Design and Development of Hospital Management System

 \mathbf{BY}

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Project titled "**Design and Development of Hospital Management System**", submitted by Md. Hamidul Islam, ID No: 181-15-10926, Tajnuva Afrin Mohona, ID No: 181-15-11247 and Mehedi Hasan, ID No: 181-15-11242 to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 04-01-2022

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DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Sharmin Akter, Lecturer, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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Abstract

The main objective and goal of our project is to provide home delivery of the desired and correct primary treatment to the users who are unable to visit the doctors due to pandemic or lack of time. We have seen that many times people do not get the required treatment on time, but our goal will be to provide proper treatment to the user. We have done a lot of work for this project using atom, where we have loaded web application which is very easy for the users and we have created it in a very interesting way. Science our project is web based; it will need an internet connection to run. When you open the application, it will take you to home page, blood, ambulance, and covid-19. Data received from the users is stored in a database at the end of the process, which we can operate with SQL, MySQL. Our project will be able to save all the information of the user such as name, address, email, phone number. Anyone can access our web application and get the treatment and also ambulance number in case of an emergency. Our web application will always try to meet all your needs properly.

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CHAPTER 1

Introduction

1.1 Introduction

There are many hospital systems we can find in online. But we try to set something different in the online system. We design an online hospital management system where people can find the primary treatments for regular diseases and they will get blood bank information and ambulance information. Also, there will be affected patient's numbers of Covid-19.

In our country, many people ignore their diseases and just put it for late. They do not consult with doctors. For this reason, they face many problems and lost their loved one. We decide to put an easy system over online where people will put their symptoms of sickness and primary treatments information will provide by the website. People just need to create an account by their email address and password. User will find prevention and protection for their diseases. Also, they can find what they should do for their sickness.

There will be a separate part for admin. They will control all the process. They will monitor the system. They can delete the unnecessary post. Any random user can post for blood by sing up the site. Users can also set the date of their blood donate so that others can easily find the person who can give blood in the right time. User will find name, phone number and address for blood donor in this site. Also, they can post for any blood group which is needed.

In our project we added ambulance for any kind of emergency situation. Because there are many times when people need ambulance but they do not get right number to call. When any user will find their primary treatments if they feel any emergency, they can get ambulance information in the same site. Also, they can see which hospital ambulance are available in that time.

Now a days Covide-19 is a major issue all over the world. So, we also put the daily effected people numbers in this site. It will auto update by the website.

Many people of our country think about money before visiting to a doctor. Also, many busy man and women, housewives who ignore their sickness for works or money. As we know, now all of us use an android phone and internet connection. It is a part of our daily life. So anyone can use

our site for free and get their treatments. It will be easy for them. If they find their symptoms serious from this site, they can then visit the doctor. By this way they can safe their money and also time.

All of this information must be managed in an efficient and cost wise fashion so that an institutions resource may be effectively utilized hospital management system will automate the management of the hospital making it more efficient and error free. It aims at standardizing data, consolidating data ensuring data integrity and reducing inconsistencies.

1.2 Literature Review

Before we start our project, we have studied some literature, projects that have been worked on this topic before, so that we can be inspired by them and find obstacles from them, to solve them. We also try to make our project easy to excess so that user feels free to use it. Also tries to connect some major parts of emergency treatments.

1.3 Motivation

We've built our web application in a way that is convenient and straight forward for everyone. People easily can get there needed treatments, blood donor, ambulance, hospital, covid-19 information in one site. It will also show the time duration of a donor when he can donate blood. All the works will manage by admin. With these things in mind, we make this web application. Our project will solve all these problems in a very smooth way.

1.4 Objectives

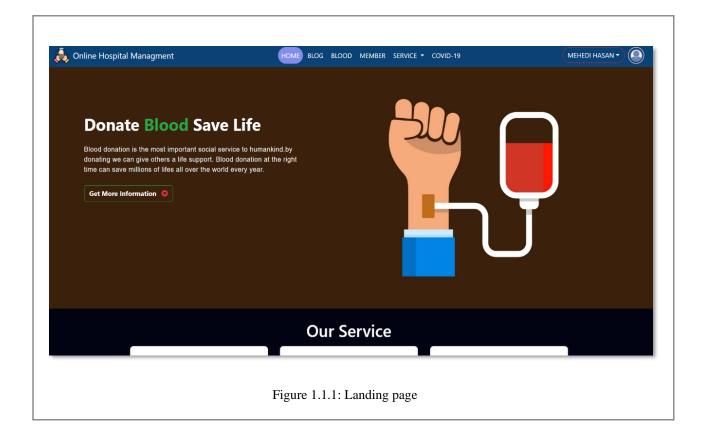
The main purpose of our web application is to provide treatment easily in internet. Users will be able to get primary treatment and the solution of their dieses. Our web application is a place where user can find the effected number of people by covid-19. Also, users can post for emergency blood post. They can request for required blood in our site. They can see all the details of a donor and also they can see the time duration when they can donate blood. Users can find emergency hospital and ambulance details.

