

Royal Rundle Hospital



DATABASE MANAGEMENT AND DESIGN PROPOSAL



CONTENTS

EXECUTIVE SUMMARY	2	HARDWARE/SOFTWARE	6
OBJECTIVES	3	PROCESS	7
BACKGROUND	4	DIAGRAM	8
SOLUTION	5	TABLES	9
		CONSIDERATIONS	10

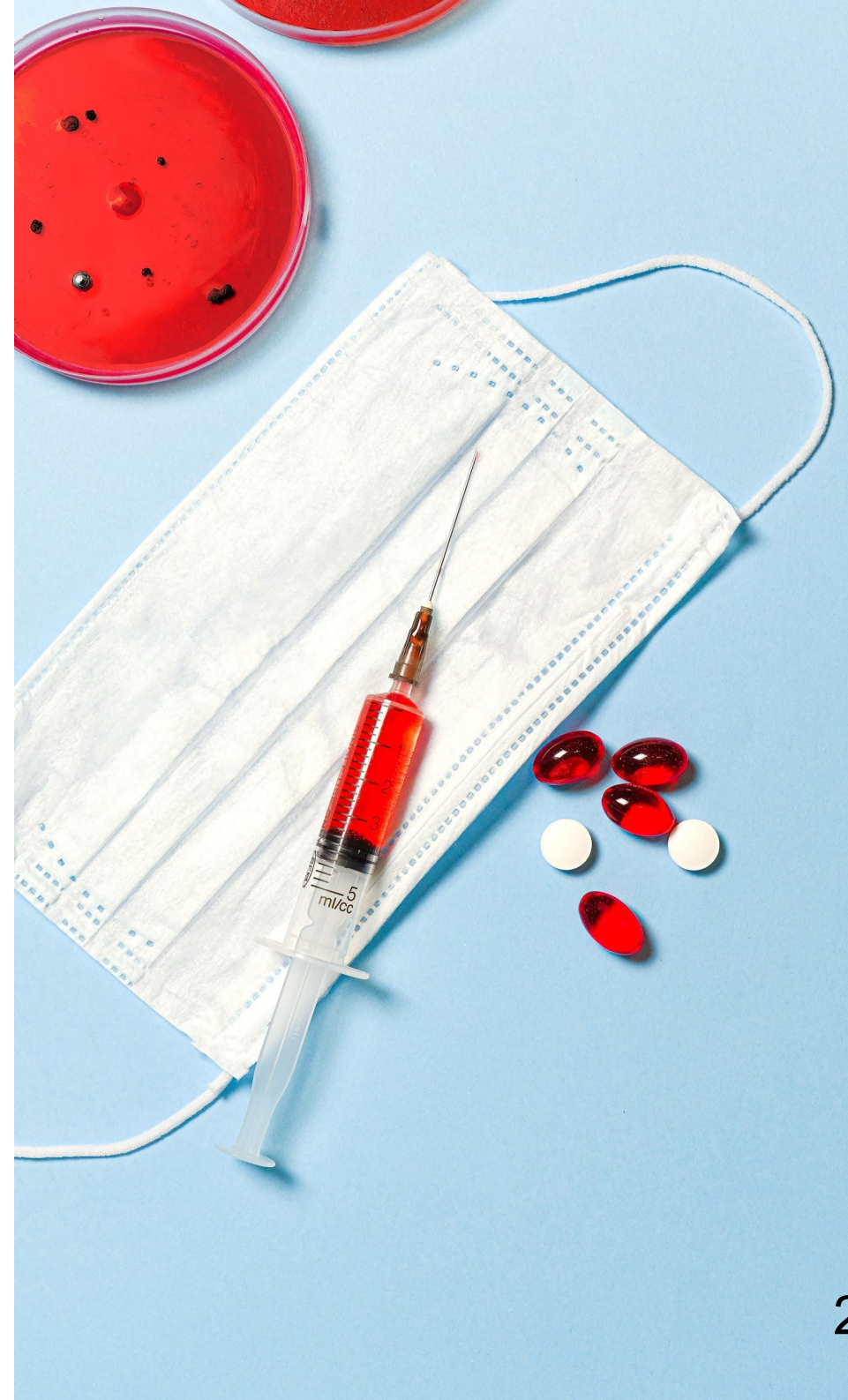
EXECUTIVE SUMMARY

The Royal Rundle Hospital is a multispecialty hospital that offers a large number of services to the community, including: surgical, 24 hour emergency department, mental health, aged and palliative care, etc.

