

# Covid - 19 Hospital Management System



(Problem Statement - 6)

Presented By: Group 1



A close-up photograph of a person's hand pointing at a document. In the background, a medical syringe is visible on a surface. The image is dimly lit, with bokeh light effects in the upper left corner.

## **Problem Statement**

Design a software solution for hospitals to effectively manage Covid-19 patients and other hospital operations

## Challenges:

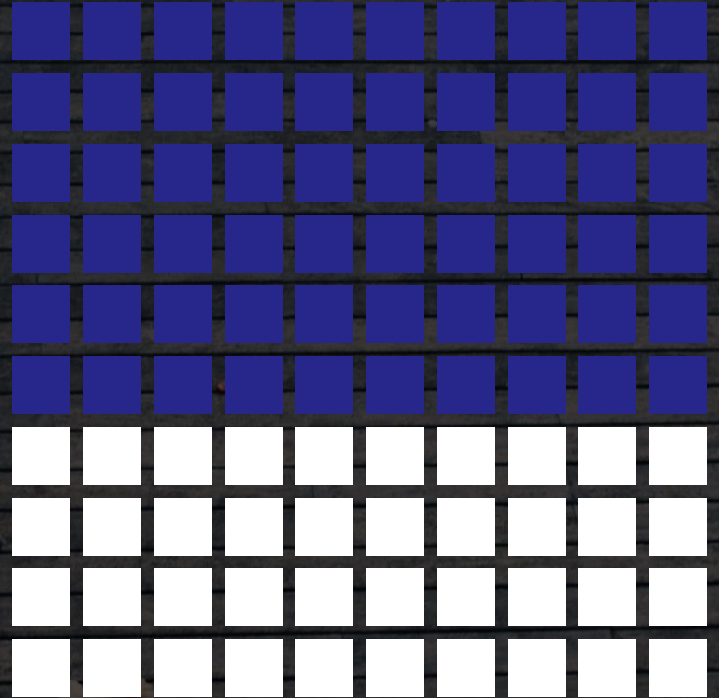
1. In the situation of Covid-19, hospitals possess the lack of resources as basic as the lack of availability of rooms.
2. Insecurity of the data.
3. Increase of Human Errors.
4. Making diagnosis and their reports difficult.

## Solutions:

1. HMS can select the rooms that are available and manage to provide a room to a patient as soon as it gets empty (with ease).
2. HMS makes it impossible for unauthorized personnel from accessing sensitive and private information, especially concerning patient records.
3. With automation of processes using an HMS, there is no room for human errors.
4. With the useful dashboards and reports provided by an HMS, doctors and other caregivers have easy and quick access to patient records and test results, thus increasing clinical competency all around.

**Let's move forward to the  
practical implementation  
of our solutions i.e.**

**Hospital Management System**



# Introduction:

It's a web application for managing hospital rooms and determining the patient's priority for isolation. The app provides a centralised hub for managing the patients and planning their distribution across hospital's rooms.

It allows nurses to keep track of the patients and their diseases in real time and to have an overview over the patients and rooms, and better manage the rooms assignment across patients.



**Tech stack comprises  
of three parts:**

1. Frontend
2. Backend
3. Database

# User



User(Nurse)

# Front end



Web app  
( Jquery)

# Backend



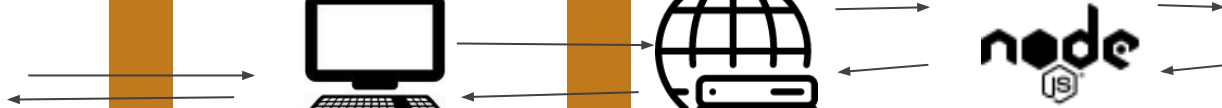
Server  
(Express.js)



API Service  
(Node.js)



Database  
MongoDB





# Frontend technologies



Core technologies



Implementations/  
Framework used



# Backend Technologies



Express.js



## Database:



Core technologies

# Mongoose



Implementation



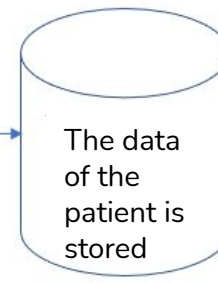
**LET US NOW WALK  
THROUGH THE  
ROADMAP OF OUR  
PRODUCT.**



Goes to a nearby health-centre for **check-up**.



