POLITECNICO
MILANO 1863

Master's Degree in Automation and Control Engineering

PROJECT DOCUMENTATION

"Emergency Healthcare Management System"

For Software Engineering

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Table of Contents

Table of Figures

Table of Tables

ABBREVATION

API	Application Program Interface
DB	Database

CHAPTER 1

1.1 FEASIBILITY ANALYSIS

The General Inscription of our project is to find the nearby hospitals for bed allocation system for emergency health conditions and it can be used during a hard pandemic time. Here we are conducting a feasibility analysis of our idea and to check how feasible the web application is for the user. As a result, here we are presenting our web application to avoid manual searching and to ease the reliability and has many other advantages which will be shown in the upcoming sections.

1.1.1 PROJECT DESCRIPTION

The main aim of our project is to find bed allocation for the patients, emergency unhealthy condition people, for the people who are suffering due to some pandemic and the people who are in a new place and to understand the medical procedures in the respective countries if they are travelling abroad. This web application has also a potential ability mainly for the people who are travelling often and people who are moving to a new place within the country and outside the country. This web application helps to avoid manual searching (such as lengthy typing in search engines) which will be difficult at times of emergency to find their suitable doctors. It also helps them to reduce their time and energy by using this web application at panic situations. In our view we believe that this web application has a very good future and will be benefits for the person who are using it. Being a foreigner ourselves and our friends like us. We all personally faced this problem in our country during the Covid pandemic period. The Language is the main barrier to us to understand the medical procedure in the country. So, we thought to have a web-based application which can help people to deal with this kind of problems.

1.1.2 POSSIBLE SOLUTION

In today's Information Technological era everyone is relying on an internet device and connected with worldwide web so that developing a web-based application will be a highly feasible solution. People can easily book or get information about the bed availability by nearby clinic, and hospitals. The bed allocation system can be accessed by the user clinic, and hospitals by user login and password. We are having a user because, to check the condition of the patient or people and allocate the bed according to the emergency.

To make the web-based application we developed the user interface in HTML, CSS and JavaScript. For sever part we used PHP and MySQL database. We developed a local host database named EHCMS where we can store and access the details of the hospitals, clinics, and patients.

1.1.3 EVALUATION CRITERIA

We also evaluated our web application by using a suitable testing method whether it satisfied our required specification or not. At present we have developed the web application to find the nearby hospitals for bed allocation system for emergency health conditions and it can be used during a hard pandemic time and the web application has satisfied our work which we intended to do before. We also evaluated the web application, and it runs according to as what we expected. We also conducted a post survey after the development, from the common people and doctors from our Country and we got very good positive response and feedback for the development of the web application. We had done this evaluation for the improvement and need for the modification and ultimately to lay the foundation for future development.

1.1.4 FEASIBLE SOLUTION

A digitalized and user-friendly web-based application will be the most feasible solution to solve this problem. The user finds this application more feasible because it helps him to find the nearby hospitals for bed allocation system. So, we found this web-based application will be very feasible for the people who can save their time at most.

1.1.5 CONCLUSION

In our point of view, we believe that this web-based application will be very easy to use and can help the people to reserve a bed for emergency health conditions without any difficulties. Nearly 70% of respondents said that they were pleased to use the web-based application, and this would reduce their time and effort of finding the beds in hospital available nearby. The global healthcare services market is expected to grow from $6872.86 billion in 2021 to $7548.52 billion in 2022 at a compound annual growth rate (CAGR) of 9.8%. The growth is mainly due to the companies rearranging their operations and recovering from the COVID-19 impact, which had earlier led to restrictive containment measures involving social distancing, remote working, and the closure of commercial activities that resulted in operational challenges. The market is expected to reach $10414.36 billion in 2026 at a CAGR of 8.4%. Also, we are from the Automation and Control Background, and so we would like to know how to build a web-based application user interface which will help us to build our own web application for what we need in the future.

1.2 MARKET RESEARCH ANALYSIS

The need to gather information about our market and our competitors is very crucial. It is necessary for development of any application. It gives us insights of various products available in the market and helps us predict and forecast the upcoming products.

1.2.1 EXECUTIVE SUMMARY

Success of a product depends on the market trend or necessity. There can be different paths to solve a problem and develop a prototype or an application. A market is made up of individuals or group of people who sell their ideas, and there are rivals and competitors, who also have a similar intuition of thoughts, along with the most important people who are the consumers. In our case study we found out that market analysis and competitor analysis provide valuable information of competitors in the market. This gives a reference set for values. Most successful products present in the market today are based on this story. In our product, there is a mix of people of all age groups. Since there are the chances for all age groups to get infected by a disease or virus. The most vulnerable are children and elderly because of their low immunity. We have developed the application to suit the demands of largely populated countries like India, but it can also be adapted in other countries also. Since the application is used for emergency scenarios, it can be used for situations such as pandemics, but it can also be modified to accommodate people who are affected by war and natural calamities also. Any person who is a resident or tourist can be allowed to use this service, but he/ she must reach a nearest clinic or a reception to avail the service. The state/ provinces in the norther and the eastern part of India have lesser infrastructure and facilities it is much harder for people to allocate hospital beds in case of emergency. Since, in India the there is a high variation levels in the literacy depending on the region we cannot use a mobile application with self-certifications and self-declarations. We need to use a classical approach to this problem. So, we make use of medical clinics, self-practitioners, and other hospitals to come to aid. We have taken the data of top news channels and newspapers in the country to conclude to use a web-based application with assistance of a user in the clinic

1.2.2 DATA COLLECTION

Data collected from the internet and through surveys was used along with the data collected by us in google forms. We also got suggestions from local health care workers and doctors in both urban and rural parts of 2 regions. Since we lived in our country for more than 20 years, we know the situation and the demographic conditions faced by the individuals in the rural and urban areas. We also have

collected some documents from several websites online to support the facts. Here is the questionnaire and results which we got through the google forms.

- Do you prefer to use a mobile application or web application in the mobile browser?
- Do you like someone to assist/help you when you are using the application for the first time?
- Do elderly people in your family use smartphone applications?
- Do elderly people in your family need assistance when they are going out?
- Do emergency services come to your place? If, yes how long does it usually take?
- If the response time for the ambulance is more than 30 minutes, how far are you away from the nearest hospital.
- Will it be easy for you to reach the nearby clinic or pharmacy than a hospital?

Students and common people from different parts of the country were involved in this survey. Based on the feedback we received we added certain features and security layers to the application. We can enhance the design and working of the application.

The answer to the first question is mixed result. Adults might prefer to use a mobile application to see or book a space since they already have some knowledge to use a smartphone. But, first time users may have a problem using it. Few users also might have less space in their mobile so they might use a web browser because the frequency of using the application regularly will be less.

Data security might also be a problem when we use a smartphone. Since all the phones must be protected.

Do you prefer to use a mobile application or web application in the mobile browser?
98 responses
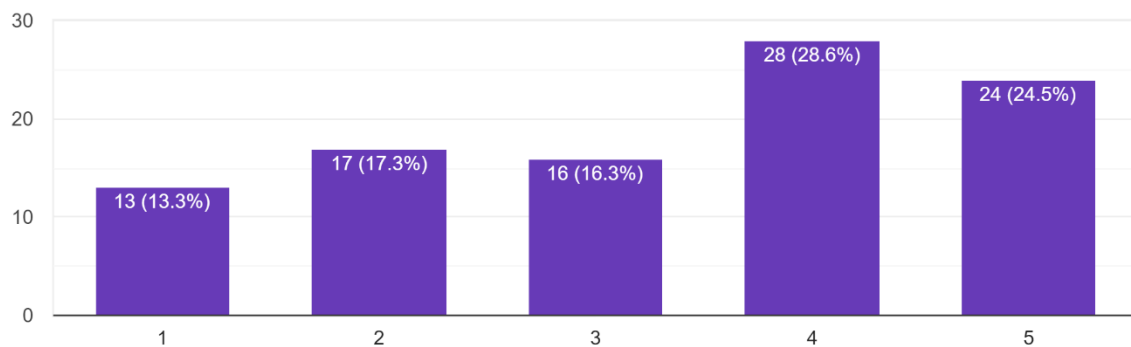
Figure 1- Figure 1.1 Application Preference

To the second question, almost 60% of the people like to receive help when using the application for the first time. It is always easy for someone to tell you about the app and its features than to find it out by yourself. Keeping that in mind we decided to appoint or assign additional task for people working in the clinic or any other medical centre to look after this task.

This acts as two purposes; one is to cross examine the person who seeks for bed allocation and the other is to prove only valid data. This can avoid false information and can avoid wrongful allocation of the bed.

Do you like someone to assist/ help you when you are using the application for the first time?
98 responses

- Yes, anyone is Ok.
- Yes, I like my friend to help.
- No, I like to do it on my own.
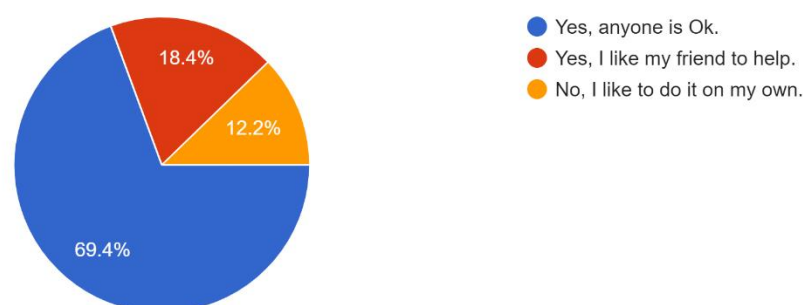
Figure 2Figure 1.2 Assistance or guidance

The 3rd Question is just to confirm the situation in India that most elderly people here do not use smartphones. So, to educate them to book a bed through a mobile application might not be an easy for them to do.

Do elderly people in your family use smartphone applications?
98 responses
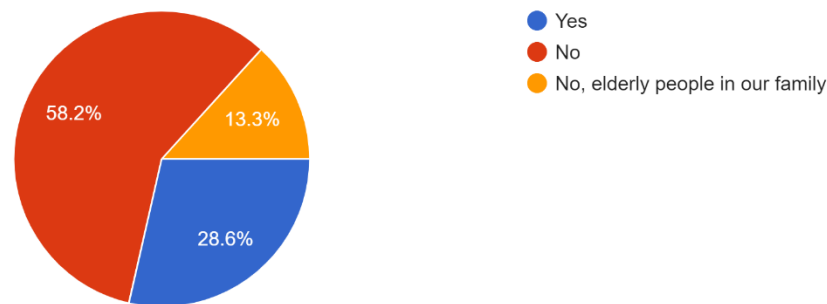
Figure 3Figure 1.3 Elderly smartphone usage

The 4th Question indicates that most of the senior adults, children and elderly people need someone to accompany them. So, for them to find a hospital bed on their own is a paramount task. And if there are only limit spaces available in the hospital will make their life very difficult.

