

KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY

Department of Computer Science and Engineering

CSE-3200 Project Report

Course Name: System Development Project

Project Name: A Web-based system for Health-care Management

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1 Introduction

"DoctorTalks: A Web-based system about health-care management" is an online platform where any user logged in as patient can consult with a doctor through messaging service and set appointment for further checkup. The system also has features like a blood bank where the information of users who wants to donate blood can be saved and people who are looking for blood can also check if blood is available of the certain type they are looking for. Here doctors would give advice voluntarily. Besides the web application also has a premium subscription features where the users or the patients can unlock special discount and features on associated hospitals. With that we can also check if a hospital has any vacant ICU or general Bed for serious condition of a patient which is very important to keep a record in this time of pandemic.

2 Background

Now a days everything is at the palm of the hand as the world is technically growing. Consulting a doctor should be in the same line as the other communication has turned into. There are many doctors who want to help the people with common medical condition. So we tried to bring the doctor and the patient closer with just one tap on the phone. Of course, it is not an alternative to see the doctor in person. It just helps the doctor to point out the probability of a certain disease to the patient. Besides, setting appointment with doctor has always been a trouble in our country. In this web application we tried to automate the appointment setup with a certain doctor. Moreover, in this era of Internet it is still a trouble to find a suitable blood donor on time, specially if the blood group is of rare type. So here we tried to keep a record of the people who would like to donate blood but we also checked if he is ready to donate blood if he already donated before.

2.1 Related Work

2.1.1 daktarbhai.com

It is a Bangladeshi website which allows its users to communicate with doctor with some easy steps. And it also has some similar features like blood banks, appointments.

2.2 Objectives

- Creating a platform where patients can easily consult a doctor for initial treatment
- Keeping a record of the people who wants to donate blood
- Easier way to set appointment with doctor
- Easier way to check if the hospitals have any ICU/Bed available for booking Easier
 way to find blood donor

3 System Overview

3.1 Software Development Lifestyle Model

As our first time developing a system we tried to keep it minimal and as simple as possible. As a result with we decided to choose the basic SDLC model. Among many SDLC models we decided to go along with the Waterfall Model. This SDLC model is the oldest and most straightforward. With this methodology, we finish one phase and then start the next. Each phase has its own mini-plan and each phase "waterfalls" into the next. The biggest drawback of this model is that small details left incomplete can hold up the entire process.

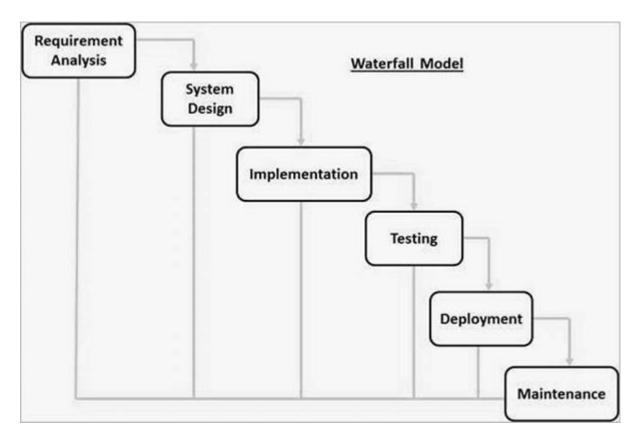


Figure 3.1: Waterfall SDLC Model

3.2 Requirement Analysis

At first we discussed about many approach how our plan can be turned into actual working system. We considered android development and web development to implement the project. After discussion we tried to keep it in web based application so that our targeted audience becomes larger.

3.3 System Design

After selecting our platform we started planning our system design. Initially we made figures how we wanted our webpage to look and function. We made lots of diagram to get an initial idea how the things will work when all the components will be merged together.

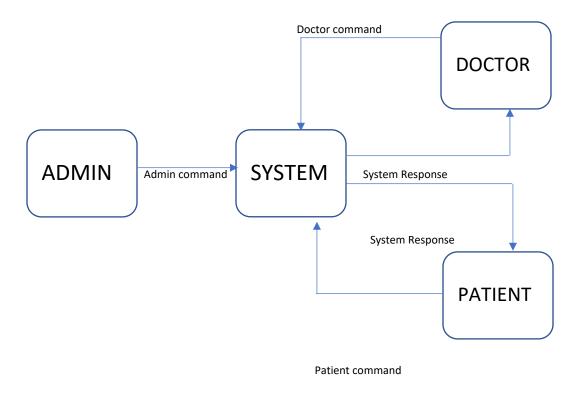


Figure 3.3: Data Flow Diagram with primary components

3.4 Implementation

This is the phase where we spent most of our time. We designed the client side to server side along with the database we needed in this phase. The parts which were independent to each other were being developed simultaneously in this phase.

3.5 Tools and Technologies Used

For the majority of the parts we used HTML, CSS, JavaScript along with php and JavaScript library ajax. The user interface or the Front-end part of the website was built using HTML, CSS and JavaScript. However, to communicate with our database we used basic php. And in between JavaScript helped to pass the data back and forth to webpage to database. To save and retrieve data in our date base we used MySQL database management system. For code editors we used Visual Studio Code and to create local server we used Xampp.

3.6 Testing

After implanting our codes, the system was tested in different browsers (Google Chrome, Microsoft Edge) and different machine to check everything was working fine.

4 System Analysis

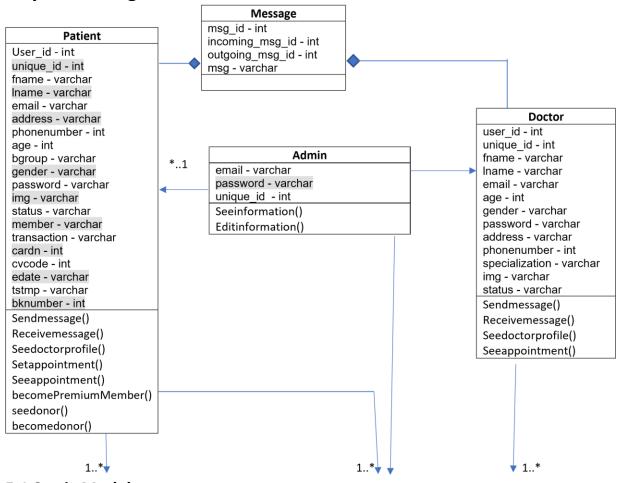
In DoctorTalks one can register either as a patient or a doctor. After registration and login Patient then can see available doctor who registered in our system and their profile. Send them messages as well as receive messages from them. Patient can also set appointment with the doctor and visit them on specified time for a in person checkup. Patient as a user can set appointment for himself or any of his friends or family member. After setting the appointments patient can see all the appointments and the details that had been set up from his account. Moreover, patient as a user can also check available blood donor and as a matter of fact he, himself can register to be a donor to help other. There is premium membership features that will be available to the patients only after he or she will pay the subscription fees. In the membership, the user will have some special discounts or features which normal users won't have.

