



**Tribhuvan University**

**Faculty of Humanities and Social Science**

**“ROOMSEWA: HOTEL BOOKING SYSTEM WITH  
CHATBOT ASSISTANCE AND CONTENT BASED  
RECOMMENDATION”**

**A PROJECT REPORT**

**Submitted to:**

**Department Of Computer Application**

**Advanced College of Engineering and Management**

**Kalanki, Kathmandu**

***In partial fulfillment of the requirements for the bachelor's in computer application***

**Submitted by:**

**Sugam Kumar Chaudhary (6-2-376-252-2019)**

**August 2024**

**Under the Supervision of**

**Er. Sakriya Maharjan**



**Tribhuvan University**

**Faculty of Humanities and Social Science**

**Advanced College of Engineering and Management**

Kalanki, Kathmandu

Bachelor in Computer Applications (BCA)

## **SUPERVISOR'S RECOMMENDATION**

I hereby recommend that this project prepared under my supervision by **Sugam Kumar Chaudhary** entitled “**RoomSewa**” in partial fulfillment of the requirements for the degree of Bachelor of Computer Application is recommended for the final evaluation.

.....

**Er. Sakriya Maharjan**

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**Tribhuvan University**

**Faculty of Humanities and Social Science**

**Advanced College of Engineering and Management**

**Bachelor in Computer Applications (BCA)**

## **LETTER OF APPROVAL**

This is to certify that this project prepared by **Sugam Kumar Chaudhary** entitled “**RoomSewa**” in partial fulfillment of the requirements for the degree of Bachelor in Computer Application has been evaluated. In our opinion, it is satisfactory in the scope and quality of a project for the required degree.

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## ABSTRACT

The project “Online Hotel Booking System” is a system based on accessing the Internet to book rooms in a hotel. The purpose of this study is to develop and implement an online hotel reservation system for hotels that will replace the manual method of booking hotel rooms. The previous system for booking rooms was faced with so many problems, such as delays in processing customer bookings and difficulties in paying for rooms that are below or beyond the customer's standard, which caused challenges for emergency bookings.

The new system addresses these issues by providing an online view of room rates and uploading available rooms and facilities so that customers can view and make their choices before arrival, including in cases of emergency travel. This system assists hotel owners in managing their hotels because they can also regulate the receptionist's activities and avoid fraudulent behavior. It also increases the efficiency of hotel managers and their profit margins as they improve their facilities.

In addition to these features, the new system incorporates content-based filtering and NLP (Natural Language Processing) algorithms to enhance the user experience. Content-based filtering recommends hotel rooms and services based on the user's preferences and past behavior, providing personalized suggestions. NLP algorithms are used to process user queries and improve communication, allowing the system to understand and respond to user requests more effectively. This combination of technologies ensures a more streamlined and user-friendly booking experience, meeting the needs of both customers and hotel staff.

**Key Words:** *RoomSewa, Room, Searching Room, Live Support, Database*

## ACKNOWLEDGEMENT

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**Yours Sincerely,**

Sugam Kumar Chaudhary (6-2-376-252-2019)

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## **LIST OF SYMBOLS/ABBREVIATIONS**

<b>Symbols/Abbreviations</b>	<b>Terms</b>
CRUD	Create, Read, Update, and Delete
CSS	Cascading Style Sheet
DFD	Data Flow Diagram
HTML	Hypertext Markup Language
MySQL	Microsoft Server Structured Query Language
PHP	Hypertext Preprocessor
SDLC	Software Development Life Cycle
UI	User Interface

# **CHAPTER: 1 INTRODUCTION**

## **1.1 Introduction**

A hotel reservation system is a software application that is implemented by hotels to allow guests to create secure online reservations. The hotel reservation system can be synced, not only with our current website. A hotel reservation system, or hotel reservation software, is a platform that enables users to easily manage bookings and check-in guests, among other functions. It provides the capability for accepting direct bookings, whether from the hotel's website or from various distribution channels like Booking.com, Airbnb, etc. Also known as a booking system or online booking engine, it is a tool that allows hotel guests to schedule the dates of their stay, choose rooms at the time of booking, and take payment from them. Advanced reservation systems for hotels even empower customers to select extras such as wine, flowers, or other niceties to be placed in their room at the time of arrival or at a later time.

Hotel Booking System is an online booking engine that allows guests to make secure online reservations through the hotel website and helps hotels accept bookings and collect payments online.[1]

## **1.2 Problem Statement**

- Customers have little or no information about the hotels in their vicinity.
- A guest checking into a hotel room that is either too expensive or too unbefitting for his or her personality.
- Prolonged delay by the receptionist in retrieving certain information about any particular guest on demand.
- Possibility of fraud by the receptionist in not documenting official information about some guests that checked into the hotel rooms.

## **1.3 Objectives**

The ultimate goal of this project is as follows:

- To develop a hotel booking software which will allow customers to carry out easy searches, book operations and make reservation management easy for staff.

- To facilitate user-friendly search and booking operations: Provide customers with an intuitive interface that enables them to easily search for available rooms, compare prices, and book accommodations efficiently.
- To integrate an intelligent chatbot: Enhance customer service by incorporating a chatbot that can assist users with common queries, provide personalized recommendations, and support booking and reservation processes in real-time.

## **1.4 Scope and Limitation**

### **1.4.1 Scope**

The system functions and features of our system will include the following:

- **Registration**

This function allows the donor and administrator to register as a user to interact with the system. The system requires the user to log in before viewing and editing any information.

- **Recording room records**

The system can record data of the whole room which is sent from the guest.

- **Searching rooms**

The guest can search the room by using this system.

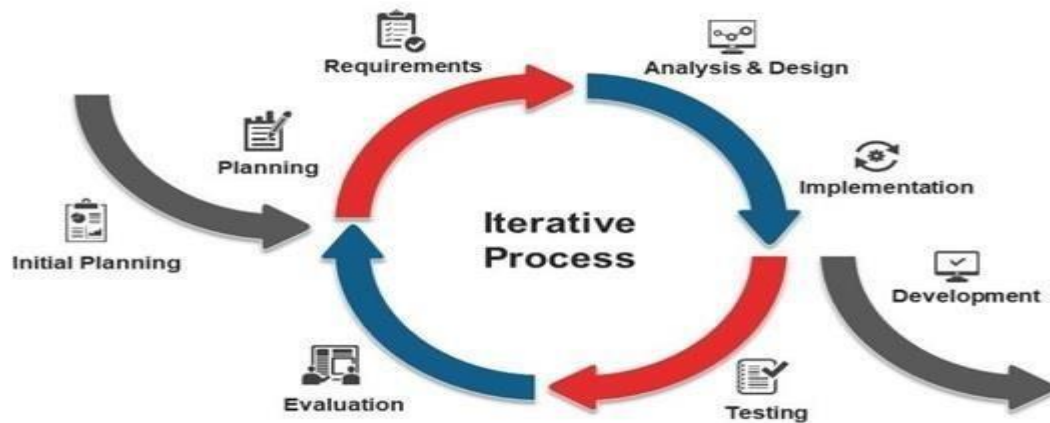
### **1.4.2 Limitation**

- Can't add multiple hotels
- Doesn't support the Mobile Version.

## **1.5 Development Methodology**

To implement this project, it has been decided to use an iterative method for software development. The iterative model is one of the popular models that can be adopted in the software development life cycle SDLC. In this SDLC model, software development is divided into smaller segments to make the work easier. It focuses on initial, simplified implementation which becomes more complex after each iteration, and features are added

until the final product is deployed. Thus, after each iteration, a better version of the product is delivered. This model's significant benefit is that it is executed while the preceding phases of the software development process permit developers and testers to determine design or functionalities defects as quickly as possible, which permits them to get restorative actions on an insufficient budget.



**Figure 1.1: Iterative Model of RoomSewa**

## 1.6 Report Organization

### Introduction

This chapter discusses the overall project introduction. It includes the project's introduction, problem statement, objectives, scope and limitations, and development methodology.

### Background Study and Literature Review

This chapter summarizes the work that has been carried out in the field of data mining and also describes the features of some existing applications related to the hotel booking system.

### System Analysis and Design

This chapter focuses on the different requirements of the system, which describes the functional, non-functional, feasibility analysis, Entity Relational diagram, Data Flow Diagram, design of the system with system architecture, database schema, and interface

design. 4 Implementation and Testing This chapter emphasizes tools used in system development, implementing details, and the results of tests performed.

### **Conclusion and Future Recommendations**

This chapter highlights a summary of the lesson learned, the outcome, and the conclusion of the whole project and explains what has been done and what further improvements could be made.