Do elderly people in your family need assistance when they are going out?
98 responses
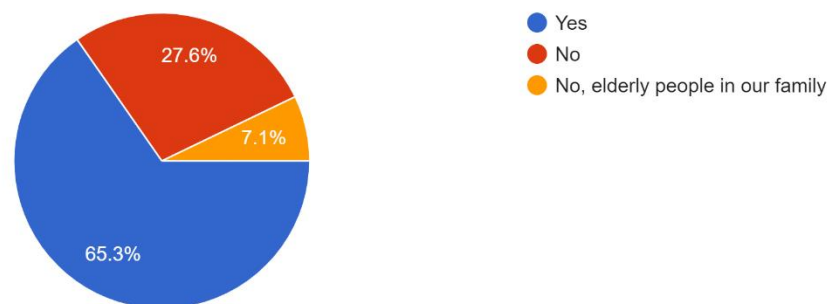
Figure 4Figure 1.4 Guidance needed by elderly

Government ambulance service does not respond quickly. But private services come within some time. So, there is a mixed response in this regard, about 43% (belong in graph 4 and 5) feel the response time is good and about 28% feel they have an acceptable response time.

So considering this situation, we have to tie up with a private organisation in the local city or town in case of emergency to transport people to the nearby free hospital bed.

Do emergency services come to your place? If, yes how long does it usually take?
98 responses
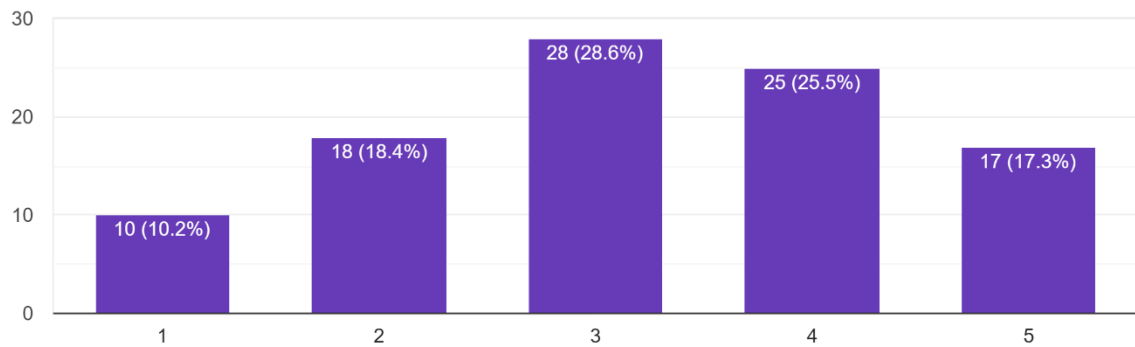
Figure 5 Figure 1.5 Time taken for the emergency services

Distance also plays a vital role in this regard. If the distance between the hospital and the residency increases, then the response time for the ambulance to arrive becomes very difficult. So, I such a situation we can arrange come emergency services from the nearest clinic or private counterpart to reach a hospital which has an availability of free bed.

If the response time for the ambulance is more than 30 minutes, how far are you away from the nearest hospital.

85 responses
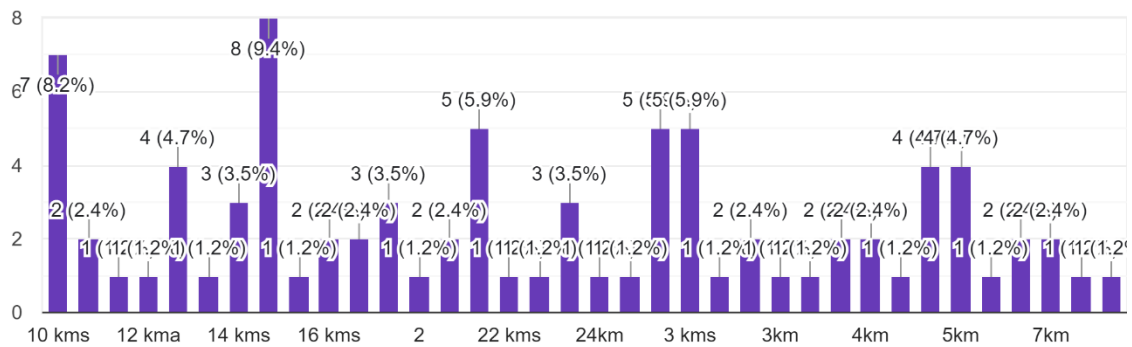
Figure 6-Figure 1.6 Kilometre range of nearest hospital

To the last question, the answer is clear cut. It is easy to reach a clinic or a pharmacy or any other private doctor than to reach a hospital. Around 85% also felt the same. This is also the reason why we would like to promote and/ or establish our idea in a nearby clinic or pharmacy.

Will it be easy for you to reach the nearby clinic or pharmacy than a hospital?

98 responses
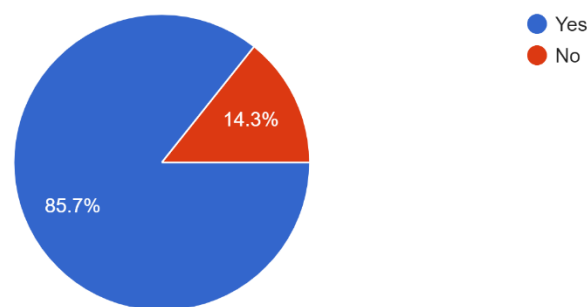
Figure 7- Figure 1.7 Easiest to reach

15

1.2.3 ETHICAL CONSIDERATIONS

Respecting the ethical Consideration is of at most importance when it comes to Market research. Data security, privacy, and confidentiality of the research participants were a few of the Ethical Considerations that were considered by us while taking the survey. Since we respected the ethical consideration we asked only their name, Country of living and Profession and we didn't ask their email id, contact number because those are their private data. Also, we included only their name because to avoid multiple responses. We also gave an option to add individuals in the family who cannot use the smartphone or internet. To respect the data protection and processing norms.

1.2.4 PROBLEM DEFINITION

We can conclude that from the data we collected in the survey and the webpages, the situation remains the similar the previous scenario in the country due to lack of knowledge to use mobile applications for people who are senior adults and elderly. So, using a web-based application with an assistant in the respected store is the most ideal situation. Therefore, this relates to our vision and the peoples' vision form the survey.

1.2.5 TARGET GROUP

Our target group are all individuals without any limits. Any person can approach a nearby clinic. The individual at the centre will check the requirements of the patient and allot the bed only when he/ she requires a bed.

1.2.6 APPROACH TO THE PROBLEM

Since we concentrated to make the web-based application which involves an operator to enter/ select the data, he/ she needs to have a very basic understanding of computer usage. So, this can be used by any individual in the centre but needs to be logged in every time and authenticated by the owner of the application for the first time. This will avoid misusing of the application.

There are many Start-up companies that have been designed a model for bed allocation in emergency to ensure a smooth procedure flow for the hospital operations. We took those applications as our reference models, and we tried to overcome the problems which were not properly done by those models. Our direct competitors are Wise bed Manager, Blueberry in Management system, Bedwatch Bed control system, CO-link.

1.Blueberry In-Patient Management Systems

It is a web-based system developed by Blueberry Consultants Ltd. The system includes functions such as bed management, patient tracking, and letter issuing. The system is complex and requires users to input different types and varying amounts of information. It has a simple graphical user interface and provides user convenience in accessing the ward, patient, and bed information.

2.Wise Bed Manager

It is a web-based system by Wise Technologies Ltd. The system displays online information of beds and patients based on the room number through a web browser. Icons or illustration of bed and color code were utilized to arrange the user interface element in a tidy way. The Wise Bed Manager system is easy to use, and the information is straightforward and easy to understand. The system also has a drag-and-drop function that makes patient access to the ward easier through the system

3. BedWatch

It is a multi-platform bed management system. The system can show the current state of a bed via devices connected to the Internet such as computers, smartphones, and tablets. Through these devices, users can view and update information such as the bed status in a ward. It helps different types of users as it can engage with several different parties such as nurses, bed managers, and cleaners. The status of the bed can be updated in a short time because the person dealing with the bed can make up dates with a smartphone.

	Blueberry In-Patient Management Systems	Wise Bed Manager	BedWatch	EHMS
Display bed information	X	X	X	√
Color-code bed allocation	√	√	√	√
Time Consumption	Higher	Higher	Medium	Lower
Bed Information	X	X	X	√
User interface	Outdated design	Outdated Design	Simple	Simple and Easy

Table 1.1 Competitor analysis

Table 1

CHAPTER 2

2.1 INTRODUCTION

2.1.1 PURPOSE

In this chapter "Requirement Analysis and Specification Document," we provided all the detailed aspects of our working application "Emergency Health Care Management System", including its components, goals, constraints, functional and non-functional requirements. The main purpose of the document is to fulfil the user requirements and the detailed description of what the system must do. The requirement analysis is very critical to the development of a web-based application and the requirements must be actionable, measurable, testable related to our business need in our case (searching for bed allocation in the web-application portal instead of searching through hospitals) which should be defined to a level of detail and sufficient design. It is important that we developed the application satisfied all the user requirements. The formers must implement and test the functionalities while the latter must examine whether every requirement has been respected.

2.1.2 PROBLEM DESCRIPTION

The application "Emergency Health Care Management System" is a web-based application which can find the bed nearby hospitals. We developed this web-based application mainly focused on "Students who are studying abroad, travelling people, Local People living in an area, Old age people having some health problems".

The main aim of this web-based application is to give the user a friendly environment for finding the way to allocate a bed nearby hospitals. And we addressed various problems through interviews and surveys for the better use of the application by the end-users.

