

Hotel Green Implementation for Future

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ABSTRACT

The online hotel management system was designed for the client hotel green, colombo, sri lanka. Currently, the client uses a manual system for management purposes where employees handle large amounts of data manually. The proposed system allows users to store and manipulated all the data in their database making their data handling process very effective. The proposed system is developed to cover the process of the hotel such as employee management, resource management, food management, rooms management, and user account management. The admin adds and updates the available rooms and foods, and customers can check the available rooms and order foods through the system. Admin adds, updates, and deletes employee details. Admin can mark the attendance of the employees. Admin can search relevant details. Admin can view details of all customers. The customers register and log in to the system. Customers can update and delete their accounts. A web application was developed to ensure that the customers of the hotel can make orders and reservations online. The system reduces data manipulation errors in the current process, resulting in considerable development in human resource utilization. It improves the client's relationship with their customers gaining profit for the business. The system is user-friendly, reliable, and efficient and its statistics all the customer requirements.

Keywords-- Hotel, Online, Management System, Booking

fantastic features of the internet is online hotel booking. In addition to being quick, easy, and handy, booking a hotel online is also incredibly affordable. Nowadays, a lot of hotel providers have websites, which enables consumers to visit these sites and examine the amenities and features each of them offers.

In order to handle the hotel's present manual system for both local and distant customers, the suggested computerized online Hotel Management System is designed to be more practical, well-organized, quick, dependable, and accurate. Any hotel should employ this technique, in my opinion.

The Hotel Management platform developed using technologies such as Express JS, Nodejs for server side, Rest API and ReactJS for client side and mongo dB as the database. This system allows Admins to add, update, and delete Hotel Employees, Foods, Rooms, and Customers can search and order the rooms and foods according to their needs.

Customer must sign up before using the system if they do not have an account. After successful registration, the user will be able to get the service in the application. After successful login customers will redirect to the home page and they can see the Rooms that are available. They can select Rooms, and those will be added to the cart. And pay for the respective rooms ordered. if a customer wants to have food, they can go through the food section available and they can select the food they like and after selecting the food, Food will be delivered to your door.

I. INTRODUCTION

The project is to support a hotel to maintain the basic information related to the hotel. The main aim of this Project is to make a customer easy to go through the hotel and their facilities and a customer can easily book and order their facilities without any hardness. One of the

II. RELATED WORK

Today computer technology substantial influence on hospitality management in the last decades and

increased the utilization of computer and information management according to the Rob law and others [1]. This affects all the sectors as well as the Hotel management system. This made a significant amount of effect on the tourism and hospitality industry.

For bookings, security, payment, and other functions, they used more computer programs. Olga Jovanovic and others highlighted that systems are considered as outdated if hospitality organizations do not use advanced technology in every function [2]. Due to that all the hotel industries trying to move to automated systems to keep them up to date in the market and to give effective and efficient service. On the organizational side, the employees can work easier, timesaving, and reduce operational costs. In most hotels after moving to the automated system, the employers can reduce the number of employees. But the star hotels give star-level service to the customer without reducing the no of employees. So, the staff can attend to customer services by holding the standards. Therefore, they need to use advanced technology to maintain luxury service and exacting standards.

Automating the system has more benefits for employees as well as their clients. For example, clients can easily search availability of the rooms, prices, and features and have a few steps to reserve the room in a few minutes in anywhere the world. And also, they get benefits when they are staying in the hotel because it has an advanced communication system.

On other hand, when considering the previous hotel management system, they used the traditional client-server mode. Johnson O. Victor and others pointed out that the users had to install client software and used it. But it increased the maintenance and upgrade costs [3]. Due to this situation, browser server mode has been introduced. User interfaces can be accessed through browser, and transaction logic implemented in server side. In B / S architecture and C / S architecture mentioned that will help to reduce cost, maintenance, upgrade and reduce total cost of clients [4].

III. METHODOLOGY

A. Technologies

The Hotel Management platform developed using technologies such as Express JS, Node.js for server side, Rest API and ReactJS for client side and mongo dB as the database.

Express JS, Node JS

A node JS web application framework called Express offers a variety of capabilities for creating both online and mobile applications. A single page, multipage, or hybrid web application can be created with it. It is a

layer added to Node JS that aids in managing servers and routes.

Express was developed to make it simple to construct APIs and online apps. It cuts the amount of coding work required practically in half while still producing effective web and mobile applications. Another benefit of utilizing express is that it is written in JavaScript, which is simple to learn even if you have no prior experience with coding. Express enables a substantial number of fresh developers to enter the web development industry.

The following justifies the development of an express framework for node JS: Fast, economical, simple to learn, and asynchronous.

Rest API

A REST API, commonly referred to as a RESTful API, is a web API that complies with the restrictions of the REST architectural style and enables communication with RESTful web services. Computer scientist Roy Fielding produced the acronym REST, which stands for representational state transfer.

When determining if a RESTful API is the best sort of API for your purposes, you should consider the following six critical constraints:

- Client-Server: This restriction operates under the premise that the client and the server should be kept apart and let to develop independently.
- Stateless: REST APIs are stateless, allowing calls to be made independently of one another and including all the information required for the call to succeed.
- Cache: A REST API should be created to promote the storing of cacheable data since a stateless API might incur request overhead by managing heavy loads of incoming and outgoing requests.
- Consistent Interface: Having a uniform interface that enables independent application growth without having the services, or models and actions, firmly tied to the API layer itself is essential to decoupling client from server.
- Layered System: REST APIs have layers of their architecture that work together to form a hierarchy that aids in making an application more scalable and modular.
- Code on Demand: Code on Demand enables the transmission of code or applets for usage within the application via the API.

React JS

React.js, sometimes referred to as React,[5] is a JavaScript library that is open-source and free. The ideal way to create user interfaces is by assembling little pieces of code (components) into whole websites. It was first

created by Facebook and is currently maintained by the open-source community.

JSX, a JavaScript and XML mix, is used to create React.js. JSX is used to construct the elements, and JavaScript is used to render them on your website. Although react requires a lot of understanding for a beginner developer, it is swiftly becoming one of the most well-liked and sought-after JavaScript frameworks.

The other solutions looked at today are considered frameworks, although react is classified as a JavaScript library. Consider a framework as a full design and a library as a tool that developers may use in any project.

Mongo dB

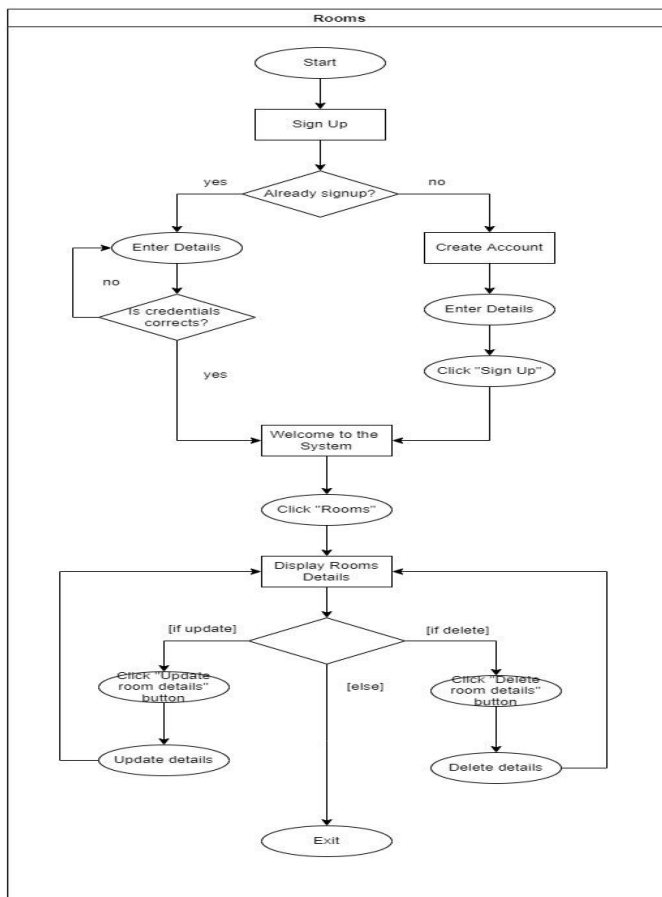
Non-relational document database MongoDB supports storage that is similar to JSON. The MongoDB database has complete indexing support, replication, and a flexible data schema that makes it possible to store unstructured data. It also features comprehensive and user-friendly APIs.