1.5Expected Outcomes

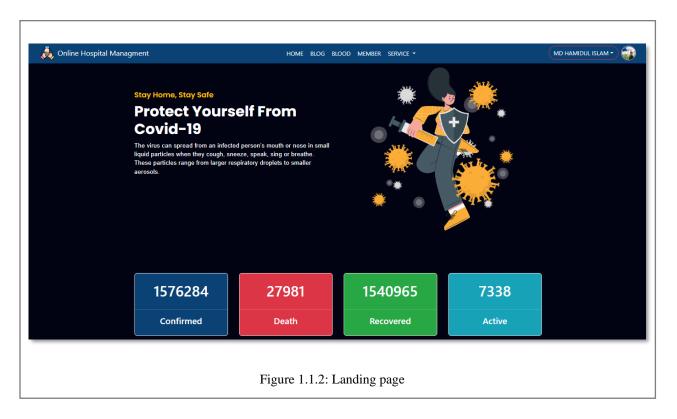
- Easy way to get primary treatments
- Can easily get the number of the emergency ambulance
- Can get blood donor information
- It is very helpful
- For this epidemic situation.
- For primary treatment
- For those who can't find blood in an emergency situation

1.6 Proposed Solution

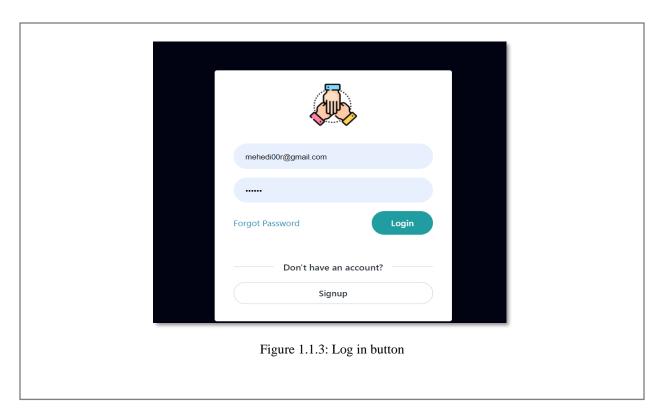
This is a smart way of hospital Management approach web application can be accessed by any user with a login and can see all details. You can also login to go to admin panel.



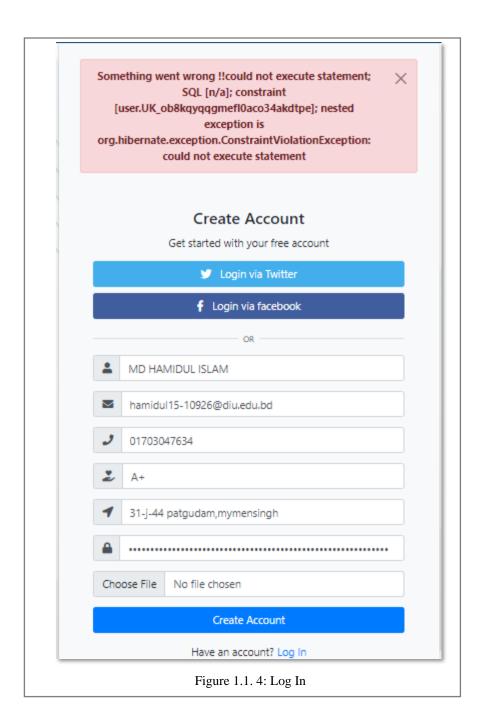
The user will be able to enter every page with login, and will be able to take help. Clients can enter the homepage, blood, blog, blood, member, and service by entering the web application. When they enter the homepage, they will be able to know about a smart way of hospital Management approach, they will be able to search information about any treatment.



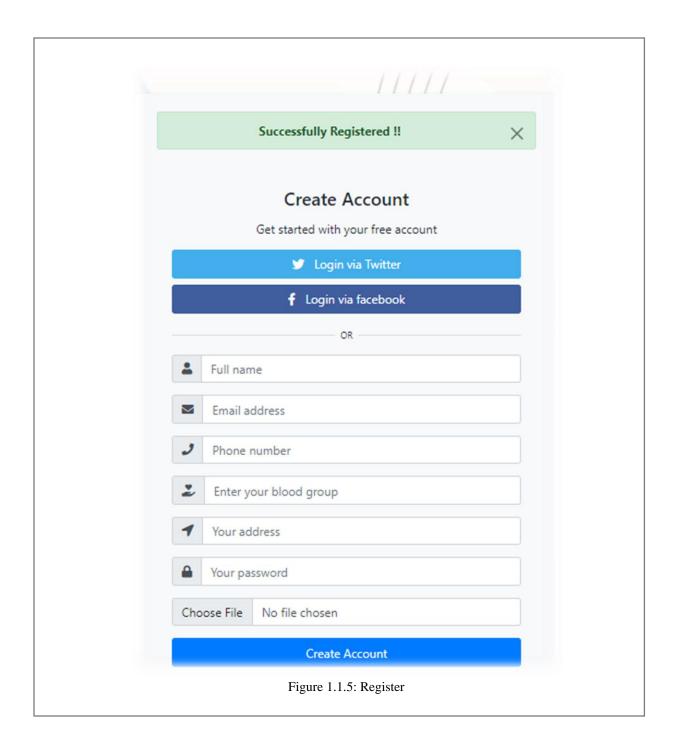
They will be able to know about regular Corona Update like how many people tested in a day, new affected people, how many deaths occurred, how many recovered, total affected summery, total number of test report. They can get a full idea of the system.



