

# Development of an Online Hotel Reservation System in Sri Lanka using Cutting-Edge Technologies

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## ABSTRACT

The hotel management system is an important aspect of contemporary hotel life since it assures the hotel's correct operation, making it efficient and enabling the opportunity to reserve a room online. It contains information on the rooms and the hotel as a whole for the staff and administration. This technology eliminates the majority of the paperwork, making it a must-have tool for any modern hotel. The present reservation system is analyzed and improved. The purpose of this paper is to offer a thorough examination of the system. Make an effort to enhance the existing condition in the hotel management industry. In addition, a modest prototype built using cutting-edge technologies MongoDB, Express.js, React.js, and Node.js (MERN stack) will be discussed. This will showcase how the system would operate from the client and administrator sides. The MERN stack is an excellent choice for hotels wishing to develop high-quality web applications. In fact, this stack enables the rapid development of online applications and software in addition to leveraging high-performance and customized technologies. The mentioned system was shown to be significantly more affordable, an open-source program with superior performance, and UI rendering by using these technologies. In addition to assessing the value of an online reservation system for Sri Lanka's hotel industry, this paper will examine how the environment's components should be set up, integrated, and built, as well as how the requirements, design, construction, and test phases of the application development lifecycle should be combined to create an overall system and how a developer would actually go about creating applications that would be used in practical situations.

**Keywords**— Hotels, E-Tourism, Business, Reservation, Technology, MERN Stack

## I. INTRODUCTION

The hotel sector, like any other, provides owners and visitors with socio-economic opportunities. Its mission is to provide clients with hospitality services. Tourists, businesspeople, foreigners, travelers, and other visitors may be among this clientele. Clients are sometimes restricted in their capacity to find a place to stay the night because it is typical to seek out a hotel after you arrive, walk inside, and enquire about the availability of accommodation. If there

are no rooms available, you must proceed to the next closest hotel and try again. Therefore, what happens if you travel about late at night in quest of a place and all nearby hotels are completely occupied? You may be lucky enough to have the hotel's contact information and can call them to arrange a stay. However, do the hotel employees make an effort to reserve a room for you? You would be lucky to obtain a room reserved for you. They are more likely to service customers who stroll in as opposed to those who call to reserve a room. Other times, if you have friends or family members in the region where you wish to reserve a room, they must go and check on your behalf. No structure in place connects the hotel and a client to verify that the client has booked a room and, more significantly, that client has the assurance of receiving a room. Customers may be victimized as a consequence of this, especially if it is late at night.

Moreover, when reserving a stay at a hotel unexpectedly, the customer must meet with the receptionist to learn more about the hotel's amenities. Next, the client must complete the pro forma that the hotel authorities have provided, pay the specified sum of money, and be given a room key for the booked room. However, clients most often seek greater security and privacy[1].

Furthermore, hotel staff members should maintain records of each reservation and the user's data details, etc. These details are collected manually, and as a result, mistakes are bound to take place. There is also the issue of security and confidentiality. This process makes the staff members work hard. Because of this, we have implemented a CISP hotel management system for CISP hotel. Our hotel was founded to provide lodging and culinary services for visitors, residents, and foreigners visiting Accra to trade, rest, and dine and those on holiday. This online system can make the staff work more efficiently and smartly. According to the system we have implemented, there are four main functions: user management, event management, room management, and reservation management. When a client visits the CISP hotel management website, they can see the home page. From the homepage, clients can get a basic idea

about the hotel and view available rooms and room details for each room category from the room page. The client can also view events taking place in the hotel. Moreover, the event details are listed for each event. These are the things that a client can do without logging in to the system. The system provides a login and registration facility for any customer. Customers should register with the system to make a reservation. In the registration, a link will be sent to the user's email address to verify the user. In case any user forgets the password, there is a forget password option to change the password in the system; when a client uses this option, the system will send a link to the client's email address then the client can log in to the email and click on the link from that client can give a new password. After making a reservation, the user will receive an email confirming the reservation and the verification number.

Also, staff members can log into the system as admins and do their work. The admin can add records, update, view lists, view each, delete, search, and generate records using the four functions mentioned above. All the details that the admin adds to the system are a direct connection to the database, and because of this, we can ensure that every detail will be secure in the database because nobody can access the database from outside. Furthermore, by using the system, we can minimize the paperwork, which will help reduce environmental pollution. Making things automated will be beneficial to the client and staff members, as it will make things easy. Therefore, we developed an online hotel management system that would permit clients to book anything they need from their current location before stepping into a hotel. The system should make it simple to access, retrieve, and report on information.