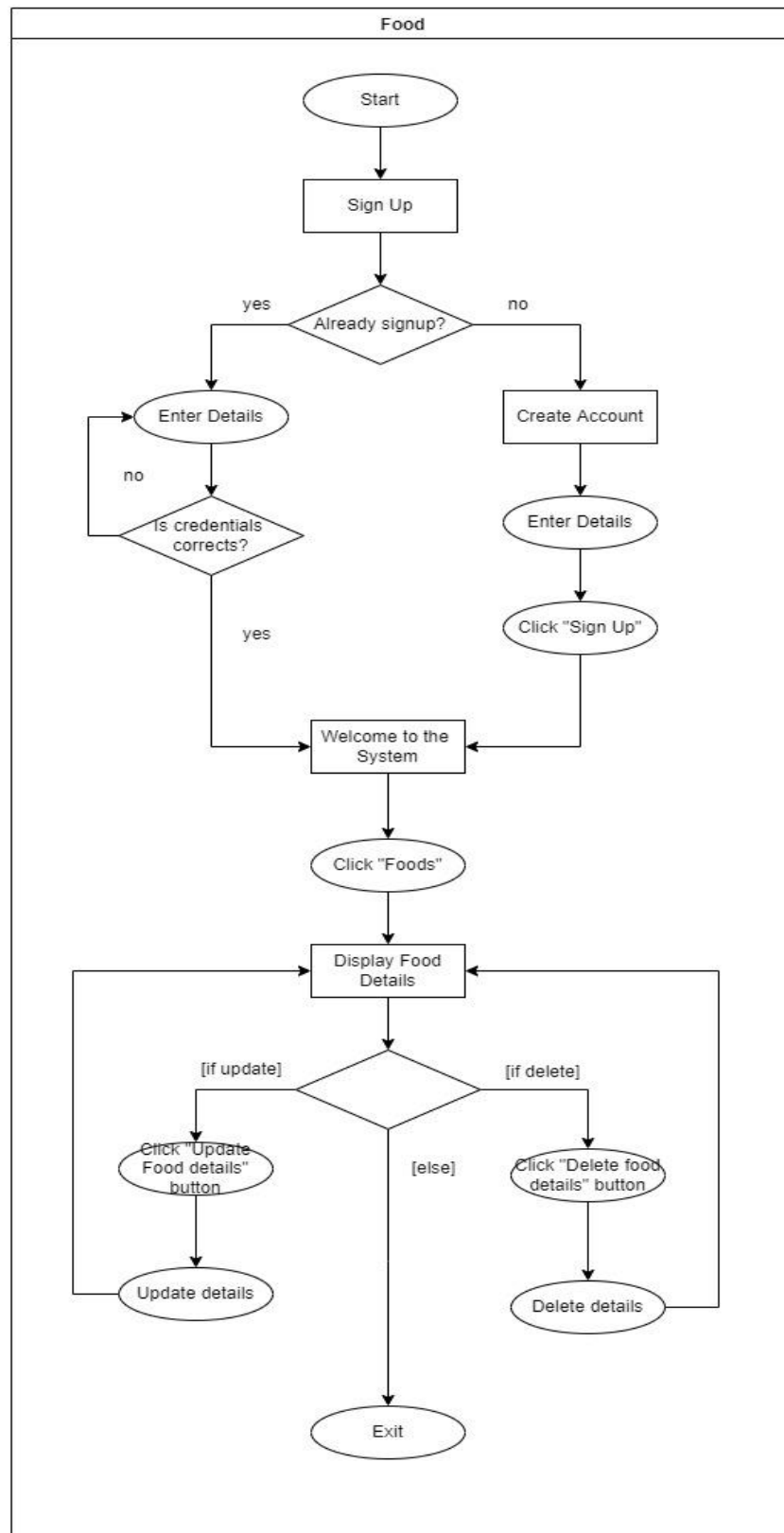
Records in MongoDB are built of documents that have a data structure made up of field and value pairs. In MongoDB, documents are the fundamental type of data. The papers employ a format called Binary JSON, which is

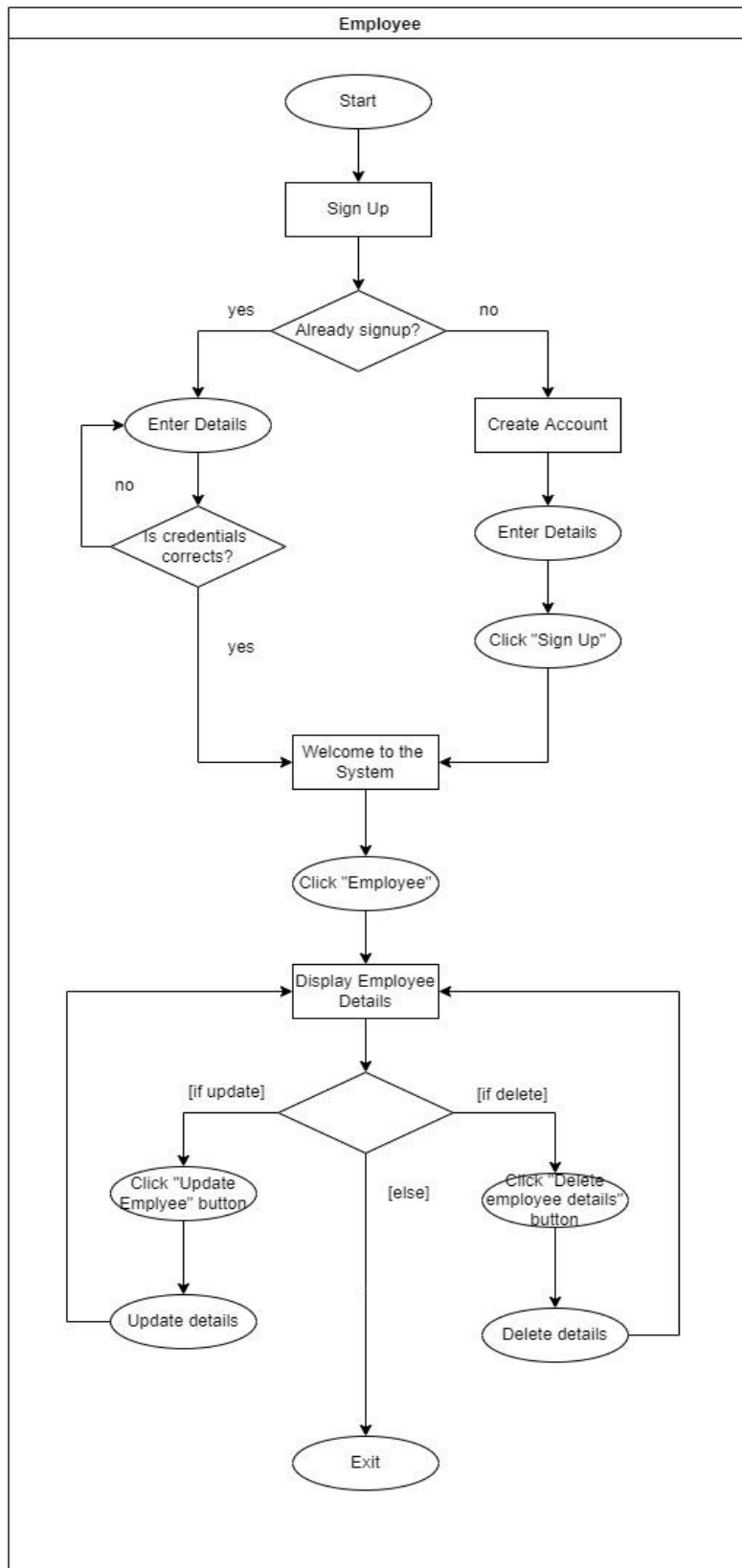
a variation of JavaScript Object Notation (BSON). The use of BSON has the advantage of supporting additional data kinds. These documents' fields resemble relational databases' columns in structure. According to the MongoDB user handbook, values included can be a wide range of data formats, including other documents, arrays, and arrays of documents. A main key will be used as a primary identifier for documents.

