Sri Lanka Institute of Information Technology



Year 2, Semester 2, 2022 Project Proposal

Hotel Management System

IT Project (IT2080)

B.Sc. (Hons) in Information Technology

Group Details

Batch : Y2.S2.WD.IT

Group Number: ITP_WD_B06_G14

Name with Initials	Registration Number
Navojith T.	IT21489464
Adhikari A.M.N.H	IT21469046
Silva H.G.LR	IT21509186
Fernando K.A.T.N	IT21361340
Gangabadage U.D	IT21157400
Monali G.M.N	IT21360428
Dias A.H.S.G	IT21305214
Nathasha W.L.R	IT21913860

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Introduction

To carry out our ITP project this semester, we undertook to create software system for a hotel management system for the Hotel Gayana which is situated in Tangalle as our client. Hotel Gayana is a banquet hotel, and it is specifically made for room reservations with a high standard of service to the customers. Previously the tasks which were functioning in this hotel such as controlling, monitoring, maintaining, and scheduling the hotel activities have been carried out manually and in our project, such tasks as Hotel Room Management, Banquet Hall Management, Restaurant Management, Transport Management, Room Reservation, Employee Management, Inventory Management, Service Management, and relevant report generation functions should be designed in such a way that they are run with the help of the newly developed software system.

Simply all the above-mentioned operations can be done with the use of this single software system via online. Features of this hotel management system come up with an attractive user interface combined with strong search entries and reporting capabilities. Also, this is very user-friendly, and this software system allows users to perform their tasks such as accessing and storing data, doing calculations, and collecting feedback within a remarkable time. For instance, the Admin of this system can manage the booking requests of the customers. On the other hand, customers can make requests for room reservations with the use of this software system.

In consequence, this system is useful for both managers and customers to do and manage their tasks and all the hotel activities in a portable way.

Problem and Motivation

Problems

- 1. Inefficiency and slow operations.
- 2. Increased likelihood of errors and mistakes.
- 3. Limited data reporting and analysis.
- 4. Difficulty integrating different parts of the hotel management system.
- 5. Potential security risks related to guest data and payment information.

Solutions

- Using computerized systems for reservations, check-in and check-out, inventory control, and employee scheduling can increase efficiency. This may result in time being freed up for the personnel and quicker, more efficient processes.
- By installing automated systems that automate many parts of hotel operations, including guest information, room assignment, and invoicing, human errors can be reduced.
- The implementation of automated systems that can monitor and analyze hotel performance data, such as occupancy rates, revenue, and customer feedback, can improve data reporting and analysis. Informed judgments on enhancing operations can be made by hotel managers thanks to this.
- By introducing computerized systems that can connect and share data amongst departments like
 maintenance, front desk, and inventory management, multiple components of the hotel
 management system can be integrated.
- Our systems can encrypt customer and payment information and store it in secure databases, security risks can be reduced. Security protocol audits on a regular basis can also aid in preventing security breaches.

Benefits

- Improved efficiency: A hotel management system can automate many routine tasks such as room bookings, check-ins and check-outs, and inventory management, which helps to reduce manual work and streamline operations.
- Increased revenue: A hotel management system can help hotels optimize their pricing strategies, increase occupancy rates, and reduce the risk of overbooking or double bookings. This can lead to increased revenue and profits for the hotel.
- Enhanced guest experience: A hotel management system can provide guests with a smooth and hassle-free experience from the moment they make a reservation to the time they check out. This can improve guest satisfaction and lead to positive reviews and repeat business.
- Better inventory management: A hotel management system can help hotels keep track of their inventory, including rooms, amenities, and other resources. This can help prevent overstocking or understocking and ensure that the hotel always has the necessary resources on hand.
- Improved data management: A hotel management system can provide hotels with real-time data on
 occupancy rates, revenue, and other key metrics. This can help hotel managers make informed
 decisions and identify areas for improvement.
- Better communication: A hotel management system can help improve communication between hotel staff, guests, and other stakeholders. This can help ensure that everyone is on the same page and that issues are resolved quickly and efficiently.

