

Online Doctor Consultation & Blood Donation System.

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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

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We hereby declare that this project has been done by us under the supervision of **Amit Chakraborty Chhoton, 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 the award of any degree or diploma.

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ABSTRACT

Our existing manual system to get medical consultation is we have to visit a doctor physically. But past almost two years we have seen by the cause of the COVID-19 pandemic situation things have changed a lot. Because there is a high chance to get affected by the corona virus that's why doctors are not willing to deliver medical service physically. As a result, the project's primary purpose is to automate the present manual system with the assistance of a website so that anyone can get their medical service at any crisis moments. Not only in crisis moment we can also use this website anytime to save time. This website is error-free, secure, reliable, and fast. Anyone can create an account to book an appointment to video chat with a doctor and get their services and user can also donate blood or can take donors from the website. User will pay through any online banking system like Bkash, DBBL(rocket), Nagad etc. Doctor will consult with the patient and will give a prescription and patient can download the prescription and if any users is willing to donate blood then user can be a donor in the blood donation page and can donate blood easily. This website has fundamentally two modules one is user module and 2nd one is admin module. User can only get the services and admin have the access of everything that is in the website. In a sentence this website is to automate the existing manual system and save time.

Keywords: Appointment, Payment, Services, Verification, Sign-up, Download Prescription, Donate Blood.

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CHAPTER 1

Introduction

1.1 Introduction

We are being increasingly digitalized day-by-day but if we have to take medical services then we mostly have to use the existing manual system that is “we have to go to doctor physically’. But things are getting changed. By the covid-19 pandemic situation we have face the difficulties of getting medical service because doctors are not being interested to visit patient in physically because there is high chance of spreading the virus. This kind of situation what would be the ultimate solution of this problem? Maybe we will conduct a video chatting with a doctor to get consultation but it will be very unorganized. To make a successful organized and secure platform we are making this website. Here doctor can login as a doctor login and manage his/her status as he/she is active to provide the service or not. After giving the link of video chatting platform doctor will give the advice and provide prescription if need and patient can download this file. That’s how the doctor consultation will work. Not only medical consultation with doctor but user can also be a donor if he/she want.by fill up a form he/she can be a donor. The module is designed to assist with urgent Blood requirements by allowing for quick and easy searches. And if emergencies to call an ambulance then there is a page where user can get ambulance info and phone number of the driver of that ambulance and user can hire an ambulance in emergency case. Basically we want to automate the whole process of the manual system for those three work. By doing this project we can deliver a website that people will use in any emergency time and crisis time and it will help to save time for the user. For this website we try our utmost to fulfill those three requirement. And we think that now-a-days smartphone is very popular and almost everyone has the smartphone so using this website will not an issue for the user. And we try our best to deliver a website that is easy to use and user friendly interface. Hopefully this will also helpful for the physically unable person who have to need those services.

1.2 Motivation

From past almost 2 years we are facing COVID-19 pandemic. In this pandemic situation we have seen that many people are not getting their medical treatment properly just because covid-19 may spread more by visiting doctor physically. In some case some hospital gives phone number to call the doctor and get treatment as possible. But it's not the ultimate solution of this so we work on this to make a website where anyone can take an online appointment and can make a video call and get the services. In this digital world everything is getting online & almost everyone uses smartphone so it's easy to go an online doctor consultation & blood donation system website where people can get the medical services & also can donate blood or get blood.

Our project's major motivation is outlined below:

- ❖ To create a website that is accessible to everyone where they can get their medical services with low cost.
- ❖ Now-a-days medical checkup is very common for people our real motivation is to develop a website where anyone can get service any time and day even in crisis time like covid-19 pandemic etc.
- ❖ There are some platform where we can get online consultation but it's not secure and not organized so we try to make a secure & organized website where no fraud issue will be happened.
- ❖ Most of the Developed country have system like this, so as a developing country we also want to make this website for the better future.
- ❖ Finding donor while need blood it's difficult to find sometimes people died just because of not getting the needy blood group donor, so we also added the blood donation option to get blood very easily.

