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Project Proposal

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**Hospital Management System for
Norris Clinic (pvt) Ltd
Group :TW2**

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Contents

1. Background.....	3
2. Problem and motivation	4
➤ Problem.....	4
➤ Motivation.....	5
3. Aim and objectives	6
➤ Aim	6
➤ Objectives.....	6
4 . System overview	7
➤ System Diagram	7
➤ Flow Diagram	7
➤ Inventory Management System (IMS).....	9
➤ Billing & Invoicing System.....	10
➤ Patients Medical Records Management System (PMRMS)	11
➤ User Registration & Login Management System.....	12
➤ Communicating System.....	13
➤ Minor Staff	14
➤ Appointment Schedule (Patients)	15
➤ Payroll Management System.....	15
5. Literature review	17
➤ Hospital Management Systems	17
➤ New Coding Structure	17
➤ Increased Security for Patient Medical Records and Personal Data	17
➤ Equality and Transparency	17
6. Conclusion	18
7. Methodology.....	18
➤ Requirements Engineering Tools.....	18
➤ UI Design tools.....	18
➤ Development Tools and Technologies.....	19
➤ Testing Methods	19
➤ Integration Method – GitHub.....	19
8. Evaluation Method	20
9. References	21
10. Appendix	22

1. Background

The Norris Clinic (pvt) Ltd is one of the best clinical situated at Colombo which offers good services for patients. Currently, all the processes done by the management system are conducted manually which is a burden to the staff as it increases the workload thereby decreasing efficiency. This also decreases the valuable time of the employees.

All the patient's information is written down and filed when they come in for registration. Therefore, this process is very troublesome and hence searching takes a great deal of time. At present, the system requires several paper forms, with data stores spread throughout the hospital management infrastructure. On forms, information is frequently lacking or not compliant with management standards. Forms frequently get misplaced in transit between departments, necessitating an extensive auditing procedure to ensure that no crucial data is lost.

A fully computerized system can be used to overcome the above challenges faced by the manual system and can be easily customized for their own customized reports the web application enables hospitals and doctors to better serve their patients Improved quality of patient care, Increased nursing productivity, Reduced the time spent, a Better quality of care, procedures, and service to Patients, and Control over the costs incurred by diagnosis-related groups. Therefore, they choose us to develop a web application and also the client is willing to have additional features to suit their needs.

The new design system includes the following information; patient information, user management, appointment scheduling, minor staff, inventory management, payment management, Communicating system, billing and invoicing system, and payroll management. With all these requirements the owner of the hospital A.I.Ruwan Ekanayake has requested us to develop a web application to manage their tasks more efficiently and effectively.

2. Problem and motivation

Due to the lack of an online management system the hospital has been facing many challenges that can affect all operations of the hospital and efficiency of patient care.

Currently the hospital has,

➤ Problem

- **Inefficient Management of patient records**

All the healthcare workers of the hospital maintain documents manually for their every task. So, using paper-based systems can lead to mistakes, misplacing important documents, and requiring a lot of time to find records. This can delay proper treatment of patients and increase the likelihood of medical errors.

- **Poor inventory management**

Currently this hospital stores all the inventories manually. Inadequate inventory management can lead to overstocking or overstocking of medical supplies, which can impact patient care and increase costs.

- **Limited access to real time information**

Manually scheduling appointments can lead to errors, double bookings and long wait times, which can impact patient satisfaction and lead to poorer health outcomes.

- **Limited communication and collaboration**

In such cases, health care providers and departments depend on communication methods like phone calls, emails, or paper-based notes, which can be time-consuming and ineffective.

This can lead to delays in patient care and increases the risk of medical errors. Managing patient care across multiple departments or locations with limited collaboration can also be challenging. If a patient may receive treatment from multiple providers or departments, such as imaging, laboratory, and pharmacy without an online management system, it can be difficult for providers to share information and collaborate effectively to ensure the better patient cares.

- **Low data security and privacy**

on manual processes or paper-based systems to manage patient data that is vulnerable to theft, loss or unauthorized access. Paper records or charts can easily be misplaced or stolen. So, this can compromise patient privacy.