The different departments that the hospital has are the following:

Orthopedic, Pathology, Emergency, Dental, Gynecology, Anesthetics, ICU, Blood Bank, Operation Theater, Laboratory, MRI, Neurology, Cardiology, Cancer Department, Corpse, etc.

The Hospital Administration is aware of the advantages that the use of Information Technologies have in the maintenance and management of the operation of a place with these characteristics, for this reason, this project aims to offer a complete technological solution that improves exponentially the experience of the different users involved in the operation of the hospital. Factors such as efficiency, accessibility and security are another of the key points to take into account when developing the system, so special emphasis will be placed on these issues in order to offer a comprehensive solution in response to customer needs.



OBJECTIVES

Within the design of the database there will be certain considerations in relation to the level of authorization and access that will be granted to different users depending on the type of information they handle. Table 1 shows an example

There will be certain requirements and expectations for this project.

Among the notable requirements are:

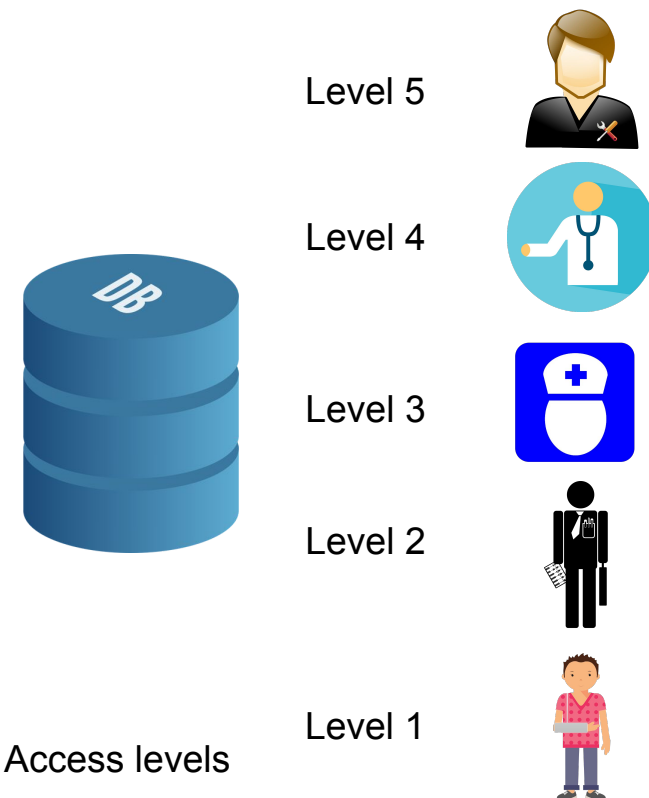
- Giving doctors the ability to view, edit and manage their patients' information
- Provide full access to supervisors in charge.
- Provide patients the ability to view their medical records

The expectations that are had of the database are the following:

- Create a secure system which cannot be accessed by unauthorized users.
- Automatic updating of databases
- Periodic maintenance of the system

USER	INFORMATION
	Profiles
Doctors	Patients information
	Introduce own informaton
Patients	Access doctors notes
	Profile
Nurses	Include some notes
	Patients condition
Working staff	Administrative
	Accounting
Compounders(doctors)	Inventory
	Information about
Administrators	Full access

Table 1 Users .



Picture. 1 Access levels

BACKGROUND

Royal Rundle Hospital has a data collection and management system that lacks a solid technological structure since it is based on paper, the different processes (admission, update, administration, etc.) are carried out manually and are maintained and physically protected within the facilities in the corresponding department. These types of administrative activities are time-consuming which could sometimes affect the productivity of doctors in relation to the number of patients they can attend for a certain time.



