Introduction

Purpose

The purpose of this document is to give a detailed description of the requirements for the National COVID Management System software. It will illustrate the purpose and complete declaration for the development of the system. It will also explain system constraints, interface and interactions with other external applications. This document is primarily intended to be proposed to a client for its approval and a reference for developing the first version of the system for the development team.

Scope

National COVID Management System(NCMS) helps to manage the existing healthcare system to face the ongoing pandemic,mainly considering the hospitals. Users must be able to identify the nearest hospital which can allocate a bed. Hospital staff must be informed about the arrival of a new patient.

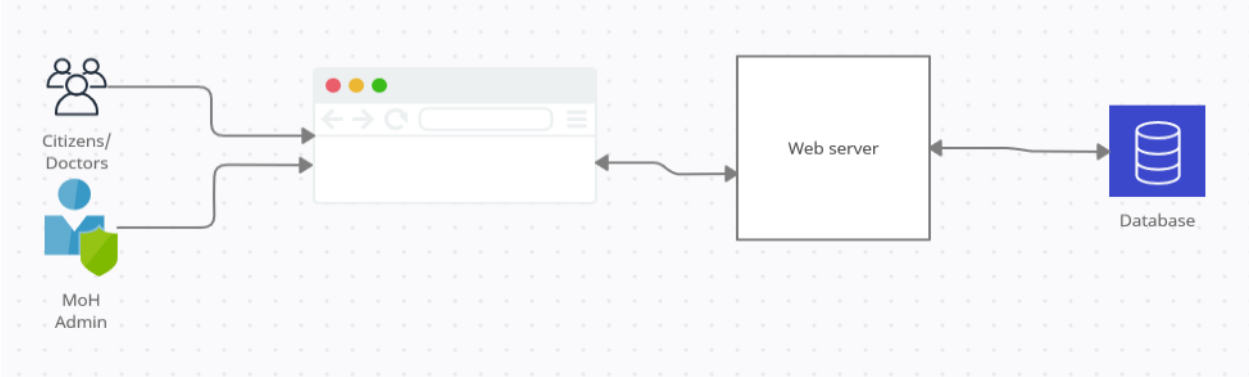
All system information is maintained in a database, which is located on a web-server. Users, hospital Staff, and the Ministry of healthcare(MoH) should access the application through the internet. The application also has the capability of representing both summary and detailed information about the statistics which must be provided for the MoH and citizens. According to the stats MoH plans on expanding the number of base hospitals.

Overall description

This section will give an overview of the whole system. The system will be explained in its context to show how the system interacts with other systems and introduce the basic functionality of it. It will also describe what type of stakeholders that will use the system and what functionality is available for each type. At last, the constraints and assumptions for the system will be presented.

Product overview

This system contains two parts: both are web applications which can be accessed through the internet. One is used by the doctors and the citizens. The Other one is used as a web portal by the MoH to register hospitals and doctors. all the data should be backed by a database and both parts communicate with the single database. To connect this database with the front-end a REST server is used.



Product functions

Here the functions that should be executed by the product itself are described. Detailed requirement analysis can be found in the special requirement section

Product must be able to register new patients while following below steps.

- Citizen create an account entering the geolocation and name.
- Parallely, Search for available beds in hospitals in the whole country.
- If vacant Beds are found, book a bed in the nearest hospital to users geolocation.
- Send the bed number and a unique serial number which is dedicated to identify the patient.
- If all the beds are filled add the patient to the Queue and send the Queue number and the patients serial number.
- As soon as a patient is registered notify the doctors about the arrival of the patient
- If the number of patients are more than 4 in any queue MoH should be notified.

Public and authorities(MoH) should be updated about the current state with the statistics as in country level, district level, hospital level Overall status until now

User characteristics

Three types of users are communicating with this system. Citizens, Doctors and MoH for different purposes. All of the requirements are described in the special requirements section. Citizens and doctors only can communicate with a part and the MoH is communicating with the other part.

MoH adds new data to the system while doctors and citizens will consume and manipulate them. Citizens also can register a new patient.

Assumptions

Doctors are already registered with the MoH register as a certified doctor.
MoH has an administrator to communicate with the programme.

Special requirement

This section contains all of the functional and quality requirements of the system. It gives a detailed description of the system and all its features.