# **CHAPTER: 2 BACKGROUND STUDY AND LITERATURE REVIEW**

## **2.1 Background study**

Online hotel reservation is a popular method for booking hotel rooms. Travelers can book rooms on a computer by using online security to protect their privacy and financial information. Online hotel reservations are also helpful for making last-minute travel arrangements. Before the Internet, travelers could write, telephone the hotel directly, or use a travel agent to make a reservation. Nowadays, online travel agents have pictures of hotels and rooms, information on prices and deals, and even information on local resorts. Many also allow reviews of the traveler to be recorded with the online travel agent.

Online hotel reservations are also helpful for making last-minute travel arrangements. A hotel may drop the price of a room if some rooms are still available. Several websites specialize in searches for deals on rooms. An online hotel reservation system, usually known as a central reservation system is a computerized system that stores and distributes information about a hotel, resort, or other lodging facilities. A computerized reservation system assists hoteliers in managing all their online marketing and sales where they can upload their service availabilities to be seen by the people.[2]

## **2.2 Literature Review**

Online hotel reservation is a popular method for booking hotel rooms. Travelers can book rooms on a computer by using online security to protect their privacy and financial information. Online hotel reservations are also helpful for making last-minute travel arrangements. Before the Internet, travelers could write, telephone the hotel directly, or use a travel agent to make a reservation. Nowadays, online travel agents have pictures of hotels and rooms, information on prices and deals, and even information on local resorts. Many also allow reviews of the traveler to be recorded with the online travel agent. Online hotel reservations are also helpful for making last-minute travel arrangements. The hotel may drop the price of a room if some rooms are still available. Several websites specialize in searches for deals on rooms. An online hotel reservation system, usually known as a central reservation system is a computerized system that stores and distributes information about a hotel, resort, or other lodging facilities. A computerized reservation system assists

hoteliers in managing all their online marketing and sales where they can upload their service availabilities to be seen by the people.[3]

Large hotel chains typically have direct connections to the airline's national distribution systems (GDS) (Sabre, Galileo, Amadeus, and World Span). These in turn provide hotel information directly to the hundreds of thousands of travel agents that align themselves with one of these systems. Individual hotels and small hotel chains often cannot afford the expense of these direct connections and turn to other companies to provide the connections. Nowadays, online travel agents have pictures of hotels and rooms, information on prices and deals, and even information on local resorts. Many also allow reviews of the traveler to be recorded with the online travel agent. Online reservations are also helpful for making last-minute travel arrangements. Hotels may drop the price of a room if some rooms are still available. Several websites specialize in searches for deals on rooms. In terms of specific features, the literature has identified several essential modules in hotel management systems, including front office management, housekeeping management, food and beverage management, accounting, and inventory management. These modules work together to provide seamless and efficient hotel operations. There has also been research on the benefits and challenges of cloud-based hotel management systems. Cloud-based systems offer several advantages, including lower costs, scalability, and accessibility from anywhere with an internet connection. However, they also come with challenges such as data security, internet connectivity issues, and dependence on third-party providers.[4]

The hotel industry is certainly fully aware of this trend and fully willing to contribute its share in this effort. The industry has realized that during those early forays into cyberspace, the industry didn't view e-booking strategically (many hotels simply considered online room bookings at the time as a way to pick up additional business by selling distressed inventory through those online travel agencies), and handed over too much control of inventory and pricing to those third-party online travel agencies. Now the industry is in the unenviable position of trying to take back the reins after early shopping patterns have been established. While the pressure to sell their inventory rooms online will continue, the industry has developed its new online strategy striving to get a better grip on this emerging marketing channel.[5]



## **Existing System**

There are many systems related to the hotel booking system, all having their set functions and flaws. So, to overcome those flaws that are present in most of the hotel reservation systems, we recently studied different existing systems to gain more knowledge relating to this. Some of the existing systems are briefly explained below.

### **i. Booking.com**

Existing systems Booking.com specializes in hotels and other travel accommodations, so it shouldn't come as a surprise they top the list of the best hotel booking sites. They offer deals on vacation rentals, hostels, and bed and breakfasts, as well as many other hard-to-find property types. Booking.com customers have reported a high degree of satisfaction with their service, particularly the ease of the booking process. Get started by entering your destination and travel dates. Then, using their filtering tools, you can focus your results on certain amenities and other details that are important to you.

There's also the option to run a theme search, which isn't something you'll find with most hotel sites. These searches are ideal when you're trying to quickly locate a family-friendly or business hotel, for example. Once you've found the right place, click on it to view more detailed information and book it right away. If you're not near a computer, you can also book your hotel from Booking. Om's mobile app and check today's rates at the hotels in your area if you need to make a last-minute reservation.[6]

### **ii. OYO Rooms:**

Here we have a detailed OYO rooms case study for educational and research purposes. Oyo is the largest hotel room chain and fastest-growing hospitality chain of living spaces, franchised hotels, and homes in India and was started with a vision of providing budget living spaces in India.

With its presence all over the world including China, Brazil, Mexico, the U.K., the Philippines, Japan, the U.S., and so on. We are presenting this case study, for, the sheer passion and unprecedented growth this company has shown. With young 'ns at the helm, OYO is the perfect example of the crawl, walk, and run and how if you set your eyes on creating a difference, age doesn't matter.[7]

## **CHAPTER: 3 SYSTEM ANALYSIS AND DESIGN**

### **3.1 System Analysis**

It is a process of observing systems for troubleshooting or developing purposes. It is an approach to information technology, where computer-based systems require defined analysis according to their makeup and design. System analysis is performed by utilities to plan and develop electric power networks. Analysis of the steady-state and transient performance of a simulated power grid and planned additions to the grid helps determine changes needed in equipment, controls, and configuration for short-term and long-term increases in system capacity. New equipment can be simulated using system analysis methods, reducing uncertainty about its performance in the particular application for which its installation is planned.

#### **3.1.1 Requirement Analysis**

Requirement analysis is one of the initial tasks performed in software engineering. It is the process of precisely identifying, defining, and documenting the various requirements that are related to a particular business objective. It is used to determine the needs and expectations of the new product. There are two types of requirements.

##### **i. Functional requirement**

- **User Registration and Authentication:** The system should require users to register and authenticate their identity to access the system's features.
- **Room Search and Availability:** Users should search for available rooms based on location, check-in and check-out dates, number of guests, and price range.
- **Cancellation and Modifications:** Users should be able to cancel reservations within the cancellation policy timeframe directly through their accounts.
- **User Account Management:** Users should update personal information, change passwords, and view booking history from their accounts.

##### **Use Case Diagram**

A use case diagram is a visual representation of the different interactions that occur between actors (users) and the system being developed. In the context of a hotel booking

system, a use case diagram would illustrate the various actions and functionalities that the system provides to its users.



**Figure 3. 1: Use Case Diagram of RoomSewa**

## **ii. Non-functional requirement**

- **Performance:** The system should be able to handle a large number of users and transactions without slowing down or crashing. It should also have a fast response time when searching for rooms.
- **Usability:** The system should be easy to use and navigate, with a simple and intuitive user interface. It should also be accessible to users with disabilities, such as visually impaired users.
- **Reliability:** The system should be reliable and available 24/7, with minimal downtime for maintenance or upgrades. It should also have backup and recovery systems in place in case of system failures or data loss.
- **Security:** The system should have strong security features to protect user data, including encryption, secure login credentials, and authentication protocols.

### **3.1.2 Feasibility Study**

The feasibility study aims to identify the weaknesses and the strengths of the existing system and the threats and opportunities that are presented in the environment. It helps in the cost estimation and the value attained if the project is undergone. The goals of feasibility studies are to understand thoroughly all aspects of a project, concept, or plan and to become aware of any potential problems that could occur while implementing the project.

#### **i. Technical feasibility**

The technical feasibility of a hotel booking system is high, as several existing systems perform various aspects of hotel booking. The system would need to have a user-friendly interface and integrate with hotels to receive real-time data.

#### **ii. Operational feasibility**

Our system helps people to find rooms without taking too much precious time from them and make their lives a little easier.

