A Complete Hotel Management System

BY

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

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DHAKA, BANGLADESH

SEPTEMBER 2022

APPROVAL

This Project/internship titled **"A Complete Hotel Management System"**, submitted by **MD Minhazur Rahman**, ID No: **192-15-13163** to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfilment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on *13 September 2022*.

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I hereby declare that this project has been done by me under the supervision **of Dr. Moushumi Zaman Bonny, Assistant Professor, Department of CSE**, Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

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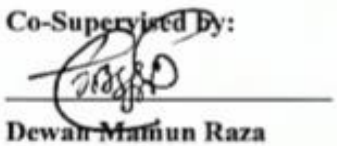

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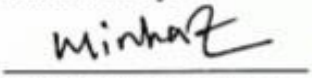

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ACKNOWLEDGEMENT

First, I express my heartiest thanks and gratitude to the almighty God for His divine blessing that made it possible for me to complete the final year project successfully.

I am really grateful and wish to express my profound indebtedness to **Dr. Moushumi Zaman Bonny, Assistant Professor**, Department of CSE, Daffodil International University, Dhaka. Deep Knowledge & keen interest of our supervisor in the field of "Web App Development" to carry out this project. Her endless patience, scholarly guidance, continuous encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior drafts and correcting them at all stages have made it possible to complete this project.

I would like to express my heartiest gratitude to **Professor Dr. Touhid Bhuiyan, Professor and Head,** Department of CSE, for his kind help to finish our project and also to other faculty members and the staff of CSE department of Daffodil International University.

I would like to thank my entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

Finally, I must acknowledge with due respect the constant support and patience of my parents.

ABSTRACT

The goal of the hotel management system is to maintain and manage the different activities and procedures that take place within the hotel. Within the range of the core section of the database, it is largely accountable for hotel management. The system provides information on the numerous hotel functions that are available, together with the availability status of a hotel at the present time. Visitors are welcome to visit the website in order to complete their registration with the application by giving the necessary information. Any registered visitor may make reservations for a specific unit. The fact that the guests have chosen a particular time prompts the staff to provide them with information regarding the availability of the apartments. This system offers the administration of the hotel the capability of operating the entire system from a single online interface, providing them with increased authority as well as flexibility. This project incorporates a variety of hotel administration services, such as reservation of rooms, management of personnel, and others. The manager is able to advertise available rooms through the use of the system. Customers can view available rooms and make reservations without leaving the convenience of their own homes. Booking requests submitted by customers are subject to approval or rejection at the discretion of Admin. Customers can view and book a variety of additional hotel services at their convenience. As a consequence of this, the system may be utilized by both customers and management to control operations within the hotel while they are on the move.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The software that is being built as part of the hotel management system project will be used to maintain and manage the many tasks and procedures that are associated with hotels. Its primary objectives are to maximize profits, simplify business processes, and do away with the need for human labor.

The primary objective of hotel management is to sustain a consistent flow of visitors and guests, in addition to promoting the hotel's extensive range of services and unique selling propositions (USPs), as well as how these things are beneficial to patrons who are staying at the hotel through various marketing campaigns. This system offers the administration of the hotel the capability of operating the whole system from a single web interface, providing them with more authority as well as flexibility.

The application is as simple as possible to prevent data entry errors. Additionally, an error notice is displayed when wrong data is input. This method requires no special training to utilize. This signifies that this system is user-friendly. As previously said, Hotel Management Systems can result in a management system that is error free, secure, trustworthy, and rapid.it allows the user to concentrate on things other than record keeping. Therefore, the organization's resource use would be enhanced.

1.2 Motivation

The goal of my project is to create a computerized "Hotel Management System" that can keep track of all the different tasks that need to be completed in a hotel. It's important to keep in mind from the start that the best topic for my project is one that is accessible to a wide audience and has direct relevance to our daily lives. Due to this, I opted to create a system for managing hotels.

1.3 Objective

The primary goal of this project on Hotel Management System is to handle the details of Room, Customer, Reservation, Tariffs, Food Bill. It controls all Room-related information. The project is fully developed at both the frontend and backend levels, ensuring that both users and administrators have access to the system's core functionality. The objective of the project is to develop an application to decrease the amount of manual labor required to manage the Room, Customer, bill, and booking [7]. It monitors every aspect of the book, tariffs, and bill.

1.4 Expected Outcome

It has been suggested that developing a computerized hotel management system would be an effective and efficient way to manage hotel service, which would help address the concerns that have been discussed above. The project for the Hotel Management System is able to maintain and manage the many duties and procedures that are associated with hotels [12]. Within the scope of the main component of the database, it is largely accountable for hotel management [8]. The system provides details about the many hotels that are open for business, as well as the availability of each of those hotels at the present time. Visitors can go to the website and register with the system by giving the information that is requested. Customers can quickly see what rooms are available and book one. Customers are able to check costs in real time and compare a variety of lodging and facility alternatives. maintain a database of all people, including consumers, managers, and others of a similar nature. This ensures that the list of all people is kept up to date.

1.5 Report Layout

This report's format is specified below.

In chapter 1, I introduced my project, explained why I decided to develop the system I did, outlined the system's purpose and my hopes for how it would function, outlined my plans for the application, and outlined the report's final structure.

In Chapter 2, I have included a few projects and case studies that have assisted me. a lot in developing this application. I also shared my troubles and difficulties. faced throughout the project development period.

In chapter 3, I have specified the whole process of this application using some use case diagrams, state diagrams, business process models, and work flow diagrams.

In chapter 4, I included the configuration that I use in the project. Front-end design, back-end design, UI/UX, implementation, etc. requirements are described in this chapter as well.

In chapter 5, I have added the implementation and testing details and analysis reports in detail.

Chapter 6 is covered by the discussion and future development scopes and plans.

CHAPTER 2

BACKGROUND

2.1 Introduction

In this chapter, I'll go through the related works and case studies, as well as the scope of the topic and the difficulties it raises. After finishing the plan, I started researching similar relevant applications and case studies. This chapter contains a summary of those topics

2.2 Related Works

I have researched and attempted to utilize alternative hotel management or hostel management-related software and journals. Several of these are detailed below:

a) Hostel Management System and Aggregation [1]. I used some of the feature ideas from this publication.
b) Study of Digitalized Hostel Management System [2]. I've learned about system management. and try to understand the difficulties of developing a management system
c) Hostel Management System [3]. From studying this journal, I got the idea to create a relevant system for hotels.

2.3 Comparative Studies

After looking at a few other initiatives that were quite similar to this one and the case studies they produced, I categorized the aspects that were in common between them and the features that made each one special. The majority of them are constructed for a particular function in order to meet their own demands.

2.4 Scope of the Problem

The system of the Hotel Management Systems can automate important hotel procedures such as the creation of CODs, billing, and the keeping track of daily transaction data. The administrator has the ability to control and make changes to the database [5]. With all these, there is need for hotel management needs to be computerized [6].

2.5 Challenges

A centralized database is an essential component in the construction of a hotel management system [17]. It's possible that a large number of users will attempt to use our system when they are on vacation and trying to book a hotel to enjoy their holiday. Therefore, it is necessary for me to double-check the accuracy of the code. in addition to ensuring that it has a quick loading time and is optimized for search engines. Since the vast majority of hotels now obtain the majority of their customers from search engines such as Google, I need to ensure that when I am working on this project, it is both fast and friendly to search engines like Google. The process of developing this version is time-consuming and expensive, and it also requires a strong server to process the requests that are being received. Also, it is necessary to maintain a high level of security for their information. That is by far the most challenging aspect of this project.

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Business Process Modeling

Business process modeling (BPM) depicts business process management and system architecture utilizing various workflow diagrams. Activity diagrams, state diagrams, use case diagrams, flowcharts, data-flow diagrams, and so on are different graphical approaches for visually communicating the complete process to others. I've included an activity diagram here. and an application flowchart to demonstrate how the system works.

3.1.1 Activity Diagram (User to System)

Figure 3.1 shows the activities performed by a user. The user will access the system without logging in. The user will then enter his specifications to search for room availability.

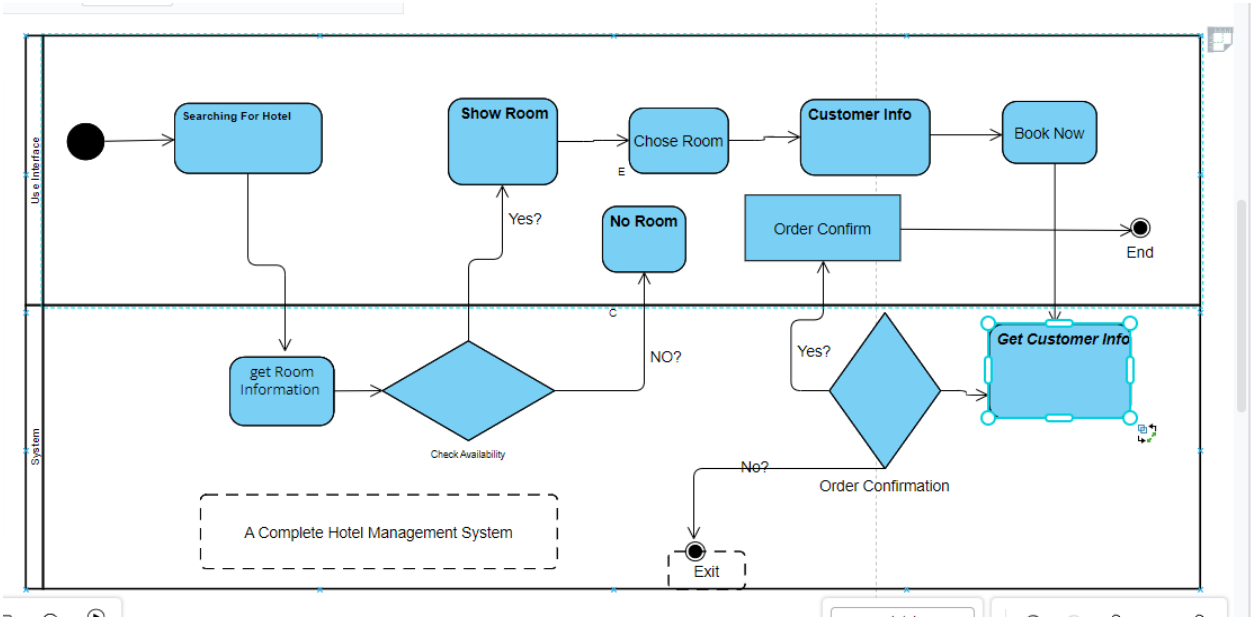


Figure 3.1: Activity Diagram (user to system)

Following that, the system checks for room availability. If a room is located that meets the requirements, the system will provide room information to the font end. Otherwise, the system will display "no room available." The user will then select his room. and

confiding in his hotel reservation to finish the reservation procedure, the user must provide his personal information. This system will process his input and validate his order when he submits it. and sent an email If the system can't check his order, it will send back an error message with more information.