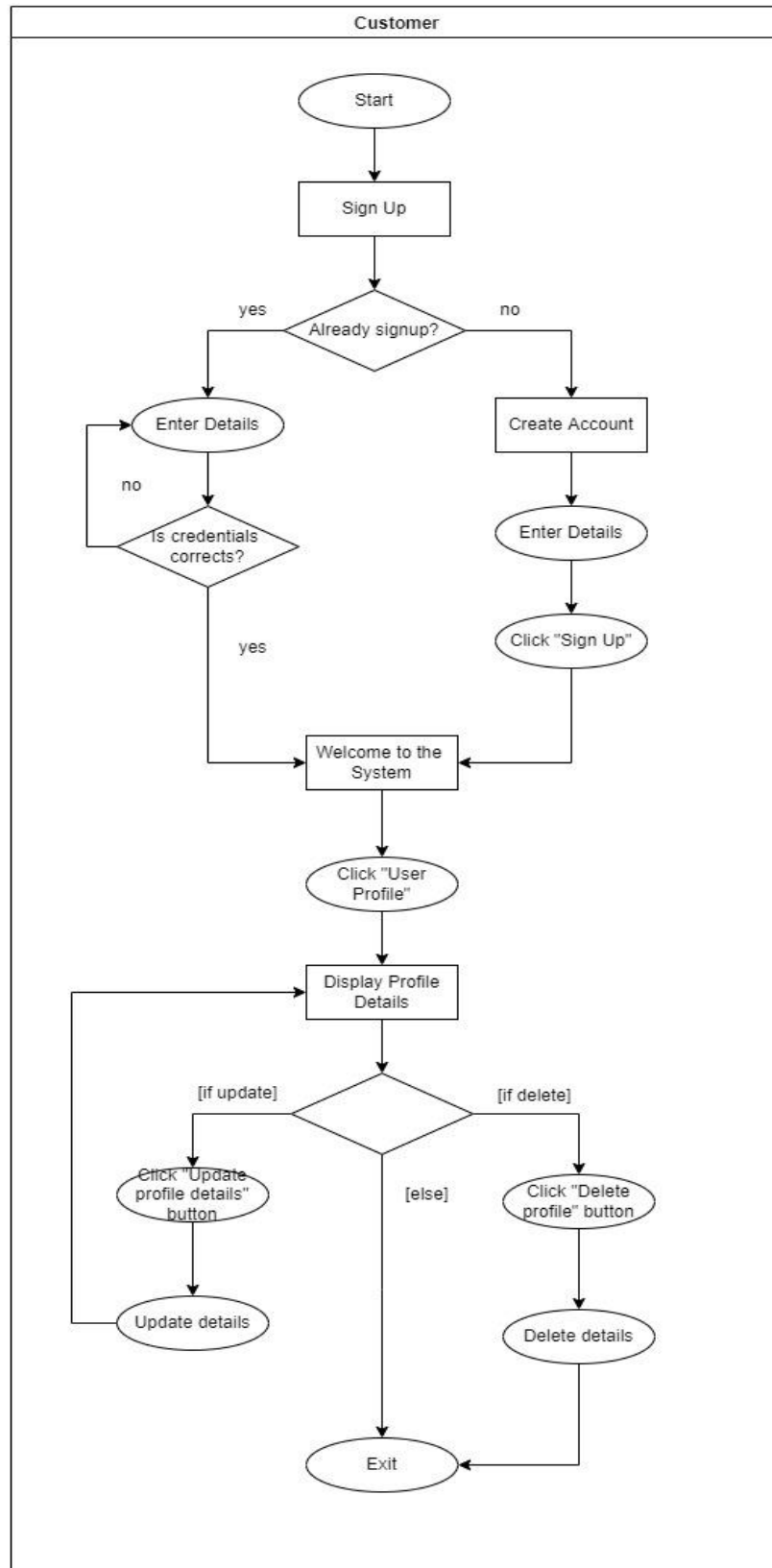
MongoDB does not require established schemas, like other NoSQL databases. It keeps all data types. Since users have the freedom to add any number of fields to a document, scaling MongoDB databases is simpler than scaling relational databases. Documents have the benefit of mapping to native data types in many computer languages, which is one of its advantages. Additionally, fewer database joins are required when documents are embedded, which can save expenses.

The flow charts below show the back-end process of the system. Chart 01 shows the back-end process of Rooms services, Chart 02 shows the back-end process of Foods services, Chart 03 shows the back-end process of Employee services, and Chart 04 shows the back-end process of Customer Services.









B. Proposed System

This system will follow the browser server model to implement the system. The system mainly focuses on

room management, room reservation, food management and ordering, employee management, and customer management.

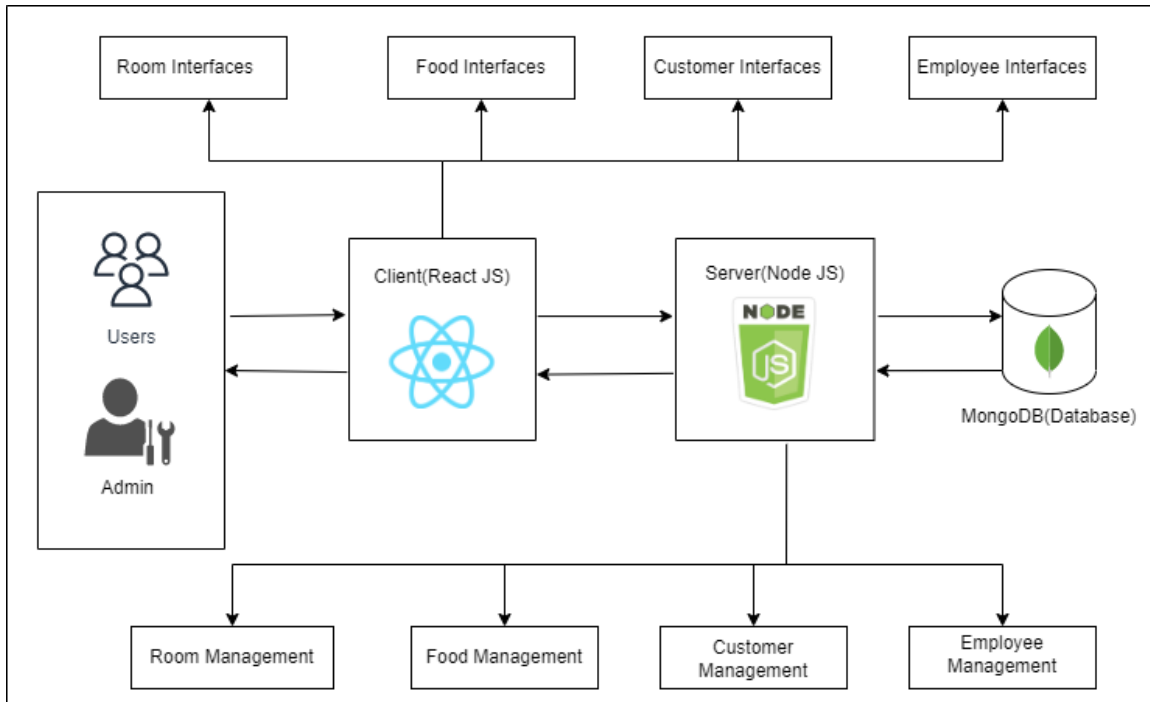


Figure 1: System Overview

1. Room Management

This function mainly focuses on adding new rooms, updating existing rooms, and if needed deleting the room. The information related to the room mainly is room

type, name, status, and other information. Admin can perform the update and delete operations of rooms. Figure2 is showing the room management interface and the Figure3 is showing the room insert form.