User Interface

Figure 1 - Citizens, doctors and MoH administrators can access the web application with the URL and to logIn as a doctor user needs to enter the registered data with the MoH. all the users can either get the data which is prompted in the User interface. Citizens can register a new patient. Newly registered patients receive a serial no with a bed number or if there are no beds available a serial number and directed into figure 2.

Figure 2: When a new patient is registered a new screen with the patients serial number, hospital, bed no and if the patient is in the queue the queue number will be shown along with the daily stats

Figure 3 - A user Logged in as a doctor can see the working hospital and the beds with the patients and their severity which is marked by the doctor on the arrival of the patient. Doctors can release the patients.Doctors are notified when a new patient is registered.

Figure 4 - MoH administrator can enter the details of Doctors and the newly built hospitals and can observe the stats of the hospitals.MoH gets notified when the number of patients in a given queue exceeds more than the desired number.

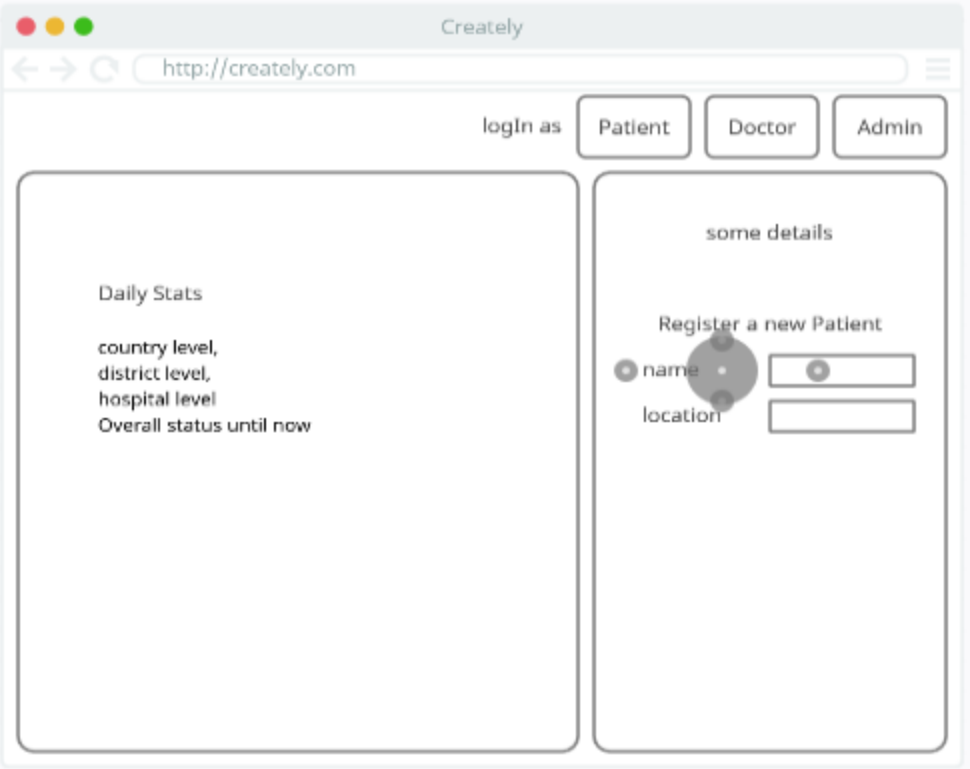


Figure 1

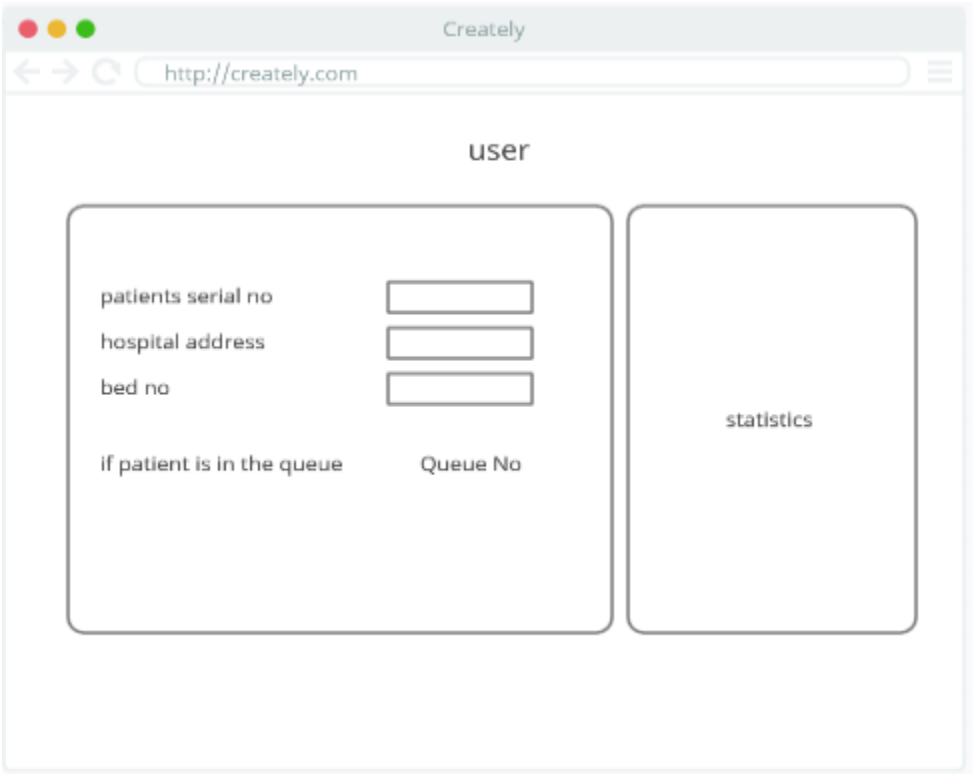


Figure 2

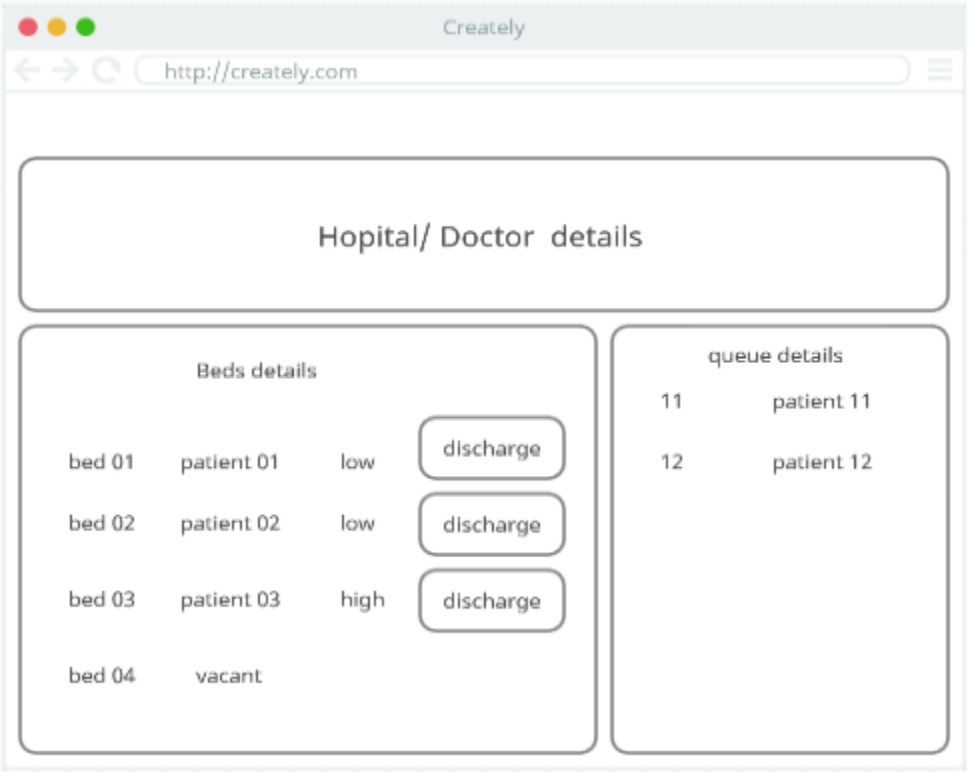


Figure 3

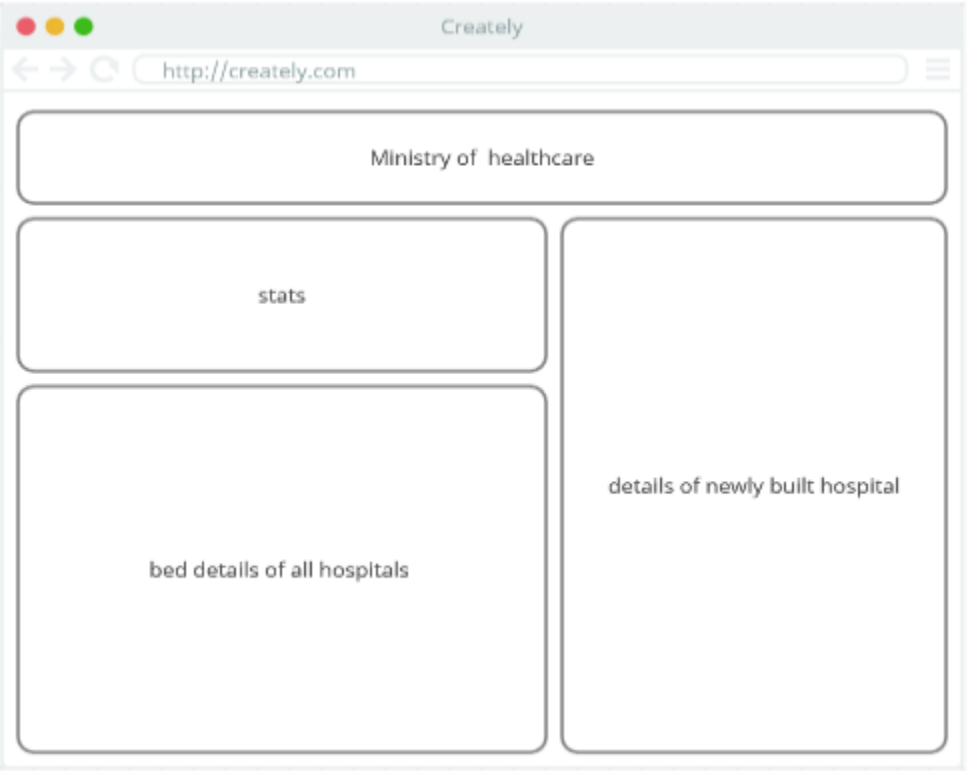


Figure 4

Functional requirement