1.3Objective

When we decided that we will work on this project our main objective is to manage the details of doctor, Appointment, patient, booking & doctor schedule. Main Objective are described in given below.

- ❖ We want to develop a website that is very easy to use and interface will be easy for all the user, doctors and admins.
- ❖ To provide emergency services in critical situation.
- ❖ It will show the information and description of doctor.
- ❖ It manage the information of booking.
- ❖ After payment and booking an appointment patient will get a link of video chatting website like google meet/ Zoom.
- ❖ Anyone can get blood in the donation option if anyone is willing to donate blood.
- ❖ If we have to visit doctor for some normal issues that don't need physical interaction /checkup then this website will save time for the user.
- ❖ Anyone can get service at anywhere if they have internet connection and a device that can connect through the internet.
- ❖ To get the service at low cost as possible.
- ❖ Past history will save so user can see previous service details and can download the prescription that has given by the doctor.

1.4 Expected Outcome

This project's main purpose is to automate the current system. Main functionalities of this website is there will be three actors that is doctor, user and admin panel. Doctor can login as doctor and can update his information and can give the video chatting link and after consultation doctor can upload prescription file for the user. Then user, user can access the website for uses only user are not allowed to edit anything. After login as a user he/she can take appointment of doctor or he can get the ambulance service or he/she can donate blood or take blood from this website. Then for the admin panel only admin can add admin and admin have the full access of the website. Admin can control patient service status and also doctor. Admin can delete or add doctor/admin. So that's how this website will show expected outcome.

1.5 Report Layout

This documentation of this project as follows, 'In chapter one the project title is elaborated and explained in introduction part. This section includes introduction of research in 1.1 Motivation of research in 1.2, objective in 1.3, expected outcome in 1.4 and project report layout in 1.5. Then the 'chapter 2', in the chapter 2 it has the project background where similar or previous done project was described. This background part describes terminologies in chapter 2.1, Related works on 2.2, and comparative analysis on 2.3, Scope of the problem & challenges are in 2.4 & 2.5 respectively. Then in chapter three we have requirement specification where Business Process Modeling described in 3.1, Requirement Collection and Analysis in 3.2, in 3.3 it has Modeling and Description of Use Cases, Logical Data Model in 3.4 & 3.5 Design Requirement. After that in Chapter

Four we have a design specification including Front-end Design in section 4.1, Back-end Design in section 4.2, Interaction Design and User Experience (UX) in section 4.3, and Implementation Requirement in section 4.4. Then, in Chapter 5, Implementation and Testing, you'll learn about Database Implementation in 5.1, Front-end Design Implementation in 5.2, Testing Implementation in 5.3, and Test Results and Reports in 5.4. Following Chapter 5, we discussed Impact on Society, Environment, and Sustainability in Chapter 6, where we discussed 6.1 Impact on Society, 6.2 Impact on Environment, and 6.3 Impact on Sustainability. 6.3 Ethical Considerations 6.4 Plan for Sustainability Then, in Chapter 7, we discussed the Conclusion and Future Scope, and in this chapter, we discuss Discussion and Conclusion briefly in 7.1 and 7.2, Scope for Future Developments Finally, we included references. This is how we've structured the document.

CHAPTER 2

Background

2.1 Terminologies

We utilized the following many terms in our project like doctor consultation, blood donation, ambulance service etc. By applying JavaScript, html, CSS we have done this project. Previously we have a project on doctor consultation project but there are some problem like if we have to get service like appointment booking then we have to use their mobile app. But we applied everything in the website to get the full expected outcome.

2.2 Related Works

We have discovered a project that is similar to our website on the internet for Bangladesh that is “<https://sebaghar.com/>” that gives only doctor consultation for the user.

