

Design and Implementation of an Automated Hotel Management System



Priyadharshini .S, Catherine Joy .R

Abstract: *The aim of an automated hotel management system is to handle all aspects of the hotel's information and booking system. This application attempted to cover all operations that occur in residential hotels. It is all identified, from employee management to booking, floors, offices, and room type management, among other things. We sought to demonstrate how data/information is processed in hotels in our project, automated Hotel Management System. The hotel management overview was achieved by splitting the project into different modules. Customers are offered various facilities such as check-in, check-out, and entry editing, as well as advance payments. Customer has the option to cancel his or her reservation if he or she so desires. Customer Id or customer name may be used to search for any customer or employee. It is also possible to inquire about available spaces. It will produce reports for customers, employees (who work in the hotel), and a bill for the customer when the customer checks out. We've only included a few modules because our aim is to get an idea or learn more about how hotels are managed. With the addition of several more components, this type of project may be used in a variety of hotels. The efficiency of any hotel is determined by the method used to obtain and prevent information from customers' personal data for use in the hotel's various services. It has been a complex and difficult operation to manage their outcome revealed, particularly when information flow is consistent. This project focuses on creating a client-side and user interface in Java Script, as well as a backend in Java Spring to support panorama data and images.*

Index terms- Automated, Front end, Java spring, sql, web development.

Keyword: It Is All Identified, From Employee Management To Booking, Floors, Offices, And Room Type Management, Among Other Things.

I. INTRODUCTION

The aim of this project is to develop an integrated Hotel Management System that both administrators and customers can use. The admin will inform customers of the availability of rooms in various hotels, and customers will verify the availability of rooms in the desired hotel. Customers should be able to find out if a room in a particular hotel is available. They should be able to book available rooms in advance based on their needs to make their stay more comfortable.

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* Corresponding Author

S. Priyadharshini*, Department of Electronics and Communication Engineering, Karunya Institute of Technology and Sciences, Coimbatore, India. Email: spriyadharshini1975@gmail.com

R. Catherine Joy, Assistant Professor, Karunya Institute of Technology and Sciences, Coimbatore, India. Email: catherinejoy85@gmail.com

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To make their stay more comfortable, they should be able to book available rooms in advance based on their needs.

Customers' reservation information is given to the Admin. Users should sign up for the system and log in. The reservation information and regular income will be known by the administrator. Seat availability and booking information are held in a database by the hotel department. Admin and user data are kept secure in this project. The hotel's different departments may be managed by the administrator. The specifics of the customer's check-in and check-out are updated. This project is beneficial to government agencies that keep track of all users registered in a given state. The authority has the power to add hotel packages, room information, online booking, room availability, and so on.

1.1 Objective

The main goal of this project is to create a hotel management framework for use in a hotel. The system should be as adaptable as possible, allowing it to be used in a variety of hotels. To learn about the various techniques that hotels have used. We need to figure out what protocols hotels use, and then build a machine that follows those procedures. We need to look up how a hotel system functions on the internet, use our own knowledge, or speak with people who work in the hotel industry directly. The more varied your information sources are, the better the resulting method and, potentially, your rating would be. This project aims to make record updating, maintenance, and searching more user-friendly. The entire information has been stored in the database or archives, and anyone who wishes to retrieve it will be unable to do so; only authentication will be able to retrieve the correct information from the files.

1.2 Advantages of the System

The main aim of hotel management software system is to eliminate the drawbacks of manual hotel operations management. Some of the advantages of the system are

- Easy to store and retrieve data
- No requirement of pen and paper
- Easy to identify duplicate data.
- Can manage data securely.
- Easy to maintain large amount of data.
- It saves time and energy.
- User friendly environment.
- Quick response time
- Cost efficient

1.3 Client Server Web Application

Client server web application is of two parts. i.e., client and server. Here server is the central main function. Client requests information from the server. The information that is been updated in the server is distributed to many clients. Many applications rely on client- server model such as world wide web, email, network printing etc., [1], It is client which always initiate communication with servers, which is awaiting for the requests. Client does not share any resources, it only requests service from the servers. On the other hand, server host run one or more programs which shares its resources with the clients .

