UNIVERSITY OF RWANDA
COLLEGE OF SCIENCE AND TECHNOLOGY
SCHOOL OF ICT
Computer and Software Engineering department
Year 3
MODULE: Software design and development LAB

Technical Project Report

Designed By:

Names	Registration Number
HIRWA Jean Claude	220000522
UWAMAHORO Angelique	220015213

Done at NYARUGENGE on 1st December 2022

La Posh hotel room reservation system

Table of Contents

Table of figures

LIST OF ABBREVIATIONS:

HTML: HYPER-TEXT MARKUP LANGUAGE

CSS: CASCADING STYLESHEET

JS: JAVASCRIPT

SQL: STRUCTURED QUERY LANGUAGE

ERD: Entity Relationship Diagram

UI: User Interface

Acknowledgement

Foremost, we would like to express our sincere gratitude to our lecturer Mr. Eric HITIMANA for the continuous support of our project analysis and implementation. His guidance helped us in all the time of research and implementation of this project.
We thank our fellow classmates at the University of Rwanda for the stimulating discussions and for the sleepless nights we were working together before deadlines.

Abstract

La posh hotel room reservation system is an online platform developed to override the problems prevailing in the practicing manual system. This system is supported to eliminate and in some cases reduce the hardships faced by the existing manual system. Moreover this system is designed for a particular need of the company to carry out operations in a smooth and effective manner.

This system facilitates the end user to view the hotel and hotel rooms based on the various room categories and sorting preferences they select. It also lets the users register to the system so that his/her individual profile can be maintained. He/she can access and modify his/her profile by signing in. New users are given sign up option. The user account maintains the personal details of the customer, both personal and room preference of the customer. Also, the reservation he/she has made can be viewed in the profile module. The user can cancel reservation prior to cancelation date.

The system admin can add and manage the configurations of the website. She/he can add and modify the rooms, categories and offers. She/he can also create users for the system and assign them access rights based on the requirements and their job duty. System admin can also view various reports to fulfill certain job duty and reports help them to take decision and make business plans.

1. INTRODUCTION

1.1. Business Concept

With the ever expanding use of the internet and online travel booking sites for vacation planning, opportunities may exist for travelers who need to reserve hotel rooms in the Online Travel Agency industry. La posh hotel room reservation system is a new system for supporting the needs of clients to reserve rooms at the La posh hotel using modern technologies.

We are intended to offer an efficient, informative, and user-friendly website for leisure travelers to book reservations for their La posh hotel holiday vacations. Travelers will be able to easily make accommodation reservations, for a vast range of hotel rooms and at very competitive rates. With the help of a strong customer service, La posh hotel room reservation system will greatly simplify the process of finding the most suitable accommodations and speed up the service provision.

1.2. Problem Background

The current manual reservation system books hotel rooms and manages reservations using paper and direct human interaction. This causes information exchange in the hotel to be delayed.

Reservations are made by phone or in person at the hotel reservation office. During the booking process, the guest's personal information such as name, gender, age, and duration of visit or stay are entered. The booking officer then requests that the room be prepared for the guest prior to his/her check-in date. The information and documents are manually transferred to the appropriate office for compilation of the guest's file. The file is transferred to reception on the day of check-in. On the day of check-in, the guest is given the key to his or her room and is asked if room service is required.

The front desk transfers the customer's file to the accounting department, where the guest pays for lodging and other fees. The customer's expenditure costs are updated daily in his file. The bills are generated by the financial department and delivered to the customers in their rooms. The visitor makes payment at the accounts department.

Their expenses are generated a day before their check-out date. As they check out, guests receive their expenditure at the accounts office, where they pay any remaining balance.

We discovered the following issues in traditional hotel room booking system at La posh after analyzing them.

- ✓ The manual system for storing records is not consistent because some inaccuracy can creep in while manually writing records.
- ✓ Guests and visitors may have difficulty finding a place to stay in the area.
- ✓ It is difficult to keep track of room availability and a large number of customer records.
- ✓ More manpower is required, and the current system takes far too long to make reservations and store data.
- ✓ Maintaining up-to-date information is difficult, making it difficult for executives to search for specific records.
- ✓ Payment processing and collection are challenging.
- ✓ Incorrect records or data.
- ✓ As information is not in one place, no centralized database can be created.
- ✓ More money, paper, and other resources are expended to keep track of available rooms and customers.

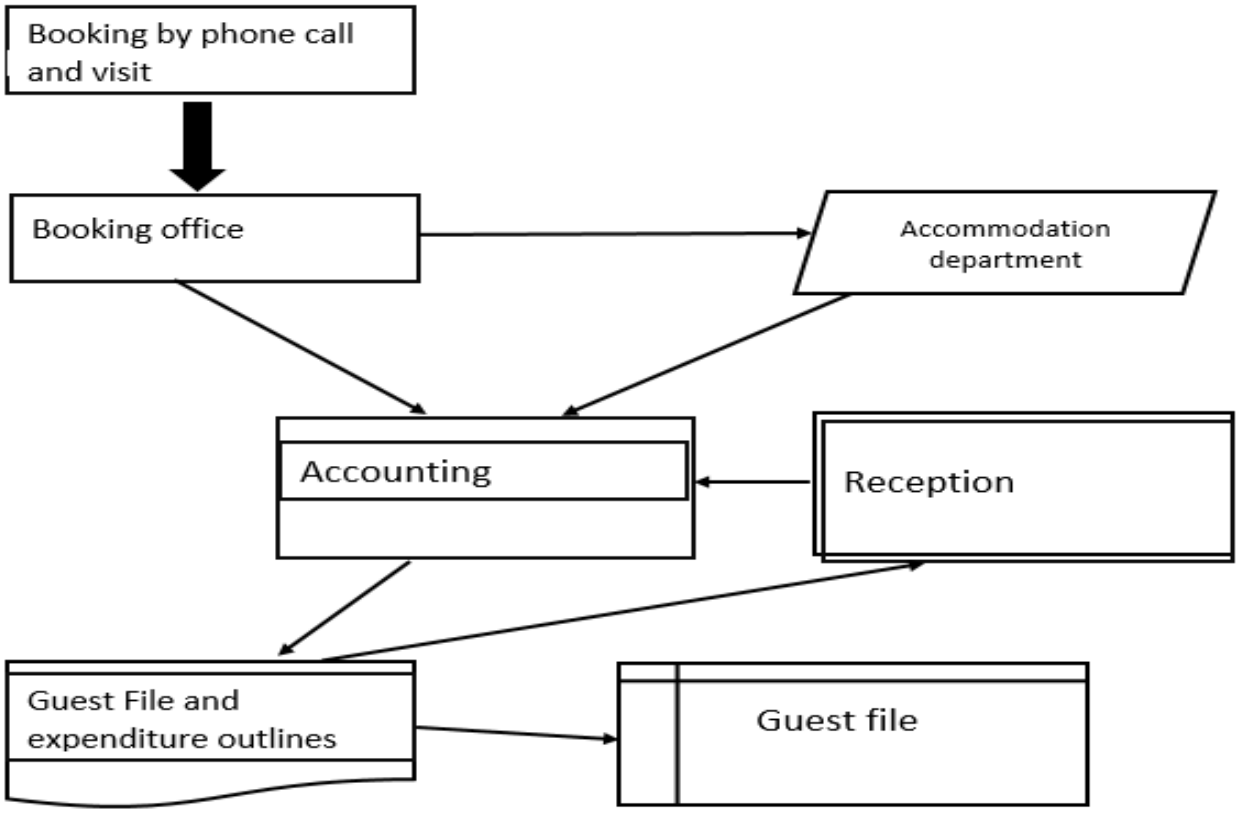


Figure 1: THE MANUAL STRUCTURE SYSTEM

1.3. Proposed Solution

The main goal of this project was to create a system that can manage and handle the activities involved in La posh hotel reservations in a cost-effective and reliable manner. It will assist the administrative staff in performing their duties in a simple and trouble-free manner, as well as visitors and customers in reserving their rooms even before to their arrival at the hotel. Customers can book and confirm their stay with La posh using any electronic device such as a laptop, computer, smart phone, or tablet. Based on the limitations and shortcomings identified in the existing Hotel Room reservation system, solutions for better organization management and customer access have been provided.

The proposed solution will allow customers to manage their accounts and save their preferences and personal information. Customers will have numerous options for comparing rates and services based on their needs. The customer is provided with efficient searching, sorting, and filtering. Traveler or any other customer can book and secure their place to stay without actually visiting the hotel. Executives and business

owners can easily manage their hotel room inventory and rates. The proposed system will be capable of processing payments and transactions.

1.4. Objectives

The Hotel industry like any other business opens up socioeconomic opportunities for both owner and customer. It has the function of providing hospitality services to customers. These customers can be travelers, foreigners, businessmen, tourists, visitors, etc.

Customers are mostly constrained in trying to get a room to pass the night, as the usual practice is to look for a hotel when you have arrived in the particular location, walk in and find out whether there is a vacant room. In the case that there is no vacant room, you have to move to next closest hotel to enquire once more. So what happens if you move around sometimes very late in the night in search of a room and all close by hotels are fully booked?

Other times you may be lucky to have the contact number of the hotel to reach them to book for a room. But do the hotel attendants really ensure to keep a room for you? You would be lucky to go and get a room booked for you. They are quick to serve those who walk in rather than those who may get access to them on phone to book a room. On other times too, if you have friends or family members in the area you want a room booked, they have to go and do the checking for you.

There is no system in place that bonds the La posh hotel and the customer that the customer has actually booked a room and for that matter he is guaranteed a room. This can make customers really stranded especially if it is getting late in the night.

Main objective of this hotel room reservation system is to maintain the robustness of the system and also the safety of customers and administrators, the secondary objectives are:

- ✓ To ease the overall booking process.
- ✓ To make the system which is easy to maintain and navigate.
- ✓ To secure customer’s details.
- ✓ To design a system which will remain up at all times.

2. SYSTEM ANALYSIS AND DESIGN

2.1. SYSTEM ANALYSIS

2.1.1. Functional Requirements

2.1.1.1. Requirement 1 (R1): Sign In

R1.1 Specify your username and password.

Input: User inputs password and username.
Output: If the user's username and password are accurate, the system allows the user to proceed.
Processing: Username and password are verified by the system.

The following figures illustrates what users see after login depending on their roles.