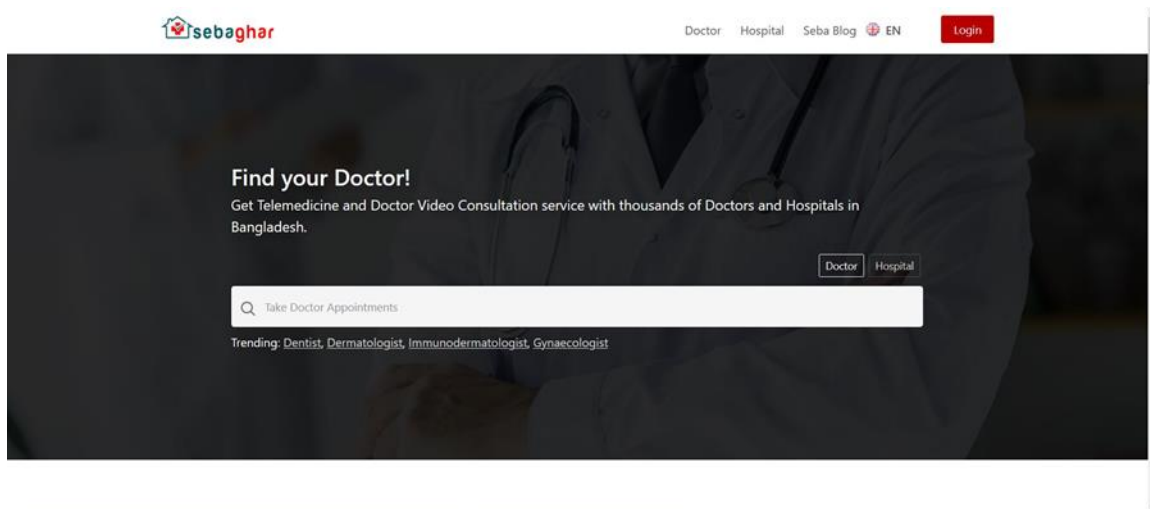


Figure 2.1: Sebahat.com Home page

This website is only works for the medical consultation but it does not have any extra feature and if anyone have to take an appointment then user have to use their app. So our project is similar in one aspect that is doctor consultation. Another website is <<<https://praavahealth.com/>>>

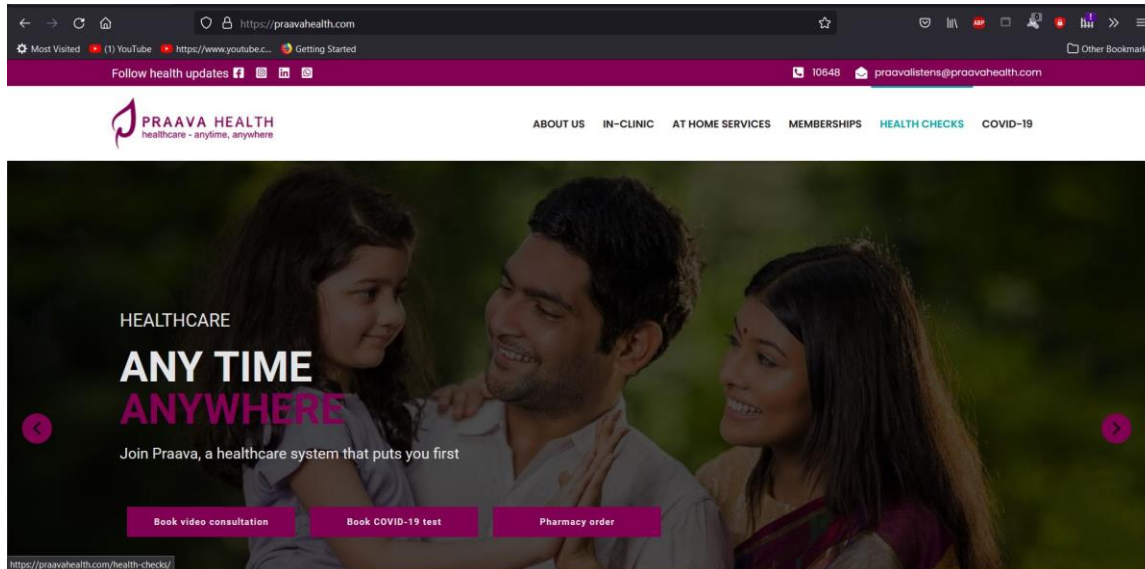


Figure 2.2: Praava heath Home page

that is also a doctor consultation system but in this website almost every doctor's consultation language is English. So that might an issue for some user. And there is no extra feature like our website. And like the previous website it also has no automated appointment system by manually doing phone calls user have to take an appointment. So those two similar work we have found on the internet.