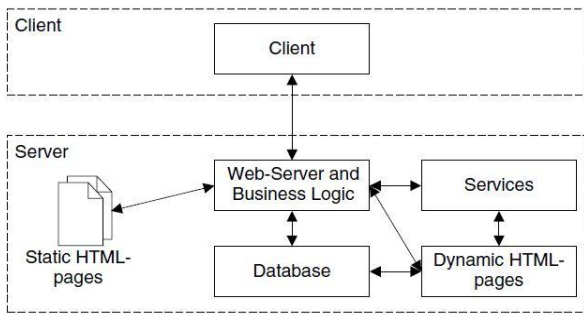


Fig 1.3 Client server web application

1.4 Front End Development

Front-end web development, also called client-side development, is the process of creating HTML, CSS, and JavaScript for a website or Web application so that a user can see and interact with it directly [2] .

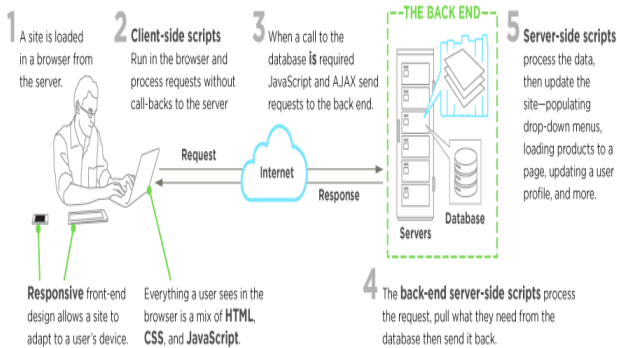


Fig 1.4 Front end development

The difficulty with front end development is that the methods and techniques used to design the front end of a website change all the time, possibly requiring the developer's continual awareness of how the field evolves. An individual typically learns HTML, CSS, and JavaScript, which run in a web browser but can also run in a headless browser, Web View, or as compilation input for a native runtime environment.

1.5 Javascript for the Front End:

JavaScript is a high-level programming language that is interactive, untyped, and interpreted. It's part of the ECMAScript language specification [3] . It is one of the three basic technologies of World Wide Web content creation, alongside HTML and CSS; it is used by the majority of websites and is supported by all modern web browsers without the need for plug-ins. JavaScript is a

multi-paradigm language that supports object-oriented, imperative, and functional programming types, thanks to its prototype-based architecture and first-class functions. It has an API for interacting with text, arrays, dates, and regular expressions, but it lacks I/O features including networking, storage, and graphics, depending on the host environment for these.

1.6 Bootstrap

Bootstrap is a Cascading Style Sheets (CSS) system that is widely used for front-end prototyping as well as the development of mobile-friendly, reliable websites that are compatible with the majority of browsers. It's also used to build web-based interfaces with a variety of mobile-responsive designs. It makes use of JavaScript (including jQuery), CSS, and HTML. To put it another way, Bootstrap is a grid-based responsive system for developing responsive, mobile-centric projects [4]. The following are some of the advantages that developers appreciate:

- 1) Quickly create a layout (fixed, fluid, and responsive)
- 2) Quickly create a form
- 3) Working grid system
- 4) Tables
- 5) Buttons

1.7 Backend with Java Spring

The first step in building a java backend is to choose a framework. After that, the spring project begins. Build the backend and do backend programming with Java spring. Spring is a platform that helps Java programs to run. Spring includes a number of modules that can be used to create a website. The layout components of Bootstrap are the most important since they influence the entire website.

