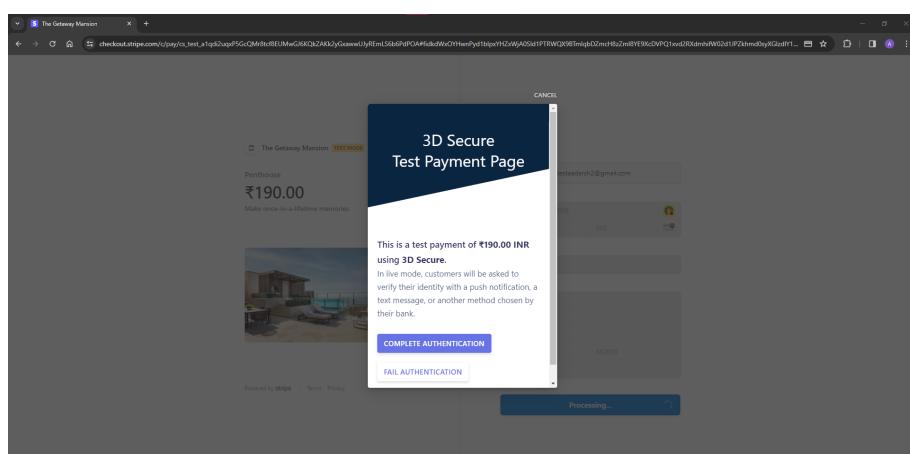


Figure 6.13: Booking(5)

Figure 6.13 is associated with the checkout page and is a validation page that serves to replace the functionality of OTP verification whilst making a card payment.

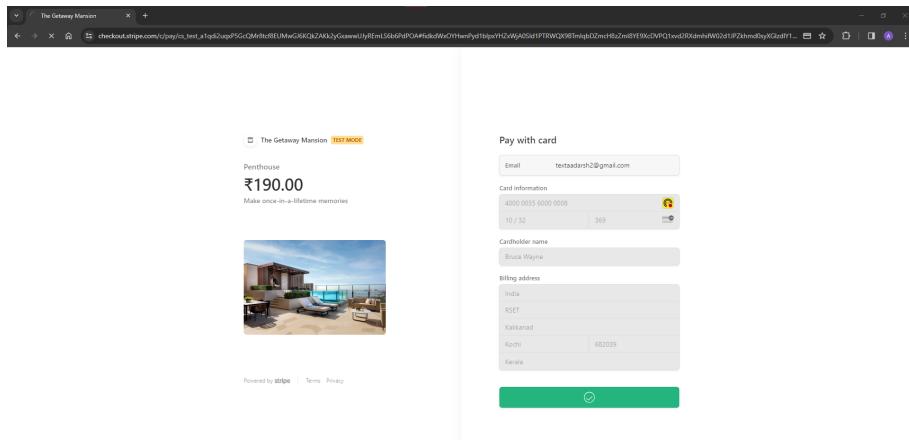


Figure 6.14: Booking(6)

Figure 6.14 shows successful payment displayed by green box.

6.7 Booking Success

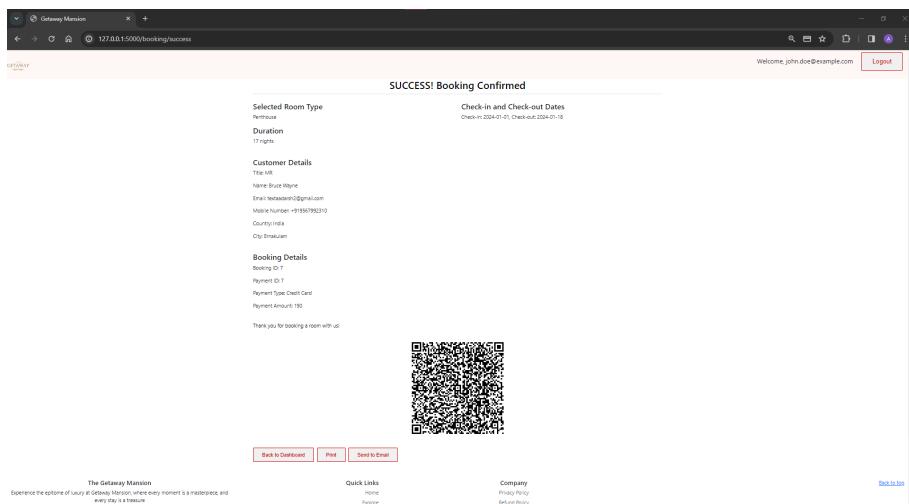


Figure 6.15: Booking Success

Figure 6.15 provides booking details after successful payment. The database is updated accordingly with all the provided details. A QR code is also generated containing all the key details.

In Figure 6.16, customers have the option to print the successful booking details and QR code for future reference.

Figure 6.17 shows that the email is sent to the provided customer email address containing all the booking details and the QR Code as an attachment.

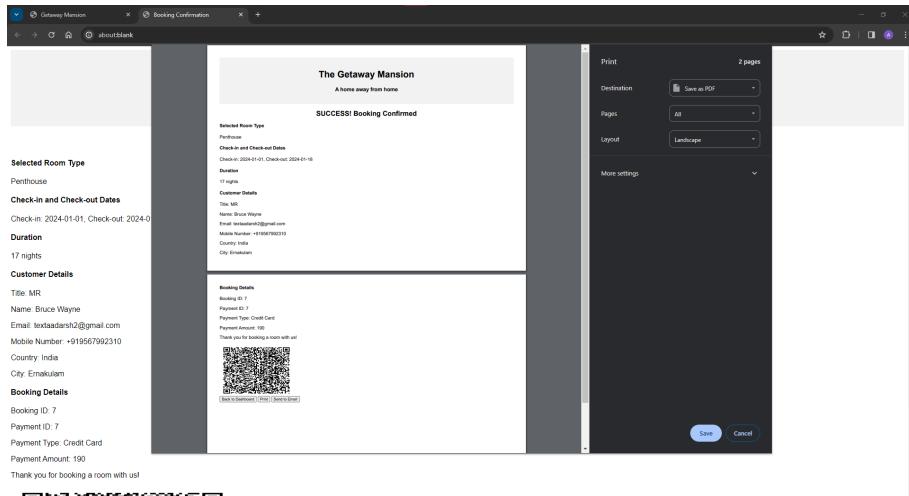


Figure 6.16: Print Option

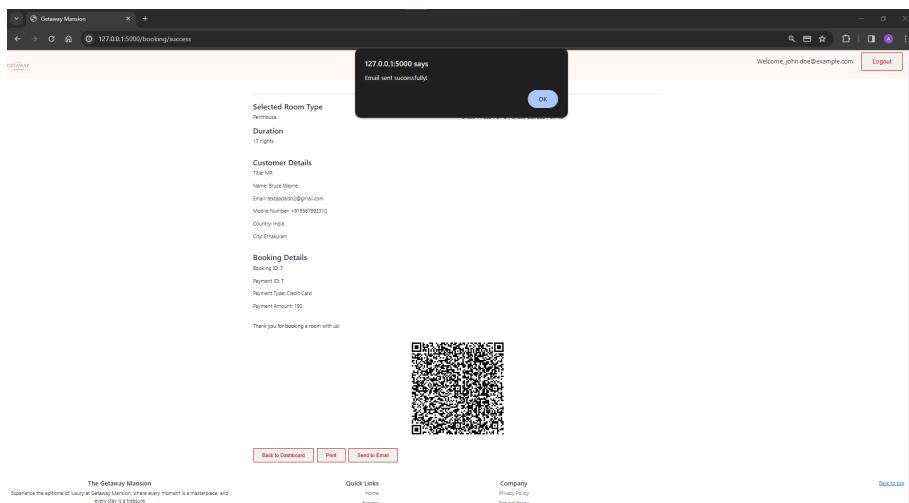


Figure 6.17: Email Request

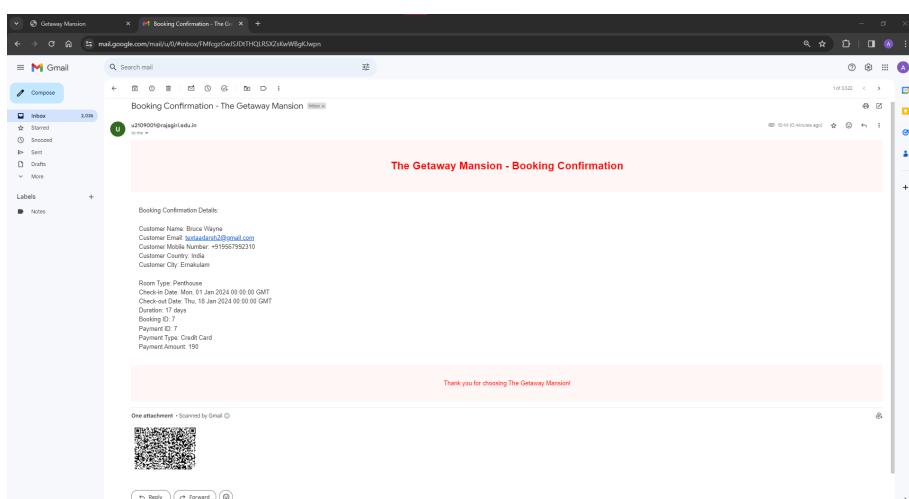


Figure 6.18: Email

Figure 6.18 shows the screenshot of the email that the customer received with room details and QR code attached.