2.1.3 APPLICATION IDEAS

• Having consistency and simple steps to enter the web-based application by login in nearby Pharmacy, Clinic or Hospitals

• Developing a simple graphical user so that the user has a consistent mood to use the application several times

• Displaying the list of available beds in the respected Specialized hospitals

The main target of the work is to build web-based application that satisfies all the prerequisites and the requirements requested from the survey. A web-based application that will satisfy all the user and admin needs. The sign-in and sign-up activity are done by user/admin in Pharmacy, Clinic and Hospital. The user admin in Pharmacy, Clinic and Hospital logs in to find a bed for the patients. The Hospital can log in to view the total number of patients who booked or total number of allocated and non-allocated beds, then these details are shared with the user in Pharmacy, Clinic who is searching for bed allocation for patients.

The User's/Admin's (Clinic) targets in the application are,

• T1 – Access the website in browser

• T2 – Entering the First name

• T3 – Entering the Last name

• T4 – Entering the Email ID

• T5 – Selecting the User type

• T6 – Entering Hospital/Clinic Name

• T7 – Entering Critical, Medium, Normal Bed count

• T8 – Entering ID-number

• T9 – Creating password for user type and register

• T10 –Entering User ID [Mail, ID-number, Password] for login

• T11 –Load patient entry column with marker (or) Icon

• T12 –Display of patient severity condition box

• T13 – Entering patient personal details

• T14 –Upload patient medical records and photo

• T15 –Sending requests for bed allocation

• T16 –Redirect to patient entry status

T17 – Patient Past Medical Details

The Hospital targets (HT) in the application are,

• HT1 – View number of bed requests

• HT2 – Allocating the bed requests

• HT3 – Update available beds in Website

• HT4 – Allocating the bed requests based on doctor available timings

Special Purpose Targets:

The special-purpose targets are the ones that can be handled only by the admin who can be authenticated.

• ST1 – Database Access or handling

• ST2 – Confirmation message about bed allocation from hospital

2.1.5 REGULATORY POLICIES

• The database handling, hospitals and clinic list can only be accessed by the admin

• The application is subjected to copyrights

• The application is also subjected under law based on the local laws in the country

2.1.6 REQUIREMENTS

Functional requirements

The following are the basic functional requirements which have been decided according to the development of the application and the assumption mentioned are according to the goals.

T1 – Access the website in browser

The user should open the browser to access the website and to use it to access and use all the facilities provided by the application.

T2 – Entering the First name

The new user needs to enter his first name to register his/her data on sign up page on the website which is mandatory.

T3 – Entering the Last name

The new user needs to enter his last name to register his/her data on sign up page on the website which is mandatory.

T4 – Entering the Email ID

The new user needs to enter his/her Email ID to register his/her data on sign up page on the website which is mandatory.

T5 – Selecting the User type

The new user needs to select the user type whether he\she is (clinic admin/hospital admin) to register his/her data on sign up page on the website which is mandatory.

T6 – Entering Hospital/Clinic Name

The new user needs to enter the hospital/clinic name to register his/her data on sign up page on the website which is mandatory.

T7 – Entering Critical, Medium, Normal Bed count

The new user(only for hospital admin) needs to enter the (Critical, Medium, Normal) Bed count to register on sign up page on the website which is mandatory.

T8 – Entering ID-Number

The new user(clinic admin/hospital admin) needs to enter his/her ID number to register his/her data on sign up page on the website which is mandatory.

T9 – Creating password for user type and register

The new user(clinic admin/hospital admin) needs to create a password to register his/her data on sign up page on the website which is mandatory. Once the user is successfully registered on the database, he/she can access the website.

T10 –Entering User ID [Mail, ID-number, Password] for login

 The user (clinic admin/hospital admin) must enter their Mail, ID-number, Password for log in to access the website.

T11 –Load patient entry column with marker (or) Icon

After user(clinic admin/hospital admin) log in to the website, the website will load, and it shows the patient entry columns in which user fills the details of patient

T12 –Display of patient severity condition box

In patient entry page, the user (clinic admin/hospital admin)can see the patient severity condition box and they must enter select the patient health severity whether it is critical/medium/normal.

T13 – Entering patient personal details

The user(clinic admin/hospital admin) must enter the required patient details in the patient entry page like place (city/town), hospital, symptom of patients, patient name, address, phone number, date of birth, age, gender, blood group.

T14 –Upload patient medical records and photo

Once (clinic admin/hospital admin)user selects the upload option of medical record and photo then there will be a pop-up window appears in which the user can upload the records and photos of patient.

T15 –Sending requests for bed allocation

Once user(clinic admin/hospital admin) upload and fills all the patient data he/she can select submit option to send requests for bed allocation.

T16 –Redirect to patient entry status

The user(clinic admin/hospital admin) can see the available patient list in the patient list page. There we can see the patient's name, patient id, symptom, date of registration, severity, requested hospital name, bed allocation request. The bed allocation request has two statuses available. If we registered the patient entry and request for a bed allocation, in patient list we can see the wating status. The status is changed to allocated, when the hospital allocates a bed.

T17 – Patient Past Medical Details

The user(clinic admin/hospital admin) needs to enter the patient ID number in search tab to see the patient past medical details on the website

The Hospital's requirement and their target achieved on the website are

HT1 – View number of bed requests

Once the hospital admin signs in, he/she can view the number of requests has been made by patients on the website.

HT2 – Allocating the bed requests

Once the hospital admin signs in, he/she can allocate the bed requests has been made by patients on the website

HT3 – Auto Update of available beds in Website

Once the hospital admin signs in, he/she can see the auto update of the available beds in the hospital on the website

HT4 – Deallocating the bed in Website

Once the hospital admin signs in, he/she can deallocate the bed from patient list to auto update the available beds in the hospital on the website

The Special purpose targets achieved in the application are,

ST1 – Database Access or Handling:

The database handling can only be accessed by the admin where he/she can have a view of the list of registered users on the application and he/she has the access to the master server for their region which has the whole database used by the application. Suppose if we want to add extra assistance, the admin makes a login into the database and then he/she adds the extra assistance in the city.

ST2 – Changing the waiting status of the patient bed allocation:

Once the hospital allocates the bed for the patient, the user in clinic will get a confirmation allocated status in the bed allocation column.

Value-added requirements

• New updates of the allocation system can be added directly to the application database by the admin.

 • Simple and user-friendly environments will be adapted in future updates

2.2 UML DIAGRAM

The UML diagram shows the detailed classes in each phase of the architecture. The relationship with each class is clearly shown in the below diagram.

2.2.1 CLASS DIAGRAM

The purpose of the class diagram to model the static view of an application. Class diagrams are the only diagrams that can be directly mapped with object-oriented languages and thus widely used at the time of construction
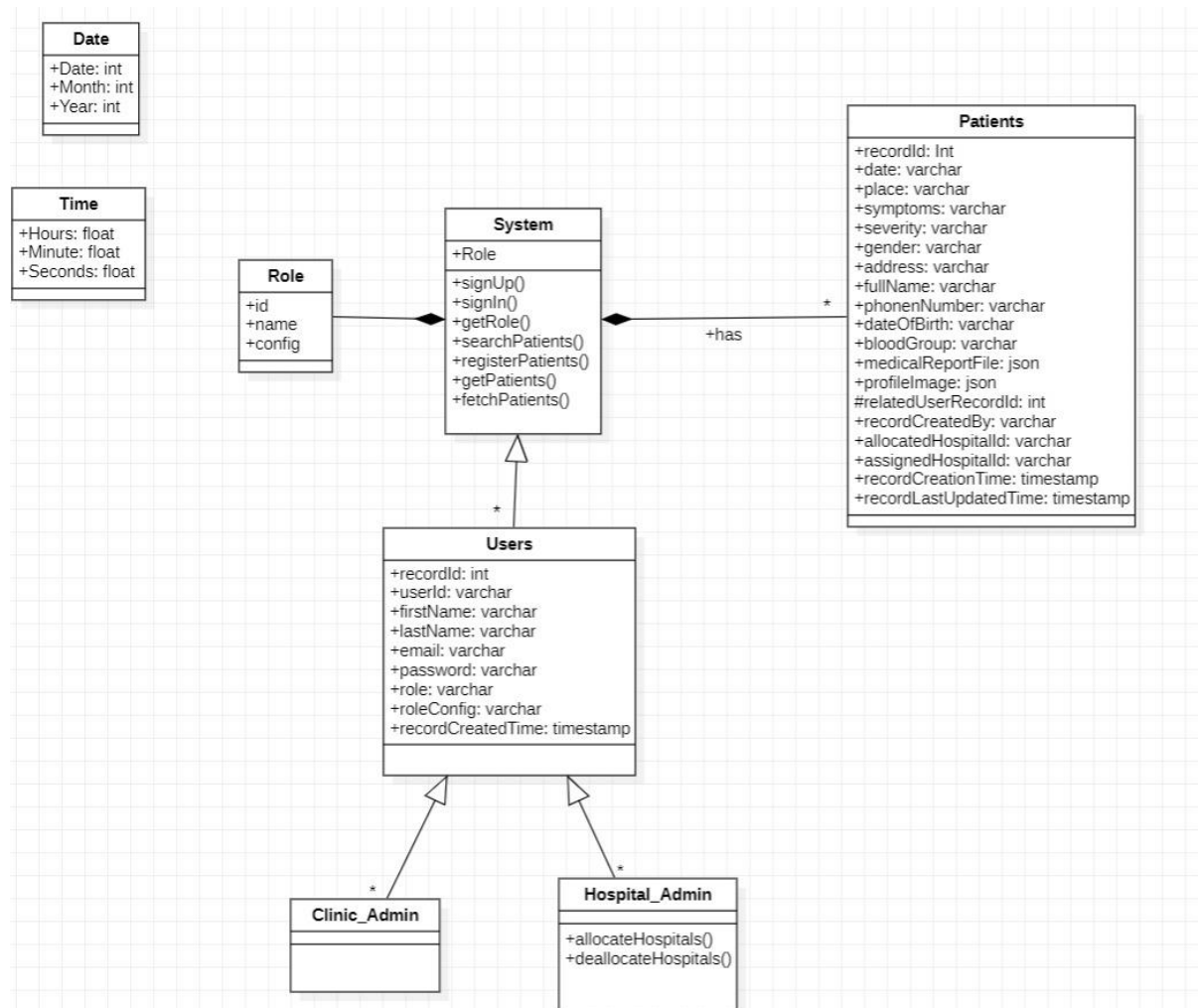
Figure 8 - Figure 2.1 UML class diagram

2.3 SEQUENCE DIAGRAM

Sequence diagrams describe the interaction among classes in terms of an exchange of messages over time. They're also called event diagrams. A sequence diagram is a good way to visualize and validate various runtime scenarios. These can help to predict how a system will behave and to discover responsibilities a class may need to have in the process of modelling a new system.