1.8 Spring Framework

Spring is a framework that allows developers to decouple each software from the rest of the system. The use of dependency-injection makes swapping components or implementations simpler. Spring provides a framework of ready-to-use modules that are useful for web applications. Spring authentication, for starters, makes access control simple and reliable, and spring data is useful when linking databases. We can use Spring Initialize to start a new spring project. When we first initiate the assistant, we must choose between the project, language, Spring boot versions, dependencies, and project metadata [5].

1.9 MySql Database

It is difficult to maintain all the activities of a hotel in a paper pen mode. It can be related to material management, banquets ,house keeping , inventory, paid services etc., It is possible to easily maintain all these details with the use of MySQL database. All the details of the employees employed at the hotel are available. The customers also can book their rooms that they require on a particular date or time. The details of the check ins and check outs are also available.

II. LIST OF FIGURES

2.1 E-R Diagram:

The appropriate number of rooms are provided by each hotel. The Room No. and category are used to identify rooms. There is a charge for renting each room. The identification and sum of the cost are used to identify everything. A hotel offers a variety of services. The identification and name of the facility are used to identify that. The location of a hotel is important. Street, city, and pin code are used to locate a location.

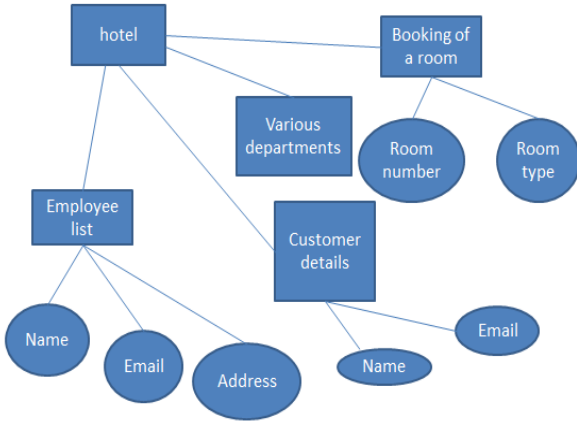


Fig 2.1 E-R diagram

The hotel room shows how to create a new room for a customer so that he or she can reserve a different room. The automated room number is produced on that screen. Finally, a room is allocated to a customer and the room records are appended to the data file after opening a new room for the customer.

2.2 Data Flow Diagram of Booking a Hotel Room

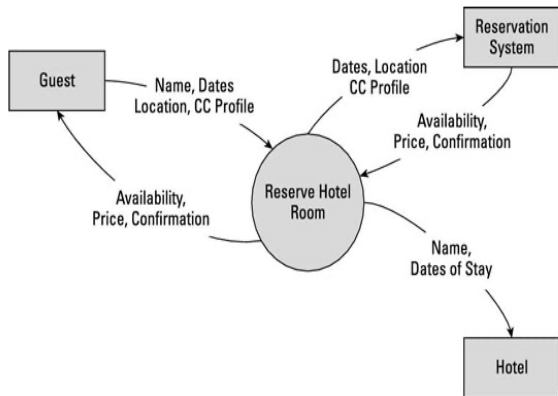


Fig 2.2 Data flow diagram of booking a hotel room

This diagram for booking a hotel room explains how to open a new room for a customer so that he/she can assign a separate room. In that screen, the automatic room number is created. After opening a new room for the customer, finally a room is assigned to a customer and the room records are appended in the data file.

2.3 Customer Check-In Diagram

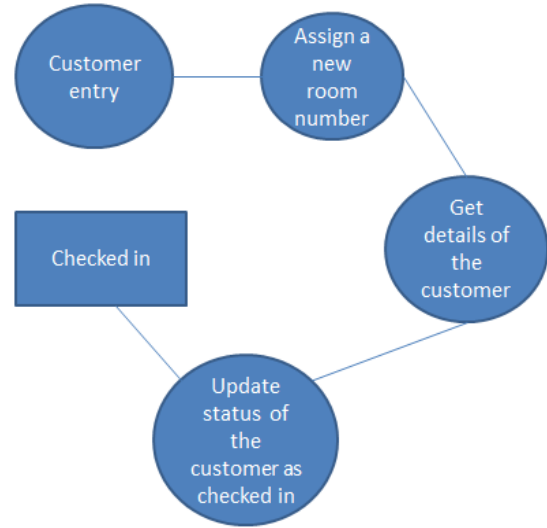


Fig 2.3 Diagram for check-in of a customer

The check-in customer diagram shows how a customer is admitted to our hotel after entering all of his personal information, such as name, address, phone number, and age, and then is allocated a room.