3.1.2 Activity Diagram (Admin to System)

The actions that an admin is engaged in are shown in figure 3.2, which can be found below. When required, the administrator will log into this system by entering his login ID and password. After successfully logging in, the admin will have access to the whole system. Any sort of information, including the creation of new rooms, can be updated by him. Additionally, he is able to access statistics on the total number of booked and unrented rooms.

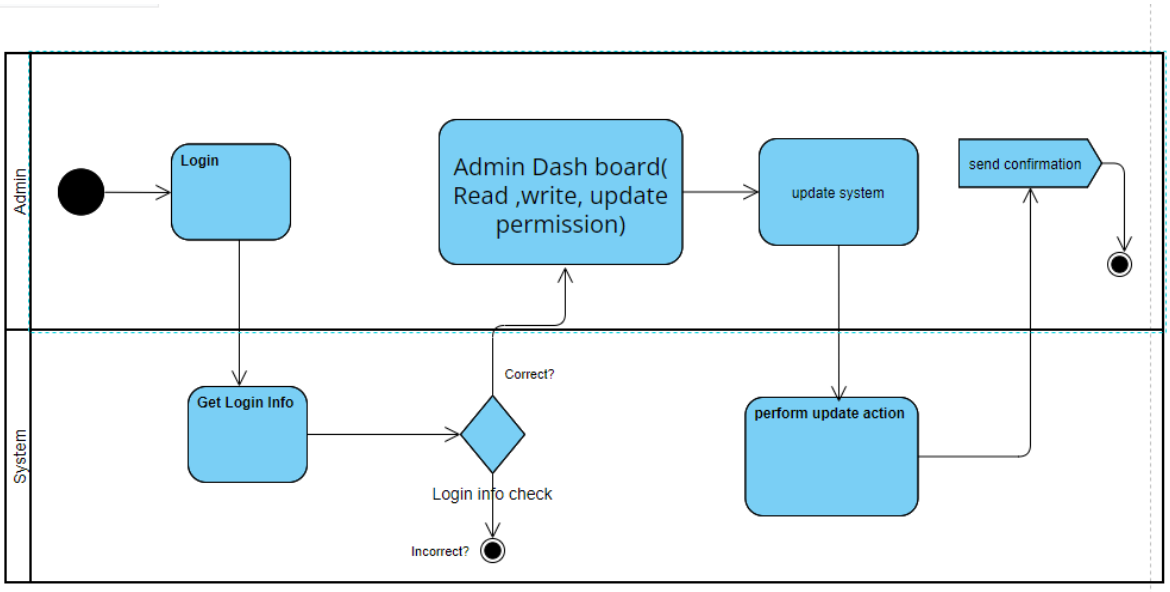


Figure 3.2 : Activity Diagram (Admin to system)

If the admin of this system modifies any of the system's information, the system will run a query to validate the administrator's request, and when the information has been updated, the administrator will receive a confirmation message.

The status of any order can be changed by the admin. In other words, the administrator has complete control over the system.

3.1.3 Flow Chart of The System

The following figure 3.3 shows the flowchart of the system.

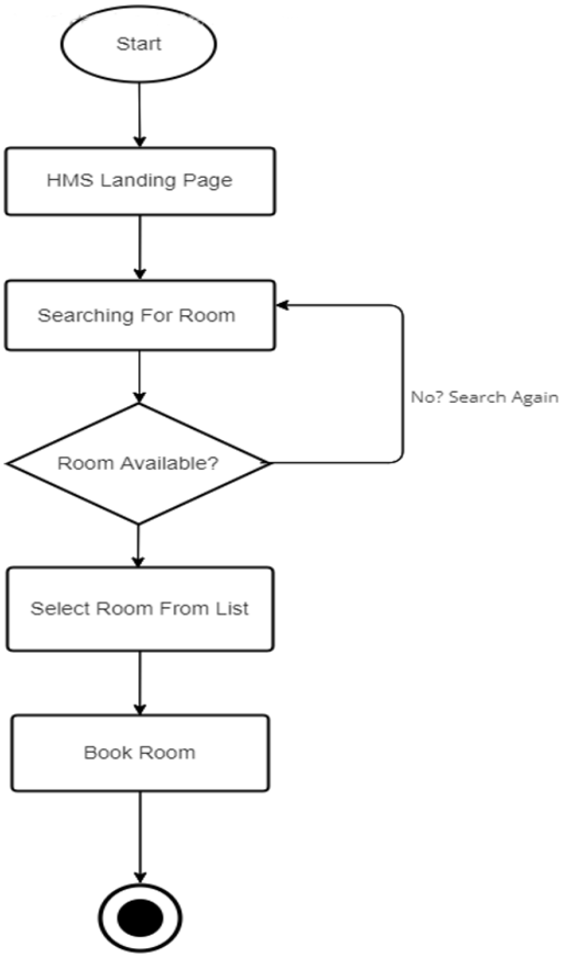


Figure 3.2 : Flow Chart Of The System

3.2 Requirement Collection and Analysis

It is critical to collect and analyze requirements before beginning to develop the system. Using information on similar projects or works, as well as case studies [13] [14]. I developed a list of specifications and an analysis of those elements in order to make this project financially, technologically, and socially feasible. I concentrated on system needs and features/functional requirements, which are listed below [15].

- The system must store information on new room entries and must have the option to change room information like price, quality, facilities etc.
- The system must assist internal staff in maintaining customer information and locating them according to various queries.
- The system must maintain a quantity log.
- The system must preserve a record of bookings.
- The system must have an option to update and delete the record.
- The system needs a search area as well.
- In addition, a data security mechanism is required [16].

3.3 Use Case Modeling and Description

In this part, I have split use case models into two parts. Use Case diagrams are used at two levels: high-level and low-level. The following are examples:

3.3.1 High-level Use Case Diagram

This high-level use case diagram describes the entire system. Figure 3.4 shows a high-level use case for the Hotel Management System.

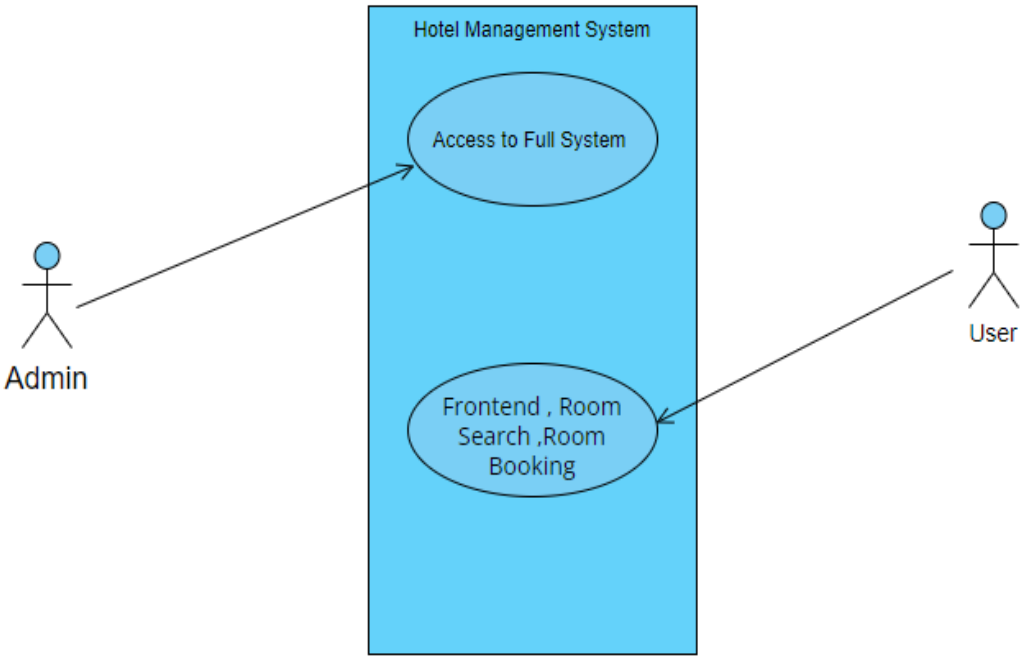


Figure:3.3 User case Diagram (High Level)

Name	:	Administrator/End-users
Brief Description	:	Admins or end-users will access the application and perform their actions.
Actors	:	Admin, end-users (for example: Create a new Rom).
Pre-Conditions	:	1. Access internet 2. Browse Hotel Management system landing page
Exception Flows	:	1.1 Internet connection failed
Post Conditions	:	1. Admin registration 2. Admin login
Exception Flows	:	1.1 Admin registration failed 1.2 Duplicate registration 2.2 Admin login failed 2.3 Password or username not matched
Flow of event	:	Admin, users will access internet first. Then they will go to Appointment Booking Apps default landing page and perform their actions.

3.3.2 Low-level Use Case Diagram

The activities outline for a user and an administrator are shown in figure 3.5 below. I have expressed the entire set of compact actions that the administrator and user can carry out using this low-level use case diagram.