The screenshot shows a 'MY BOOKINGS' page from a web application. At the top right, it says 'Welcome, john.doe@example.com' and has a 'Logout' button. Below the header is a search bar and a table with columns: Booking ID, Check-in Date, Check-out Date, Status, Duration, Room ID, Room type, Customer ID, Customer Name, Payment ID, and Actions. There are two entries:

| Booking ID | Check-in Date | Check-out Date | Status | Duration | Room ID | Room type | Customer ID | Customer Name | Payment ID | Actions |
|------------|----------------------------------|----------------------------------|-----------|----------|---------|-----------|-------------|---------------|------------|------------------------|
| 1 | Thu, 21 Dec 2023 00:00:00 GMT | Sun, 31 Dec 2023 00:00:00 GMT | Cancelled | 10 | 1 | Penthouse | 1 | John Doe | 1 | Cancel |
| 7 | Mon, 01 Jan 2024 00:00:00 GMT | Fri, 12 Jan 2024 00:00:00 GMT | Confirmed | 17 | 1 | Penthouse | 7 | Bruce Wayne | 7 | Cancel |

At the bottom, there are buttons for 'Back to Dashboard' and 'Book Now'.

Figure 6.19: Proof of Booking

Figure 6.19 shows where customer could see all the reservations they made and as a proof of room reservation.

The screenshot shows a 'MY PAYMENTS' page from a web application. At the top right, it says 'Welcome, john.doe@example.com' and has a 'Logout' button. Below the header is a search bar and a table with columns: Payment ID, Payment Type, Amount, Status, Booking ID, Customer ID, and Customer Name. There are two entries:

| Payment ID | Payment Type | Amount | Status | Booking ID | Customer ID | Customer Name |
|------------|--------------|--------|-----------|------------|-------------|---------------|
| 1 | Credit Card | 190 | Completed | 1 | 1 | John Doe |
| 7 | Credit Card | 190 | Completed | 7 | 7 | Bruce Wayne |

At the bottom, there are buttons for 'Back to Dashboard' and 'Back to top'.

Figure 6.20: Proof of Payment

In Figure 6.20, customer can also view the proof of their payment showing information such as the amount paid, payment type & status and more.

The screenshot shows a 'BOOKINGS' page from a web application. At the top right, it says 'Welcome, admin1@gmail.com' and has a 'Logout' button. Below the header is a search bar and a table with columns: Booking ID, Check-in Date, Check-out Date, Status, Duration, Room ID, Room type, Customer ID, and Customer Name. There are seven entries:

| Booking ID | Check-in Date | Check-out Date | Status | Duration | Room ID | Room type | Customer ID | Customer Name |
|------------|-------------------------------|-------------------------------|-----------|----------|---------|--------------------|-------------|-----------------|
| 1 | Thu, 21 Dec 2023 00:00:00 GMT | Sun, 31 Dec 2023 00:00:00 GMT | Cancelled | 10 | 1 | Penthouse | 1 | John Doe |
| 2 | Fri, 05 Jan 2024 00:00:00 GMT | Mon, 15 Jan 2024 00:00:00 GMT | Confirmed | 10 | 2 | Penthouse | 2 | Alicia Smith |
| 3 | Fri, 12 Jan 2024 00:00:00 GMT | Sat, 20 Jan 2024 00:00:00 GMT | Cancelled | 8 | 6 | Presidential Suite | 3 | Michael Johnson |
| 4 | Mon, 15 Jan 2024 00:00:00 GMT | Mon, 22 Jan 2024 00:00:00 GMT | Confirmed | 7 | 9 | Executive Suite | 4 | Emily Brown |
| 5 | Thu, 01 Feb 2024 00:00:00 GMT | Sat, 10 Feb 2024 00:00:00 GMT | Cancelled | 9 | 12 | Studio | 5 | Robert Miller |
| 6 | Sun, 18 Feb 2024 00:00:00 GMT | Wed, 28 Feb 2024 00:00:00 GMT | Confirmed | 10 | 18 | Deluxe Room | 6 | Sophia Davis |
| 7 | Mon, 01 Jan 2024 00:00:00 GMT | Thu, 18 Jan 2024 00:00:00 GMT | Confirmed | 17 | 1 | Penthouse | 7 | Bruce Wayne |

At the bottom, there are buttons for 'Back to Dashboard' and 'Next'.

Figure 6.21: Admin Side Proof(1)

Figure 6.21 shows the admin's side of viewing the proof of bookings. Admins could see all the reservation made, all at one place. It shows details such as the customer information along with room information and reservation details. Admin is allowed to search for a particular reservation among the list.

| CUSTOMERS | | | | | | | | |
|-------------|-------|------------|-----------|-----------------------------|---------------|-----------|----------|---------|
| Customer ID | Title | First Name | Last Name | Email | Phone no | Country | City | User ID |
| 1 | Mr | John | Doe | john.doe@example.com | 1234567890 | USA | New York | 2 |
| 2 | Mrs | Alice | Smith | alice.smith@example.com | 9876543210 | Canada | Toronto | 3 |
| 3 | Dr | Michael | Johnson | michael.johnson@example.com | 5551123456 | UK | London | 4 |
| 4 | Mrs | Emily | Brown | emily.brown@example.com | 9998887777 | Australia | Sydney | 5 |
| 5 | Mr | Robert | Miller | robert.miller@example.com | 1112223344 | Germany | Berlin | 6 |
| 6 | Mrs | Sophia | Davis | sophia.davis@example.com | 7778665555 | France | Paris | 7 |
| 7 | MR | Bruce | Wayne | test@example.com | +919876543210 | India | Mumbai | 2 |

Figure 6.22: Admin Side Proof(2)

Figure 6.22 shows Admin's side of viewing customer details. It shows all the information on every customer as a list/table as shown in the figure.

In summary, this chapter visually showcases the hotel reservation and travel planner website's performance. Through succinct descriptions and screenshots, it highlights key features and project achievements. This chapter serves as a concise reference, emphasizing the successful implementation of goals and the overall impact of the developed system.

Chapter 7

Conclusions & Future Scope

Our mini-project aimed to develop a comprehensive hotel reservation and travel planning system to enhance user experience and streamline administrative tasks. Through the implementation of a user-friendly interface, efficient database management, and integration of key functionalities, the system caters to both customers and administrators, offering a seamless reservation process and robust management capabilities. The user-centric system architecture facilitates easy navigation for both customers and administrators. Key features like online inquiries, reservation cancellations, and an AI-driven travel planner enhance versatility and responsiveness. The emphasis on system requirements, both hardware and software, ensures that the system operates optimally and is accessible to users across different environments. The specified hardware and software requirements, including a multi-core processor, stable network connection, and compatibility with Visual Studio Code and MySQL, contribute to the system's reliability and performance. The use of various modeling techniques, including Data Flow Diagrams, Entity-Relationship Diagrams, and UML diagrams, played a pivotal role in conceptualizing, designing, and structuring the system. As with any project, continuous testing, feedback, and refinement are crucial for ensuring the system's effectiveness and user satisfaction. By incorporating user feedback and addressing potential enhancements, the system can evolve to meet changing requirements and expectations.

Future Scope

The project exhibits promising avenues for future expansion and improvement:

1. Integration of additional payment gateways to enhance flexibility for users in making reservations and payments.
2. Implementation of a feedback system for customers to share their experiences and

contribute to the enhancement of services.

3. Integration of a dynamic pricing system based on factors such as demand, seasonality, and special events.
4. Development of a mobile application to provide users with on-the-go access and a seamless booking experience.
5. Inclusion of personalized user profiles, allowing customers to save preferences and receive tailored recommendations for future travel plans.

