Sri Lanka Institute of Information Technology

Resort Management System

Project Proposal

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1. Background

Client-Blue Lagoon Resort

Blue lagoon Resort is a resort located in Kalpitiya which is surrounded by the tropical palms and coconut trees facing the Blue Lagoon and the beach front. This resort serves many tourists and local customers with a great level of hospitality and caring.

This resort features 14 Exclusive and Luxury Superior Deluxe Chalets and 8 Deluxe rooms, located in a middle of a lush garden offering privacy, peace, and simplicity in all aspects.

The resort also offers services such as Boat rides, kayaking, Flatwater recreation, kite surfing, karaoke nights, shisha on the lagoon and many more events.

So, our client runs the business without an automated system at present, basically the owner needs to implement a fully automated system to function the resort functions smoothly.

The main idea behind the implementation of this new system is to automate the Resort work which will enrich the quality of the service delivered towards the customers and the wellbeing of the service staff.

2. Problem and Motivation

2.1. Problem Statement

In today's highly competitive world, most resorts have automation systems to save time and increase customer satisfaction. A well-built system is necessary to endure this fierce competition. Most of the time-consuming operations in the existing system are managed manually, so it takes more time, and the employees can have a lot of work to complete. These chores might have an impact on the resort's profitability and customer satisfaction.

Also, guests must make calls to reserve rooms, and this comes with the disadvantage of waiting in call queues. This could potentially lead to inaccurate information about reservations. A loyalty member should be given a special discount but using this manual system it is necessary to go through the records to identify a loyalty member. According to the system currently in use, to make a customer request/complaint, the guest must inform the receptionist about it. After that, the receptionist notifies the relevant staff of the request/complaint. This requires time and effort from staff.

To identify the items below the reorder level and purchase those items, resort management must routinely examine the inventory. The details of the repair inventories should be recorded and notified to the relevant staff but with the current system, this is complicated. This resort's selection of a supplier for a certain item is another significant problem because some of these suppliers do not deliver products of acceptable quality, while others are temporarily unavailable. To identify a good supplier, it is difficult to keep track of previous experiences with their services and their availability.

A common complication faced by the resort is the management of its parking area. In the existing system, the parking reservation details are maintained through manual records. This increases the chance of human errors and can lead to customer dissatisfaction and improper administration.

Restaurant staff must be aware of food allergies and should be considerate when it comes to preparing their orders. The current system does encourage the customers to mention their food intolerances but due to poor implementation and lack of communication between the restaurant staff it is often ignored, and customers have a bad impression of the restaurant. This has been a rising concern for the resort.

Traditional methods to record staff details and calculate the salary based on their attendance and OT hours consume a lot of time and it is inefficient. All the documents of the staff should be recorded and updated frequently because decisions about promotions and allowances related to staff are made using their work history, therefore, the management should store all files which occupy a lot of space. The management provides its staff with special loan facilities but again due to its manual record maintenance this service is being poorly utilized.

2.2. Motivation

The resort's current system follows manual methods which are time-consuming, expensive, need enormous space to store documents, and hard to retrieve information when it is needed, and these factors might affect customer satisfaction. To survive in the competitive world and earn customers' satisfaction, the resort should have a new system with specific features and benefits such as accuracy, smooth access, and optimized storage space. And the system should have proper management where the data can be inserted, updated, and retrieved easily.

3. Aim and Objectives

3.1. Aim

This project aims to develop a system that is intended to computerize the work performed in the resort management system and to create a system that has a user-friendly environment and makes employees' jobs more convenient and faster with error-free transactions to benefit the business. The goal is to provide the best services to customers with great hospitality throughout the customer's booking process, stay and checkout and to improve the resort's performance. The main idea of the project is to develop a web application for the resort by providing scope for visiting tourists from different geographic locations to book their stay, and to manage internal operations of the resort. To accomplish consistency in the business and set up the system in such a way that if there are any changes, they can be easily done and there is a scope for growing the company

3.2. Objectives

This system helps to manage and perform various operations.

- The system should be able to accept and cancel reservations for rooms, restaurant tables and parking spaces.
- The system should be able to manage the availability of rooms according to reservations made
- The system should be able to calculate bills and generate reports automatically on all services rendered to customers for a specific time.
- The system should be able to manage and store restaurant menus and bar-related orders.
- The system should keep a record of customer details.
- System should be able to accept and manage customer complaints which will be managed by service staff.
- System should be able to accept or decline customer requests such as room service, transport, gym, or swimming training.
- The trainer or customer can cancel or decline a request.
- The system should be able to manage and store inventory and stock information.
- The system should manage the availability of items.
- The system should store and manage supplier information and store order details.
- The system stores and manages staff details working in different departments, manages attendance and salary of staff.
- The system stores and manages staff loan information, allows staff to apply for loans.