As for Doctor side of the system, one also has to register as a doctor. After registration and login the doctor will be able to see the patient list and their details. He or She can send message or response to the messages that had been sent to him by the patients. He can also see his upcoming appointments as well as previous appointments with patient with details.

As for general viewer of the website they can see details about the hospitals like if a particular hospital has any ICU/General Bed vacant for booking or the doctor information associated with the hospital.

The admin panel is only visible to authorized person. The admin can monitor, delete, create or edit user(doctor/patient) information. The admin also authenticates the payment for membership for the website.

5 System Design



5.1 Static Model

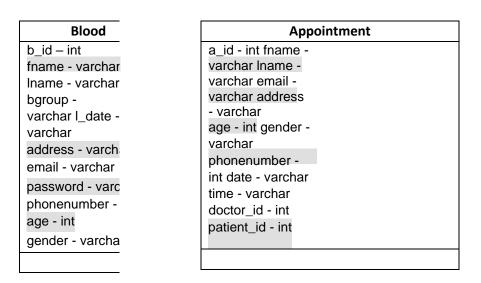


Figure 5.1: Static Model

5.2 Dynamic Model: Data Flow Diagram

The flow of the data in the system is shown using the data flow diagram. Here we used the top down decomposition to show the most detailed data flow in the lowest level.

5.2.1 Level 0 Data Flow Diagram

The following diagram gives an high level overview how the data flows across the system.