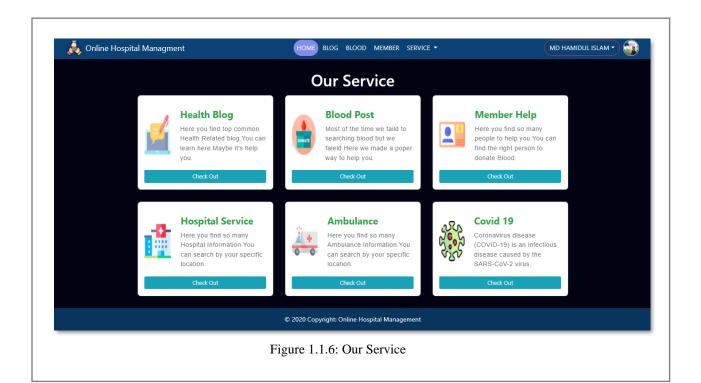
In the web page user will 1^{st} get an option to clicking there, a log in interface will be open. When user clicks on it users have to give email and password.



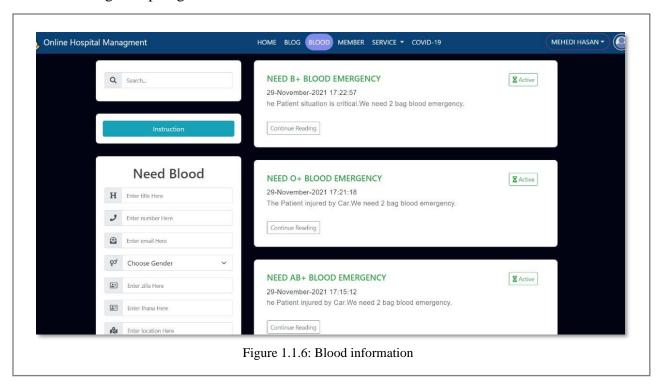
If you are already sign up, you can log in, and if not, you need to sign up with email password and other information. This is a mandatory process.



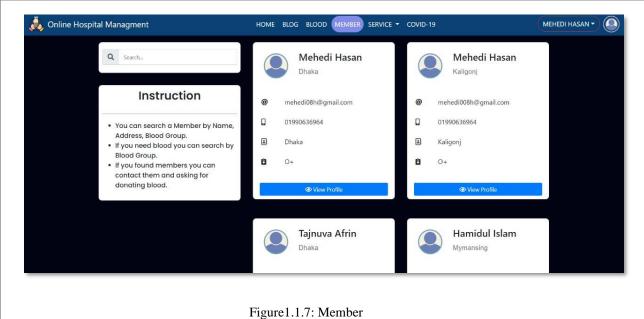
After registration the web application, they see our service and they are Health Blog, Blood Post, Member help, Hospital Service, Ambulance, Covid-19.



If the user enters the blood option of the web application, he will see a list of bloods, from where he can get help to get blood and also can be a donor.



After selecting blood, the next option will service. There will be several information about ambulance, hospital and covid-19.



After registration they can be a member. They can post on the site and also get our blood, ambulance and hospital service. They also can contact with all other people of the site for emergency purpose.

1.7 Report Layout

This report consists of six chapters. This section gives an idea about those six chapters

- 1. The first chapter gives an idea about the presentation, goal, purpose, motivation, expected result.
- 2. In the second chapter we discuss various searches related to our work, our tasks and results.
- 3. In the third chapter we have given the proposed system requirements, trade model, precondition, testing structure, way of running.
- 4. Chapter 4 discusses the structure of our proposed web application, UI plan, backend work plan, database plan.
- 5. Chapter 5 deals with the implementation of the database, finding out the problems of the app and testing.
- 6. In Chapter 6, it consists of Conclusion, Restrictions, Differentiation and Future Action Plans.

CHAPTER 2

BACKGROUNDS

2.1 Introduction

A smart way of hospital Management approach is an e-commerce site, from where in a very short time and in compliance with the hygiene rules. All kinds of primary treatments and other information are given to the web application for the people.

At present, people are afraid to come out from their homes because of corona virus and due to busy at work. This web application can solve all these problems in this situation. A large number of people in Bangladesh do not get treatments on time, due to lack of time or lack of interest for treatment. We have created this web application considering these people. It will be a much quicker and easier solution.

2.2 Related Works

We do a lot of thinking, research and planning for our web application for all kinds of people. So that the users can handle it very easily. It's hard to figure out what's convenient inside so many web applications, so we've tried to keep the UI of our web application pretty much different than others. We've done a lot more interesting than all the other web applications. We just worked for a better user interface and to make a reliable interface.

2.3 Comparative Studies

Our web application is accessible only if you have internet. There are many web applications whose are very complicated. Many user interface applications are much more critical and take a long time to understand.

Many web applications have a lot more options, which takes a lot of time for users to get through. Our smart way of hospital Management approach website is much more convenient, easy and user friendly.

Our features:

- Easy, fast and effective
- Very easy to understand user interface
- Treatments can be got very easily
- Details blood options and other facilities
- Doctor's suggestive blog

2.4 Scope of the problem

There are some common problems to be faced in web application. Such as bad UI / UX which cannot keep the user fluent in the website. In many cases the website cannot be accessed due to network issues. Also not being able to load, third party apps cause some problems. We have designed and built our website with everything in mind.