4. System Overview

4.1. Functional Requirements

1. Customer Service Management

Customers can check the system and reserve resort transport or a gym/swimming session with the available trainer based on the available schedule of the trainer. They can also lodge service-related complaints using the system. These service requests/complaints will be displayed to the relevant staff once they have logged in to the system from their side. Once the Customer's request is fulfilled or his complaint is attended to, the customer service staff will record the action taken in the system.

Customer requests can be room service requests, training session requests or transport requests. The availability of trainers and transport is shown to the customer before making a request. Once a request is made the request status is displayed as "requested" and once it is accepted by the relevant department it is set to "Request Accepted" and once it is fulfilled it can be set to "completed." If a certain request is declined by the service staff, its status can be set to "Request Declined." Sometimes accepted requests such as reservation of a swimming/gym session with a trainer can be later declined by the trainer or customer. Upon cancellation, the system will request to enter the reason for cancellation. Customers can see their service-request history.

Manage all Customer Complaints - Customer complaints are generally service-related complaints. The complaints lodged have a status field which will show the status of the complaints made. When a complaint is ongoing its state will be displayed as "Ongoing" and once

it's resolved it will be displayed as "resolved" in the system. The action taken to resolve the system will be mentioned by the service staff before they change the complaint status to "resolved". Customers can see their complaint history.

Reports can be generated based on frequently requested services and the complaints made by the customers to improve the quality of service.

2. Parking Management System

Reserve a parking slot for the customers While the reservation processes the customers will be allowed to reserve a parking slot. based on availability, date, and the number of days the user is staying. An email will be sent to the user upon reservation

For outsiders and non-reserved customers, a separate area will be assigned for the users that are not using any of the facilities in the resort. Parking will be provided on a first come first serve basis and availability of the parking slot will be considered. When the user comes in the system will request the number plate id and a timer will start upon entering the information. Once leaving the customer will be requested to do a payment depending on the hours the vehicle was parked. The parking fee can be waived off if the user has a valid receipt from the resort. The security personnel will handle the payments, validating the receipt and entering the vehicle id.

The Administrators can change the hourly rate for the parking facilities and view reports based on monthly earnings and parking reservations on a daily/weekly/ monthly basis.

3. Restaurant Management

Handles all the food and beverages requirements. Can update the food menus for each meal, snacks etc. From Kitchen, we can handle the food orders received by the restaurant. We have room service to manage the food orders received directly from the resort rooms.

A bar section is available in the restaurant to handle liquor-related orders from the customers.

Restaurants keep a record of customers' health-related requirements and the food items they are allergic to.

Bills are managed based on orders made from each room or table.

Using this system restaurant staff can prepare the requested orders according to the customers' requirements and customers can search for their preferred food items through the updated restaurant menu. Reports are generated based on restaurant sales.

4. Reservation and Booking Management

Manages all online reservations & booking of packages for customers. The reservations/bookings are made based on details such as type of package, and rooms, Packages include facilities, food and amenities. Available rooms, and parking spaces are displayed on the system for customers to reserve. As a person makes a booking the rooms and facilities availability count gets updated on the database, and the availability of rooms and services are displayed on the system. Discounts could be offered to loyal customers. A customer may apply

to become a loyal customer. Arrangements for reservations for a table in the restaurant, and reservations for parking spaces can be made.

To make a booking, customer creates an account. Customer can edit his preferences and details of his account, and when the customer checks out his account is deleted in the case that he is not a loyal customer.

A customer/client may also reserve a parking slot if he/she wishes to do so, in the case that he does not want to reserve a slot he can proceed with the room reservation, if he wishes to reserve, he will be directed to the parking reservation system

Once a booking is made the customer is notified through the system. The receptionist keeps track of information about the rooms that are assigned to which respective customer, the receptionist can also make a booking for people who do not know how to use the system.

Monthly reports of customers and reservations can be made. And the receptionist can search customer information by customer name/id. or room information by room id.

5.Inventory and Stock Management

Manages and stores information about the assets & stocks in the company. Inventory Manager handles the inflows and outflows of kitchen stocks and toiletries, out of which he gives fixed amounts to the chef and the staff every week, in the case where the customer crowd is more during certain seasons or days, then the chef or the staff can request more kitchen stock or toiletries via a form which will update the amount of kitchen stocks and toiletries in need on the database.

Inventory manager and the chef can view the availability of the kitchen stocks and the toiletries in the database. When the need for new kitchen ingredients or toiletries arises, the inventory manager can request these items via a form, this will be added to the database which will be viewed by the supplier manager.