Aim and Objectives

<u>Aim</u>

This project aims to:

- Create a smart management system for hoteliers.
- Solve the problems and issues faced by the business to improve the quality of the business.
- Upgrade the system and introduce an online platform where they can encounter more customers and expand the business.

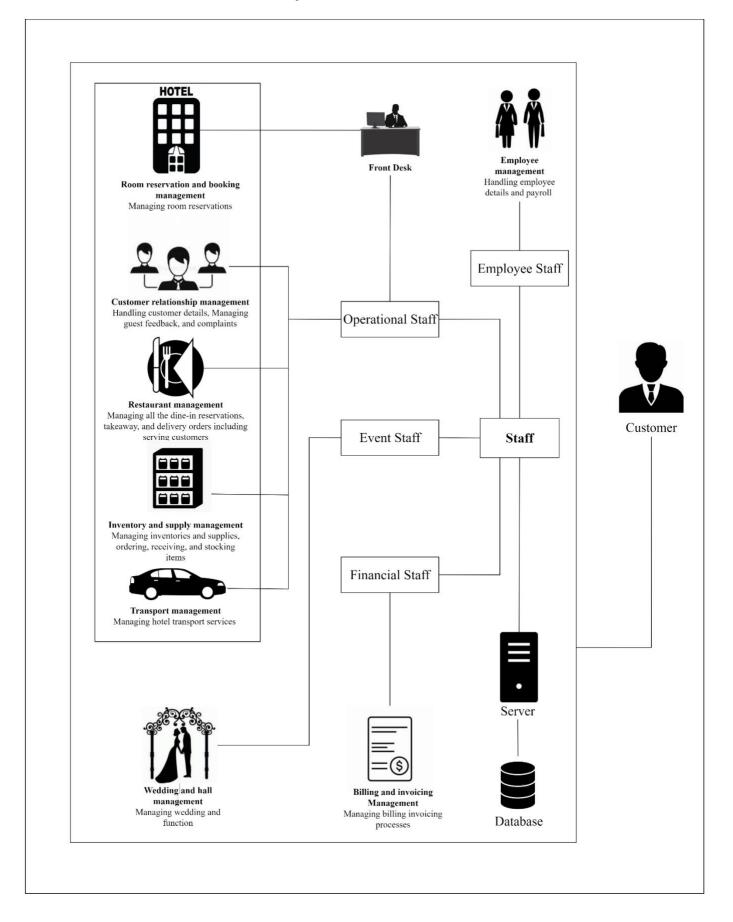
Also, to Implement the system covering all the requested functions such as creating an automated hotel management system that keeps track of customer data, room reservation, booking management, wedding and banquet hall, transport management system, billing and invoicing, inventory and supply management, customer relationship management, sending reservation emails, employee and restaurant management, generating automated reports and management of revenue.

Objectives

The objectives of this project are:

- To make a fast system to increase effectiveness.
- To automate payment processing and generate automatic payment receipts.
- Easy and user-friendly interface for both the customer and admin sides.
- Integrating all departments of the hotel into a single software.
- Transfer manual work to a computerized system. (Creating a computerized system)
- Create a system that allows quick record entry, update, computation, deletion, and retrieval.
- Decrease the errors that occurred by the staff.
- Providing excellent customer satisfaction.
- Improve customer experience and productivity.
- To increase employee efficiency.
- Provide better features to manage employees.
- Categorized and specified functions for each activity
- Speed and efficient system.

System Overview



System Functions

1. Room reservation and booking management.

The room reservation and booking management system allows customers to make reservations for their stay in advance.

Through this function,

- Customers can check the availability of rooms.
- Customers can view room types, and features and select the room.
- Customers can proceed to make a booking.
- The system allows customers to modify or cancel their reservation, under the hotel's policies.
- Customers can take a 360-degree virtual tour of a selected room.
- The system may offer personalized recommendations based on the customer's booking history or preferences.
- Meanwhile Admin can add room types, update them, and view room details

2. Wedding and banquet hall management

The wedding and banquet hall system allows customers to make bookings for weddings and other functions.