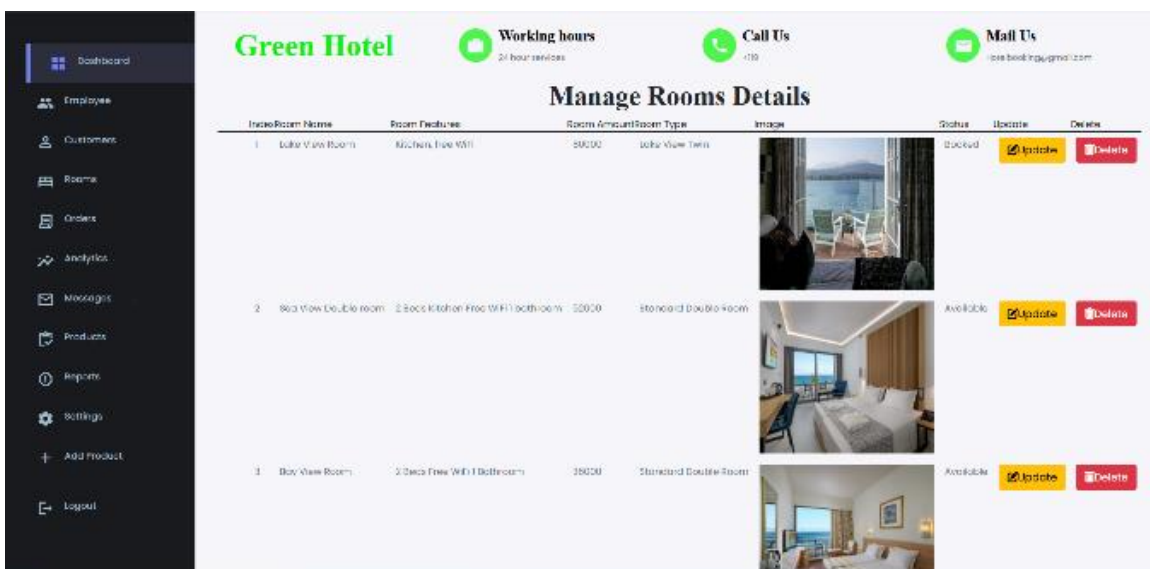


Figure 1: Room Management Interface

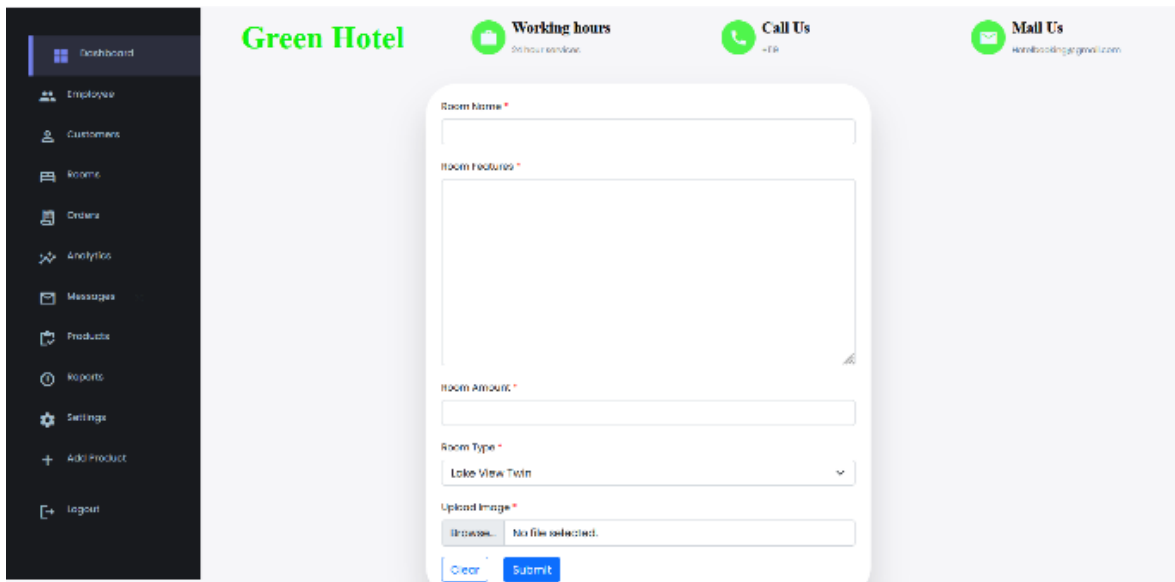


Figure 2: New Room Adding Interface

2. Room Reservation Function

This function focuses on room booking by customers. After successful login ordinary user will redirect to the home page. Figure4 shows the available rooms to select. The ordinary user can view the room details and if interested, they can book the room by

clicking the 'Book' button. When they click on the 'Book' button, they will redirect to the room reservation page which has the form to fill out. After filling out the form user will redirect to the Payment page where the user can reserve the room. The payment is handled by a third-party service provider.

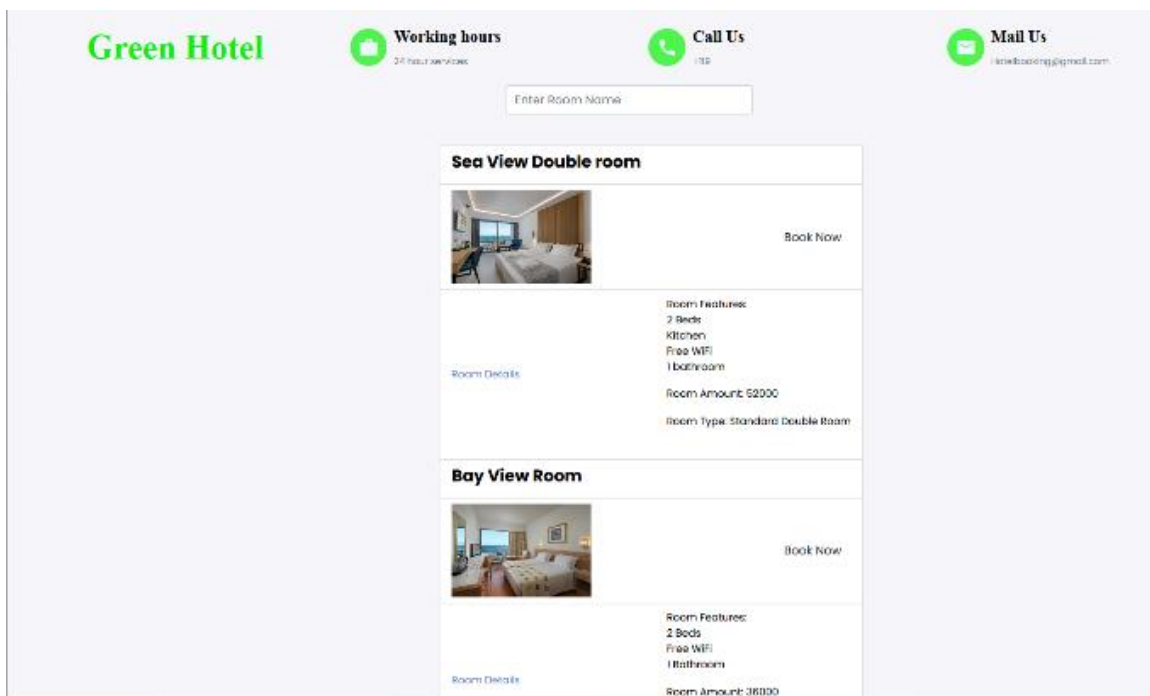


Figure 3: Room Search Interface

3. Food Management

This function mainly focuses on adding foods, updating existing foods, and if not available deleting the food. The information related to the food mainly is food

category, food name, and other information. Admin can perform the update and delete operations of food. Figure5 is showing the food management interface and the Figure6 is showing the new food insert form.