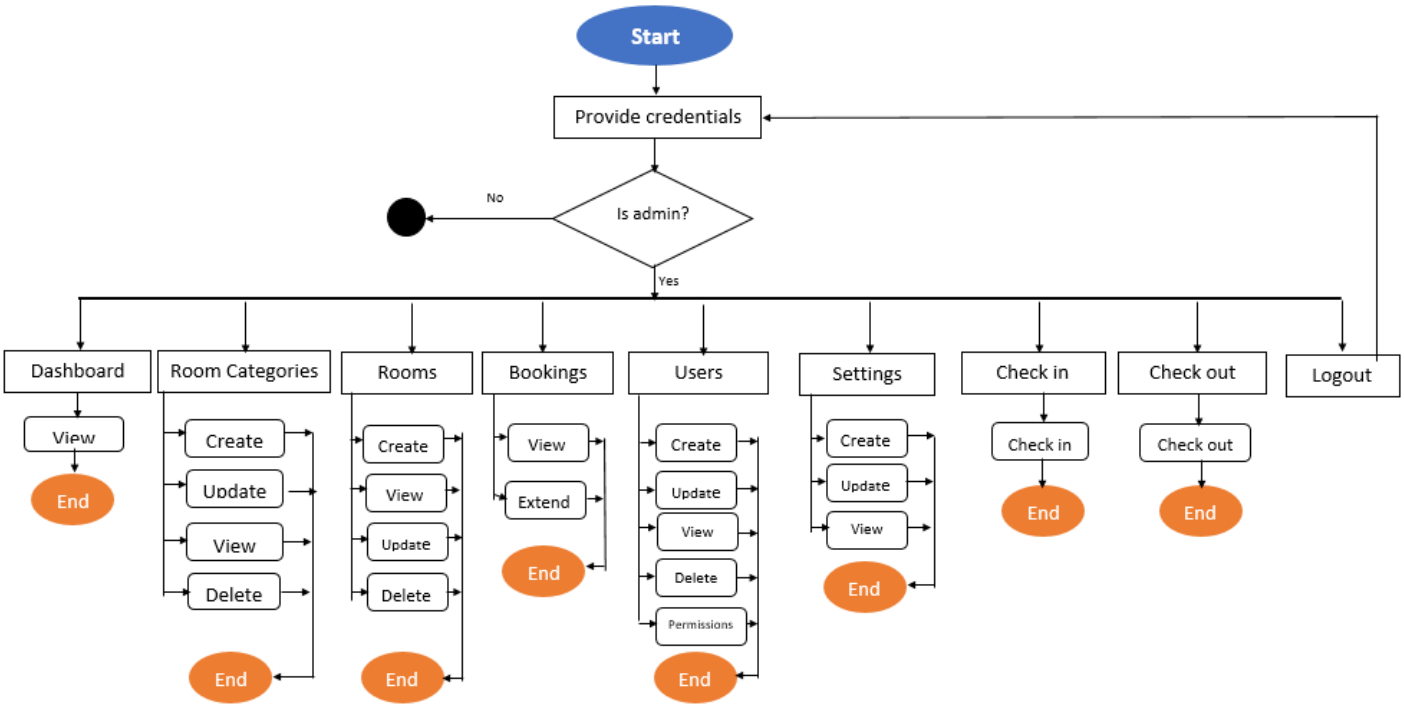


Figure 2: Admin login

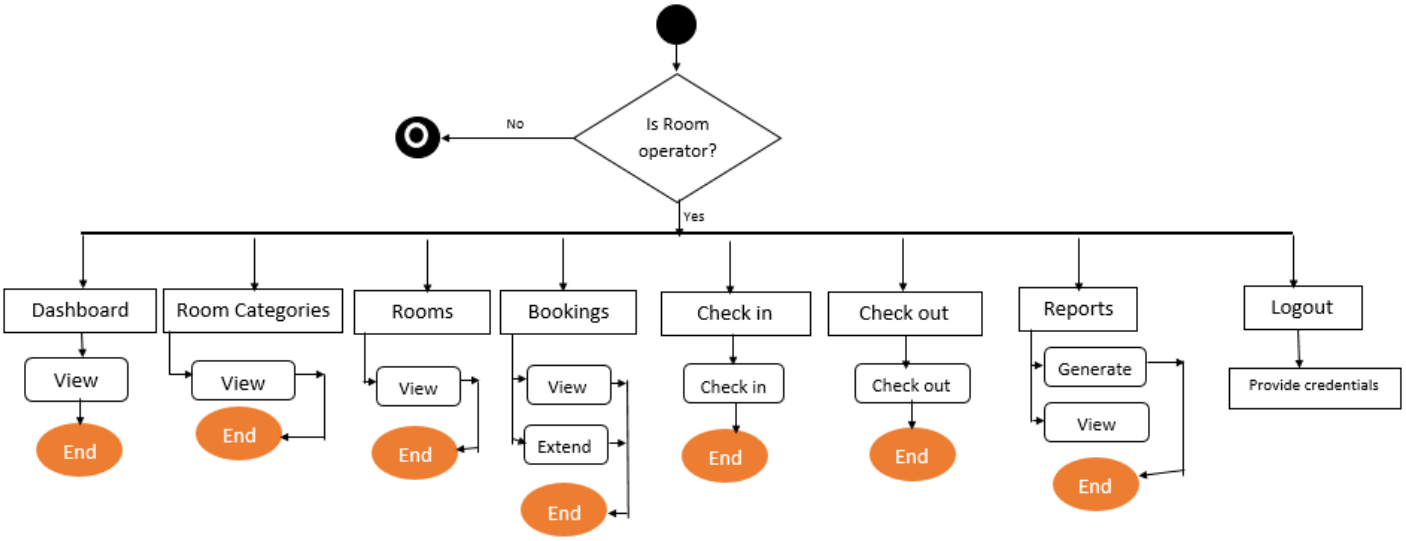


Figure 3: Room operator login

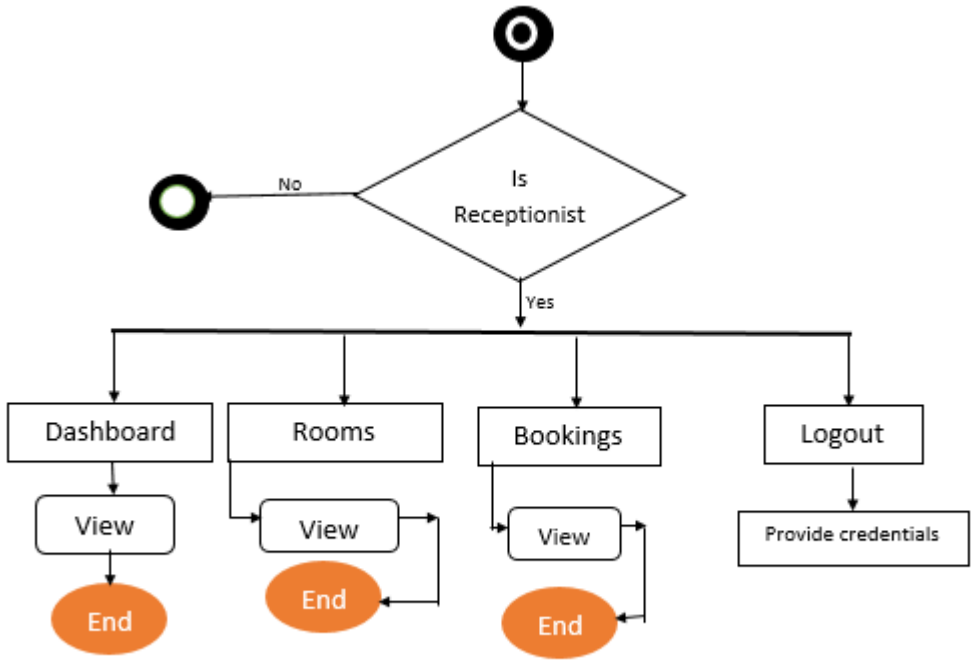


Figure 4: Receptionist Login

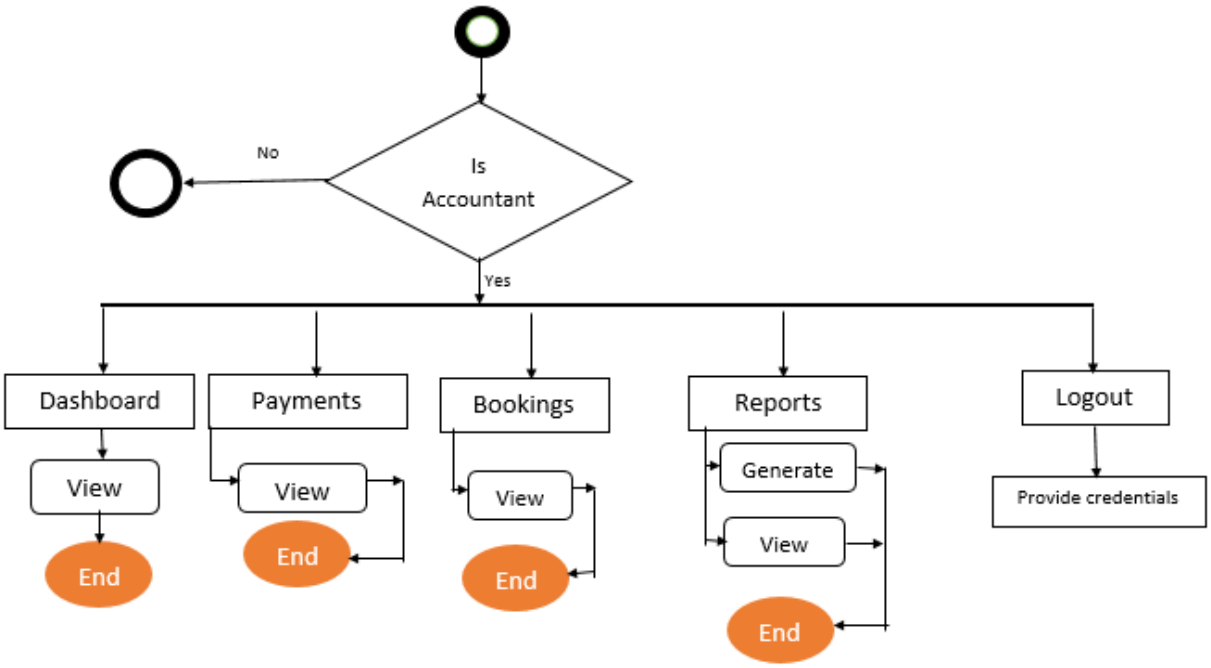


Figure 5: Accountant Login

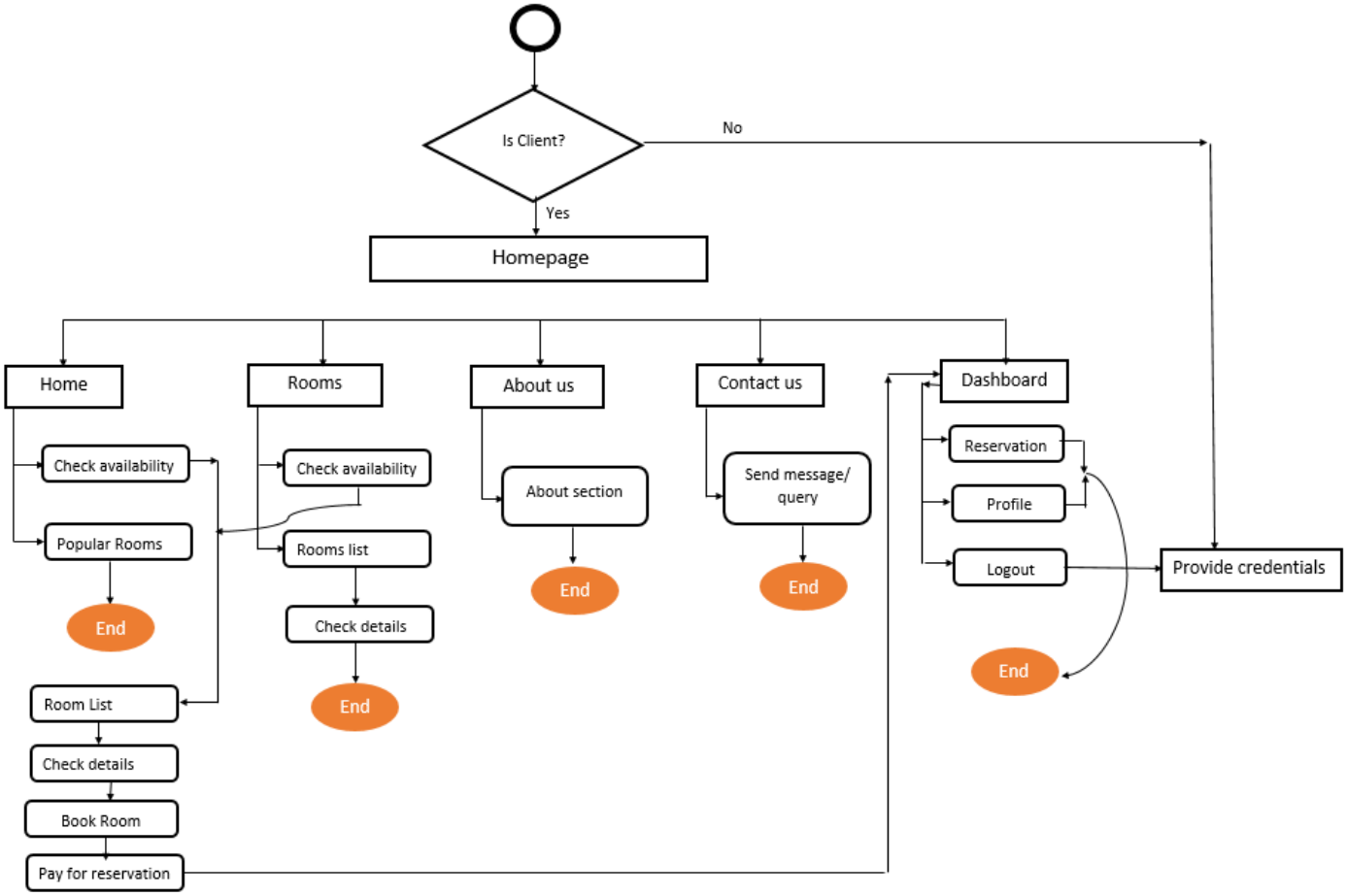


Figure 6: Client Login

R1.2 Create the new user.

Input: User inputs email address and password and other needed information.
Output: The system registers the new user and produces a new profile for him or her.
Processing: The system validates and confirms the user's email and password.

2.1.1.2. Requirement 2 (R2): View Room

R2.1 Filter the room

Input: User chooses the options for filtering.
Output: Displayed are the rooms that fit the filtering criteria.
Processing: System determines which rooms meet the requirements for selection.

R2.2 Sort the room

User input: Selecting a single sorting option.
Output: Based on the user's selections, all rooms are shown in the order they were sorted.

2.1.1.3. Requirement 3 (R3): Book a room

R3.1 Select dates (Check in Date and check out date [all with time])

User input: user chooses his/her check in date with exactly the check in time and check out time
Output: *The system produce a list of rooms available for the specific dates provided.*

R3.2 View Room details

The user enters one room that they are interested in.
Output: Detailed information about the room's full specifications is shown.

R3.3 Reserve Room

User input: User chooses the room to be reserved and provide all information about the reservation.
Output: A reservation request is executed for the chosen room.

2.1.1.4. Requirement 4 (R4): Manage User Profile

R4.1 Maintain User information.

R4.1.1 Add User Information
Information entered by the user: personal data.
Output: Everything has been successfully inserted.

R4.1.2 Update User Information
The user enters updated personal information.
Output: The information has successfully been changed.

R4.2 Manage Reservation

R4.2.1 View Reservation
The user enters a view reservation choice.
Output: The user is shown all of the orders they have placed.

R4.2.2 Extend Reservation
Input: The user requests that the reservation data can be changed.
Output: The change request is either allowed or declined.
Processing: If the request is made before the date of alteration, the request is approved; otherwise, it is rejected.

R4.2.3 Cancellation of Reservation
Input: The user chooses which reservation to cancel.
Output: The reservation chosen by the users is canceled.
Processing: The system determines if the reservation is cancellable

2.1.1.5. Requirement 5 (R5): Manage Reservation

R5.1 Create a New Reservation
Input: The user makes a new reservation for the room he or she chooses.
Output: The user is given the reservation details as an output.

R5.2 Bill Payment
Input: The system computes the total amount to be paid on the bill.
Output: The customer pays the bill.

2.1.1.6. Requirement 6 (R6): Admin

R6.1 User Management
Input: The administrator adds, edits and remove the user and user information including their permissions.

Output: The user list has been updated.

R6.2 Offers Management
Input: The administrator adds or modifies the offers.
Output: The offerings are adjusted as a result.

R6.3 Configuration
Input: The admin adjusts the website's settings.
Output: The settings are modified as a result.

2.1.1.7. Requirement 7 (R7): Staff

R7.1 Room check-in
Input: responsible staff member enter the room to be checked-in and confirm check-in
Output: selected room is checked-in.

R7.2 Room check-out
Input: responsible staff member enter the room to be checked-out and confirm check-out
Output: selected room is checked-out.

R7.3 Check payments
Input: accountant enters the reservation to be verified for payment
Output: payment details are displayed as the output.

R7.4 Receive payments
Input: payments made by customers are received by accountant.
Output: payment details are displayed as the output.

R7.5 Extends Reservation:
Input: responsible staff member enters the reservation to be extended
Processing: The system checks whether the reservation is eligible for extension
Output: reservation is extended or the request is rejected.

2.1.2. Non-Functional requirements

- ✓ **Reliability**

The elements required to determine the software's predicted dependability are as follows:

1. The user inputs must be legitimate and fall within the specified range.

2. Normal program termination

- ✓ **Security**
    1. One person cannot access the account of another.
    2. Logging in is restricted to the authorized user.

- ✓ **Maintainability**

1. The program interacts with the server as little as possible, resulting in a great overall performance.
2. The application is available 24 hours a day, seven days a week.
3. If new features are required, the application code is simple to debug and extend.

2.1.3. Intended users

The system's final users are:

1. **System administrator**

The system's behavior and the entire system will be managed by the administrator. He/she will be able to use practically all of the system's access permissions.

2. **Hotel Staff members**

These are the employees of the hotel to perform basic reservation activities. They include accountants, receptionists, managers and others.

3. **Clients**

The system's ultimate users will include travelers, business people, and anybody else who wants to reserve a hotel room, as well as commercial partners who will utilize the system to market their products and services.

The users must possess the following qualities:

- ✓ The user must have a foundational understanding of computers or other smart devices.
- ✓ It should be easy for the user to launch and dismiss web-based applications.

2.1.4. Use case diagrams

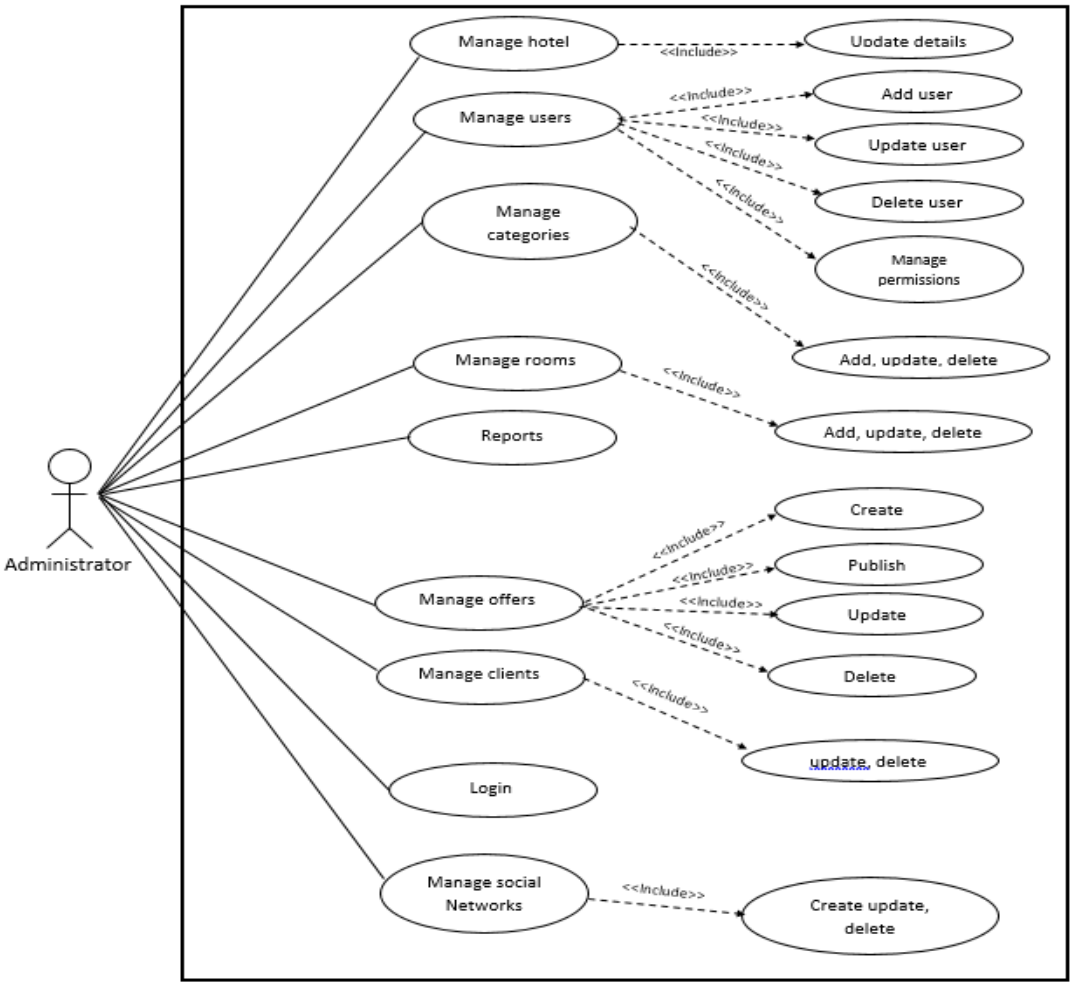


Figure 7: Use case: Administrator

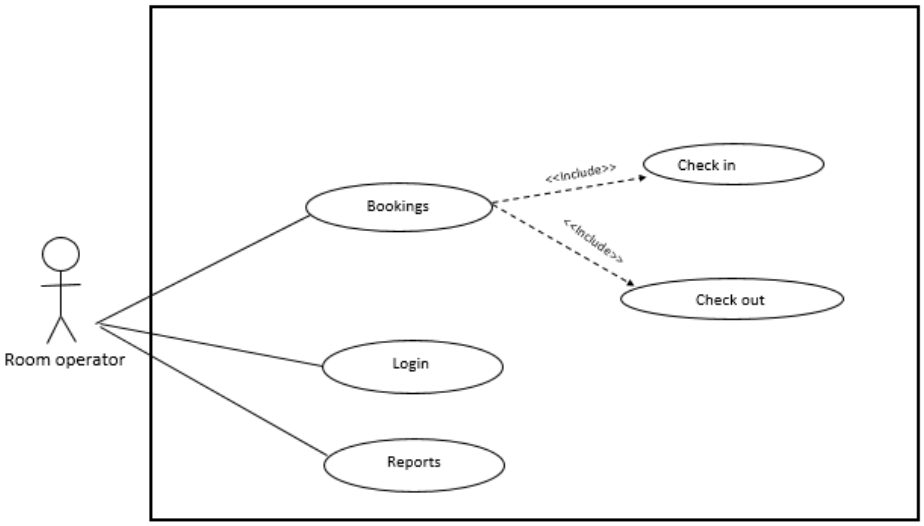


Figure 8: use case: room operator

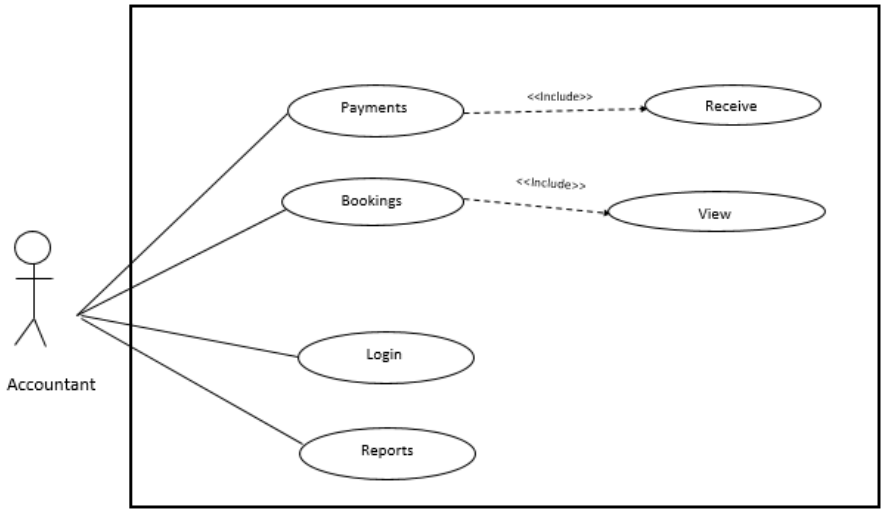


Figure 9: use case: accountant

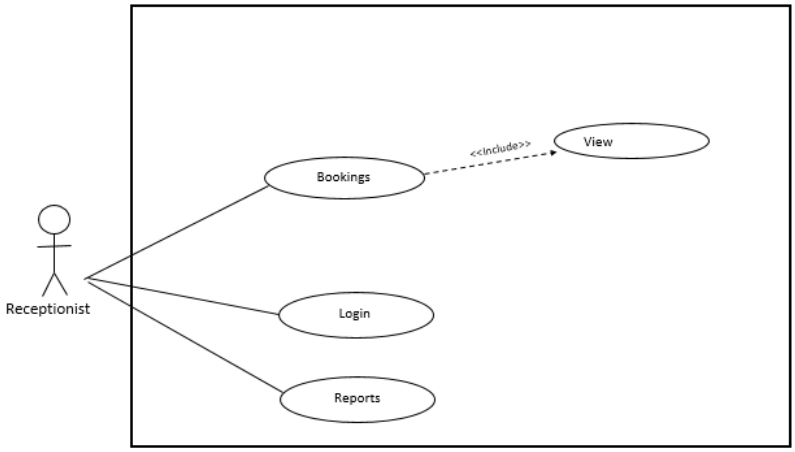


Figure 10: use case: hotel receptionist

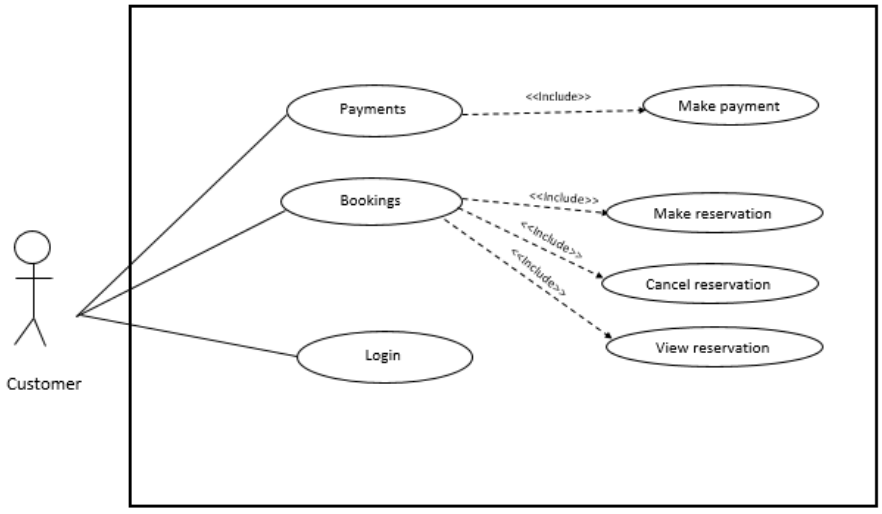


Figure 11: use case: customer

2.1.5. Intended partners

Our system will have the following partners

- ✓ **Banks and other financial organs**: These will facilitate the hotel to make financial transactions easily and both of us will get benefits in this partnership.
- ✓ **Businesses**: the businesses will be allowed to make advertisements on our website and this will increase the revenue to the hotel.
- ✓ **La posh Hotel**: specifically, this system will be used by the La posh hotel to make their room reservation system feasible in the easiest manner and speed up the operations.