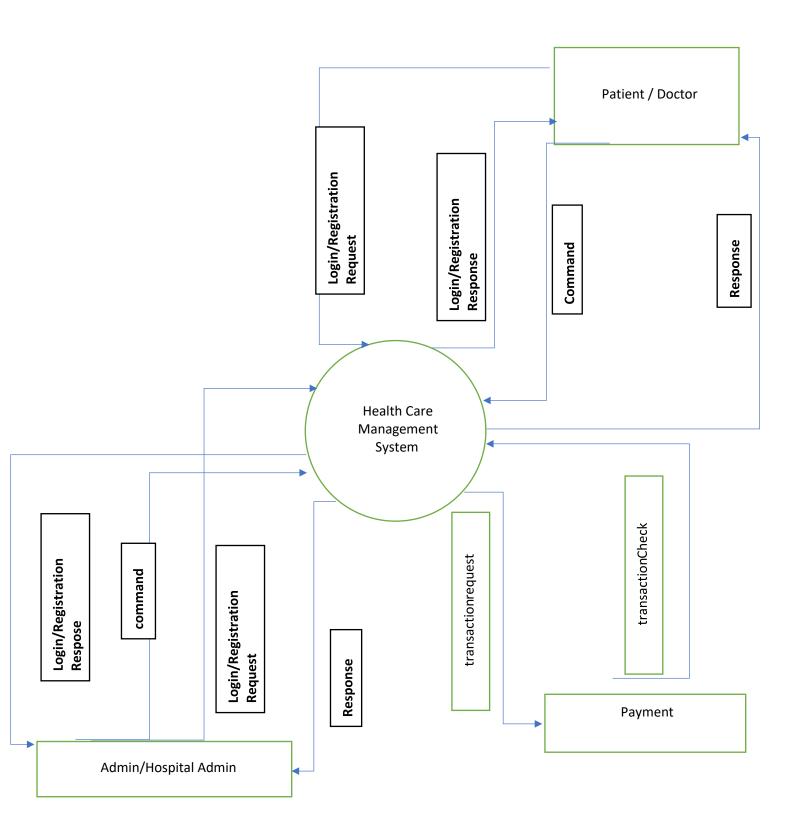


Figure 5.2: Level 0 Data Flow Diagram

5.2.2 Level 1 Data Flow Diagram

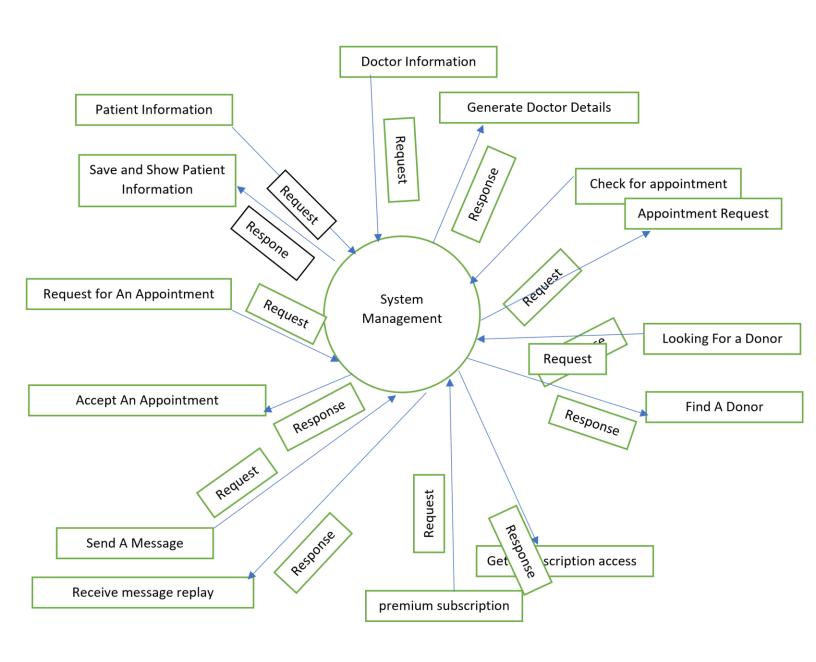


Figure 5.3: Level 1 Data Flow Diagram for Doctor and Patient

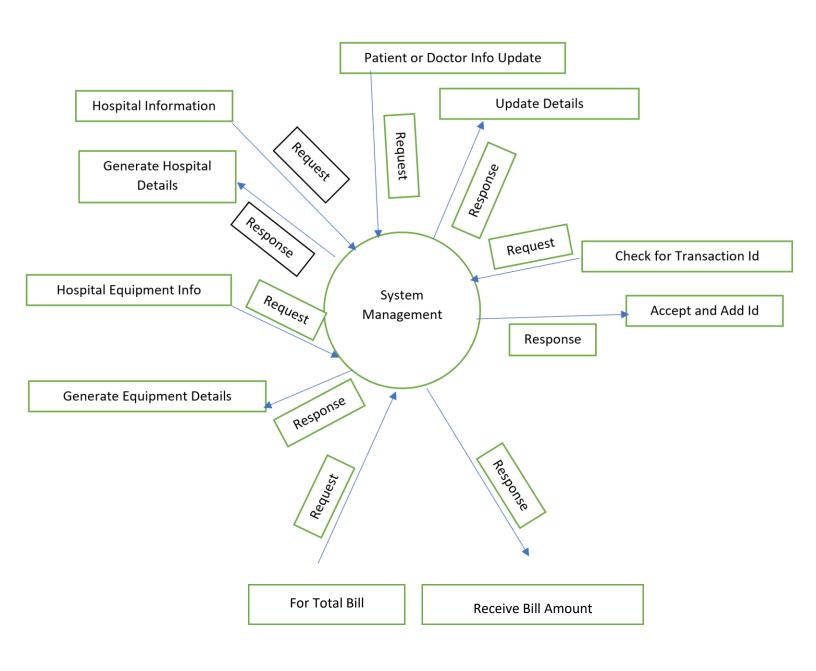


Figure 5.4: Level 1 Data Flow Diagram for admin

5.2.3 Level 2 Data Flow Diagram

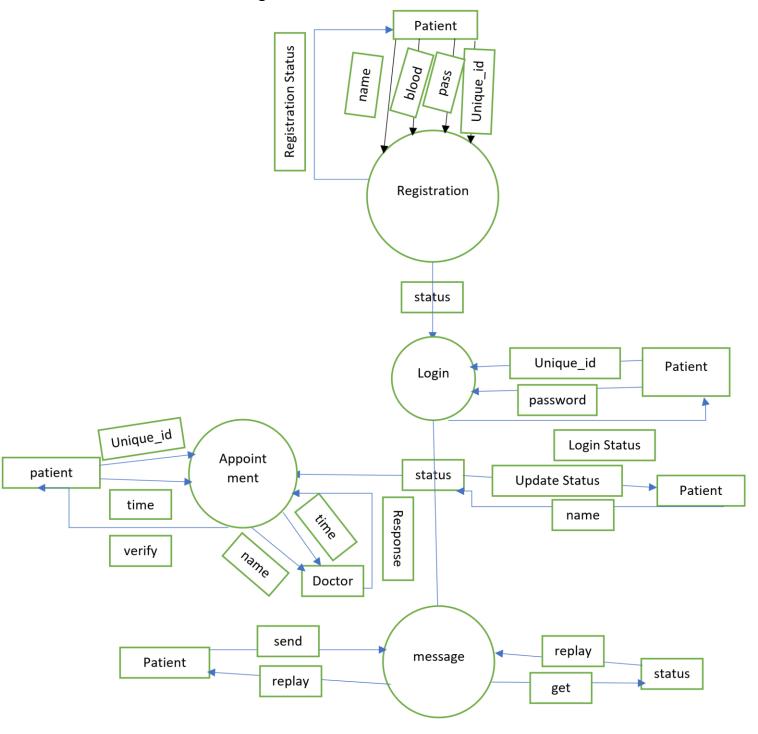


Figure 5.5: Level 2 Data Flow Diagram for patient

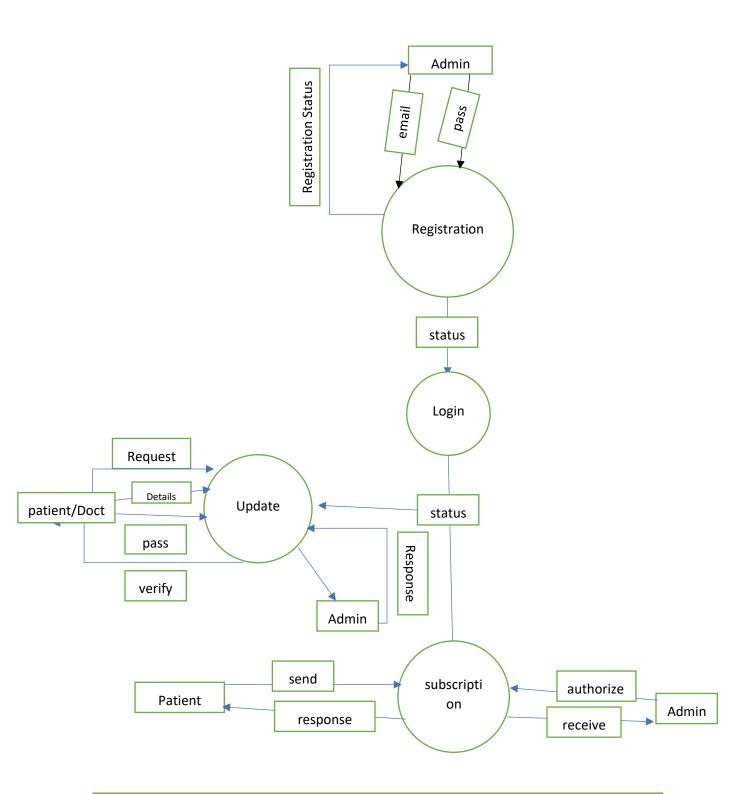


Figure 5.6: Level 2 Data Flow Diagram for admin

6 User Interface Design

The UI of the system was built using HTML, CSS and JavaScript. UI is different for Doctor, Patient and the admin.

6.1 Visitors User Interface

Anyone who comes to the web page are prompt to sign up in the system to unlock the full potential of the website. So visitors will simply see a registration form. Although for some functionality the registration is not required like to check the hospital info and the ICU/Bed vacancy information or the blood donor information.

6.2 Patient User Interface

To unlock more functionality of the web page one must register to the system. That's why the first page one will come and see will be the registration page for patient. The web application shares the same header and footer section across all of its pages. The header severs some functionality depending on whether one is logged in or not.

6.2.1 Header

Header section contains the logo, a link to quickly jump to the homepage, administration options for hospital admins and services such as blood bank features.

DoctorTalks Home Administration Services

Figure 6.1: Header section of the web-application

6.2.1.1 Administration option of the header

This section contains the links to take the admin of the hospitals to their admin page to update or insert new data related to their hospitals.

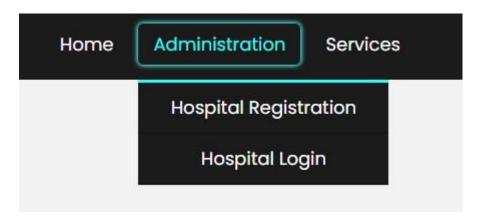


Figure 6.2: Administration option in the header

6.2.1.2 Services

This section contains the links to see the blood donor lists, a link if someone wants to register as a donor, links to hospital profile and a "More +" button for more functionality to its premium users or the user who has the membership access.

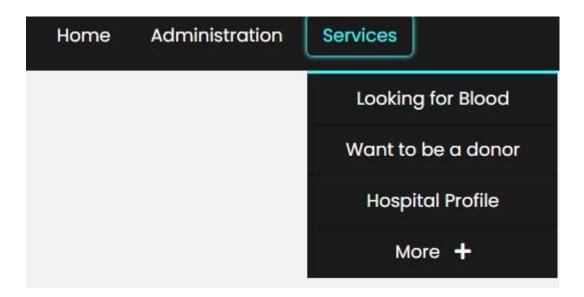


Figure 6.3: Services option in the header

6.2.2 Footer

Like the header section the footer section is also shared across all the pages of the web-application. In the footer section we talked about what the web application is about and about the developers and address of the organization.



Figure 6.4: Footer Section

6.2.3 Patient Sign Up

In the user as a patient registration or sign up section the patient will have a form to fill up. This page also contains link of patient login if someone already have an account and links if someone wants to register or login as a doctor.