2.3.1 SIGN UP
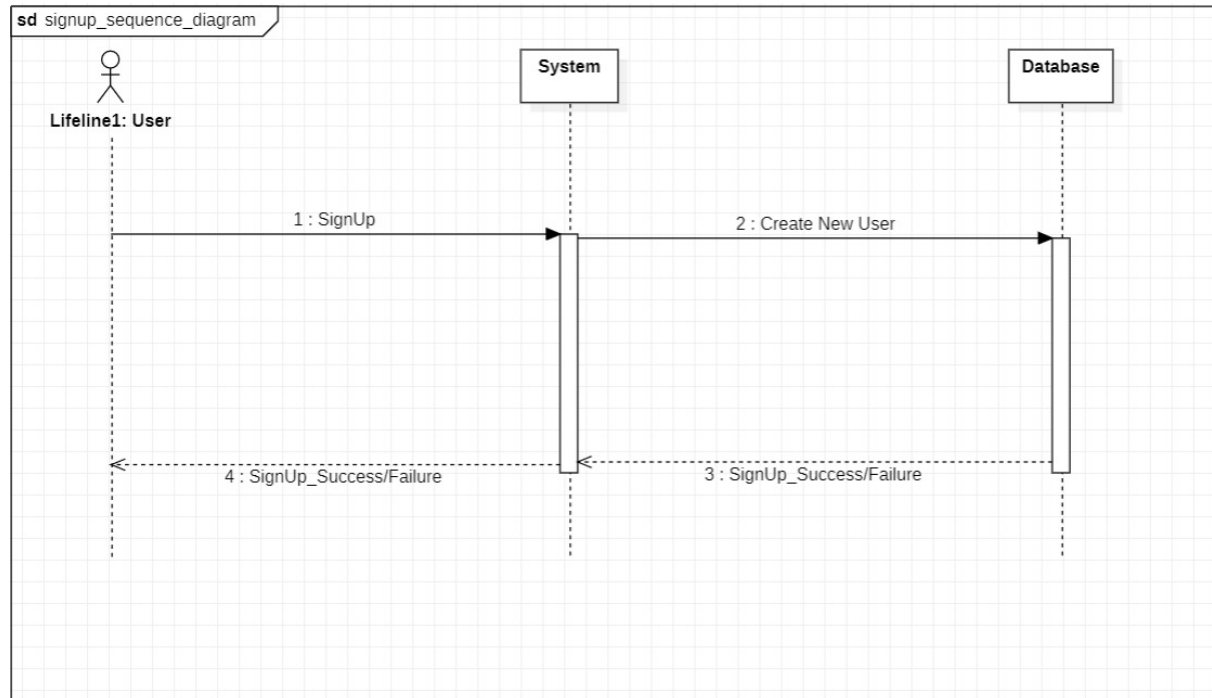
Figure 9- Figure 2.2 Sign up sequence diagram

2.3.2 SIGN IN
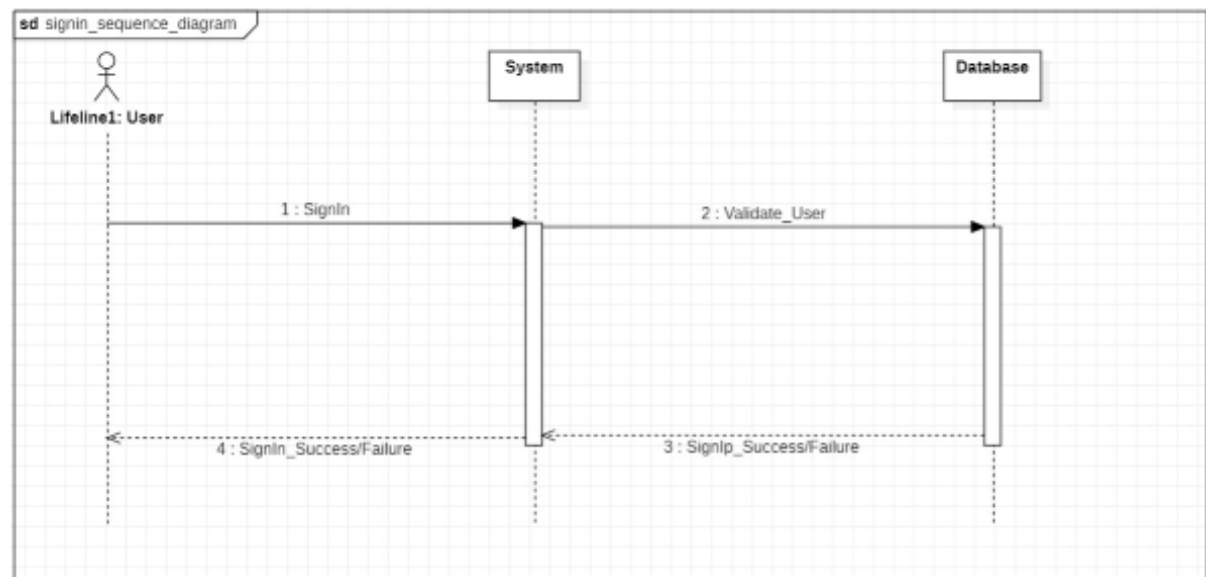
Figure 10- Figure 2.3 Sign in sequence diagram

2.3.3 COMPLETE SEQUENCE DIAGRAM
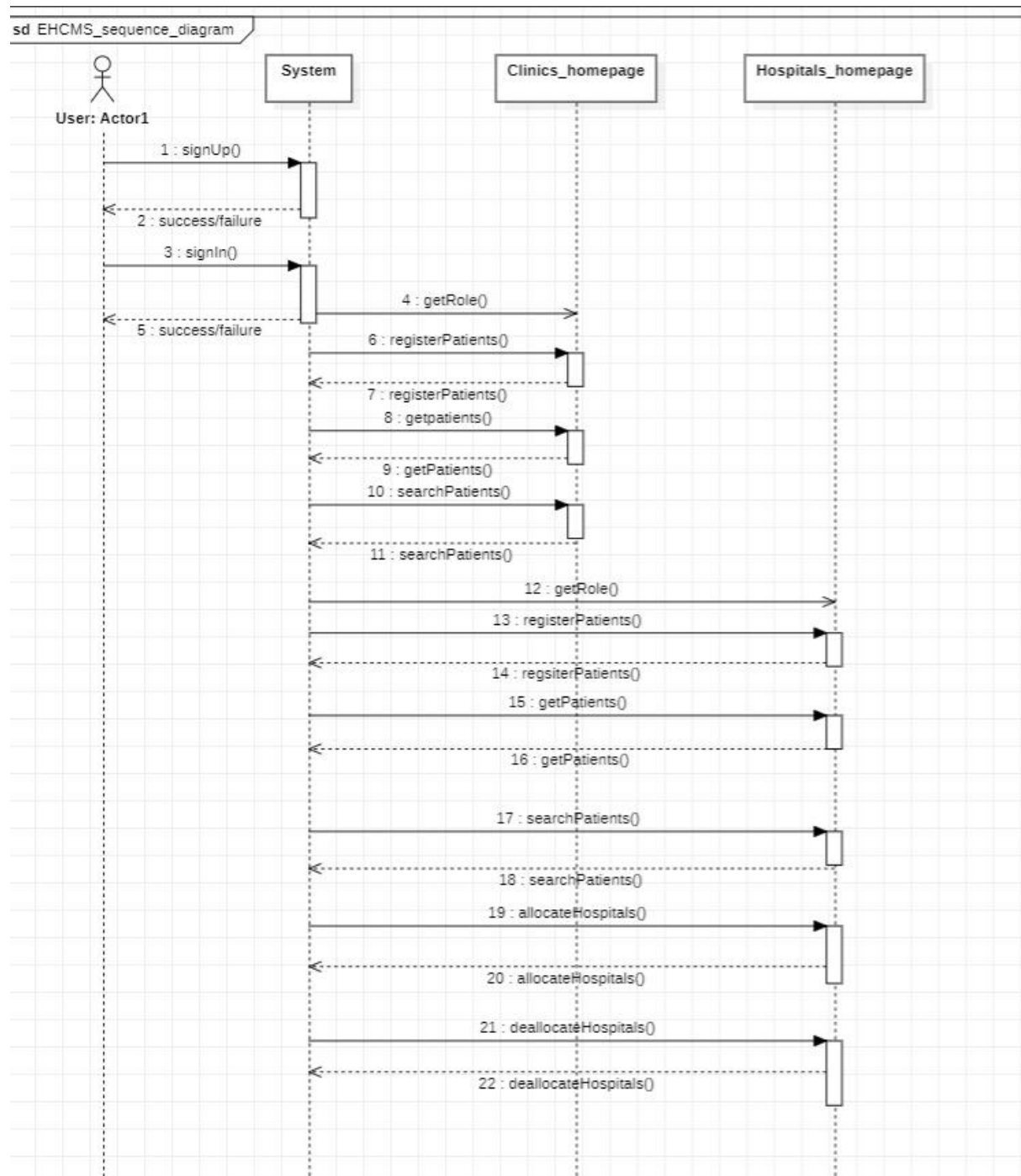
Figure 11- Figure 2.4 Complete sequence diagram

2.4 FLOW CHART DIAGRAM

A flow chart is another important diagram to describe the dynamic aspects of the system. It is basically a flowchart to represent the flow from one activity to another activity. The activity can be described as an operation of the system. The control flow is drawn from one operation to another.
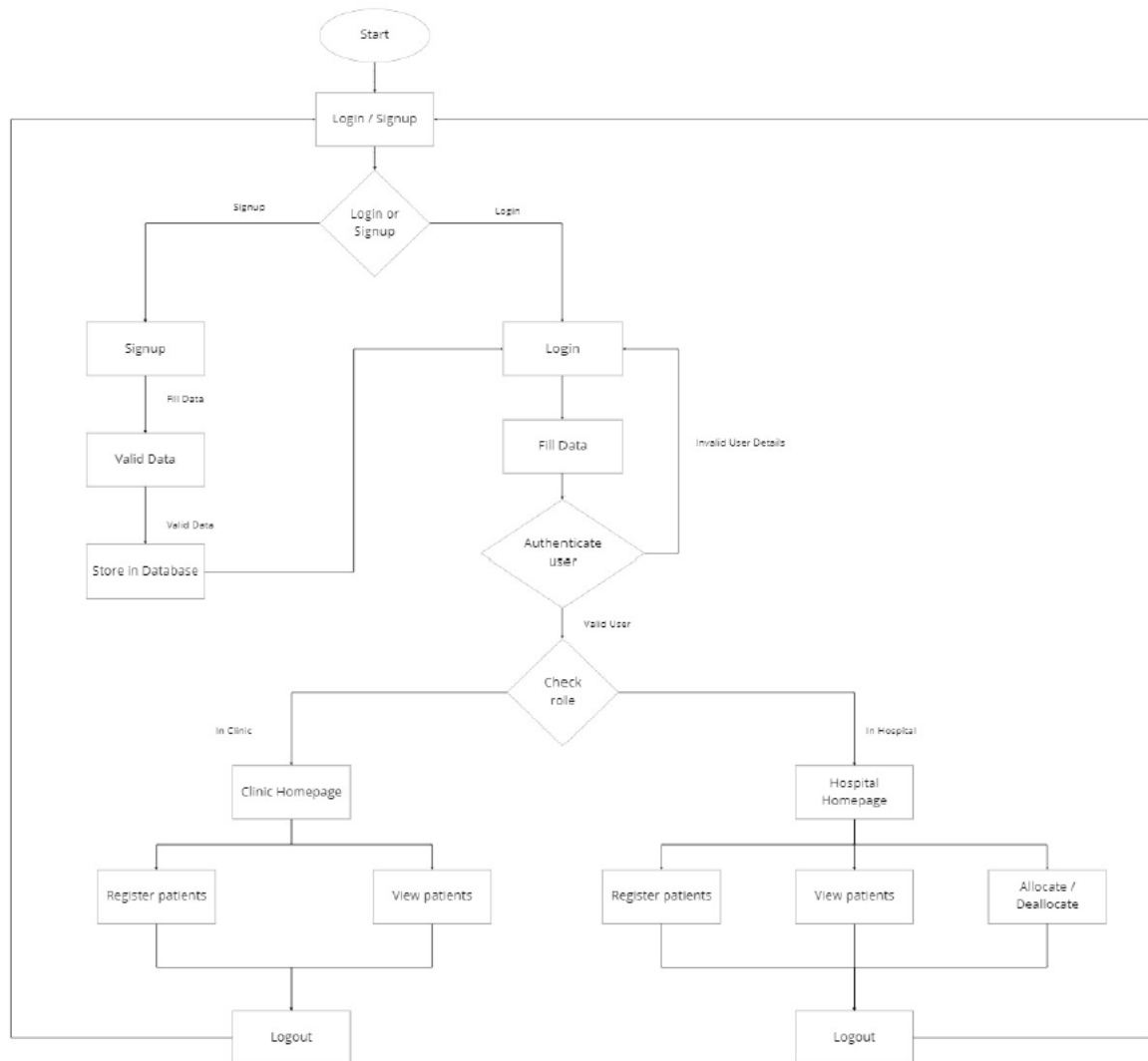
Figure 12- Figure 2.5 Flow chart diagram

CHAPTER 3

3.1 DESIGN AND ARCHITECTURE

3.1.1 OVERVIEW

The purpose of this section is to provide an overview of the system architecture, on which all the assumptions later in the document will be based. In the reference system architecture is represented in figure 3.1.
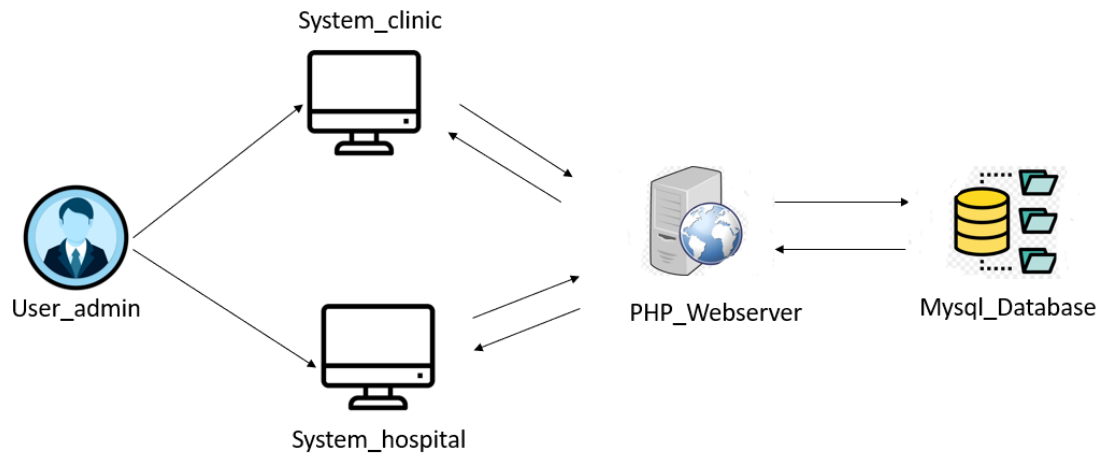
Figure 13- Figure 3.1 Reference system architecture

The software to be developed is a distributed application with a client-server multi-tiered architecture. The general architecture of the system can be subdivided into the three logic layers:

• Presentation Layer: it handles the interaction with all kinds of user. It provides an interface to users accessing both the web application in the mobile browser and the web application is the most recommended option. It is also very feasible for a clinic or a hospital to allocate a separate PC for this activity.

• Application Layer: it contains the webserver and data access logic. It handles the functions to be provided for the users. It also manages communication between the end user interface and the database.

• Data Layer: it manages the persistent storage and retrieval of data accessing to the database.

3.1.2 ARCHITECTURE

The GUI of the web-based application uses three different languages in IDE - Visual Studio Code. We have used CSS, JavaScript, and HTML. HTML is used as the base for all the operations. It is the skeletal structure that holds the contents of the website for input commands of the user and for viewing the webpage. We created a login page, sign up page, patient details, patients' registration page, patients list and bed allocation. All these were created using html