2.5 Challenges

We have had to face many challenges in doing this project. In many cases there are bugs and mistakes in the code. Then the code has to be corrected. It took a lot of work to get the codes into a good management. Also, all the problems that we have to face:

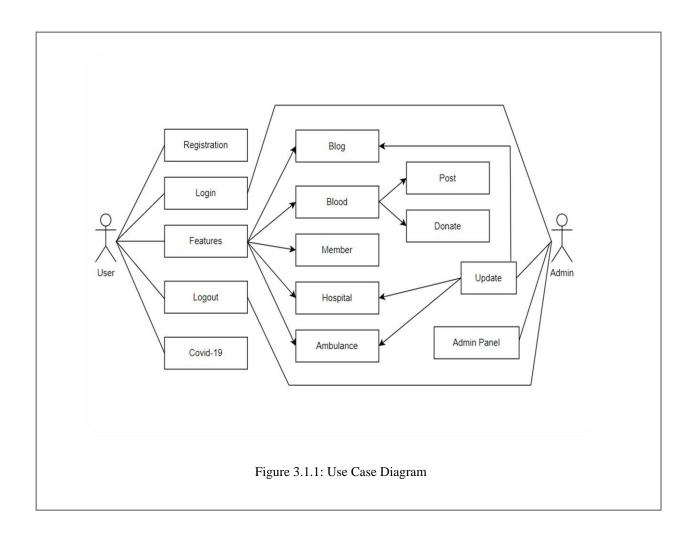
- To make the system user friendly
- To create a smooth database
- Beautiful and easy to create user interface
- The API was much more difficult to handle
- Finding and fixing bags of code
- Putting all the mini projects together

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Case Diagram

Use case diagram shows high level function and the relationship between actors and use case. Here admin will control all the system. User can go through with all the functions. Members can create posts, ask for blood donor, ambulance, hospital etc facilities.



Flow chart: Flow chart is a simple diagram that shows the process how a system works. Here it describes that after login how the steps will work. This chart makes easy to understand.

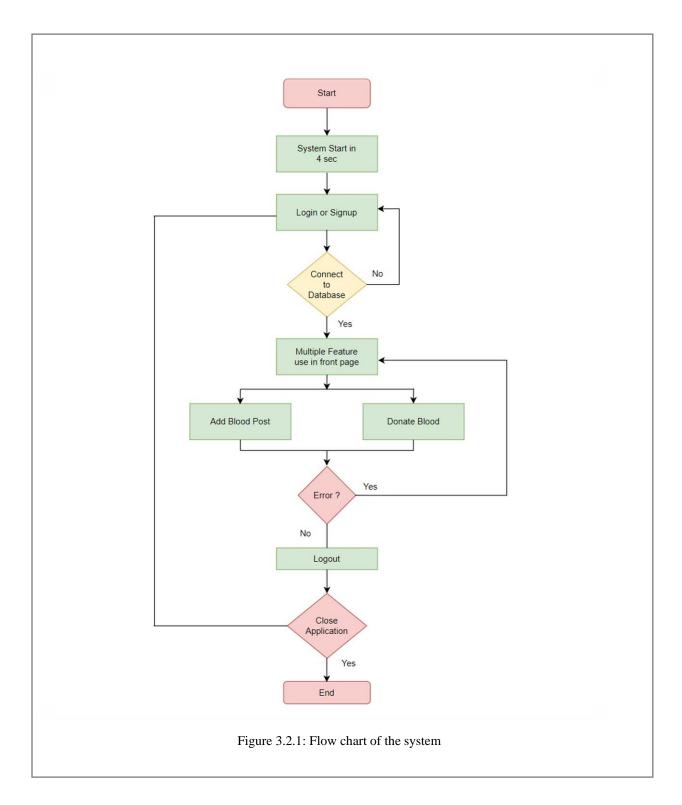


Table 3.1: Use case Specification for Log in Function

Utilize case title	Login	
Pre-Condition	Must register or have an account open in advance	
Actors	User	
Purpose	For the security of the users	
Main Flow	1- There will be a login option at the top	
	Of the home page	
	2- The system will ask for an email	
	Address and password	
	3- Users need to give the necessary	
	Information	
	4-Click to log in	

Users must have an account, even if they do not have an account, they can access the application. This web application has guest mode.

Table 3.2: Use case Specification for register Function

Utilize case title	Login	
Pre-Condition	NULL	
Actors	User	
Purpose	Access to the application	
Main Flow	1- There will be a register button on the homepage	
	2- Have to click on the register button	
	3- System will require: Name, Email address, Phone number, Gender, Blood Group, Address and password.	
	4-User have to provide required info	
	5-Click to register	

Table 3.3: Use case Specification for Guest mood

Utilize case title	Guest mood	
Pre-Condition	Null	
Actors	User	
Purpose	For the security of the users	
Main Flow	1- There will be a login option at the top	
	Of the home page 2- They will see Home, Blog and Covid-19	
	Information.	
	3- Users need to give the necessary information.	
	4-Click to log in	

Table 3.4: Use case Specification for Add blood post

Utilize case title	Add blood post	
Pre-Condition	Null	
Actors	User	
Purpose	For blood post / Emergency blood	
Main Flow	1- Blood post page.	
	2- Next click to the blood post button.	
	3- Users need to required information for blood post.	
	4-Click to post.	