References

- [1] H.-S. Chiang and T.-C. Huang, “User-adapted travel planning system for personalized schedule recommendation,” *Information Fusion*, vol. 21, pp. 3–17, 2015. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S1566253513000705>
- [2] C. Morosan and M. Jeong, “Users’ perceptions of two types of hotel reservation web sites,” *International Journal of Hospitality Management*, vol. 27, no. 2, pp. 284–292, 2008. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0278431907000643>
- [3] B. A. Sparks and V. Browning, “The impact of online reviews on hotel booking intentions and perception of trust,” *Tourism Management*, vol. 32, no. 6, pp. 1310–1323, 2011. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0261517711000033>

Appendix I: Presentation

Mini Project Presentation

Group 1 – S5 CSBS



Hotel Reservation System + Travel Planner

1/3/2024

1

Content

Introduction

Problem Statement

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Activity Diagram

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Functionalities

Implementation Details

Project Timeline

Screenshots of Work done so far

Project Guide & Team Members

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Introduction



This project aspires to create an efficient platform for users by combining a Hotel Reservation System with a Personalized Travel Planner.



Emphasis lies in providing users with a streamlined process for booking rooms in a hotel, detailed information about accommodation options, and the convenience of personalized travel plans.



This project addresses the evolving needs of travelers by leveraging technology to simplify their experience.

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Problem Statement



Users face a challenge navigating separate platforms for reservations and planning, while hotels grapple with resource optimization and personalized service delivery, resulting in limited insights and inefficiencies in travel management.

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Objectives



Cohesive Hotel Reservation System coupled with a Personalized Travel Planner



Streamline the booking process



Provide comprehensive information, personalized recommendations, and efficient travel management

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Motivation



HOME

ABOUT US

PACKAGES

EXPLORE KERALA

TESTIMONIALS

TRAVEL TIPS

CONTACT US

For Booking & Enquiry

+91 9447231365

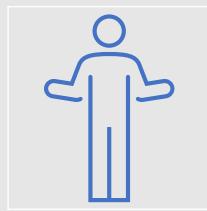
**"EXPLORE THE VERDANT PARADISE OF
KERALA WITH PEACOCK HOLIDAYS AND
TAKE HOME A MEMORABLE
EXPERIENCE TO CHERISH A LIFETIME."**

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Scope & Applications

Application: In the Travel & Hospitality Industry



Can be used by travelers to seamlessly plan and book their trips, ensuring a personalized and stress-free travel experience.

Can be used by hotels by integrating into their existing hospitality technology solutions, adding value to their offerings.

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Challenges



User Input Errors



User Internet Connectivity Issues



Payment Processing Issues from Customer's Bank

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Literature Review

[1] H.-S. Chiang and T.-C. Huang, "User-adapted travel planning system for personalized schedule recommendation," *Information Fusion*, vol. 21, pp. 3–17, Jan. 2015, doi: <https://doi.org/10.1016/j.inffus.2013.05.011>.

Problem: Planning comprehensive travel schedules which is personalized

Methods: Novel algorithm, User-adapted interface, adjustable results, and feedback mechanism.

Results: Statistically significant improvements in user satisfaction and intention.

Advantages: Comprehensive consideration of user requirements, Emphasis on personalization and user flexibility, Automation for streamlined planning, Feedback mechanism for improved accuracy.

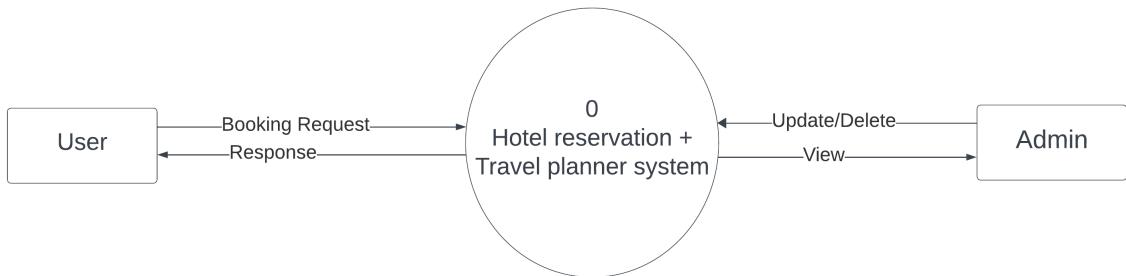
Disadvantages: Lack of detailed algorithm information, Dependency on user feedback may vary, Limited insight into experimental scope, Challenges in generalizing better performance claims.