Currently Royal Rundle Hospital does not have the tools required to enter patient information electronically, which represents a challenge for the design of the platform once it is completed.

The current system makes the process of collecting information from patients complicated, increasing the chances of errors or omissions. A clear example of this is when updating or changing the history corresponding to a patient, a paper-based system can take longer and there is a risk of loss or confusion of the records, instead when moving to an electronic system the process is carried out in real time with the certainty that the update will remain in the database.

The implementation of a DBMS solution will be a great advance and support for the hospital administration since it will give clarity, fluency and transparency to the information management carried out by the different users that are in the hospital. This database must be designed according to the needs of each of the responsible actors, in this case, doctors, nurses, working staff, pharmacy staff and administrators.

SOLUTION

Research

In recent years the use of database management systems has gained popularity among the business community, organizations of all sizes have joined this trend by increasingly adopting the use of these technologies, the need being one of the main reasons. Computer systems have evolved significantly, currently handling large amounts of information that is difficult to handle in computer programs designed for less complex functions.

A database management system * DBMS) is software that interacts with the place where the database is hosted.

Choosing the right DBMS is crucial as it brings the needs of the business closer to the technical capabilities and structure of the database, facilitating the work of database analysts who will focus the construction of the system around what the company in its totality requires.

MySQL is an open source database management system. Some of its features include:

- Working on multiple platforms
- Back up
- Using multi-layered server design with independent modules
- Import / Export data
- Executing very fast
- Java support
- Supporting data types.
- Custom functions

It is able to provide multiple instances of the same database server, and automatically update and delete data in the nested tables