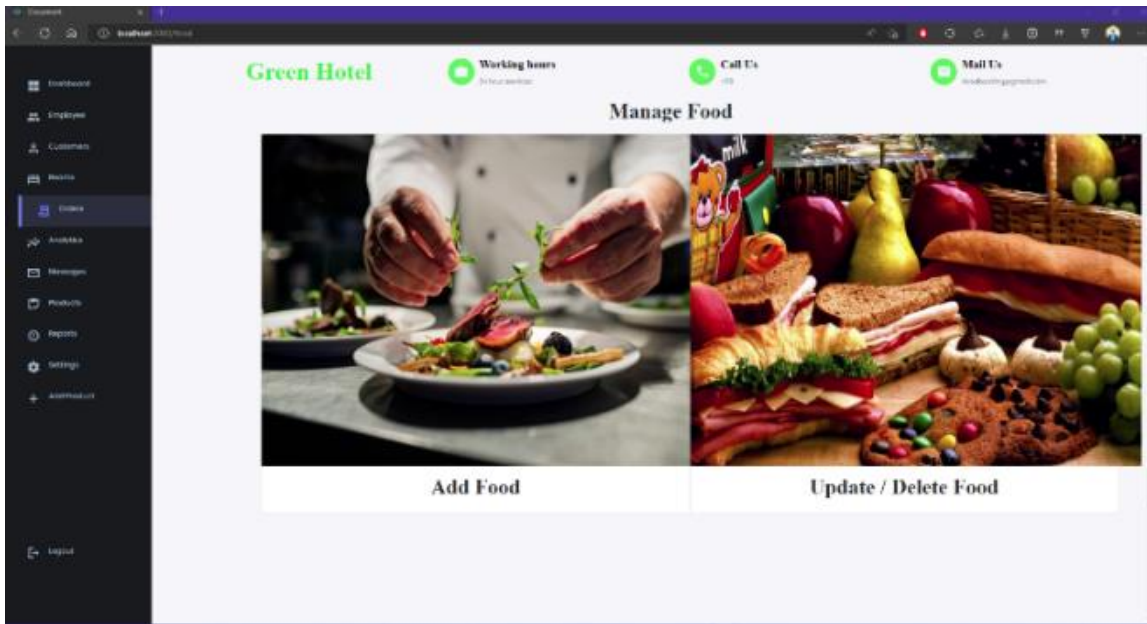


Figure 4: Food Management Interface

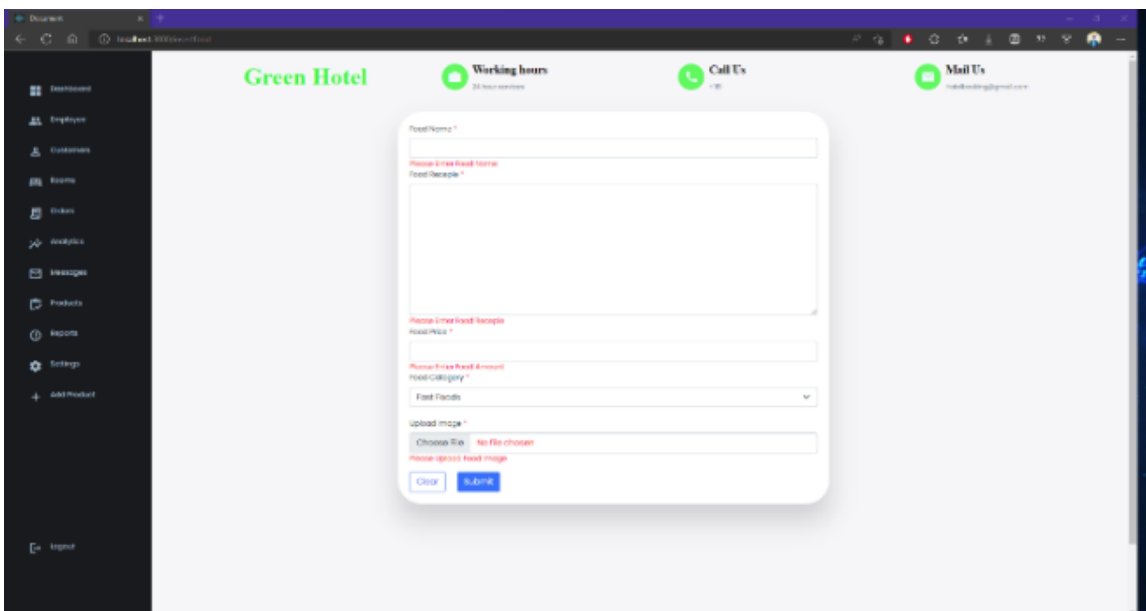


Figure 5: Add Food Interface

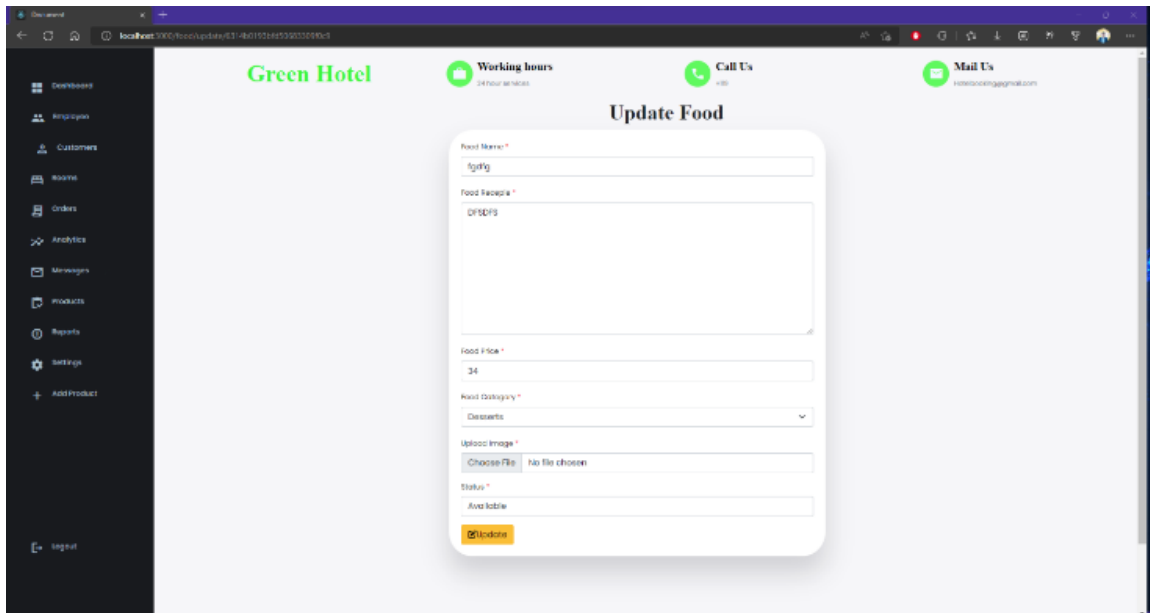


Figure 6: Update Food Interface

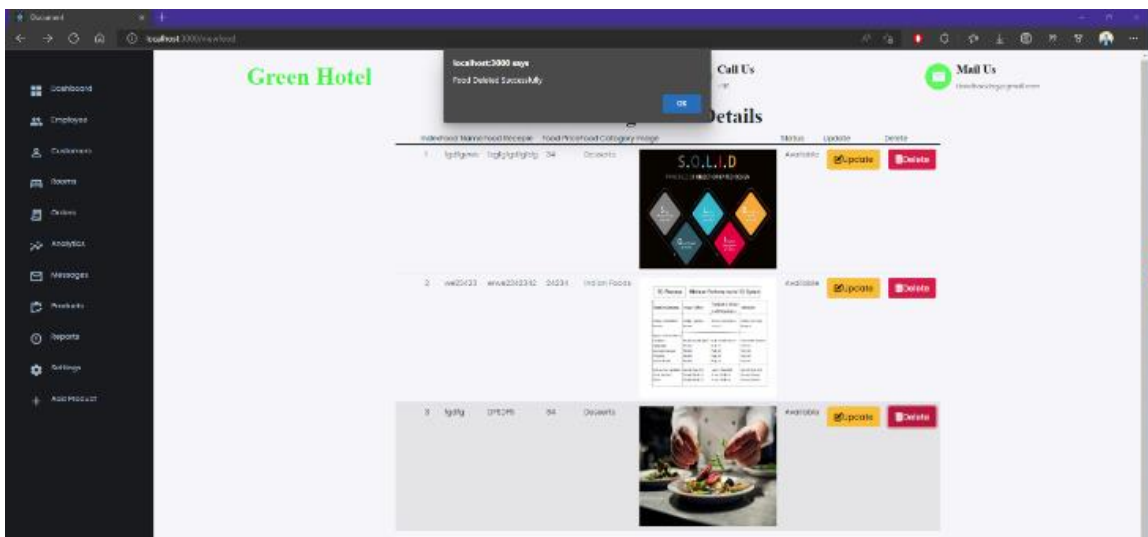


Figure 7: Delete Confirmation for Food Interface

4. Food Order Function

This function focuses on food ordering by customers. After successful login ordinary user will redirect to the home page. The ordinary user can view the food details and if interested, they can order the room by clicking the ‘Order’ button. When they click on the ‘Order’ button, the user will redirect to the Payment page where the user can make the payment. The payment is handled by a third-party service provider.