2.2. SYSTEM DESIGN

2.2.1. UI DESIGN

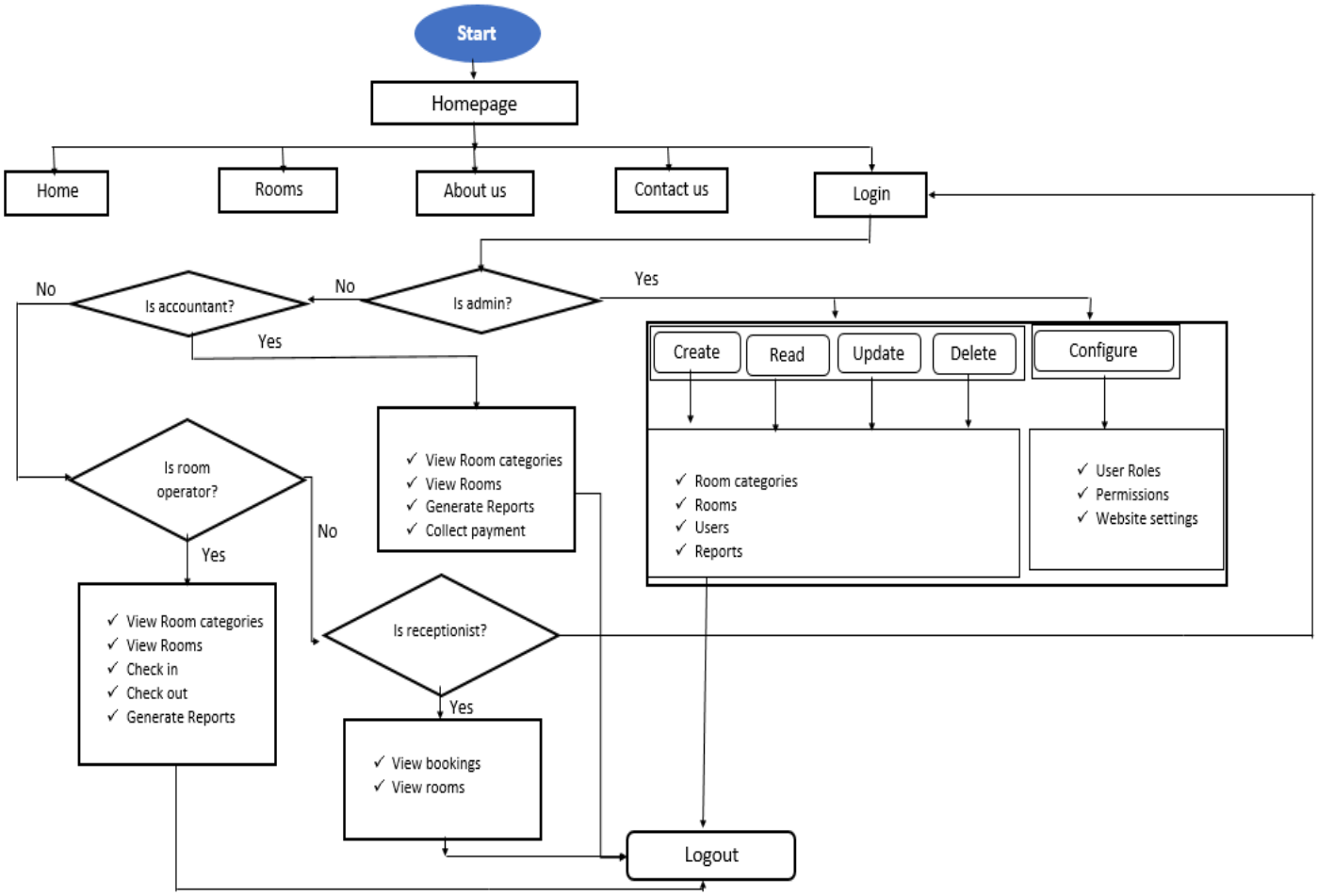


Figure 12: UI design | management

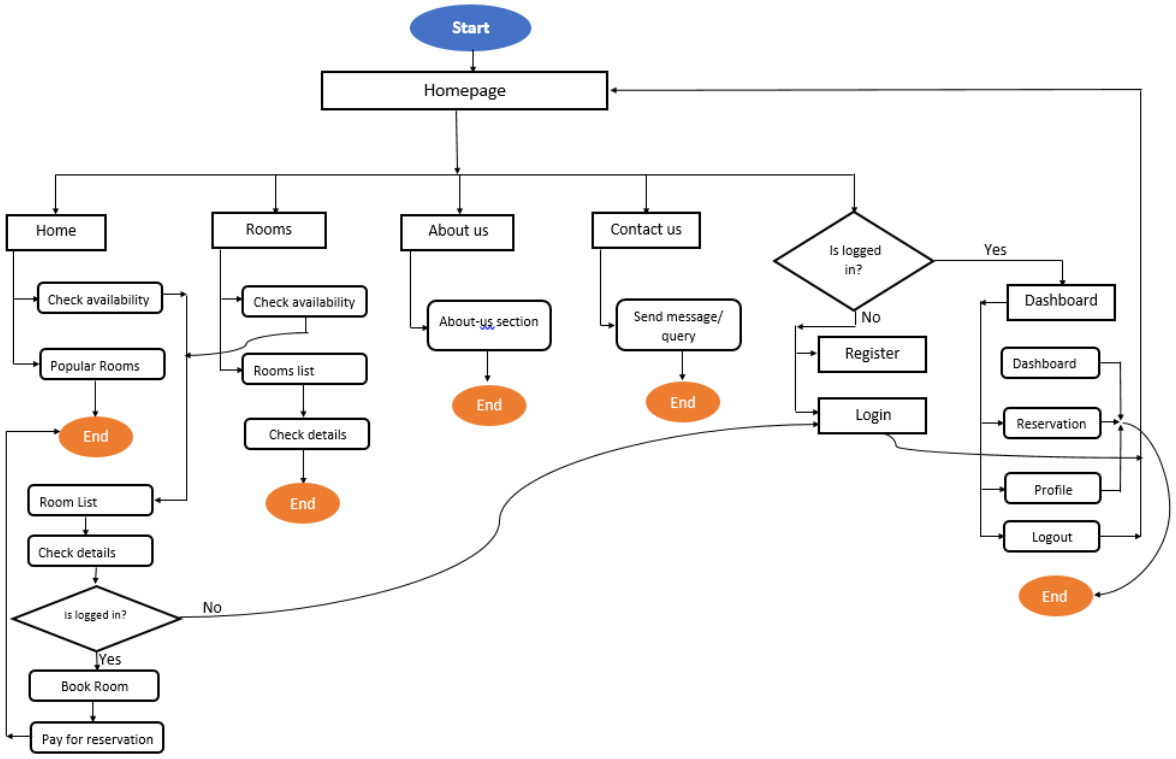


Figure 13: Client-side UI

2.2.2. Database Design (ERD)

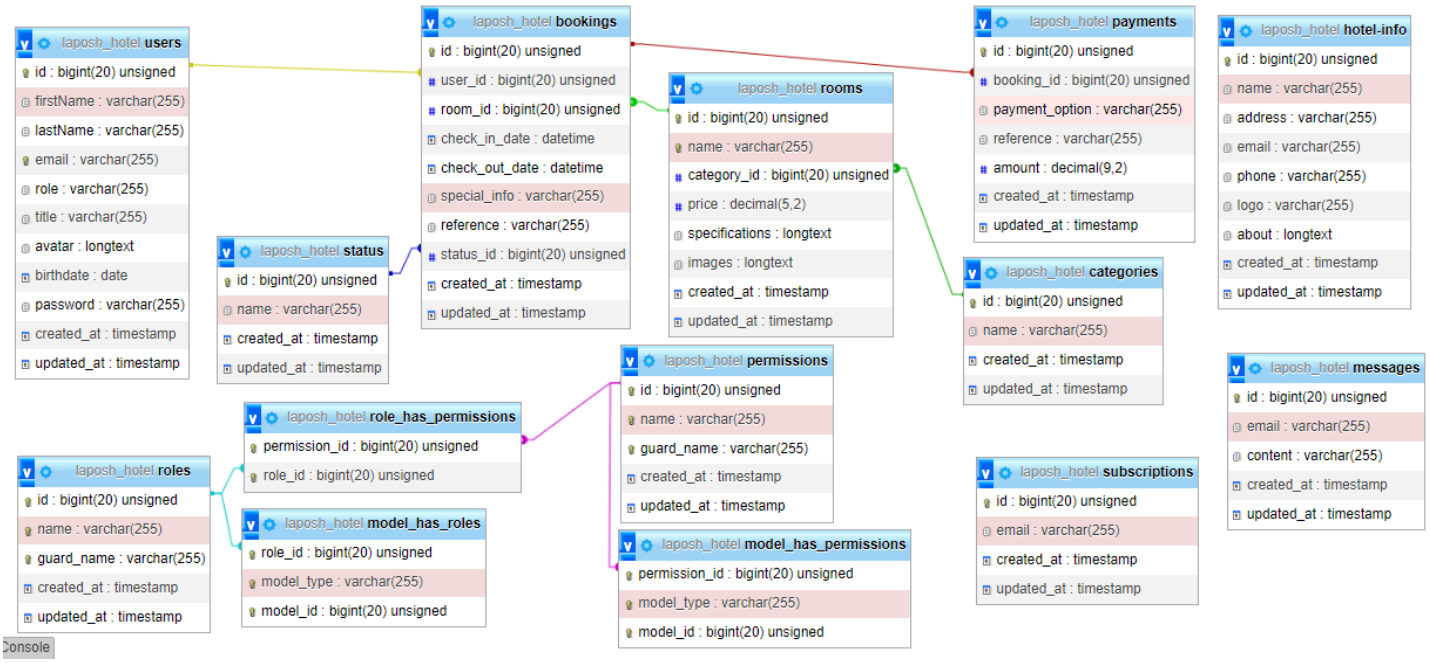


Figure 14: ERD

3. Implementation

3.1. Introduction

This project was implemented using Laravel framework together with MySQL database. The system was made compatible to the web browser of any type and is responsive to be accessed using a mobile phone.

3.2. Screenshots

3.2.1. Account set up and login

Every client who wants to work with our hotel need to have an account in our system. The account is free and easy to create and can be accessed anytime from anywhere with any networked device having a web browser.

The following is our user registration form

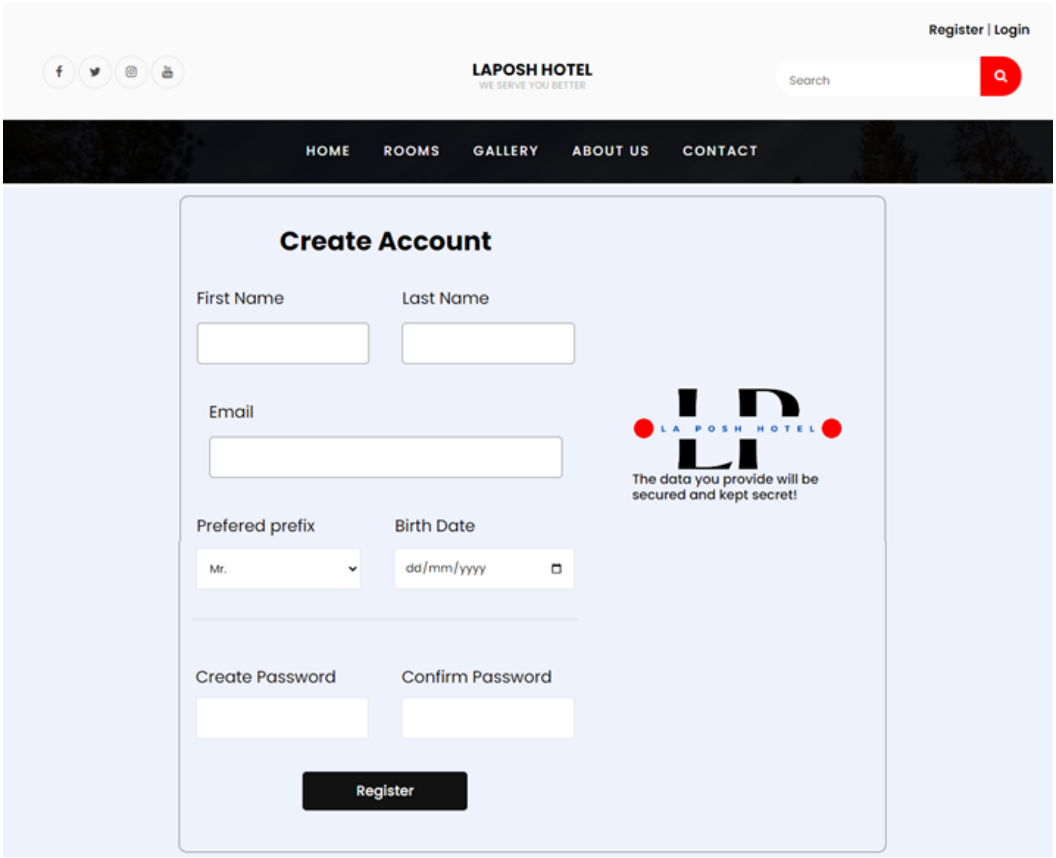


Figure 15: registration page

To register, the user fills out the form and submit it. The form is designed in a manner that can capture all information and provide various validations of user input.

To Login the user provide registered credentials and if they match with the one we have in our system, he/she will be allowed to access his/her account. The login page is here down below:

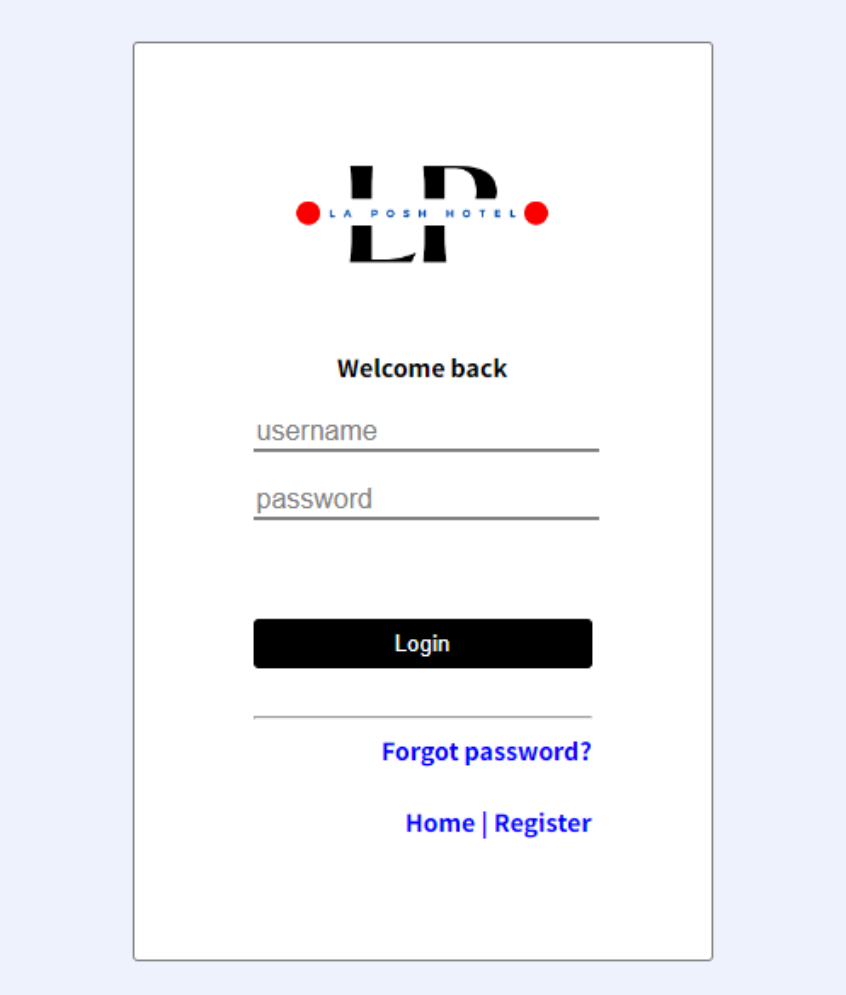


Figure 16: Login page

Validations

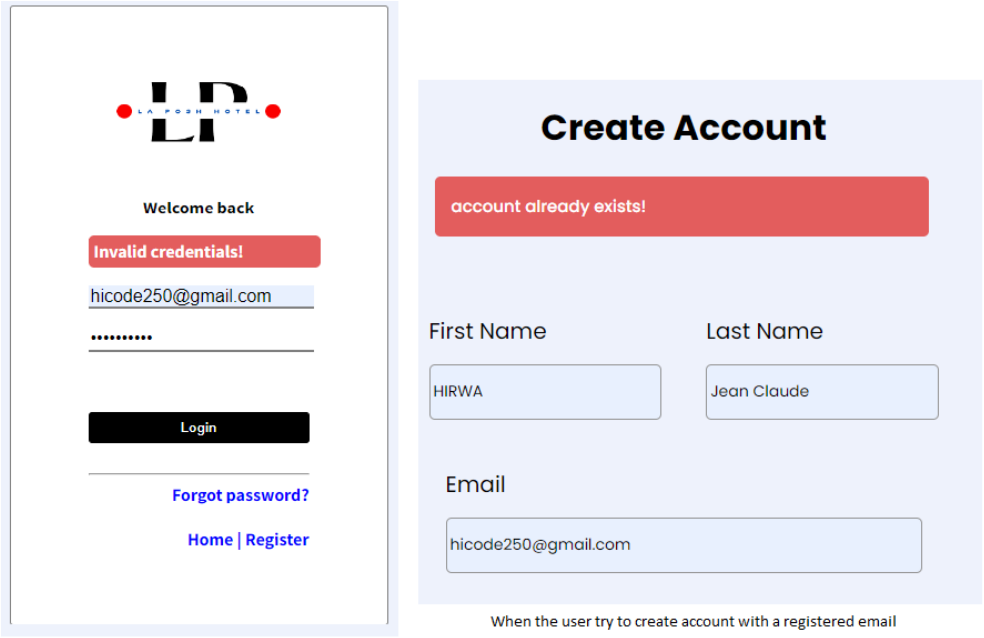


Figure 17: validations

3.2.2. Management

After being logged in, the site administrator lands on the index page where the system metrics are listed. The following is the view of the admin dashboard:

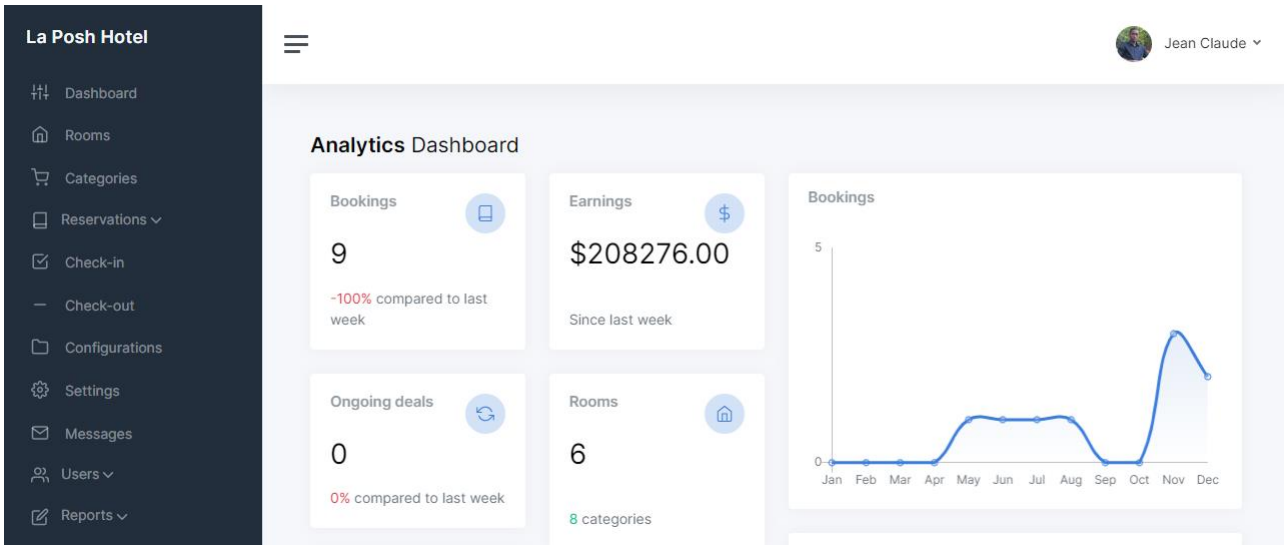


Figure 18: dashboard

Different metrics that can be found here are given below:

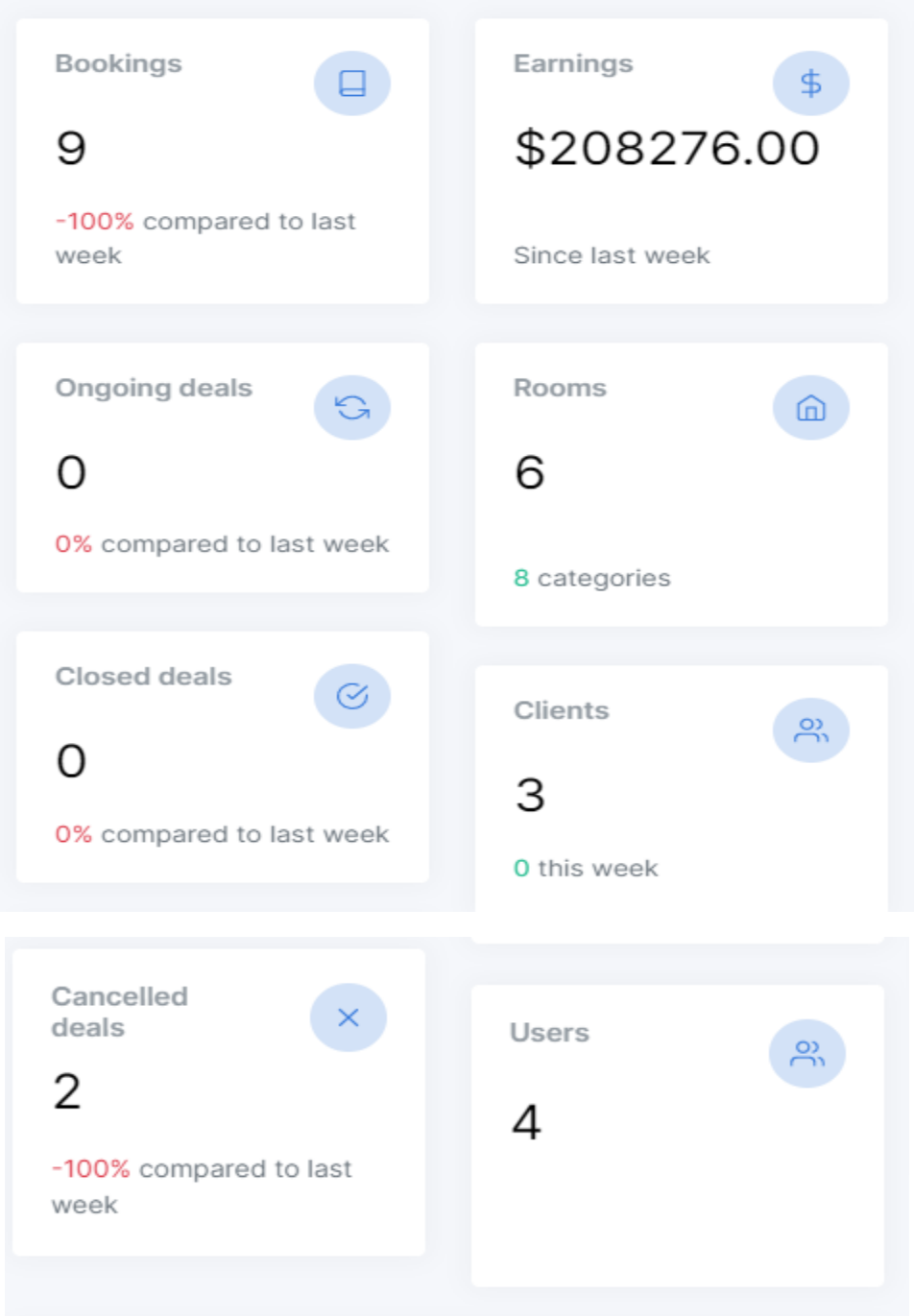


Figure 19: analytics

The above are the information about bookings, rooms, earnings, room categories, users, clients that the system have all in numbers.

It also illustrates the monthly booking pattern of the clients as shown below

Figure 20: analytics chart 1

The system can compare the booking count of the current and the previous year to give an image of business progress.

Figure 21: chart 2| comparison

It also shows the behavior of clients about cancelling reservations

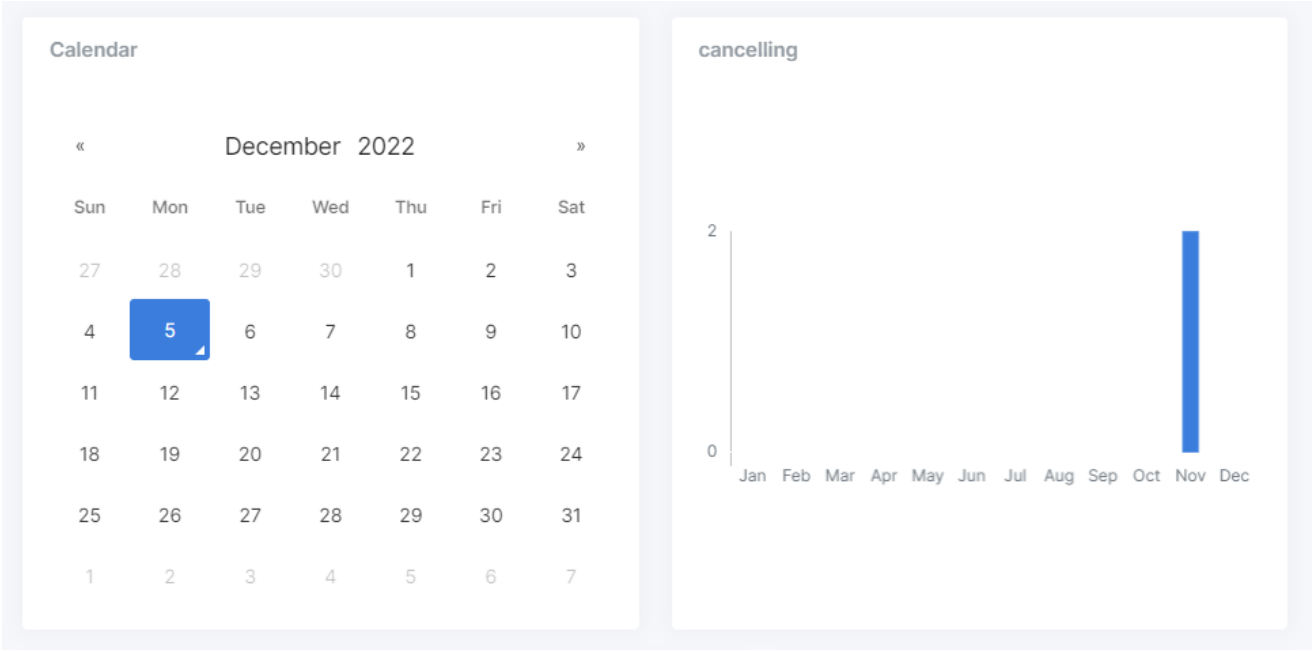


Figure 22: cancelling

All payments made are listed in the data tables for easy access and filter. The image below shows the payments made with the popular booked rooms onside.

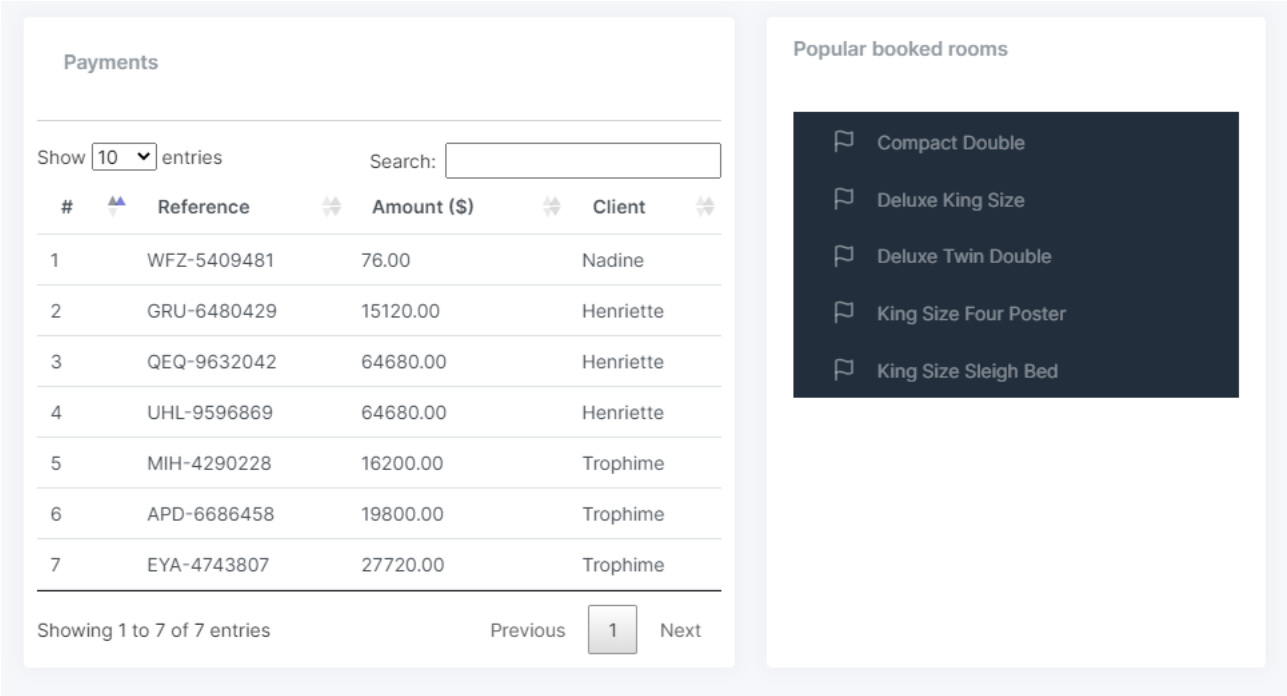


Figure 23: payments

Managing room categories

A room must have a category in which it belongs to. Before creating a room, the administrator first create the category if it had not previously exists.

To create a room category the user (Administrator or another with the create category permission) clicks on categories and a list of categories available is shown together with the new category form as shown below:

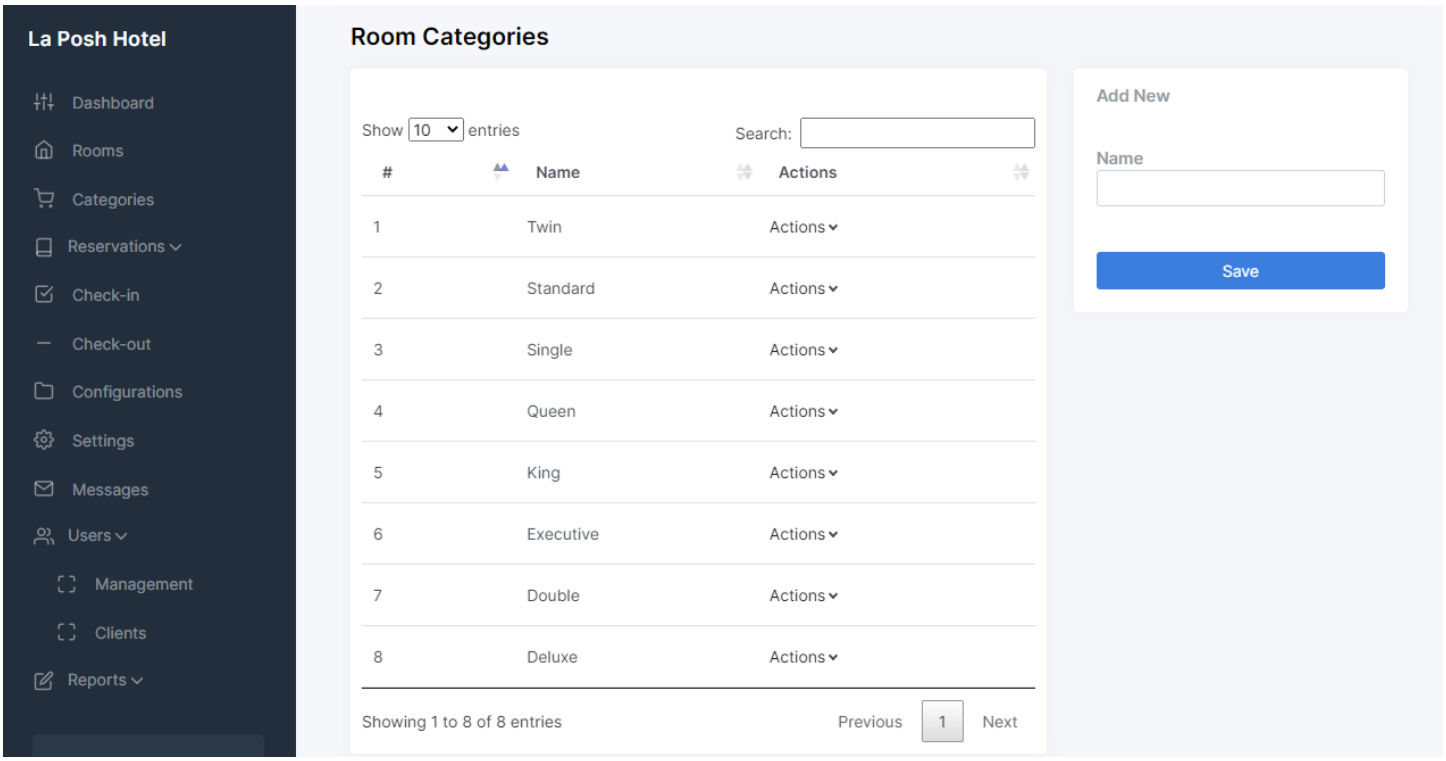


Figure 24: room categories

The user fills out the form to create the category. The form is validated to accept all relevant information about the room category.

Suppose that the user tries to register a category that is already registered, the following will be the response:

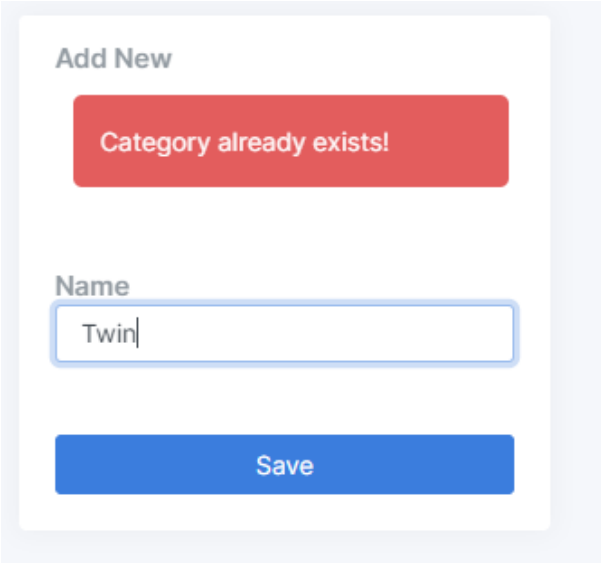


Figure 25: Room category validator

By clicking on the action button in the category table the user can perform different operations on the category such as view, edit, and delete.

More information about the category are displayed when the user clicks on view, under the action. The category is returned together with its rooms if any. Let's view the Executive category.

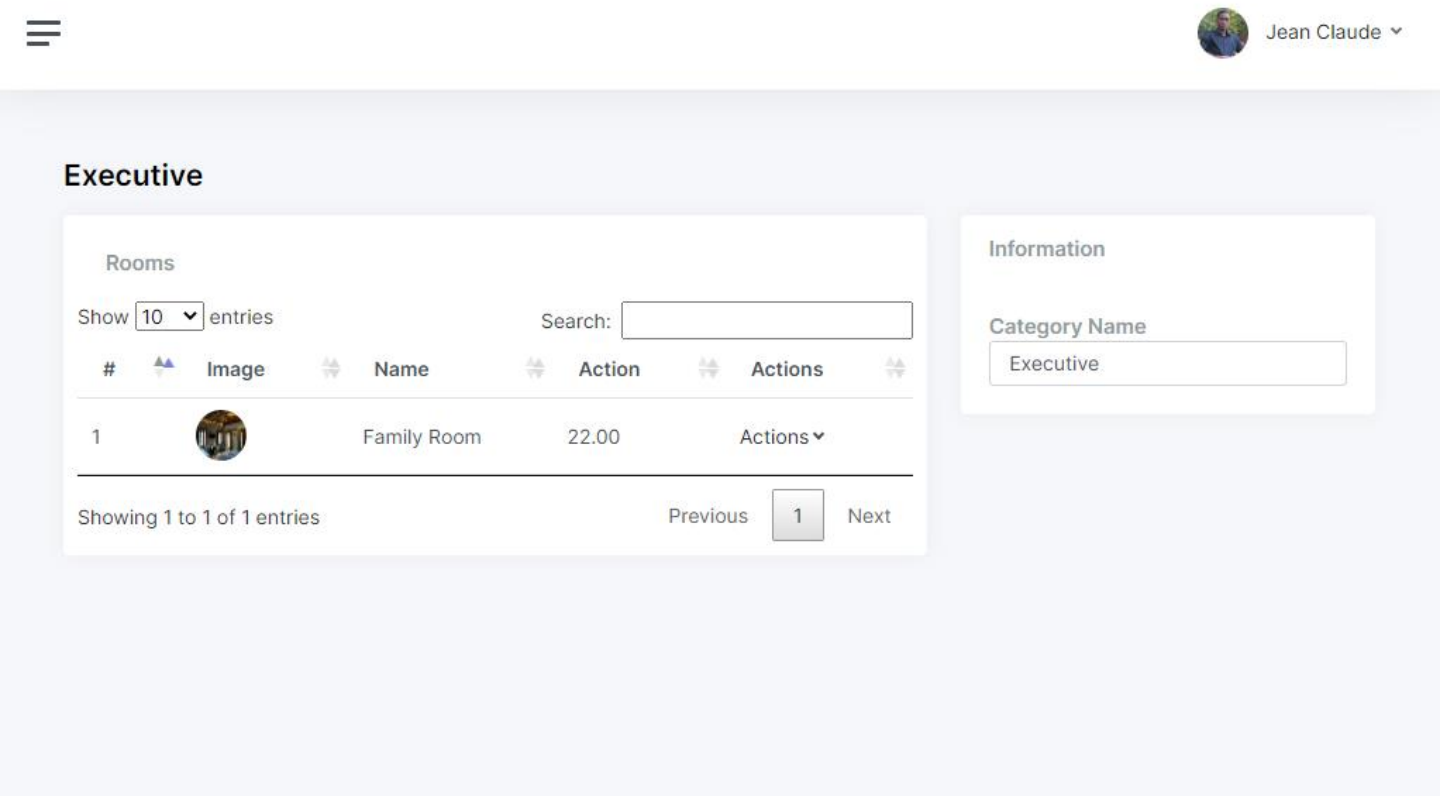


Figure 26: view category

From the above image, we can see that the executive category has one room.