- Customers can make reservations for weddings.
- Customers can receive help finding the best options and recommendations depending on their tastes and budget from the system administrator or staff members.
- Customers can explore the wedding hall Graphically.
- Customers may quickly assign guest seats using the system's built-in web app, which includes a seat planner form.
- The system maintains a calendar to show the availability of the venue for bookings.
- Customer can update, delete, read their information about reservation.
- Admin insert, update menu, price list and delete unnecessary data.
- Admin erases the booking information after the event, to maintain privacy and security.

3. Transport management

The transport management system allows customers to manage their transportation services efficiently.

Through this function,

- Customers can manage all the transportation-related details and services for their customers using the system.
- Customers can choose their preferred route and vehicle type.
- Four fundamental CRUD actions are offered by the system to manage transportation details.
- Customers can make requests through the system.
- Customers can simplify the transportation management process to increase its effectiveness and efficiency.
- When new information on transportation services is available, the system may notify and alert users and customers.

4. Billing and invoicing

The billing and invoicing system allows hotel staff to manage customers' billing.

- The system allows hotel staff to manage customers' billing, including charges for accommodation rates, taxes, and extra services.
- The system generates invoices for customers, detailing all charges throughout their stay.
- The system manages payment processing for cash payments, credit card transactions, and other payment options.
- The system allows staff members to create, read, update, and delete payment details.
- The system allows customers to scan the QR code to check for any payments that need to be made during their stay.
- The system provides customers with a final bill that includes all charges and payments they made during their stay.

5. Inventory and supply management

The inventory and supply management system allows hotel staff to manage inventory and supplies.

Through this function,

- The system allows hotel staff to manage and categorizes inventory and supplies by ordering, receiving, and stocking items.
- The system tracks inventory levels and usage to ensure stock levels.
- The system generates bar charts and other data visualizations to help staff with stock movement analysis and the identification of trends and patterns in inventory usage.
- Customers can follow their orders throughout the supply chain using the system's order tracking feature.
- The system includes a quality control function that allows staff to return and replace orders that do not meet quality standards.

6. Customer relationship management

The customer relationship management system allows hotel staff to manage guest information.

- The system allows hotel staff to manage guest information, including contact details, booking history, and preferences.
- The system allows hotel staff to communicate with guests through email and SMS.
- The system provides a reliable ticketing system to address client complaints and grievances.
- The system manages guest details, including adding new guest information, reading and displaying guest details, updating guest information, and removing them if necessary.
- The system allows staff to send emails to previous guests about the latest offerings, events, and promotions.
- The system allows guests to send feedback through a form.

7. Employee management

The employee management system allows hotel staff to manage employee information.

Through this function,

- The system allows hotel staff to manage employee information such as contact details, schedules, and roles.
- The system allows hotel staff to control employee access to the system. This means that hotel staff can control which employees have access to the system and their access level.
- Hotel staff can create new employee records, read and display employee details, update employee
 information as needed, and delete employee records when necessary.
- Hotel staff can track employee performance over time.
- The system allows hotel staff to assign tasks to employees via email.

8. Restaurant Management

The restaurant management system allows hotel staff to manage all the restaurants of the hotel.

- The system manages all the dine-in reservations, takeaway, and delivery orders based on the ordered date and time.
- Hotel staff can use this function to track reservations and orders and manage the seating arrangements for each restaurant.
- Hotel staff can create and manage food categories and menu items for each restaurant. They can add new menu items, edit existing ones, and remove items that are no longer available.
- This function includes KOT (Kitchen Order Ticket) and BOT (Beverage Order Ticket) options. KOT
 is used to manage the orders placed for food items, while BOT is used to manage the orders placed for
 beverages.