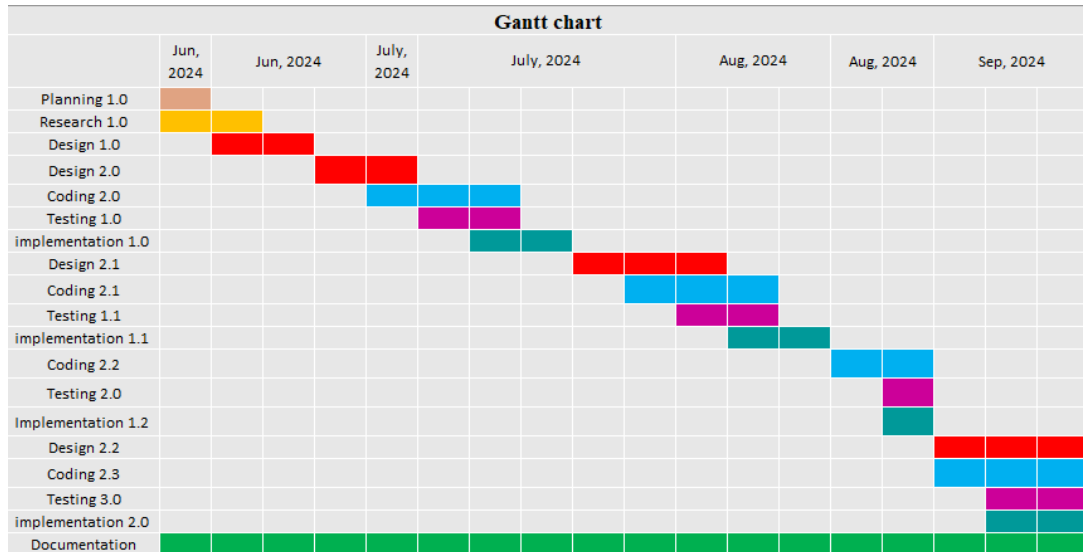
#### **iii. Economic feasibility**

The economic feasibility of a hotel booking system depends on several factors such as the cost of development, maintenance, and marketing, as well as the potential revenue streams and market demand. The economic feasibility of the system also depends on the size of the market demand for such a system.

#### **iv. Schedule Feasibility Study**

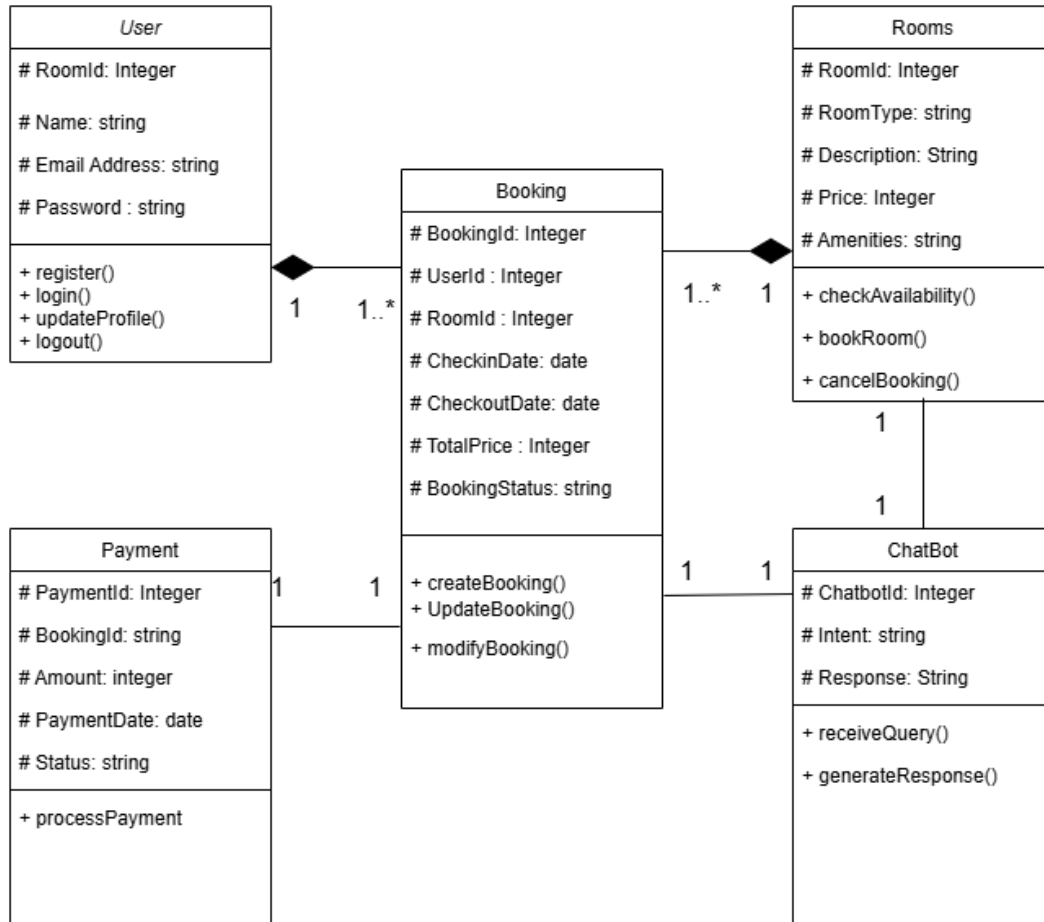
The system is completed within the scheduled time and does not exceed the scheduled time.

**Table 3. 1: Gantt Chart of RoomSewa**



### 3.1.3 Object Modeling: Object and Class Diagram

Class Diagram and Object Diagram are both types of diagrams used in UML (Unified Modeling Language) to visualize and describe the structure and relationships of objects and classes in a system, typically during software design and modeling.



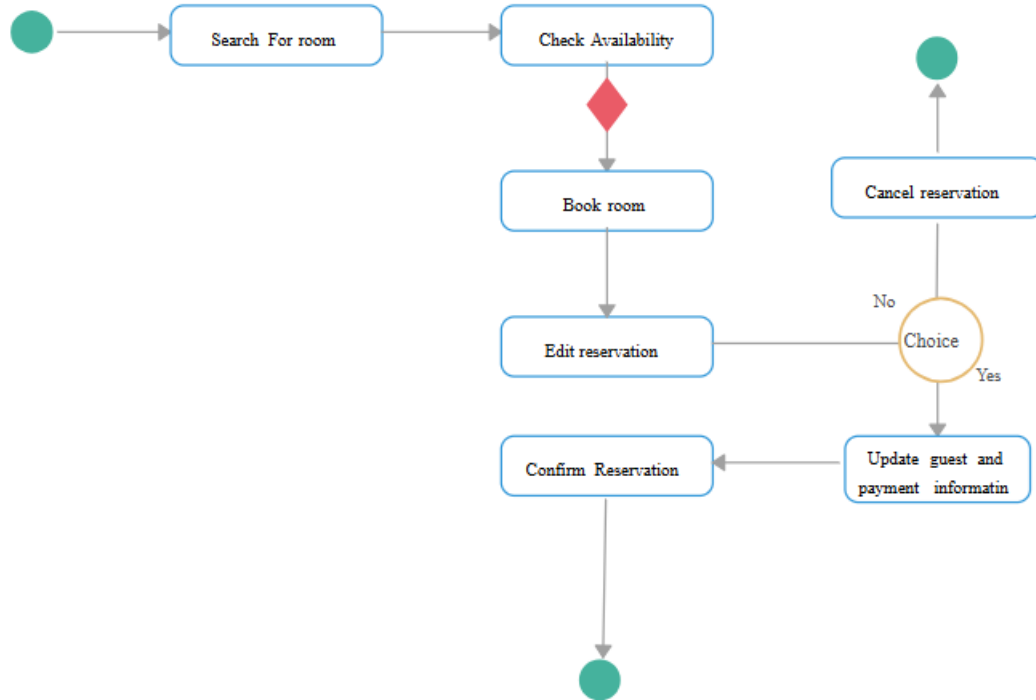
**Figure 3. 2: Class Diagram of RoomSewa**

### 3.1.4 Dynamic Modelling using State and Sequence Diagrams

#### i. State Diagram

State diagram is used to represent the condition of the RoomSewa application or part of it at finite instances of time. The figure below represents various states the system goes through during its usage. The initial state relates to user registration and