## II. RELATED WORK

This paper emphasizes the importance of an online reservation system in the hotel business. Technology's advancement has paved the path to a revolutionized world. Everything existing in the world now depends on this technological advancement. This modern digital age has made everything instantly accessible. It has made an impact on many aspects of our everyday lives, both personally and professionally. They have penetrated every industry, altered customer expectations, and altered the way we communicate, shop, travel, and more. Moreover, the business world is not an exception. Customer expectations have significantly shifted as a result of this revolution's emphasis on quick satisfaction. An online hotel reservation system is one of contemporary hotel companies' most crucial technological expenditures. Serving as many clients as possible while leveraging tech-based services helps to achieve the primary goal of being profitable in the hotel industry. Also, it offers a worldwide marketplace, improving the hotel(s)' visibility and enabling them to reach as many potential customers as they can.

Some literary works have addressed this necessity, and the authors have elaborated on how shifting from manual to online has positively affected the hotel business.

Reserving a hotel room manually means a customer has to visit the hotel and contact the hotel management to do the needful. The need to personally visit the hotel to make a reservation or inquire is inconvenient, time-consuming, and expensive. Based on this, it is shown that developing software that is an online system for booking hotels and providing hotel inquiries spares the customer from having to visit the hotel for a booking [2]. Additionally, it necessitates verbal communication and physical process recording from the hotel's point of view. For instance, the receptionist has a lot of paperwork to complete as a result of the numerous reservations she must make. Some details of the receptionists' interactions with customers have to be forwarded in other directions; for example, details of the number of days of reservation booked by a customer have to be forwarded to the account section for billing. As a result, the information retrieved depends on the document referred to [3]. This highlights the importance of a centralized system where all pertinent information is kept and accessible in accordance with permission.

Furthermore, Shakira [2] has also outlined some major significances of the study, which was carried out to identify the need for an online hotel reservation system by every hotel. They include assisting guests in saving time by making reservations online while relaxing at home, assisting hotel managers in knowing how many guests they have daily by providing daily reports, and assisting staff in keeping track of reservations without the need for paperwork.

Aside from the sentimental requirements of an online system, some literature has revealed the critical areas to consider when developing the system.

The structure of the website should be well-organized and easy to navigate through. Customers should be able to identify the functionality of the system at a glance and find the necessary details they are seeking. The website's content should always be up to date. These are critical to consider when developing such a system, as information is critical for potential guests. The system must ensure that potential guests receive accurate information from this website, such as room rates and hotel locations [1].

Similar to other works, the proposed system is developed considering a hotel which uses a manual booking system to record customer reservations and wants to advance in the competitive digital world. Eventually, become a digital shop available around-the-clock so that anyone in the world can make a reservation. In manual systems, you can't always accept reservations smoothly, and this will cause some reservations to be lost. With the proposed online system, the increased availability will improve the efficiency of direct reservation and ensure that none of the potential reservations is lost.

These related works not only validated the need for an online reservation system for every hotel but also outlined how a merging online hotel reservation system can give a complete spin to the business strategy. Newer breeds of hotel reservation systems are tuned in to meet the demands of today's customers and offer endless benefits. Given some of them:

An online system accelerates the reservation process by transforming a hotel's website into a self-service online store that is open 24 hours a day, seven days a week. It will provide full authority over the reservation system and the user experience enabling direct reservation.

Hotels will be able to gain additional profit due to the large span of customers as a result of exposing the hotel to a global audience rather than a specific geographical area.

Additionally, the hotels will be able to tailor their offerings and stand out in the hotel industry. The website aids in providing customers with high-quality, personalized service. It is possible to tailor the hotel's target market by changing room styles, adding unique benefits, offering exceptional deals, etc. The website is a showroom, where customers can browse, be inspired, and make a reservation without having to interact with a third-party agent or one of the salespeople. Thus, communicate directly with the hotel.

The ultimate goal of this is to establish a devoted client base for a certain hotel network. Using an online hotel reservation system is the most efficient and lucrative method to manage bookings while providing a top-notch guest experience. As a result, a number of customers find the service to be satisfactory.

Having a strong customer base boosts the hotel's brand image. Creating a unique brand image is crucial for creating a successful business in the hotel industry. Having a brand highlights the hotel's distinctive value proposition and encourages trust and loyalty in the hospitality industry. To ensure this, a website is the best place to start.