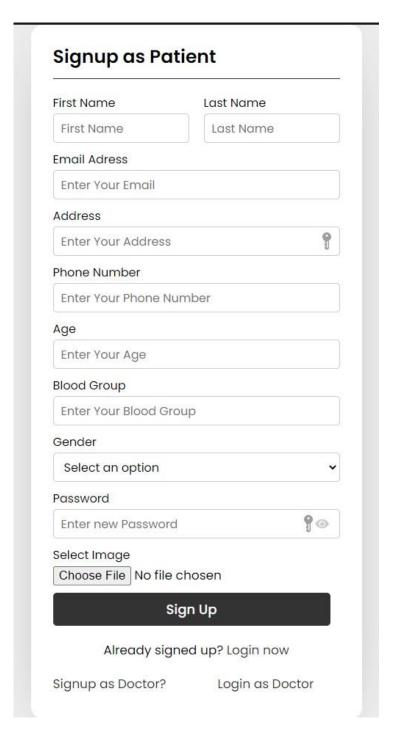


Figure 6.5: Patient Sign Up

6.2.4 Patient Login

If a user already has an account then this section is for him. This page also contains if someone accidentally press the login link and now want to register. Besides if anyone wants to access different page directly without logging in the web application redirects him to this login page.

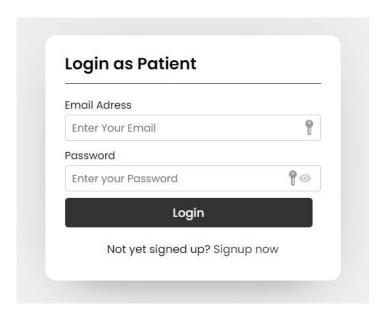


Figure 6.6: Patient Login

6.2.5 Homepage after Patient Login

Here we wanted to keep things as simple as possible. This page contains only three links along with a button to logout anytime. One to see the available doctor list and their profiles. One to directly go to the inbox where he will see all the doctors he has previously talked with. And the last one with the links to see all the appointments he has made with the doctors along with their details. Besides on logging in the user now can use some extra functionality from the header. Now the "More +" button is activated. And will see the dropdown list of the button.

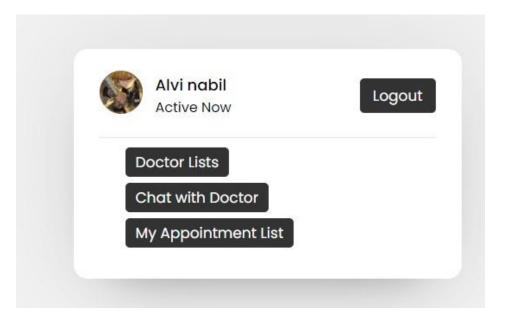


Figure 6.8: Patient Login

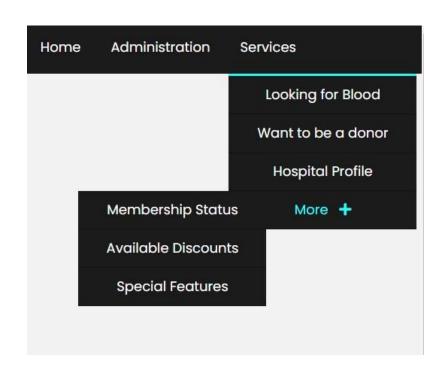


Figure 6.7: Header after patient login

6.2.6 Doctor Lists

Here the user will see all the doctors and their details along with their online status who have registered in our system.

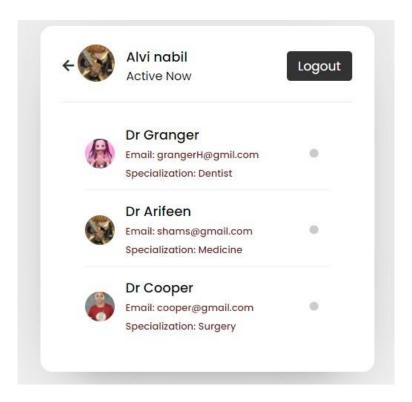


Figure 6.9: Doctor list

6.2.7 Doctor Profile

Upon clicking one of the links on the doctor list the user will be taken to the doctor profile page. Here the user will see all the information of the doctor along with two buttons for messaging with him and setting appointment with the doctor.

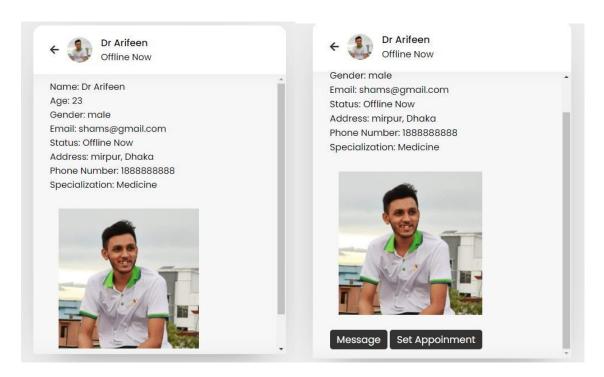


Figure 6.10: Doctor Profile

6.2.8 Message Section with the Doctor

On clicking the message button the user will be taken to the message section with the doctor here the user can send or receive messages.

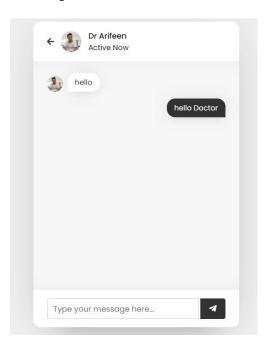


Figure 6.11: Messaging with the doctor

6.2.9 Inbox

In the inbox section the user will see all the doctor and the last message they have sent or received from that doctor.

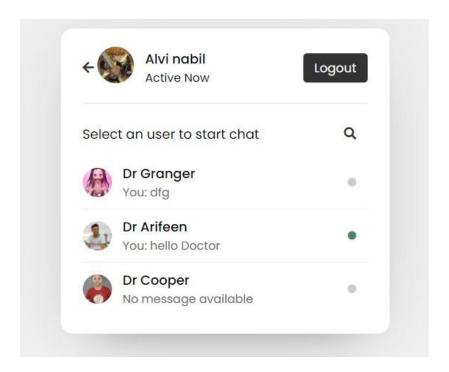


Figure 6.12: Inbox of the patient user

6.2.10 Appointment Set

On clicking the "Set Appointment" button on the doctor profile the user will be taken to another page where he will have to fill up a form to set the appointment date and time with other additional information with the doctor.

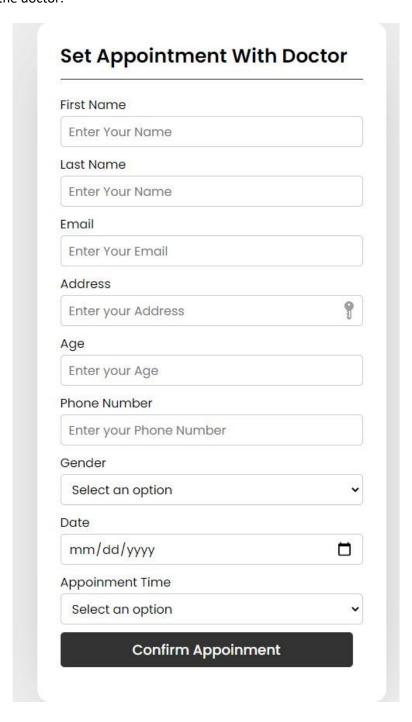


Figure 6.13: Appointment form

6.2.11 Appointment List

On clicking the appointment list on the first page the user will be taken to the appointment list where he can see all the appointment he has set along with their details.