Table 3.5: Use case Specification for home page

Utilize case title	User Home page	
Pre-Condition	Null/have login	
Actors	User	
Purpose	To see the home page	
Main Flow	1-Go to the Home menu	
	2-User can see the homepage with info about "Online Hospital Management"	

Table 3.6: Use case Specification for home Log out

Utilize case title	Log out page	
Pre-Condition	Must have login	
Actors	User	
Purpose	Get out of the web application	
Main Flow	1-Just click on profile on the top right.	
	2-Click on the log out	

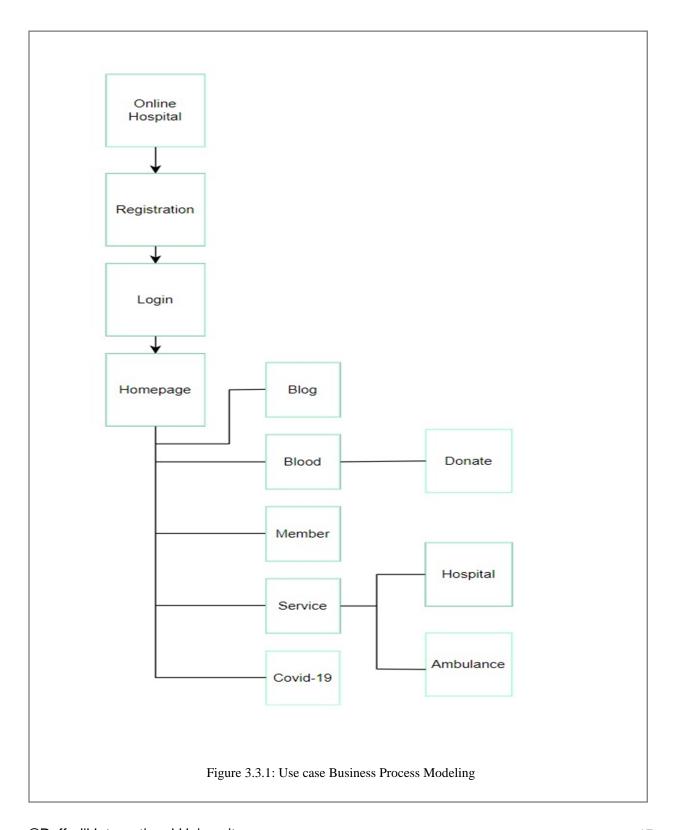
3.2 Logical Data Model

Security: In this web application some records of the users are stored in the database. Through which he can log in later. Also, when they search for any options, the information stored in the database. We guarantee that our users' information is secure. -

Availability: These frameworks will be accessible on the Internet. If there is no Internet and / or the application is running while the Internet is running, access will no longer be possible, as it will be disconnected.

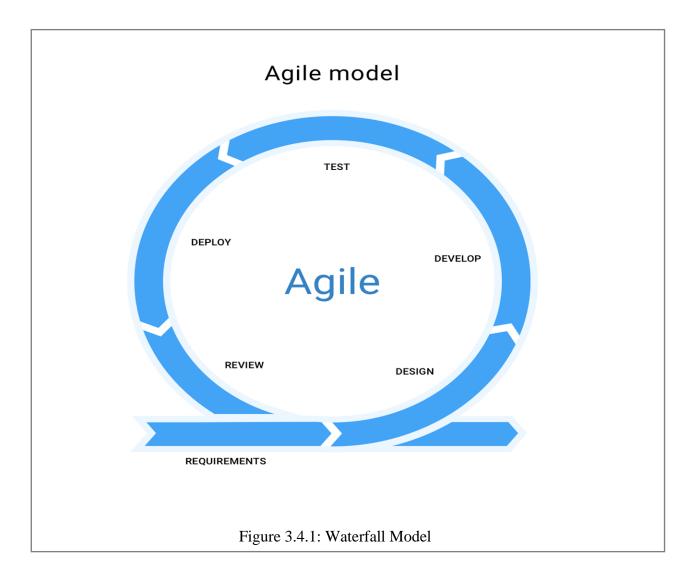
Usability: Our structure is very helpful. Anyone can use it. The application is very easy to understand and its process is user friendly.

3.3 Business Process Modeling



3.4 Requirement collection and analysis

We have used Agile model. "Agile process model" refers to a software development approach based on iterative development. Agile methods break tasks into smaller iterations, or parts do not directly involve long term planning. The project scope and requirements are laid down at the beginning of the development process. Plans regarding the number of iterations, the duration and the scope of each iteration are clearly defined in advance.



Each iteration is considered as a short time "frame" in the Agile process model, which typically lasts from one to four weeks. The division of the entire project into smaller parts helps to minimize the project risk and to reduce the overall project delivery time requirements.

3.5 Design Requirement

It is a web application. The project is based on online platform. We have worked considering the demands of the users, where we have worked based on their requirements. So, we designed it considering all aspects. We've taken suggestions from many more web applications and learned from all the minor mistakes. We work with these in mind and with user's usability in mind.

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-end Design

Front-end-design is the graphical user interface (GUI) makes content design visible to all. This is very important because it is what attracts the customer to the web application. Everything we see on a website is basically front-end.