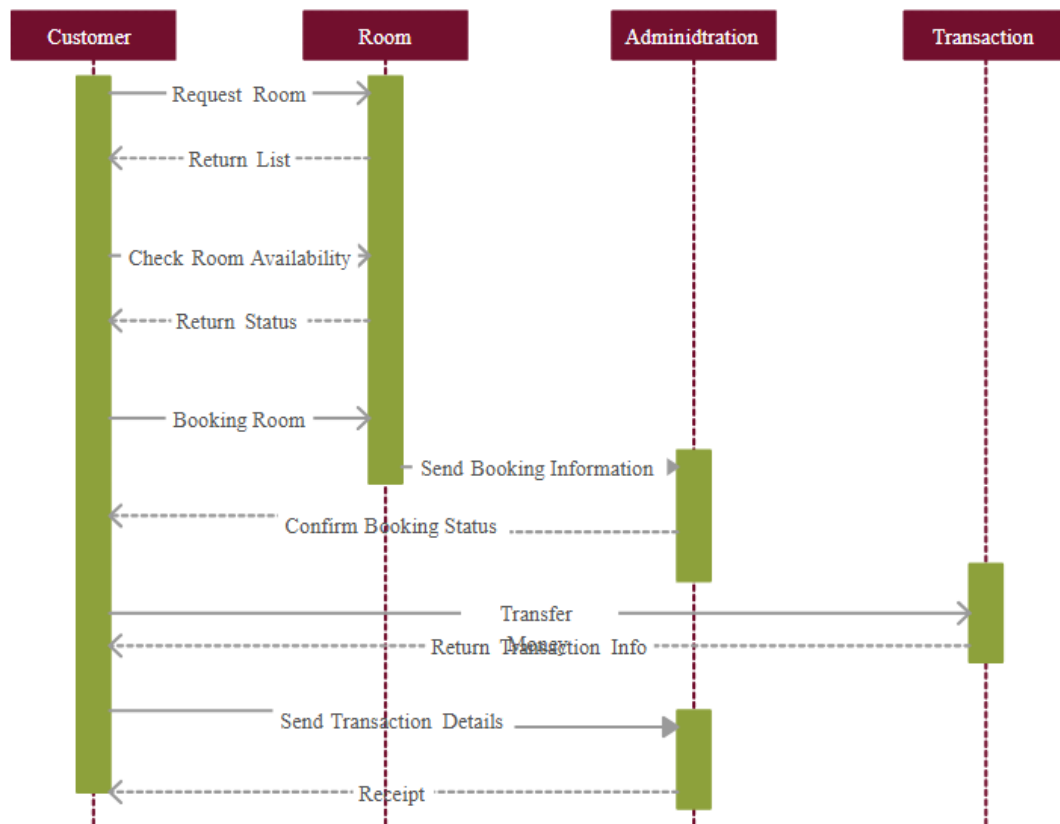
login. After login, it shows states such as searching for available rooms, viewing room details, confirming a booking, and completing the reservation process.



**Figure 3. 3: State Diagram of RoomSewa**

## ii. Sequence Diagram

Sequence diagrams are a popular dynamic modeling solution in UML because they specifically focus on lifelines, representing the processes and objects that exist simultaneously within the RoomSewa system. These diagrams illustrate the messages exchanged between these lifelines to perform functions such as user registration, room searching, booking, and payment confirmation, before the lifeline ends. This helps visualize the flow of interactions and dependencies in the system.

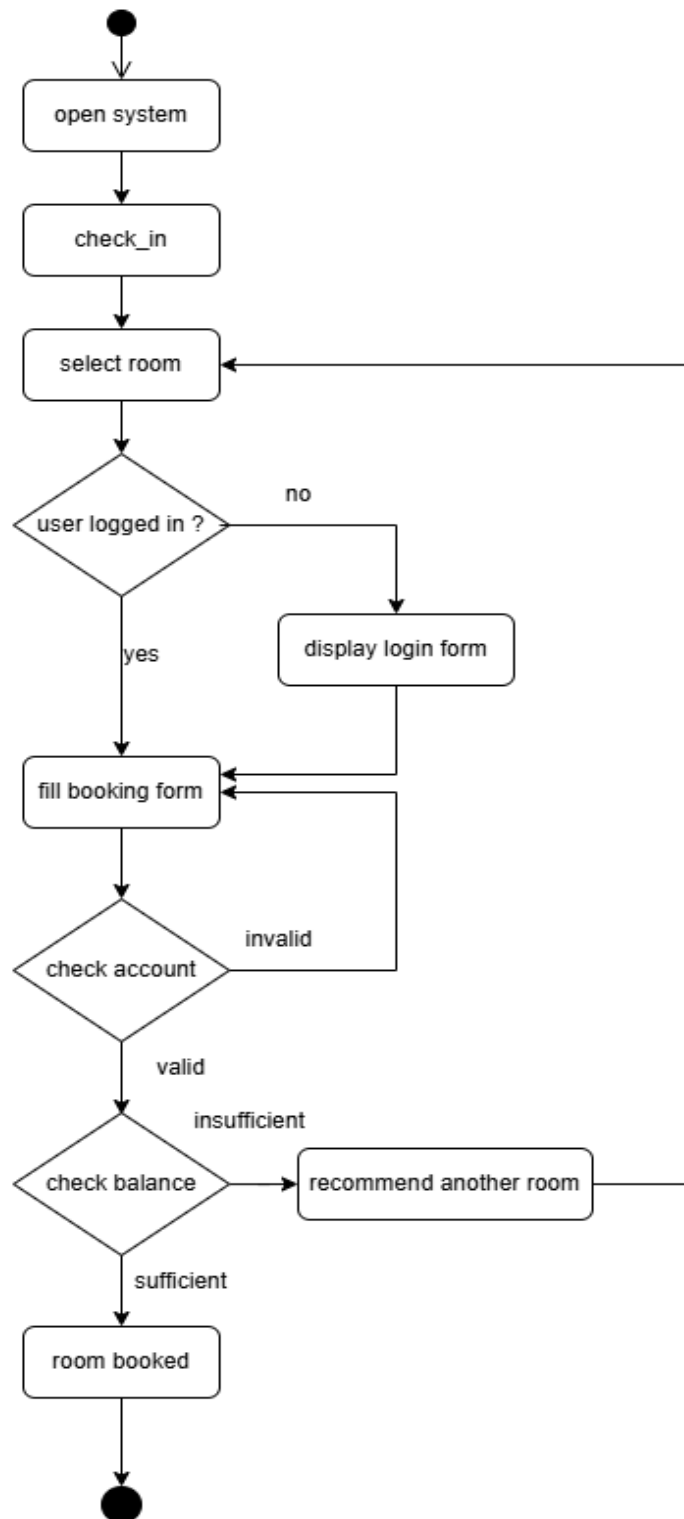


**Figure 3. 4: Sequence Diagram of RoomSewa**

### 3.1.5 Process Modelling using Activity Diagrams

Process modeling is the graphical representation of business processes or workflows. The activity diagram describes the dynamic aspects of the RoomSewa application. The activity starts with user login verification. Once a user is successfully verified, they gain access to the homepage, where they can perform various activities, such as searching for available rooms, viewing room details, booking a room, and managing their reservations.





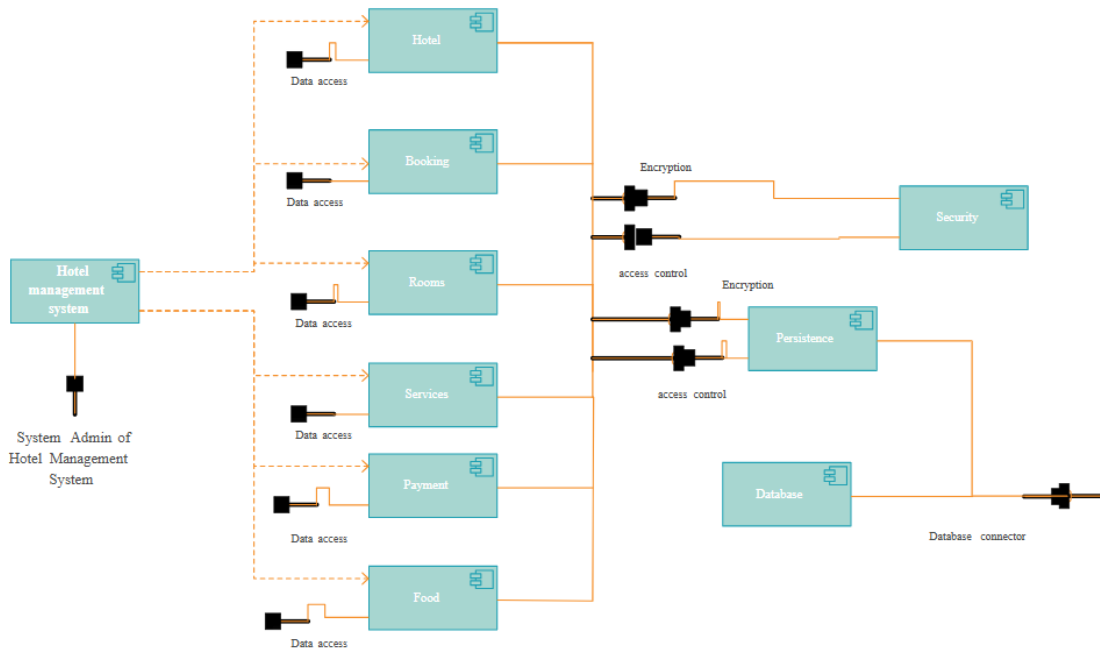
**Figure 3. 5: Activity Diagram of RoomSewa**

## 3.2 System Design

System design provides an overall view of the RoomSewa system by defining the key elements that comprise it. These elements include the modules and components, the interfaces between those components, and the data that flows through the system. This section addresses the needs and requirements of RoomSewa through the engineering of a coherent and efficient system. To illustrate this design, the following diagrams have been created:

### 3.2.1 Component Diagrams

Component diagrams are used to model the physical aspects of the RoomSewa system. These physical aspects include executables, libraries, files, and documents that reside within a node. A module of classes, referred to as a "component," represents autonomous systems or subsystems in RoomSewa that may communicate with other parts of the system. This diagram provides a detailed view of the system's modular structure, illustrating how components interact to achieve the desired functionality.