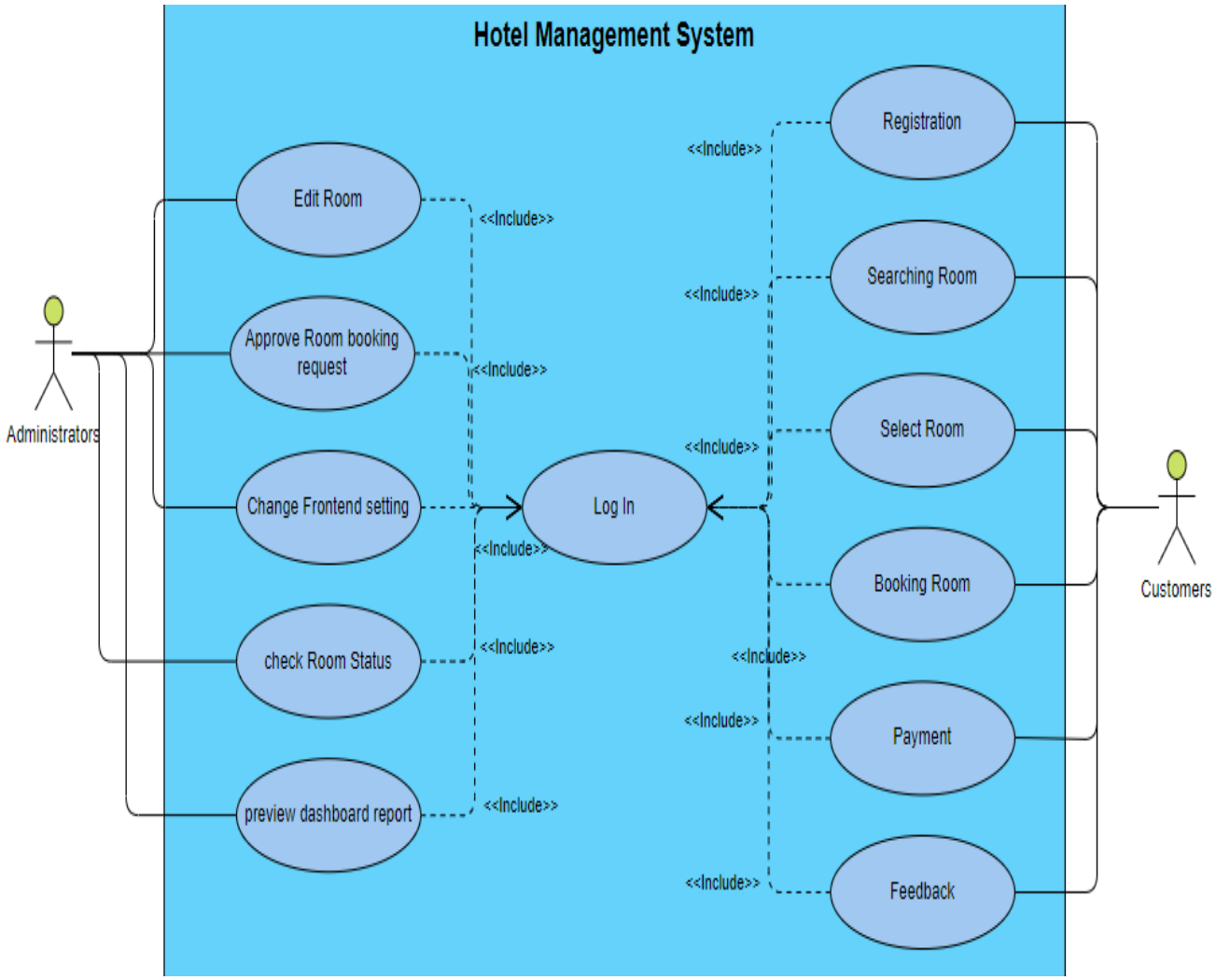


Figure 3.4 Low-level Use case Diagram

Name : Admin Officer

Brief Description : All the activities that can be performed by an Admin are described using this use case.

Actors : Admin.

Pre-Conditions : 1. Access internet

2. Browse Hotel Management System

Exception flows : 1.1 Internet connection failed

Post Conditions : 1. Login

2. Go to the admin dashboard.

3. Room List (view or delete)

4. Customize Site Setting

5. Add/remove/edit/update Room

6. Change Room Status

7. Calculate financial report

8. Configuration or customize settings

Exception flow : 1.1 Login failed

1.2 Password or username not matched

Flow of event : Admin can login and access the entire system. He/she will get these options and he/she may change these based on System requirements.

Name : User/Customer

Brief Description : End-users will access the system landing page through the internet and perform these activities.

Actors : Customer

Pre-Conditions : 1. Access internet
2. Browse Hotel Management System

Exception flows : 1.1 Internet connection failed

Post Conditions : 1. Search For Room
2. Select Room
3. Enter personal information
4. Select Payment Method
5. Confirm Order
6. Check order history by log in

Exception flow : 1.1 Login failed
1.2 Password or username not matched

Flow of event : A user may perform a room search. He can reserve his room by selecting the room type and giving his personal information. Following order confirmation, the user will receive a confirmation message and an invoice by mail.

3.4 Logical Data Model

The following figure 3.5 shows the logical data model of this Hotel Management System

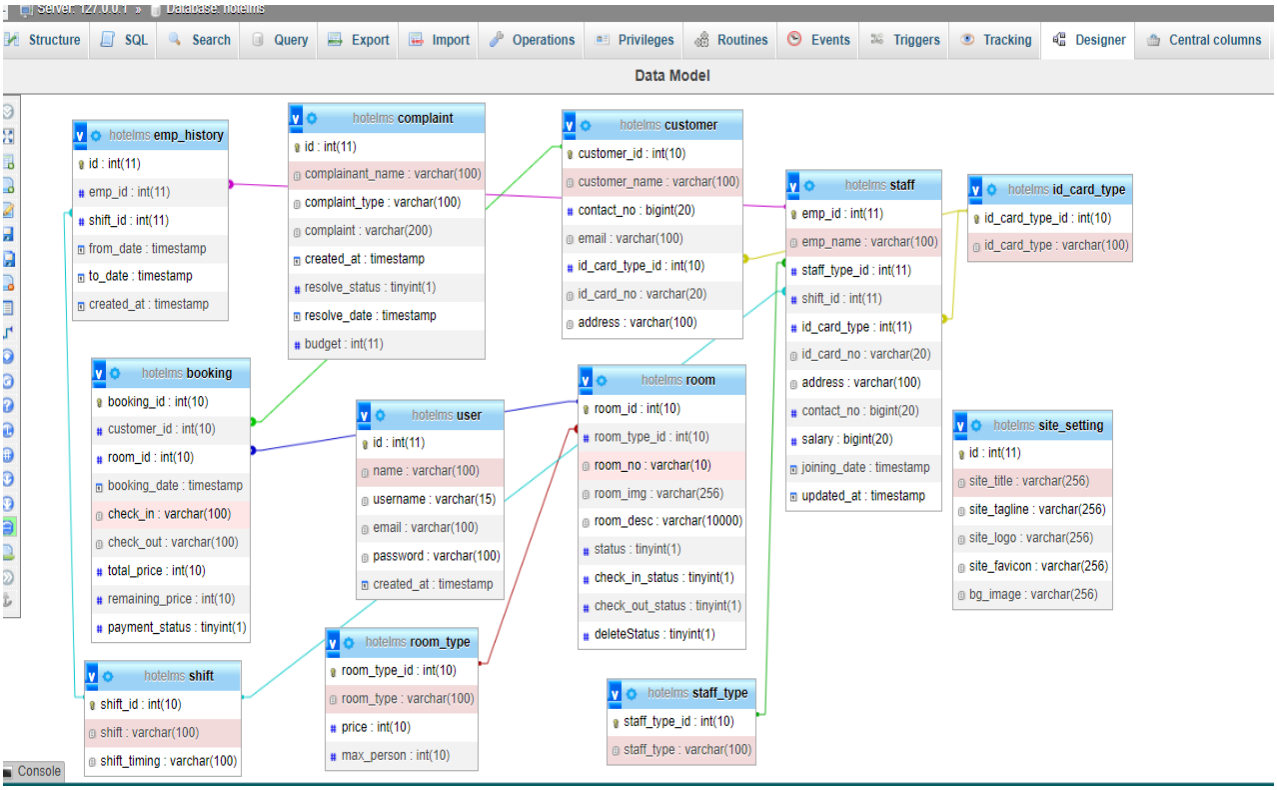


Figure 3.5: Logical Data Model

3.5 Design Requirements

The following tools and languages were used in the development of this hotel management system. I apply multiple tools and languages at various stages. For example, I used visual-paradigm, HTML, CSS, JavaScript, and PHP to get the best outcome [9][10]. I've added a list of the languages and tools I used to develop this project:

Tools: Google PageSpeed Insights, Visual Paradigm, Plagiarism Checker, etc.

Languages: HTML5, CSS3, JavaScript, SQL, PHP.

Frameworks and Libraries: jQuery, Bootstrap

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-End Design

There are multiple front-end pages in this project. Visitors first land on the system's home page or default landing page. Users and visitors have the option to search for rooms from the home page; in the search room section, they must choose the room type, the number of guests, the check-in date, and the check-out date. The user will click the Check Availability section after choosing this option. Then the user will be redirected to the room page, where he or she will see the room details relevant to their search. The user will choose the room from here and proceed with checking out. The user will enter his or her personal information and confirm their hotel reservation on the checkout page. Then he or she will receive an invoice via mail and computer screen.

4.2 Back-End Design

The system back-end is only accessible to administrators or other authorized users. The system administrator must login and pass security in order to access the system's back end. The application's back end will contain a number of modules. The back-end features room management, booking monitoring, earning monitoring, and staff management. There will be features to add, delete, update, view, and customize each module.

4.3 Interaction Design and UX

Improving user satisfaction is critical in software development. The main terms in increasing user satisfaction are desirability, usability, and accessibility. By reviewing other similar projects and conducting extensive research, I attempted to make this application as user-friendly as possible. I concentrated on a simple user interface, clean design, and minimal complexity while attempting to include as many features as possible.

4.4 Implementation Requirements

In order to put this application into action, I have set up my local computer to function as a local server by installing the XAMPP software. I have completed the installation of the dependency manager known as Composer. After finishing up these procedures, I moved on to the next part of this software, which is the primary coding and implementation.