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DFD Diagram

Level 0 DFD Diagram

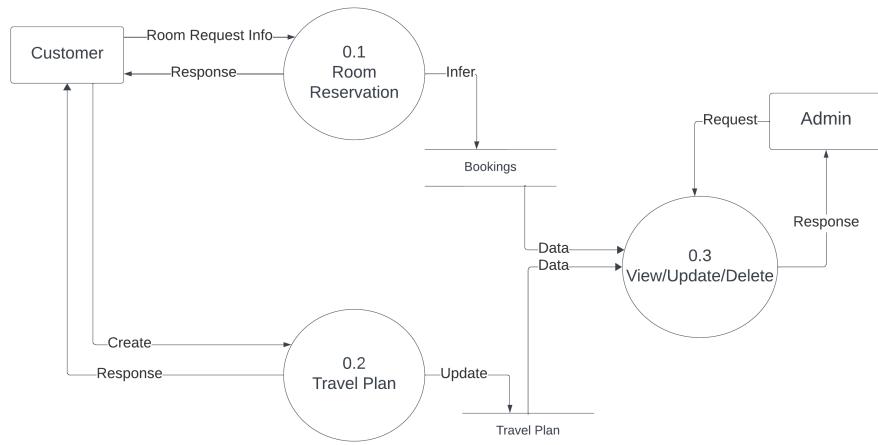


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DFD Diagram

Level 1 DFD Diagram

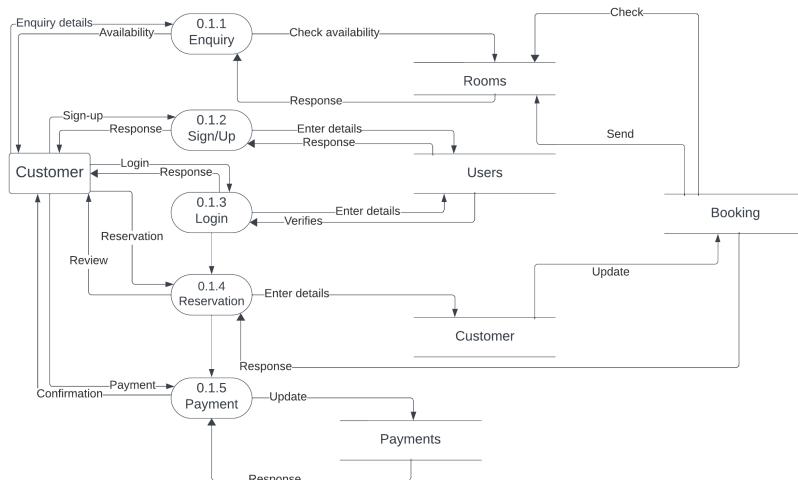


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DFD Diagram

Level 2 DFD Diagram

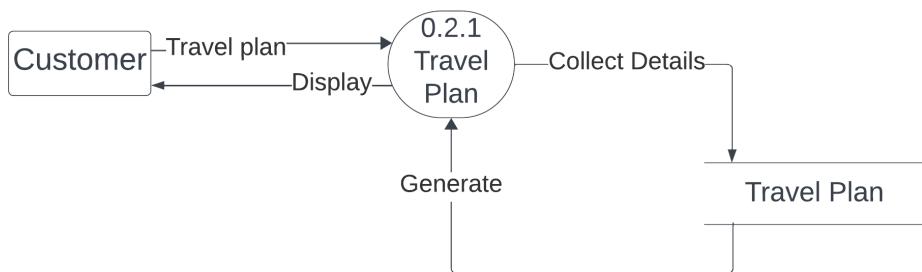


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DFD Diagram

Level 2 DFD Diagram

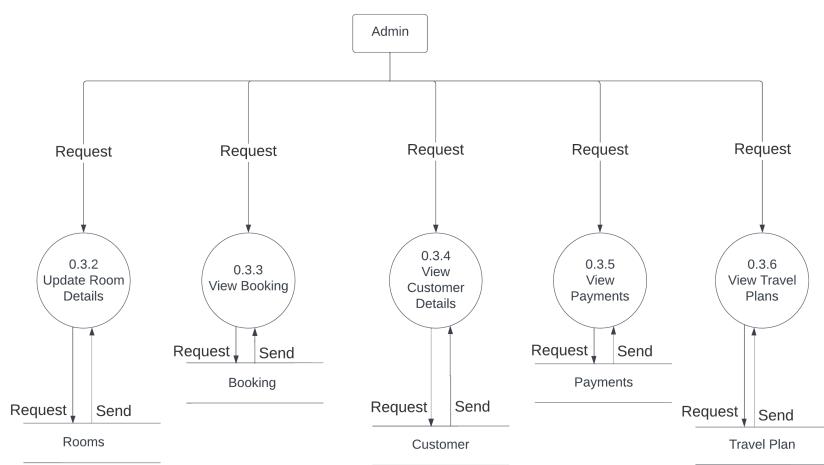


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DFD Diagram

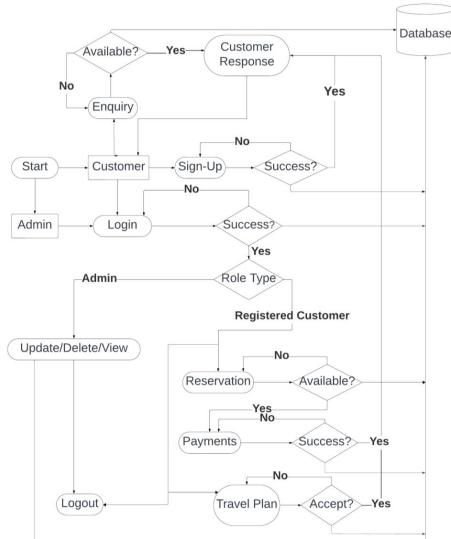
Level 2 DFD Diagram



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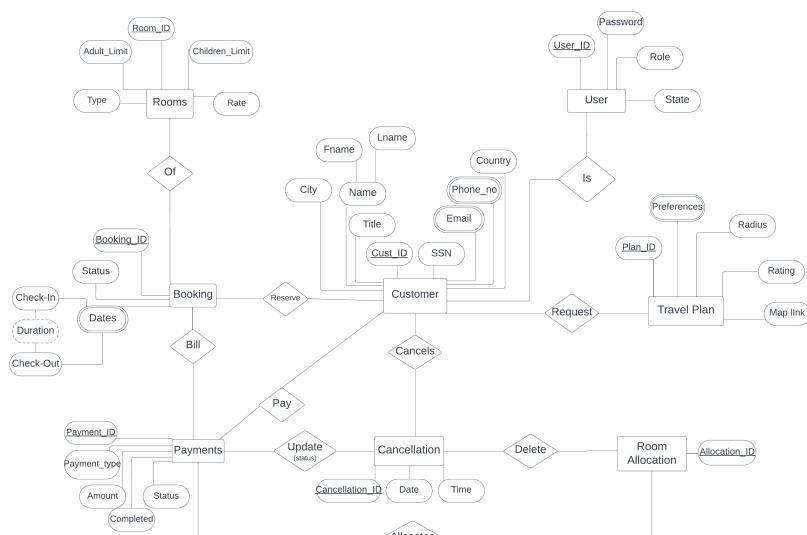
Block Diagram



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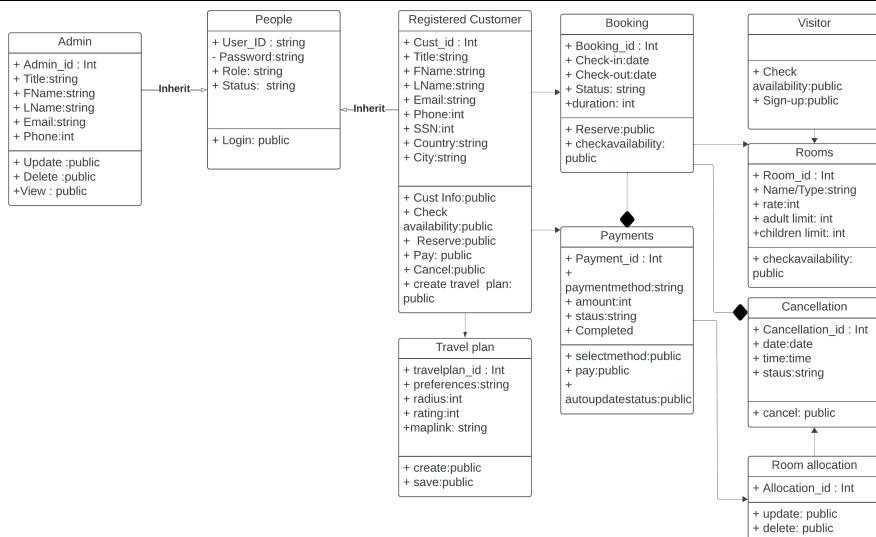
Entity Relationship Diagram



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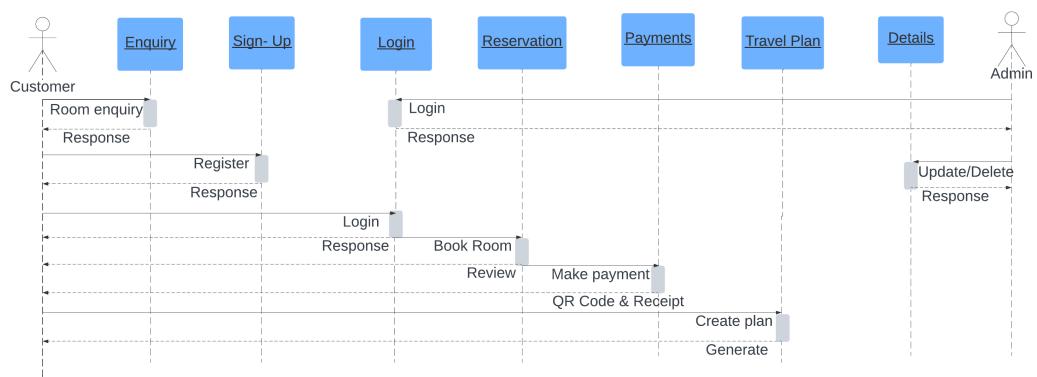
Class Diagram



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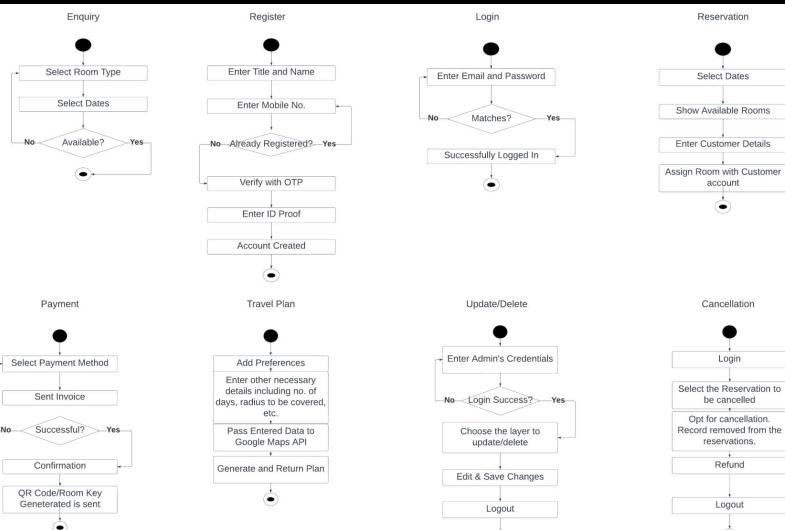
Sequence Diagram



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Activity Diagram



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Modules



Enquiry



User authentication



Reservation



Payments



Travel Plan

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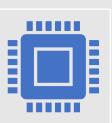
Functionalities

|  |  |  |  |  |
|---|---|---|--|---|
| Enquiry | User authentication | Reservation | Payments | Travel Plan |
| Room Availability Checking | Sign-Up Login | Enquiry Room Booking Customer Information Collection | Method Choice Transaction Confirmation Cancellation of Booking | Preferences Collection Generator |