If the kitchen stocks and the toiletries are below the reorder level, this is notified to the supplier manager and once the order is received the availability of the raw ingredients and the toiletries will be updated. If the chef does not use an ingredient hereon, then that ingredient can be deleted from the database.

A maintenance log of the inventory will be recorded, and an update of the repairs will be sent to the inventory manager periodically, if the inventory cannot be repaired then the item will be removed from the database.

A detailed report of the items to be ordered, available inventory and the maintenance plan may be retrieved by the admin so the expenses can be stored.

The inventory manager and admin can search for the inventory, stock, or goods using the id to see information about it.

6.Supplier Management

Store and manage supplier information according to the types of products they supply to the resort (such as kitchen stock, toiletry etc.).

Store order details such as date, item name, quantity, and other specific details and assign the suitable supplier based on the ratings and reviews of their previous purchase history to supply the products.

When the order is delivered to the resort, the information about the products, the total cost, and the date of delivery should be recorded, and the status of the order should be changed from pending to completed (order is received).

Quality inspectors give ratings and reviews to the suppliers according to the quality of their products and services to decide whether to reject or retain the supplier in the future.

Notify the admin and relevant employees about the purchase details of the products to update the inventory table.

If a supplier is unable to supply any kind of product for a period, the status of that supplier should be updated in the system as unavailable, and the status should be changed when that supplier can supply the relevant products.

A report should be generated on the information of the supplier and details of the orders that are delivered to the resort.

7.Staff Management

Manages and stores personal details of employees working in different departments in the database. Employees can view and edit their profiles if required and view their salary invoices. Employees can also request leaves by filling out the leave request form. When an employee enters the resort, he starts his shift by logging in to the system and marking his check-in time and does the same at the end of his shift by marking his check-out time.

Managers can approve or reject leaves requested by employees, once the manager approves or rejects the leave request, the status is displayed on the employee interface. Managers can also decide the salary of the employees based on attendance and OT hours, these timings are processed to generate the salary of employees, and payment details are then shared with each employee in the form of an invoice.

Admin can add new employees when an employee is recruited to the resort, update employee details to make changes, view employee details and remove employee details from the database when an employee resigns or is terminated from the company. The admin can also make decisions on promotions and allowances based on employee performances and work history, search each employee and department, and generate reports on the employee performances and employee and department details.

8.Loan Management

Here the staff members can view their ability and availability of loan facilities. Every permanent member of the staff can apply for a staff loan. They can apply for a loan with a maximum of 100,000. Staff members can apply for the loan from the system while the managers can approve or reject the loan request for specific reasons. If a staff member is currently holding a loan, they cannot apply for another loan they can apply for a new loan after they have finished the existing loan facility. Every month staff members must pay a fixed amount based on their loan amount. The loans can be categorized into two as short-term (three, six months) and long-term (nine months or one year- maximum).Staff members can monthly do their payment as a bank transfer and upload the deposit slip to the system so that managers can approve the payment via the system so, that the monthly payment of the loan of staff members shows as paid and the payment gets updated and they can view the balance to be paid. All these functions are also available for management staff as well additionally they have the authorization part as well.

4.2. Non-Functional Requirements

- Search results must give results within acceptable time limits.
- Easy to use, efficient and accessible.
- Systems must accept payments through different payment methods.
- System must be available 24x7.
- Performance must be maintained when many users use the systems together**.**
- Reliability-system must be able to fulfil its assigned task in each environment at any given time.
- Maintainability-resolve problems with a mean time to repair of less than one hour for high severity incidents.
- Privacy- privileges must be set to different users who can access the personal details of customers and employees.
- Portability- the system must be able to run on any given platform.

4.3. Technical Requirements To Build The Software

- Internet connection
- Estimated System Requirements are:
    1. Processor dual core
    2. RAM 2GB
    3. Laptop or personal computer device.
- Knowledge of MERN technology including MongoDB, Express, React, and Node is a requirement for the software developer of the software.
- Operating system-Windows 10 or the versions released subsequently.

4.4. Constraints & Limitations

- Customer must be connected to a stable internet connection to use the web application.
- Customer requires a smartphone, or a device that allows him/her to access the web application.

- Fingerprint scanner or face recognition was planned to be used for marking attendance of employees, but it could not be implemented due to its high cost.
- Sensors were planned to be used for the parking system but could not be used due to their high cost.
- Delivering the project within the given period.
- The customer must have an email address to book a room.
- Ensure backups are regularly maintained.
- The system should be implemented considering the access privileges of different users.
- Difficult to develop the system to have the portability feature as all members used the same platform to develop the system.
- Scalability of the system could not be tested as the number of users who tested the system was limited to 8 members in the group.