The category can be updated if its details need adjustments. Here, we changing the name. It is done by clicking on the edit under action button, and fill the update form.

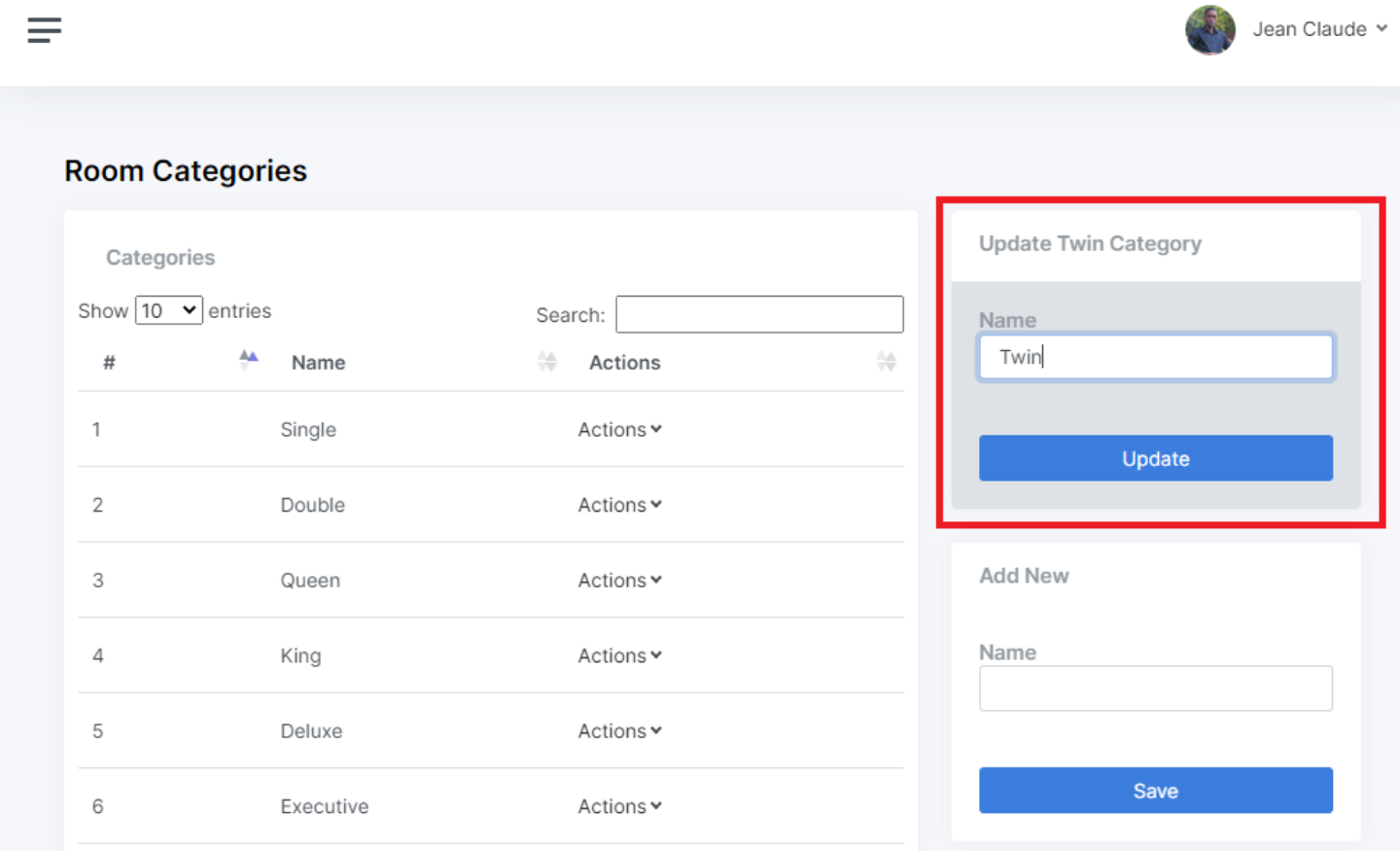


Figure 27: update category

The update form is the one highlighted in the red rectangle. This rectangle is not the component in our UI. It is just for illustration.

The admin or other user with the delete category permission can delete the category by simply click on the delete button under the action button. When the category is deleted, all of its rooms are also deleted.

Managing Rooms

To create a room the user (Administrator or another with the create room permission) click on rooms and a list of rooms available is shown together with the new room form as shown below

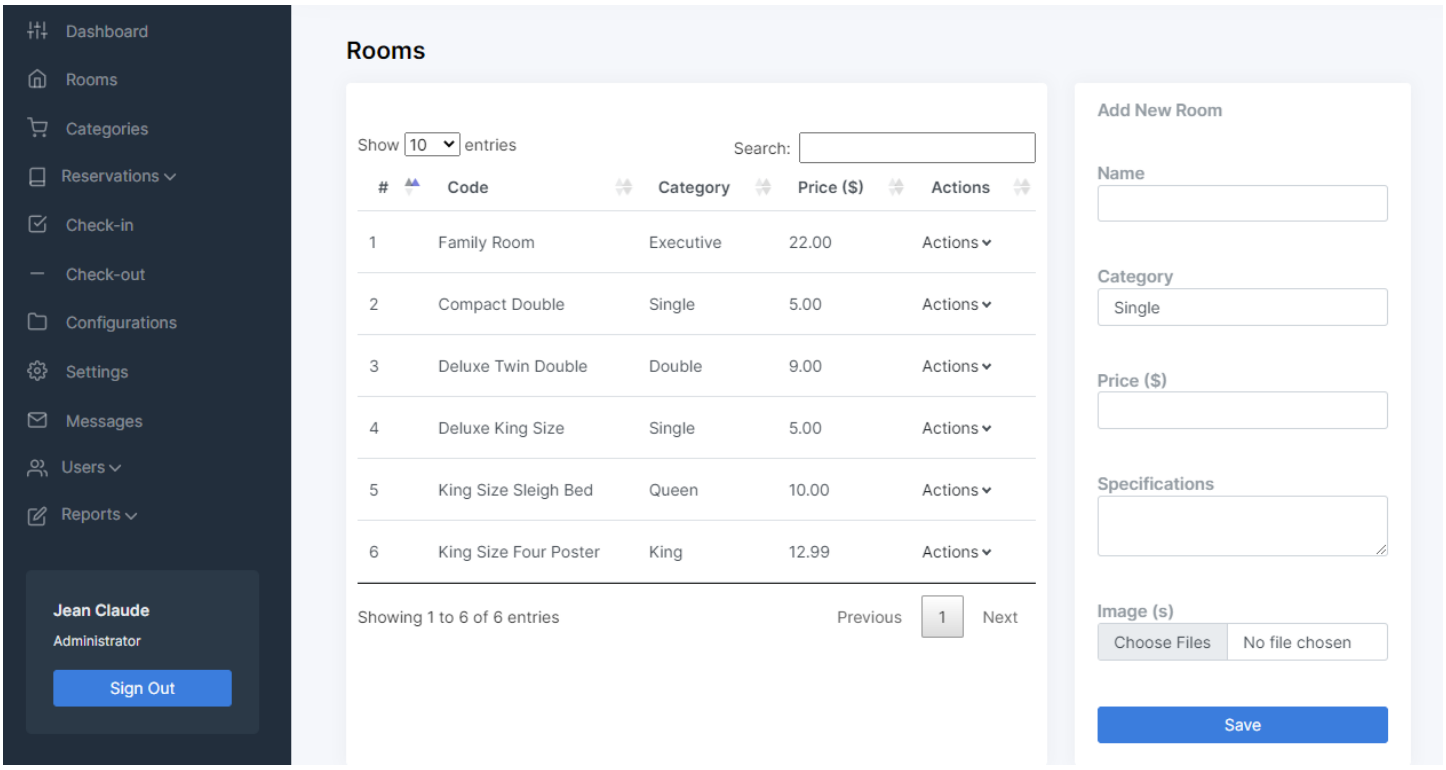


Figure 28: manage rooms

The user fills out the form to create the room. The form is validated to accept all relevant information about the room.

Suppose that the user tries to register a room that is already registered, the following will be the response:

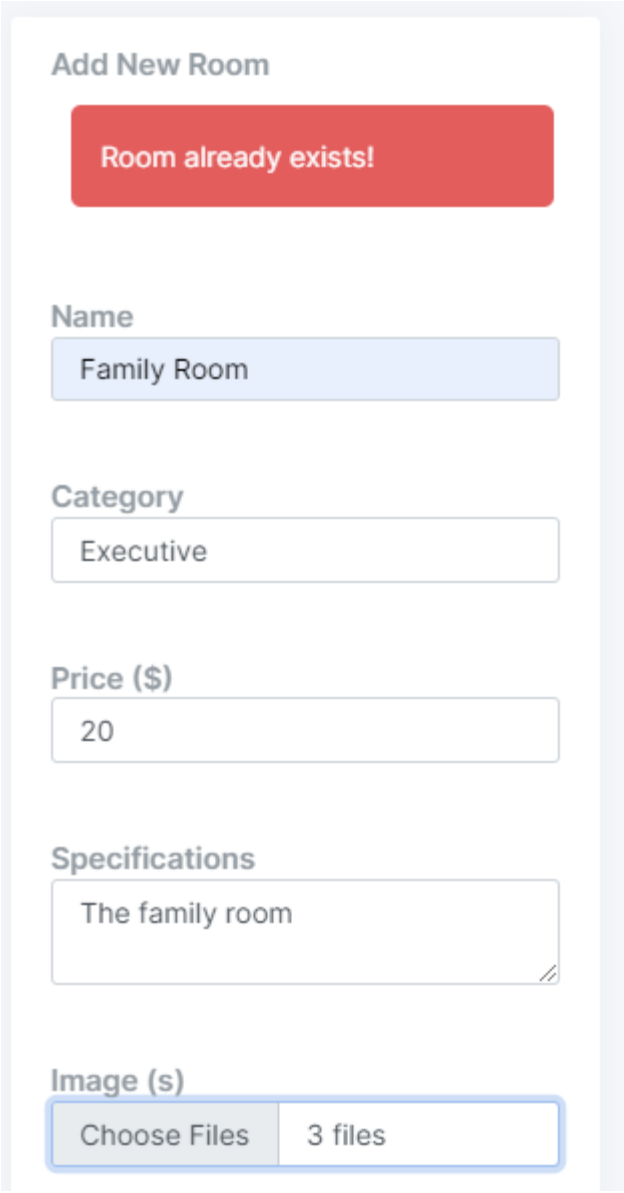


Figure 29: new room form

By clicking on the action button in the room table the user can perform different operations on the room such as view, edit, and delete.

More information about the room are displayed when the user clicks on view, under the action. The room is returned together with its images, and reservations made for it if any!

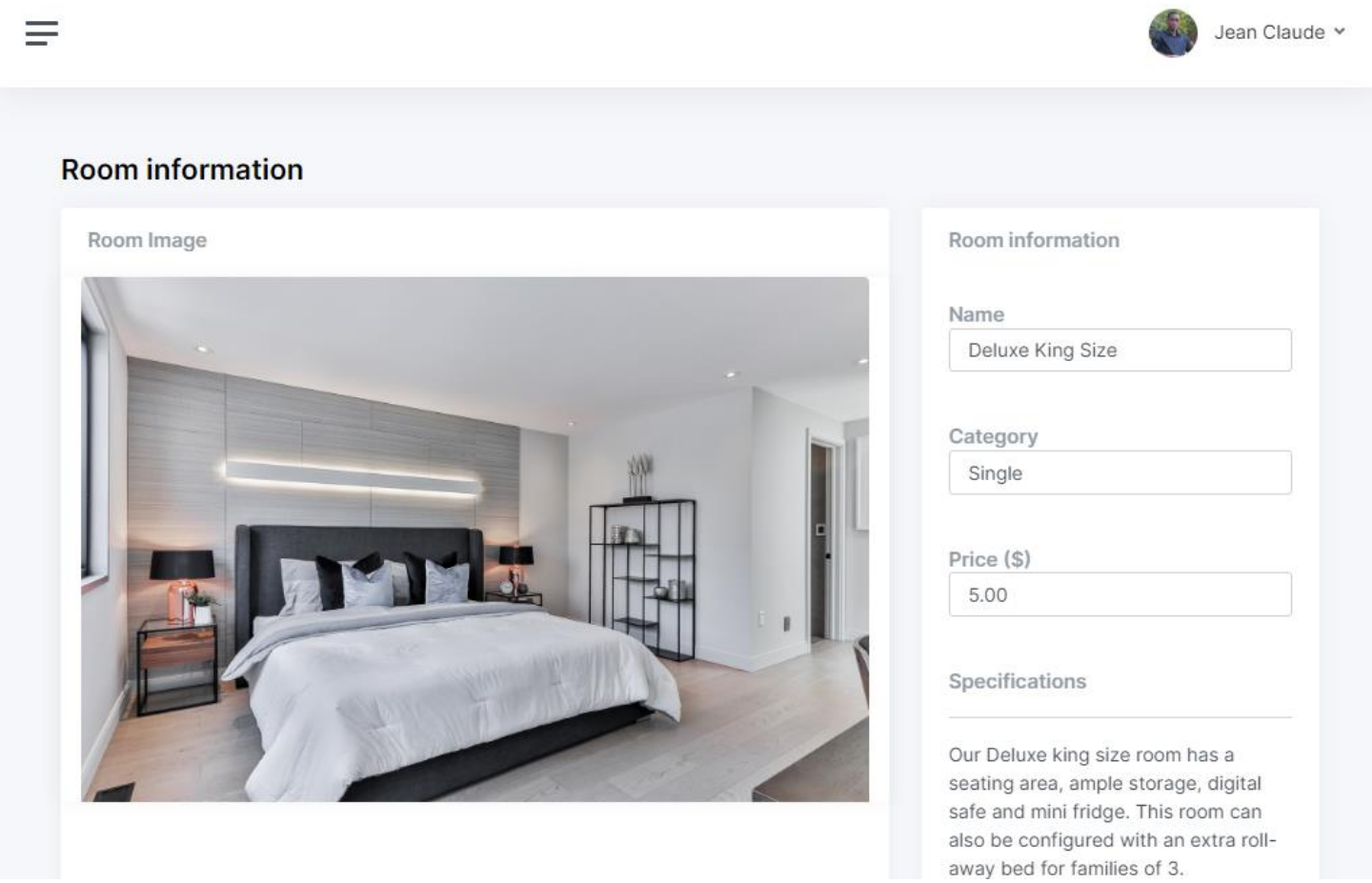
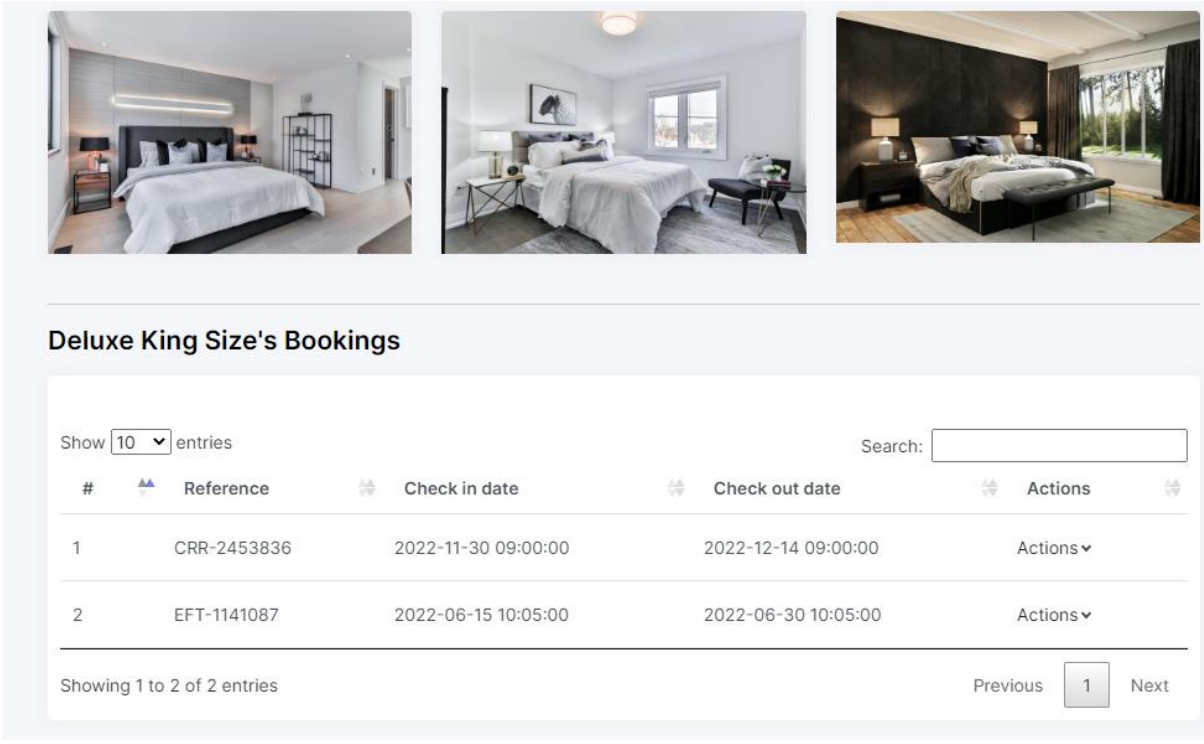


Figure 30: view room



The room can be updated if its details need adjustments. Here, we changing the price. Room images can be updated as well. It is done by clicking on the change room images and upload the new images.