**Figure 3. 6: Component Diagram of RoomSewa**

### 3.2.2 Deployment Diagrams

A deployment diagram is a UML diagram type that illustrates the execution architecture of the RoomSewa system. It includes nodes such as hardware or software execution environments and the middleware that connects them. Deployment diagrams are typically used to visualize the physical hardware and software components of RoomSewa, showing how the system is distributed across servers, databases, and client devices.

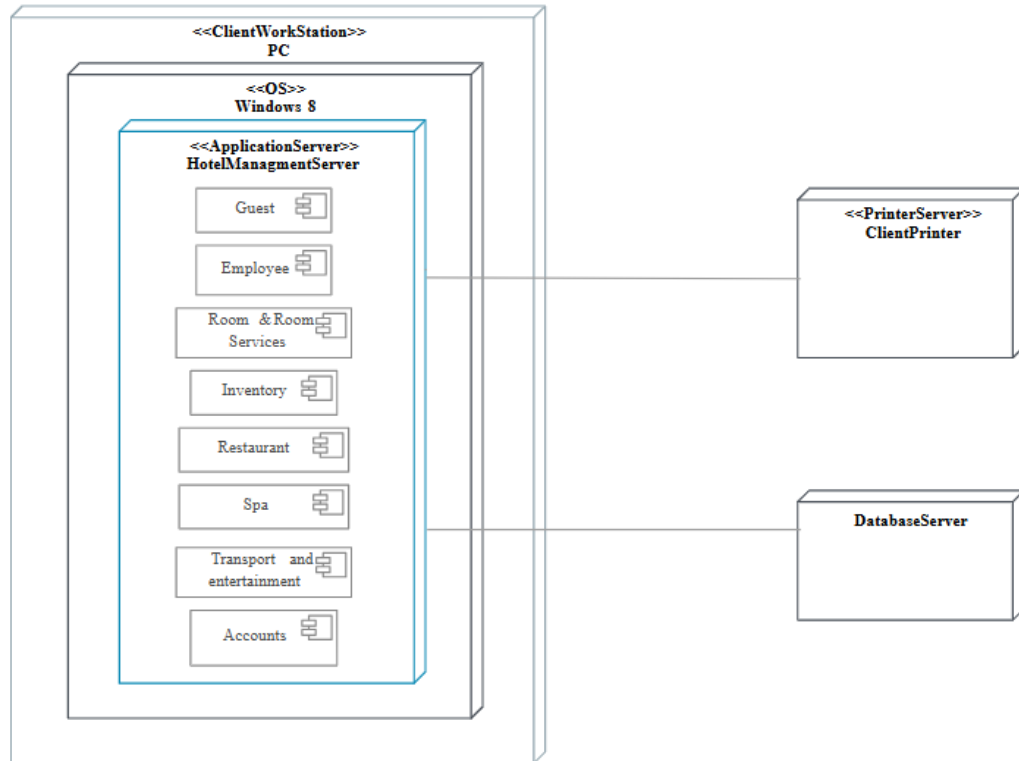


Figure 3. 7: Deployment Diagram of RoomSewa

### 3.3 Algorithm Details

Some of the algorithms that can be used for the RoomSewa are described below:

#### i. Content-Based Filtering Algorithm

Content-based algorithms compare the characteristics of rooms with the preferences and requirements provided by the user. The system recommends or allocates rooms that best match the specified attributes, such as room size, location, amenities, etc. Content-based filtering is a

technique used to recommend items to users based on the characteristics of items they have liked or interacted with in the past. The algorithm focuses on matching user preferences with item attributes.

Here's a step-by-step description of how the content-based filtering algorithm works:

1. **Collect User Preferences:** Gather information about the user's preferences and past interactions. This can include preferences for location, price range, amenities, and other hotel features.
2. **Represent Item Profiles:** Create a profile for each hotel based on its features. This profile includes attributes such as location, price, amenities, ratings, and room types.
3. **Feature Extraction:** Extract relevant features from both user preferences and item profiles. This involves identifying the attributes that will be used to compare user preferences with hotel features.
4. **Vectorization:** Convert the extracted features into numerical vectors. This is similar to how NLP uses TF-IDF to create a vector representation of text data.
5. **Compute Similarity:** Calculate the similarity between the user's preference vector and each hotel's feature vector. A common method for this is cosine similarity, which measures the cosine of the angle between two vectors.
6. **Rank and Recommend:** Rank hotels based on their similarity scores. Recommend the top-ranked hotels to the user.
7. **User Feedback and Iteration:** Collect feedback from the user about the recommendations. Use this feedback to refine user profiles and improve future recommendations.
8. **Generate Final Recommendations:** Present the recommended hotels to the user, providing details about why each hotel was selected based on their preferences.

### **Mathematical Representation of Content based Filtering Algorithm**

To compute the similarity between the user's preferences and hotel features, the cosine similarity formula is often used:

$$\text{Cosine Similarity}(U, H) = \frac{\sum_{i=1}^n U_i \times H_i}{\sqrt{\sum_{i=1}^n U_i^2} \times \sqrt{\sum_{i=1}^n H_i^2}}$$

Where:

$U=(U_1,U_2,\dots,U_n)$  is the user preference vector.

$H=(H_1,H_2,\dots,H_n)$  is the hotel feature vector.

$n$  is the number of features.

## **ii. Natural Language Processing (NLP) Algorithms**

In the context of a hotel booking system, Natural Language Processing (NLP) algorithms play a crucial role in enabling chatbots to interpret and respond to user inputs in a human-like manner. NLP allows the chatbot to understand the nuances of human language, making interactions more intuitive and efficient for users seeking hotel reservations and related services.

Here's a step-by-step description of how the NLP algorithm works:

1. **Receiving User Input:** Obtain the user's input text, which is typically a query or command that the user types into the chat interface.
2. **Text Preprocessing:** Clean and preprocess the input text by removing noise and preparing it for analysis. This step involves several sub-steps:
  - **Tokenization:** Split the text into individual words or tokens.
  - **Lowercasing:** Convert all characters to lowercase to ensure uniformity.
  - **Removing Stop Words and Punctuation:** Eliminate common words (e.g., "and," "the") and punctuation that do not contribute to the meaning.
  - **Lemmatization/Stemming:** Reduce words to their base or root form (e.g., "running" becomes "run").
3. **Feature Extraction with TF-IDF:** Transform the preprocessed text into numerical vectors using the TF-IDF (Term Frequency-Inverse Document Frequency) method, which measures the importance of words in the document relative to the entire corpus.
4. **Intent Recognition:** Use machine learning models, such as an MLPClassifier, to predict the intent of the user based on the TF-IDF vector representation. This involves

comparing the user's input with pre-trained patterns and determining the most likely intent.

5. Named Entity Recognition (NER): Identify and extract specific entities from the user's input, such as names, dates, or locations, using NLP techniques. This helps in understanding the context and providing more accurate responses.
6. Sentiment Analysis: Analyze the sentiment of the user's input to gauge the emotional tone. This can provide additional context for generating an appropriate response, especially in customer service applications.
7. Response Generation: Generate a response based on the identified intent, extracted entities, and the overall context. Responses are typically pre-defined for each recognized intent and selected randomly to add variety.
8. Sending Response to User: The generated response is sent back to the user through the chat interface.