Table 4.1: List of application design

1	Home page
2	Sign up
3	Log in
4	Home
5	Blog
6	Blood services
7	Member
8	Hospital
9	Ambulance
10	Covid-19
11	Log out

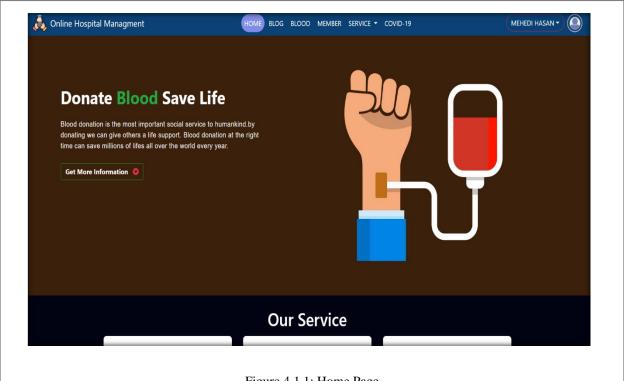
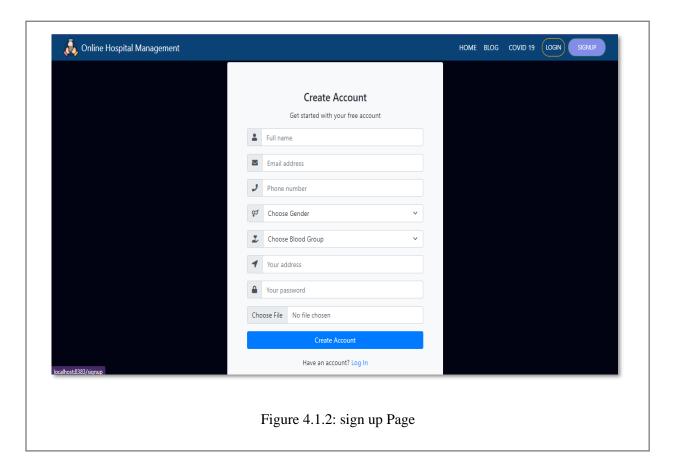
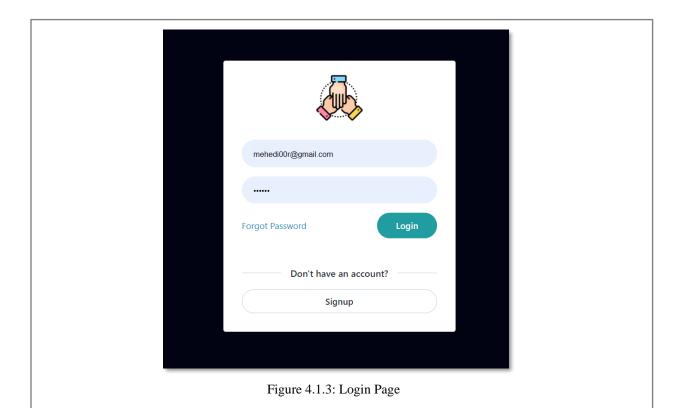
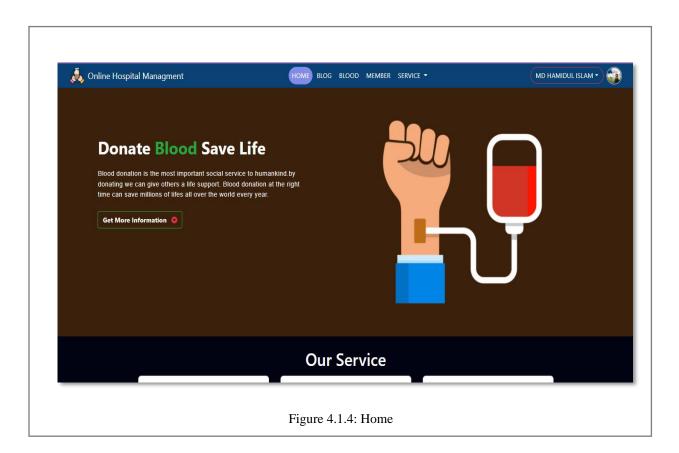
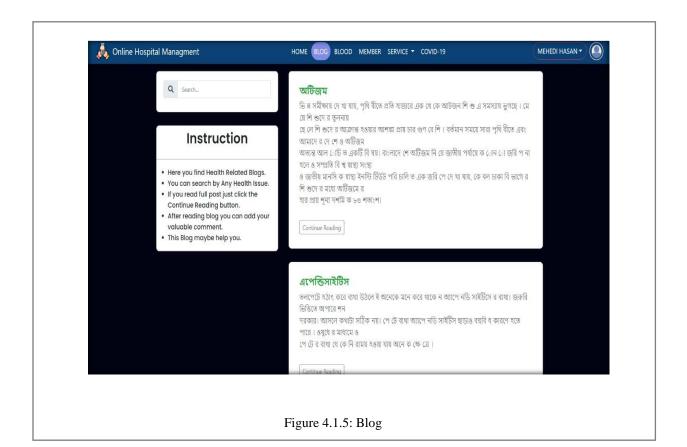