HMS collaborates with Hospital



The data of the patient is stored

The database scans the information of the patient.

According to the **functionality** asked in the application:

1. A new patient can **added**.
2. **Availability** of the room is being checked
3. **Isolation** is provided if the room is available.
4. A person can **wait** if their reports are yet to come.



People can take necessary **measures**.



Nurses can notify patients by checking their status in the web application

# Application Functionalities:

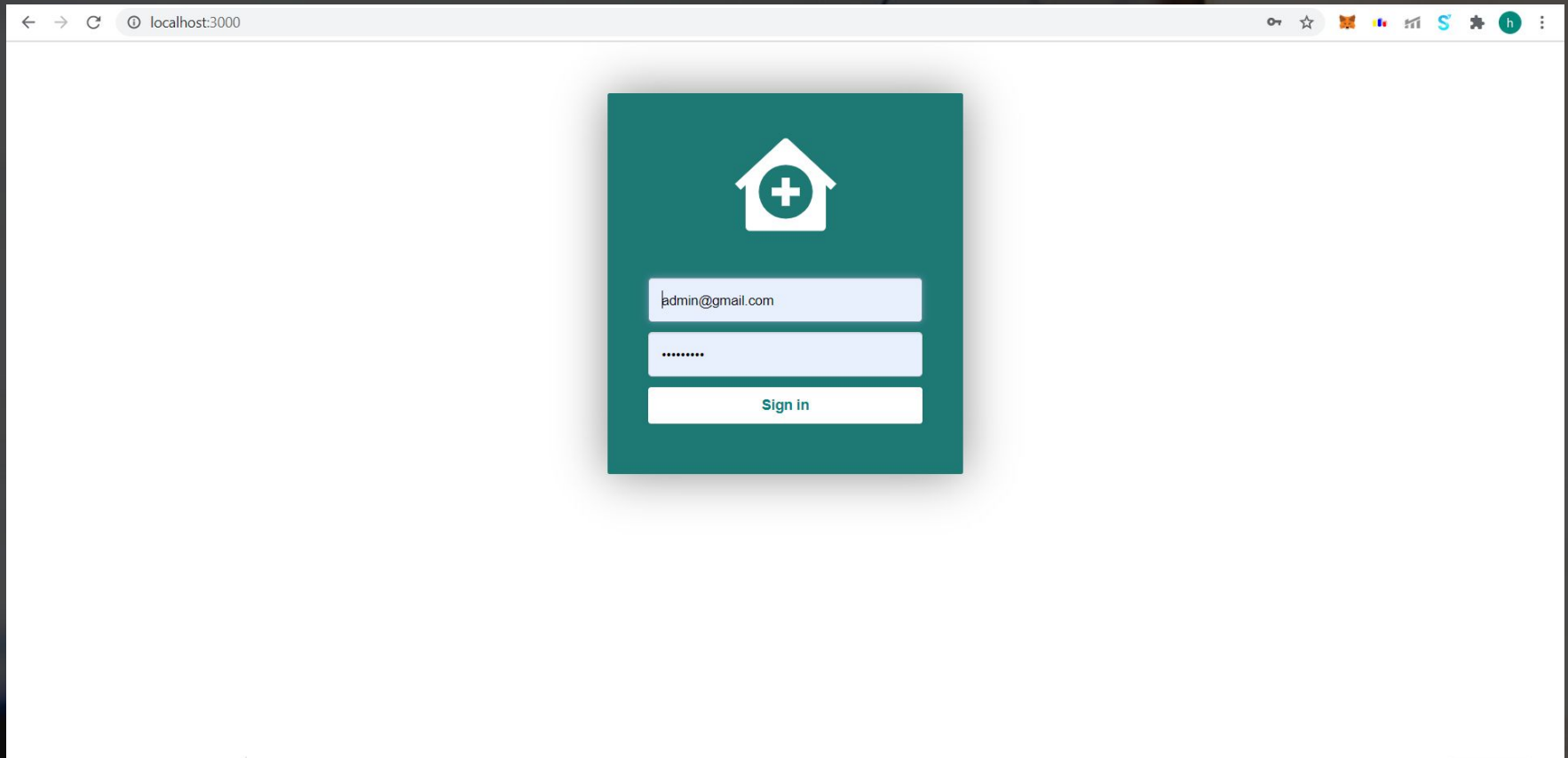
1. Dashboard area which comprises of three tabs :