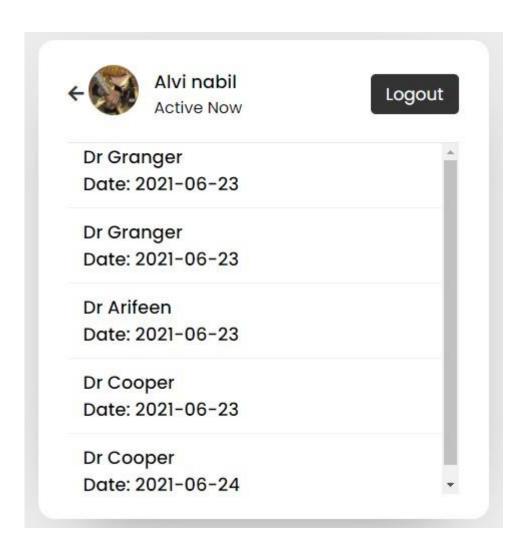


Figure 6.14: Appointment list

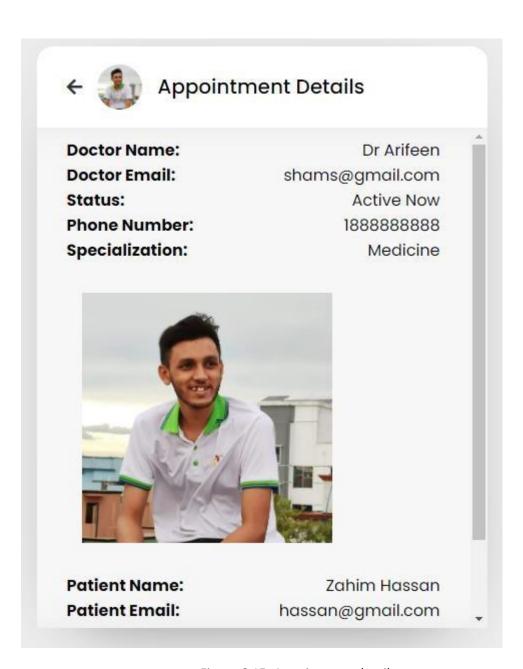


Figure 6.15: Appointment details

6.2.12 Services

6.2.12.1 Blood Donor Lists

On clicking the "Looking for blood" link under the services the user will be taken to a new page where he can see all the blood donor available along with their detail contact information and there is also a group based search to easily find the blood group the user is looking for.

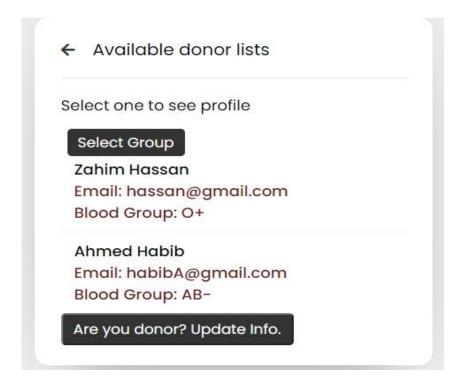


Figure 6.16: Donor List

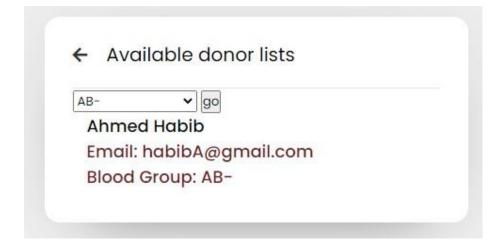


Figure 6.17: Group Based Donor List

6.2.12.2 Donor Registration

A user can also be a blood donor to help the others. In order to do that he/she will have to register in our system as a donor. The registration link he can find under the service as the "Want to be a donor".

On clicking the link, he will be redirected to a registration form where all his information is needed as a donor.

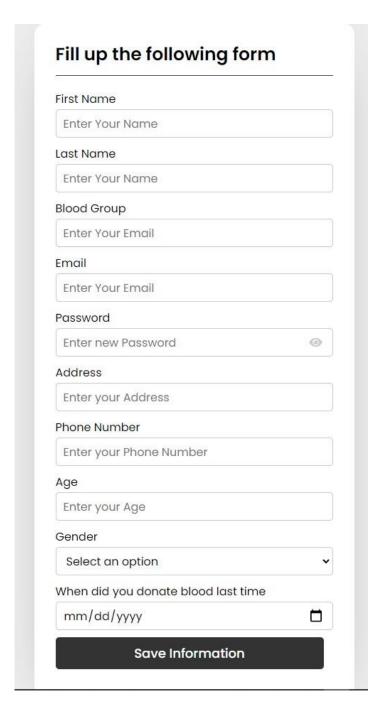


Figure 6.18: Donor Registration

A donor can also update his info after logging into his donor account from the donor list.

6.2.12.3 "More +" features for premium Members

After registration all the users will be normal users. To access some of the special features one has to activate the membership subscription. Without that normal users can't access those features.

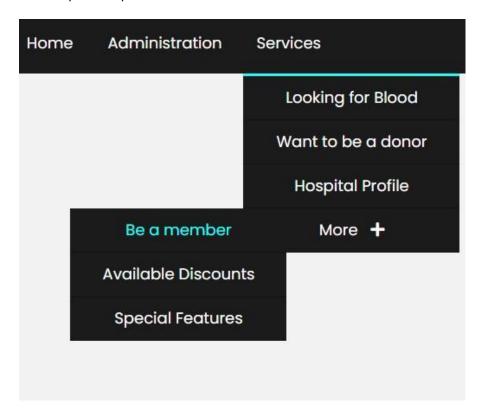


Figure 6.19: More features option before being a member

Without the subscription the "Available Discounts" and "Special Features" option will be locked. On clicking the "Be a member" the user will be taken to a "Payment" page to activate the subscription.

We have included two payment method. One is through "VISA/Mastercarrd" and the other is through the "BKash". In both case the users must fill up some form to initiate the payment process. At the end the payment will be confirmed by the admin on checking Transaction ID of the payment and upon that the account will be made premium by the admin side.