### **Mathematical Expression of TF-IDF**

Certainly, the TF-IDF can be expressed mathematically as follows:

Let:

$t$  =  $t$  be a term in the document.

$d$  =  $d$  be a document from the corpus.

$D$  =  $D$  be the entire corpus of documents.

$f(t, d) = f(t, d)$  be the frequency of term

$t$  =  $t$  in document  $d$   $|D|$   $|D|$  be the total number of documents in the corpus.

$|\{d \in D: t \in d\}| = |\{d \in D: t \in d\}|$  be the number of documents containing term  $t$   $t$ .

The mathematical expression for TF-IDF is given by:

- i. Term Frequency (TF):

$$\text{TF}(t, d) = \frac{f(t, d)}{\sum_{t' \in \text{df}(t', d)} f(t', d)}$$

ii. Inverse Document Frequency (IDF):

$$\text{IDF}(t, D) = \log \left( \frac{|D|}{1 + |\{d \in D : t \in d\}|} \right)$$

iii. TF-IDF Score:

$$\text{TF-IDF}(t, d, D) = \text{TF}(t, d) \times \text{IDF}(t, D)$$

## **CHAPTER: 4 IMPLEMENTATION AND TESTING**

### **4.1 Implementation**

#### **4.1.1 Tools Used (CASE tools, Programming languages, Database platform)**

Different tools, applications, and technologies have been used in this project. All of them are discussed below:

##### **Front End Tools**

###### **i. HTML**

In the Hotel Booking System, HTML is used for creating different web pages and sites. It is used to create and structure sections, headings, links, and paragraphs using various tags and elements. We also define headers, paragraphs, links, and images of the hotel booking system by using HTML.

###### **ii. CSS**

In the Hotel Booking System, CSS is used for designing different tags of HTML. It is also used to design different components with the help of class and ID. Different CSS are used such as inline CSS, internal CSS, and external CSS to design this system. It is used for defining the styles for web pages. By using CSS, we can control the text color, font style, spacing between paragraphs, sizing of columns, layout designs, and many more.

###### **iii. JavaScript**

In the Hotel Booking System, JavaScript is used for client-side validation and to make dynamic, interactive, and responsive web pages. It is used to add dynamic behavior to the webpage and add special effects to the webpage.

##### **Back End Tools**

###### **i. PHP**

PHP is used for backend purposes and for making dynamic web applications. It is used for server-side scripting purposes to add connectivity to the database and also to encrypt the data, validate the user data, confirm the user to go to certain pages, and log pages. It also includes adding, updating, and deleting the data from the database.



## **ii. Apache Server**

In the Hotel Booking System, the Apache server is used to run PHP files and create fast and dynamic web pages.

### **4.1.2 Implementation details of modules (Description of procedures)**

Different modules of this system are described below:

#### **Admin Module**

##### **Admin add/edit/delete category**

In this module, there are different categories for rooms. Admin can add, list, update, and delete the categories in this existing system. The admin starts the action add by clicking on the add category item button, the admin can add a room category. The admin performs list action by clicking on the list categories. The page displays the list of room categories from the database and the admin can view the list of room categories. Likewise, the admin performs the edit and delete action by clicking the edit and delete items button. The admin then chooses the room category they want to edit and delete by clicking on edit and delete items.

##### **Admin Manage Customer**

Admin can manage the details and information about customers. The customer is categorized by name, address, username, email, phone, and country. The admin can add new customers to the existing system by entering their details and information by clicking on the add applicant item button. Likewise, the admin can view the list of customers by clicking on the list customer item button. The page displays the list of customers which are stored in the database.

##### **Admin Manage Rooms**

Admin can also manage the details and information about rooms. The rooms are categorized by name, price, and size. The admin can add new rooms to the existing system by entering their details and information by clicking on the add customer item button. Likewise, the admin can view the list of rooms by clicking on the list room item button. The page displays the list of rooms that are stored in a database.

### **Admin View List of Booking**

Admin can view the list of bookings. It includes all the details of the booking like title, amount, category name, created at, check in/check out. Admin can view in which category room have booked and when they are checking in. After viewing all the details of the booking of the room, the admin decides whether to approve their booking or not.

### **Applicants Module**

Customers first register into the system by entering all the details such as name, address, email, username, password, phone, country, and gender required to register. And then can log in to the system with their username and password. After login, they can view different booking categories and after viewing they can book a different room in which category, they want to apply by filling up the application form which includes details of the room such as title, amount, and category name, created at availability. After filling up the form they can get a booking of room only after admin approves their booking.

### **Customer Module**

Customers first register into the system by entering all the details such as name, address, email, username, password, phone, country, and gender required to register. And then can log in to the system with their username and password. After login, they can view different room categories and after viewing they can provide different rooms in which category, they want to book by filling up the form which includes details of rooms such as title, amount, and category name, created at, apply deadline. After filling up the form they can book after admin approves their booking.

Customer can log in to the system with their username and password. Customers can view different room categories and after viewing they can book for different rooms in which category they want to book.

### **Customer Category Module**

In this module, there are different categories of rooms such as food, clothes, and education. The customer views the room category and they choose the category in which they want to book to stay.

### **Login Module**

In the login module, we have implemented three sub-modules they are admin login and user login. Admin and user log into the system using their valid username and password.

### **Register Module**

In the register module, we have implemented two sub-modules the customer register and admin register. customer and admin register into the system by entering all the details such as name, address, email, username, password, phone, country, and gender required to register. And then can log in to the system with their valid username and password.

## **4.2 Testing**

System testing is done by giving different training and testing datasets. This test is done to evaluate whether the system is providing an accurate summary or not. During the phase of the development of the system, our system is tested time and again. The series of tests conducted are as follows:

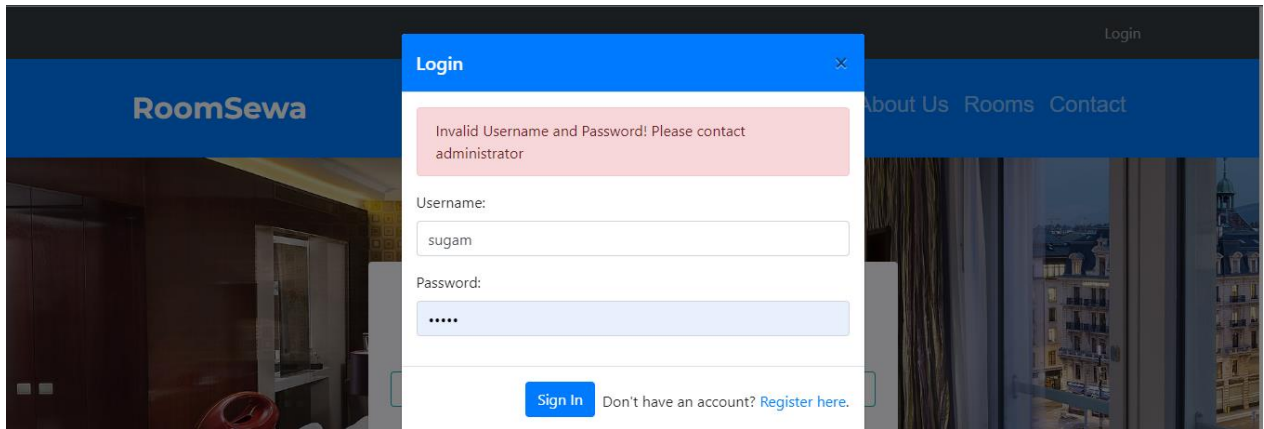
### **4.2.1. Test Cases for Unit Testing**

Various modules were tested individually to find any possible errors.

**Table 4. 1: Unsuccessful User Login of RoomSewa**

<b>Test Case 1</b>	<b>Unsuccessful User Login (Unmatching Password)</b>
<b>Test Data</b>	Username: sugam Password: admin
<b>Expected Result</b>	The message should be displayed showing the message “Invalid Username and Password! Please contact administrator”.