- A. Patients in Isolation
- B. Pending Test Reports
- C. Available Rooms

2. Current Status of no. of patients infected, recovered and deceased


# Front-end Analysis

# Login Page:




← → ↻ ⓘ localhost:3000


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# Patients in Isolation:

Logout


 Dashboard

 Current Stats


 System Settings




0  
Patients in Isolation



1  
Pending Test Reports



12  
Available wards

 no.	Patients in Isolation	Room	Score
1	Alfred M.	12	83
2	Jill Smith	21	100
3	Maria Gomez.	45	34
4	Grace Lancaster	29	130
5	Mike Hannigan	139	89
6	Ziva Mishra	45	67
7	Yashi Sharma	35	2

First Name

Last Name

Hospital no.

Date of birth

Sex

Male


Female


Add patient


# Pending Test Reports:

← → ↺ 📍 localhost:3000/app

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 **Dashboard**

 **Current Stats**




0

Patients in Isolaion



1



Pending Test Reports



9

Available wards

Search patient waiting...

 no.	Pending Test Reports	Score
123	 Lakshit Dua	89

[Logout](#)[Dashboard](#)[Current Stats](#)[System Settings](#)

First name

Lakshit

Last name

Dua

Hospital no.

123

Date of birth

01/01/2000

Sex

Male



5

Patient score

No room assigned

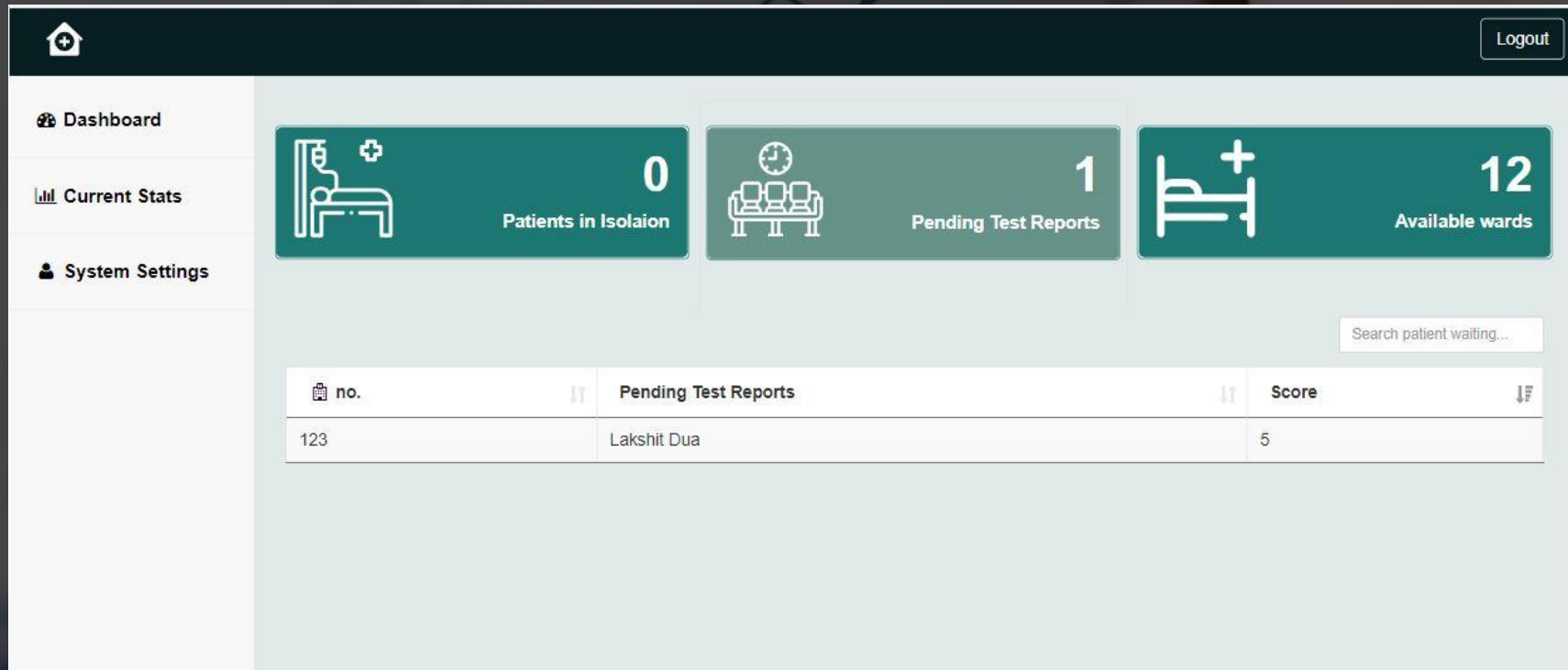
[Delete patient](#)