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Implementation Details

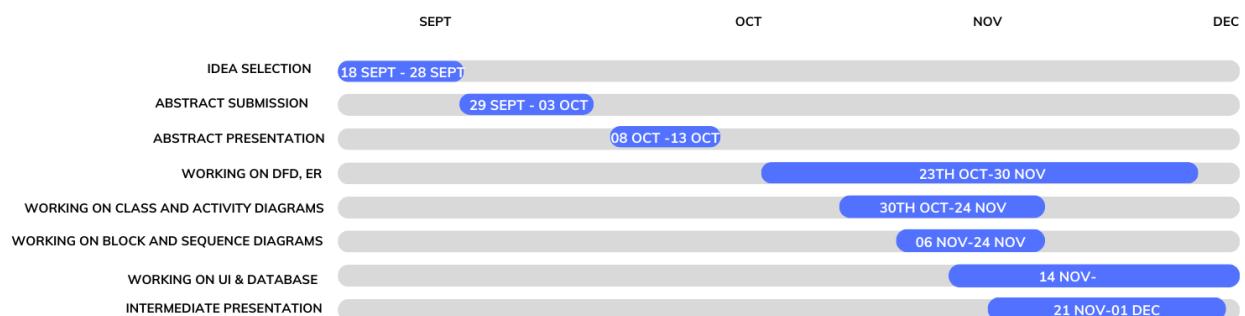
|  |  |  |
|--|--|---|
| Hardware Requirements Multi-core Processor (CPU) At least 8GB Memory (RAM) Stable Network Compatible Operating System | Software Requirements IDE : Visual Studio Code Mark-up Language: HTML & CSS Programming Language: JavaScript & Python Database: MySQL | Technological tools Web Framework: Flask |

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Project Timeline

GANTT CHART



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Project Guide & Team Members

Guide:

Dr. Neeba E A
Associate Professor
HOD of IT Dept
RSET
Kochi

Members:

- Nedha Fathima
- David Vinoj Mathew
- Megha Rajesh
- Aadarsh Suresh

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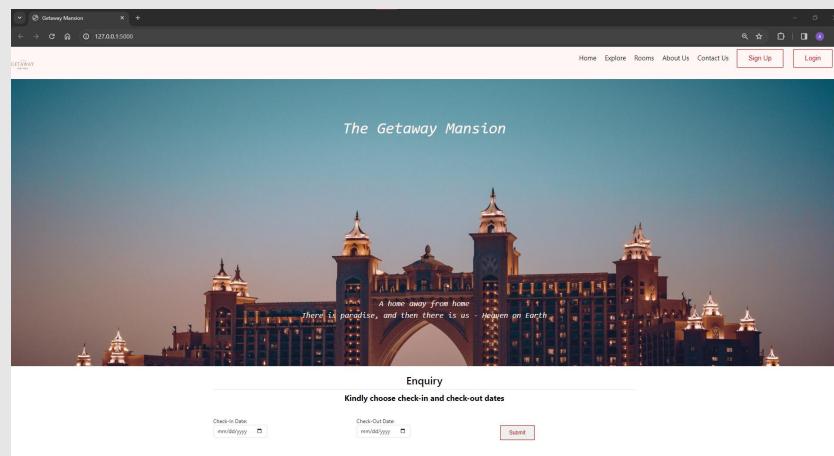
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SCREENSHOTS OF WORK DONE

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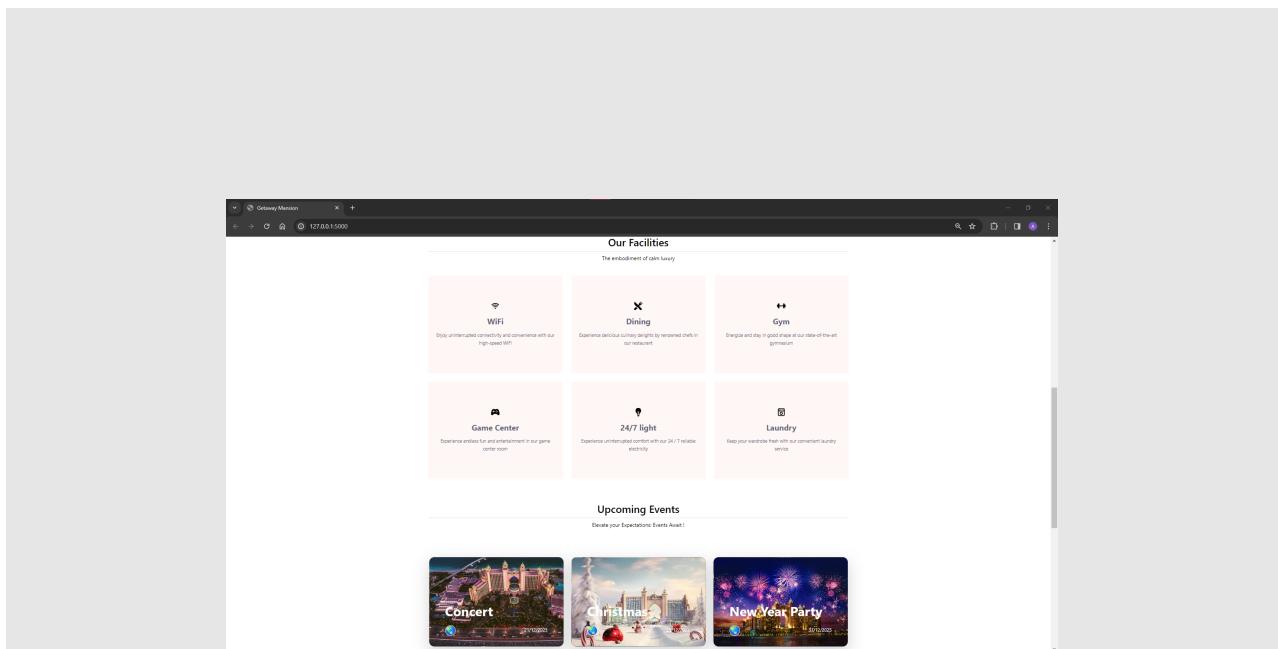
25