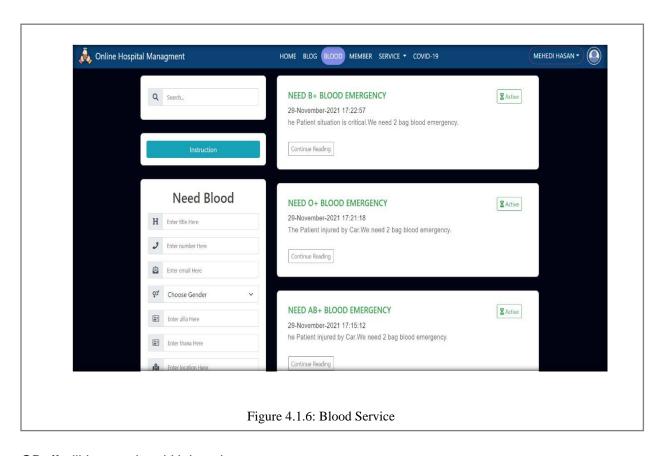
Figure 4.1.1: Home Page

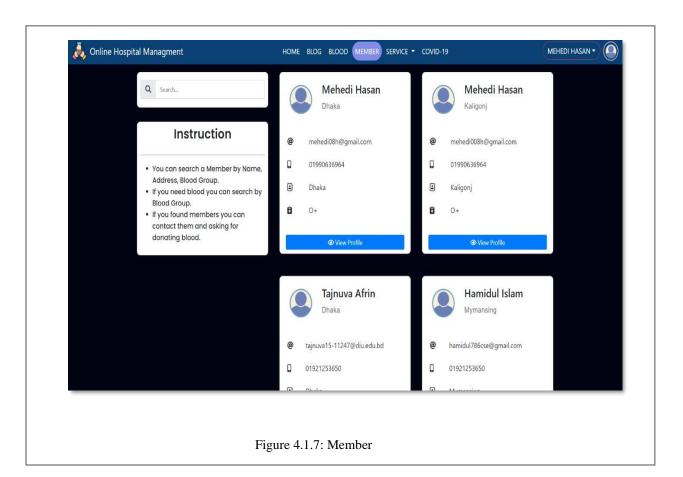


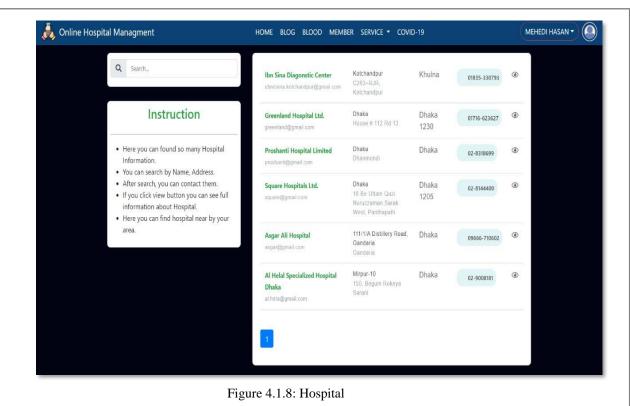












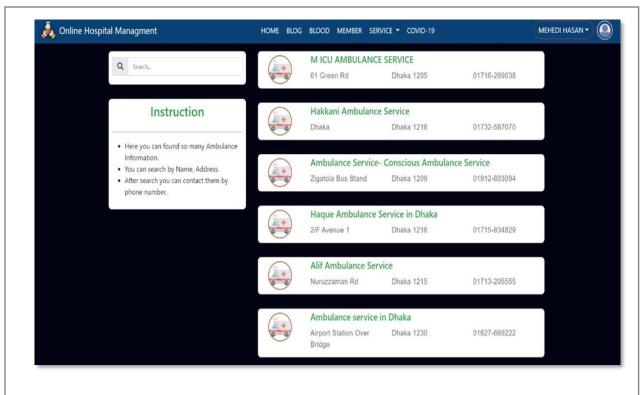
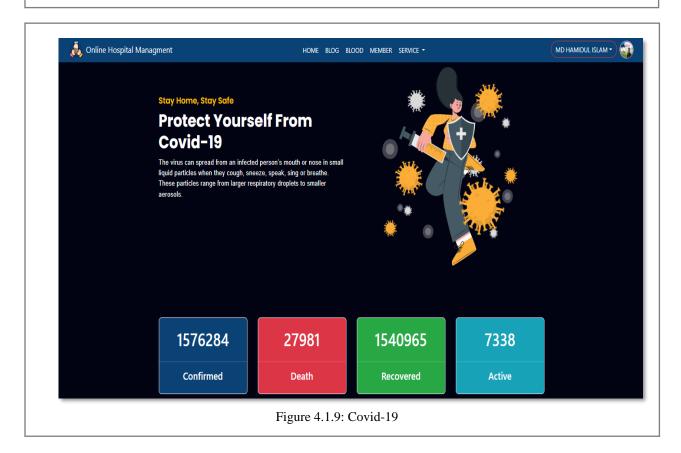
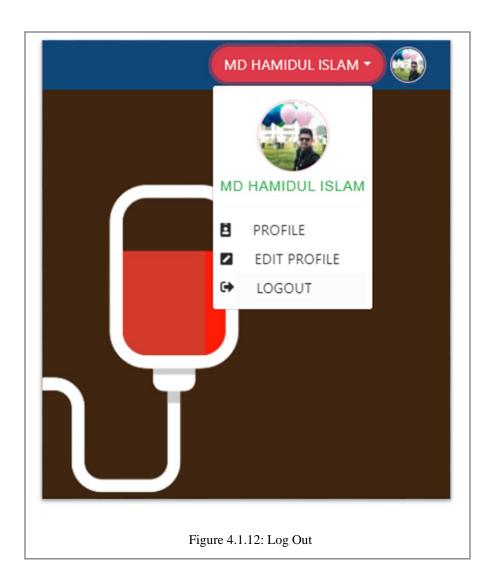


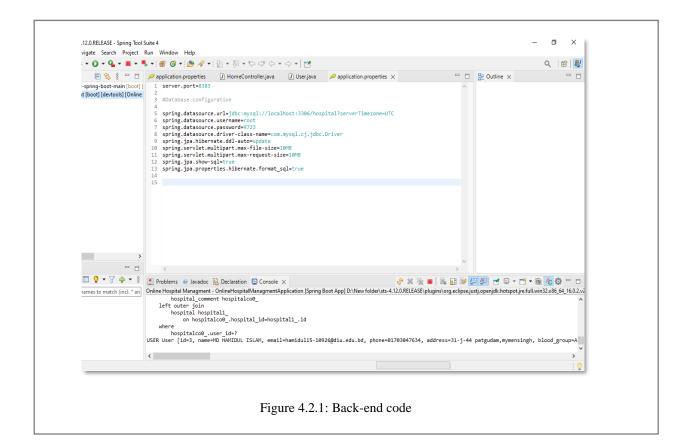
Figure 4.1.9: Ambulance





4.2 Back-end Design

The project has been developed using Java using MVC pattern. Here all the backend work has been done basically through Java. All data is added to MySQL database, and the data is implemented from there .



