



# Sri Lankan Institute of Information Technology

Information Technology Project (IT2080)

Hospital Management System

Project Proposal Document

KDY\_2022\_WD\_1

	<b>Surname with initials</b>	<b>Registration Number</b>
1.	Nissanka N.M.H.H	IT21038778
2.	Kumari J.M.D	IT21152832
3.	Abeyrathne A.P.T.G.H.N	IT21063664
4.	Dissanayake D.M.T.K	IT21062506
5.	Senevirathne N.O	IT21096884
6.	Kiriella K.G.A.K	IT21035876
7.	S. P. Munasinghe	IT21058400
8.	M.M.S.B. Wijesooriya	IT21091452
9.	Wimalasooriya S.A.N	IT21034268

## **Table of Contents**

Background .....	3
Problem .....	3
Aims and objectives .....	3
System overview .....	4
Functional requirements .....	4
Administration .....	4
Patient management.....	5
Doctor management.....	5
Payment management.....	6
Inventory management .....	6
Lab management.....	7
Pharmacy management.....	8
Non-Functional requirements .....	9
Literature Review .....	9
Methodology .....	10
Tools and technology.....	10
Gantt chart.....	10
Work breakdown structure.....	10

## **Figures**

Figure 1 – System Overview.....	4
Figure 2 – Gantt chart .....	10

## **Background**

This is a client-less project made for local hospitals that provides OPD, lab testing, and pharmaceutical services. The major stakeholders that these hospitals are patients, doctors, inventory handler, pharmacists, and lab assistant.

## **Problem**

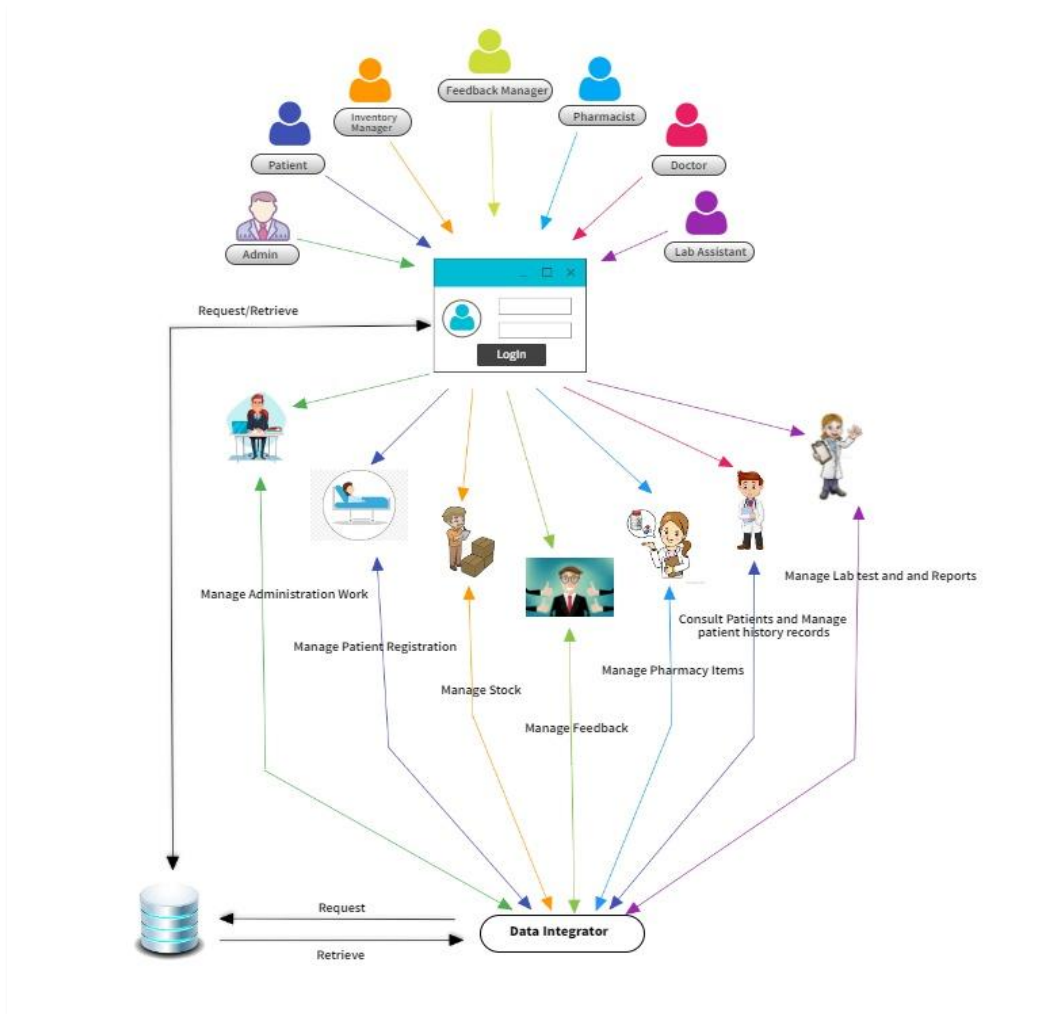
These hospitals that we aim can come across many problems including keeping and taking records, managing the inventory, pharmacy management.