2.4 Diagram of Check Out of a Customer

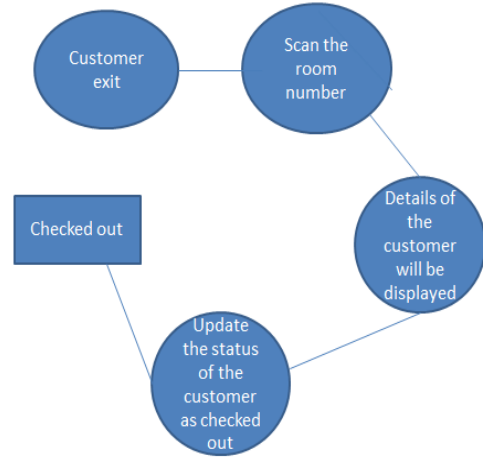


Fig 2.4 Diagram of check out of a customer

As the user enters his room number, the same room number will be checked in the database; if the room number matches in the database, the customer will be checked out of the database and the record of the checkout will be moved to another table of the database so that Hotel Management has a record of customers who have checked out to satisfy his legal obligations.

III. LIST OF TABLES

3.1 Booking Details Table

Booking date	Number
Booking number	Number
Booking status	Char
Check in	Char
Check out	Char
Guest id	Number
Guest name	Char
Room type id	Number
Room type name	Char
Kids	Number

This table is for storing all data about booking of a room including room number, date of the room booking, guest name, number of kids etc

3.2 DepartmentDetails Table

created_by	Char
created_date time	Date
modified_by	Char
modified_data time	Date
Description	Char
Name	Char
Status	Char

This table is for updating the status of various departments of a hotel so that we know whether the department is currently active or not.

3.3 EmployeeDetails Table

Address	Char
Country	Char
Confirm password	Char
City	Char
Email	Char
First name	Char
Last name	Char
Gender	Char
Mobile number	Number

This table is for storing all details of an employee including his name, mobile number, address etc.,

3.4 Floors Booking Table

created_by	Char
created_datetime	Number
modified by	Char
modified status	Char
Name	Char
Status	Char

This table to update the status of the floors whether it is vacant or not

3.5 Guest Details Table

Address	Char
City	Char
Confirm password	Char
Country	Char
First name	Char
Last name	Char
Dob	Date
Email	CHAR
Mobile no.	Number

This table stores all information about guests including mobile number, country, address etc.,

3.6 Payment Details Table

Created_by	Char
Created date time	Date
Modified by	Char
Modified date time	Date
Amount	Number
Date	Date
Guest id	Number
Guest_name	Char
Invoice number	Number

This table stores all data about amount payment, date on which the amount paid, guest name, guest id etc.,

3.7 Room Type Details Table

Created_by	Char
Created date time	Date
Modified_by	Char
Modified_date time	Date
Floor	Char
Room type	Char
Status	Char
Floor_id	Number
Room number	Number
Room type_id	Number

This table is storing room type details including room type id, room number, floor id etc.,

IV. RESULTS AND DISCUSSION

Displaying Web Pages

A web page is a specific collection of content provided by a website and displayed to a user in a web browser. A website typically consists of many web pages linked together in a coherent fashion.