4.5. Architectural Diagram

- Refer to Figure 8.1 in Appendix

5. Literature Review

5.1. Overview

Restaurant management systems are complex systems of software, hardware, and processes that help a restaurant run smoothly and efficiently. They include everything from order management software to reservation management systems and point-of-sale systems. They help a restaurant run more smoothly and efficiently, so they can better serve their customers and increase their profits.

This project is designed to manage The Blue Lagoon Resort. Currently, the resort does not have an automated way of storing its records, and the staff is involved with manual data processing. This system is designed to solve that problem. The system can be interacted with by both customers and resort-related workers.

The System consists of Staff Management, Customer service, Supplier Management, Parking Management, Reservation Management, Loan Management, Inventory management, and Restaurant management.

5.2 Our competitors as an individual component

Customer Service - similar solutions: Salesforce, Zoho CRM, Pipedrive

Parking Management- similar solutions: Parkable, JustPark

Restaurant Management- similar solutions: mycom, CAKE pos

Supplier Management similar solutions:

Staff Management similar solutions: Gusto, Zoho People, Namely

Reservation And Booking Management - similar solutions: booking.com, trip advisor

Inventory & Stock Management -similar solutions Zoho Inventory, Square

Loan Management System similar solutions: none

5.3 Our competitors as a system

Ezee Absolute — Resort Management System

eZee Absolute is a highly flexible and simple cloud PMS for the hotel industry. Combining all our software features, it helps hoteliers to utilize every opportunity to boost their business revenue.[9]

Pros - Cross-platform compatibility

Cons - Each component needs to be manually purchased

SaaS-based

The monthly cost is high (for the basic package they have to pay 80$)

myHotelina

Myhotelina is a SaaS-based Property Management System (PMS). This Sri Lankan Hotel Software comprises all key modules required for a property. myhotelina PMS is a unique online Hotel Software where the management of the property would be able to trace down the status of their property on a real-time basis - from anywhere in the world. [10]

pros - available for a wide variety of devices

Cloud-based solution

Information can be accessed anywhere in the world

cons - SaaS-based

boosthotels

Boost Hotels is a Hotel and Restaurant Software and Management Company in Sri Lanka. More than 6000 clients around the World use our Hotel and Restaurant soft

Pros- Cloud-based software solution

Cross-platform compatibility

Cons- To use some of the functions additional hardware required

SaaS-based

Each module needs to be purchased manually

Similar products Features	Ezee Absolute	myHotelina	boosthotels	Our solution
Staff Management	✓		✓	✓
Restaurant management	✓	✓	✓	✓
Customer service			✓	✓
Supplier Management			✓	✓
Parking Management				✓
Reservation Management		✓	✓	✓
Loan Management				✓
Inventory management	✓	✓	✓	✓

5.4 Why use our system?

- No additional integration fee or monthly SaaS is added to the operator which will help them even on financial difficult days.
- Other resort management systems could take a lot of man-hours to train staff on how to use them. With the high turnover in hospitality, training expenses can build up fast. On the other hand, our resort management system will be so easy to use as the system will be most familiar with their daily activities
- No additional integration fee or monthly SaaS is added to the operator which will help them even on financial difficult days.
- The customer is spending on Sri Lankan rupee rather than US dollars developing the system. Which will help our consumers to save money and to develop their businesses further.

6. Methodologies

6.1. Requirement Engineering methods

- **Requirement Elicitation** - It must deal with the several techniques employed to learn about the project domain and its needs. Customers, business manuals, currently in use software of the same sort, standards, and other project stakeholders are among the many sources of domain knowledge.

  For our project, since the client's current system is not automated, we used Zoom meetings to gather requirements. We also looked at the client's current records and documents and similar systems used by other resorts to get ideas.

- **Requirement Specification** – To produce the formal requirement model all the functional requirements, nonfunctional requirements and constraints were gone through. The models used at this stage were ER (Entity Relationship) Diagram, Data flow diagram and use cases. More project-related issues were discovered at this stage, and these problems were addressed by having to go back to the elicitation phase.