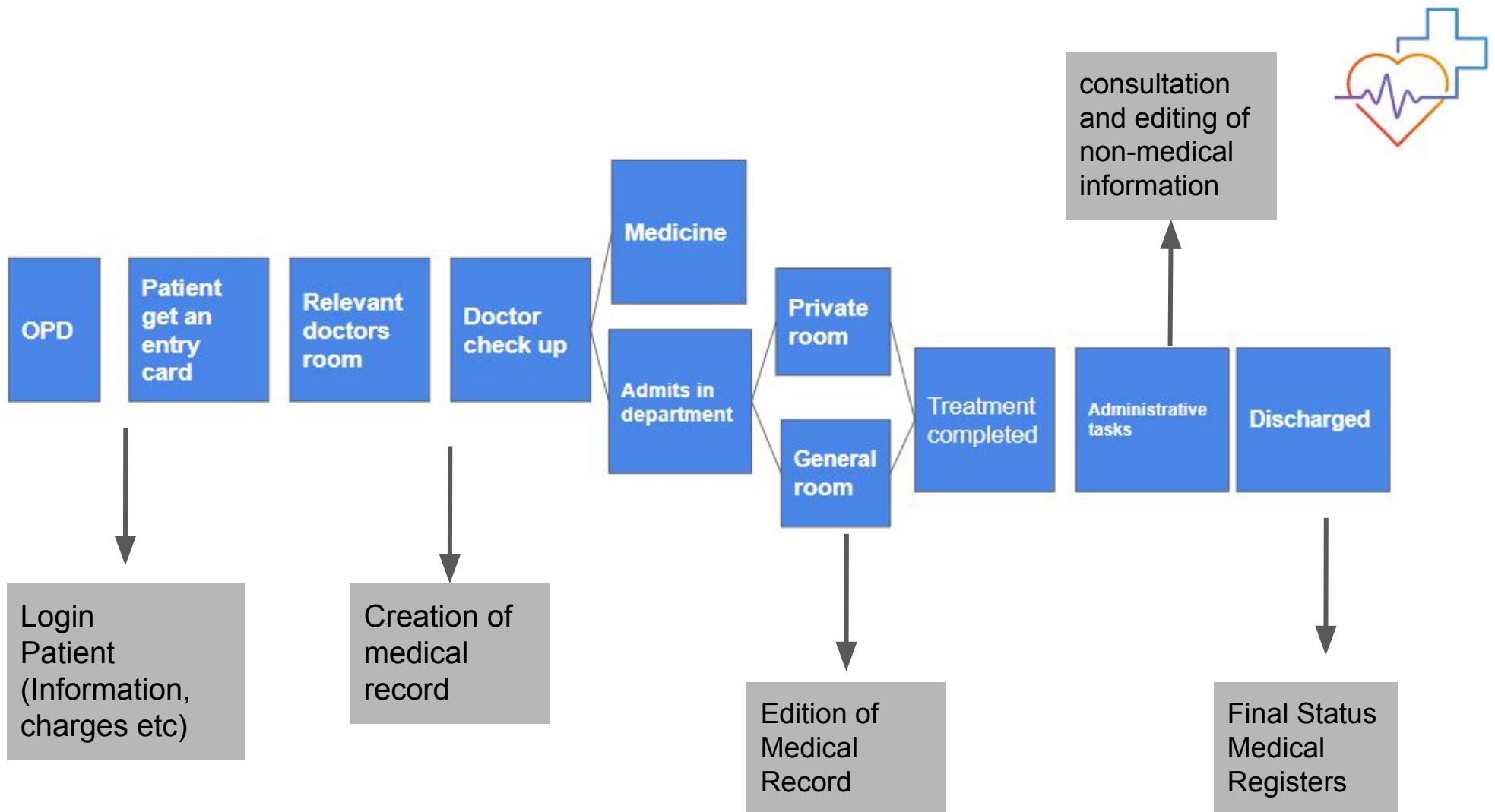


Hardware/Software. In order to have a fully functional and reliable system that meets the technical and performance requirements that are expected, it should have a physical space only reserved for these tasks. The hospital's IT department will be responsible for deciding where the hardware that will house the databases will be placed, a special place will be dedicated within the hospital which will have the human and material resources for its operation, 2 enterprise servers will be installed . The software requirements will be handled with the MySQL system, in relation to the operating system to be used, it will work with Windows 10.