with the help of CSS and JavaScript. JavaScript is mainly used for better user interactions such as clicking on the page, clicking the button while CSS is used for styling purposes. We have used minimal CSS to keep the program simple. For better interaction of the CSS script with the HTML code we used bootstrap framework. This is also used for styling purpose. To link the JavaScript, we used jQuery library for tables and listing purposes. For database we have used php, this is used to keep the script simple and easily readable when seeing it for the first time. Php is used along with MySQL for database management. We used Rest API to design the server, since we did not want to combine it with the php and html code for easier readability of the code. For hosting the program, we used Clever cloud for the database and 000webhost for the web-application.
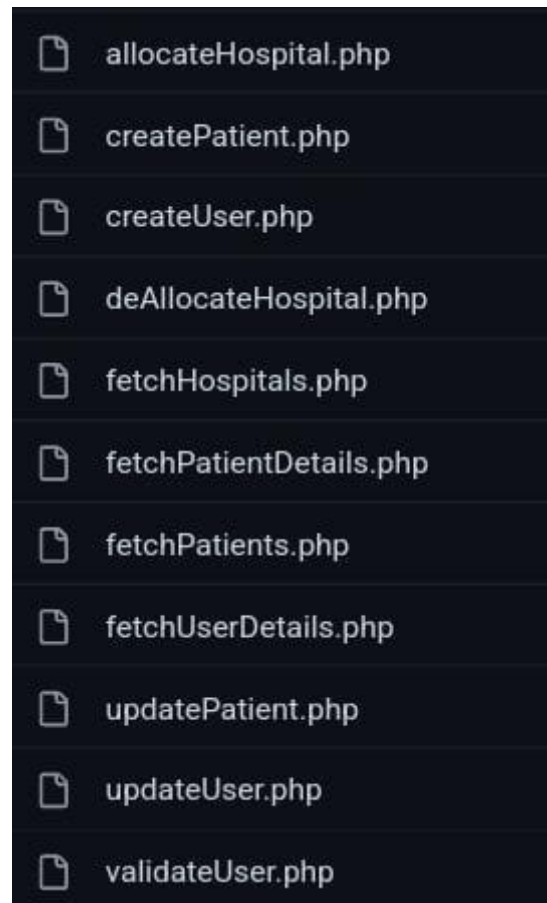
Figure 14- Figure 3.2 List of API Functions

CreateUser.php
      This records the data of the user/ assistant after signing up. They can be a hospital or a clinic.

Updateuser.php
      The database gets updated.

ValidateUser.php
      This is used for the login page.

FetchUserDetails.php
      This collects the data entered by the user/ assistant after the sign-up.

CreatePatient.php

It records all the details of the patient such as name, age, gender, address and so on.

FetchHospitals.php

From the list of hospitals', the patient can select a hospital closest to them to take their service.

UpdatePatient.php

The database is updated with the patient details.

FetchPatientDetails.php

This shows the data of the patients entered by the user/ assistant.

FetchPatients.php

During allotment or reallotment of beds the patient details are synced with the database.

AllocateHospital.php

This is button used to allocate the patient to the specific hospital for which he/ she has requested to take their service.

EeAllocateHospital.php

This is button used to deallocate the patient from the hospital.

3.1.3 DEPLOYMENT OF THE PROJECT

We initially did the setup of the project in the local machine. We used php and xampp server. The advantage of using xampp server is that it includes MySQL Database, ProFTPD and Apache Web Server under the same roof. Using xampp reduces the need to install includes MySQL Database, ProFTPD and Apache Web Server separately and run it individually.

By using localhost/phpMyAdmin we can see the databases that are created under the name ECMS. By selecting the explore sign, we can further investigate the patient details and the users.