The study thus aimed to create an online hotel reservation system that would allow customers to book whatever they needed from wherever they were before lodging in the hotel. The system is designed to make information and reporting more accessible and retrievable. Any hotel would be more competitive in the hotel industry if such a system was in place.

### III. METHODOLOGY

The "how" of any specific piece of research is known as the methodology. It is a methodical, logical strategy for solving a research issue. Utilizing a systematic approach, research issues are solved through data collection using a variety of approaches, data interpretation, and research data findings. This section will offer a full overview of the study undertaken, from selecting an appropriate technological stack to testing the system to ensure the production of a quality system.

#### A. Technology

##### 1. MERN Stack

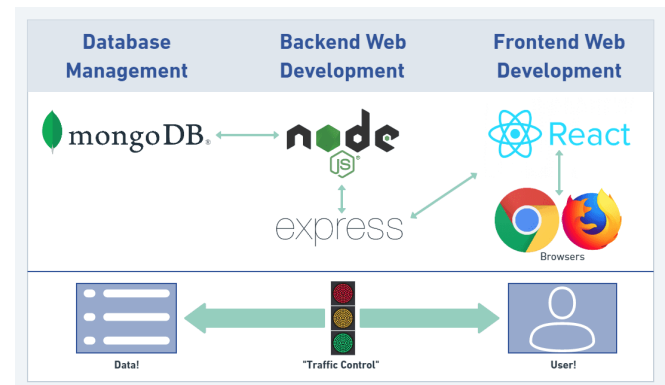


Figure 1: MERN Stack Framework

MERN stack is an acronym for MongoDB, Express, React, and Node, the four main components of the stack. The MERN architecture makes it simple to build a three-tier architecture (front end, back end, database) purely out of JavaScript and JSON. There are many advantages to using 3 tier architecture like this one. its improve scalability and it is a very important feature of like these systems. Because normally hotels have peak seasons and off-peak seasons and when the system lacks performance during that peak seasons, the system can be scaled according to the load. And easy to load balance. Since the system can be deployed on many machines. Security is one of the main things in these kinds of systems because there is a lot of personal information. Using this architecture type we can improve the security aspect of our system since the user does not have direct access to the database therefore it is hard to obtain unauthorized information from the database. Hotel systems are fast pacing systems therefore business logic can be easily managed and can improve data integrity. Overall 3 tier architecture is easy to maintain and modify in long run. sub-packages.

1. MongoDB — Document database (NoSQL)
2. Express(.js) — Web framework for Node.js
3. React(.js) — A client-side JavaScript framework
4. Node(.js) — The best JavaScript web server

MERN was developed to streamline the application development process. Each component of MERN has a distinct functionality of it's own.

##### 1.1 Express JS

Express is a Node.js web application framework with a wide range of functionality for developing online and mobile apps. Express was designed to develop APIs and online apps with simplicity. It cuts coding time in half while still producing web and mobile applications.

##### 1.2 React

ReactJS is a well-known JavaScript front-end library. User Interface is one of the most important parts of the system. Because User experience is everything in the business world system should perform well to attract users to the system. React is a popular option to do those things. React uses Virtual DOM therefore it will

compare the previous state and update only the item that needs to be updated, and because of that, it will improve the performance greatly.

### 1.3 Node

Node.js is a JavaScript runtime environment that is open-source and cross-platform. It is a widely used tool for nearly any type of job. Node is mainly known as very performance oriented. Node.js can manage thousands of simultaneous connections with a single server more efficiently than other approaches. Hotel systems load can handle easily.

### 2. Bootstrap

Bootstrap is a large library of reusable code that is extremely helpful for developers. It also allows developers to simply develop responsive designs. Because of that developers can easily implement websites to work efficiently throughout a variety of products.

### B. Hardware Requirements

The proposed system's minimum requirements

- CPU: Core i3 or more
- RAM: 4 GB or more
- Graphic: Intel HD Graphics or more
- Display Resolution: 1024×768 is the minimum.
- Disk Space: 10GB
- Internet: Good Internet Connection

### C. Tools

Selecting the appropriate tools is the next crucial stage in creating a quality system. With the correct tools, work can be done more quickly and effectively, and they may also help in avoiding making mistakes. Certainly, a variety of factors play a role in deciding which tools to utilize for a certain project. The specifications, commercial objectives, and other expectations of the project will determine which tool is best to use because each has advantages and disadvantages.