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation of Database

In this Hotel Management system, there are several Tables. Some of them are shown below:

Table 5.1 Whole Database Tables of Hotel Management System

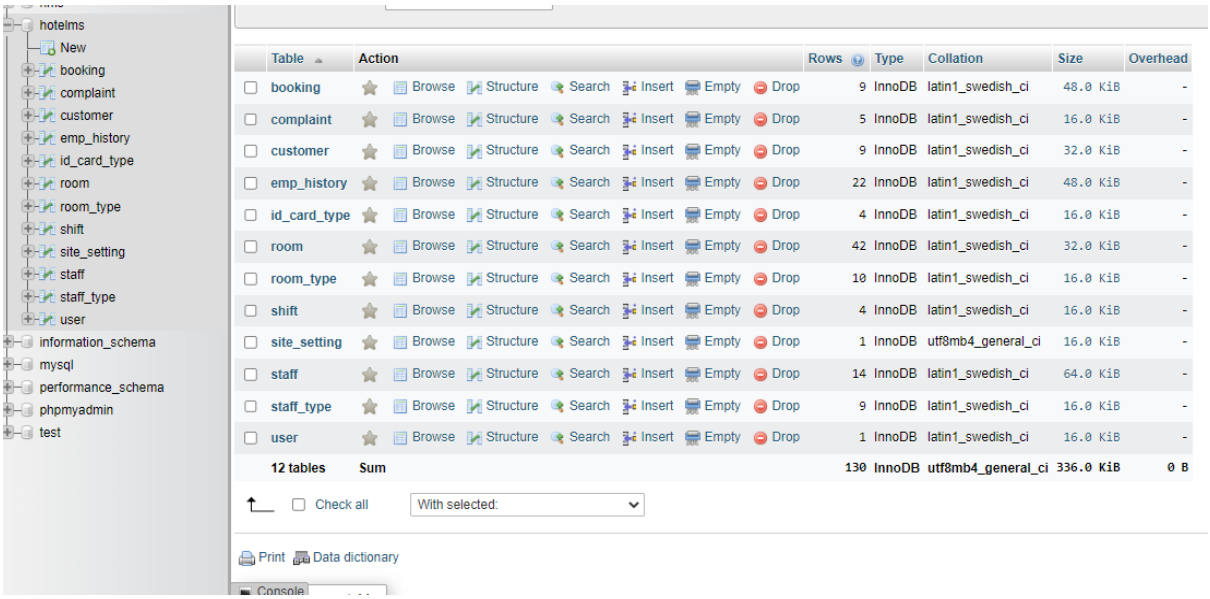


Table 5.1 shows the entire database tables used in my Hotel Management System. Database name is: hotelms

Table 5.1 displays the database's structure as well as the type and size. In addition to that, it displays the names of every table that the hotel management system has.

Table 5.2 User table in Hotel Management System

This table demonstrates the structure of the user table as well as the data that is used in the hotel management system. The login information for users is stored in this table.

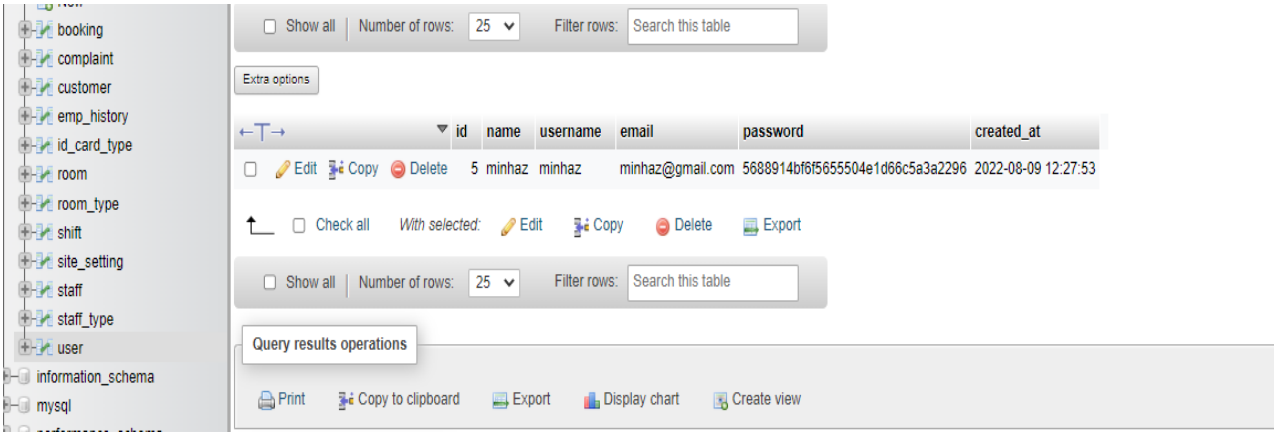


Table 5.2 contains all user in Hotel Management System. Table name user

Table 5.3 Room Type table in Hotel Management System

This table shows the structure and type of room type table which is used in the hotel management system. This table is used in the database to store information about the different types of rooms and how much they cost.

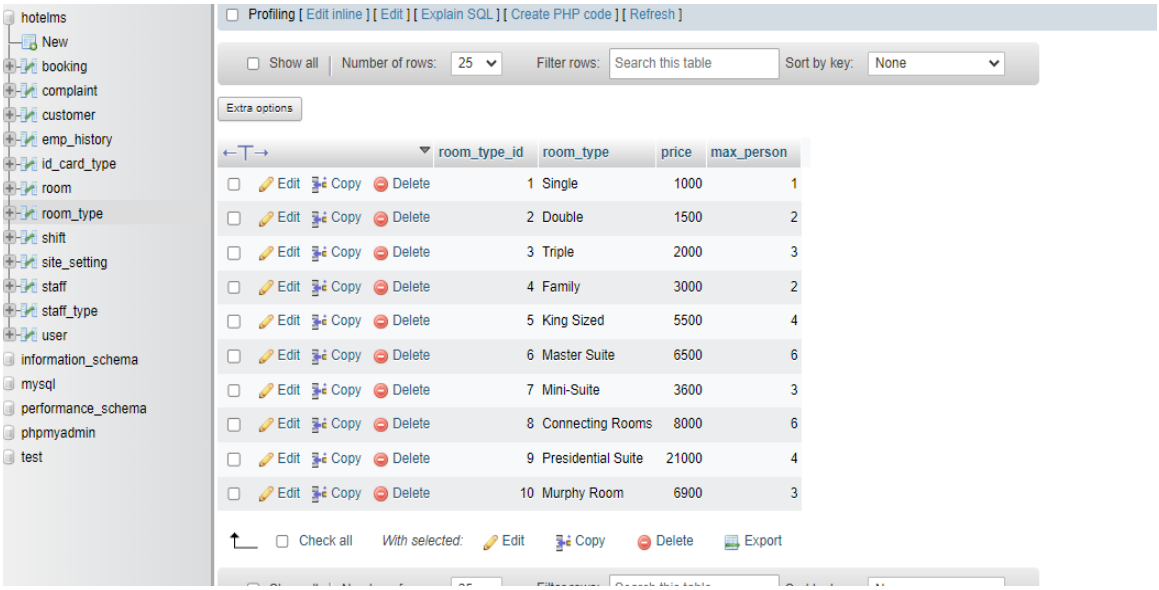
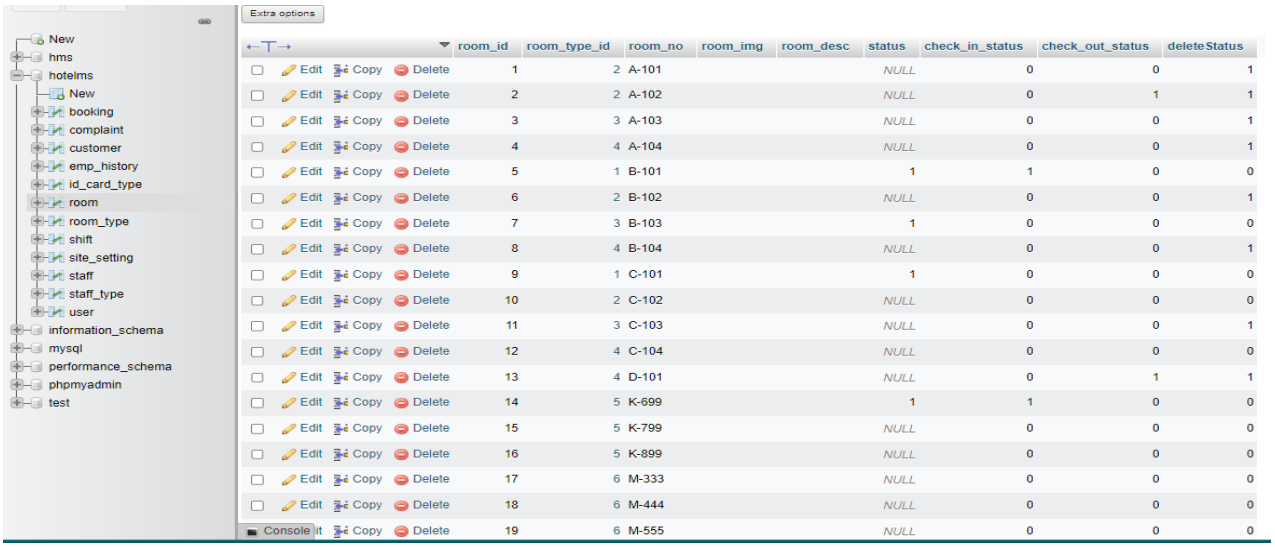


Table 5.3 shows available room Type on Hotel Management system. Table name room_type

Table 5.4 Room table in Hotel Management System

This table, which is used in the hotel management system, displays the room number as well as the availability of each room. This table is used to store information about rooms in the database, including room numbers, room image paths, room details, room type, and room availability.