The patient details give the list/ table of all the details collected by the user employee during registration. The users are the list of administrators or employees of a clinic or a hospital.
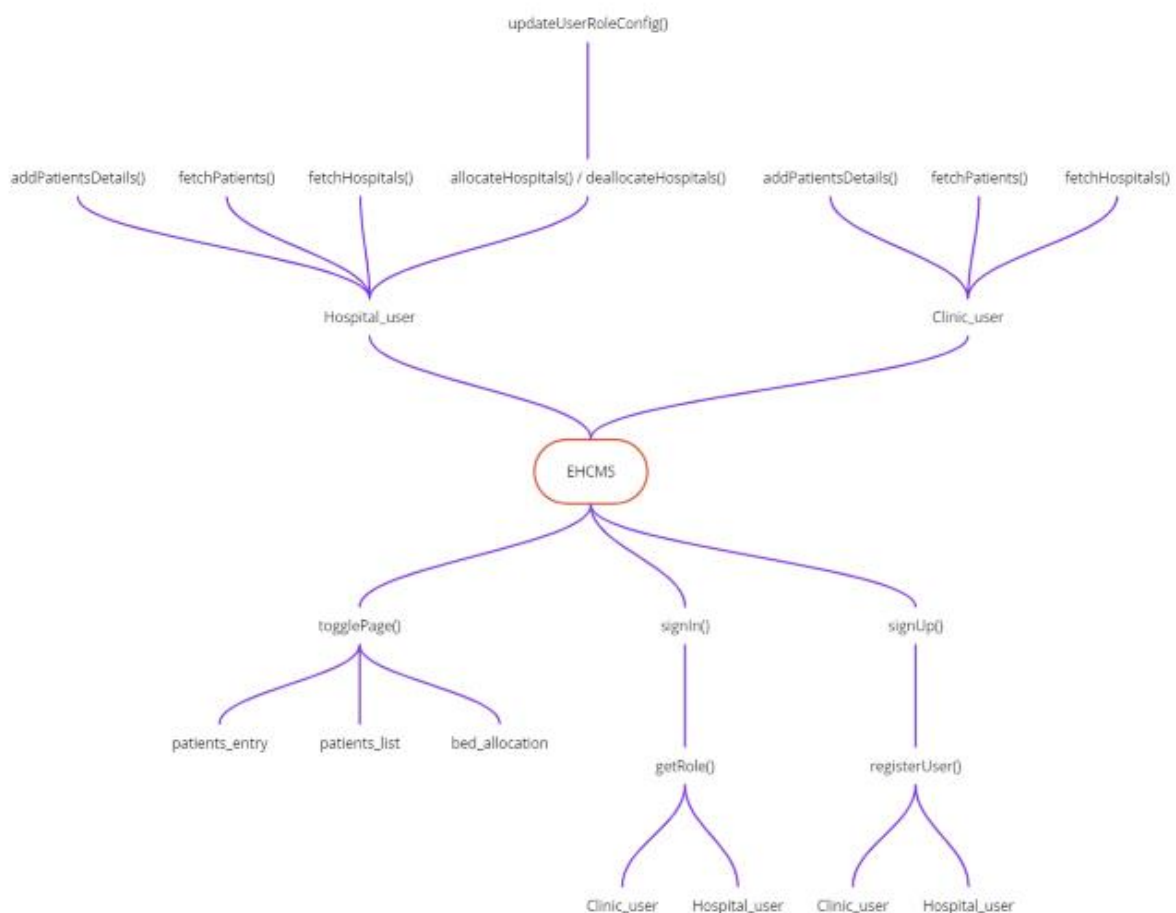
Figure 15- Figure3.3 Mind map

ClearInputs()

        Makes all input fields empty. It is a basic code which is used to clear all the fields.

ToggleForm()

        It is used to toggle between the signIn and signUp pages. Clicking the Sign-up button it will change from signin page to sign up page.

        fetchInputs() is used to Fetch inputs from ui based on page parameter

AuthenticateUsers()

        Initiates signin service after fetching inputs from UI.

     On success it will fetchInputs ,

→ clearInpurs()

→fetchHospitals()

→ fetchpatients()

     on failure,

→ alert message displayed

registerUser()

        Fetch inputs from UI and initiates services to create user. It can be either accessed by either the clinic or hospitals

        fetchInputs() on success,,

→ toggeleForms()

→ clearInputs()

     on failure it displays the alert message

logout()

        Logs out the user and reload after that clearInputs() are used to clear all the fields

addPatientDetails()

        It fetches the inputs from the UI and initiates the service to register the patients in the database.

     On success,

→ toggleForms()

→ clearInputs()

     on failure it displays error message

fetchPatients()

        It is used to fetch all the patients specific to a single hospital or clinic by initiating a service.

     On success,

→ loadPatients()

→ clearInputs()

     on failure it displays error message

loadHospitals()

        it is used to display the list of hospitals in a dropdown list.

togglePage()

        It is used to switch between 3 pages. They are,

        1. registration page where we fill the patient details.

        2. view patient page

        3. Bed allocation page, this is only available in the hospital login

If the page is the first login page then we go with fetchHospital() or else we go with the fetchPatients()

loadPatients()

It displays the list of patients in UI. This is only applicable to view patients and allocate the bed in the Hospitals page and not available in the clinic page.

After that we use refershUserDetails()

loadPatientDetails()

It is used to load the individual details of the patients.

On success, we can assign the details of the patient

On failure, the error message get generated and we use clearInputs()

refeshUserDetails()

It initiates the service to fetch the users' details

On success, it will refresh the bed count in the User Interface.

allocateHospital()

it is used to initiate a service to allocate a hospital to a patient and the bed count gets updated in the database and gets reflected in the UI.

After that we use refreshUserDetails()

On success,

➔ updateUserRoleConfig()

➔ fetchPatients()

➔ clearInputs()

On failure it displays error message in the popup

deallocateHospital()

it is used to initiate a service to deallocate a hospital to a patient and the bed count gets updated in the database and gets reflected in the UI.

After that we use refreshUserDetails()

On success,

➔ updateUserRoleConfig()

➔ fetchPatients()

➔ clearInputs()

On failure it displays error message in the popup.

UpdateUserRoleConfig()

It is used to update the bed count in the users tables in the database and it is done by initiating a service.

On success, it follows the refreshUserDetails()

On failure, it displays an error message.

toggleInputs()

It shows or hides the input fields. It contains three fields that are critical, medium, and normal.

It is used to allot specific number of beds for each category in the registered user page.

CHAPTER 4

4.1 IMPLEMENTATION

In today's Information Technological era everyone is relying on an internet device and connected with worldwide web so that developing a web-based application will be a highly feasible solution. People can easily book or get information about the bed availability by nearby clinic, and hospitals. The bed allocation system can be accessed by the user clinic, and hospitals by user login and password. We are having a user because, to check the condition of the patient or people and allocate the bed according to the emergency.

The Aim of emergency healthcare management system helps people to reach their nearest clinic or pharmacy or hospital to better manage their health care needs and communicate with their care teams. By using this web-based, you can view and store information from already entered form.

4.1.1 IMPLEMENTATION ORDER

1.Signup execution
For the new user (clinic/hospital admin), they must enter their details for the registration purposes.

Figure 16- Figure 4.1 Sign in & Sign up execution

2.Registration notification execution
New user (clinic/hospital admin) gets notified after successful registration
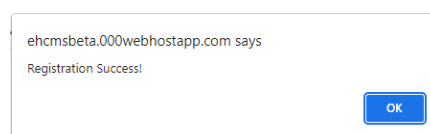
Figure 17- Figure 4.2 Registration notification

3. Login execution

Registered users (clinic/hospital admin) must enter their login credentials for accessing the web application. It will redirect to the patient's data entry page.

Figure 18- Figure 4.3 Patient entry page

4. Register patient data execution

The User must register the patient details in the patient entry page (Clinic/hospital) of the web application. This page is indicated in figure 4.3 in case of hospital login. Notice that the bed allocation tab will be missing in case of clinic login. By selecting the patients list we can view the patient who was already registered and may be in the waiting for his/ her bed to be allocated.

Figure 19- Figure 4.4 Register patient data

5. Bed allocation execution

The patient details are visible to User (clinic/hospital) but the authority to allocate the bed is done by hospital admin. The figure 4.5a is the page that displays allocate button. After the allocation of bed is processed then the red button figure 4.5b we become active for deallocation.

Figure 20- Figure 4.5a and 4.5b Bed allocation and deallocation

Figure 21- Figure 4.6 Patient list

6. Deallocate bed execution

Like the bed allocation process, deallocation is carried out by hospital admin. It is similar to figure 4.5a.

CHAPTER 5

5.1 INTRODUCTION

5.1.1 PURPOSE

The Integration Test Plan document is intended to indicate the necessary tests to verify that all the components of the previously described system are properly integrated. This document is important to verify the total work done on the website. All the test cases are identified and are described in order. Data transfer between the modules is tested thoroughly. The data are assumed and tested practices to verify the "Expected Output". Final Results match with excepted output to verify the operation of the application.

The product "ECHMS" is a bed allocation website.

There are two types of tests used:

• Integration Testing

• User Acceptance Testing (Done by the Professor)

5.1.2 REFERENCE DOCUMENTS

The Integration Test Plan Document has been composed following the indications reported in the previous documents delivered for this project: the Requirements Analysis and Specification Document, describing fundamental aspects of ECHMS such as goals, functional and non-functional requirements, and the Design Document, which shows more accurately all the functionalities provided by focusing on the software design of the system.

With regards to the course named Software Engineering 2 and held by Professor Matteo Rossi (Politecnico di Milano, a. y. 2021/2022), the document conforms to the guidelines provided during the lectures and within the material of the course.

5.2. INTEGRATION STRATEGY

Testing of ECHMS mobile application was carried out by running each case on the application and the results are observed.

Since this application has a quite medium number of functionalities consisting of a lot of lines of codes, the development team decided not to do the conventional testing of each individual components and integrations of those individual components, Instead, all the features and functionalities of the application were checked by directly using the application.

Results were recorded one by one and noted in tables which will be shown in the next sections. All the tests turned out to be successful as expected. The test cases

are illustrated in the following tables. The Professor will help us to make the alpha testing of the app "User Acceptance".

5.3. TEST PROCEDURE

The testing procedure we followed was "Blackbox Testing", as stated in the lecture notes for our application, which requires a lot of pre- and post-conditions that must hold before and after the program is executed for it to behave correctly. The following test document will include the test case, test data, Output, excepted output, and the results

5.3.1 TEST DATA BASE SCENARIO

In the Table 5.1, database the initial step will be to add an object and here the test case added is successful and the special purpose target ST1 mentioned in chapter 2 is achieved.

Test Case (ST1)	Test Data	Output	Excepted Output	Result
Creating an object on the database	Adding "First Name, Last Name, Email ID" on DB	Data are written on DB "Successful"	Data are written in DB	Test Case Successful

Table 2- Table 5. 1 Testing of Creating Object function in a Database

In the next step (Table 5.2) we are creating the values on the database to include a large amount of data. Here the test case added is successful and the special purpose target ST1 mentioned in chapter 2 is achieved.