Non-Functional Requirements

1) Performance

- The response and processing time of each interface are within a few minutes.
- Website must load quickly as possible.

2)Security

- Only admin can generate the report.
- If customer wishes website and system must allow option to logout.
- Registered customers have to login to the website by providing their username and password.

3)Safety

- Each user has unique username and password to login and access their accounts on the website.
- If customers forget their account login password, he can contact the administration through the message
 provided in the homepage. Accessible link will be resent to the user so by clicking on it the password
 can be reset.

4)Software Quality Attributes

- A. Availability The system is available for all authorized customers and staffs to access when needed(24x7).
- B. **System Maintenance** If any faults are found within the system it should be noted by the staff members and forwarded to the development team.
- C. **Reliability** Development team continues to monitor how the system is performing and continue to make improvements to the system through updates.
- D. **Usability** User can easily understand the system and functions and operate them. Interfaces should be user friendly.
- E. **Accuracy** All the managements function with expected response.

Technical Requirements

- Web-based System
- Mobile Compatibility
- Backup and restore
- UI design
- Database Management
- SSL Internet Security Protocol
- Barcode Reader
- Printers
- Any device that can use the Internet

Literature Review

The fusion of the hotel industry is playing a vast role in the development of the tourism industry in accordance with the services that they are bringing to the guests. The hotel industry can be mentioned as a very fast-growing sector in recent years. That is why it is essential to carry out their activities in an orderly manner. Therefore, Hotel Gayana also wanted to create a management system to ease their work. Simply, hotel management system is software that automates hotel operations such as billing information, guest information like check-in and check-out, inventory management and room reservations. In this literature review, we aim to inspect the impact of the existing hotel management systems and the modernity we suppose to bring out through the system that we are about to create in this project.

Basically, the impact of this system on guest satisfaction is important to consider when it comes to creating this system. Therefore, we must implement a well-designed system in this hotel and then we can improve the quality of the service that we provide to the customers, reducing the waiting time of the guests also, we can increase the efficiency of the hotel staff through this system. Also, this hotel management system can provide real-time information on the availability of the rooms, and it is important to manage the accuracy of the revenue according to the availability of the rooms. Through this hotel management system, hotel staff can get real-time information about their employees. Not only that, but also it has reduced the workload of the employees since some of their works have been automated in this system. This helps to lead the job satisfaction.

Even though this kind of hotel management system gives many benefits, there can be some kind of probable disadvantages to consider about. Since the hardware and software costs are high, it is required a high initial cost to implement such kind of a system. Also, like in any technology, this system can be faced to the technical issues such as software bugs. It is required to put an extra effort into training the staff to utilize this system fully, which can take some time. If there is any kind of disruption to the system, it could cause operational issues and it could affect the data and information stored in the system. Consequently, it is important to consider that this kind of hotel management system will only have the cons, there are some disadvantages too.

By way of conclusion of this literature review, it says that this hotel management system that we are going to create will have a positive impact to Hotel Gayana over the system currently in use. Because, through this system the hotel staff can assign tasks to the employees and that is not a feature that they have in the existing system. Also, this system has a positive impact on the hotel by improving customer satisfaction by giving them a space to update their booking information according to their wants. These can be mentioned as the novelties or the modern features that are supposed to be added into this system. Since the technologies pursue into an advance level, this hotel management system will likely get the best out of it as we wish.

Other Hotels	Hotel Gayana
Uses waiters to take the orders	Uses Kitchen Order Ticket (KOT) and Beverage Order Ticket (BOT) to take orders
Assigns tasks to the employees manually	Assigns tasks to the employees through the system by sending an email
Doesn't give a particular seat order for the events	Uses online seat planner to the weddings and events
Should make the payments rights after making the orders	Uses a QR band and it has all the ordering records of the guest, and the payments should be made when finishing the bill as a total amount.
Guests should raise their problems and complaints after they are getting into the hotel	Uses a ticketing system to collect the complaints of the guests and it helps to the guests to raise their problems even before they check in to the hotel.