- **Ineffective scheduling and appointment management**

Depending on manual scheduling methods, such as phone calls or paper-based appointments, are very time consuming. And also, hospital struggle to manage changes to appointments, such as cancellations or rescheduling, which can cause further delays and inefficiencies.

➤ **Motivation**

- **Improved patient care**

Come up with real-time access to patient information, including medical history, test results and medication records. This can lend a hand to healthcare providers to make decisions and provide high quality of care

- **Modernized administrative task**

The aim of implementing a hospital management system is to automate administrative tasks including patient registration, appointment scheduling and medical record management. It's helping to save time and reducing errors

- **Improve operational efficiency**

Hospital management systems can help to manage resources such as staff, equipment and inventory, thereby improving operational efficiency and reducing costs. Can computerize all the details about staff, inventory and other details in a database instead of manual storing.

- **Improved patient satisfaction**

Improved scheduling and reduced wait times can improve patient satisfaction and increase patient loyalty.

- **Improved communication and collaboration**

Plan to implement a chat window as a better communication system. It facilitates communication and collaboration between healthcare providers for greater patient care. This system is a more useful communication method between internal staff during immediate emergency cases.

- **Enhanced security and privacy**

These systems can improve security and traceability by ensuring that patient data can only be accessed by authorized workforce, protecting against unauthorized access.

- **Greater accessibility**

The system is remotely accessible, allowing patient healthcare providers or any other users to access information and collaborate on patient care from anywhere at any time.

3. Aim and objectives

➤ Aim

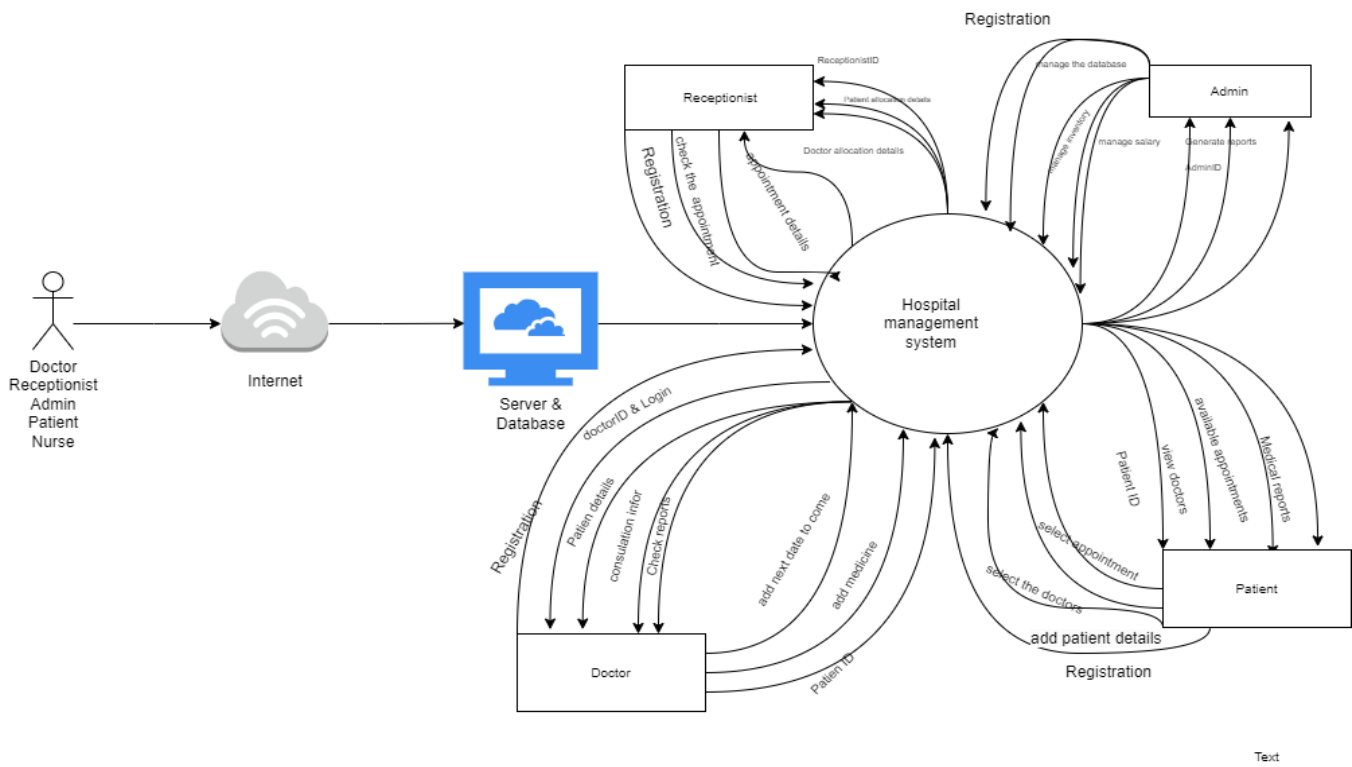
The main aim of our project is to develop a system for the medical providers and hospitals to provide a paperless, efficient, accurate system that benefits both the healthcare professionals and patients. The system provides transparency, medical and patient information security, payment equality and a proper coding structure to the healthcare system and streamlines the process across a selected hospital chain; that can be further implemented Island wide. And also, to improve and simplify the workflow of hospital management, to give a better patient experience. However, it manages a wide variety of functions.