In the discussed system, the selected set of tools are

#### 1. VS Code

It is a lightning-fast source code editor which supports a large number of languages. In MERN stack technology the majority of people use VScode. For developers, there are many advantages to using VScode. As an example, connecting to GitHub or uploading the project to GitHub is very straightforward in VScode. Other hand it has a lot of useful extensions to improve productivity and efficiency. So, using VScode we can cut the development cost and gain productivity.

#### 2. GitHub

GitHub is a platform for collaboration and version control. The hotel management system is not a simple system to develop. Because there is a lot of hidden business logic and features to implement. So normally there is a team of developers who develop a system like this. Using GitHub as a version controller is very convenient. Team members fix and can parallelly work on the same project. Doing that saves time and efficiency.

#### 3. Azure Board

Azure Boards is a well-known solution for organizing work for specific software projects. In addition, the software project's tasks, problems, and features were tracked using Azure Board. It enabled the team to stay in sync with all the essential code modifications related to the work.

#### 4. Selenium

Selenium IDE (Integrated Development Environment) is a tool to test web applications by developing automated test cases. Testing is an essential part of a maintaining good quality product. Especially in this type of system, sometimes the user is not a tech-savvy person. Therefore, the system should work properly as users expect and should not surprise by errors or bugs. On the system under discussion, Selenium's automated testing feature was successfully applied to ensure this. This method of testing allowed developers to save a significant amount of time and effort.

#### 5. SonarQube

SonarQube provides a continuous code quality inspection to do automated inspections with static code analysis to find defects and code smells. Using this tool ensured that the UIs (User Interfaces) are clean and more readable and the code itself is clean and readable to any developer. Additionally, it assisted developers in identifying minor flaws they may have overlooked while coding. It decreased the risk associated with software development. And automatically encountered problems in the code and informed developers to resolve them before releasing it to be used in production.

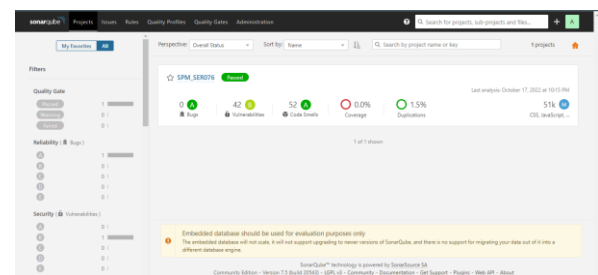


Figure 2: SonarQube overview

#### 6. Postman

Postman is a tool to design, create, test, and iterate on APIs (Application Programming Interfaces). It ensures that the implemented function gives the desired output, and it is well structured, and reliable, returns the correct response and also checks the time taken to retrieve and authorize the data by API. It was quite beneficial for developers in the creation of the system under discussion.

### D. Planning

Software development planning is a process that aims to improve the reliability of software deployment by collecting requirements, designing, and developing software, and doing research and development to identify the unknown or risky components of the project.

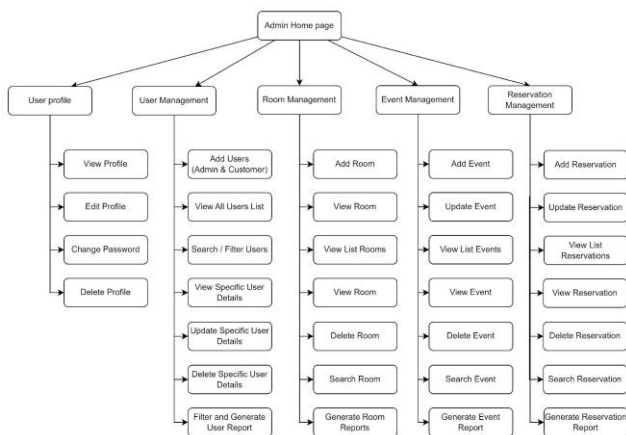
After brainstorming about the requirements, we found out this system has two leading registered user roles and one unregistered user.

1. Admin
2. Customer
3. User (Unregistered)

We decided to break the whole system into four sub-systems Because of easy implementation and development.