- **Requirements Verification and Validation**
    - **Verification** – The verifications are done to ensure that the software correctly implements its functions, and the right software is built. For the verification purposes of our project peer reviews and inspections have been planned.
    - **Validation** – Customer requirements form the basis of requirement validations. It guarantees that the system being constructed is exactly what the client desires. To make sure of this, our team intended to show the client an early prototype of the system to identify any flaws in the currently under-development system.
- **Requirements management –** Managing requirements is done to ensure that product development objectives are achieved. It is a group of methods for organizing, prioritizing, and documenting requirements so that engineering teams always have approved and up-to-date requirements. By monitoring requirements changes and promoting stakeholder dialogue from the beginning of a project through the entire lifecycle, requirements management offers a means of preventing errors. Certain steps followed by our group members are,

  Certain steps followed by our group are,
    - Obtain the requirements from the relevant parties
    - Analyzing requirements
    - Define and document the demands.
    - Prioritize the requirements.
    - Accept and agree on requirements
    - consulting stakeholders to see if requirements need to be changed.
    - evaluate the effects of changes
    - Document changes

6.2. Design Methods

An information system's development process is organized, planned, and managed using a software development methodology. The degree to which the SDM is followed can effectively decide the success or failure of a project and/or company, regardless of the methodology selected—whether it is Waterfall, Iterative, Agile, or another.

We use Agile development approaches since they are effective and flexible and because our project is centred on resort management, we find agile to be simple and enjoyable to work with because it demands the clean delivery of software components in a set amount of time. The client’s needs may evolve from what they first requested due to the nature of this project and agile is well suited to match those changes. Also, new features are supplied fast and regularly with a high degree of predictability by employing time-boxed, fixed schedule Sprints of 1-4 weeks. Because of this, we may be able to deploy the software earlier than we had planned. The project team may concentrate on high-quality development, testing, and cooperation by dividing the work into manageable parts. Additionally, by producing numerous builds, performing testing and reviews during each iteration, and spotting expectation mismatches early on, quality is improved.

6.3. Development Tools and Technologies

Frontend - React, HTML, CSS, Bootstrap
Backend – Express JS, Node JS, MongoDB
Tools – GitHub, ClickUp, VSCode

GitHub - GitHub is a cloud-based hosting service that allows its user to manage their repositories efficiently. It is used for hosting code and version control and collaboration. More than 83 million developers and more than 200 million repositories were listed on GitHub as of June 2022, with at least 28 million of those repositories being open to the public. Currently, as of November 2021, it is the biggest source code host [1].

We decided on GitHub over some of its rivals, including Bitbucket and GOG, because of its better user experience in the open-source community, accessibility, and ease of use.

ClickUp - A team may manage any kind of project with the help of the visual project management and task tracking tool ClickUp. A to-do list, additional files, or even automation. Everything should be customized to the way a team works best.

We chose ClickUp for Agile project management practices. Another alternative application we came up with for this was Trello. Trello offers similar features, but we chose ClickUp because it offers very advanced workflow automation capabilities, way more customizable options and it is affordable. [2]

VS CODE – The majority of developers who work with the MERN stack primarily utilize VS Code as their IDE. It has several extensions to make the lives of developers easier, as well as a built-in debugging mode. It supports every language and framework that we want to utilize for this project, including JSX, HTML, CSS, and React. Additionally, because it is open-source software, the cost will not be a concern for our group's members. Furthermore, it has additional features like syntax highlighting, bracket matching, auto-indentation, box selection, snippets, and more.

Node JS - JavaScript code may be used outside of a browser thanks to Node.js, an open-source, cross-platform JavaScript runtime environment. Before a page is sent to the user's browser, Node.js developers can create server-side scripts that execute on servers to create dynamic web page content. Therefore, Node.js offers a "JavaScript everywhere" model, uniting the creation of online applications around a single programming language rather than a variety of languages for clients and client-side scripts. Since the functions of Node JS do not directly perform any I/O operations it can be recognized as deadlock-safe most times [3].

Express JS – Express JS is a well-liked framework built on NodeJS. It is used to address NodeJS's shortcomings, such as not providing HTTP methods, web handling, or request processing in addition to its other features. It is a layer that was added on top of NodeJS. It can be used to create web applications that are a single page, multipage, or hybrid. Compared to some of its alternatives, we chose Express JS based on its highly supportive community and since it is a well-documented environment it is easy to learn and work with.

MongoDB – The resort management system databases that can be used to handle data were taken into consideration after a brief search. A few databases were taken into consideration, including MySQL, Microsoft SQL Server, and MongoDB. As the best database for the suggested solution, MongoDB was selected. Query simplicity, high availability, security, and speed are

four of the key reason we chose it for our project, coupled with other attributes like flexibility and easy deployment.

React JS - React JS is a JavaScript library for building object-oriented, strong, and adaptable user interfaces. It is an open-source JavaScript front-end library that enables the development of front-end web applications that are quick, easy, and scalable. Among its rivals, React JS is the framework that is the most favoured among developers.[4]

React was selected for this project above Angular JS, Backbone JS, and Ember JS based on the ease of access to references when assistance was required. The following are some typical benefits of React:

- It has substantial code reuse, which makes development work more productive.
- Because it is centred on component-based building, it is less time-consuming to develop and gives a speedy performance.
- Because of its adaptable framework, updates and maintenance are simple. This open-source framework uses solid and modern technology.