➤ Objectives

- Design a computerized system to maintain the patients and billing section.
- Structured data on staff performance.
- To minimize hospital operating costs.
- Better communication between the hospital departments.
- Manage physical and medical checkups service.
- Deliver quick and reliable service on a real-time basis.
- Handles activities of major departments in a hospital like:
 - User registration and login management (scheduling, registration)
 - Inventory management system
 - Billing and invoicing system
 - patients' medical records management system (PMRMS)
 - Communicating system
 - minor staff
 - appointment Schedule(patients)
 - Payroll management system

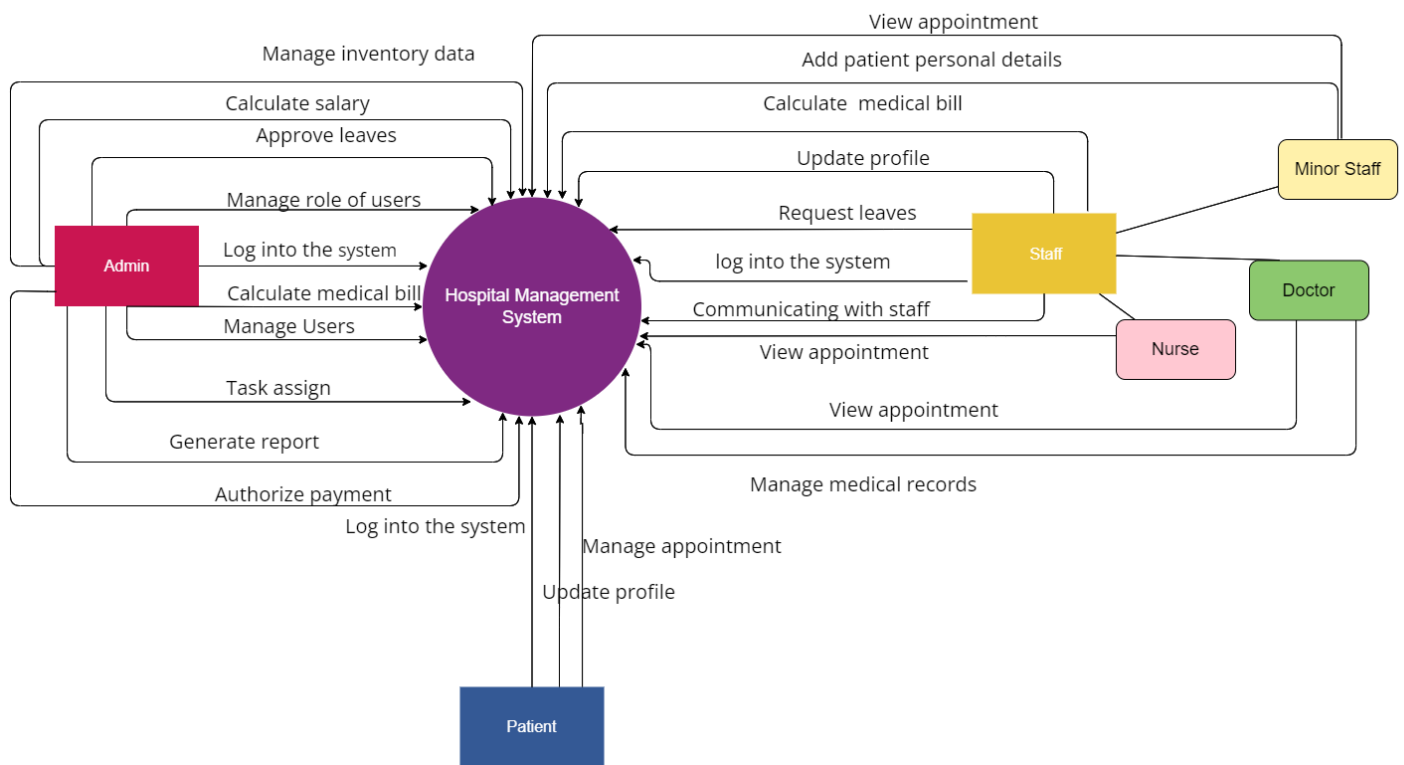
4. System overview

➤ Flow Diagram



Text

➤ System Diagram



➤ **Inventory Management System (IMS)**

An inventory management device (IMS) in a hospital is software that enables the sanatorium to tune and manage all of its medical supplies, system, and medicines. IMS allows to ensure that the health facility has enough resources accessible to satisfy affected person needs at the same time as averting overstocking or running out of substances. Here are some key features of an IMS for a hospital Item tracking, Inventory control, Integration with other systems, Reporting and Security

Normally inventory management system is tracking and managing the inventory of goods in a business. According to this system keeps details of all the inventory of the hospital which may include various departments such as pharmaceuticals and medical equipment's of name out the few.

This function refers to the system and processes to manage the stock of organization with the involvement of Technology system. This function can be used to stock add inventory details, update the inventory based on the sales details, store the details of the inventory, delete existing inventory details, and view inventory report daily or weekly based. When deleting existing inventory details can't be done everyone.

In that part can doing for inventory manager. In this system we use a coding system to every inventory item and dividing to no of sections items and each section has code. Another special thing is when some item quantity level is going low the system informs the inventory manager. This system uses cloud technology in that case user can log onto the system in any computer.