4.1 Admin Profile

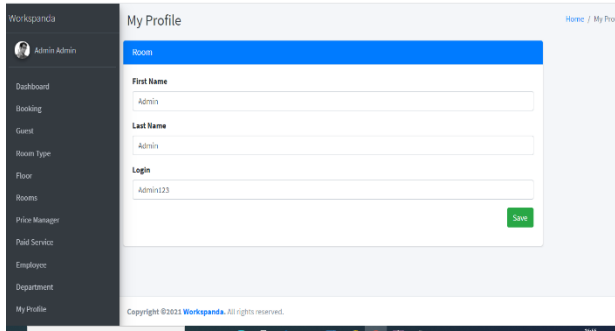


Fig 4.1 Admin profile

The administrator has to login first in order to make changes to the Hotel Management by adding, deleting or modifying the data in the hotel management database. The admin is responsible is maintaining all details and security.

4.2 Booking of a Room

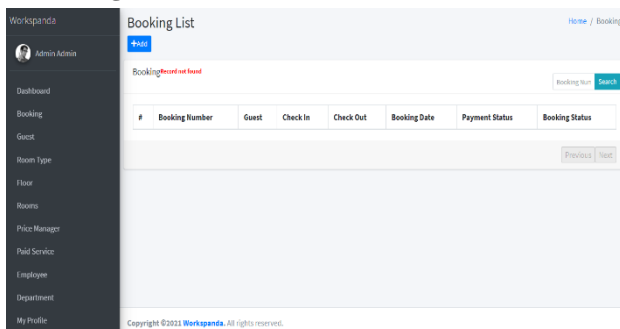


Fig 4.2 Booking of a room

To reserve a room for (oneself or someone else) at a hotel. One has to record register his details esp. one's arrival at a hotel. In that screen, the automatic room number is created. After opening a new room for the customer, finally room is assigned to a customer and the room records are appended in the data file.

4.3 Guest List

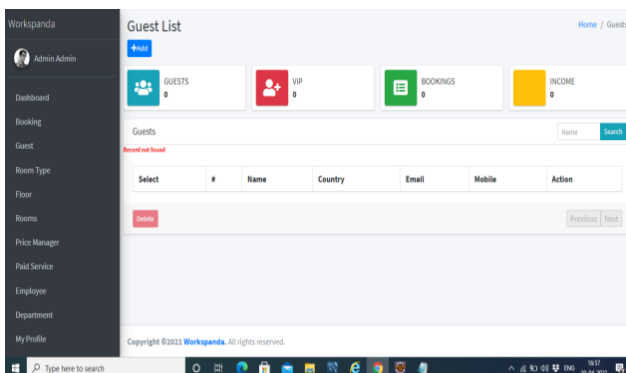


Fig 4.3 Guest list

The number of guests, rooms, or both, can be added to a Hotel Booking request to book available rooms that meet the criteria. The Guest Information element is used to indicate traveler numbers and type for both the booking request and response.

4.4 Floor Booking

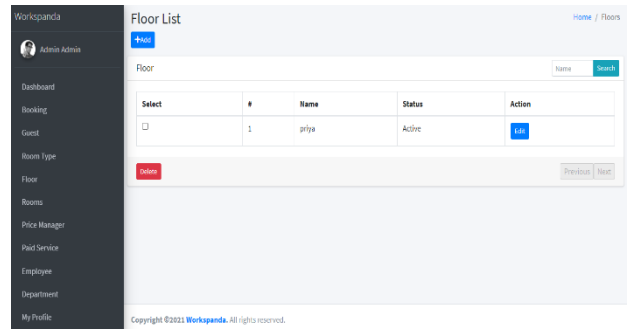


Fig 4.4 Floor booking

Add / update Total number of floors in the building before adding any floors for the room. Floor number in the building where the room is located object. The floors added should be consistent to the room location code in the room location.