This section includes the requirements that specify all the fundamental actions of the software system.

User class 1 - Patients

- Functional requirement 1

  ID: FR1
  TITLE: Register a patient via the application
  DESC:A Patient must be able to create an account in the application and receive patient ID and an allocated bed number in a particular hospital
  DEP: None

User class 2 - Doctors

- Functional requirement 2

  ID: FR2
  TITLE:doctors and staff must be notified about the arrival of new patient
  DESC: Doctors and medical staff must be notified when a new patient is registered with the patient ID and the particular bed number.
  DEP: None

- Functional requirement 3

  ID: FR3
  TITLE: Doctors must be able to categorise patients.
  DESC: Doctors must be able to categorise patients according to the severity low, moderate and critical.
  DEP: None

- Functional requirement 4

  ID: FR4
  TITLE: Doctors must be able to release a patient after the recovery
  DESC: Doctors must be able to see the current list of patients and determine whether they can be released or not.
  DEP: None

User class 3 - Citizens

- Functional requirement 5

  ID: FR5
  TITLE: Receiving the daily Stats
  DESC:Without creating an account Citizens must be able to receive the daily stats about the country level, district level, hospital level Overall status until now in the application
  DEP: None

User class 4 - MoH

- Functional requirement 6
  ID: FR6
  TITLE: MoH must be notified about the stats daily.
  DESC: MoH should be notified with the daily stats about the country level, district level, hospital level Overall status until now
  DEP: None

- Functional requirement 7
  ID: FR7
  TITLE: MoH must be able to check the stats.
  DESC:Moh must be able to check the daily stats in order to cater the uprising demand of beds for the patients
  DEP: None

- Functional requirement 8
  ID: FR8
  TITLE: MoH must be notified about the traffic of hospitals.
  DESC: MoH must be alerted if one of the hospitals has a queue exceeding four patients.
  DEP: None

- Functional requirement 9
  ID: FR9
  TITLE: MoH must be able to add the details of the new hospitals..
  DESC: MoH must be able to notify the citizens about the new base hospitals with coordinates
  DEP: None

- Functional requirement 10
  ID: FR10
  TITLE: MoH must be able to add the details of doctors..
  DESC: MoH must be able to notify the citizens about the doctors and the working hospital of the doctor.
  DEP: None

- Functional requirement 11
  ID: FR11
  TITLE: reallocate the patients in the queue to the new hospital.
  DESC: As MoH adds the details of the new hospitals all the patients in the queue must be reallocated and send a bed number with the hospital address.
  DEP: None