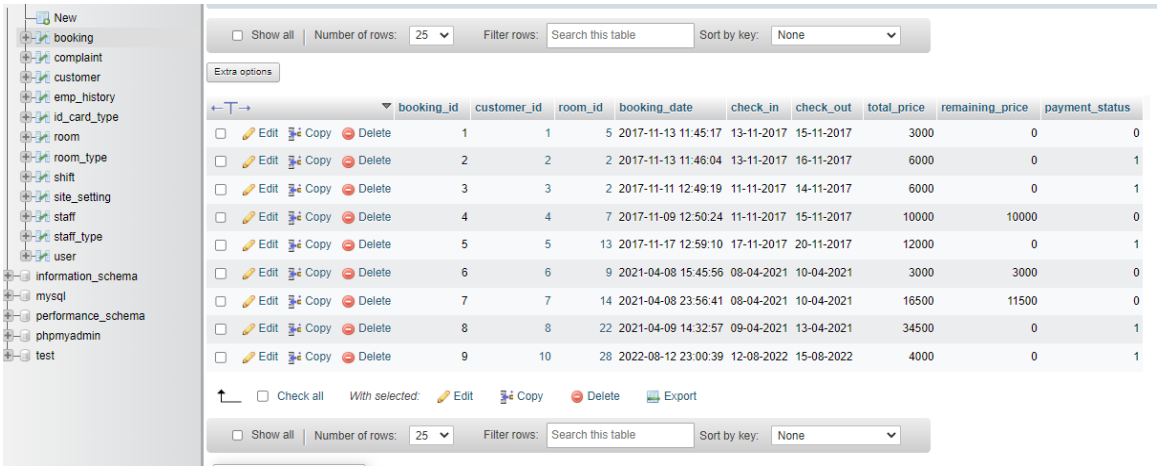


	room_id	room_type_id	room_no	room_img	room_desc	status	check_in_status	check_out_status	deleteStatus
Edit Copy Delete	1	2	A-101			NULL	0	0	1
Edit Copy Delete	2	2	A-102			NULL	0	1	1
Edit Copy Delete	3	3	A-103			NULL	0	0	1
Edit Copy Delete	4	4	A-104			NULL	0	0	1
Edit Copy Delete	5	1	B-101			1	1	0	0
Edit Copy Delete	6	2	B-102			NULL	0	0	1
Edit Copy Delete	7	3	B-103			1	0	0	0
Edit Copy Delete	8	4	B-104			NULL	0	0	1
Edit Copy Delete	9	1	C-101			1	0	0	0
Edit Copy Delete	10	2	C-102			NULL	0	0	0
Edit Copy Delete	11	3	C-103			NULL	0	0	1
Edit Copy Delete	12	4	C-104			NULL	0	0	0
Edit Copy Delete	13	4	D-101			NULL	0	1	1
Edit Copy Delete	14	5	K-699			1	1	0	0
Edit Copy Delete	15	5	K-799			NULL	0	0	0
Edit Copy Delete	16	5	K-899			NULL	0	0	0
Edit Copy Delete	17	6	M-333			NULL	0	0	0
Edit Copy Delete	18	6	M-444			NULL	0	0	0
Edit Copy Delete	19	6	M-555			NULL	0	0	0

Table 5.4 shows available room details. Table name room

Table 5.5 Booking table in Hotel Management System

This table shows information on room bookings from the hotel management system. This includes the store room booking date, check in date, and check out date, as well as the customer id of the person who is reserving this room.



	booking_id	customer_id	room_id	booking_date	check_in	check_out	total_price	remaining_price	payment_status
Edit Copy Delete	1	1	5	2017-11-13 11:45:17	13-11-2017	15-11-2017	3000	0	0
Edit Copy Delete	2	2	2	2017-11-13 11:46:04	13-11-2017	16-11-2017	6000	0	1
Edit Copy Delete	3	3	2	2017-11-11 12:49:19	11-11-2017	14-11-2017	6000	0	1
Edit Copy Delete	4	4	7	2017-11-09 12:50:24	11-11-2017	15-11-2017	10000	10000	0
Edit Copy Delete	5	5	13	2017-11-17 12:59:10	17-11-2017	20-11-2017	12000	0	1
Edit Copy Delete	6	6	9	2021-04-08 15:45:56	08-04-2021	10-04-2021	3000	3000	0
Edit Copy Delete	7	7	14	2021-04-08 23:56:41	08-04-2021	10-04-2021	16500	11500	0
Edit Copy Delete	8	8	22	2021-04-09 14:32:57	09-04-2021	13-04-2021	34500	0	1
Edit Copy Delete	9	10	28	2022-08-12 23:00:39	12-08-2022	15-08-2022	4000	0	1

Table 5.5 Shows Booking table. table name booking

Table 5.6 Customer table in Hotel Management system

This table stores customer personal information.

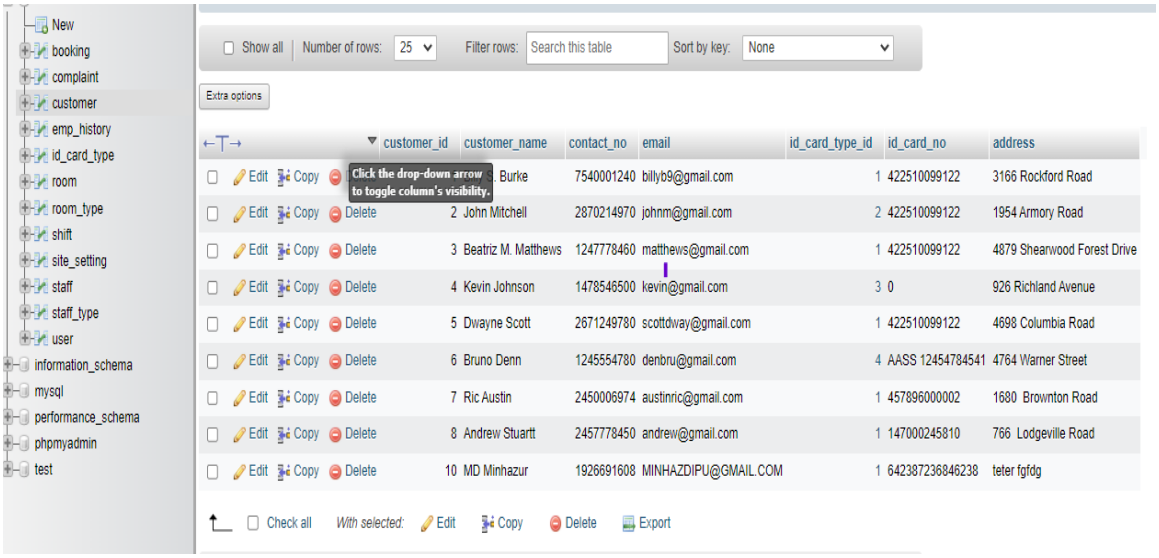


Table 5.6 shows customer table. That's kind of information we store with this system

Table 5.7 Site setting table in Hotel Management System

The settings for the site are stored in this table. such as the color, site title, heading, and background image, among other things.

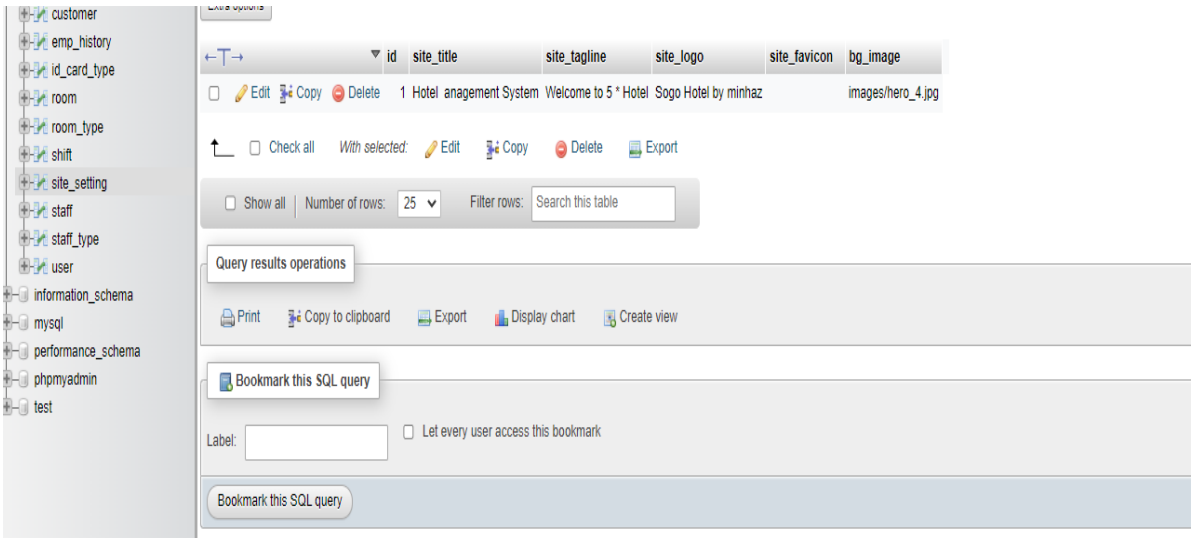


Table 5.7 site setting table. where store all kind of data related to table

5.2 Implementation of Front-End Design

Different pages of front-end of end-users and admin are shown below:

5.2.1 Home Page (for Front-end user)

Figure 5.1 shows Home Page for font end user from this page user can check availability of a room

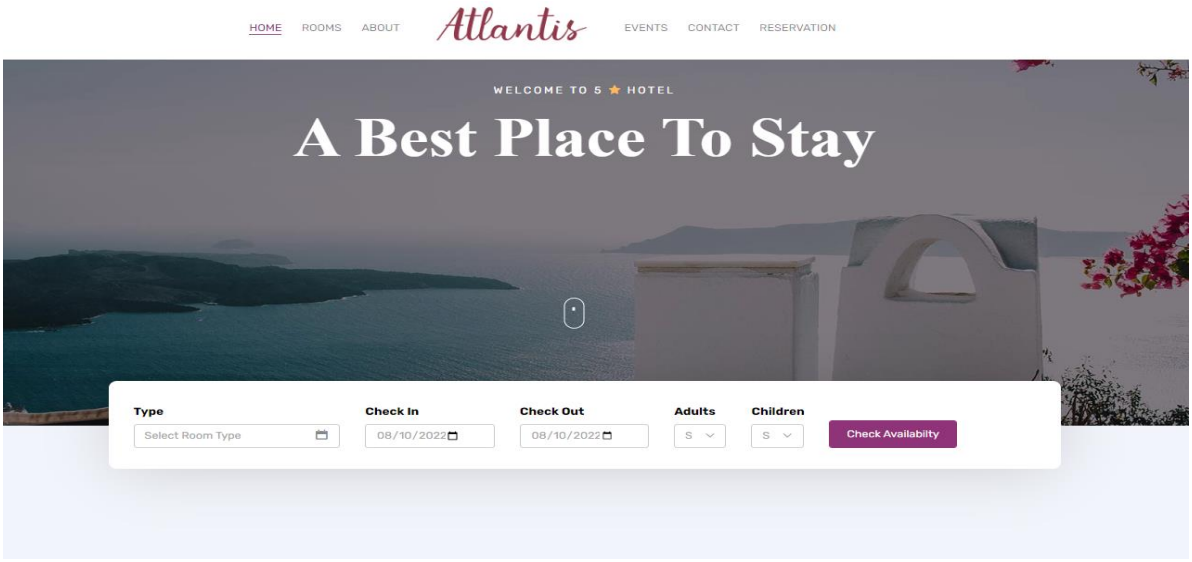


Figure 5.1: Home Page

5.2.2 Check Availability page (for Front-end user)

Figure 5.2 show available room based on user search. Its's shows price,and available service with room

Figure 5.2 Room Availability Page

5.2.3 Booking Page (for Front-end user)

Figure 5.3 shows room boking page for user. It's shows booking information and customer detail entry form.