1. User Management System
2. Reservation Management System
3. Room Management System
4. Event Management system

**1. Admin**



**Figure 3: Admin Functionality**

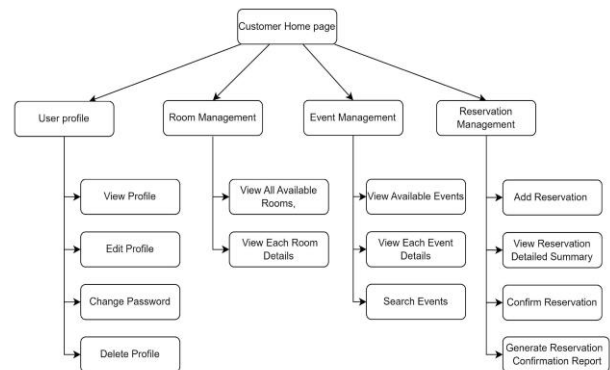
An admin is a vital role in every system. In the system under discussion, hotel management serves as the system's administrator. Therefore, it is essential that the administrators have full authority to manage the functionalities of the hotel reservation system.

An administrator is typically tasked with a number of responsibilities when it comes to a complicated system, like a hotel reservation system. An ALL-IN-ONE (integrated) hotel reservation system can be utilized to lessen this strain. It provides the flexibility of managing all the administrative work all in one place. It significantly decreased the amount of time spent on manual administrative activities by allowing the management to focus on more crucial responsibilities, including serving the customers. This saves time in practically every aspect of the business while also increasing employee satisfaction and productivity.

Despite having complete authority, administrators shouldn't interfere with customers' privacy. No matter what, the system should always make sure that the customer feels secure using it. As a result, the system allows administrators to perform basic create, read, update, and delete tasks in the required regions. The system should have a main admin who can manage other admins as well. Typically, this admin is given power over not just system functionality but also other admins. like adding, updating, viewing, or removing other administrators. To handle various regions, the main administrator can create several

admin roles as well. Admins can also use the system to produce useful reports for their convenience. Additionally, the technology allows the logged-in user to alter their personal information. Admins can alter basic client information as well, but not sensitive data.

**2. Customers**

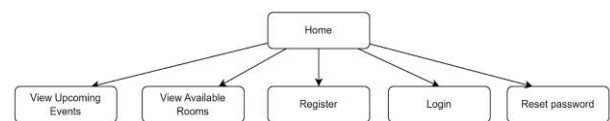


**Figure 4: Customer Functionality**

The customer is an outsider who is unfamiliar with the system. As a result, the system should offer a seamless flow for them to grasp and continue in a timely manner.

The customer experience is fundamental to hospitality and a primary motivator of loyalty and personal recommendations. As a result, a customer should not be both overwhelmed and underwhelmed. The described system is designed in such a manner that clients may easily comprehend everything from the user interface to the system's operation. Customers can accomplish everything they want without having to go through the system trying to figure out how to do it since the user interface is really simple but very straightforward.

**3. User (Unregistered)**



**Figure 5: User Functionality**

Although a registered customer has special access to the system, this should not prohibit other potential customers from utilizing it. The system has to entice new users in a way that encourages them to return later, gain access, and finally register. These visitors should be able to obtain a sense of the hotel by simply browsing the essential features rather than being required to register or log in.

**E. Back-End Planning**

An entity-relationship diagram, often known as an ER diagram, is required to model the data stored in a database. It is the fundamental design upon which a database is constructed. ER diagrams define the types of data that will be stored: entities and their characteristics.

They also demonstrate how entities interact with one another.

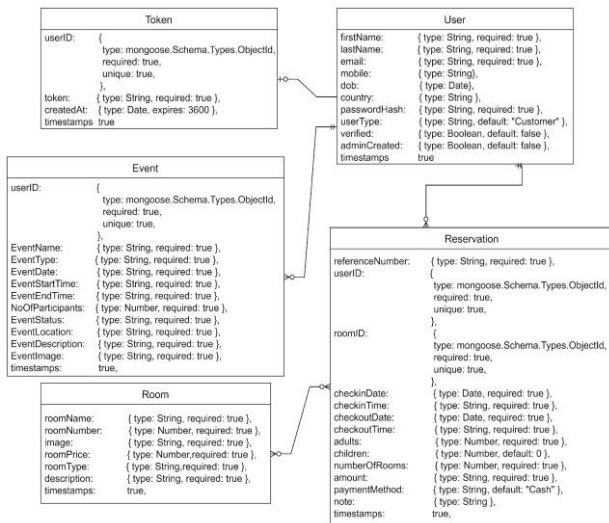


Figure 6: ER diagram

According to this ER diagram, The Token entity stores the user’s Email verification code and holds a relationship with the user entity to verify the specific user. The User entity for storing details about the registered user details is one of the leading entities in the system. Event entity stores details about the event that the admin adds to the system and holds a relationship with the user entity to hold the details about the customer. Room entity for storing the details about the available rooms in the hotel. The reservation entity stores details about the reservation that customer put, and its hold relation with the user entity holds the details about the customer and a relationship with the room entity for hold details about the rooms that the customer reserve.