- There are many instances where hospitals that keep records in documents written in books and paper get damaged by water or lost completely, this will affect the future references.
- Stocks that are maintained by paperwork can be misplaced when finding important records.
- When purchasing pharmaceutical goods, even customers making appointments can take a considerable amount of time, so managing time is key making the system efficient.
- Suppliers is a valuable asset, and is necessary to manage the pharmacy therefore their details should be stored and maintained well.

## **Aims and objectives**

After brainstorming among the group, we were able to come up with a solution to these problems. A fully functional online hospital management system specifically designed to counter the problems. Meaning the system should be able to store and take records, computerizing everything making it safe, reliable, and easy to use. We will also be providing a way for patients to make appointments online making it easy for patients and doctors to view and manage their appointments

# System overview



*Figure 1 – System Overview*

## Functional requirements

### Administration

In this function, the administrator can register doctors, and other staff members including lab assistant, pharmacist, inventory manager, and feedback manager. The admin that has a separate login can register doctors and staff using various fields which will update the database, the admin can

also search doctors and other staff members by either their name or their ID where their profile will be shown and if the admin wishes to do so the profile can be deleted. Aside from those functions the admin can also get a monthly report of registered users.

### **Patient management**

A patient can register with an account by inserting relevant details such as Name, Age, Gender, Telephone Number, Email, NIC and Password. After that patient can get logged in to the system. Then he/she can see his/her above-mentioned details which can be edited by clicking on “edit profile” button. Also, there is an option to delete his/her entire profile by clicking on “delete profile” button. Furthermore, there are more buttons that redirect to Pharmacy Management Page, Feedback Management Page and Appointment Management Page, and patient can see their appointment records and payment records in their account. In addition to that, Patient can click the “Check Availability of Doctors” button and select a date, it will generate a report to show which doctors are available for an appointment. After that patient can download that report by clicking the “Download Report” button. Furthermore, there is a Search option that allows the patient to search and get relevant details about doctors. That includes the doctor’s name and doctor’s specialty. The major beneficial act of this is that the patient can get all the patient’s details from one place without any interruption. The patient does not need to go to the hospital for everything. It will help the patients in their time management.

### **Doctor management**

In the medical industry, the connection between the doctor and the patient is one of the most important factors. A doctor's diagnosis of a patient is done in person and is extremely difficult. So, for that we can use technology to get rid of the problem by computerizing the details in the system. So, for that we make this a major functionality in our system. In here we implement the prescription form, update the condition report as well and on the other hand, there is an option for doctors to search the patients who are under their

doctorID. So, every doctor cannot view every patient's record which may violate the patient's information security. Here every doctor who registers for this system will get the options to search patients, view their appointments, delete appointments, update patient conditions and insert patient prescriptions as well. If the doctor is unable to conduct the consultation, he can delete the appointments and the patient gets a notification about the cancelation. There the doctor can view two interfaces for the two types of patients, for the new patients, there is one interface, for the old patients there is another interface as well. The difference is for the interface the old patients get, the previous condition button is available there. From that doctor can view the previous records of the patient. When deleting the appointments patients will get a notification if the doctor cancels the appointments for a date.