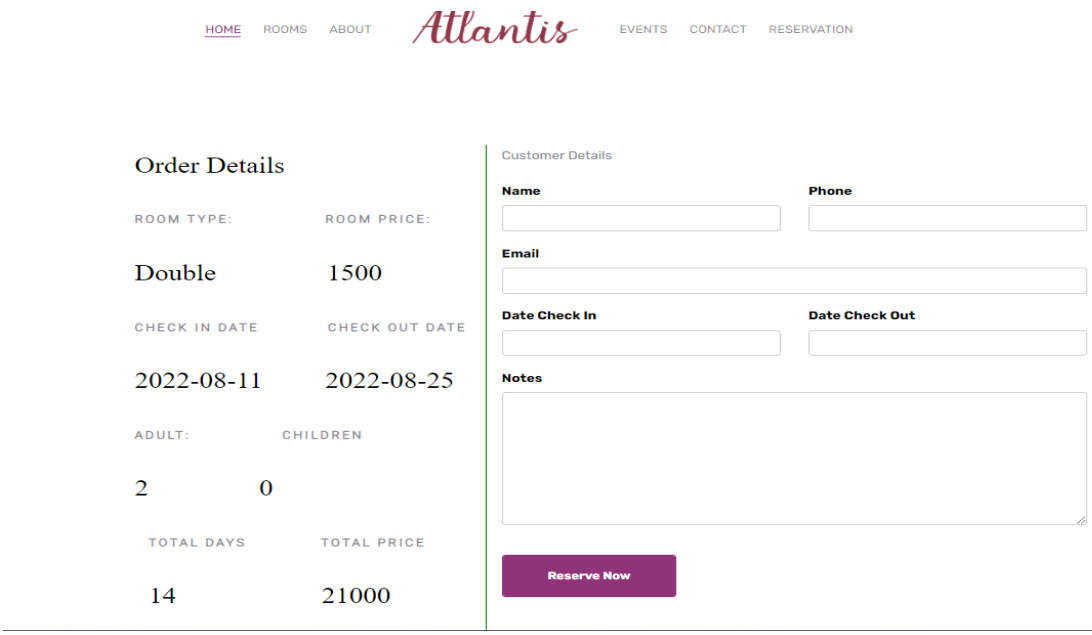


Figure 5.3 Room Booking Page

5.2.4 Room type Page (for Front-end user)

Figure 5.4 shows Room type page with price for user .

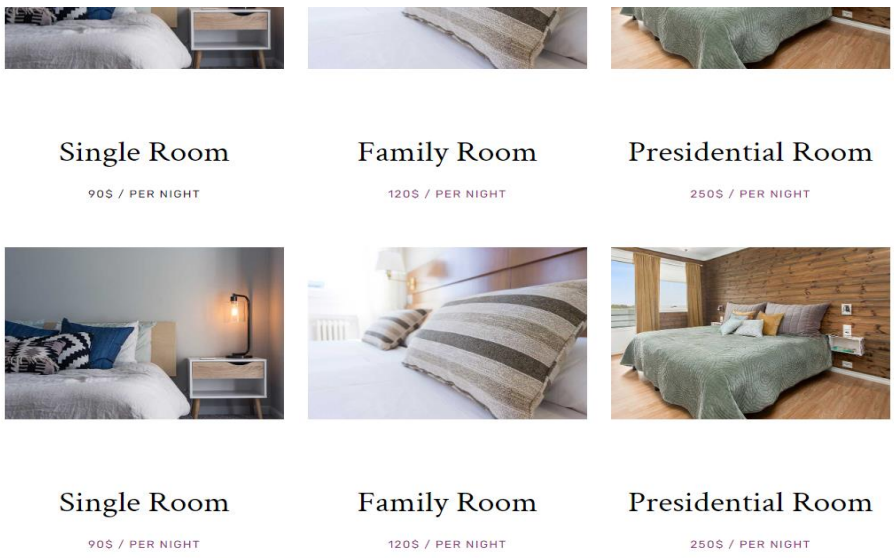


Figure 5.4 Room type Page

5.2.5 Reserve Now Page (for Front-end user)

Figure 5.5 shows Custom reserve page for user

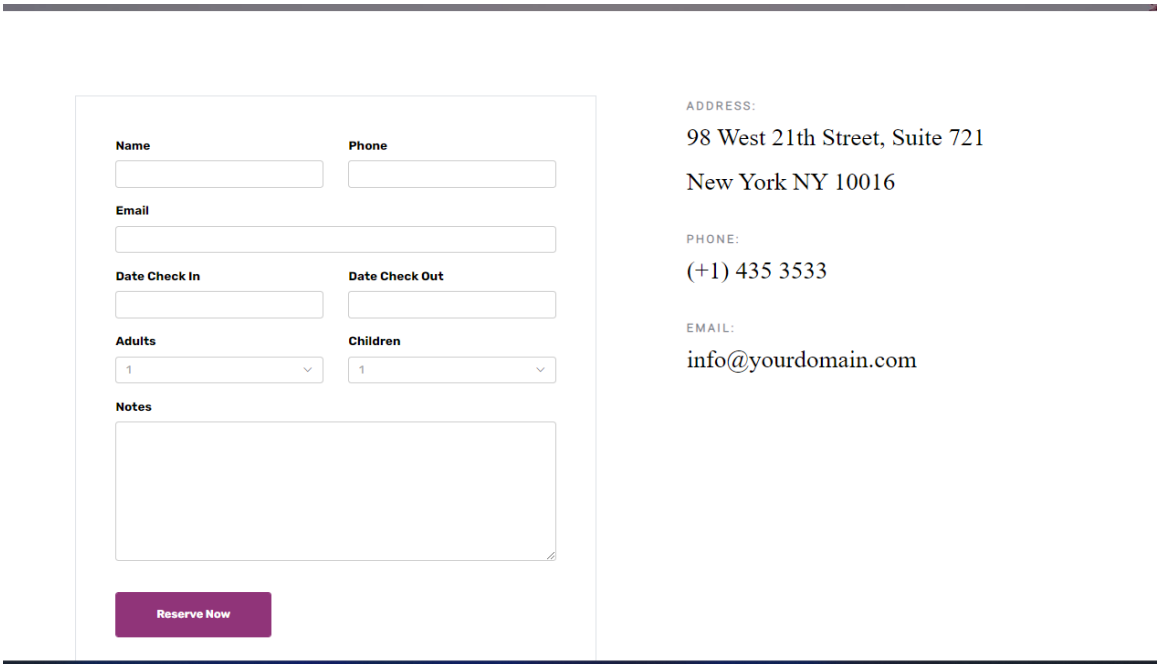


Figure 5.5 Reserve Now Page

5.2.6 Admin Login page (for Admin)

Figure 5.6 shows Admin Login page. From hare admin will login to admin portal

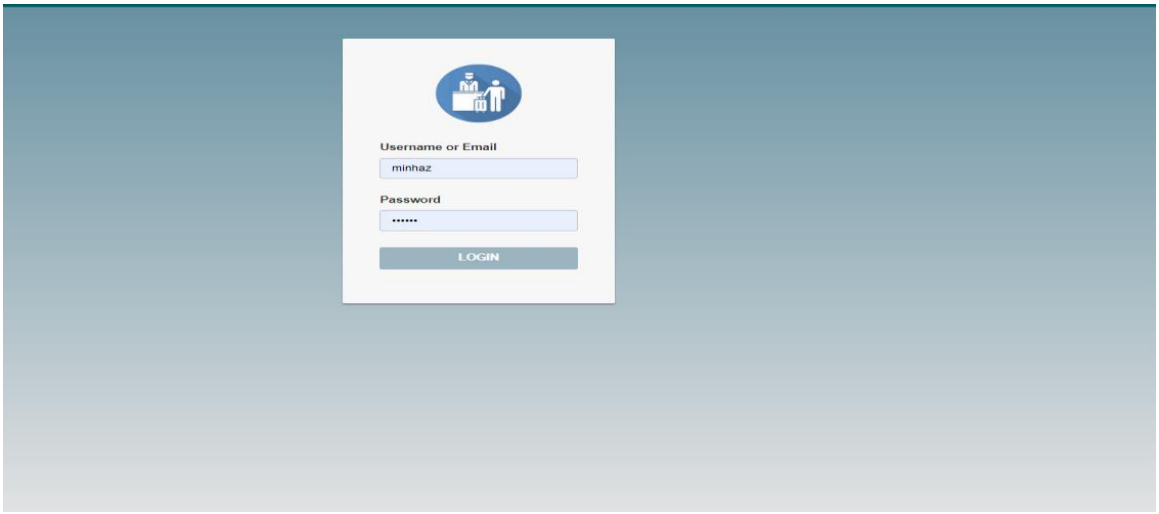


Figure 5.6 Admin Login

5.2.7 Admin Dashboard (for Admin)

Figure 5.7 shows Admin dashboard. from hare admin will know status of everything.

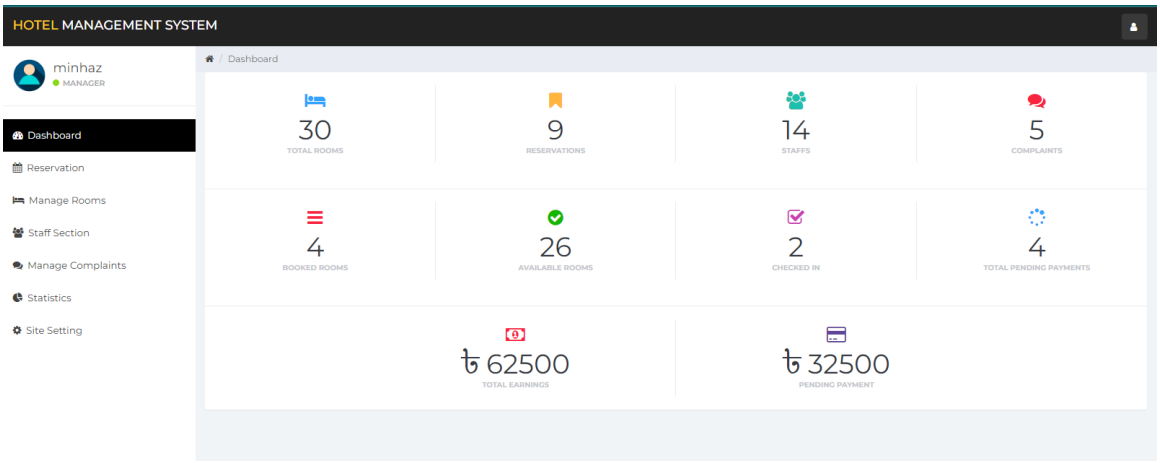


Figure 5.7 Admin Dashboard

5.2.8 Manage Room (for Admin)

Figure 5.8 shows status of room. Admin can observe how many room available and how many room are ready for booked.