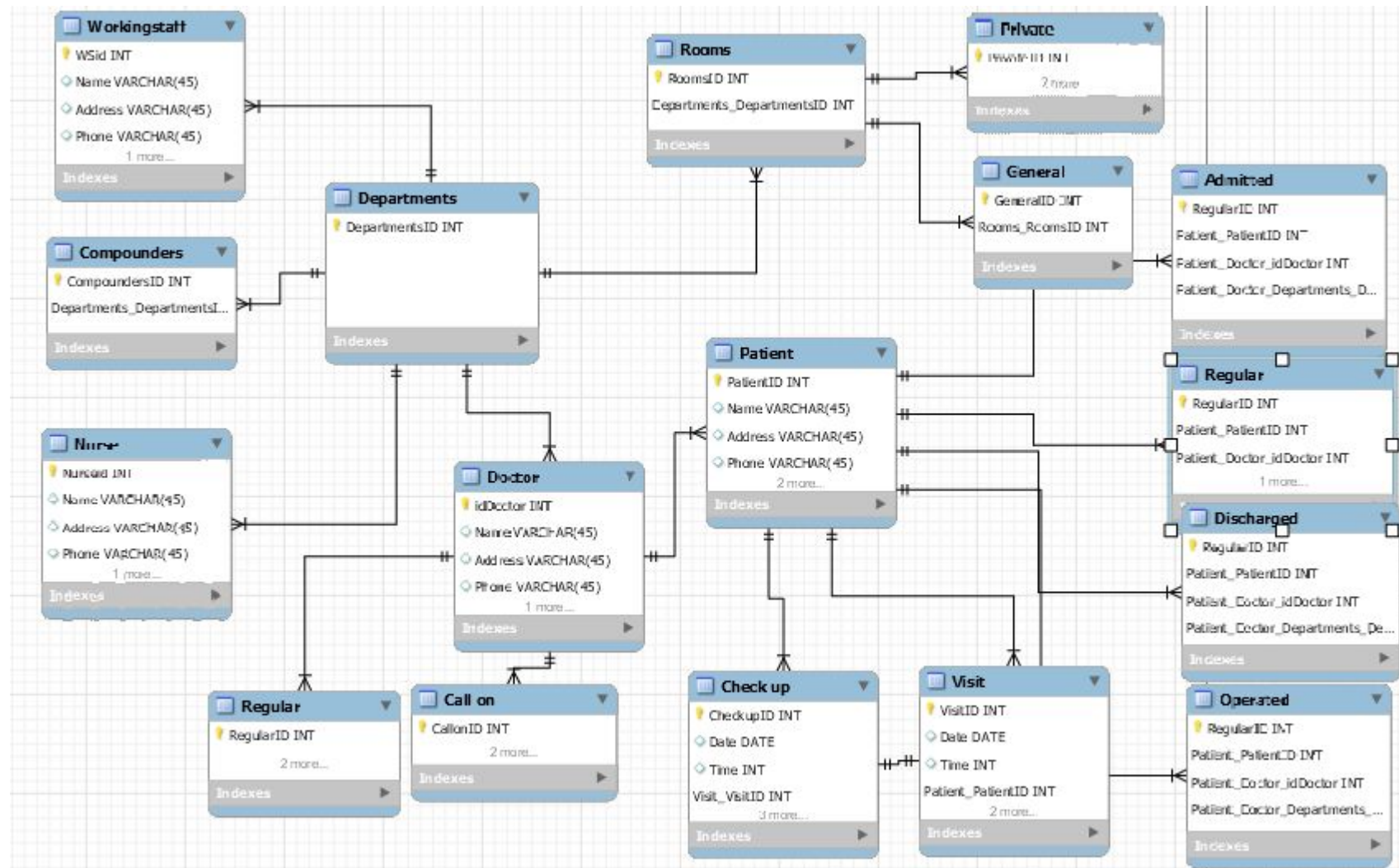
The constant monitoring of the performance of the system will be of utmost importance since it will allow the program to comply in the future with the requirements set out by the organization, to facilitate this process, the system will collect information in real time that will be transferred to the IT department for its analysis and decision making.



IMPLEMENTATION REQUIREMENTS	
Personnel	
IT Security Officer	
IT Manager	
Hardware/Software	
Enterprise Database for server for testing operation	
Enterprise Database server for production operations	
MySQL	
Facilities	
A considerable space (room) for administration	



The following diagram shows the process carried out by the patient during his stay in the hospital as well as the participation of the system in each part of the process.



The following illustrations shows the logical model of Royal Rundle Hospital

TABLES

The tables that will be created for the system are shown below, detailing the different attributes to consider depending on each case indicated.

Table Departments

Column Name	Description	Data Type	Length
DepartmentID	Unique identification number	Number	12
RoomsID	Unique identification number	Number	12
DoctorID	Unique identification number	Number	12
NursesID	Unique identification number	Number	12
CompoundersID	Unique identification number	Number	12
WorkingstaffID	Unique identification number	Number	12

Table Nurses

Column Name	Description	Data Type	Length
NursesID	Unique identification number	Number	10
Name	Nurse's Name	Alphanumeric	30
Address	Nurse's Address	Alphanumeric	30
Phone	Nurse's Phone	Number	12
Email	Nurse's Email	Alphanumeric	30

Table Working Staff

Column Name	Description	Data Type	Length
WorkingstaffID	Unique identification number	Number	10
Name	Workingstaff's Name	Alphanumeric	30
Address	Workingstaff's Address	Alphanumeric	30
Phone	Workingstaff's Phone	Number	12
Email	Workingstaff's Email	Alphanumeric	30

Table Patients Regulars/Admitted/Operated/Discharged

Column Name	Description	Data Type	Length
PatientID	Unique identification number	Number	10
Name	Patient's Name	Alphanumeric	30
Address	Patient's Address	Alphanumeric	30
Phone	Patient's Phone	Number	12
Email	Patient's Email	Alphanumeric	30