<b>Test Result</b>	Message displayed showing the message “Invalid Username and Password! Please contact administrator”.
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**Figure 4. 1: Unsuccessful Login of RoomSewa**

**Table 4. 2: Login Successfully of RoomSewa**

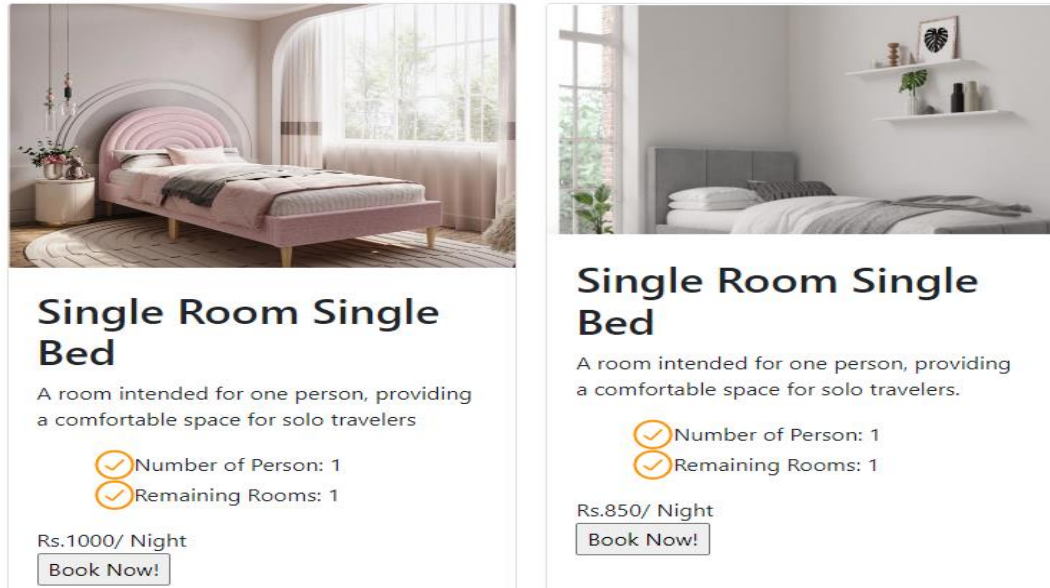
<b>Test Case 1</b>	<b>Successful User Login</b>
<b>Test Data</b>	Mobile number: sugam Password: sugam
<b>Expected Result</b>	Login successfully and redirect to the home page
<b>Test Result</b>	Login successfully and redirect to the home page

**Table 4.3: Search room of RoomSewa**

<b>Test Case 1</b>	Search room
<b>Test Data</b>	Check-in: 07/31/2024 Check out: 08/01/2024 Number of persons: 1 Accommodation: Single Bed
<b>Expected Result</b>	Available room From: 07/31/2024 To: 08/01/2024   Single Bed

Test Result	Available room From: 07/31/2024 To: 08/01/2024   Single Bed
-------------	---

Available room From: 07/31/2024 To: 08/01/2024 | Single Bed



**Figure 4. 2: Searching room of RoomSewa**

### 4.2.2 Test Cases for System Testing

System Testing (ST) is a black box testing technique performed to evaluate the complete system and the system's compliance with specified requirements. In System testing, the functionalities of the system are tested from an end-to-end perspective. System Testing is usually carried out by a team that is independent of the development team to measure the quality of the system unbiased. It includes both functional and Non-functional testing.

**Table 4. 3: Test for the working of RoomSewa**

S.N	Test Case	Input	Expected Output	Result
1.	User Login	Login Detail	Login Successfully	Details were added in the login form and logged in successfully.

2.	Registration	Registration Detail	Registration Successfully	Details were added to the registration form and registered successfully.
3.	Searching Room	Searching Detail	Find Room	Found room
4.	Book Room	Booking Details	Book Room	Booked Successfully.
5.	Chatting with chatbot	I want to book a room.	Please provide the room number you'd like to book.	Found the expected output.
6.	Booking room with the help of chatbot.	Provide the check in, check out date, purpose of staying etc.	Book Room.	Booked Successfully.

## **CHAPTER 5 CONCLUSION AND FUTURE RECOMMENDATION**

### **5.1 Conclusion**

The Online Hotel Reservation System was developed to replace the manual process of booking a hotel room or any other facility of the hotel. The old system does not serve the customer in a better way; rather it makes customer data vulnerable. The new system keeps proper records of customers for emergency and security purposes. The hotel's advertising effort is now accompanied by a virtual tour created on the system.

### **5.2 Lesson Learnt/Outcome**

While making this project we have learned many things. They are listed down below:

- Learn about the Hotel Booking.
- Learn to solve the errors found in the project.
- Learn to communicate with the team.
- Learn to make a workable real-time project.

### **5.3 Future Recommendations**

We have many things that we want to do in the coming days, so some of these are listed below:

- We will add more data sets so the analysis can be much more accurate.
- We will add more functionalities and new updates.
- We will try to add more bug-free and error-free applications.

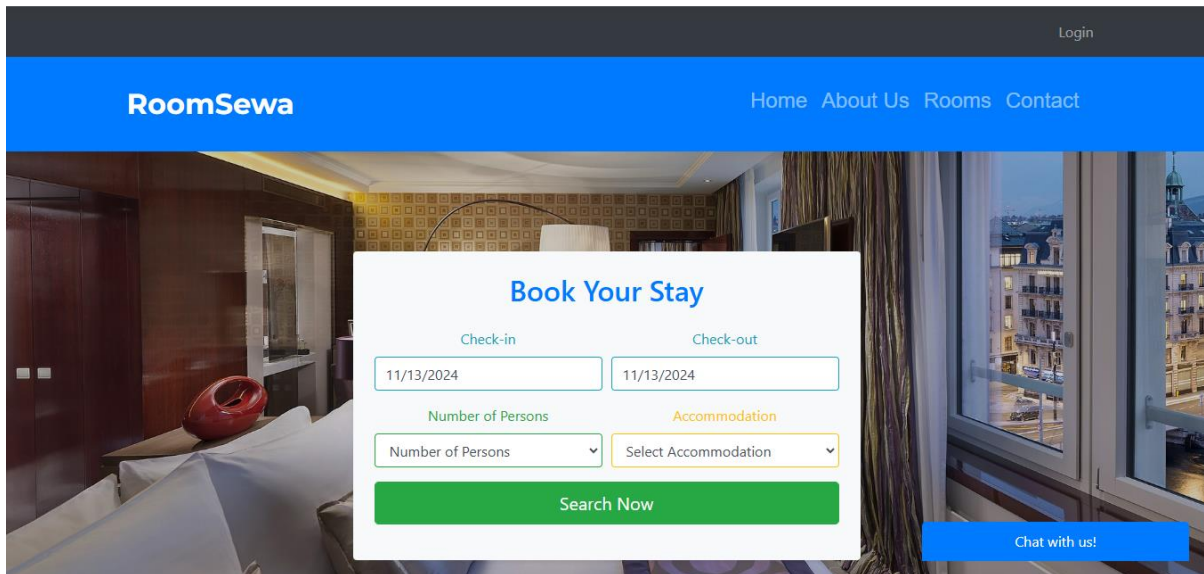
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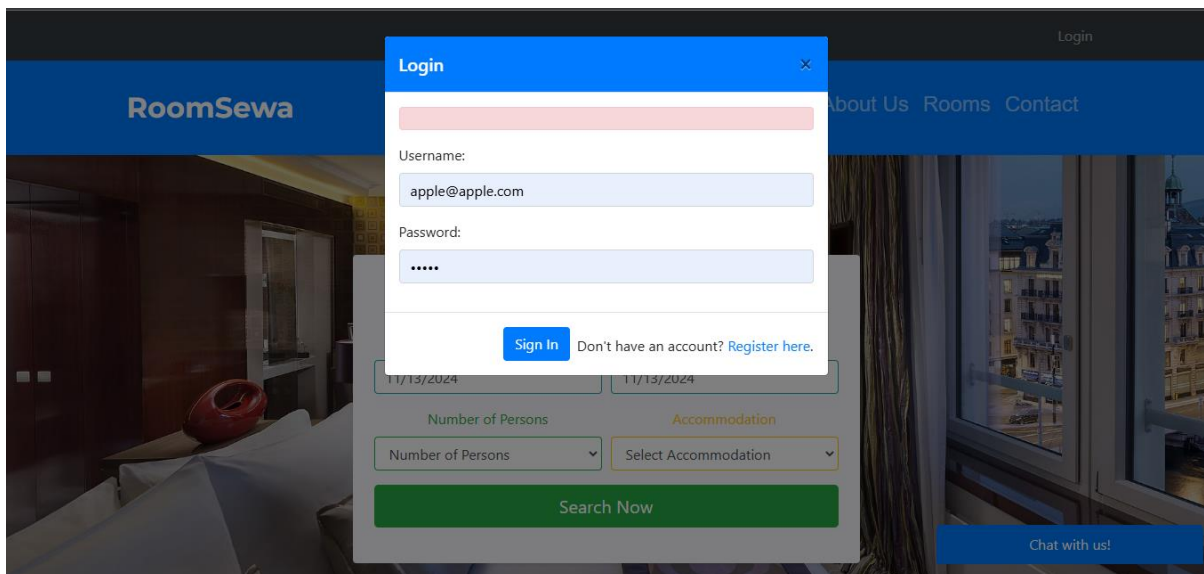
# APPENDICES

## Home Page




The screenshot shows the RoomSewa Home Page. At the top right, there is a "Login" link. Below it, a blue navigation bar contains the "RoomSewa" logo and links to "Home", "About Us", "Rooms", and "Contact". The main content area features a large background image of a hotel room. Overlaid on this is a "Book Your Stay" form. The form includes fields for "Check-in" (11/13/2024) and "Check-out" (11/13/2024), a "Number of Persons" dropdown menu, and an "Accommodation" dropdown menu. A green "Search Now" button is at the bottom of the form. In the bottom right corner, there is a blue button labeled "Chat with us!".