INDEX



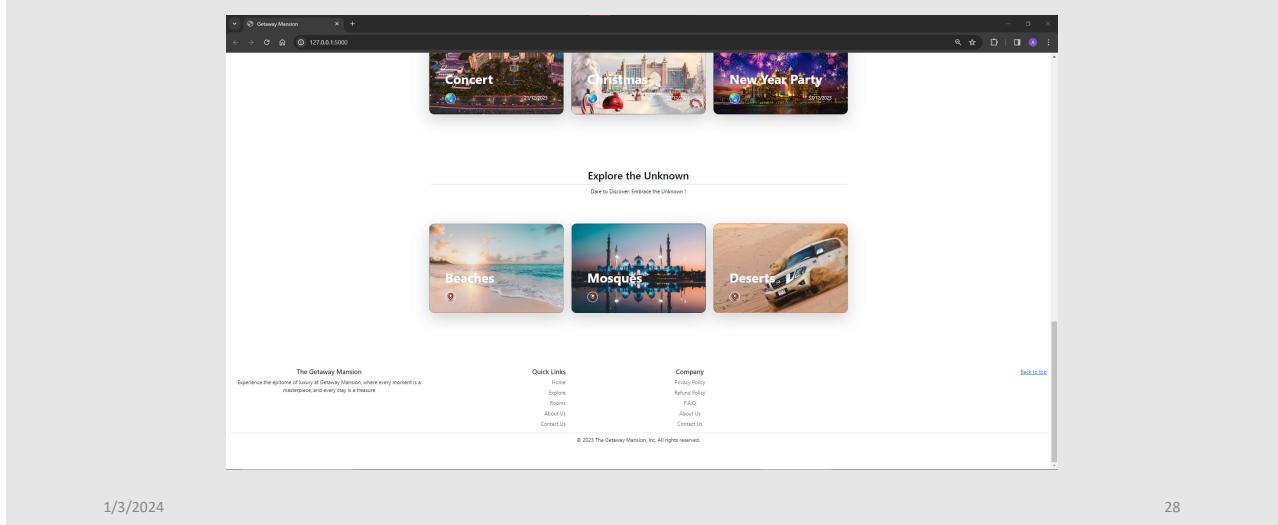
1/3/2024

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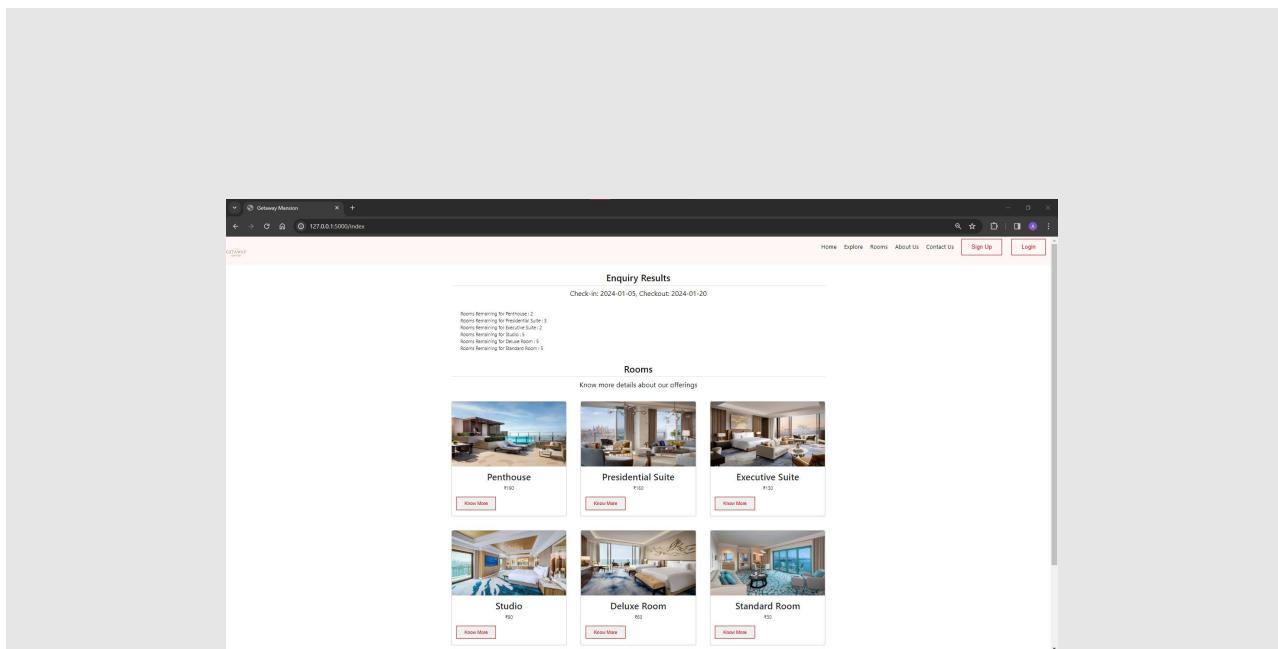
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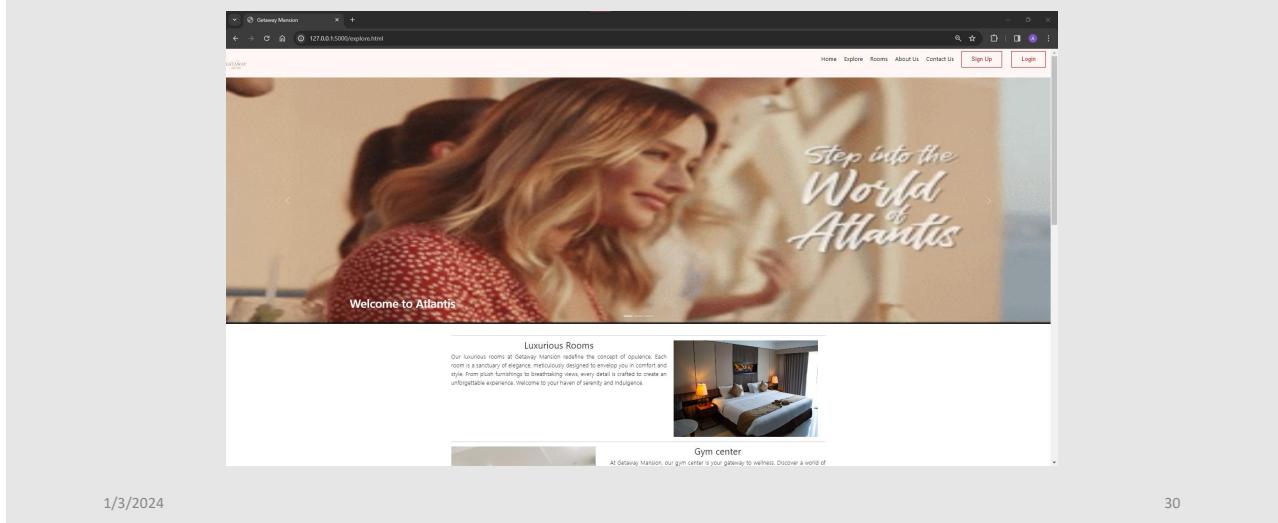
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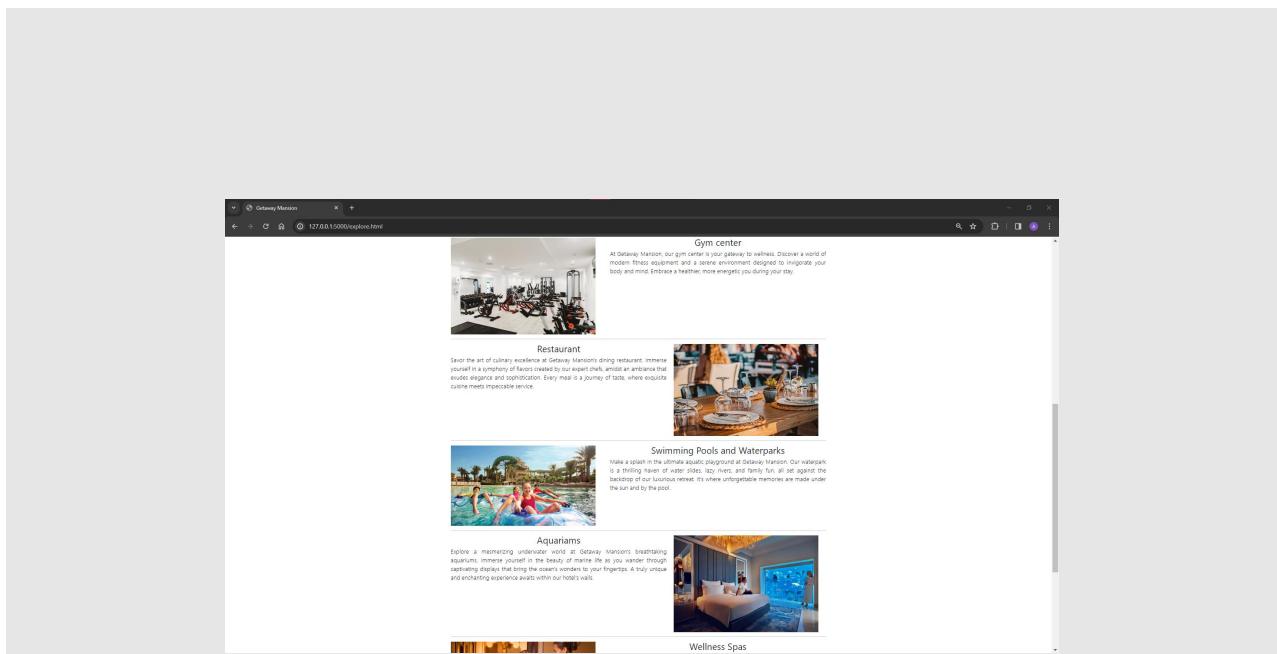
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EXPLORE