Test Case (ST1)	Test Data	Output	Excepted Output	Result
Creating value on Database	Adding "Value type" on DB	Data are written on DB "Successful"	Data are written in DB	Test Case Successful

Table 3-   Table 5. 2 Testing of Creating Value in a Database

In Table 5.3, we are adding the attributes in the database to specify each of the individual assistance. Here the test case added is successful and the special purpose target ST1 mentioned in chapter 2 is achieved.

Test Case (ST1)	Test Data	Output	Excepted Output	Result
Adding Attribute in the object on Database	Adding "Package Status" on DB	Attribute added on DB "Successful"	Attribute added on DB	Test Case Successful

Table 4-　　　　　Table 5.3 Testing of Attribute adding function in a Database

In Table 5.4, we are making a simple edit of the attribute in an object of the database and here the test case added is successful and the special purpose target ST1 is achieved.

Test Case (ST1)	Test Data	Output	Excepted Output	Result
Simple editing of an attribute in the object on Database	Modify "Package Status" on DB	All Attributes listed on DB "Successful"	All Attributes listed on DB	Test Case Successful

Table 5-　　Table 5.4 Testing the editing of an attribute in the object on Database

In Table 5.5, we are uploading all the bulk elements of hospital data from the file. Here the test case added is successful and the special purpose target ST1 mentioned in chapter 2 is achieved.

Test Case (ST1)	Test Data	Output	Excepted Output	Result
Uploading all bulk elements of hospital data on Database	Added the list to the Database	Added Attributes listed on DB "Successful"	All Attributes listed on DB	Test Case Successful

Table 6-　　　　　Table 5.5 Testing of uploading Bulk elements of hospital data in a Database

In Table 5.6, we are uploading all the bulk elements of the patient data from the file. Here the test case added is successful and the special purpose target ST1 mentioned in chapter 2 is achieved.

Test Case (ST1)	Test Data	Output	Excepted Output	Result
Uploading all bulk elements of patient data on Database	Added the list to the Database	Added Attributes listed on DB "Successful"	All Attributes listed on DB	Test Case Successful

Table 7-   Table 5.6 Testing of uploading Bulk elements of patient data in a Database

In Table 5.7 we are reading all the attributes written in the database is correct or not and here the test case added is successful and the special purpose target ST1 is achieved.

Test Case (ST1)	Test Data	Output	Excepted Output	Result
Reading all Attribute of an object on DB	Read all package status	Object downloaded from the DB "Successful"	Object downloaded from the DB	Test Case Successful

Table 8- Table 5.7 Testing of Reading all attributes of an object in a Database

5.3.2 TARGETS

In Table 5.8, we have shown the test case for hospital admin viewing the number of requests by the patients and as mentioned in the hospital target (HT1) is achieved and the test case is successful

Test Case (HT1)	Test Data	Output	Excepted Output	Result
Hospital admin viewing the number of requests by the patients	Page: Bed Allocation(H)	S no:1 Patient name: Vijay Patient ID: 02 Registered by: Raju Symptoms: Fever Date: 25/07/2022 Severity : Critical Hospital: Hospital 1 Bed allocation: Allocate S no:2 Patient name: Arul Patient ID: 12 Registered by: Dhilip Symptoms: Headache Date: 27/01/2022 Severity : Normal Hospital: Hospital 2 Bed allocation: Allocate A New bed allocation window for patient requests appeared successful	A New bed allocation window for bed allocation appears	Test Case Successful

Table 9-   Table 5.8 Testing of Hospital viewing the requests by the patients

In Table 5.9, we have shown the test case for hospital admin allocating the bed requests by the patients and as mentioned in the hospital target (HT2) is achieved and the test case is successful

Test Case (HT2)	Test Data	Output	Excepted Output	Result
Allocation of bed requests	Bed allocation: Allocate	Bed allocation status "allocated" appears	Bed allocation status "allocated" appears	Test Case Successful

Table 10- Table 5.9 Testing of allocating the bed requests

In Table 5.10, we have shown the test case for Automatic updating of bed availability after approving the bed requests and as mentioned in the hospital target (HT3) is achieved here.

Test Case (HT3)	Test Data	Output	Excepted Output	Result
Automatic updating of bed availability after approving the requests	Total Beds C: 20 | M: 50 | N: 11 Allocated Beds C: 0 | M: 1 | N: 100 Available Beds C: 20 | M: 49 | N: 111	Remaining available beds "Available Beds C: 10 | M: 49 | N: 111" is displayed	Remaining available beds is displayed	Test Case Successful

Table 11- Table 5.10 Testing of automatic updating of bed availability status

In Table 5.11, we have shown the test case for Automatic updating of bed availability after deallocating the bed from patient list and as mentioned in the hospital target (HT3) is achieved here

Test Case (HT4)	Test Data	Output	Excepted Output	Result
Automatic updating of bed availability after deallocating the requests	Bed allocation :Deallocate	Remaining Available Beds C: 20 | M: 49 | N: 111 is displayed	Remaining Available Beds C: 20 | M: 49 | N: 111 is displayed	Test Case Successful

Table 12- Table 5.11 Testing of automatic updating of bed availability after deallocating the bed

In Table 5.12, we have shown the generation test case and the targeted result was successful in this case

Test Case	Test Data	Output	Excepted Output	Result
Web page generated	https://ehcmsbeta.000webhostapp.com/	Website runs successfully in the browser	Website runs in the browser	Test case successful.

Table 13- Table 5.12 Testing of website generated

5.3.3 DATABASE: SPECIAL PURPOSE TARGETS

In Table 5.13, we have shown the test case for hospital user signing in the database and to handle the database to add new user registration and the special purpose target (ST1) mentioned in chapter 2 is achieved and the test case is successful.

Test Case (ST1)	Test Data	Output	Excepted Output	Result
New user registration for hospital	First name: Periyapazhu vettaiyar Last name: sezhiyan Email: anbu@gmail.com User Type: Hospital Hospital/Clinic name: Avinashi hospital Critical bed count: 40 Medium bed count: 50 Normal bed count: 45 Id number: 54321 Password: 54321	Registration successful message appears	Registration successful message appears	Test Case Successful

Table 14- Table 5.13 Testing of registration as hospital new user

In Table 5.14, we have shown the test case for Clinic user signing in the database and to handle the database to add new user registration and the special purpose target (ST1) mentioned in chapter 2 is achieved and the test case is successful.

Test Case (ST1)	Test Data	Output	Excepted Output	Result
New user registration for clinic admin	First name: Arul Mozhi Last name: Varman Email: arman@gmail.com User Type: Clinic Hospital/Clinic name: Mundasupatti Clinic Id number: 654321 Password: 654321	"Registration success" message appears	Registration successful message appears	Test Case Successful

Table 15- Table 5.14 Testing of registration as clinic new user

In Table 5.15, we have shown the test case for signing in the database and to handle the database to add new user signing in and the special purpose target (ST1) mentioned in chapter 2 is achieved and the test case is successful.

Test Case (ST1)	Test Data	Output	Excepted Output	Result
New user signing in	Email: arman@gmail.com Id number: 654321 Password: 654321	Signed in successful	Signed in successful	Test Case Successful

Table 16- Table 5.15 Testing of sign in as new user

In Table 5.16, we have shown the test case for signing in the database and to handle the database to add new attribute to each user and the special purpose target (ST1) mentioned in chapter 2 is achieved and the test case is successful.

Test Case (ST1)	Test Data	Output	Excepted Output	Result
Adding New Attribute	Click so on DB Authentication Tab	New entry for adding attribute "Successful"	New entry for adding an attribute	Test Case Successful

Table 17- Table 5.16 Testing of adding a new attribute

5.3.4 WEBSITE HOME PAGE

In Table 5.17, test case we have shown the display of home page in the browser and the user's target which is mentioned in chapter 2 is achieved and tested successfully.

Test Case	Test Data	Output	Excepted Output	Result
Visibility of Home page in the browser	https://ehcmsbeta.000 webhostapp.com/	Home page is visible "Successful"	Home page is Visible	Test Case Successful

Table 18- Table 5.17 Testing about visibility of home page in the browser

In Table 5.18, test case we have shown about accessing the website in the user's system browser and the user's target which is mentioned in chapter 2 is achieved and tested successfully.

Test Case	Test Data	Output	Excepted Output	Result
Accessing the website	Email: arman@gmail.com Id number: 654321 Password: 654321	Patient entry page is visible "Successful"	Patient entry page is visible	Test Case Successful

Table 19- Table 5.18 Testing about accessing the website

In Table 5.19, test case we have shown the selection of patient severity on the website and the user's target (T12) which is mentioned in chapter 2 is achieved and tested successfully.

Test Case (T12)	Test Data	Output	Excepted Output	Result
Selecting the Patient severity	Patient severity: - Critical - Medium - Normal	"Critical" selected is displayed "Successful"	Patient severity "critical" selected is displayed	Test Case Successful

Table 20- Table 5.19 Testing of selecting the Patient severity

In Table 5.20, test case we have shown about the visibility of the Upload window on the website and selecting the patient photo and the user's target (T14) which is mentioned in chapter 2 is achieved and tested successfully

Test Case (T14)	Test Data	Output	Excepted Output	Result
Visibility of the Upload window and selecting the patient photo	Icon: Upload	A new pop-up window appears and patient photo uploaded is displayed "Successful"	Patient photo uploaded is displayed	Test Case Successful

Table 21- Table 5.20 Testing about Visibility of the uploading and selecting the patient photo

In Table 5.21, test case we have shown about the visibility of the patient's full name on the website and the user's target (T13) which is mentioned in chapter 2 is achieved and tested successfully

Test Case (T13)	Test Data	Output	Excepted Output	Result
Visibility of patient full name	Full name: Joseph Vijay	Entered patient name is displayed "Successful"	Entered patient name is displayed	Test Case Successful

Table 22- Table 5.21 Testing about Visibility of patient full name

In Table 5.22, test case we have shown about the visibility of the patient full address on the website and the user's target (T13) which is mentioned in chapter 2 is achieved and tested successfully

Test Case (T13)	Test Data	Output	Excepted Output	Result
Visibility of patient full address	Address: Poosarikadu post, Avinashi taluk, Tamil Nādu	Entered Patient address is Displayed "Successful"	Entered patient address is displayed	Test Case Successful

Table 23- Table 5.22 Testing about Visibility of patient full address

In Table 5.23, test case we have shown about the visibility of the patient phone number on the website and the user's target (T13) which is mentioned in chapter 2 is achieved and tested successfully

Test Case (T13)	Test Data	Output	Excepted Output	Result
Visibility of patient phone number	Phone number: 7902988081	Entered Patient phone number is displayed "Successful"	Entered patient phone number is displayed	Test Case Successful

Table 24-   Table 5.23 Testing about Visibility of patient phone number

In Table 5.24, test case we have shown about selecting the patient date of birth on the website and the user's target (T13) which is mentioned in chapter 2 is achieved and tested successfully

Test Case (T13)	Test Data	Output	Excepted Output	Result
Selecting the patient date of birth	Icon DOB (Date of Birth): 02-12-1999	Patient D.O.B "02-12-1996"selected is displayed "Successful"	Patient D.O.B "02-12-1999" selected is displayed	Test Case Successful

Table 25- Table 5.24 Testing of selecting the patient date of birth

In Table 5.25, test case we have shown about the visibility of the patient age on the website and the user's target (T13) which is mentioned in chapter 2 is achieved and tested successfully.