**F. Back-End Processes**

A back end is an essential component of a wide range of solutions, including web apps, mobile apps, and IoT ecosystems. Back-end development aims to provide server-side logic, set up databases, and establish communication between a back end and a front end.

**1. User Registration**

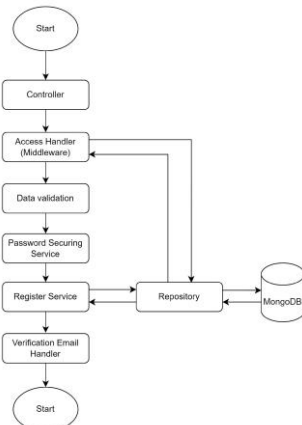


Figure 7: User Registration Backend Process

In 7th figure briefly shows how the backend will handle or process registration requests from the front end. The first controller gets the request and validates the request. Then the access handler (middleware) receives the request, and it will check that the user is not registered in the system. after that, it reads the body data and validates the request body to check if the request has valid details for registration. After that user password will be secured using encrypting, hashing, and salting. The user service will store the data in the database using the repository. Then verification Email handler will generate a verification link for the newly registered user to send. Finally, if all the functions work correctly, the backend will respond successful message with a "check email for the verification" message. Otherwise, the backend will respond with a specific error message

**2. View specific event as a popup**

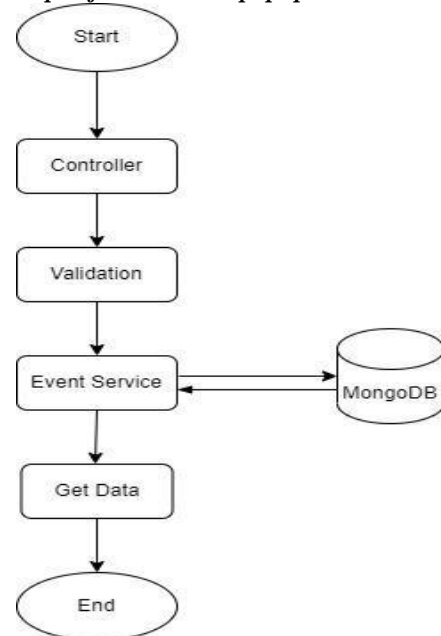


Figure 8: View specific image as a popup

To fulfil the purpose of viewing the details of either a user, a room, a reservation or an event the system uses a pop-up view. Figure 8 demonstrates the backend process of viewing an event in pop-up mode. Pop-ups are extremely useful for the smooth rendering of the front-end pages (UIs). It doesn’t require navigating to another page, instead displays a small window on top of the existing window on the screen. The fact that everything is contained on a single screen makes it easier for users to continue where they left off before the pop-up window opens. When selecting the button to view the details of a single event the already loaded data is shown in the pop-up.

**3. View room list**

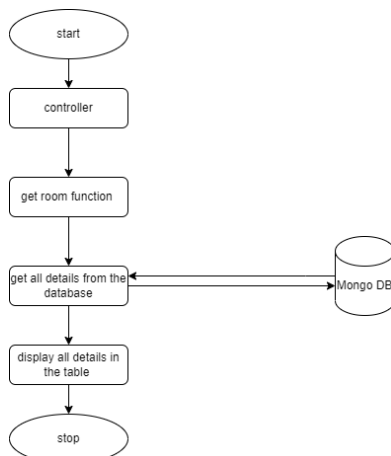


Figure 9: View room list

The diagram describes the backend, in the controller, there is a function called get rooms that takes the details that are saved in the mongo database then those details will be added to the table to display.

The same process takes place in retrieving all the data in list form. The specific model will be called upon the type of the front-end request. That is whether user, room, reservation or the event model.