5. Hotel Employee Management

This function mainly focuses on the management of employee. In this employee management function handle main two function,

1. Employee Register function
2. Employee Attendance mark function

First of all, employees should register to the system. For that there is an employee registration page in the system, employee can navigate to that page and fill the required field in that form correctly. After that employee can click ‘submit’ button to register. If employee fill the incorrect

information to the fields system will be display error messages and employee cannot be registered till the add correct information. Those all-registered employees display in the employee details display page and if

administrator want to update or delete employee, admin can update or delete information using this employee details display page. System will display success message when employee successfully delete or update.

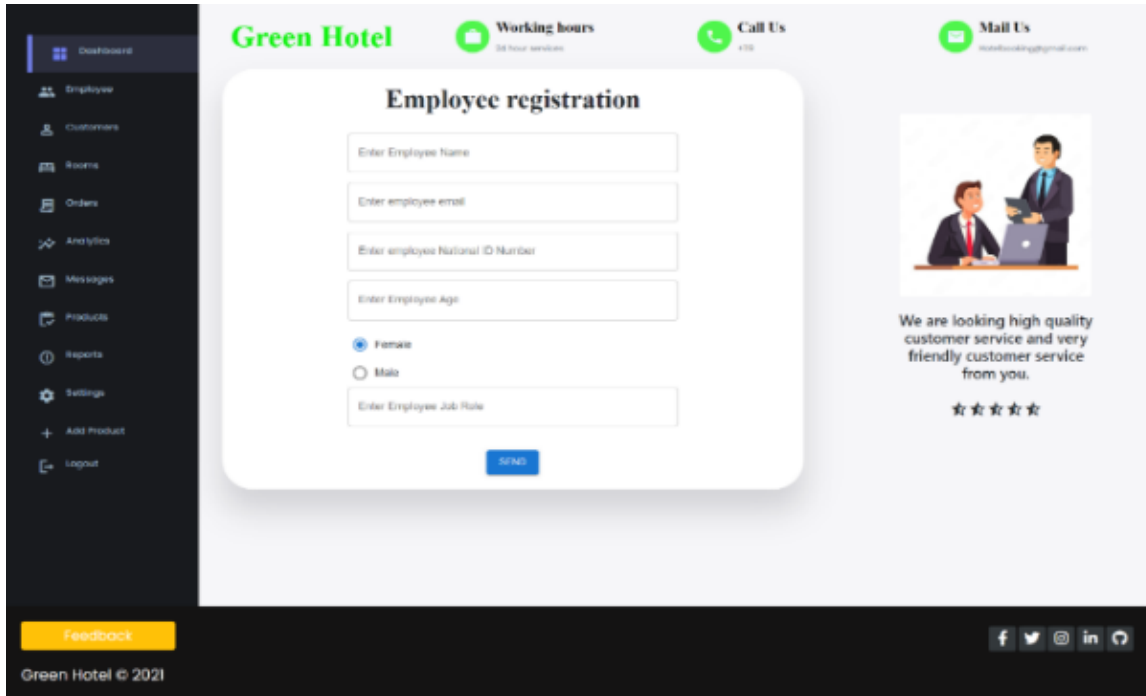


Figure 8: Employee Registration Interface

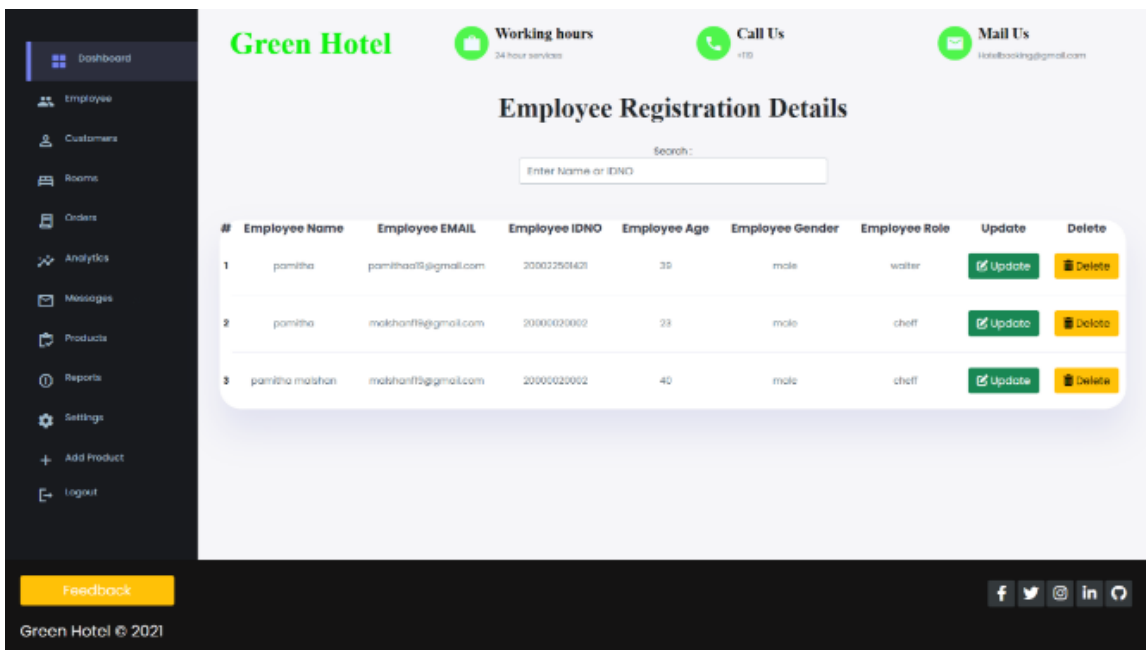


Figure 9: Employee Details Interface

Employee should mark the attendance when they arrive to the hotel. They need to fill the employee attendance mark form using their name and IDNO, current date and time are automatically gotten from the system instead of date and time manually set. Administrator can view all attendance details in attendance details view page

and if he wants find attendance in individual person he can search and find attendance easily. Attendance can delete clicking the 'Delete' button and if attendance delete success system will display Attendance Delete Successful message.