4.5 Room Type List

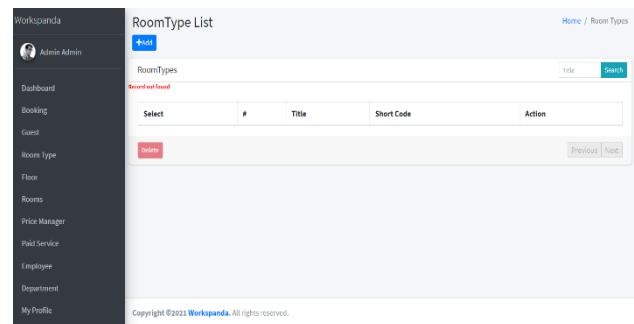


Fig 4.5 Room type list

Under Room type, you'll find a drop-down menu where you can select the corresponding room/unit type. Under Room name, make sure to select the name that matches best. Double-check the info is correct, then click on save button to save the updated details.

4.6 Paid Services

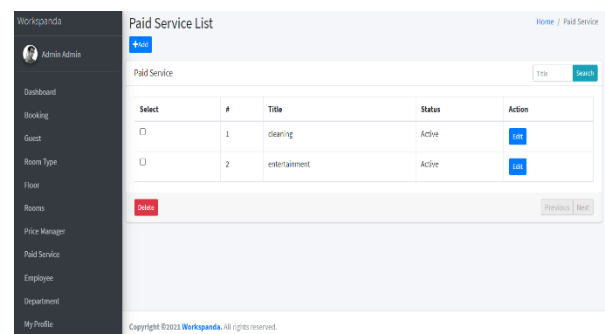
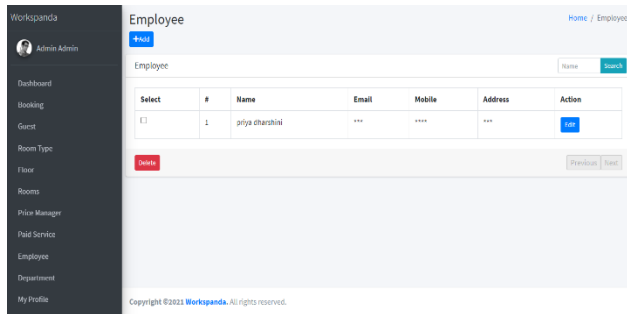


Fig 4.6 Paid services list

Paid services includes Shops (souvenir, grocery), vending machines; Entertainment Infrastructure (Disco, Casino, gaming machine, billiard room); Sightseeing service, services of translators; Organization of selling tickets to theaters, Circus, concerts, etc.;

Transport services (ticket bookings for all types of transport, order of vehicles on the application of guests, call taxi, car rental); Purchase and delivery of flowers; Sale of souvenirs, postcards and other printed products.

4.7 Employee List



Select	#	Name	Email	Mobile	Address	Action
<input type="checkbox"/>	1	piya dharshini	***	****	***	Edit

Fig 4.7 Employee list

Enter an employee and click on save button to save the employee details. Rather than using the Location Filter to find employees, you may find it more direct to enter the employee name in the Smart Search console. Reorder the employee: To change the value by which the data in the Employees is sorted, click the rectangle in the column header of the field you wish to sort by.

V. CONCLUSION

This project is designed to fulfill all the requirements that are necessary to manage a hotel. It has been developed using HTML, CSS, Java Script for front end and using Java spring for back end keeping in mind the specifications of the system. We have used MySQL for hotel database management. For designing and planning the system we have used simple data flow diagrams. Overall, this project teaches us development of a successful website and database management.

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AUTHORS PROFILE



S. Priyadarshini, completed her bachelor's degree specialized in Electronics and Communication engineering from Karunya Institute of Technology and Sciences, Coimbatore, India. Her research areas include artificial intelligence, embedded systems. Email: spriyadarshini1975@gmail.com



R. Catherine Joy, is presently working as an Assistant Professor at Karunya Institute of Technology and Sciences, Coimbatore, India. She has a teaching experience of 12 years and has published more than 15 research publications in refereed International/National Journals and International/National Conferences. Her research areas include Bio medical signal processing. Email: catherinejoy85@gmail.com