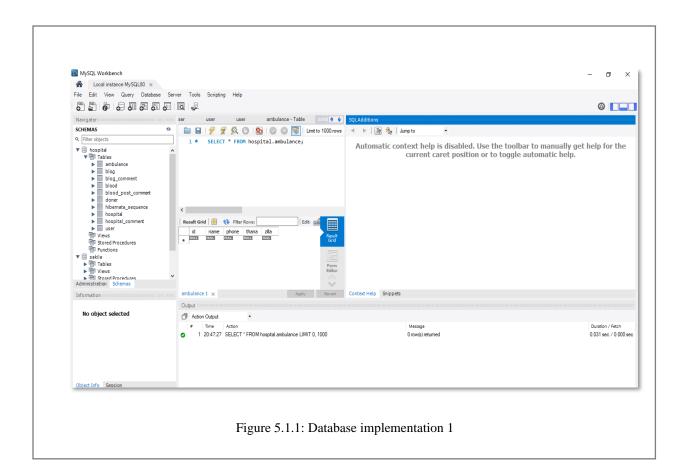
```
model.addAttribute("user", user);
}
//user dashbord
@RequestMapping("/index")
public String home(Model model)
    model.addAttribute("title","Home - Online Hospital Management");
    return "user/index";
}
//user profile
@RequestMapping("/profile")
public String profile(Model model,Principal principal)
    User currentUser = userRepository.getUserByUserName(principal.getName());
    SimpleDateFormat sdf = new SimpleDateFormat("dd-MM-yyyy HH:mm:ss");
    String lastDonateDate = currentUser.getLastDonateDate();
    boolean avaliable;
    Long remainDate;
        if(!lastDonateDate.isEmpty()) {
            Date newDate = new Date();
            SimpleDateFormat dateFormate = new SimpleDateFormat("dd-MM-yyyy HH:mm:ss");
            String currentDate = dateFormate.format(newDate);
                Date 1Date = sdf.parse(lastDonateDate);
                Date cDate = sdf.parse(currentDate);
                long difference In Time
                             Figure 4.2.2: Back-end code
```

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation of Database

First you have to linkup MySQL database with PHP code. The hostname in the database Java module is localhost. Database name "hospital". User name "root". By making this connection, all the inputs given in the web application will be saved in the database. If you search for something, it will search directly from the database and show it in the web application



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5.2 Implementation of Interaction

We have made our web application tick for the convenience of the user. We made it very easy and smooth. I have made sure that the user can use it extensively.

5.3 Testing Implementation

It is very important to complete the testing of the web application. We have tried to find the errors.

This part Includes -

- 1 . Internal Logic
- 2. Input and output domain

Table 5.3: Test case table for "Hospital Management approach" application

Test Case	Test Input	Expected Outcome	Actual Outcome	Result
1.Running the web application	Used some different system like windows	Run successfully	Run successfully	Passed
2. sign in with Info	invalid address	Sign in info	Invalid input	Passed
3.Password	Invalid	Correct password needed	Incorrect pass	Passed
4.Treatment	Blank	NULL	NULL	Passed

5.4 Test Result and Reports

Inside the test report are the details of the test. We tested it very nicely and made this table with all the information. In all the tests we have completed, we have got the expected results. So it can be said that our project is free from mistakes.

5.5 Outcome

Everything we planned before we created this web application. Much of it has been successful. The biggest advantage of this application is that people will get the primary treatments they need in a very short time. As a result, people are not getting home at the time of this epidemic. Their health risks are decreasing and they will get the necessary treatments and other health related options.

Also, Ambulance help line numbers in same page.

CHAPTER 6

IMPACT ON SOCITY & ENVIROMENT

6.1 Impact on Society

In our society current hospital management system is not so updated and automated. If our project can be implemented properly then the whole hospital management system will be easy to manage and beneficial for both Admin and Patients. Considering COVID-19 situation it will be very effective as there is less risk to meet personally. It will be time and money consuming. It will reduce travel cost, money and easy for patient as they can book appointment from home and no need to go to hospital.

6.1 Impact on Environment

This project will make a great effect on social environment. The social environment refers to the immediate physical and social setting in which people live or in which something happens or develops. It includes the culture that the individual was educated or lives in, and the people and institutions with whom they interact. Our project will not have any negative impact on environment.

CHAPTER 7

CONCLUSION AND FUTURE SCOPE

6.1 Conclusion

In the current context, leaving the house is much more frightening, Corona's situation is getting worse day by day. It has also become very difficult to get adulterated and all the necessary primary treatments and also blood information at the same platform. We will try to comply with all WHO and FDA regulations. We also add ambulance for any emergency situations. So that user can get whatever they want in the time. I also hope to be able to provide much better and user-friendly service than everyone can excess. Our aim is not only to provide treatments, blood donor information's or other information's, but also to ensure that the users can get various doctor's advice and emergency ambulance services. With this project we will be able to win by doing as expected and keep coming to a much better position.

6.2 Limitations

This project has some limitation too

- This web application is only for web based, it has not any Android/iOS version
- Our features could not be able without internet connection
- No one can comment without sign up

6.3 Future Work

Some future activities of our project are given below

- We'll develop our application in other available platforms
- We will upgrade our security system with the global rules.

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