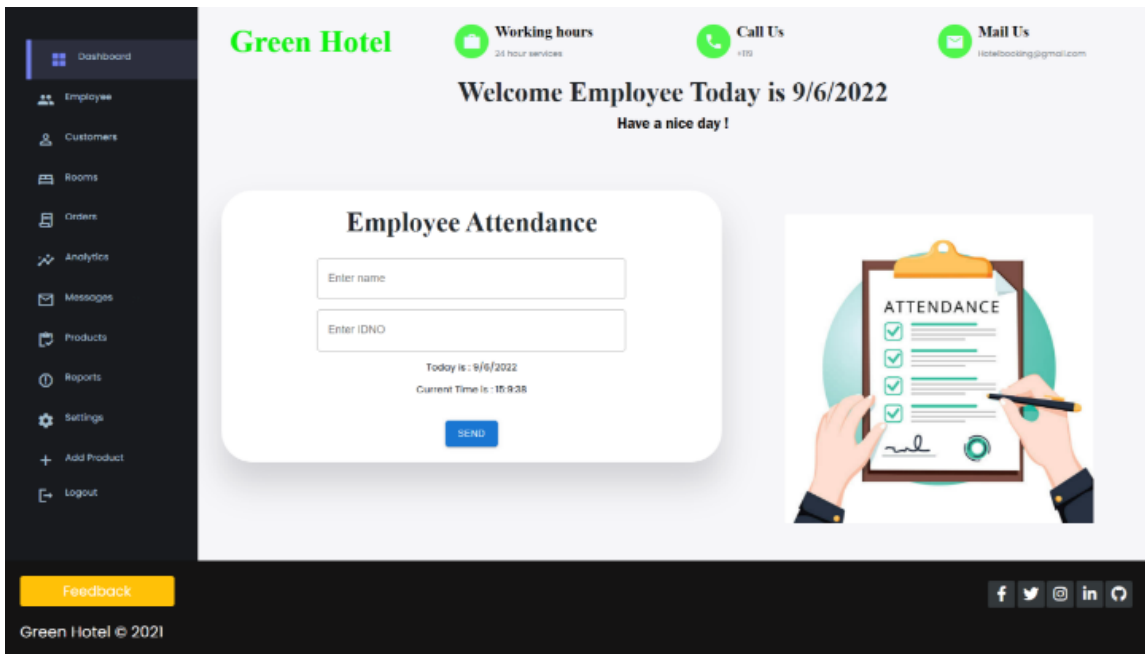


Figure 10: Attendance Mark Interface

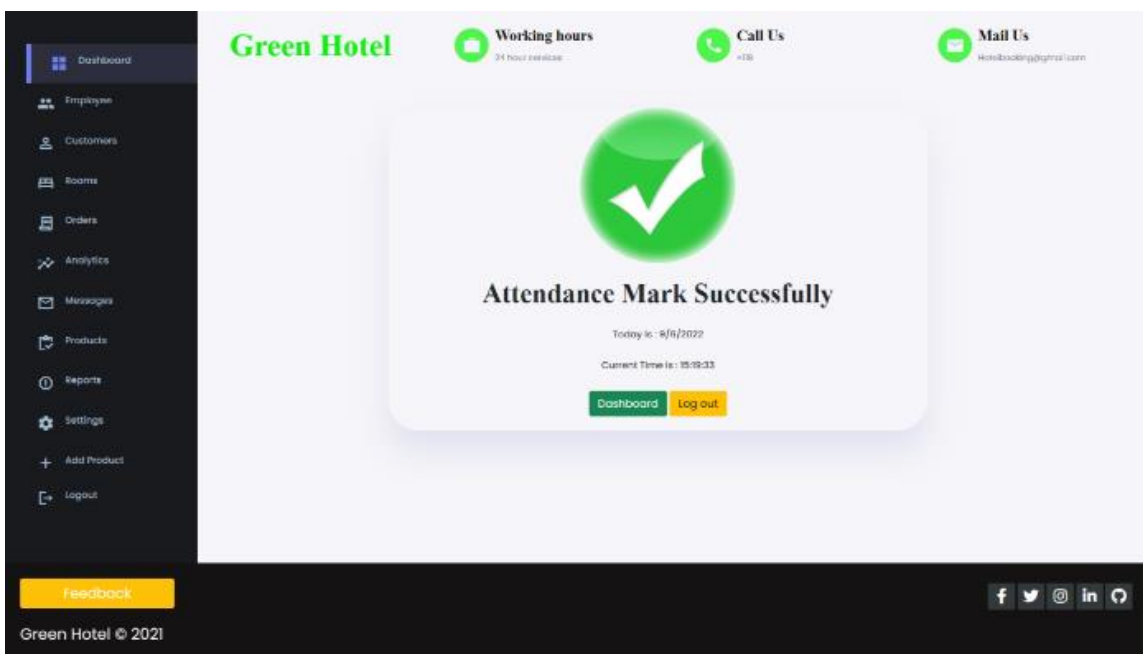


Figure 11: Attendance Mark Success Interface

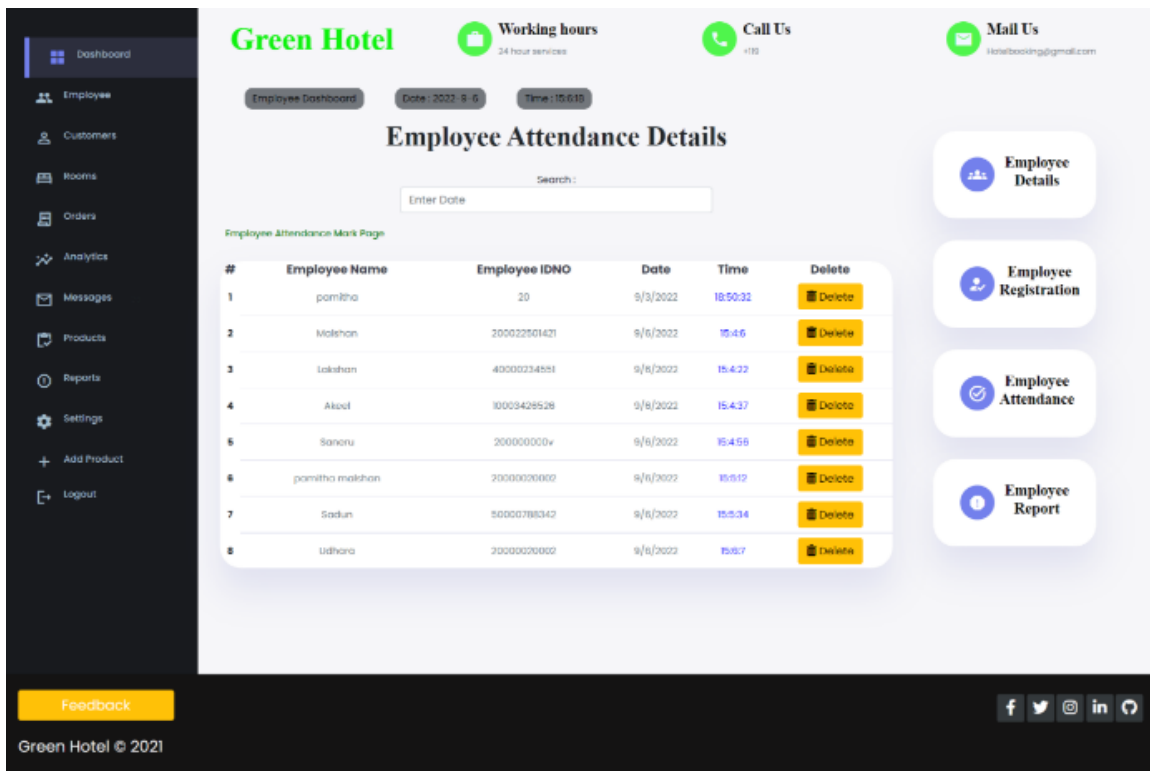
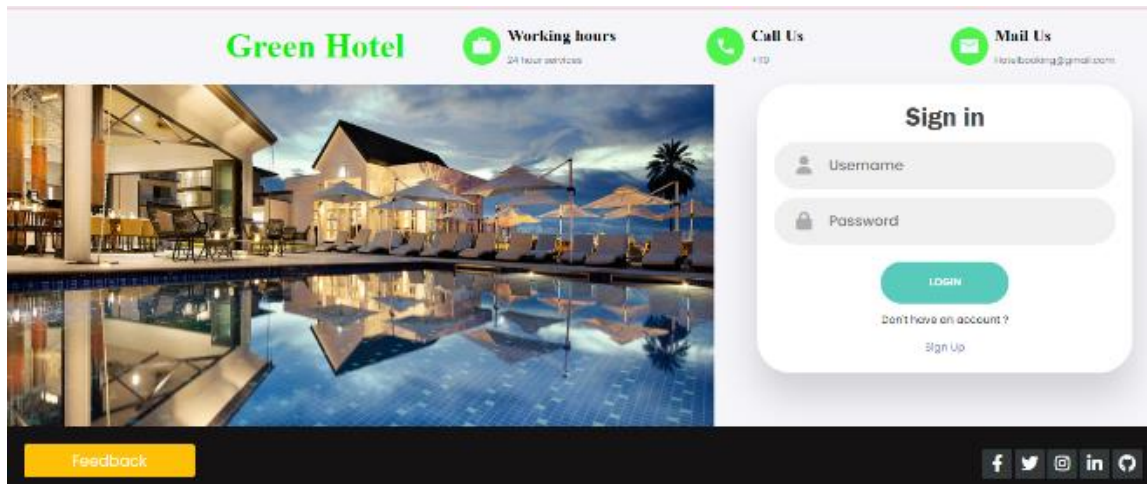