## Login Page



The screenshot shows the RoomSewa Login Page. A "Login" modal is open, displaying a "Username:" field with the text "apple@apple.com" and a "Password:" field with masked characters "\*\*\*\*\*". Below the password field is a blue "Sign In" button and a link that says "Don't have an account? Register here.". The background shows the same RoomSewa Home Page as the previous screenshot, but with the "Book Your Stay" form dimmed.

## Rooms Page




**Couple Bed Standard Room**

This is one of best for couple

✓ Number of Person: 2  
✓ Remaining Rooms: 0

Rs.999/ Night

**Fully Book!**




**Double Room Standard Room**

Without TV

✓ Number of Person: 2  
✓ Remaining Rooms: 1

Rs.15/ Night

[Book Now!](#)



**Deluxe Room Travelers Time**

Without TV

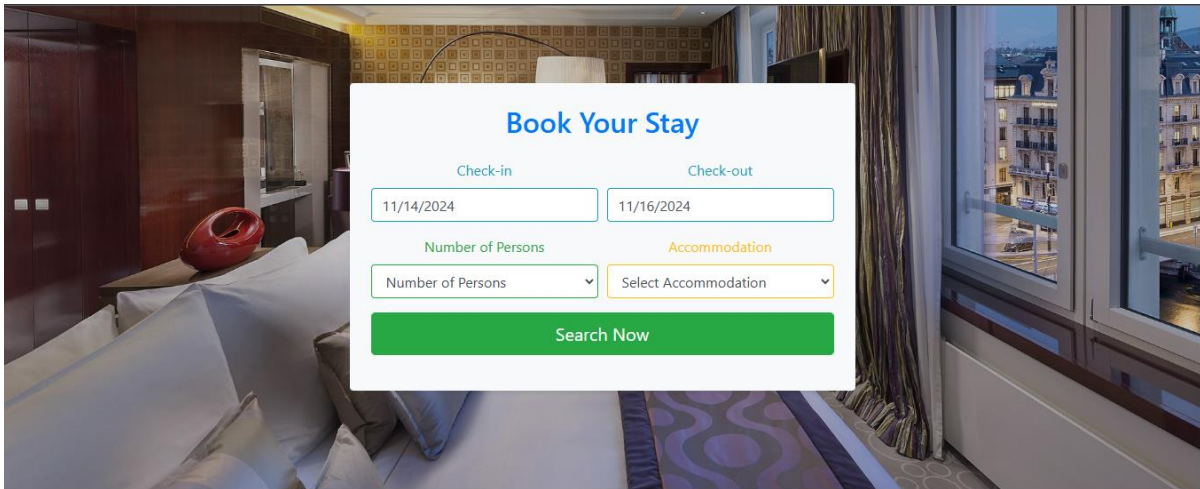
✓ Number of Person: 2  
✓ Remaining Rooms: 4

Rs.495/ Night

[Book Now!](#)

[Chat with us!](#)

## Room Search Box



**Book Your Stay**

Check-in: 11/14/2024      Check-out: 11/16/2024

Number of Persons:       Accommodation:

Number of Persons:       Select Accommodation:

[Search Now](#)

# Booking Page

### Your Booking

Room	Check In	Check Out	Price	Nights	Amount	Action
Single Room A room intended for one person, providing a comfortable space for solo travelers	2024-11-14	2024-11-16	Rs. 100	2	Rs. 200	<a href="#">Remove</a>

Total: **Rs. 200**

Update Cart

Clear Cart

Continue Booking

Chat with us!

# Billing Details Page

RoomSewa

localhost/RoomSewa/booking/index.php?view=payment

### Billing Details

[HomeBooking](#) [CartBooking Details](#)

Name: Mayas Chaudhary

Address: khokana,Lalitpur

Phone #: 9810288250

Transaction Date: 11/13/2024

Transaction Id: e6zd76ve

Room	Arrival	Departure	Price	Night(s)	Subtotal
Single Room A room intended for one person, providing a comfortable space for solo travelers	11/14/2024	11/16/2024	Rs.100	2	Rs.200

Total: **Rs. 200**

Submit Booking

Phone

9810288250

Address

Kirtipur, Kathmandu

roomsewa@contact.com

Chat with us!

## Chatbot Box

RoomSewa

Home About Us Rooms Contact

Book Your Stay

Check-in

11/13/2024

Check-out

11/13/2024

Number of Persons

Number of Persons

Accommodation

Select Accommodation

Search Now

Chat with us!

Hi! How can I assist you today?

Type your message...

Send

## Admin Home Page

Home Rooms Accomodation Reservation (0) Reports Users Logout

Administrator Panel:Welcome Anonymous

Rooms

The guest house has got various rooms that are categorised accordon to types. Each room is of particular category and have a maximum number of Adults and Children that can be accomodated. Click [HERE](#).

Accomodation

Reservation

Users

© RoomSewa

# Admin Room Page

HomeRoomsAccommodationReservation (0)ReportsUsersLogout

List of Rooms

No.	<input type="checkbox"/> Image	Room	Accommodation	Person	Price	
	<input type="checkbox"/>		Double Room (Without TV)	Standard Room	2	Rs.15
	<input type="checkbox"/>		Deluxe Room (Without TV)	Travelers Time	2	Rs.495
	<input type="checkbox"/>		Single Room (A room intended for one person, providing a comfortable space for solo travelers.)	Single Bed	1	Rs.100
	<input type="checkbox"/>		Single Room (A room intended for one person, providing a comfortable space for solo travelers.)	Single Bed	1	Rs.850
	<input type="checkbox"/>		Single Room (A room intended for one person, providing a comfortable space for solo travelers.)	Single Bed	1	Rs.1000
	<input type="checkbox"/>		Couple Bed (This is one of best for couple)	Standard Room	2	Rs.999

New

☐ Delete Selected

# Admin Accommodation Page

HomeRoomsAccommodationReservation (0)ReportsUsersLogout

List of Accommodation

No.	<input type="checkbox"/> Accomodation	Description
	<input type="checkbox"/>	Standard Room
	<input type="checkbox"/>	Travelers Time
	<input type="checkbox"/>	Single Bed
	<input type="checkbox"/>	Double Bed
	<input type="checkbox"/>	Two Single Beds
	<input type="checkbox"/>	Three Single Beds
	<input type="checkbox"/>	Queen-Size Bed
	<input type="checkbox"/>	King-Size Bed
	<input type="checkbox"/>	Multiple Beds

New

☐ Delete Selected

# Admin Reservation Page

HomeRoomsAccomodationReservation (0)ReportsUsersLogout

#	Guest	Transaction Date	Confirmation Code	Total Price	Status	By whom	Action
70	Mayas Chaudhary	2024-11-05	0f17c35c	300	Pending	Pending	<div><div>View</div><div>Cancel</div><div>Confirm</div><div>Delete</div><div>Edit</div></div>
69	Mayas Chaudhary	2024-11-05	6a26ba99	300	Confirmed	Confirmed	<div><div>View</div><div>Cancel</div><div>Check in</div><div>Delete</div><div>Edit</div></div>
71	Mayas Chaudhary	0000-00-00	vuvfg3zh	10989	Confirmed	Confirmed	<div><div>View</div><div>Cancel</div><div>Check in</div><div>Delete</div><div>Edit</div></div>

© RoomSewa

# Admin Report Page

HomeRoomsAccomodationReservation (0)ReportsUsersLogout

RoomSewa Report

Date: 11/13/2024

Room

Search For....

Status

Checkedin

Checkedin

2024-11-13

Checkedout

2024-11-13

Submit

Guest	Room	Price	Arrival	Departure	Night(s)	Subtotal
				Total Amount		
				Total:		Rs.

Print

© RoomSewa