According to this system there are functional requirements, unfunctional requirements and technical requirements.

The functional requirements are stock monitoring, product Attributes, reporting & analytics, usage of cloud technology, set reminder and restock inventory.

The unfunctional requirements are security, usability, reliability, scalability, and Cost-Effectiveness.

The technical requirements are system platform, network connectivity, database, memory, and hardware.

Through implementing an IMS, a hospital can enhance the efficiency of its inventory control strategies, reduce waste, and price, and make sure that sufferers obtain the care they need without interruption.

➤ **Billing & Invoicing System**

A billing and invoicing system can be an incredibly valuable tool in a healthcare setting. The system offers numerous advantages that can benefit both healthcare providers and patients.

Firstly, a billing and invoicing system can help improve accuracy and efficiency. Automating the billing process can significantly reduce the likelihood of errors such as incorrect calculations or missed charges. This, in turn, can help streamline the invoicing process and reduce the time it takes to generate and send invoices. Ultimately, this can help healthcare providers save time and money while improving their bottom line.

Secondly, a billing and invoicing system can help healthcare providers improve cash flow. By reducing billing errors and streamlining the invoicing process, healthcare providers can reduce the time it takes to receive payments. This can be particularly important for small practices or hospitals that may struggle with cash flow issues.

Also, a billing and invoicing system can help healthcare providers comply with regulations related to billing and coding. By ensuring that invoices are accurate and comply with relevant regulations, healthcare providers can reduce the risk of audits or fines.

Finally, a billing and invoicing system can help improve patient satisfaction. Providing clear, accurate billing statements can help patients better understand the services they received and the associated costs. This can help improve transparency and trust between patients and healthcare providers, ultimately leading to better patient experiences.