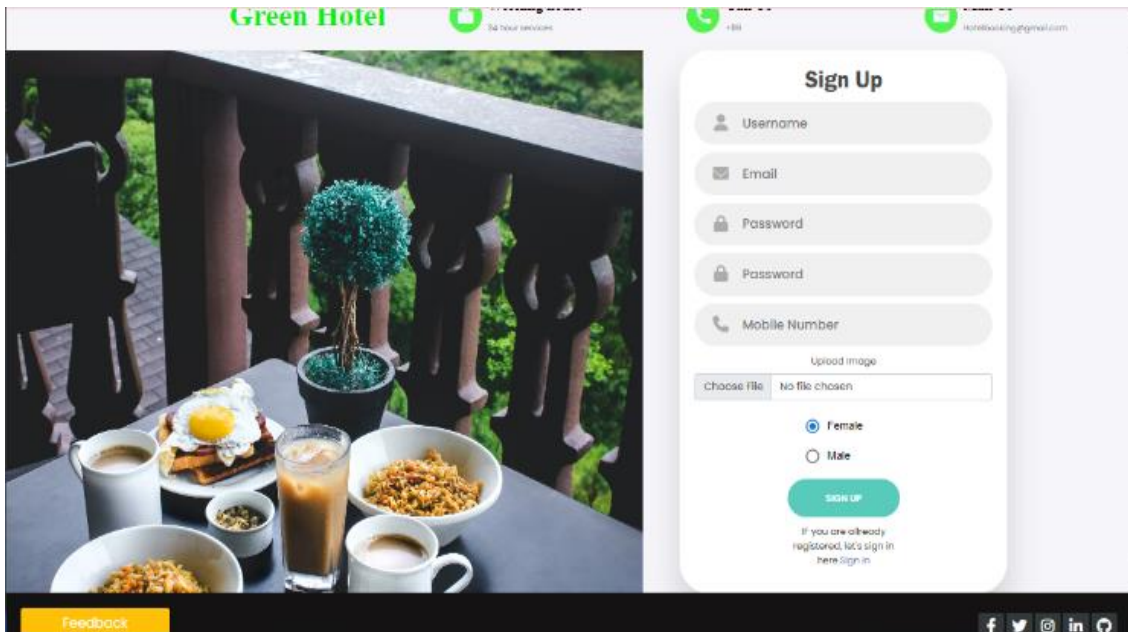
Figure 12: Attendance Details Interface

6. Customer Register Function

This function mainly focuses on the registration of customers. The new customer must register in the system before viewing the hotel details. They need to fill out the registration form using their username, email,

password, mobile number, and gender. If the customer is already registered in the system, use the login form to log in to the page. Figure14 is showing customer Sign in interface and Figure15 shows the customer Sign up the interface.

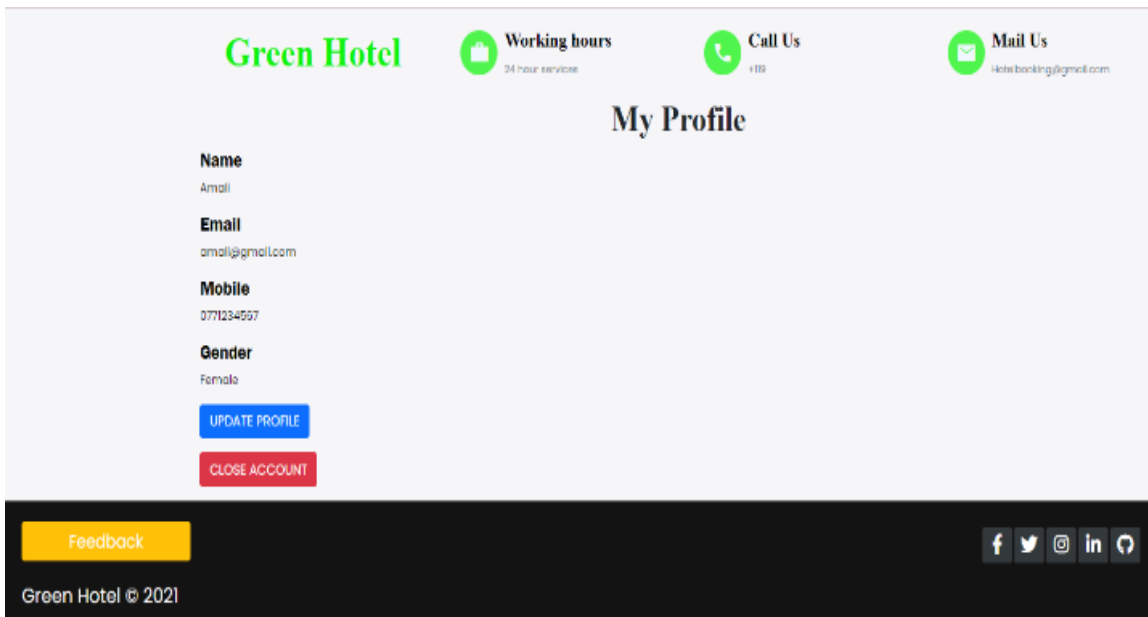




7. Customer Profile Management

This function mainly focuses on viewing profile details, updating profile details, and if not available deleting the profile details. The information related to the customer profile mainly is username, email, mobile

number, and gender. Customers can perform the update and delete operations of profiles. Figure 16 is showing My profile interface and Figure 17 is showing Update Profile details interface.



IV. DISCUSSION

This hotel system developed to reduce the hotel management facing main problems. Hotel industry remarkably busy in the holiday season, hence if they could not give good customer service customer satisfaction reduce and those customers will not back to those hotels. This system developed to reduce those main problems and easily manage the hotel system. Mainly identified problems are room booking, food ordering and employee handling. Hence this system mainly focusses those primary areas to give the solution to reduce this hotel complexity. This system developed attendance mark function, using this function actual attendance time marked because of time and date system automatically set it cannot manually add when mark attendance. If one customer reserve any room it will display as an unavailable room, hence that room cannot reserve any other customer.

For this system developed, used React as our frontend framework and express used as a backend framework. All the data store in the mongo DB cloud database as a collection. Some libraries are used to develop our system, like Axios, React-from-validation, jQuery, mongoose, multer and express. Interfaces developed are very user friendly and use icons to easily understand. Bootstrap and external CSS used to stylize the interface and icons got from the front awesome and google fonts.

V. CONCLUSION

Sri Lanka is the main tourist destination in the world. With the demand of hotel industry, hotel service also increase. There are a lot of foreigners and local travelers are travel for an entire year. Local people mostly travel in the holidays, so those days are remarkably busy in this hotel industry. Due to the demand of hotel service,

they are face lot of difficulties. Such as customer information is increasing the amount of data, reducing work efficiency and sometime service went wrong. Now a day existing systems are incredibly old and modern technology and features are not in there. This system solves most of the existing problems. The interface is amazingly simple, and icons are used so any user can easily understand. Attractive colors and images used to develop the interfaces. As the developed, the first goal is reducing the number of staff and easily manage the staff. This can reduce the booking trouble because of if any user book the room that room display as a booking room in the system so that room cannot book any other user. Foods also can book using this system. The Hotel industry is particularly important to country's economy. For this system, used high technology to improve efficiency and customer satisfaction.

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