Methodology

In this part, we go through the hotel management system technique. They fall under the categories of software model, requirements analysis, system design, system implementation, and testing. The team's use of an agile methodology also gave them access to ongoing client input, which helped them build the best solution possible. The team was able to work quickly because of the methodology's use of agile techniques and technologies.

Why can we use the MERN stack for web development?

The main goal of the MERN stack is to create apps that solely use JavaScript. This is because all four of the technologies that comprise the technological stack are JS-based. So, the backend, frontend, and database may be operated simply if one is familiar with JavaScript (and JSON).

MERN Stack Full Form

The MERN Stack is a collection of four different technologies that collaborate to create dynamic web pages and online applications.

It is a contraction for four different technologies as mentioned below:

Front-end technologies:

• **ReactJS:** React is the most popular front-end JavaScript library in the field of web development. React is a JavaScript library created for building fast and interactive user interfaces for web and mobile applications.

Backend-end technologies:

- **ExpressJS**: Express is a node JS web application framework that provides broad features for building web and mobile applications. It is used to build a single page, multipage, and hybrid web application. It's a layer built on top of Node JS that helps manage servers and routes.
- **NodeJS:** Node.js is a server-side platform built on Google Chrome's JavaScript Engine. It's an open-source, cross-platform runtime environment for developing server-side and networking applications. For keeping the code precise, ExpressJS offers a range of middleware.

Database tool

• MongoDB: NoSQL database management program. NoSQL is used as an alternative to traditional relational databases.

Backend testing tools: Postman API **Project management tool:** GitHub

IDE: Visual Studio Code



Project Plan

Gantt Chart

Hotel Management System

Gayana Hotel

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Task	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1.Requirement Gathering																
2.Project Charter																
3.Project Presentation																
4.Interface Design																
5.ER Diagram And Database Design																
6.Coding And Developing																
7.Testing																
8.Integration																
9.Accepting And Testing																
10.Final Report Writing																
11. Final Presentation And Viva																

Work Distribution

Name	Function	Description
Navojith T.	Room reservation and booking management	 Implementing the related insert, update, Search and delete methods. Create a method for check the availability of rooms. Create a method for choose room types, and features. Create a method for 360-degree virtual tour. Create a method to offer personalized recommendations. Create a method for generating the reports.
Adhikari A.M.N.H	Wedding and banquet hall management	 Implementing the related insert, update, Search and delete methods for the admin and customer sides. Create a method for generating reports Create a method for the reservation process Create a method to plan seating. Create a Calendar to view available dates. Create a method to view graphical views of the wedding hall.

Silva H.G.L. R	Transport management	 Implementing the related insert, update, Search and delete methods. Create a method for choosing a preferred route and vehicle type. Create a method to manage all the transportation-related details and services. Create a method for notifying customers about new information on transportation services. Create a method for generating the reports.
Fernando K.A.T. N	Billing and invoicing management	 Implementing Insert, update, search and delete payment and booking details. Create invoices for customers Create methods for payment processing Implement a method for staff to create, read update, and delete payment details. Create a QR code for payment. Create a final bill with all charges. Create a method for generating a summary report.

Gangabadage U.D	Inventory and supply management	 Implementing the items insert, update, Search and delete. Implementing, update, Search and delete row material orders. raw material ordering process tracking and quality control Return and replacement orders Implementing, update, Search and delete Item Category list and Store location Low levels of inventory, fast-moving parts, and cost data can be shown through data visualization. Low levels of inventory, fast-moving parts, and cost data can be shown through data visualization Print all reports all order-related letters can be printed.
Monali G.M.N	Customer relationship management	 Implementing the related insert, update, Search and delete methods. Create a method for communicating between customers and staff. Create a ticketing system for complaints and grievance handling. Create a method for sending the latest offerings and events to previous guests. Create a method for getting feedback. Create a method for generating the reports.