### **Payment management**

A patient after an appointment, Pharmacy getting medicine, or a Lab tests the patient will have to pay the necessary bill. This will bring you to the make payment page where you can pay. You can pay for different bills independent from others as an example you can make an appointment only and pay for the fee. You can add a credit/debit card for convenience. You can quick pay from the added cards. You can add multiple cards and when you go to pay you can choose from these cards. You can edit the information of the cards and remove an added card as well. In addition, you can check your payment history. You can generate a monthly income report for lab testing. This report takes an analytical look on the most common lab tests, and you can compare the lab tests taken.

### **Inventory management**

To carry a business or some sort of an organization, that business or organization needs inventory to carry on the operations which are done in that organization. So, in this scenario, the inventory of the developed system is mainly focused on the medicines or other items needed for lab and pharmacy, because the system that has been developed is a web application

for a hospital. As per the client's requirements, one of the major concerns was inventory management. This was done manually before this. So, as a solution for the client, this system has been developed to make the client's tasks easier in Inventory Management. When a request is made to the inventory manager by the pharmacist or lab assistant, which is done via the submission of the requesting form. So, according to that request, the inventory manager checks whether the items are available or not in the stock. If the items are available, the inventory manager issues those items. If the items are not available to the inventory manager order those items from the supplier by filling out a form. Moreover, when a new medicine or other items are needed to be added to the system, an inventory manager can register those new items to the system using a form. In this form, there is valuable information specific to that item. Inventory management can view the list of items that are available in the system currently. So, here a list is displayed with the available items in the system with their most important attributes. So that if the inventory manager wants to update or delete any item from the stock, he can do it by filling out a form. Then the system is updating the current stocks also. As an additional feature, an inventory manager can also search for any medicine or other items which are existing in the system currently. This might help the user to navigate to the specific item he/she is searching for, and it would help the user to manage time effectively and efficiently.

## **Lab management**

The hospital management system has a laboratory. This laboratory is managed by a Lab assistant. And lab assistant can access the database.

Firstly, lab assistants need to log in to the system by providing the username and password. In the system, lab assistance supposed to view and manage all the test report details conducted in the laboratory. If the price changing in the particular lab test it will be updated by lab assistant.

If the patient comes, ask patientID from the patient and gets patient's corresponding details from the system then drawn a blood from the patient and register for the test.

Lab assistant suppose to view and manage all the patient's lab reports. Lab assistant can search, view and update completed lab reports and patient details. After receiving the lab report result from the chemist, search for that particular patientID and upload result report. If the patient has made the payment for the lab report, update report state to the issued and send the result report via email. When the result report is received but if the patient has not made the payment to the lab report. The report status will be updated to the available status. Lab assistant generating a report to get the highest count of issued lab reports in a month.

### **Pharmacy management**

The hospital management system has a pharmacy. This pharmacy is managed by a pharmacist. And pharmacist can access the database.

Firstly, pharmacist needs to log in to the system by providing the username and password. In the system, Pharmacist is supposed to view the pharmacy home page. When pharmacist search the relevant patient ID, the prescription and the patient details will be shown.

After receiving the prescription, search for that particular medicine and check availability of the medicine stock. Pharmacist can generate a total amount of that medicines and sent it. If pharmacist needs to check the payment status, after fetching that particular record pharmacist issue the medicines for the patient. Pharmacist suppose to view and manage all the medicines. Pharmacist can search, view, and delete medicines. If pharmacist need to maintain medicine stock, can insert, update, delete stock out quantity of medicines and it will automatically update the current available medicine count. If the medicine count is low, pharmacist can request the pharmacy products through the inventory. Pharmacist is Generating a monthly report to get the maximum sold out pharmacy products. This will help to determine which medicines are sold the most in a month and how much is the medicine count.