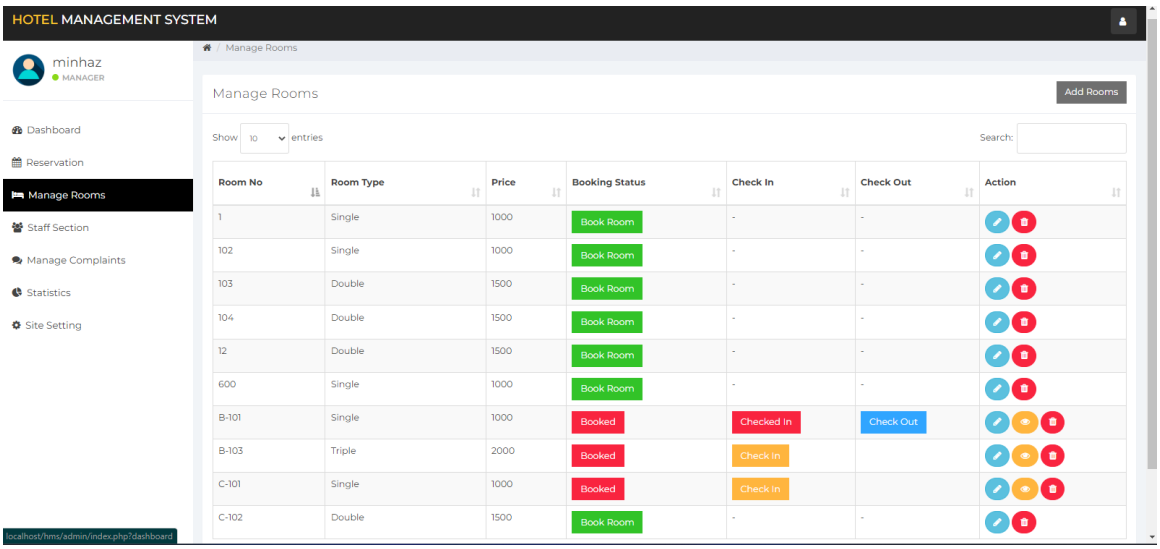


Figure 5.8 Manage Room

5.2.9 Add New Room (for Admin)

Figure 5.9 shows Add new room popup

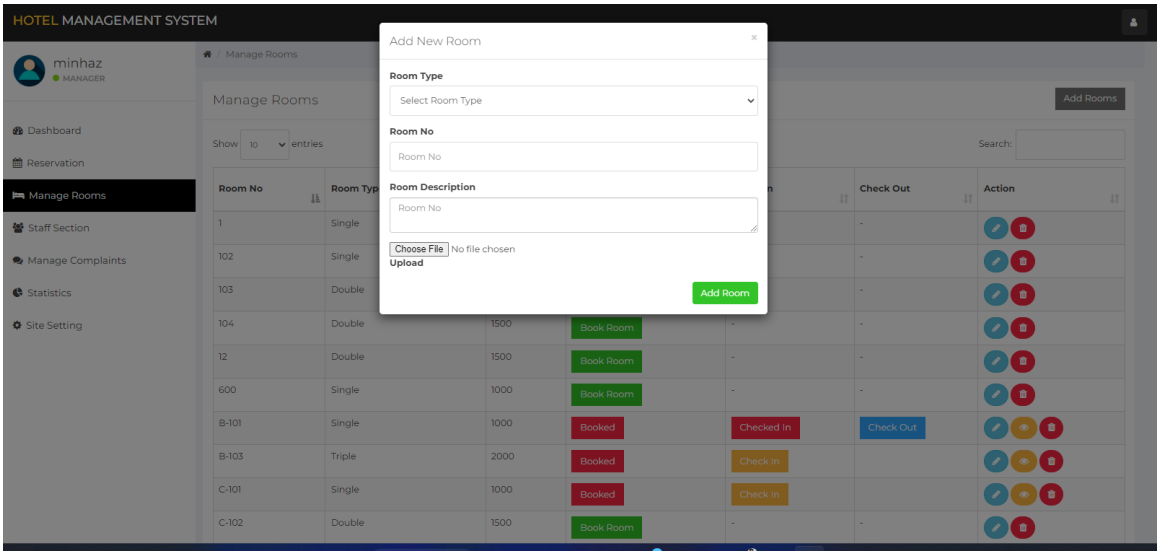


Figure 5.9 Add new Room

5.2.10 Site setting (for Admin)

Figure 5.10 shows Site Setting

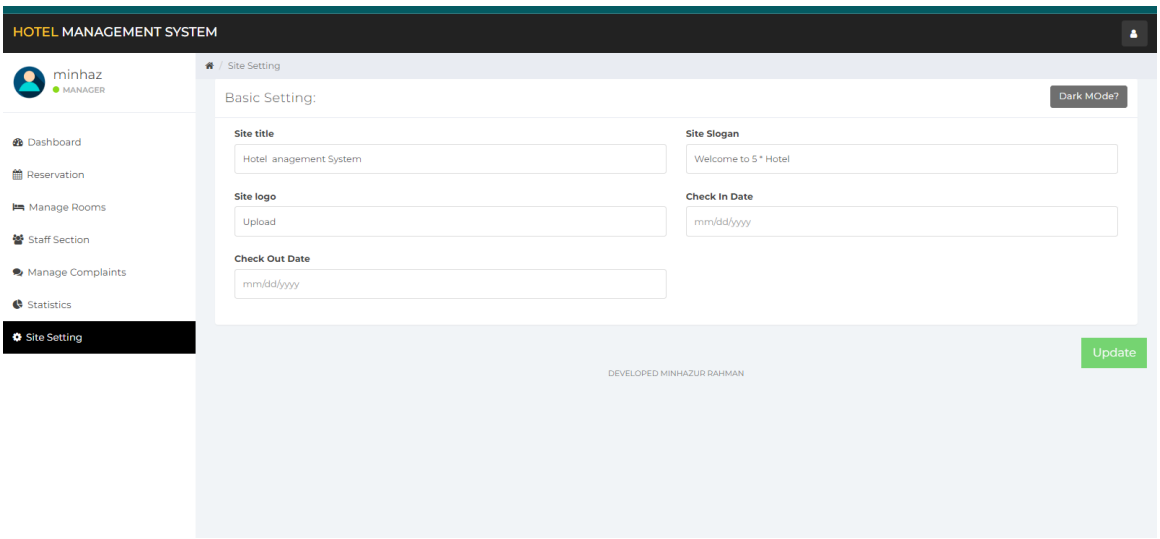


Figure 5.10: Site Setting Page for Admin

5.2.11 Reservation (for Admin)

Figure 5.11 shows Reservation Process for Admin Page

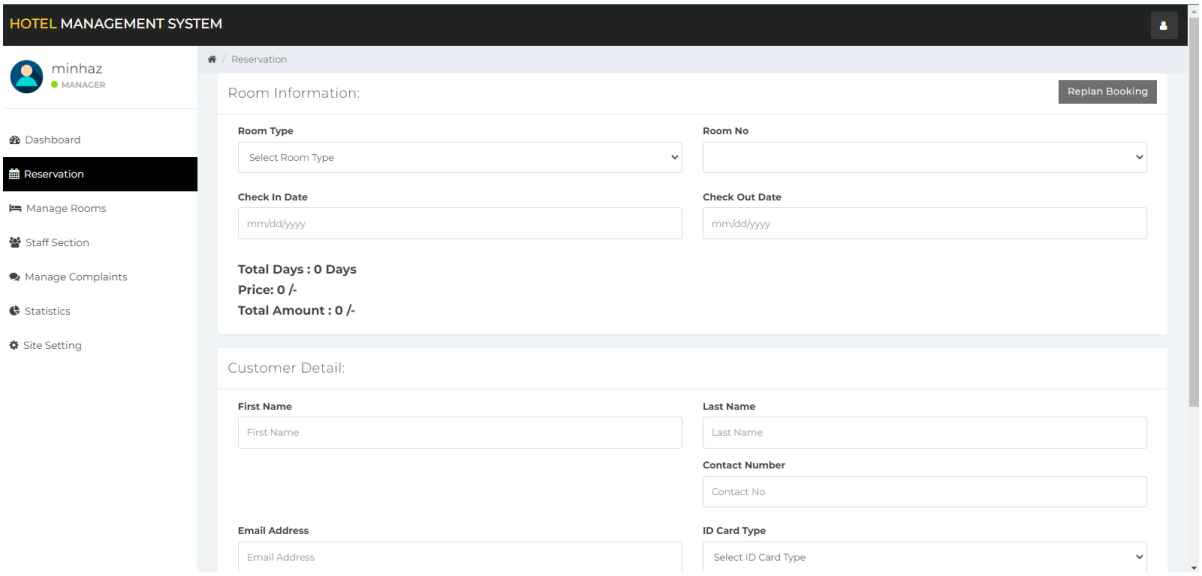


Figure 5.11 Reservation (for Admin)

5.2.12 Complaint Management (for Admin)

Figure 5.12 shows Reservation Process for Admin Page

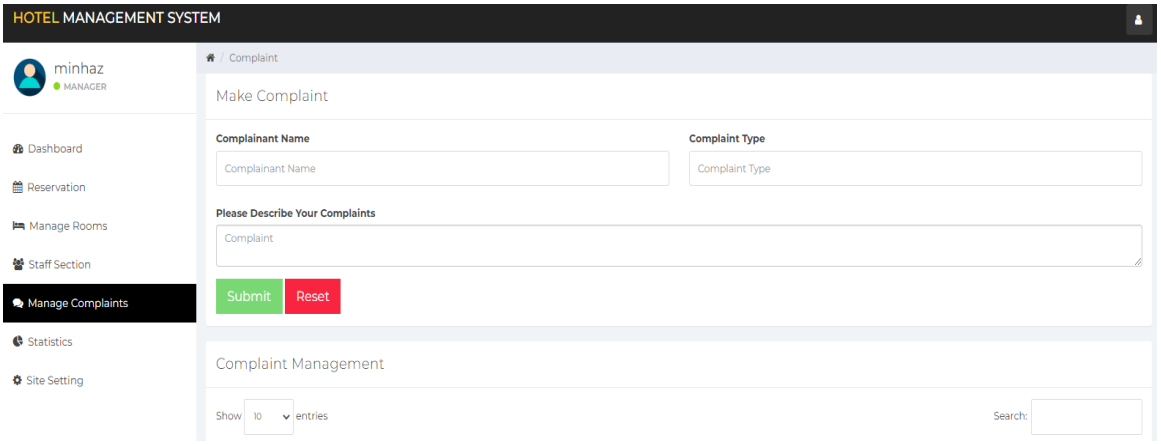


Figure 5.12 Complaint Management (for Admin)

5.3 Implementation of Interactions

Back-end programming is essential to the application's ability to interact with visitors or end users. Here, further views of the backend procedure are added.