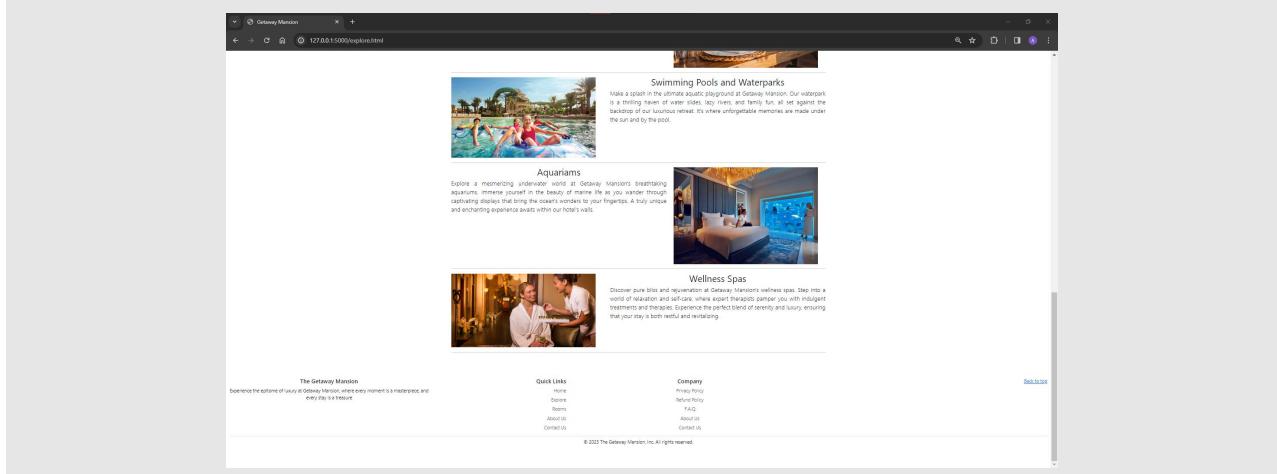
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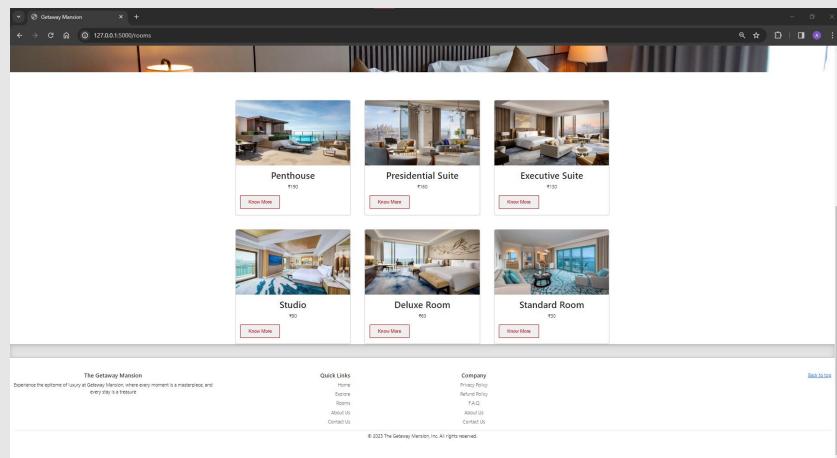
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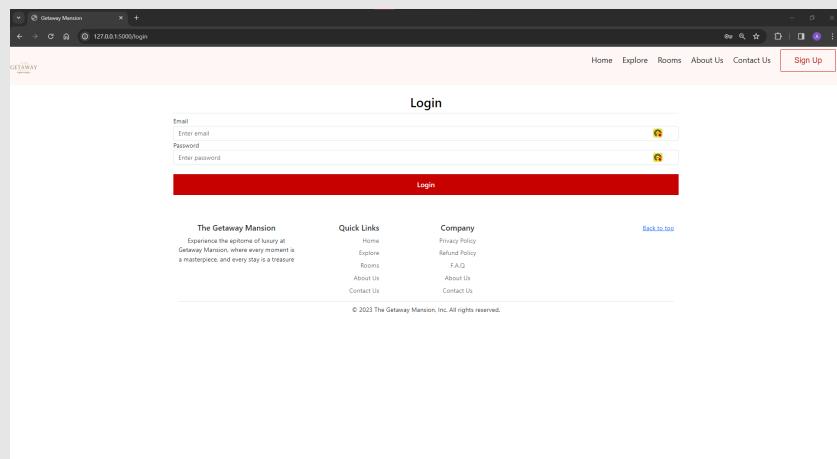
ROOMS



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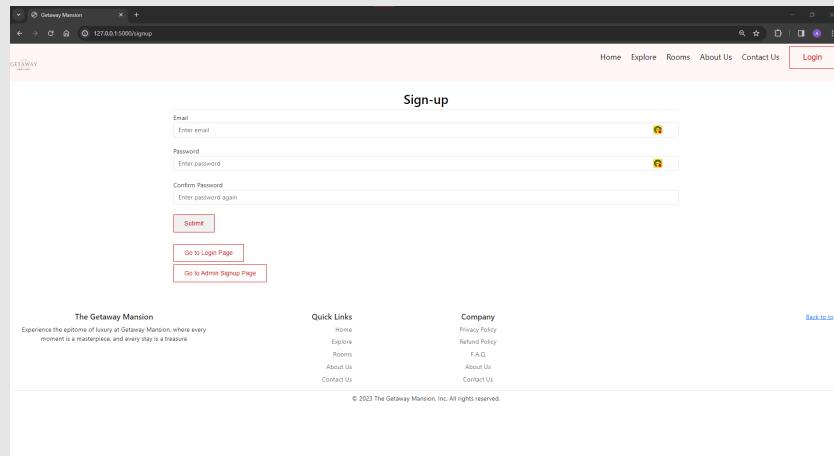
LOGIN



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CUSTOMER SIGN UP

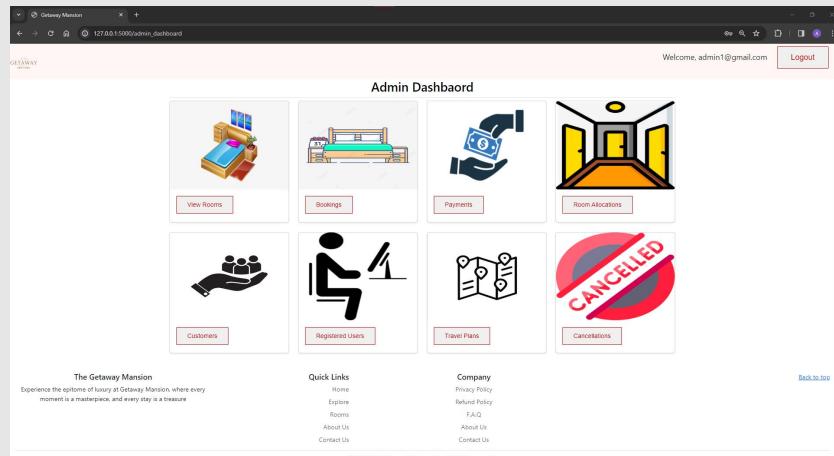


A screenshot of a web browser showing a sign-up form for 'The Getaway Mansion'. The form has fields for Email, Password, and Confirm Password. Below the form are three buttons: 'Submit', 'Go to Login Page', and 'Go to Admin Signup Page'. At the bottom, there's a section for 'The Getaway Mansion' with a brief description, followed by 'Quick Links' and 'Company' navigation menus.

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ADMIN DASHBOARD

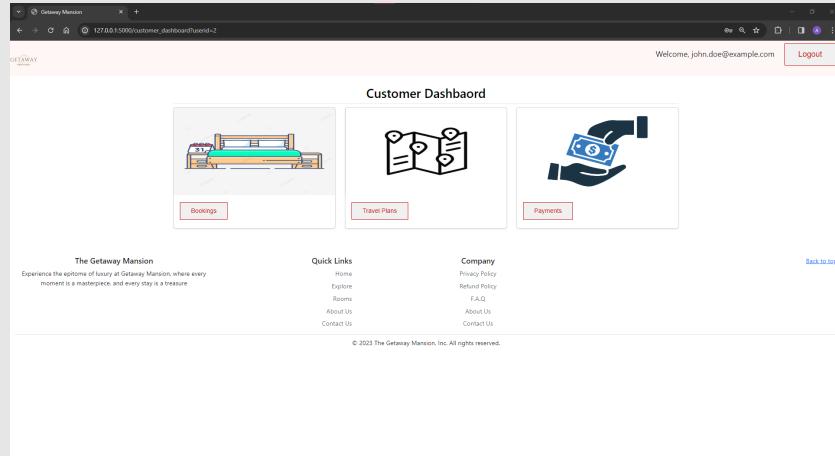


A screenshot of a web browser showing the 'Admin Dashboard' for 'The Getaway Mansion'. It features a grid of eight cards with icons: View Rooms, Bookings, Payments, Room Allocations, Customers, Registered Users, Travel Plans, and Cancellations. Below the dashboard is a section for 'The Getaway Mansion' with a description, followed by 'Quick Links' and 'Company' navigation menus.

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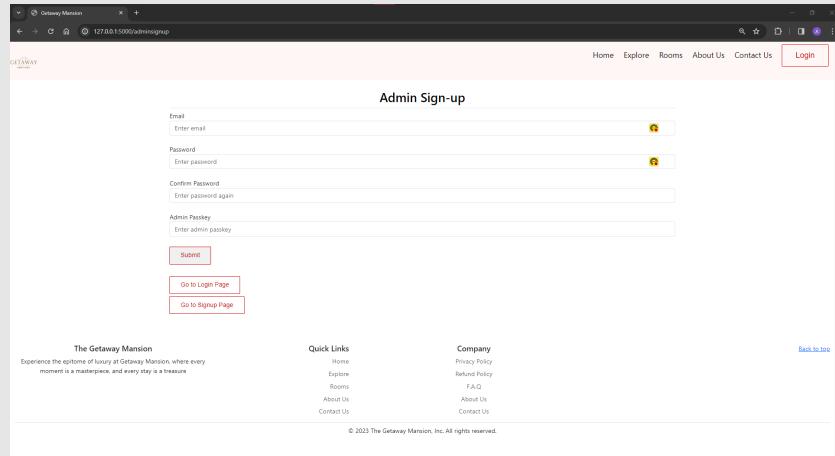
CUSTOMER DASHBOARD



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ADMIN SIGN-UP



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SIGN-UP

The Getaway Mansion
Experience the epitome of luxury at Getaway Mansion, where every moment is a masterpiece, and every stay is a treasure

Sign-up

Passwords do not match, try again.