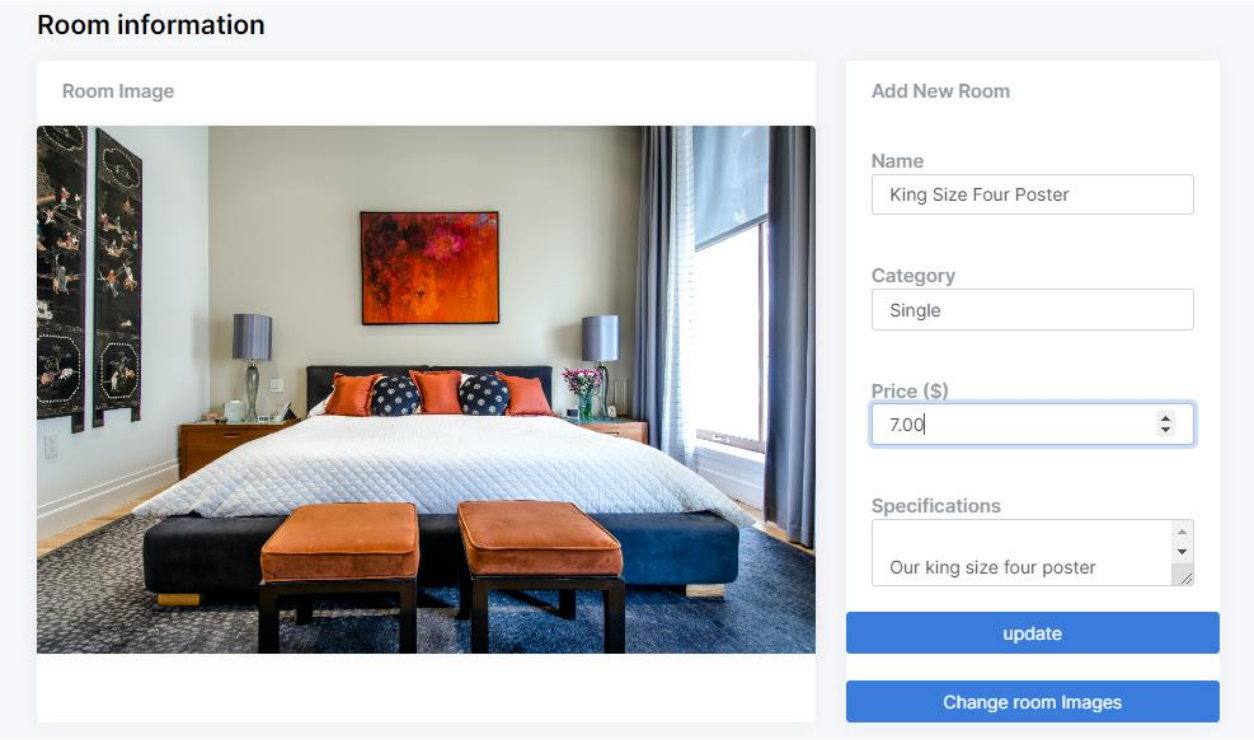


Figure 31: update room

The admin or other user with the delete room permission can delete the room by simply click on the delete button under the action button.

Managing Users

To create a new user account the administrator click on users in the navigation. There are two categories of users which are the one in the management and clients. Here we are concerned with the one in the management (staff).

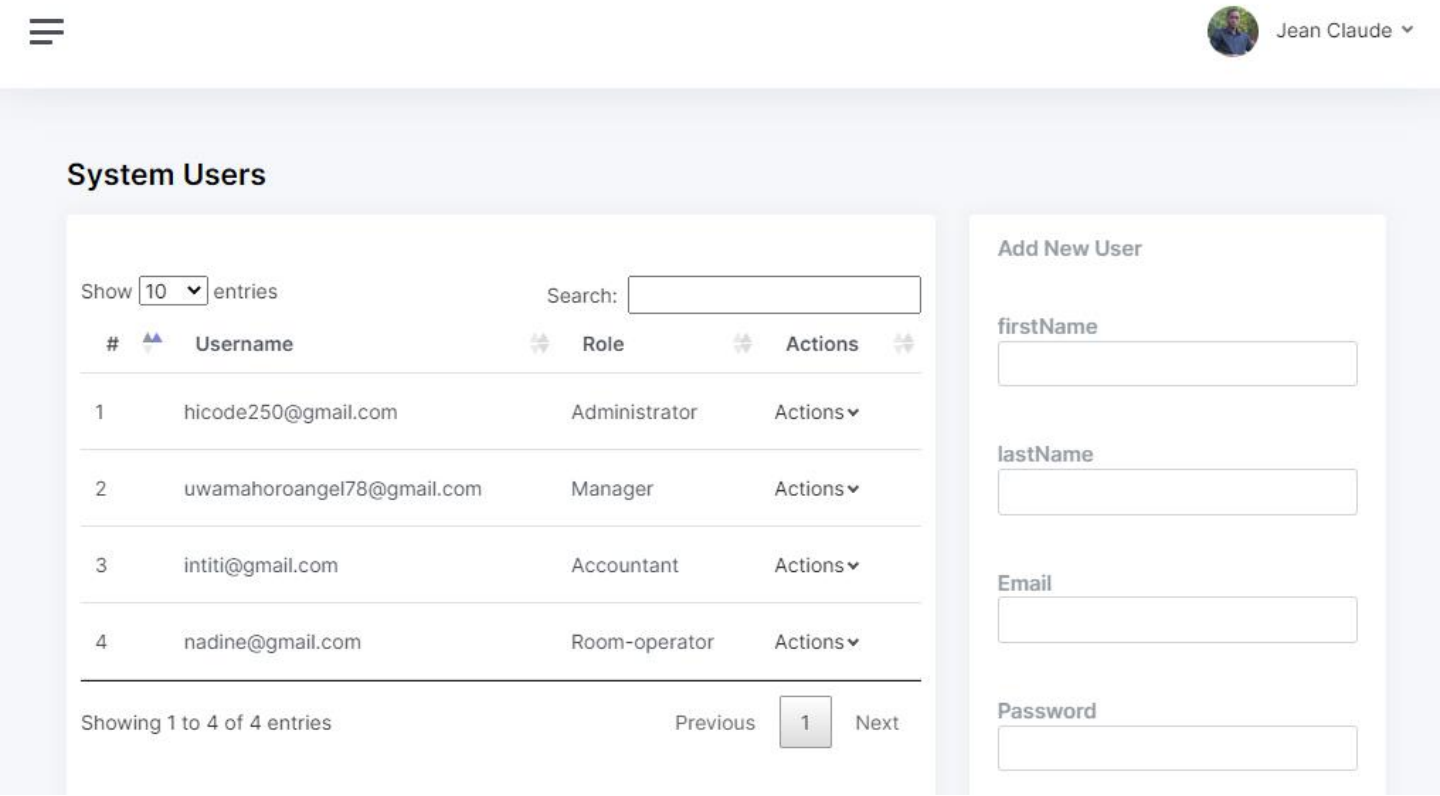


Figure 32: users

On the left, there is a list of all system users in the management. The new user is added by filling the form on the right.

By creating the new user, the admin provide all needed information including the role that user has in the system. The user form is validated to accept all relevant information about the user.

By clicking on the action button in the users table the admin can perform different operations on the user such as view, edit, and delete.

User Roles and permissions

The user roles and permissions can be configured where the user can be granted new permissions or revoked some. This will help to continue the work when one user with some permissions is not around and the permissions can be granted to another user. To do so, the system admin clicks on the configuration in the navigation and the permission page is returned as a response.

To update the user permission, the user click on the button highlighted below:

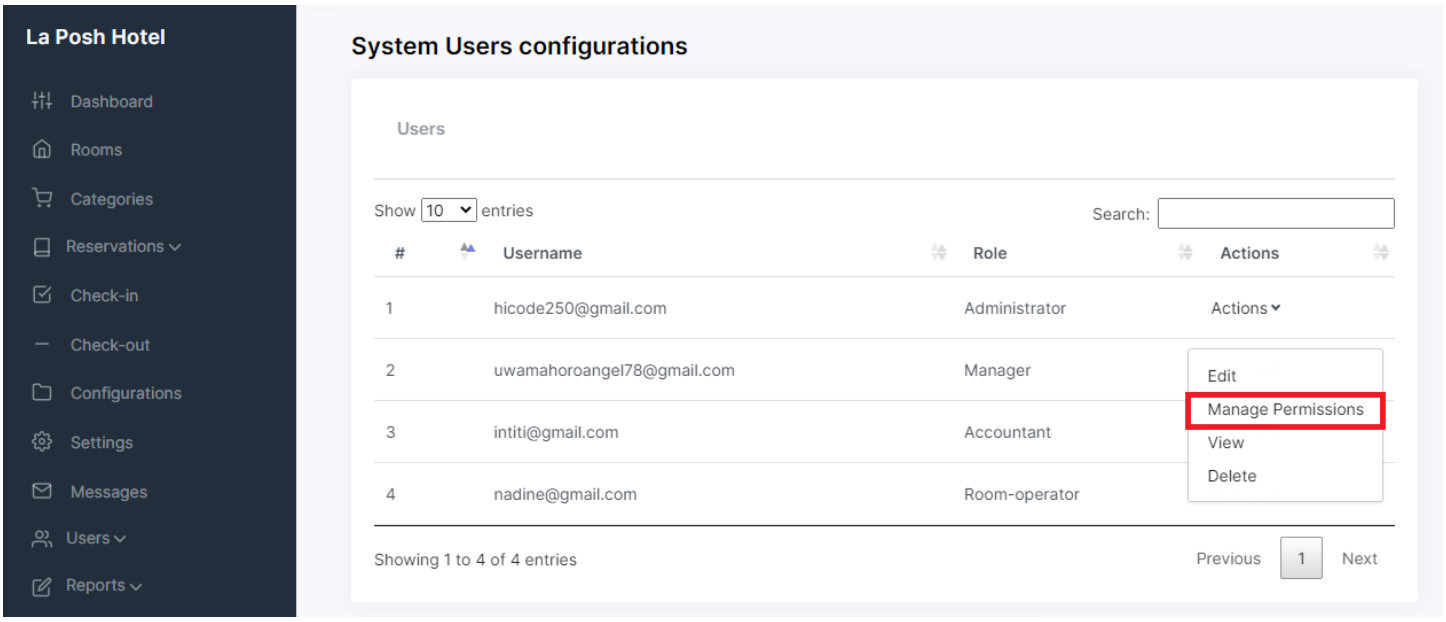


Figure 33: manage roles

The list of all permissions the user has and the ones that can be granted to him/her will be displayed and the admin will perform the desired action.

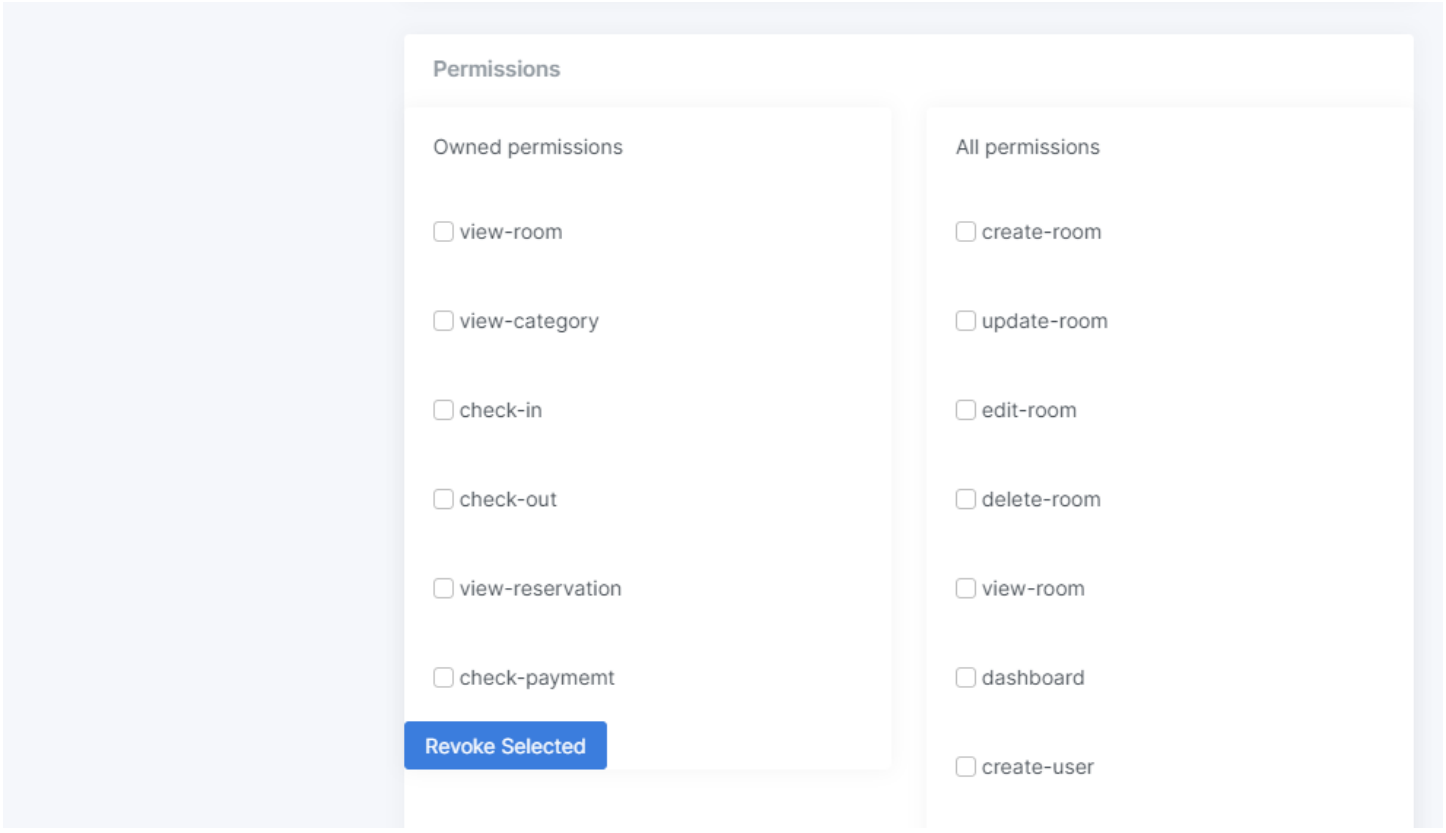


Figure 34: permissions

Bookings

The responsible user can view the reservation by clicking on reservations on the navigation.

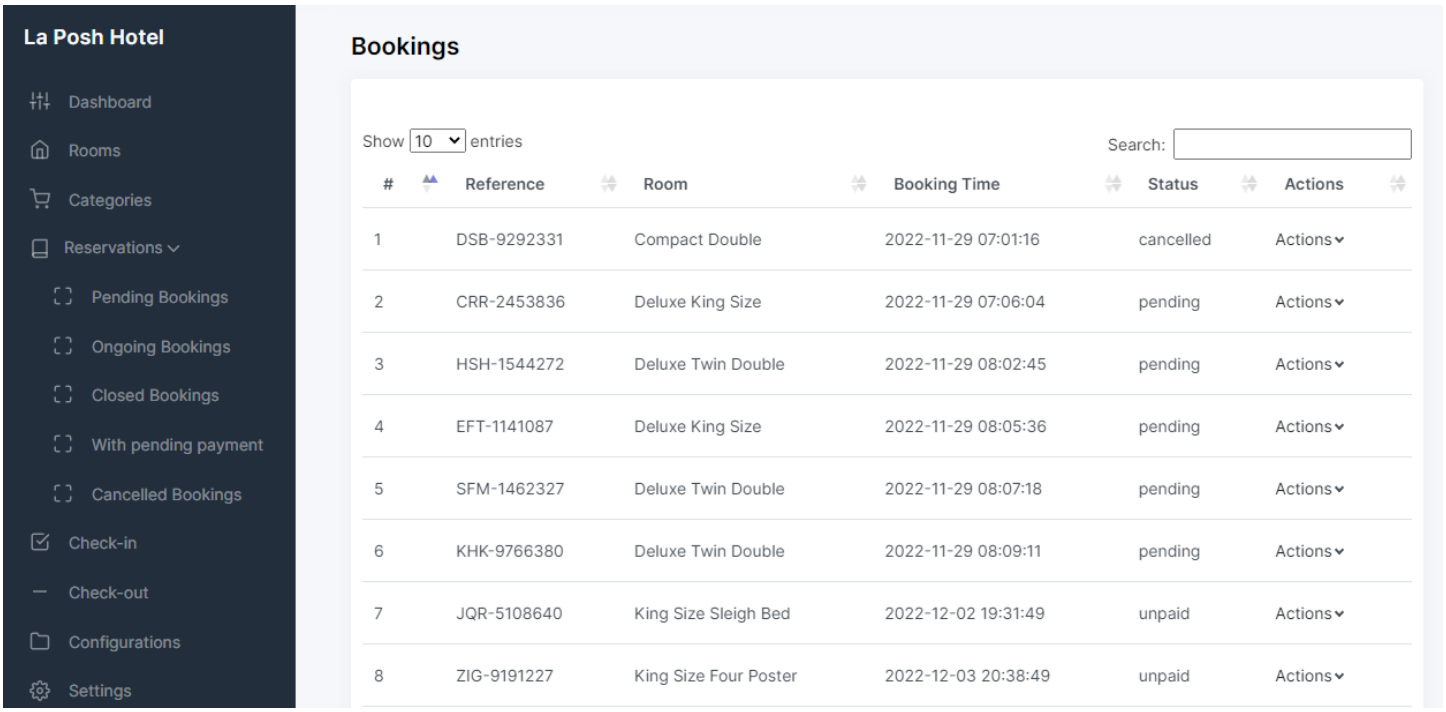


Figure 35: Bookings

In case the user wants to view the reservations grouped by status, the user select the reservation status in the dropdown.

Check in

The responsible user can view the reservations to check in at any date by clicking on check-in in the navigation. The appearing reservation can be viewed and checked in.

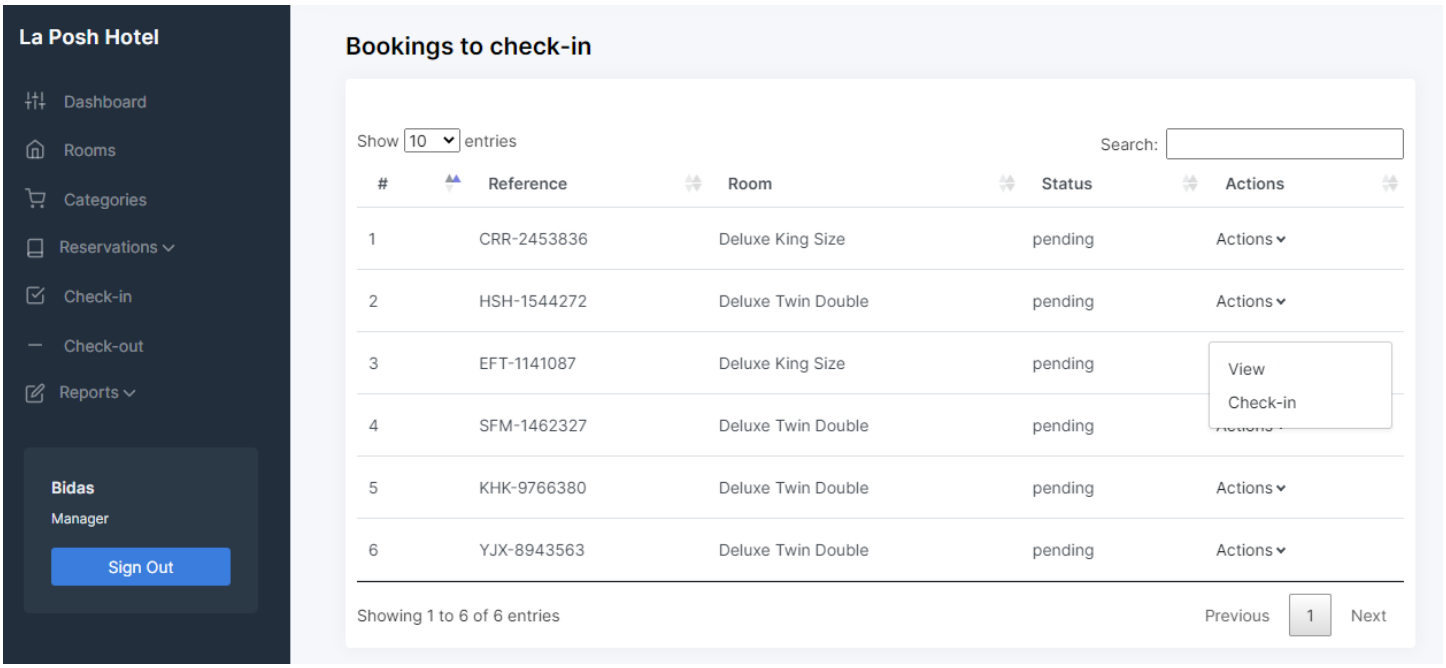


Figure 36: check in

The below image shows the output of view booking.