Dias A.H.S.G	Employee management	 Implementing insert, update, search and delete operations. Create a method to assign tasks. to the employees of the system. Create a method to check employees' work status.
Nathasha W.L.R	Restaurant management	 Implementing add, update, search and delete operations for menu items. Create a method for online table booking management Create a method for generating reports. Create a method to turn on/off menu items availability. Generate an invoice using KOT (kitchen order ticket) method. Create a method to search and filter menu items.
All Me	UI DesigningDatabase management	

References

MongoDB, "What is the MERN Stack? Introduction & Examples," *MongoDB*, 2022. https://www.mongodb.com/mern-stack

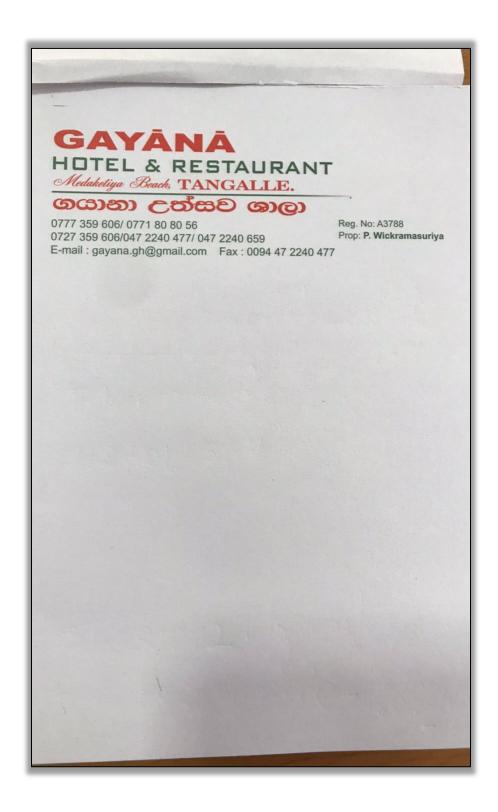
"MERN Stack," GeeksforGeeks, Oct. 11, 2019. https://www.geeksforgeeks.org/mern-stack/

[1]"Michelin-starred Chef Larry Graces the Kitchen | Cinnamon U," blog.cinnamonhotels.com. https://blog.cinnamonhotels.com/michelin-starred-chef-larry-graces-the-kitchen/(accessed Mar. 02, 2023).

[2]R. Roy, "Hotel Management Software System Features & Requirements," Aug. 28, 2022. https://www.selecthub.com/hotel-management/hotel-management-software-features-requirements/

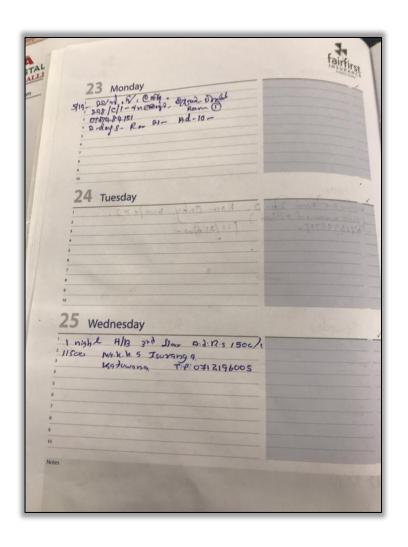
[3]TechAvidus, "Online Hotel Management System - Web Based Hotel Management Software," TechAvidus. https://www.techavidus.com/case-studies/hotel-management-system (accessed Mar. 02, 2023).