This following figure 5.13 shows the editor with the back-end codes of the roomdetails.php . room search result are process in this page

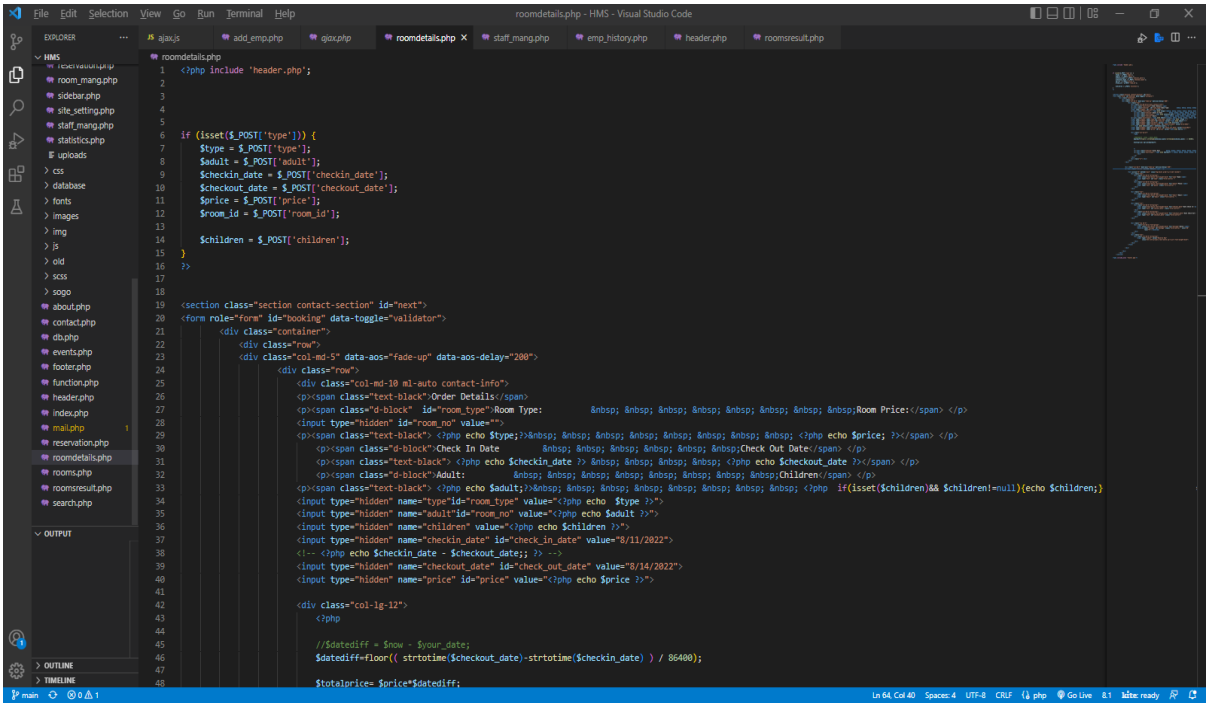


Figure 5.13 Coding Interface (Back-end)

5.4 Testing Implementation

Programming tests can be run using a variety of methodologies, including unit and integration testing [18]. I tested this project using the default testing tool for the Google Chrome browser. I tested the performance of my code on the Chrome browser using Performance Insight. I test page speed, accessibility, and SEO best practices using Light House, which is included in the next section. For testing purposes, I have collected data

from numerous hotel websites. Room information such as room type, room price, and reservation process are gathered from various websites.

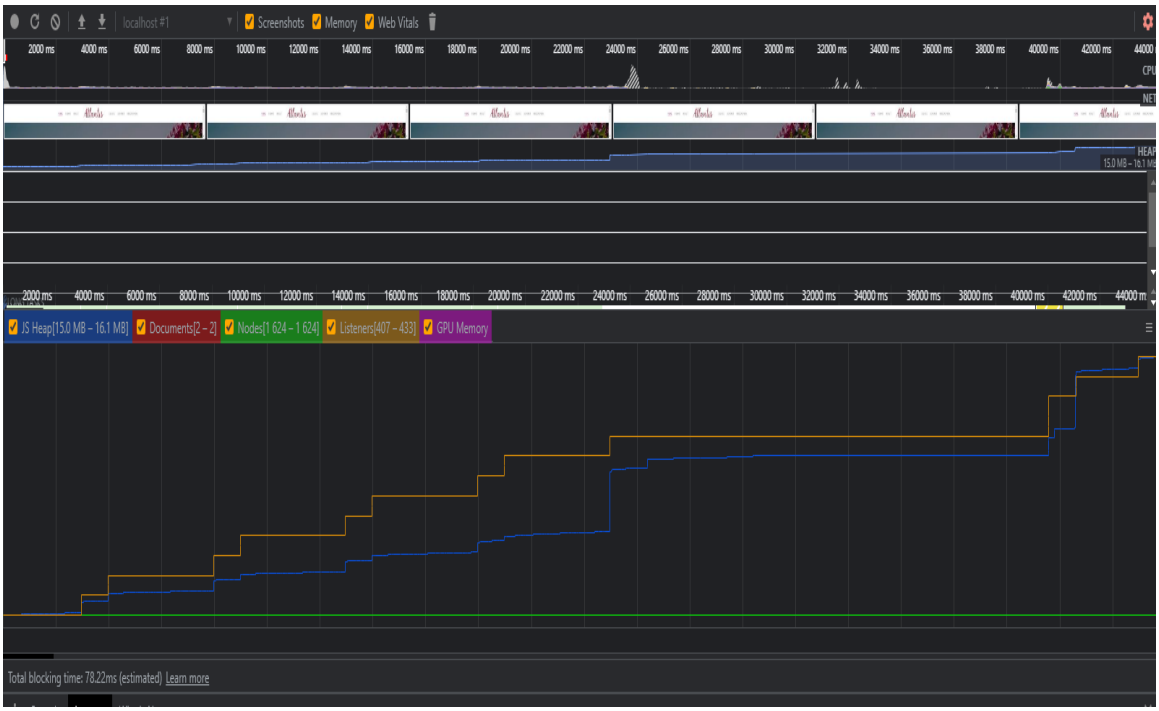


Figure 5.14 Performance Testing

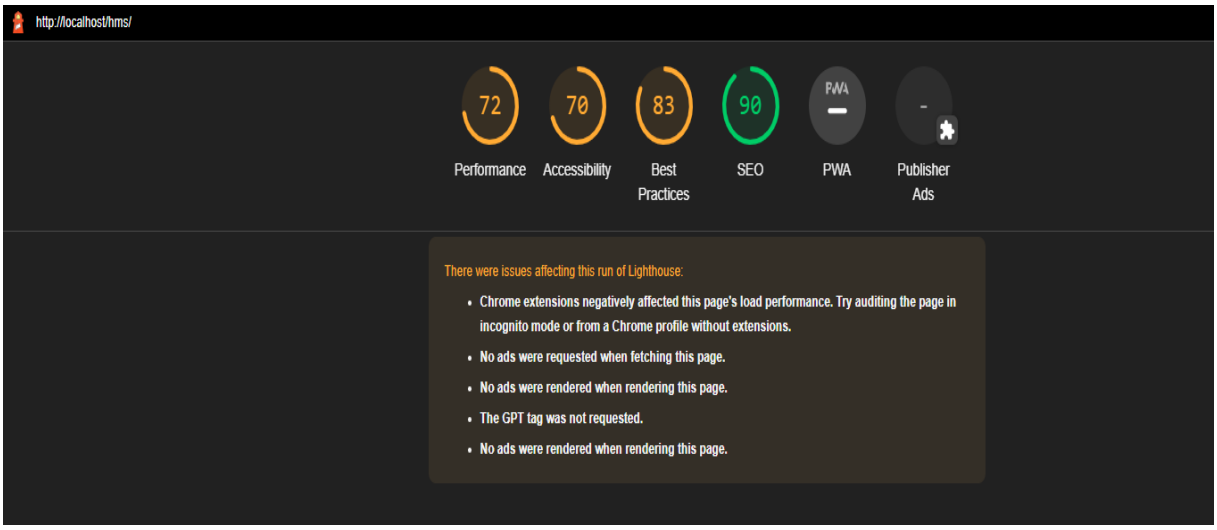


Figure 5.15 Lighthouse Testing Report

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

6.1 Discussion and Conclusion

My objective in developing this system was to enhance the user experience of room bookings by making it easier and smoother. I attempted to create a system in which both users and administrators could simply access all hotel features online. I believe it will meet all of the requirements of a hotel management system.

I believe that this system will meet the needs of hotels that provide services such as room booking and reservations. It is a user-friendly web-based application, and I am confident that end-users will understand the user interface for booking a room. Finally, this web application will be a beneficial addition for small-to medium-sized hotels looking to expand their influence.

6.2 Scope for Future Developments

In the future, I will undertake this project to update and will also try to add more features to make it up to date. Some future plans are given below:

- Support for multiple hotels.
- A centralized database for all of a company's hotels.
- Get SMS notifications on the user's mobile device [19].
- Option for Order Cancellation.
- Increasing system security and more [20].

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