Search disease

Disease	Score	Diagnosis
Cough	5	<input checked="" type="checkbox"/>
Covid19	100	<input type="checkbox"/>
Dengue	18	<input type="checkbox"/>
Fever	3	<input type="checkbox"/>
Headache	2	<input checked="" type="checkbox"/>
Malaria	8	<input type="checkbox"/>
Pneumonia	2	<input type="checkbox"/>
Skin	7	<input type="checkbox"/>
Stomach ache	5	<input checked="" type="checkbox"/>
Throat cancer	1	<input type="checkbox"/>
Trill?	25	<input type="checkbox"/>

[Update patient](#)

# Pending Test Reports:



# Available Rooms:

Logout

Dashboard

Current Stats

System Settings

0

Patients in Isolation

1

Pending Test Reports

12

Available wards

Search room...

Free rooms

52

67

cancer

covid 19 room

covid 19 room 2

covid-19

covid-isolation-ward-floor-3

Emergency Room

General ward

General ward 2

Isolation room

Special Ward

Add new room in the system

Room name

Enter new room name...

Add room

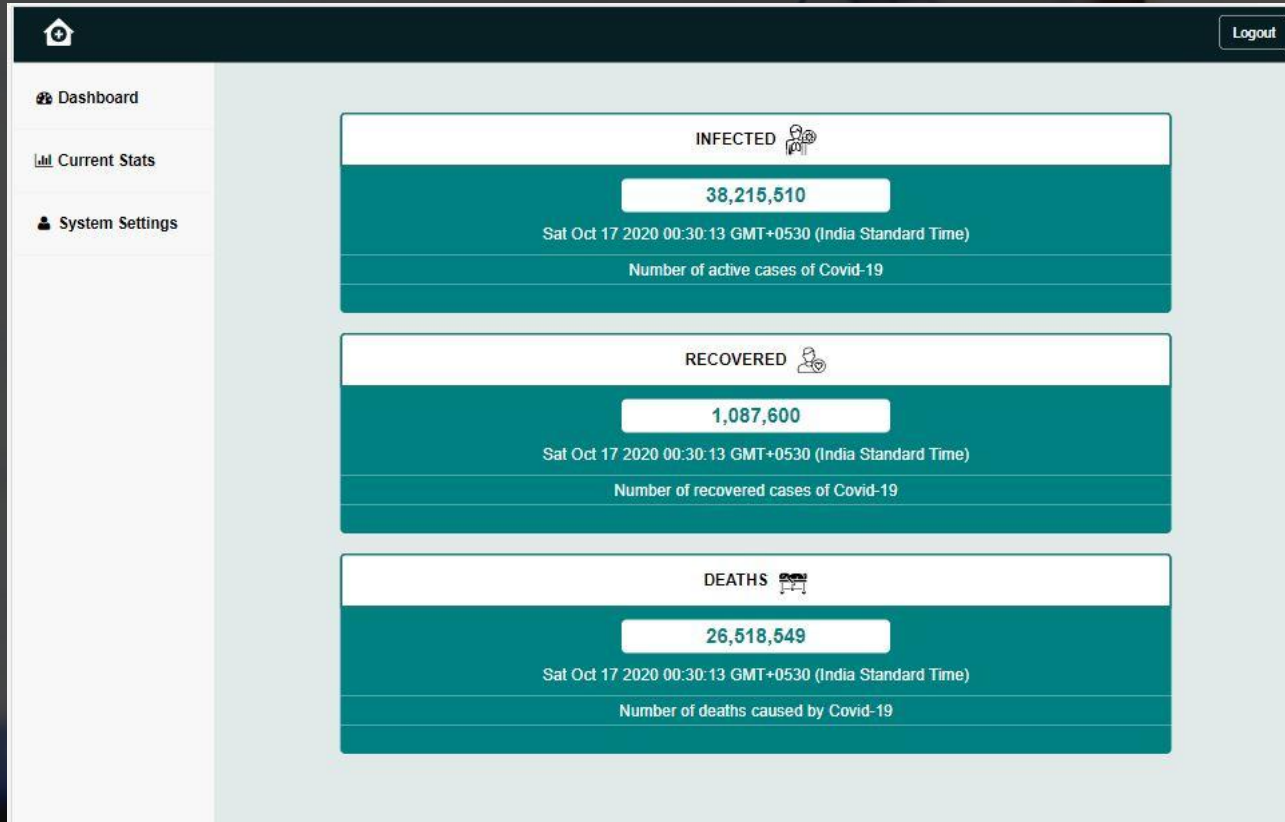
Delete rooms from the system

Search room...


Room	Select
67	<input type="checkbox"/>
cancer	<input type="checkbox"/>
covid 19 room	<input type="checkbox"/>
covid 19 room 2	<input type="checkbox"/>
Emergency Room	<input type="checkbox"/>
General ward	<input type="checkbox"/>
General ward 2	<input type="checkbox"/>
headache room	<input type="checkbox"/>
Special Ward	<input type="checkbox"/>