### **Appointment management**

This function is managed by system admin. Admin can view all the details of appointments made by the patients. After completing the registration patient can make a appointment. By appointment ID system admin will identify patients. Admin can schedule new appointments, and can make



updates about the current appointments as well. Patients will be notified about the canceled or rescheduled appointment by the admin. System admin can check whether the patient made the required payments. Appointment details can be searched by doctor name and speciality. Aside from these functions system admin can get monthly report of number of patients for each speciality.

## **Non-Functional requirements**

- Every page should load within 2 seconds
- The database should have appropriate security measures

## **Literature Review**

The hospital we are aiming to has a physical system where they log all their records in books, and the systems that currently exist is too complicated for this local hospital. So, in the climate we are living now with the fuel shortages and covid-19 this can be an inconvenience as well as a disadvantage to the hospital. We thought of few solutions for this issue. In the end the solution we came up with to make the hospital system combination of online web application and can be used as a physical application.

We are planning to create this system for a small-scale hospital. Because of this our system must be easy to use and accessible. The workers who are utilizing this system is not very technology savvy same as the patients. So, the system must help make the activities more efficient not hinder their performance due to lack of digital knowledge. Since it is a small-scale business, the system must be cost-effective as well.

Because of the country's prevailing issues travelling has been extremely hard so the hospital has been losing lot of money. This obviously leads to laying off employees and even neglecting lot of patients as well. Through the implementation of this system the hospital can gain more revenue than before since the hospital's pharmacy has been implemented to the system. We are confident that this solution is the best one for the hospital.

# Methodology

## Tools and technology

We plan to use –

- Java
- PHP
- MySQL database
- GitHub
- Eclipse

## Gantt chart

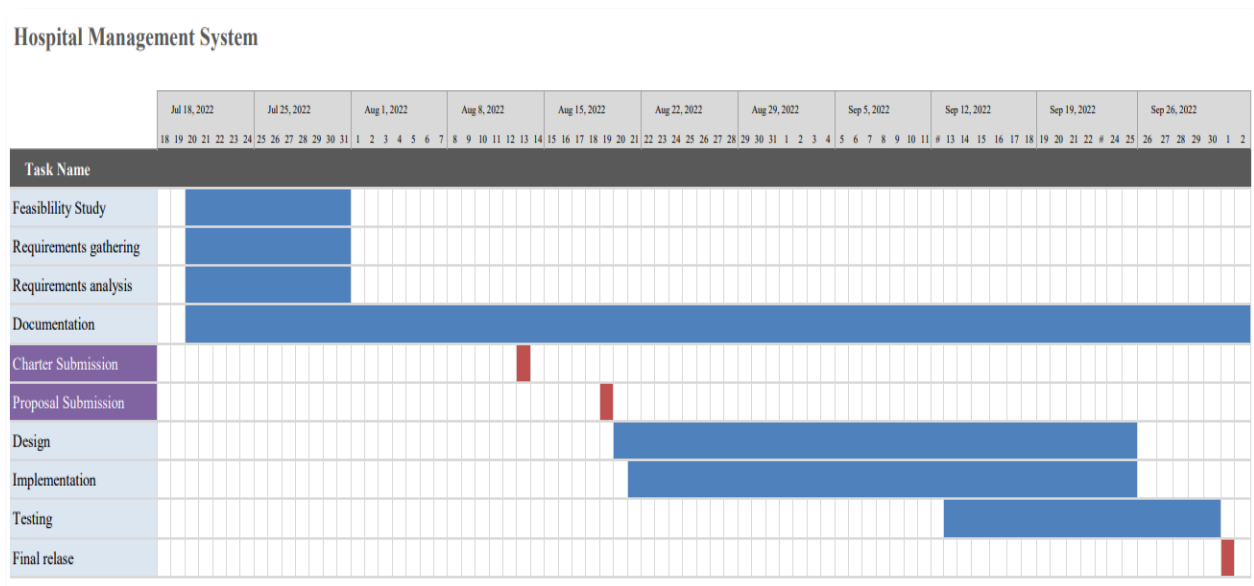


Figure 2 – Gantt chart

## Work breakdown structure

Name with Initials	Brief Description of the Function
--------------------	-----------------------------------