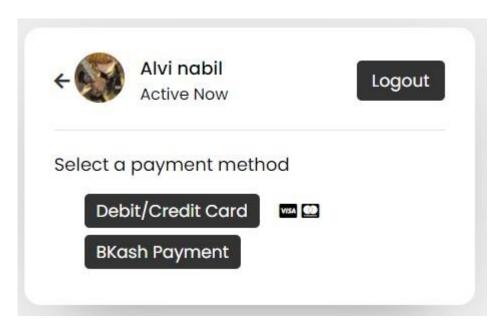


Figure 6.20: Payment Methods

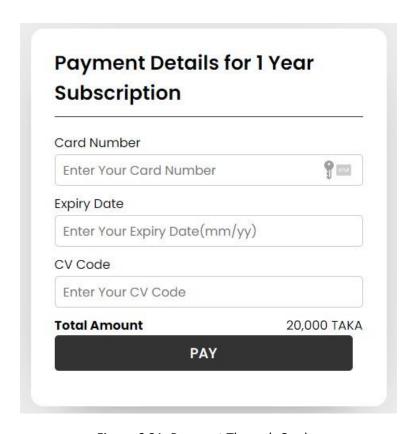


Figure 6.21: Payment Through Cards

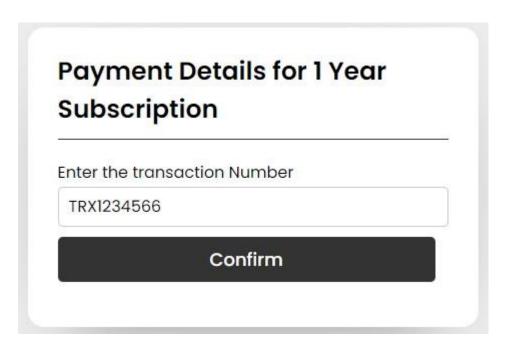


Figure 6.22: Transaction Number Insert

After successfully being a member the features under the "More +" will be unlocked and now the user can see his member ship status and membership expire date.

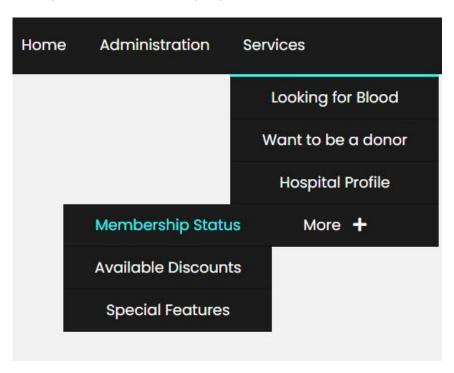


Figure 6.23: More features option after being a member

As a result the Available discounts and Special Features option will now be unlocked and the users can access them.

6.2.13.4 Hospital Profiles

On clicking this link, the user will be redirected to the hospital profile page where he will be able to see the details about the hospital and also will be able to see data about the diseases that are most commonly treated in that hospital, about the seat details and the doctor details who are associate with that hospital.

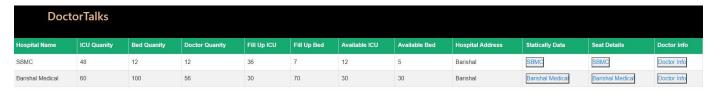


Figure 6.24: Hospital Details about ICU/Bed count

6.2.13 User Profile and Update

Upon clicking the profile image from anywhere of the webpage the user will be redirected to the My Profile page where he'll be able to see his details. Under his details there is an edit option where he can edit his profile.

First Name	Last Name
Alvi	nabil
Email Addr	ess
billie@gm	nail.com
Address	
Barishal	
Phone Num	nber
-882	
Age	
12	
Gender	
male	

Figure 6.25: My Profile

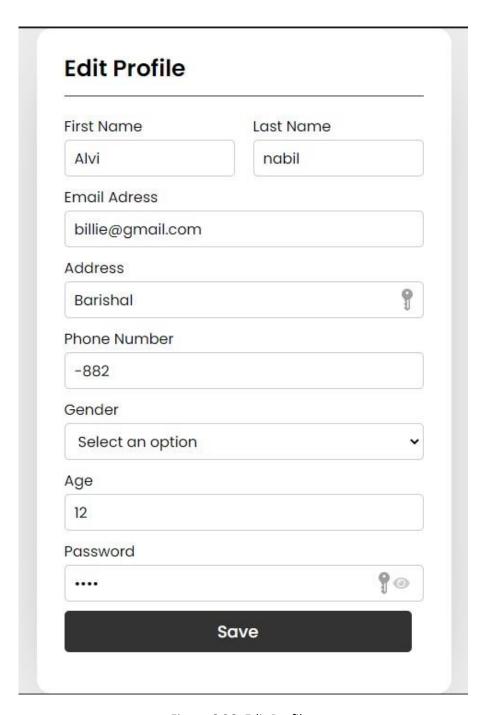


Figure 6.26: Edit Profile

6.3 Doctor User Interface

6.3.1 Doctor Sign UP/Login

Doctor Sign Up/Login is almost the same as patient. But both of them are maintained in different database in the backend.

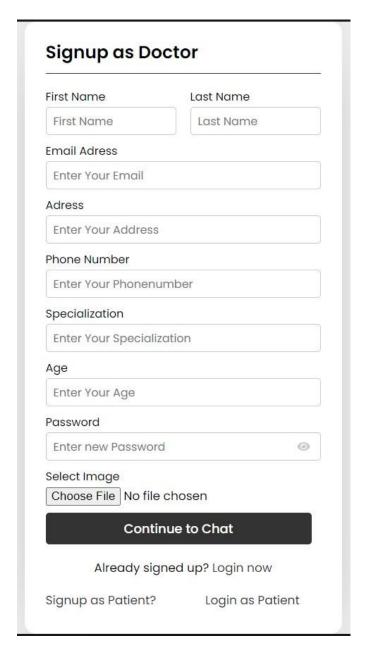


Figure 6.27: Doctor Signup

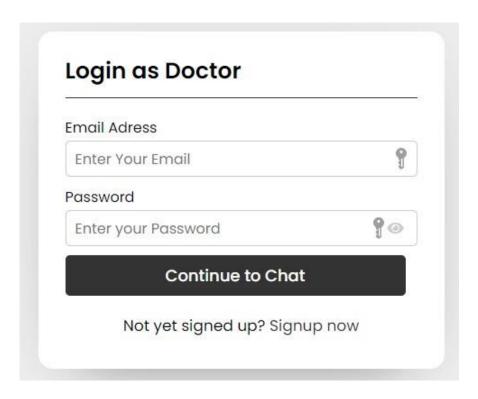


Figure 6.28: Doctor Login

6.3.2 Doctor First Page

On the first page the doctor will see three links along with a logout button. One is patientlists, another is inbox and the last one is appointments.

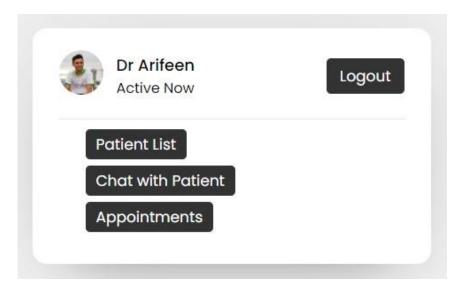


Figure 6.29: Doctor Homepage

6.3.3 Patient List

Here doctor will see all the patient along with their details.