4. Save a new reservation

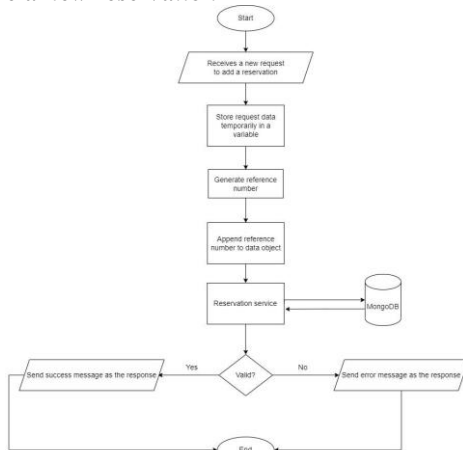


Figure 10: Save a new reservation

The diagram illustrates the backend process of adding a new reservation into the system. When the backend receives a post request to save a new reservation it follows a few steps before actually saving the reservation in the database.

A separate function is implemented to handle the generation of the reference number. It is generated by reading the lastly generated reference number from the database and then incrementing that number by one. Such as REF0026. After that, the reference number is appended to the received data object. Thus, successfully saving the new reservation details in the database.

In the front-end side, placing a reservation has been developed considering the convenience of the user. When a registered customer is prompted to make a reservation on a selected room, he/she will be shown a full

summary of the reservation. But this will only be shown if the entered details are validated. If the specific room is unavailable on the selected check-in or check-out dates, the system will prompt a message to let the customer know about it. Else, if the rooms are already booked and not available for any more reservations that room will not be available with the reservation option. Nevertheless, a successful reservation leads to the confirmation of it providing the customer with another option of either proceeding with the reservation or not.

IV. DISCUSSION

Hotels that make every effort to prevent recurring problems have a better chance of retaining guests. Hotels must plan to deal with issues and always train their staff to be prepared. However, this is only sometimes possible. With a manual hotel management system, you have to remember a lot of information about guests, including their latest stays and favourite amenities, which takes a lot of time. In addition, when it comes to billing, you need to be specific and make the calculation very accurate, including most taxes if all other outlet costs are added. Additionally, more employees are needed. As a result, we will be wasting money and labour when all jobs can be accomplished by calculation. The following is a list of the current issues with the present system.

1) Problems

a) Covid-19 Pandemic Situation

Due to the Covid 19 virus, the distance between people should be maintained. However, hotel guests do not consider social distancing when making their reservations. This increases the possibility of hotel workers and customers contracting the virus. They will need to touch a pen to sign registration forms or touch a credit card terminal keypad during payment. This method is used in many hotels. It can be clear from the chart below.

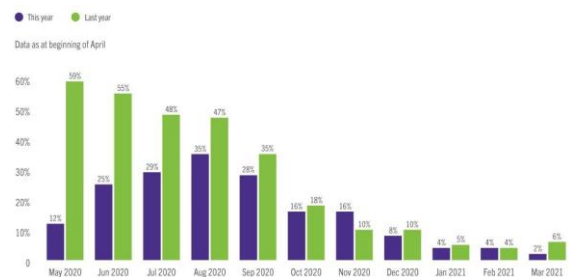
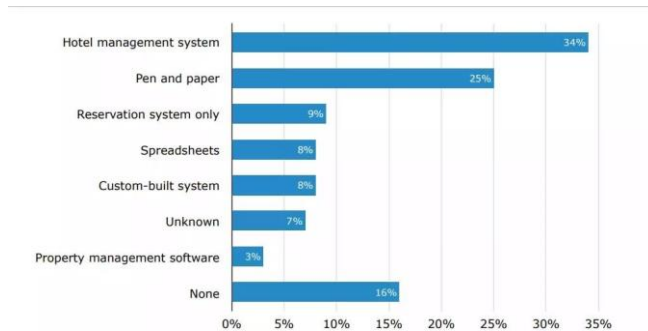


Figure 11: Covid-19 impacts on HMS

This clearly shows how the hotels were doing before and after the arrival of covid. Also, after the arrival of covid, the hotel industry fell to the bottom, and only very few customers came. So, this is a big problem for hotels.[4]

b) Inconsistency of data entry and wrong information noted

When making reservations manually, errors and omissions may occur. This may inconvenience the staff and customers. However, an online hotel management system can be used to prevent those mistakes. A clear idea about this can be obtained from the following chart.