Nissanka N.M.H.H	<u>Administration</u> Doctors, and staff registration and account management. Login function for doctors and staffs. Update / Delete doctors, and staff profile. Search relevant details relating to doctors, and other staff. Generate a report to show monthly users
Senevirathne N.O	<u>Doctor Management</u> View all the patient Old records through the system Insert the medicines.(prescription) Insert the patient condition if the patient is a new patient to the doctor. Update the patient condition if the patient is an old patient of the doctor. Delete the appointments that are assign to the doctor. Search the patients , If the doctor wants to get the information. Generating a report to get the highest count of affliction in a month
Wijesooriya M.M.S.B.	<u>Patient Management</u> Patient account registration. Patient login. Patient profile view. Update patient information. Delete profile. View appointment records. View payment records. Search the doctors. If the patient wants to get the information.

	<p>Generating a report to show which doctors are available for an appointment.</p>
Kumari J.M.D	<p><u>Pharmacy Management</u></p> <p>Search the patient's ID for getting the prescription.</p> <p>Getting patient details.</p> <p>Search drugs whether it is available or not.</p> <p>Generate a bill for relevant prescription.</p> <p>Insert pharmacy products to the database.</p> <p>Update pharmacy products count.</p> <p>Delete expired pharmacy products.</p> <p>Pharmacy products are not deleted permanently from the system database for future references</p> <p>Generate a monthly report what are the maximum sold out products.</p>
Kiriella K.G.A.K	<p><u>Inventory Management</u></p> <p>Insert stock items into the inventory.</p> <p>Stock items can be updated, and damaged items can be deleted.</p> <p>Search for necessary items if necessary.</p> <p>Damaged items are not deleted permanently from the system database for future reference.</p> <p>Items are supplied by a supplier. New supplier details can be Inserted.</p> <p>Calculate the total amount of stock available in the inventory, the total amount of deleted items, and issued items, and calculate the most issued item in the month.</p> <p>Generate a monthly stock report</p>

Abeyrathne A.P.T.G.H.N	<u>Lab Management</u> Show the details price list of the particular lab tests. Getting patient details for lab test. Update details and price of laboratory tests. Delete particular laboratory tests which are no longer performed. Search particular laboratory report for patients and finding the availability Update result report for particular patient. Generating a report to get the highest count of issued lab reports in a month

S. P. Munasinghe	<u>Payment Management</u> Take the bill information from the pharmacy. Take the doctor fee. If there is a lab test take the fee. Make payments through credit or debit cards. Add credit/debit Cards. Delete credit/debit Cards. Update credit/debit Cards. Check payment history. Generate report monthly income report about the lab testing.
Dissanayake D.M.T.K	<u>Appointment Management</u> Read/view appointment details made by patients. Create/ schedule individual appointments including doctor details Update available time slots and dates of each doctor Delete/ cancel appointments which are no longer exists Report - Calculate number of appointments for each specialty
Wimalasooriya S.A.N	<u>Feedback Management</u> Implements a search function to search complains by patient ID Create a report/log of the complains monthly. Create a function to delete older complains. Creates a page for the manager to handle complains sent by the users Create a page for the user to send complains. Implements a functionality to respond complains.

	<p>Create a FAQ section.</p> <p>Create a page for the manager to add, delete FAQs.</p> <p>Create a user FAQ page to ask questions for clients</p>
--	---