Email
Enter email

Password
Enter password

Confirm Password
Enter password again

Submit

Go to Login Page

Go to Admin Signup Page

Quick Links

Home
Explore
Rooms
About Us
Contact Us

Company

Privacy Policy
Refund Policy
FAQ
About Us
Contact Us

[Back to top](#)

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CUSTOMER-BOOKING

The Getaway Mansion
Experience the epitome of luxury at Getaway Mansion, where every moment is a masterpiece, and every stay is a treasure

MY BOOKINGS

| Show: 10 entries | Search: | | | | | | | | | |
|------------------|---------------------------------|---------------------------------|-----------|----------|---------|-----------|-------------|---------------|------------|------------------------|
| Booking ID | Check-in Date | Check-out Date | Status | Duration | Room ID | Room Type | Customer ID | Customer Name | Payment ID | Actions |
| 1 | Thu 21 Dec 2023 00:00:00 GMT | Sun 21 Dec 2023 00:00:00 GMT | Confirmed | 10 | 1 | Penthouse | 1 | John Doe | 1 | Cancel |

Showing 1 to 1 of 1 entries

Back to Dashboard Book Now

Quick Links

Home
Explore
Rooms
About Us
Contact Us

Company

Privacy Policy
Refund Policy
FAQ
About Us
Contact Us

[Back to top](#)

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CANCEL BOOKING

The screenshot shows a web browser window for 'Gateway Mansion' with the URL '127.0.0.1:5000/customer/booking/cancel'. The page title is 'MY BOOKINGS'. A green success message box at the top left says 'Booking cancelled successfully.' Below it is a table with columns: Booking ID, Check-in Date, Check-out Date, Status, Duration, Room ID, Room Type, Customer ID, Customer Name, Payment ID, and Actions. There is one entry in the table:

| Booking ID | Check-in Date | Check-out Date | Status | Duration | Room ID | Room Type | Customer ID | Customer Name | Payment ID | Actions |
|------------|--------------------------------|--------------------------------|-----------|----------|---------|-----------|-------------|---------------|------------|------------------------|
| 1 | Thu, 21 Dec 2023 080000 GMT | Sun, 31 Dec 2023 080000 GMT | Cancelled | 10 | 1 | Penthouse | 1 | John Doe | 1 | Cancel |

Below the table, there are buttons for 'Back to Dashboard' and 'Book Now'. On the right side of the page, there is a sidebar with 'Quick Links' (Home, Explore, Rooms, About Us, Contact Us) and 'Company' links (Privacy Policy, Refund Policy, F.A.Q., About Us, Contact Us). The footer contains the text '© 2023 The Getaway Mansion, Inc. All rights reserved.' and a link to 'Back to top'.

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BOOKING CONFIRMATION

The screenshot shows a web browser window for 'Gateway Mansion' with the URL '127.0.0.1:5000/booking/success'. The page title is 'SUCCESS! Booking Confirmed'. It displays booking details: Selected Room Type (Penthouse), Check-in and Check-out Dates (Check-in 2024-01-01, Check-out 2024-01-15), and Customer Details (Title: Mr, Last Name: Doe, First Name: John, Email: JohnDoe123@gmail.com, Mobile Number: +919867962120, Country: India, City: Bangalore). It also shows Booking Details (Booking ID: 7, Payment ID: 7, Payment Type: Credit Card, Payment Amount: ₹10). A QR code is displayed in the center. At the bottom, there are buttons for 'Back to Dashboard', 'Print', and 'Send in Email'. The footer includes 'Quick Links' (Home, About Us) and 'Company' links (Privacy Policy, Refund Policy, F.A.Q., About Us, Contact Us).

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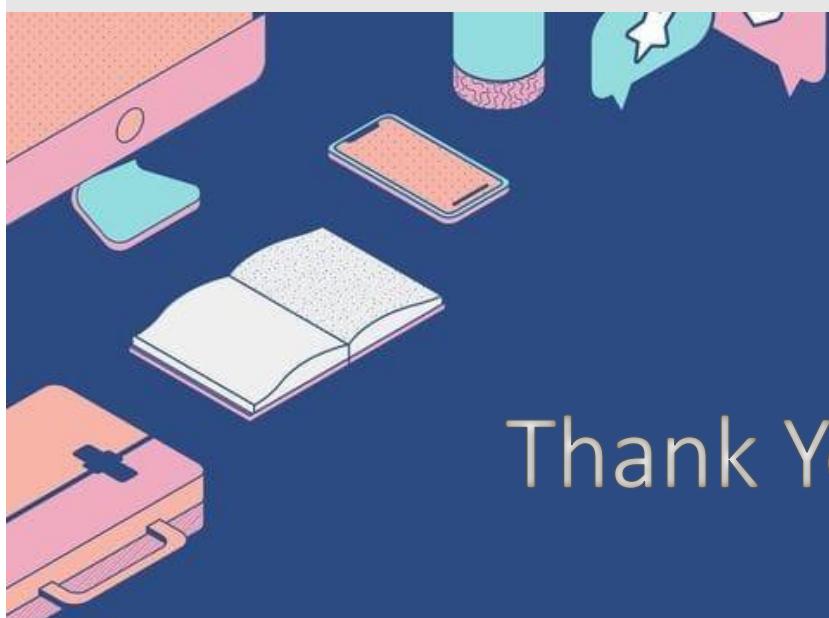
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TASK ASSIGNMENT

| Tasks | Done by |
|---|-----------------|
| Module 1: Login & Register | Nedha Fathima |
| Module 2: Enquiry & Reservation | David Vinoj |
| Module 3: Admin – Room Creation & Update/Delete | Aadarsh Suresh |
| Module 4: Payment & Cancellation | Megha Rajesh |
| Diagrams : | |
| DFD | Aadarsh & Megha |
| ER | Megha Rajesh |
| Block | David & Nedha |
| Sequence | David Vinoj |
| Activity | Nedha Fathima |
| Class | Aadarsh Suresh |

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Thank You !

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Appendix II: Vision, Mission, Programme Outcomes and Course Outcomes

Vision, Mission, Programme Outcomes and Course Outcomes

Institute Vision

To evolve into a premier technological institution, moulding eminent professionals with creative minds, innovative ideas and sound practical skill, and to shape a future where technology works for the enrichment of mankind.

Institute Mission

To impart state-of-the-art knowledge to individuals in various technological disciplines and to inculcate in them a high degree of social consciousness and human values, thereby enabling them to face the challenges of life with courage and conviction.

Department Vision

To evolve into a department of excellence in information technology by the creation and exchange of knowledge through leading- edge research, innovation, and services, which will, in turn, contribute towards solving complex societal problems and thus building a peaceful and prosperous mankind.

Department Mission

To Impart high quality technical education, research training. professionalism and strong ethical values in the young minds for ensuring their productive careers in industry and academia so as to work with a commitment to the betterment of mankind.

Programme Outcomes (PO)

Engineering Graduates will be able to:

- 1. Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

- 4. Conduct investigations of complex problems:** Use research-based knowledge including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5. Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- 6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- 7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- 9. Individual and Team work:** Function effectively as an individual, and as a member or leader in teams, and in multidisciplinary settings.
- 10. Communication:** Communicate effectively with the engineering community and with society at large. Be able to comprehend and write effective reports documentation. Make effective presentations, and give and receive clear instructions.
- 11. Project management and finance:** Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team. Manage projects in multidisciplinary environments.
- 12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

Course Outcomes (CO)

Course Outcome 1: Make use of acquired knowledge within the selected area of technology for project development.

Course Outcome 2: Identify, discuss and justify the technical aspects and design aspects of the project with a systematic approach.

Course Outcome 3: Interpret, improve and refine technical aspects for engineering projects.

Course Outcome 4: Associate with a team as an effective team player for the development of technical projects.

Course Outcome 5: Report effectively the project related activities and findings.

Mapping of Course Outcomes with Program Outcomes

CO - PO Mapping

| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 |
|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|
| CO 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | - | - | - | 3 |
| CO 2 | 3 | 3 | 3 | 3 | 3 | - | 2 | 3 | - | 3 | 2 | 3 |
| CO 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | - | 2 | 3 | 3 |
| CO 4 | 3 | 3 | 2 | 2 | - | - | - | 3 | 3 | 3 | 3 | 3 |
| CO 5 | 3 | - | - | - | 2 | - | - | 3 | 2 | 3 | 2 | 3 |