**Figure 12:** Usage Types of Hotel property

This shows that more than 50% of the hotel is managed manually, and the hotel management system is used only 34%. Therefore, this kind of manual process must face the above problem.[5]

#### c) *Manually Room Checking*

In the current system, one employee must be assigned to check all information regarding the rooms accessible in the hotel for travellers. For both workers and customers, this process is costly and time-consuming. Acquiring all information on customer-available rooms can take much work, particularly during peak hours. Additionally, assigning a dedicated staff person to check is quite expensive from a management perspective. They are unable to budget for additional work. Therefore, this is the problem in an existing system.

#### d) *There is no database*

Management has discovered a problem with the server database on the existing system. As all the client data is now recorded on an Excel data sheet, managing all the data is now quite challenging. Therefore, there is no security from the hotel's point of view, as the management retains only one week's data sheets.

### 2) *Advantages*

#### a) *Saves administrative time and effort*

The application will handle most of the work when using the web application instead of manually administering the hotel system. As a result, every aspect of operations will be affected, and almost all duties will be automated and simplified. Generating reports for all management saves time for all staff.

#### b) *Reduce manual errors*

Reports will be more accurate, and referrals will be processed more quickly with a web application that simplifies data entry and processing. In addition, integrating with an administrator may prevent duplicate bookings by ensuring that your work is automatically updated.

#### c) *24-hour availability*

Customers worldwide can access and make reservations on the hotel booking system because it is an online business accessible twenty-four hours a day, seven

days a week. Additionally, greater efficiency is possible with this direct allocation technique.

#### d) *Efficient booking process*

Visitors to web apps expect an easy, quick, and simple booking experience. The value of an uncomplicated booking procedure cannot be over emphasized. The booking process should be simple and fast, including getting event information, choosing dates, choosing a room, and confirming payment.

### 3) *Manual HMS*

In a manual hotel management system, customers have to book rooms or any other services by walking up to the receptionist, calling them on the phone, or using a third-party option. Any inquiries seeking feedback should generally be addressed to the hotel personally. There is a high possibility of providing false reports to the management regarding the workflow of the hotel, and there is also a possibility that the employees will occasionally give false price information to the customers. From the employee's account, customer details are not used in the workflow, and in some cases, records need to be appropriately kept.

### 4) *Online HMS*

An online hotel management system can manage hotel operations and tasks easily and quickly. It helps to save time and focuses mainly on front desk process management, reservations, and planning. It also reduces the duties of employees to some extent. So, they can focus on other productive tasks. The most significant advantage of an online hotel management system is that it allows you to access data, collect data and monitor operations from anywhere at any time. There are no restrictions on accessing the data. Also, you can assign individual passwords to your employees to ensure security within the authorization. It can avoid the shortcomings of manual reservations. The online hotel management system automates various functions like guest reservations, guest data, point of sale, receivables, and event management.

### 5) *Testing*

#### a) *Unit Testing*

In this initial testing phase, the program evaluates specific parts or elements of the software to see if each is fully functional. The main objective of this effort is to evaluate the application's functionality. That way, if there is a problem when changing the codes, it will be able to be solved quickly.

#### b) *Integration Testing*

Integration testing allows testing all the units within a program together and as a group. This level of testing is designed to find interface errors between functionalities. This is especially useful because it determines how efficiently the units work together. This way, problems can be identified and solved after the system is installed.



## V. CONCLUSION

According to the investigation, users preferred online hotel management systems over traditional manual hotel processing. Introducing a hotel reservation system has replaced manual technology for booking hotel rooms, event information, and other hotel facilities. The current system is operated manually. As a result, people make mistakes all the time. However, with the proper management structure, such mistakes may be eliminated. The hotel must track every customer's information, including payment information, room assignment, and event information. Outdated technology can put customer data at risk and not adequately serve the customer. All these points are entered and retrieved manually, which has several disadvantages, including time consumption, update problems, and data inaccuracy. To avoid this, we proposed establishing a new system that uses the current system's web platform.

The main goal of this project is to give hotels a means to manage most of their tasks via a web application. The consumer's demands might occasionally be forgotten, but with proper management, this can be prevented, and management is made easy. The new system maintains precise consumer information for security, crises, and prevention. With online booking and payment, it is simple to use. The use of this technology will save labour expenses and provide visitors additional reasons to adore the hotel and return repeatedly. The administrator will receive help

from this online application handling customer information, hotel reservations, payment information, invoicing information, etc. Uploading hotel amenity bills will be straightforward and error-free, and the data will be preserved accurately.

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