In conclusion, a billing and invoicing system can offer numerous advantages to healthcare providers. From improving accuracy and efficiency to reducing costs and improving patient satisfaction, implementing a billing and invoicing system can be an effective way to improve healthcare operations and outcomes.

➤ Patients Medical Records Management System (PMRMS)

Patient medical record management system is an automated platform or digitalized form to capture, store and manage patient medical records. It is usually part of a larger hospital management system and provides healthcare providers with access to critical patient information such as medical history, diagnosis, treatment and test results. As well as record some personal details about the patient like discounts, examine time period that useful for other systems. Mainly administrator and the doctor responsible for this task. This module provides access to critical and complete patient data leading to high quality cost effective and efficient patient care.

As **functional requirements** of this system,

- Patients Information management- System can store and manage the personal details (name, age, gender, contact number etc.) for newly added patients. View the recorded details of the registered patient and updated the existing information. Also, can remove the data from the system.
- Medical history management - The system must be able to store and manage the patient's medical history, including previous diagnoses, surgeries, allergies, immunizations, and chronic conditions. Can delete, update, and view those details as a functionality.
- Patient treatment plan management – Can store and manage current and future treatment plans, including medications, laboratory results, imaging tests and other relevant medical information. Then can view details during the arrangement of the plan, update existing details with deleting past details and new records to the system or report.

When it comes to **non- functional requirement** of this system, it includes with

- Security -this should be designed to ensure confidentiality, integrity and availability of patient data.
- Usability- System should be user- friendly and easy to use for all user of this feature.
- Performance- System can be manage and store large amount of patient data with minimum delay and error.
- Reliability-And should be available or reliable for 24 hours of the day.
- Speed -Must be designed to respond quickly to user requests with minimal latency

Finally keep a log of errors, provide capability of backup and recovery. And respond time, user interface, back-end, front-end and should user more reliable database to store patient data can be taken as **Technical requirement** of this feature.

➤ User Registration & Login Management System

User management allows to manage the scope of access to the application and the content visible to dedicated users.

It keeps track of registration and login details about users (patient, staff etc.) and manage them

In the user module, staff can register yourself. Staff are registered in the system by entering their personal contact details. After Registration, users can log in with their own email id and password.

If the user forgot their own password, then user can request for password using their own email id.

- **Patient**

The patient is registered to the system by the receptionist. Patients can be able to see their current medical condition (diabetic, pressure, cholesterol) according to their latest medical report. Patients can update their own profile picture, can change passwords, view available doctors, book or cancel an appointment, make payment, can view their medical history.

- **Doctor**

They can be able to see their schedule for today and appointments for can manage appointments, can view medical data of their own patients. After examining the patient, the doctor generates a medical report of the patient.

- **Admin**

Admin can manage all registered users. Admin can update the user information and delete the user. Admin can keep track of the appointment history, and the doctor's notes.

- **Functional requirements**

- User registration
- User authentication
- User profile management
- Manage database
- Each user has unique user interface

- **Nonfunctional requirements**

- Security
- Reliability
- Availability
- Maintainability

- **Technical requirements**

- Database
- Web technologies
- Backend
- Front end
- Memory
- Hardware requirements

➤ Communicating System

Gone are the days when medical professionals used papers and other traditional means of communication. We are also switching from paper-based filing to digital data storage. These changes also had a significant impact on communication management within the hospital.

We provide a user-friendly interface and easy-to-use applications which add value to the staff. Our dedicated team will understand client requirement and provide a customized solution accordingly. from this web application, All the staff can maintain helpful conversations about urgent matters. If there's any urgent thing to share with the staff it can be easily done through this system.

All the staff can access this communication system including the doctor, Nurse, and admin can be able to share important details via this system. As a functional requirement, all the logged users (doctors, nurses, and admin) should be able to chat through this application. Following are the functional requirement of the communication system

- Should be able to send the messages
- Should be able to reply to the messages
- Should be able to edit the sent messages
- Should be able to delete the unwanted messages

Non-functional requirements are what make a system successful. It is impossible to complete the task without seeing the agreed non-functional requirements. followings are the-functional requirements in the communication system.