Admitted			
Column Name	Description	Data Type	Length
AdmittedID	Unique identification number	Number	12
PatientID	Unique identification number	Number	12

Operated			
Column Name	Description	Data Type	Length
OperatedID	Unique identification number	Number	12
PatientID	Unique identification number	Number	12

Discharged			
Column Name	Description	Data Type	Length
DischargedID	Unique identification number	Number	12
PatientID	Unique identification number	Number	12

Regular			
Column Name	Description	Data Type	Length
RegularID	Unique identification number	Number	12
PatientID	Unique identification number	Number	12

Table Doctors Regular/Call on

Column Name	Description	Data Type	Length
DoctorID	Unique identification number	Number	10
Name	Doctor's Name	Alphanumeric	30
Address	Doctor's Address	Alphanumeric	30
Phone	Doctor's Phone	Number	12
Email	Doctor's Email	Alphanumeric	30

Column Name	Description	Data Type	Length
RegularID	Unique identification number	Number	12
DoctorID	Unique identification number	Number	12

Column Name	Description	Data Type	Length
CallonID	Unique identification number	Number	12
DoctorID	Unique identification number	Number	12

Table Visit /Check up

Column Name	Description	Data Type	Length
VisitID	Unique identification number	Number	12
Date	Visit day	Number	10
Time	Time day	Number	10
PatientID	Unique identification number	Number	12
DoctorID	Unique identification number	Number	12

Column Name	Description	Data Type	Length
CheckID	Unique identification number	Number	12
PatientID	Unique identification number	Number	12
Notes	Doctor notes	Alphanumeric	30
DoctorID	Unique identification number	Number	12

Table Rooms Private/General

Column Name	Description	Data Type	Length
RoomsID	Unique identification number	Number	12

Column Name	Description	Data Type	Length
PrivateID	Unique identification number	Number	12
RoomsID	Unique identification number	Number	12

Column Name	Description	Data Type	Length
GeneralID	Unique identification number	Number	12
RoomsID	Unique identification number	Number	12

Table Compounders

Column Name	Description	Data Type	Length
CompoundersID	Unique identification number	Number	12
DoctorID	Unique identification number	Number	12

CONSIDERATIONS

The changes and solutions presented will impact the different departments and operations carried out at the Royal Rundle Hospital, taking this into account, in case of implementing the system, it should be analyzed which areas will be the first to see the change. and based on the results obtained from an initial test, decide if the system will be imposed on the remaining departments at the same time or in stages.

It should be taken into consideration that once the system begins to operate, resources should be allocated periodically for the maintenance of the platform, this type of measure will ensure the correct functioning of the database over time. For this type of situation, a system administrator should be appointed per database to perform update functions constantly. These changes or additions to the structure of the organization can cause a considerable impact to the organization due to the simple fact that the hospital at the moment may not have the personnel required for this type of maintenance work since it was not necessary previously. .

Additionally, the hospital may have to hire additional staff to ensure that the database is secure, in addition to maintenance, each department may require network administrators and information security officers. The functions of these positions are basically to ensure that Each of the users involved can access the database and consult and alter information depending on their hierarchy and position within the hospital, thus ensuring that certain information is available only to authorized persons. In relation to external security, They will also be in charge of safeguarding sensitive information that on certain occasions is prone to being sought by cybercriminals

POSITION	TASKS
Database Administrators	Update servers Users Management Monitoring
Network Administrators	System security Monitoring
Security Officers	Protecting data organization Enforce security policies

Ethical practices

The treatment of the medical information of each patient is of utmost importance considering the type of data that is being handled, they are issues concerning the entire organizational structure of the hospital. These concerns are not limited to the access that can be given to the database but also involve the design of the database. Some of the ethical concerns surrounding the medical area involve the handling of large amounts of clinical information that can be valuable for both public and private research. However, medical records contain sensitive information that can be used in different ways, often in an unethical way. For this reason, medical confidentiality, respect for patients, their privacy and autonomy must be present at the time of using the database, in the same way the appropriate tools will be implemented so that this process can be carried out in the friendliest way possible.