HTML, CSS & Bootstrap – HTML is the standard markup language for documents designed to be displayed in a web browser and CSS specifies how HTML elements should appear in various media, such as on screens. It can simultaneously control the layout of several web pages. To improve the layout and user experience for our system's users, we use CSS to create styles for our web pages. When it comes to developing our web pages, CSS also offers code reuse and saves a ton of work [5]. Also, we use Bootstrap, a framework that already includes the fundamentals for developing responsive websites. With the help of Bootstrap, our group members can create websites much more quickly without having to spend time worrying about fundamental commands and functions of CSS and JavaScript. We use bootstrap to create an effective and simple user interface for our users to interact with.[6]

6.4. Testing Methods

The following testing techniques are intended to be used when creating The Blue Lagoon Resort Management System.

During Development

- Unit testing – Done after the establishment of each member's separate components by each member of our organization using a set of test cases. Debugging will be simpler for us in the latter stages based on this way.
- Integration testing – After unit tests are finished, this test is conducted. Each member of our crew will perform this task to ensure that the capabilities we have designed function flawlessly.
- System testing - System testing is a type of black box testing used to assess the finished, integrated system to make sure it complies with predetermined requirements. Before the product is released into production, all group members will test the software's functionality, and any necessary changes and bugs will be attended to.

After Development

- Usability Testing – This testing will be done by all the group members to test the ease of use of the system with the customer's perspective kept in mind. This will make sure that the intended functions of the system are taken proper advantage of by the users provided through the respective interfaces.
- Performance testing – Performance testing identifies the system's response to different workloads. This testing is crucial for our project because the system under test is used by both management and customers. We will load and stress test the system to determine performance testing.
- Security testing – To make sure that our system safeguards the integrity and privacy of the users of our system, Security testing will be carried out. Our team believes that testing must be done because our client has a reputation with their customers to uphold. Integrity, secrecy, authenticity, authorization, and availability are just a few of the concepts that will be tested during this process [7].

6.5. Integration Methods

Software is used in the data management process known as "system integration" to automatically communicate information between different subsystems. Some benefits are Improvements in efficiency, productivity, and operational quality. The client's organization will see faster information flow and lower operating costs because of system integration.

Enterprise application integration (EAI) – Done to integrate all the developed components into a single environment. To create one ecosystem for Inventory Management, Supplier Management, and Staff Management.

Star System Integration – Through star system integration, one subsystem is linked to the others. It was decided to use the Star system integration because some components, such as inventory management and staff management, needed to be linked to other subsystems, like supplier management, staff management, and reservation administration [8].

6.6. Deployment Method

The developed system will be immediately deployed and put into operation, unlike the current system, which is controlled manually. The proposed system will be utilized in tandem with the current system due to the difficulties associated with the project's enormous scale, and once the proposed system is successful, the old system will be phased out. As a result, this project will make use of a parallel deployment strategy.

6.7. Work Breakdown Chart & Gantt Chart

- Refer to Table 8.1 & Table 8.2 in Appendix

7. References

[1]"GitHub - Wikipedia", *En.wikipedia.org*, 2022. [Online]. Available: https://en.wikipedia.org/wiki/GitHub.

[2] "ClickUp vs Trello: A Side-by-Side Comparison", *Nuclino.com*, 2022. [Online]. Available: https://www.nuclino.com/solutions/clickup-vs-trello#:~:text=ClickUp%20is%20more%20flexible%20and,extra%20fees%20for%20Power%2DUps.

[3]"About | Node.js", Node.js, 2022. [Online]. Available: https://nodejs.org/en/about/. [Accessed: 08- Aug- 2022]

[4]"React – A JavaScript library for building user interfaces", *Reactjs.org*. [Online]. Available: https://reactjs.org/

[5] "CSS Tutorial", *W3schools.com*. [Online]. Available: https://www.w3schools.com/css/. [Accessed: 08- Aug- 2022]

[6] A. Zola, "What is a Bootstrap and how does it work?", *WhatIs.com*, 2022. [Online]. Available: https://www.techtarget.com/whatis/definition/bootstrap

[7] "Software Testing Methodologies", *smartbear.com*, 2022. [Online]. Available: https://smartbear.com/learn/automated-testing/software-testing-methodologies/

[8]"What is system integration?", *Youredi.com*, 2022. [Online]. Available: https://www.youredi.com/blog/what-is-system-integration

[9] “Hotel PMS Software | A Complete Property Management System for Hotels,” www.ezeeabsolute.com. https://www.ezeeabsolute.com/hotel-pms-software.php

[10] “myhotelina PMS - Sri Lanka’s best Hotel management system | Hotel PMS,” www.myhotelina.com. https://www.myhotelina.com/ (accessed Aug. 09, 2022).