Test Case (T13)	Test Data	Output	Excepted Output	Result
Visibility of patient age	Age: 23	Entered Patient age "23" is displayed "Successful"	Entered patient age"23" is displayed	Test Case Successful

Table 26- Table 5.25 Testing about Visibility of patient age

In Table 5.26, test case we have shown about selecting the patient gender on the website and the user's target (T13) which is mentioned in chapter 2 is achieved and tested successfully

Test Case (T13)	Test Data	Output	Excepted Output	Result
Selecting the patient Gender	Gender: - Male - Female - Others	Patient gender "Male" selected is displayed "Successful"	Patient Gender "Male" is displayed	Test Case Successful

Table 27- Table 5.26 Testing of selecting the patient gender

In Table 5.27, test case we have shown about selecting the patient blood group on the website and the user's target (T13) which is mentioned in chapter 2 is achieved and tested successfully.

Test Case (T13)	Test Data	Output	Excepted Output	Result
Selecting the patient blood group	Blood group: O+ O- A+ A- B+ B- others	Patient blood group "A+" selected is displayed "Successful"	Patient blood group "A+" selected is displayed	Test Case Successful

Table 28- Table 5.27 Testing of selecting the patient blood group

In Table 5.28, test case we have shown about selecting the present date, month and year on the website and the user's target (T13) which is mentioned in chapter 2 is achieved and tested successfully

Test Case (T13)	Test Data	Output	Excepted Output	Result
Selecting the present date, month, and year	Date:25-07-2022	Selected date, month and year is displayed "Successful"	Selected date, month and year is displayed.	Test Case Successful

Table 29- Table 5.28 Testing about selecting the present date, month, and year

In Table 5.29, test case we have shown about the visibility of the patient city on the website and the user's target (T13) which is mentioned in chapter 2 is achieved and tested successfully

Test Case (T13)	Test Data	Output	Excepted Output	Result
Visibility of patient city	Place: Coimbatore	Entered patient city is displayed "Successful"	Entered patient city is displayed	Test Case Successful

Table 30- Table 5.29 Testing about Visibility of patient city

5.3.6 HOSPITAL SELECTION

In Table 5.30, test case we have shown about Visibility of hospital based on patient severity on the website and the user's target which is mentioned in chapter 2 is achieved and tested successfully

Test Case	Test Data	Output	Excepted Output	Result
Visibility of hospital list based on available beds	H-012345 – hospital1 | C(50) M(30) N(30) H-112345 – hospital2 | C(20) M(30) N(70) H-212345 – hospital3 | C(90) M(10) N(60) H-412345 – hospital4 | C(10) M(90) N(20) H-512345 – hospital5 | C(50) M(50) N(80)	Hospital priority list window is displayed based on severity is "Successful"	Hospital priority list window is displayed based on severity	Test Case Successful

Table 31- Table 5.30 Testing about visibility of hospital based on patient severity

In Table 5.31, test case we have shown about selecting the hospital based on hospital available beds on the website and the user's target which is mentioned in chapter 2 is achieved and tested successfully

Test Case	Test Data	Output	Excepted Output	Result
Selecting the hospital based on hospital available beds	H-012345 – hospital1 | C(50) M(30) N(30)	Selected hospital is displayed "Successful"	Selected hospital is displayed	Test Case Successful

Table 32- Table 5.31 Testing about selecting the hospital based on hospital priority.

5.3.7 PATIENT SYMPTOMS & MEDICAL RECORD SELECTION

In Table 5.32, test case we have shown about the visibility of the patient symptoms on the website and the user's target (T13) which is mentioned in chapter 2 is achieved and tested successfully.

Test Case (T13)	Test Data	Output	Excepted Output	Result
Visibility of patient symptoms	Symptoms: Fever	Entered patient symptoms is displayed "Successful"	Entered patient symptoms is displayed	Test Case Successful

Table 33- Table 5.32 Testing about selecting the visibility of patient symptoms

In Table 5.33, test case we have shown about the visibility of the medical record window and selecting the patient medical record to upload on the website and the user's target (T14) which is mentioned in chapter 2 is achieved and tested successfully

Test Case (T14)	Test Data	Output	Excepted Output	Result
Visibility of the medical record window and selecting the patient medical record	Icon: Choose Medical Record	A new pop-up window appears, and patient medical record uploaded is displayed "Successful"	Upload Patient medical record file is displayed	Test Case Successful

Table 34- Table 5.33 Testing about visibility of the medical record window and selecting record

In Table 5.34, test case we have shown about the selecting the submit option to bed request and the user's target (T15) which is mentioned in chapter 2 is achieved and tested successfully

Test Case (T15)	Test Data	Output	Excepted Output	Result
Selection of submit option	Icon: submit	Patient entry data is submitted "Successful"	Patient entry data is submitted	Test Case Successful

Table 35- Table 5.34 Testing about selection of submit option

5.3.8 PATIENT LIST VISIBILITY

In Table 5.35, test case we have shown about the visibility of patient entries and the user's target (T16) which is mentioned in chapter 2 is achieved and tested successfully

Test Case (T16)	Test Data	Output	Excepted Output	Result
Visibility of patient entries	S no:1 Patient name: Vijay Patient ID: 02 Symptoms: Fever Date: 25/07/2022 Severity : Critical Hospital: Hospital 1 Bed allocation: Waiting S no:2 Patient name: Arul Patient ID: 12 Symptoms: Headache Date: 27/01/2022 Severity : Normal Hospital: Hospital 2 Bed allocation: Waiting	List of available patient entries is displayed "Successful"	List of available patient entries is displayed	Test Case Successful

Table 36- Table 5.35 Testing about visibility of patient entries

5.3.9 PATIENT HISTORY SEARCH

In Table 5.36, test case we have shown about the visibility of the patient history based on search on the website and the user's target (T17) which is mentioned in chapter 2 is achieved and tested successfully.

Test Case (T17)	Test Data	Output	Excepted Output	Result
Visibility of patient history based on search	Patient ID : 04	Full name: Arul Joseph Address: Coimbatore, Tamil Nādu Phone number: 9954388667 DOB:03-02-1997 Age:25 Gender: Male Blood Group:0+ Place: Coimbatore Hospital: Hospital 01	For Patient ID: 22 Patient past medical history is displayed	Test Case Successful

		Symptoms: Fever Date: 25/07/2022 Severity : Critical Hospital: Hospital 1, Medical records, photos" Patient history is displayed "Successful"		

Table 37- Table 5.36 Testing about visibility of patient history

5.3.10 PATIENT BED ALLOCATION VISIBILITY

In Table 5.37, test case we have shown about the visibility of patient allocation details based on search and the user's target which is mentioned in chapter 2 is achieved and tested successfully

Test Case	Test Data	Output	Excepted Output	Result

Visibility of patient bed allocation details based on search	Search : 02	Patient bed allocation details
		"S no:2
		  Patient name: Arul
		  Patient ID: 12
		  Symptoms: Headache
		  Date: 27/01/2022
		  Severity : Normal
		  Hospital: Hospital 2
		  Bed allocation: Waiting "
		is displayed "Successful"
			For entered patient ID the patient details is displayed	Test Case Successful

Table 38-   Table 5.37 Testing about visibility of patient details based on search

In Table 5.38, test case we have shown about the visibility of patient's bed allocation results and the user's target(T16) which is mentioned in chapter 2 is achieved and tested successfully

Test Case (T16)	Test Data	Output	Excepted Output	Result

Visibility of patient bed allocation results	Bed allocation : Waiting Allocated	Patient bed allocation result "waiting" is displayed "Successful"	Patient bed allocation result "waiting" is displayed	Test Case Successful

Table 39-   Table 5.38 Testing about the visibility of patient bed allocation results

5.3.11 USER SIGN OUT

In Table 5.39, test case we have shown about selecting the Log out icon to exit the website and the user's target which is mentioned in chapter 2 is achieved and tested successfully

Test Case	Test Data	Output	Excepted Output	Result
Selecting the Log out icon	Icon : Log out	Sign out is executed & home page is displayed "Successful"	Sign out is executed & home page is displayed	Test Case Successful

Table 40- Table 5.39 Testing about selecting the Log out icon

CHAPTER 6

6.1 FUTURE WORK

Till now we developed a web-based application for allocating and deallocating the bed during emergency conditions. In the next phase (i.e., in future) we will improvise the web-based application by adding health insurances, calling ambulance service from clinic, message notification to the patients.

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APPENDIX

WEB APPLICATION PICTURES

Sign In

Email

Enter email

Id Number

Enter ID number

Password

Enter password

Login

Don't have an account? Sign Up

Sign Up

First Name

Enter first name

Last Name

Enter last name

Email

Enter email

User Type

○ Hospital   ○ Clinic

Hospital/Clinic Name

Enter Hospital Name

Critical Bed Count

Enter Total Critical Bed Count

Medium Bed Count

Enter Total Medium Bed Count

Normal Bed Count

Enter Total Normal Bed Count

Id Number

Enter ID number

Password

Enter password

Register

Already have an account? Sign In

EHCMS   Patient Entry   Patients List   Bed Allocation(H)   👤 Dev anand ▼

Date:

18-07-2022

Place:

Place

H-012345 - hospital1 | C(50) M(30) N(19)

Search with patient id...   Load

Symptoms:

Upload Medical Record:

Choose File   No file chosen

Submit

Patient Severity:

Critical

Medium

Normal

Upload ⬆

Full Name:

Full Name

Address:

Address

Phone Number:

Phone Number

DOB: Age:

dd-mm-yyyy   Age

Gender ▼   Blood Group ▼