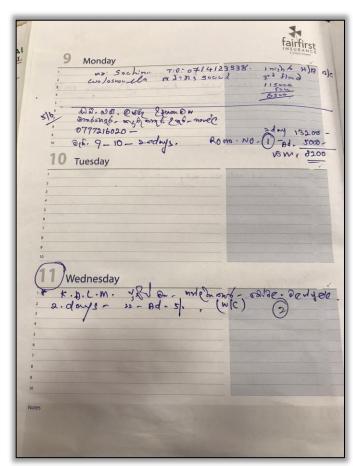
Appendix

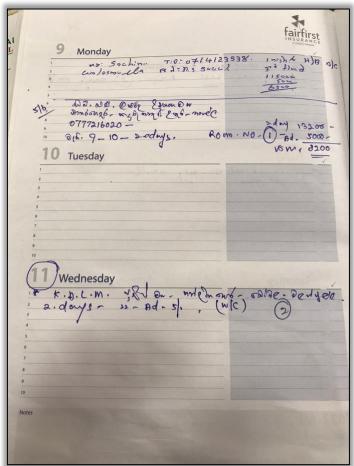


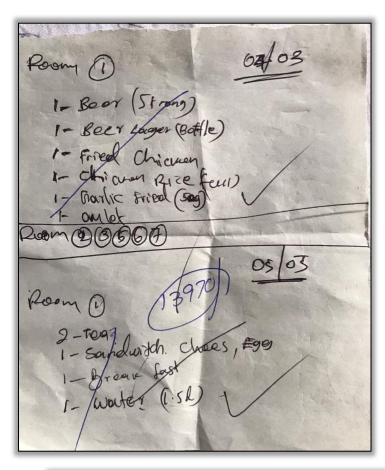
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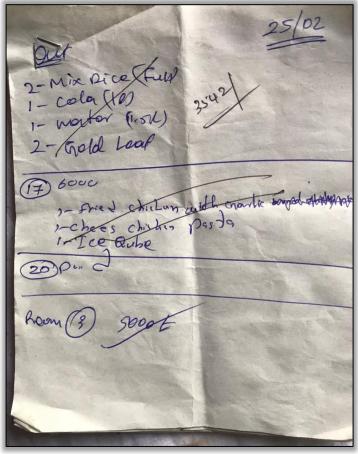
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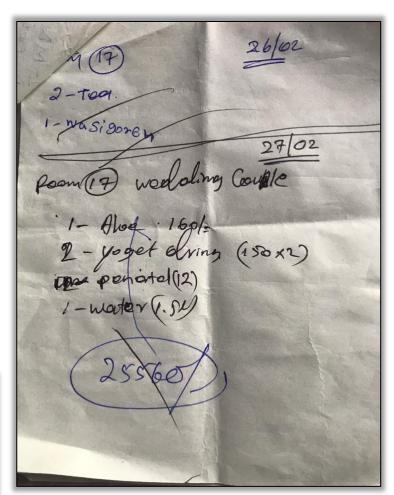


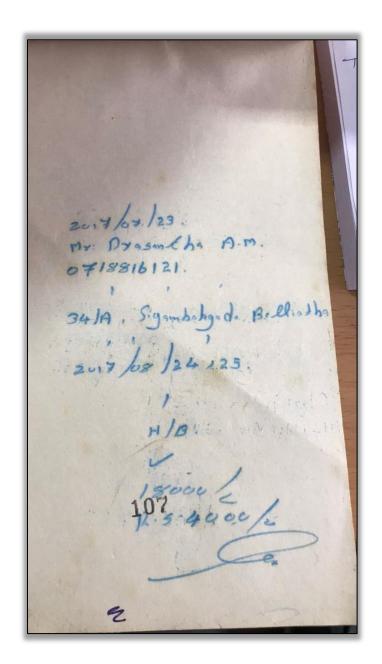


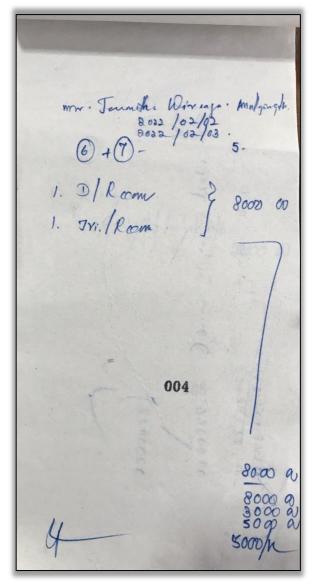














Our Team