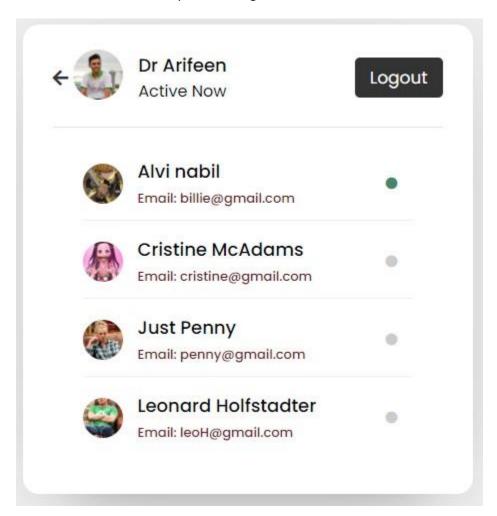


Figure 6.30: Patient List

6.3.4 Appointments

On appointments the doctor will see all the appointments he has along with a feature to check appointments of a particular date.

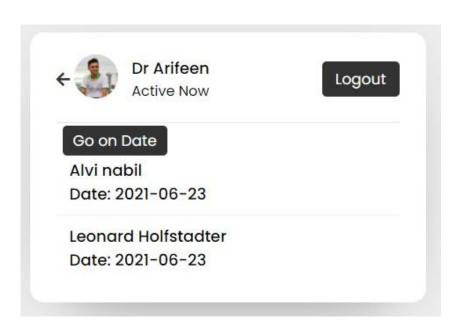


Figure 6.31: Appointment List

6.3.5 Doctor Profile and Edit

On clicking the profile picture from anywhere the doctor will be taken to his profile and under his details there will be a edit option where he can edit his profile.

First Name	Last Name	
Dr	Arifeen	
Email Addre	ss	
shams@gi	mail.com	
Address		
mirpur, Dh	aka	
Phone Numl	per	
188888888	8	
Age		
23		10
Gender		
male		

Figure 6.32: Doctor Profile

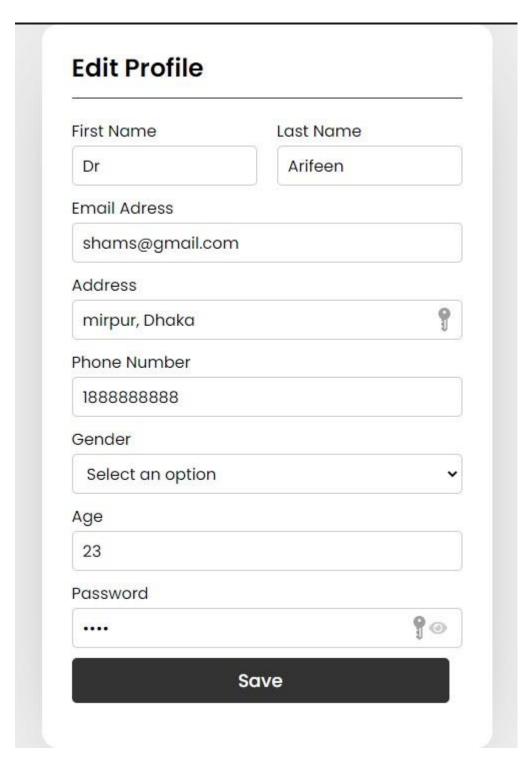


Figure 6.33: Edit Profile

6.4 Admin User Interface

Admin section is hidden from the user and doctor page. It needs to be accessed differently through admin url.

6.4.1 Admin Login

Admin login is for authorized personel. Only the admin can access all the data of the website, can monitor user activity and in need also can change them or edit them.

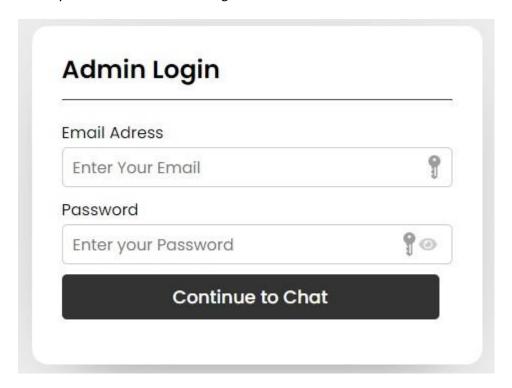


Figure 6.34: Admin Login

6.4.2 Admin Home Page

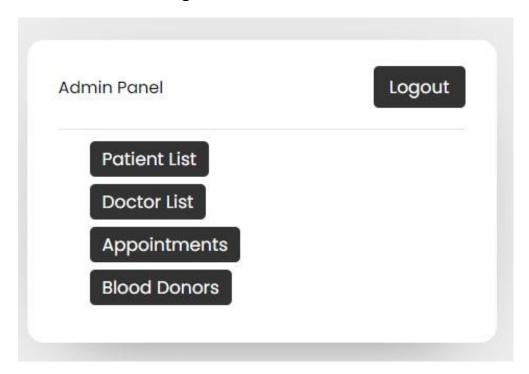


Figure 6.35: Admin Home Page

6.4.3 Edit by Admin

Admin has the privilege to see and edit all the details of patient, doctor, appointments and donor profiles.