Delete rooms


## 2. Current Status:




# 3. System Settings



Dashboard



Current Stats



System Settings

Logout

Add new disease in the system

Disease name

Enter new disease name...

Disease score

Enter new disease score...

Add disease

Add a new user

Username

Enter username...

Password

Enter password...

Add user

Delete diseases from the system

Search disease...

Disease	Score	Select
Cough	5	<input type="checkbox"/>
Covid19	100	<input type="checkbox"/>
Dengue	18	<input type="checkbox"/>
Fever	3	<input type="checkbox"/>
Headache	2	<input type="checkbox"/>
Malaria	8	<input type="checkbox"/>
Pneumonia	2	<input type="checkbox"/>
Skin	7	<input type="checkbox"/>
Stomach ache	5	<input type="checkbox"/>
Throat cancer	1	<input type="checkbox"/>
Trill?	25	<input type="checkbox"/>

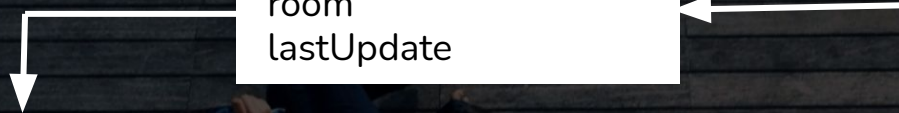
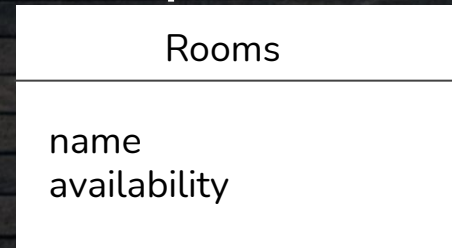
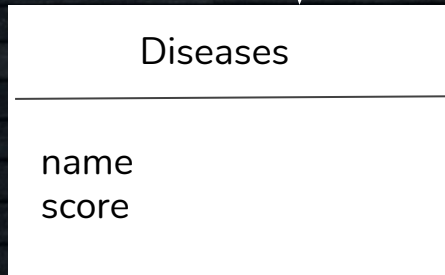
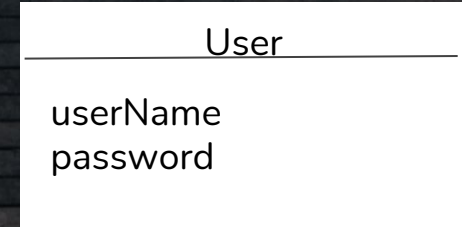
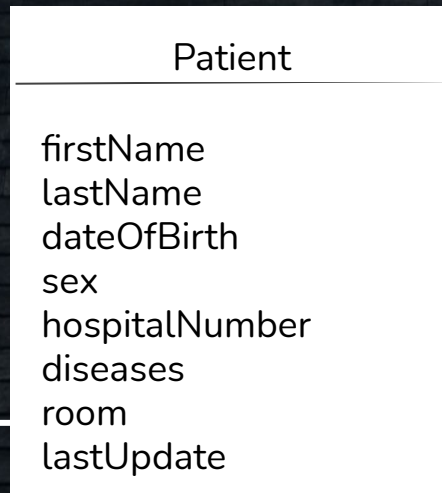
Delete diseases



# Back-end Analysis

The background is a solid teal color. In the upper right quadrant, there is a large, faint, semi-transparent pie chart. Several smaller, similar semi-transparent pie charts are scattered across the right side of the image. At the bottom right, there are faint, vertical, rounded rectangular shapes that resemble a bar chart.