- Reliability - specifies how likely the system would run without a critical failure
- Scalability -should be able to accommodate a growing number of users and messages without slowing down.
- Security – this is a non-functional requirement to ensure that all data within a system or part is protected from malware attacks or unauthorized access.
- Usability This feature affects users. It shows how effectively you can learn and use the system.

As a new requirement of the client, we decided to implement a new feature to protect the privacy of communication by sending direct messages.

➤ Minor Staff

In a hospital management system, "minor staff" refers to non-medical workers who work in the hospital's administration and support departments.

These staff members play a significant role in the hospital's operation and contribute to its successful and efficient operation.

Receptionists, administrative assistants, medical secretaries, cleaning staff, maintenance personnel, security personnel, and other support staff are examples of minor staff.

Depending on their position and department, their duties may vary, but in general they operate in the background to keep the hospital running efficiently.

The specific tasks and activities that the system must be able to carry out to support the job of the minor staff are referred to as the **functional requirements** for minor staff in a hospital management system.

- Assign task: according to the needs of the patients and doctors, the minor staff should be able to assign tasks to other staff, such as nurses.
- Leave apply and manage: first, you need to choose who is the admin. Then apply for leave and specify the reason and date. The system will show a list of all the approved leave requests for the day the employee plans to take leave.
- Attendance marking: the system allows authorized staff members to access attendance records of minor staff members in real-time. They can view attendance data, including the date, time, and duration of each minor staff member's shift.

The system's **non-functional requirement** is:

- Security: Information on patients, doctors, and employees should be secure and secured from unauthorized access or misuse due to the hospital management system.
- Performance: the system should be fast and responsive, allowing minor staff to quickly access patient information and perform their tasks without experiencing any delays or system downtime
- User-Friendly: the system should be easy to use and navigate, so that the minor staff can easily enter and access data.
- Reliability: Minor staff members need reliable and accessible hospital management systems to perform efficiently, leading to better patient care and improved overall hospital performance.

A hospital management system's minor staff technical requirements refer to the specific equipment and software required to support the work of non-clinical staff members. This may include technology such as data backup and recovery, performance, and security measures to ensure the system is both efficient and secure. Ensuring that these technical requirements are met can help improve the productivity and efficiency of non-clinical staff members, leading to better patient care overall.

➤ Appointment Schedule (Patients)

In hospital management system an appointment schedule for a patient refers to the system or process used by healthcare providers, such a doctor, other healthcare professionals, to manage and schedule appointments with their patients. This system is used to ensure that patients receive timely and efficient care while also helping healthcare providers manage their time effectively. The appointment scheduling involves understanding the patient requirements by asking the right questions and determining the right strategies for the delivery of care.

In this system patients can submit the appointment, delete the appointment and update appointments. And those appointments can be viewed by the doctor and admin concerned only.

In this system have,

- Through this system, users have the freedom to express their experiences on the services they received using a rating system.
- Through this system have two database systems, a patient's details database and appointment details database.
- The system will send a copy of the patient's appointment via email once the appointment is made.
- There is a limit of appointments that can be approved from this system. (25 appointments per day)

Functional requirements

- User interface – The software should have user- friendly interface
- Appointment management – The system should allow users to create, edit, and cancel appointments
- Reminder and notification – The system should provide reminders and notifications to users to ensure they do not miss their appointments

Nonfunctional requirements

- Security - The software should be designed to protect sensitive information such as personal data, appointment details, and payment information from unauthorized access or theft.
- Accuracy – The system should be user data in accuracy.
- Usability - The software should be easy to use and navigate, with a user-friendly interface and intuitive design.
- Performance - The software should be able to handle a large number of appointments
- Reliability - The software should be reliable and available at all times.

Technical requirements

- Frontend – react js
- Backend – Node js
- Database management - The software should be integrated with a database management system to store and manage appointment information
- Programming language and platform - The software should be developed using a specific programming

➤ Payroll Management System

A payroll management system is a solution that automates the process of calculating and processing employee salaries, benefits, taxes and other deductions.

This system is important because it helps to ensure that all the staff members are paid accurately and on time. It also helps to prevent overpaying and underpaying employees by keeping track of employee work hours, salary and taxes.

In payroll management system database should keep the details about the employee details, payroll information and tax information in organized and secured manner.