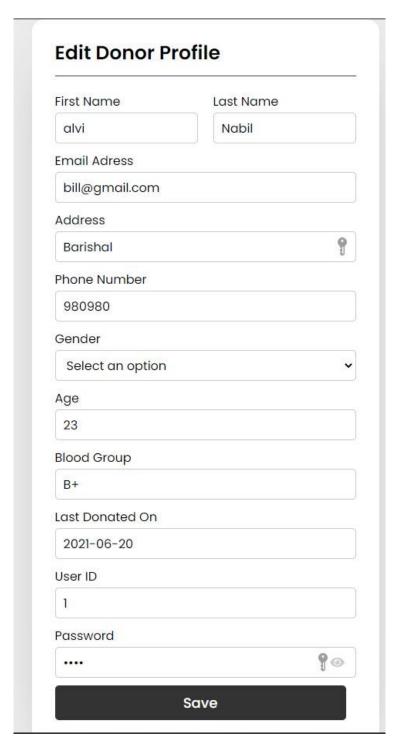


Figure 6.36: Admin Edit

6.5 Hospital Registration

Hospital admin can register their hospital in our system

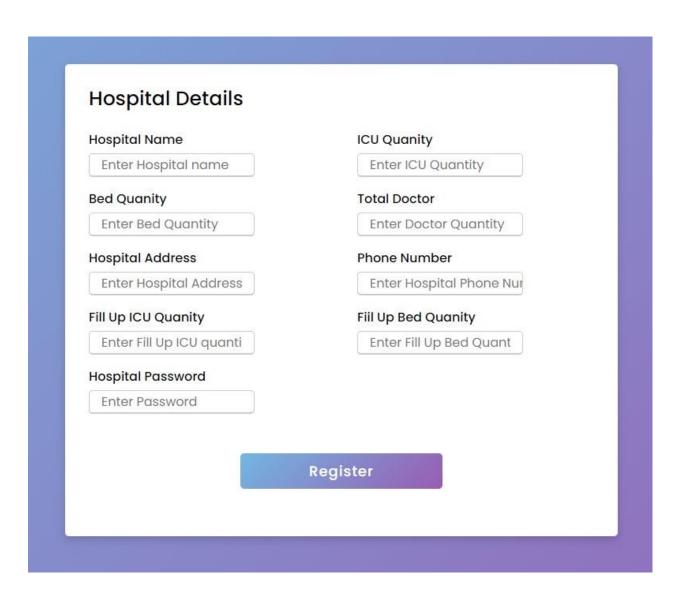


Figure 6.37: Hospital Registration

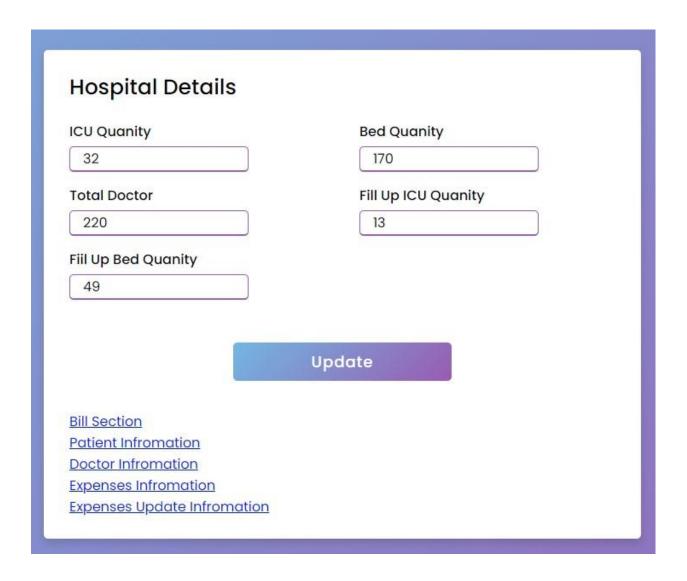


Figure 6.38: Hospital Details

Here admin can bill a customer for their expenses, update information, edit and insert doctor information.

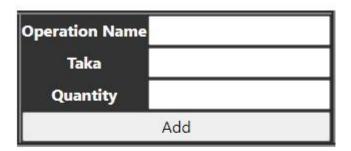




Figure 6.39: Billing

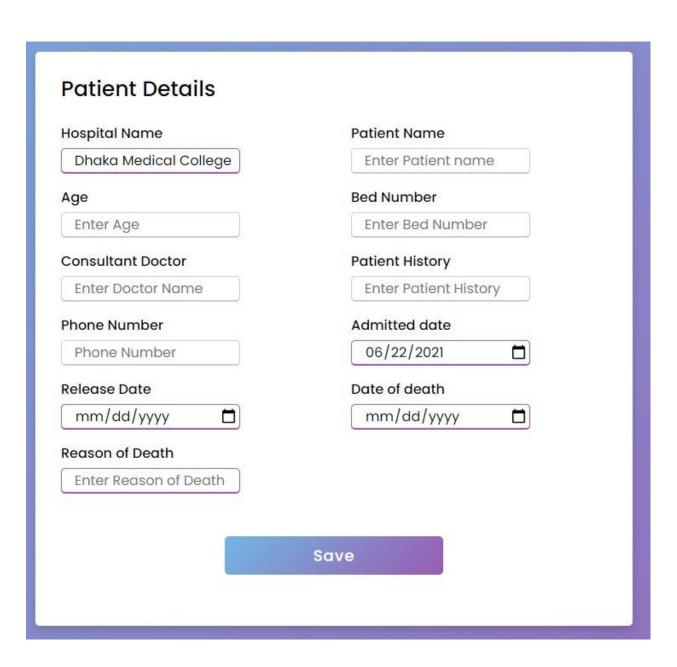


Figure 6.40: Patient Info

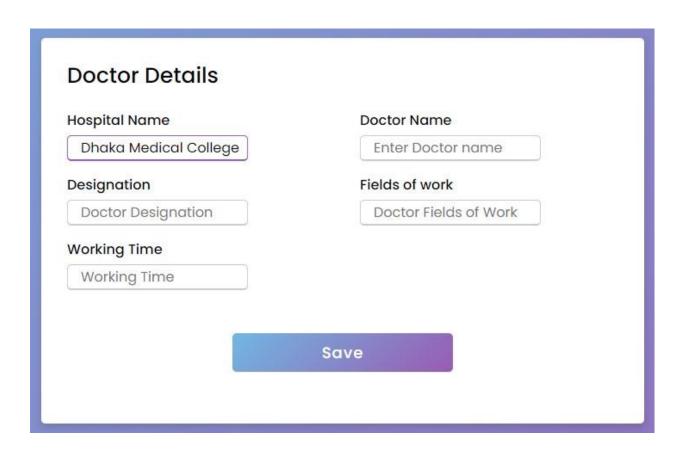


Figure 6.41: Doctor Info

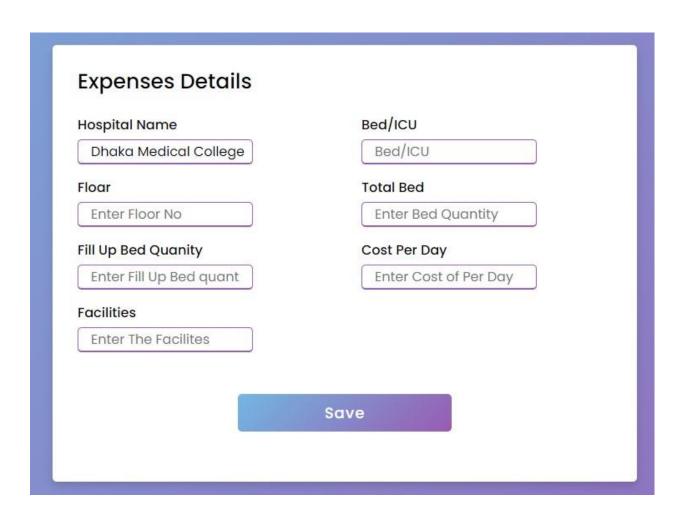


Figure 6.42: Expense Details

7 Future Plan

As our first attempt to create a whole system, this was not a complete one by any means. So this project has lot of scope to improve in future. In our thoughts, the following things can be done with our project.

- Making the system more responsive and user friendly as well as secure using a high-level framework like Django or Laravel.
- Analyze the Blood donor information to make it more accessible to the people in need.
- As we are collecting data about disease and the hospital the patient chooses for treatment we
 can use this data to make a prediction what the general people think about a hospital on certain
 disease treatment.
- Analyze the data about death rate on certain type of disease.
- Analyze the expenses details of certain hospital to others to give a prediction about pricing for the people.

8 Conclusion

The system was created with the goal of making the healthcare system more accessible to individuals of all socioeconomic classes to alleviate people's misery and corruption. As many important aspects of our problem had been overlooked at the beginning. With proper development this system could help a large number of people.

9 Bibliography

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