8. Appendix

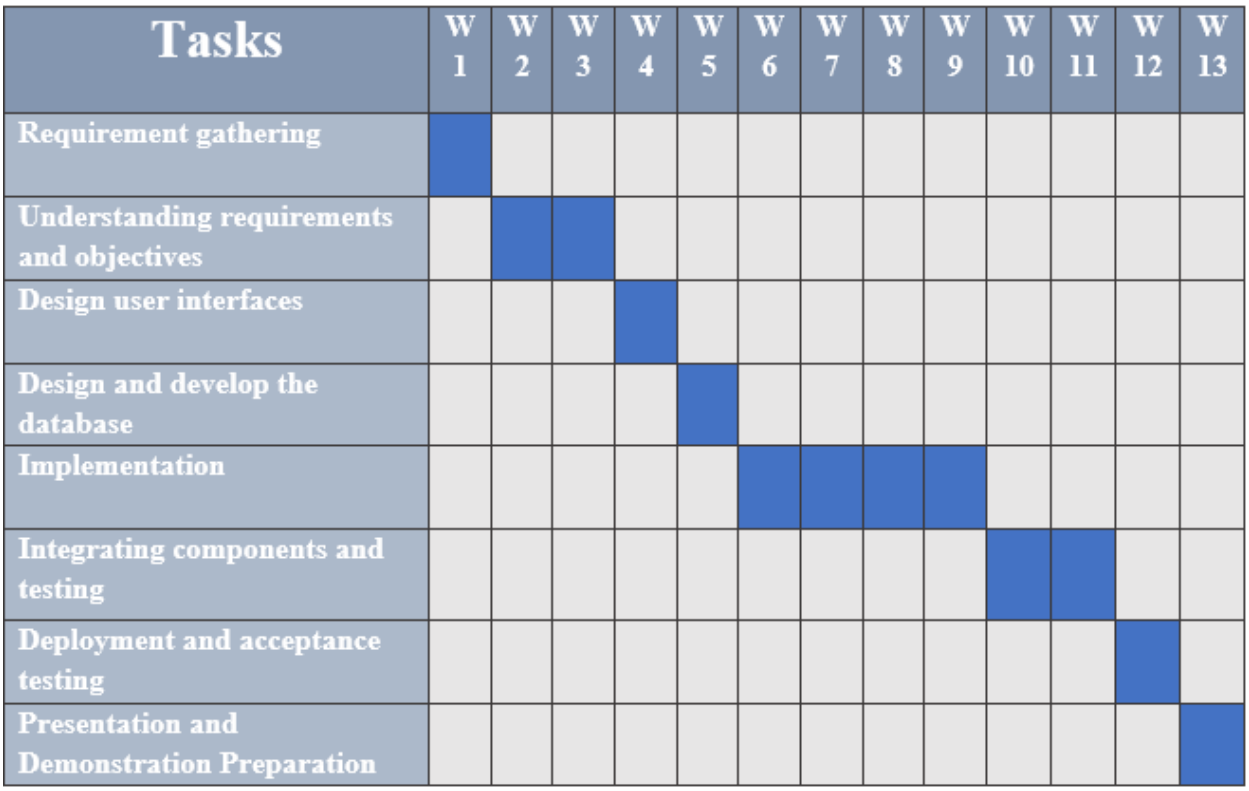
Table 8.1

Task Description	Assigned To
Reservation Management • Reservation UI Design • Implement Database Connectivity related to Reservation management • User Registration • Assigning Room/Table • Implementation of payment gateway • Security verifications • Booking verification • Store and maintain Customer Data • Store and Update reservation information • Testing	Nuha M.N
Staff Management • Staff Management UI Design • Implement Database Connectivity to Staff Management • Store and verify staff details • Design Leave Request Form • Capture attendance data • Maintain work history • Maintain staff leave request history • Salary calculation • Generate receipts • Testing	Zainab M.Z
Staff-Loan Management • Design Loan Management UI Design • Design Loan Management Forms • Implement Database Connectivity to Loan Management • Record Loan details/type • Track Ongoing loan status • Track loan history • Loan Notifications Management • Testing	Madusanka K.M.I