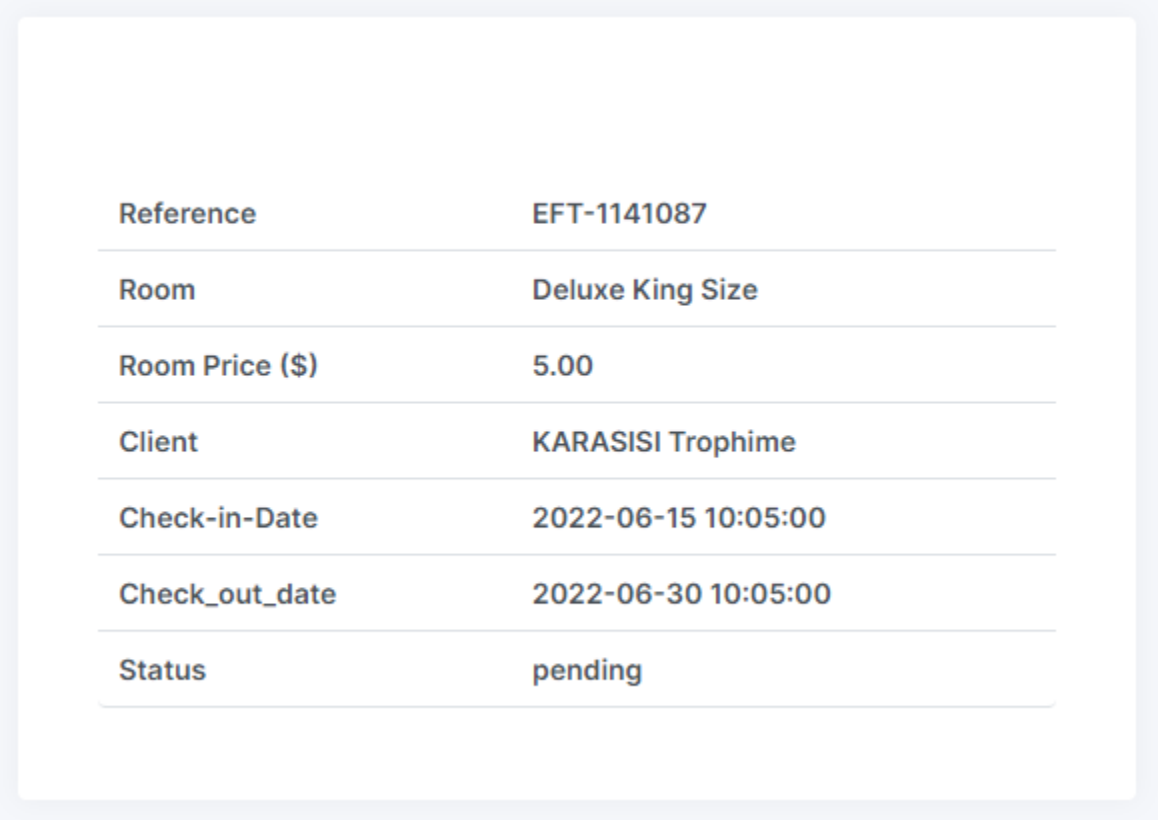


Figure 37: view booking

Check out

After the reservation is checked in, it will appear on the check-out list where the responsible user will use it to check out. It can be viewed and be checked out as well.

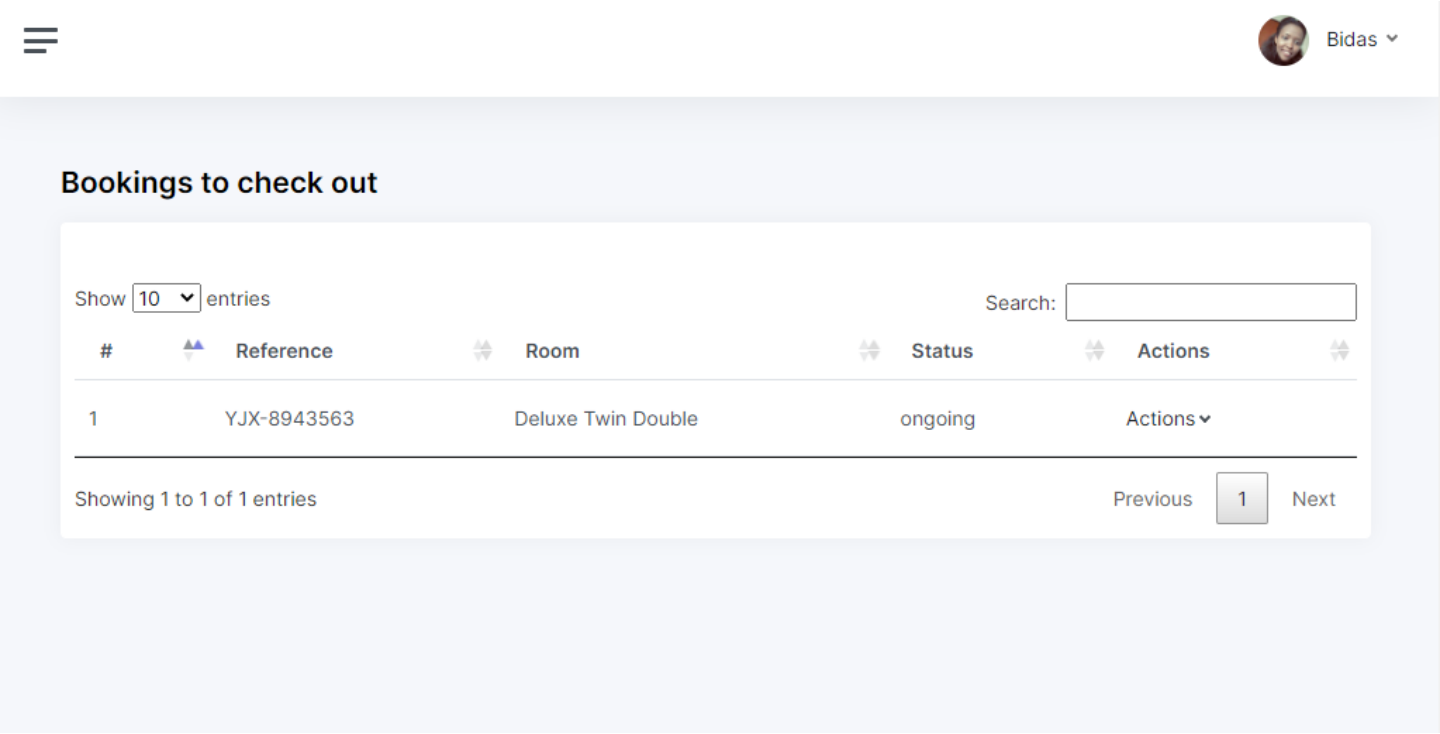


Figure 38: check out

Reports

Our system is able to generate reports that can be needed in hotel operations. They include financial reports and other details in numbers.

The following figure is of the annual financial report that is generated by the system.

Figure 39: reports

Messages

The administrator and another users with certain permissions, can view the messages sent by clients in the contact us section. The user can respond to emails or send new emails to clients.

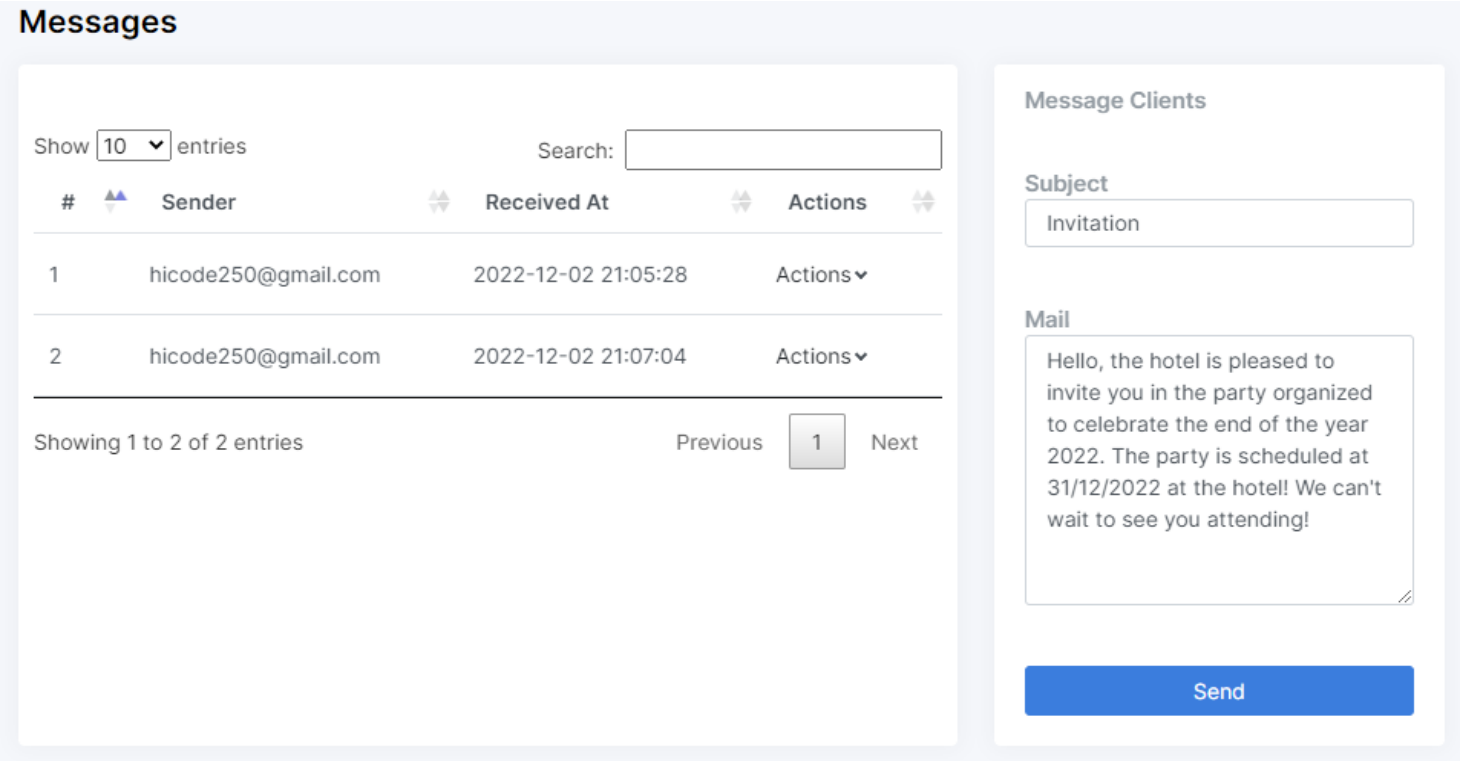


Figure 40: Messages

Email sent to clients has the following view in their mail account:

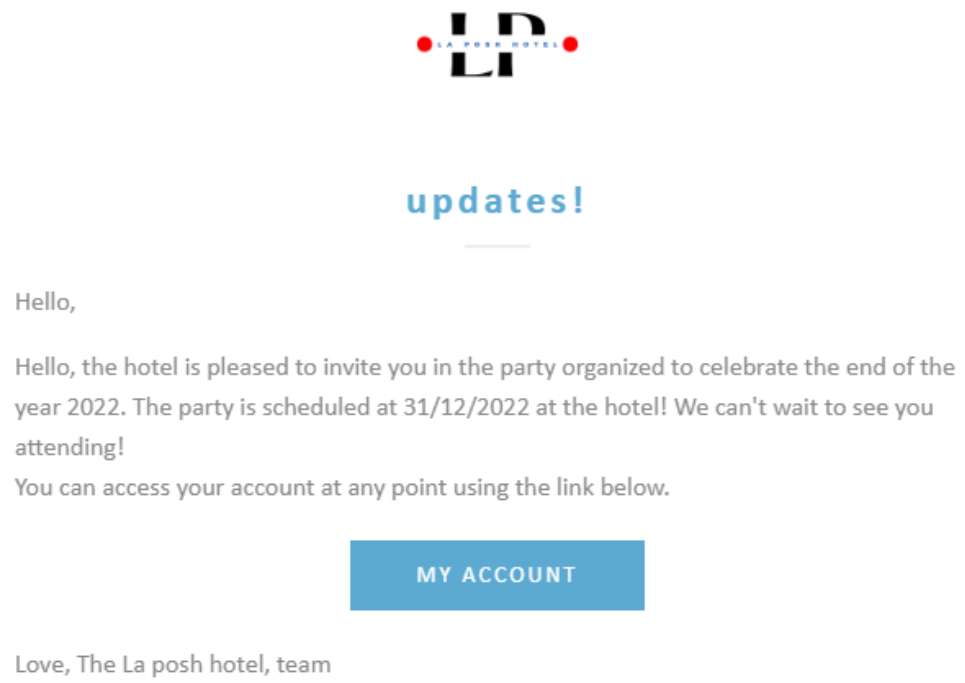


Figure 41: email to clients

The admin also has the right to configure the hotel website and update information at any time.

3.2.3. Client side

A client to reserve a room access our website and see can see the services we provide. The following is the view of our homepage.

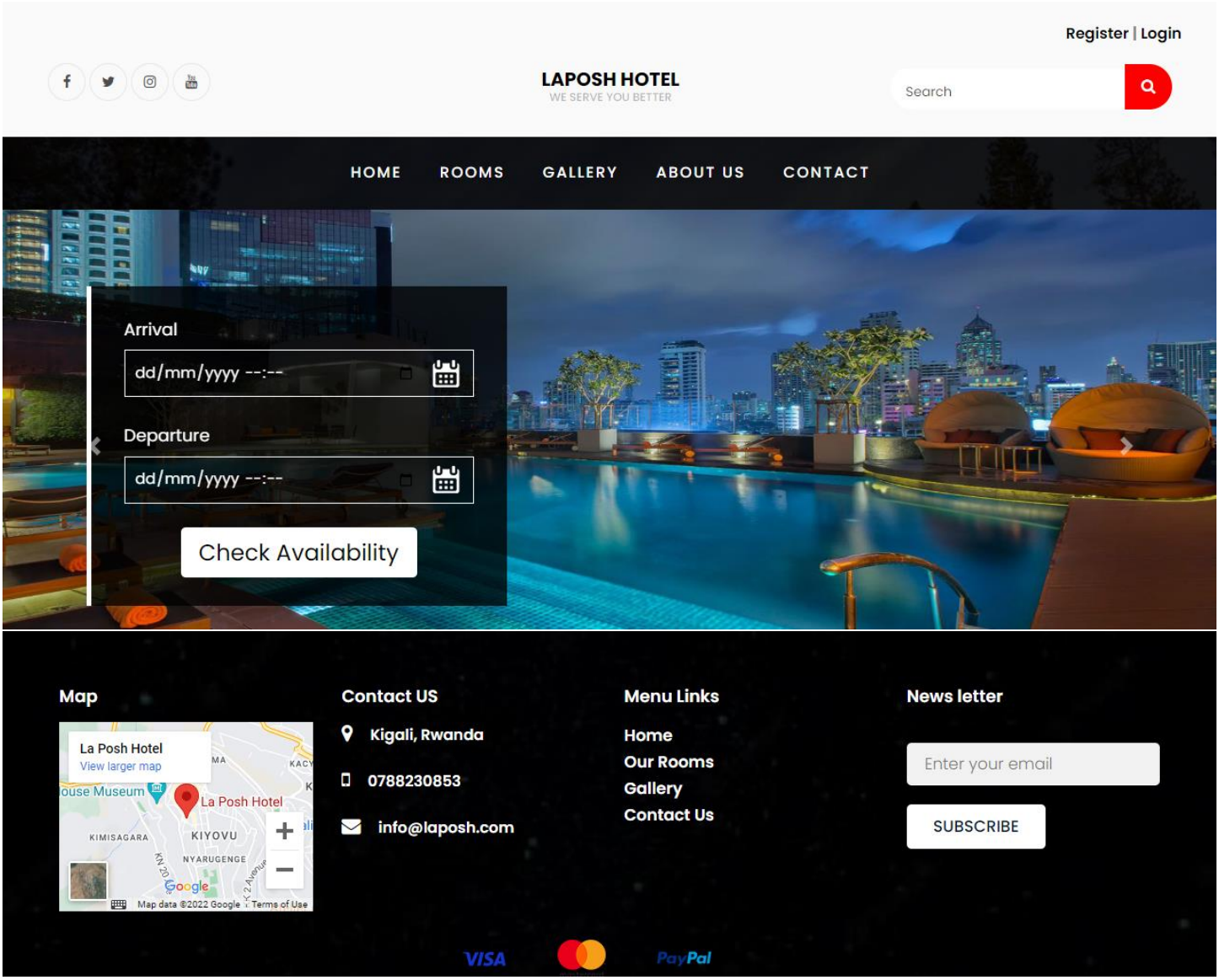


Figure 42: homepage

The client can see our rooms by visiting the rooms link from the navigation bar.