This system will add a new employee when log in to the system and get the information from the user and assign a basic salary to each staff member. And any user can view their payroll details when they want. When there are taxes, allowances, special discounts payroll information should be updated. When an employee removed from the organization particular

Payroll information will be deleted.

Every staff member can get a monthly report of their own payroll information

Non-functional requirements for this system,

- Scalability - System should be capable of maintaining the growth of the organization and changing needs according to the requirement
- Integration - All the data should be accurate and up to date
- Security - Since the payroll information is very sensitive and the confidential system should have strong security features.
- Compliance - System should be comply with the legal requirements of other parties

Technical requirement for this system

- Data backup – all the payroll information should backup to a cloud system when every time informations are updating
- Database – System should store the all the details related to payroll in a database
- Automation – This is the ont of the most important requirements in this system. The system should automate all the salary calculations, tax deductions and other manual processes to reduce errors and save time.

4. Literature review

The healthcare industry in Sri Lanka is a rapidly growing sector, and with the advent of technological advancements, the need for effective and efficient management systems has become increasingly vital. In this literature review, we will explore the existing research and literature on hospital management systems and the implementation of new coding structures, increased security for patient medical records and personal data, equality in healthcare professionals' payments and transparency in the healthcare industry in Sri Lanka.

➤ Hospital Management Systems

A hospital management system is an integrated system that manages all the aspects of a hospital's operations, including patient management, appointment scheduling, and inventory management. A study by Senarathne and Kumara (2017) on the implementation of hospital information systems in Sri Lanka found that these systems have been shown to improve hospital operations, reduce medical errors, and improve the quality of patient care.

➤ New Coding Structure

The implementation of a new coding structure is a crucial step towards ensuring accurate data recording and efficient data management. In Sri Lanka, the International Classification of Diseases (ICD) coding system is used for diagnosis and treatment coding in healthcare. A study by Silva et al. (2019) suggests that the implementation of the ICD-11 coding system can improve the accuracy of data recording, reduce errors, and enable interoperability between different healthcare systems.

➤ Increased Security for Patient Medical Records and Personal Data

With the increasing amount of patient data being collected and stored electronically, ensuring the security and privacy of patient information has become a significant concern. A study by Jayasundara et al. (2018) highlights the importance of maintaining data confidentiality and privacy in healthcare and recommends the implementation of robust security measures to prevent unauthorized access to patient information.

➤ Equality and Transparency

In Sri Lanka, there is a growing awareness of the importance of equality and transparency in healthcare. A study by Gunawardena et al. (2018) on healthcare transparency and accountability in Sri Lanka found that there is a need for greater transparency in healthcare financing and resource allocation. The study also recommends the implementation of a comprehensive monitoring and evaluation system to ensure accountability and transparency in healthcare.

5. Conclusion

In conclusion, the implementation of a hospital management system with a new coding structure, increased security for patient medical records and personal data, and a focus on equality and transparency in healthcare can significantly improve the quality of patient care and the overall efficiency of the healthcare system in Sri Lanka. The existing literature suggests that such measures can reduce medical errors, improve data accuracy, and ensure data confidentiality and privacy. However, there is a need for further research and evaluation to assess the impact of these measures on healthcare outcomes in Sri Lanka.

6. Methodology

In this section, we discuss the methodology used for hospital management system. In which they fall into, software model, Requirement gathering and analyzing, system's design, system's implementations, as well as testing.

➤ Requirements Engineering Tools

- StarUML
- Draw.io
- Microsoft office

In this section, we discuss the methodology used for Hospital management system. UML diagrams, Star UML, Draw.io, Figma, AdobeXD , MERN Stack, Microsoft office and HTML, CSS are used as technical tools in our project. StarUML is a software engineering tool which is used as a requirement engineering tool. Object oriented modelling capabilities are offered by StarUML. Most of the diagram types specified in UML 2.0 are supported. Draw.io, currently known as Diagram net, is free opensource software. It is also used as a requirement engineering tool and used for creating UML diagrams. Microsoft office for document creating purposes. Those tools are easy to use, and we are familiar with those tools.