Customer Service Management • Design Customer service interface • Design relevant forms for complaints and services • Design service staff interface • Implement Database Connectivity to Customer Service Management • Verify and store requests and complaints • Track complaint status • Maintain requests and complaints history • Testing	Reezan S.A
Inventory Management • Inventory interface design • Implement Database Connectivity to Inventory Management • Track inventory • Maintain inventory status • Restock management • Store inventory details • Testing	Rashida M.S.F
Supplier Management • Supplier Interface design • Implement Database Connectivity to Supplier Management • Store Supplier information • Supplier suggestions • Order goods • Track ordered items • Supplier Feedback Management • Testing	Fernando V.G.S.O
Restaurant Management • Design restaurant UI • Implement Database Connectivity to Restaurant Management • Menu Updating • Accepting/Rejecting orders • Bar maintenance • Track food inventory • Testing	Caldera H.G.S
Parking Management • Design Parking interface • Implement Database Connectivity to Parking Management • Parking slot assigning • Slot blocking/clearing	Weerasinghe D.J.A.H

• Slot verifications • Track parking slots • Parking history management • Testing	

Table 8.2 – Gantt Chart



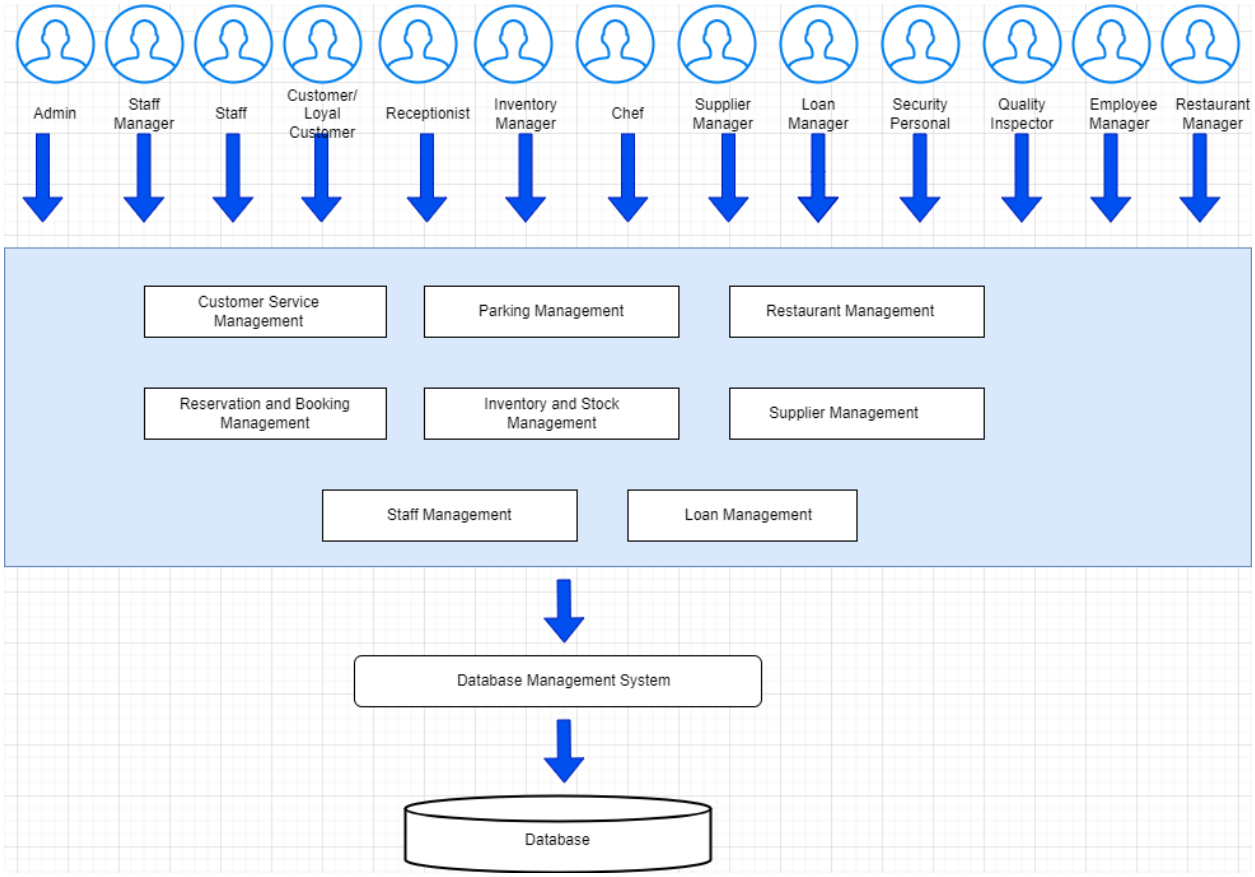


Figure 8.1 – Architectural Diagram