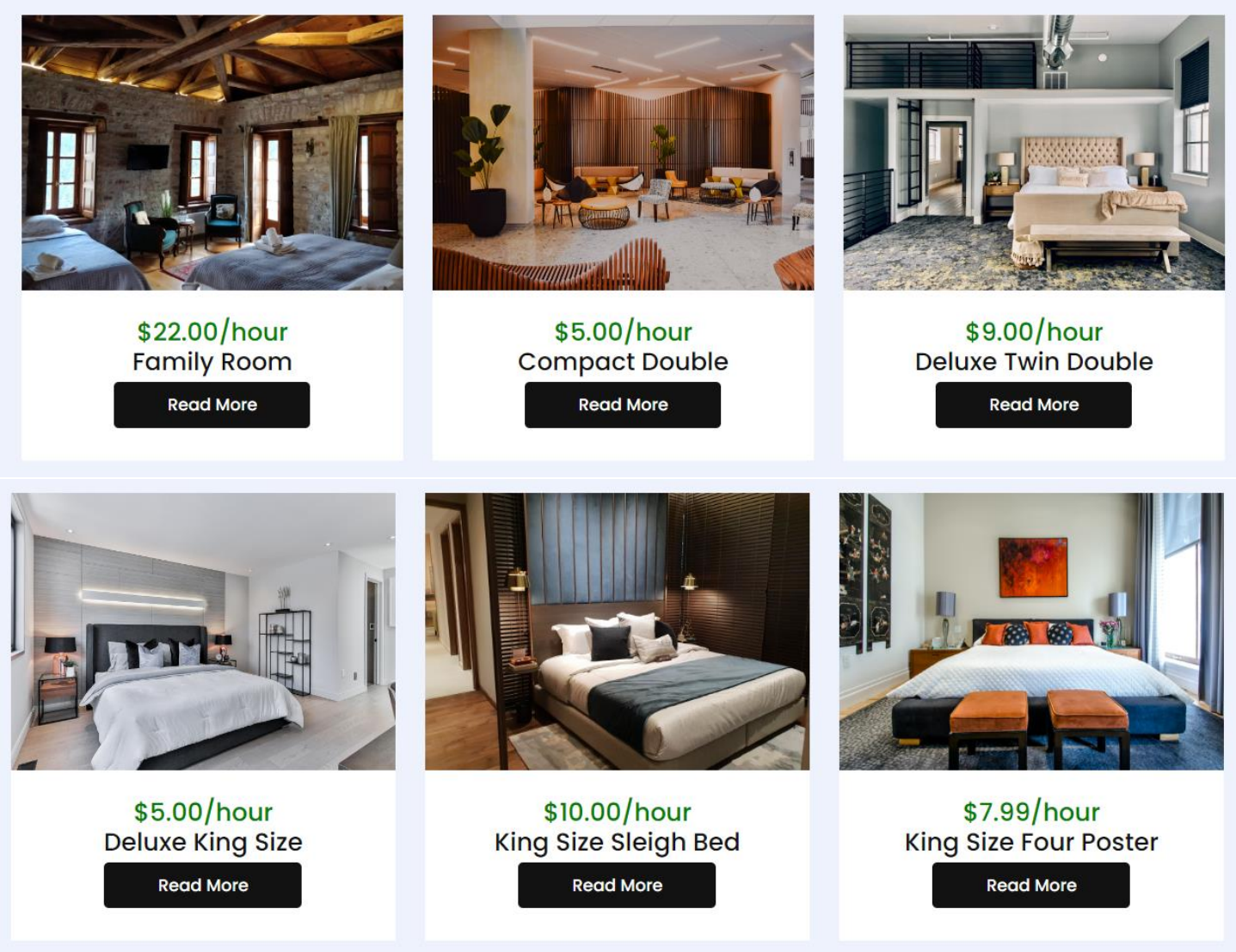


Figure 43: Our rooms

The client must click on the **read more** button to see more about the selected room.

Booking Process

For the client to make a reservation on our website, he/she must have an account in our system and must be logged in for the system to capture all necessary information. The following steps are followed in the booking process.

Step 1: Select arrival and departure dates and time

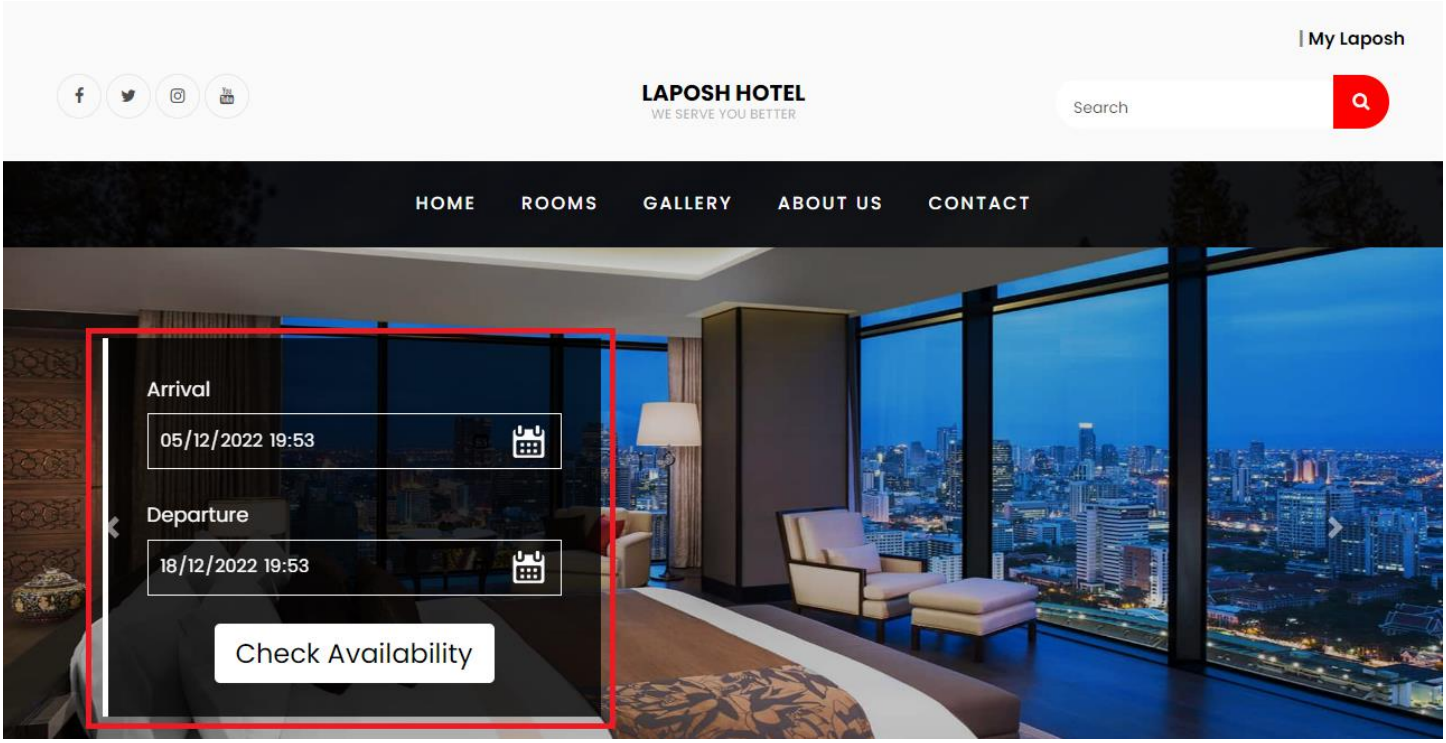


Figure 44: check availability

After choosing the dates, he/she clicks on check availability button and the list of rooms available at these dates will be called to display

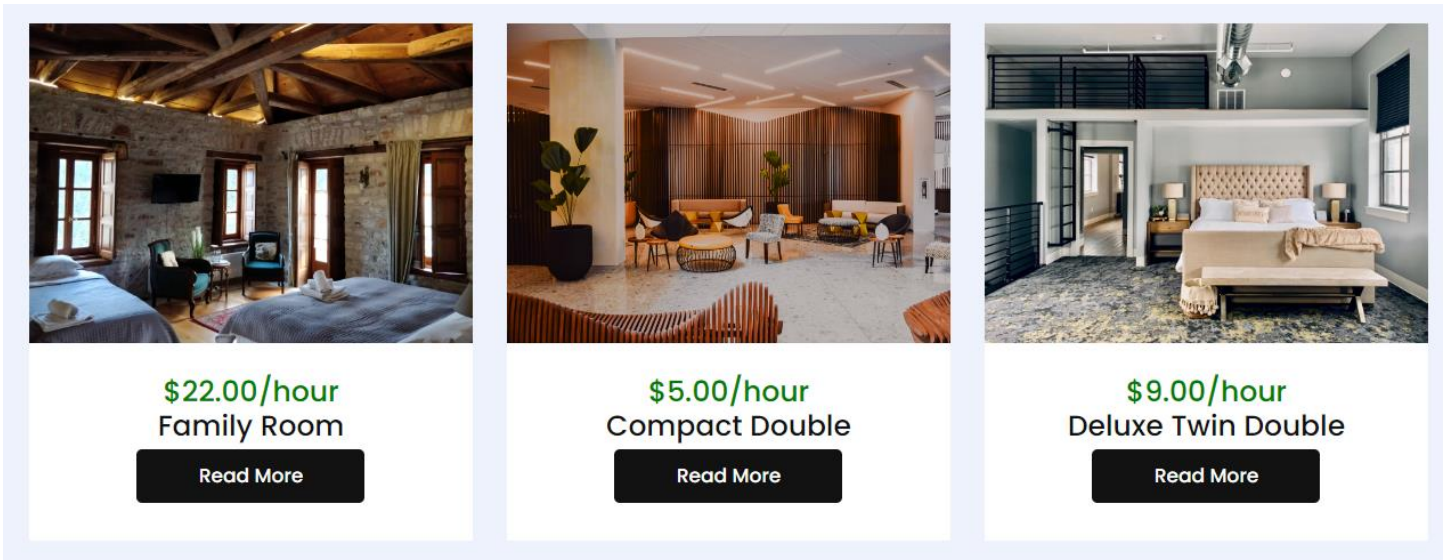


Figure 45: bookable list

The user click one "**read more"** button on the room of his/her choice and the following page appears

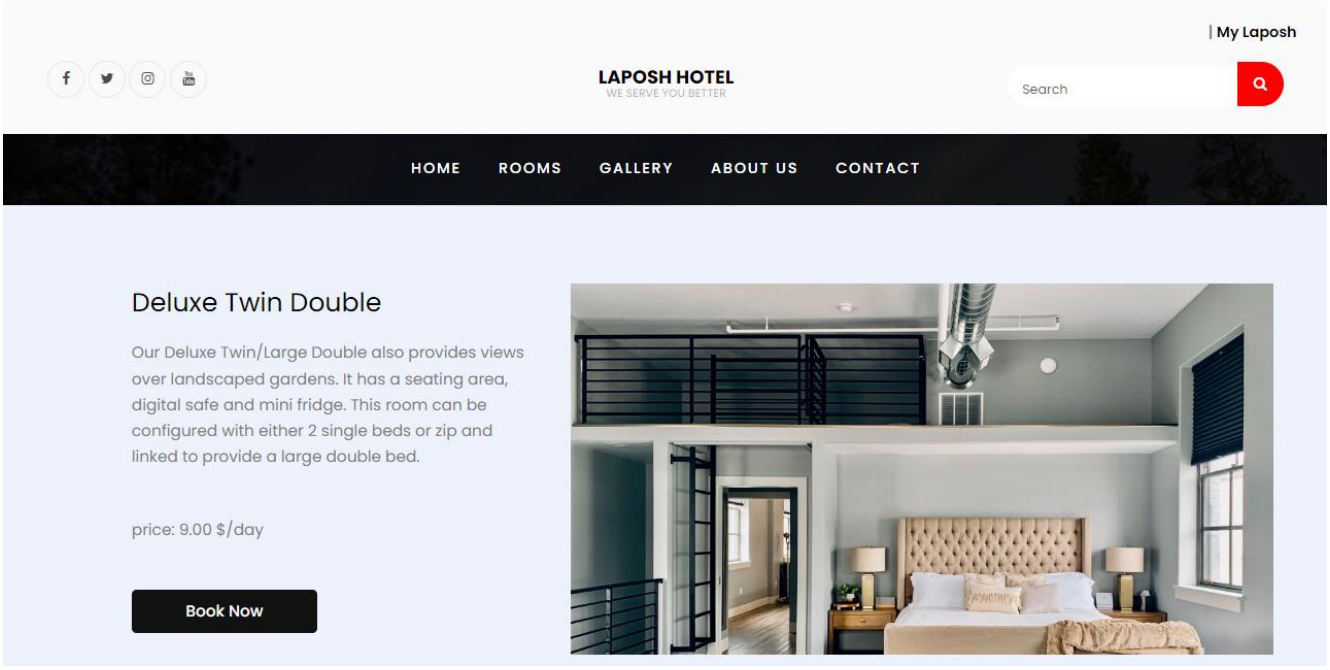


Figure 46: view room to book

After the page appears, the client clicks on Book Now button to proceed with reservation process

Step 2: Fill the booking form

The client fill the special information input (it is not mandatory) and submit the form to continue with payment.

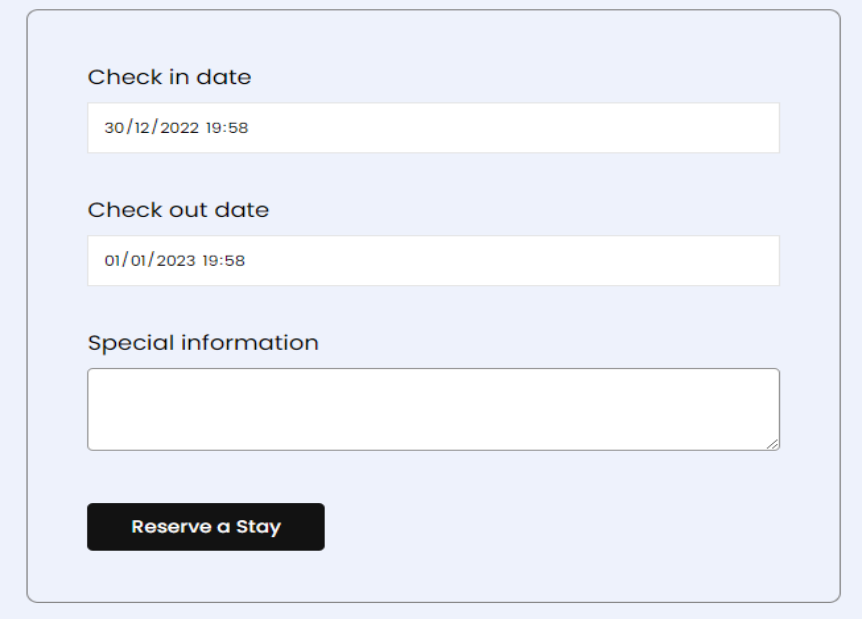


Figure 47: booking form

Step 3: Pay for reservation

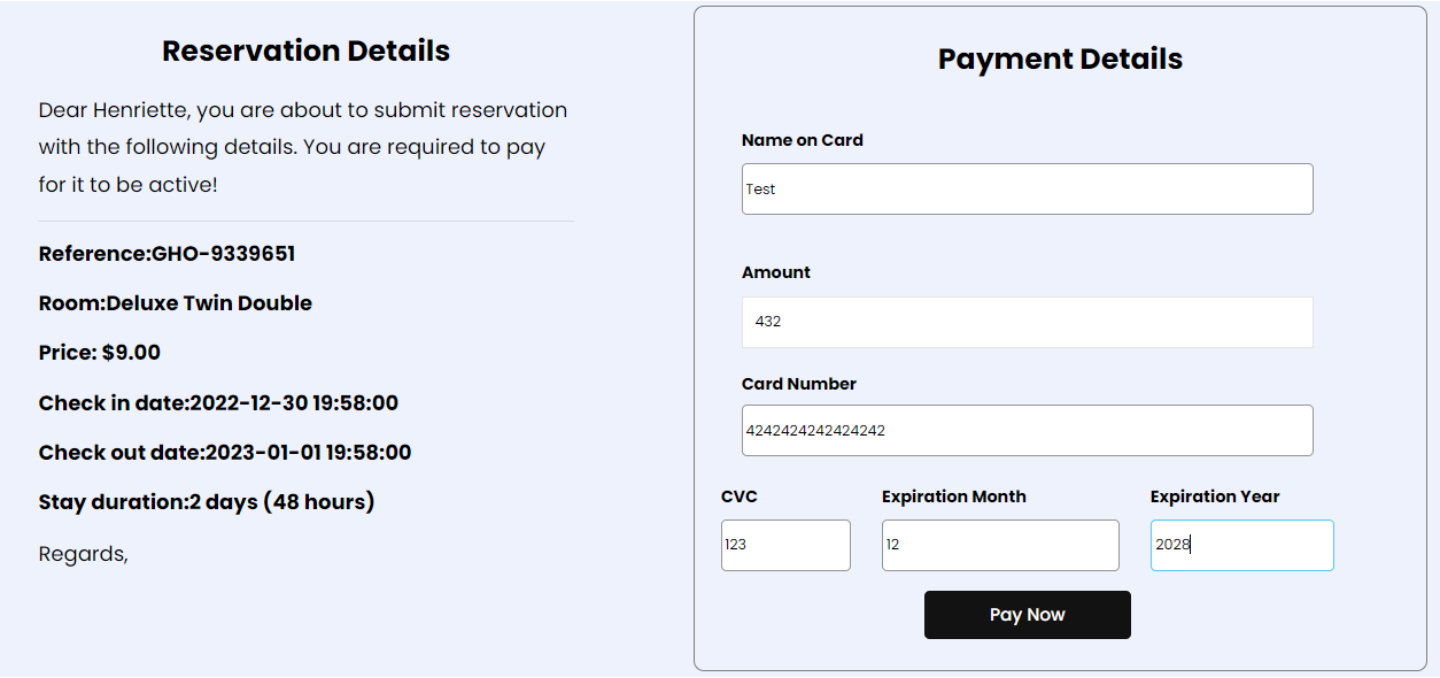


Figure 48: payment form

The user fills the payment form and submit it. After submitting the reservation is appears on his dashboard and the hotel administration can access it. And He can also get an email thanking him to be part of the hotel!

3.3. Security Features

The main security feature of the system is that not all users have permission to access entire system. Access of the system is given to each user as per his/her role in the system.

- ✓ Admin has all rights of the system.
- ✓ Other users have access to only those parts of the system that their user role allows them.
- ✓ The customer can access his/her profile and modify the information in it.
- ✓ The customer can cancel the reservation provided it satisfies particular conditions.

3.4. Coding Standards

The front-end of the project is HTML, CSS and JS. The project “La Posh hotel room reservation system” has fixed standard for designing the GUI so that all modules are found consistent as far as GUI is concerned.

The GUI standards includes following specifications:

- ✓ The sizes of components like buttons, textboxes, combo-boxes, list etc.
- ✓ In system login facilities are available.
- ✓ User can change password.
- ✓ All the authority is given to Administrator only.
- ✓ Specifications for defining the variables etc. and defining the functions.

4. Conclusion and Recommendation

4.1. Implementation state

About 94% of our project's aims and objectives were met, however there were a number of factors that prevented it from being 100% effective, including the following:

- ✓ Short implementation period because this project was carried out in conjunction with other courses and academic activities.
- ✓ Inadequate internet access made it impossible for us to work remotely.

4.2. Recommendations

4.2.1. Recommendations to the lecturer

The lecturer's teaching methods were outstanding because he began from scratch, and as a result, we learned the fundamentals of the Laravel framework as well as the basics of constructing systems.

We were grateful for the lecturer's close supervision during class, who kept track of our progress on the project and offered advice on how to get the system to produce the desired results. In addition to the fundamental knowledge we acquired in this course, we aspire to learn more.

4.2.2. Recommendations to the user

We advise customers to take some training in using technological tools, particularly the computer and the internet, as it is essential for people using this system to make reservations.

4.2.3. School about Time constraint

We are grateful to the school for adding this course on the plan and thought the module was excellent. We recommend setting the academic calendar appropriately so that such lengthy units will be completely covered.

4.3. Conclusion

Working on the La Posh hotel room reservation system was interesting, and we made excellent use of a variety of tools to get the job done.
It was really exciting to work with Laravel and the MVC design, which calls for a solid foundation in programming and an understanding of internal workings. We gained greater knowledge of various cutting-edge technologies while working on this project, including MySQL and Laravel. There are numerous ways to make this project better for upcoming work. For instance, we may add a localization option to the website to improve client experience, improve the payment system, and more.

5. Appendix

GitHub Link: https://github.com/hicode-byte/Laposh