➤ UI Design tools

Choosing the right UI tool for a hospital management system depends on the complexity of the system, customization level, and development team's skillset and preferences.

- Bootstrap: Bootstrap is a popular front-end framework that allows programmers to quickly create and design a user interface (UI) for a hospital management system. It is flexible and adaptable, making it an effective tool for developing a user-friendly and responsive UI for a hospital administration system.
- React: React is a JavaScript library that enables developers to build modular and reusable UI components for hospital management systems. It is well-suited to creating complex user interfaces that require dynamic content and frequent updates. It is a powerful tool for building high-performance and intuitive user interfaces for hospital management systems.

➤ Development Tools and Technologies

- **MERN stack**

MERN Stack is a JavaScript Stack that is used for easier and faster deployment of full-stack web applications. MERN Stack comprises of 4 technologies namely: MongoDB, Express, React and Node.js. It is designed to make the development process smoother and easier. Each of these 4 powerful technologies provides an end-to-end framework for the developers to work in and each of these technologies plays a big part in the development of web applications.

MongoDB - document database

Express(.js) - Node.js web framework

React(.js) - a client-side JavaScript framework

Node(.js) - the premier JavaScript web server

- **MongoDB**

MongoDB is a tool that can manage document-oriented information, store or retrieve information. This is an open-source NoSQL database management program.



- **Express.js and Node.js server tier**

Nodejs offers a genuine opportunity to build high-performance web applications from the ground up. Visual Studio Code will serve as our primary integrated development environments, with Sublime Text serving as our secondary editor. In addition, we will use React as the front-end framework and Express as the back-end framework for our application. Express is a NodeJS web application framework that adds.

- **React.js - front end**

React.js is the top tier of the MERN stack. This is a JavaScript framework for creating dynamic client-side applications in HTML. Complex interfaces are used by React using simple components.

➤ Testing Methods

- Unit testing.
- User acceptance testing.

➤ Integration Method – GitHub

This is a code hosting platform for version control and collaboration. It gives a chance to you and others to work together on projects from anywhere.

7. Evaluation Method

Task	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12
Client meeting												
Requirement Engineering												
Charter creation												
Scrum activity												
Charter approval												
Proposal creation												
Proposal presentation												
Database diagram												
Implementation												
System test												
Final report												

8. References

- Gunawardena, N., Kumara, R. M., & Kumara, N. N. (2018). Healthcare transparency and accountability in Sri Lanka: An analysis of policy and practice. *Journal of Health Management*, 20(4), 552-558.
- Jayasundara, D. S., Perera, S., & Samarasinghe, S. (2018). Privacy and security of electronic health information in Sri Lanka. *Journal of Health Informatics in Developing Countries*, 12(1), 1-11.
- Senarathne, K. W., & Kumara, K. H. A. N. (2017). An empirical investigation of factors influencing the implementation of hospital information systems in Sri Lanka. *International Journal of Health Care Quality Assurance*, 30(8), 685-697.
- Silva, D., Gamage, K. A. A., Weerasinghe, I., & Rathnayake, N. (2019). The impact of ICD-11 implementation on data quality in Sri Lanka. *Journal of Health Informatics in Developing Countries*, 13(1), 1-10.
- Technology, T.C.S. (2020) The functional and nonfunctional requirement for HMS, Hospital Management Software in Pune - 9765311999. Available at: <https://hospitalmanagementsoftwareinpune.wordpress.com/2020/11/27/the-functional-and-nonfunctional-requirement-for-hms/> (Accessed: February 24, 2023).
- Behara, G. (2014) Hospital Management System a project report submitted in partial fulfillment of the requirements for the award of the, Academia.edu. Available at: https://www.academia.edu/7149341/HOSPITAL_MANAGEMENT_SYSTEM_A_PROJECT_REPORT_Submitted_in_Partial_Fulfillment_of_the_requirements_for_the_Award_of_the (Accessed: February 24, 2023).

9. Appendix

The hospital management system makes it simple for us to save patient, employee, and inventory item records. To finish this project, just the Java Script programming language was used. There are a few menu options for entering records, editing records, searching records, seeing all records, and deleting records according to flow instructions for patients, employees, and inventory items.