Database Schemas →



A high-angle, dark photograph of a person lying on their back on a wooden deck. The person is wearing a light blue t-shirt and dark pants. A blue backpack is on the deck near their feet, and a pair of green flip-flops is also visible. The scene is dimly lit, suggesting dusk or dawn.

## Functionalities:

### -login System

- Add/Delete Patients.

### -add Users

- Update patient's diagnosis

### -Dashboard

- View patient's page
- Extract patient's information

### -current Statuses

- Total Status,affected and recovered.



## Routes:

1. `/app.js`
2. `/routes/login.js`
3. `/routes/app.js`
4. `/routes/disease.js`

## Routes Functionalities →

1. It connects the DB, and an express server is being created binding all other routes.
2. It is responsible for authenticating a user by the strategy defined by us using passport.js.
3. It simply renders the dashboard page where we have three tabs pertaining different actions.
4. It adds a particular disease type with its score which will be used for patients.

# Continued...

## Routes:

1. `/routes/patient.js`
2. `/routes/rooms.js`
3. `/routes/settings.js`
4. `/routes/users.js`

## Routes Functionalities →

1. It consists all the requests to get, add, update, delete a particular patient and even get the list of all patients.
2. Depending on the availability allocations are done and adding and deleting a particular ward depending on patients.
3. Working as a browser Route to render system settings page.
4. Add new Users and sign Out option.



# Rest APIs

## End Points:

1. `/app/getdiseases`
2. `/app/getpatients`
3. `/app/getpatient/:patient`
4. `/app/getrooms`
5. `/login`
6. `/app/adduser`

1. Retrieve all information about the diseases from database.
2. Returns information about all patients.
3. Returns information about a specific patient
4. Gets the current statuses/information about the rooms vacancy in the system.
5. User authentication to application.
6. Admin can give access to other staff members by adding them as user.

# Result

- Allows hospital staff to compute priority score of patients.
- Allocate rooms to patients based on their score.
- Manages availability of various rooms.
- Allows hospital staff to update patient's rooms



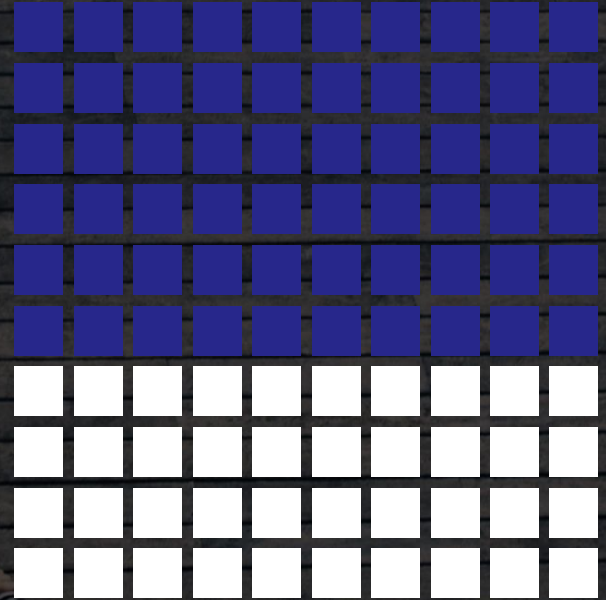
# Project Quality Attributes

- User-friendly design
- Extensibility
- Fast and Stable

# Conclusion

Through this app we tried to solve some of the problems faced by hospital staff in this pandemic.

This app provides a more structured way to manage availability of hospital beds for more optimized use of resources.





# Future Scope:

- We can tie up to various health centres so that this application can be useful in day to day management.
- We can expand our application by adding functionalities like online appointment for the patients.
- Various test reports and results will also be stored in database and can be made visible in patient's history.

...Continued

# Future Scope

- Create a chat forum so that many of the covid patients who are in home isolation can consult to their doctors if anything serious happens.
- Prescription and consult given by doctor in that chat forum will be stored in a database.
- It can happen that a person with low priority score will never get a hospital room.



# Thank You

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(Group-1)

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