2.3 Comparative Analysis

If we compare our project with those two existing website that we have discussed before then we can say that our project is similar in only one aspects that is doctor consultation system. But if we look at the sebaghar.com it has only consultation system but user can't take appointment through this website if user want to take an appointment then user have to use their app. So it's inappropriate for the user who have not the mobile app. And another reason we can say that if we have to use the mobile app then why we need the website? So it's inconvenient to use by only using website. But if we compare with our website then we can see that we can take appointment make payment and book the appointment by the website only. And extra blood donation and ambulance service feature added on the website also. So comparatively our project far ahead from sebaghar website.

2.4 Scope of the Problem

In previous works, developers only make a website that can only provide video consultation system but it has not any extra feature and appointment system is also lacking so we have work on that to make a better experience for the user. For our project we have high chance to getting popular if we host this website on the internet. So it will be also better for our country people.

2.5 Challenges

Every work will have some challenges. Like that while doing this project we also face some challenges for this project that are briefly described in below.

- ❖ Building an easy and user friendly user interface that will attract the user.
- ❖ Maintaining database security is very important for user's security.
- ❖ Ensuring user registration properly to avoid fake and spam user.
- ❖ Verify doctor information to avoid fake doctor issues that can happen by this website.
- ❖ Ensuring Data security for every user and doctor.
- ❖ Ensuring good quality doctor for the consultation.

Chapter 3

Requirement Specification

3.1 Requirement Collection and Analysis

In our project, there are specific requirements that must be met in order for our system to function properly. Those are admin login, User login, Doctor login, user registration, payment, prescription download and blood donation. Those will be described given below.

3.1.1 Software Analysis

Design analysis is required in all projects to make them more user-friendly, and ours is no different. We merely attempted to manage the circumstance in an orderly, well-designed, and simple manner. We'll need at least a medium computer to build the software, as well as the following Software Requirements:

- Operating System: Windows 8, Windows 7, Windows 10
- Programming Language: JavaScript
- Frontend Framework or library: Bootstrap, react.
- Backend Framework: node.js
- Scripting language: JavaScript
- Tools: Visual Studio code, Extensions for VS Code

3.1.2 Hardware Analysis

For building up the application, we need the accompanying Hardware Requirements:

- Processor: intel Core i3 or higher model
- RAM: 2 GB or higher
- Space on plate(disk): at least 512MB

3.1.3 Requirement Analysis

Serial No	Requirement Name	Requirement Analysis
01	Admin Login	Admin have all access of the website. Admin can modify any catalog of the site. Admin have to logged in. A admin can create more admin.
02	User Login	After creation an account by signing up user can log into the website.
03	Doctor Login	If a user wishes to log in as a doctor, the user will do so. After logging in, the administrator will double-check the doctor's identification.
04	User Registration	User have to registration if user want to log into the website.
05	Payment	Through a payment gateway user will payment doctor fees.
06	Prescription Download	After getting consultation doctor will give a prescription file and patient can download it.
07	Blood Donation	User can also be a donor or receiver.

Table:3.2: Our project Requirement analysis

3.2 Use Case Modeling and Description

For our website we have three actors those are admin, user and doctor. And the corresponding use cases for those actors are: -

Admin: Login, logout, manage doctor, modify service status, manage payment.

User: Registration/Sign-Up, login, logout, manage profile, download file, donate blood.

Doctor: Login, logout, give link, manage profile, donate blood, provide file.

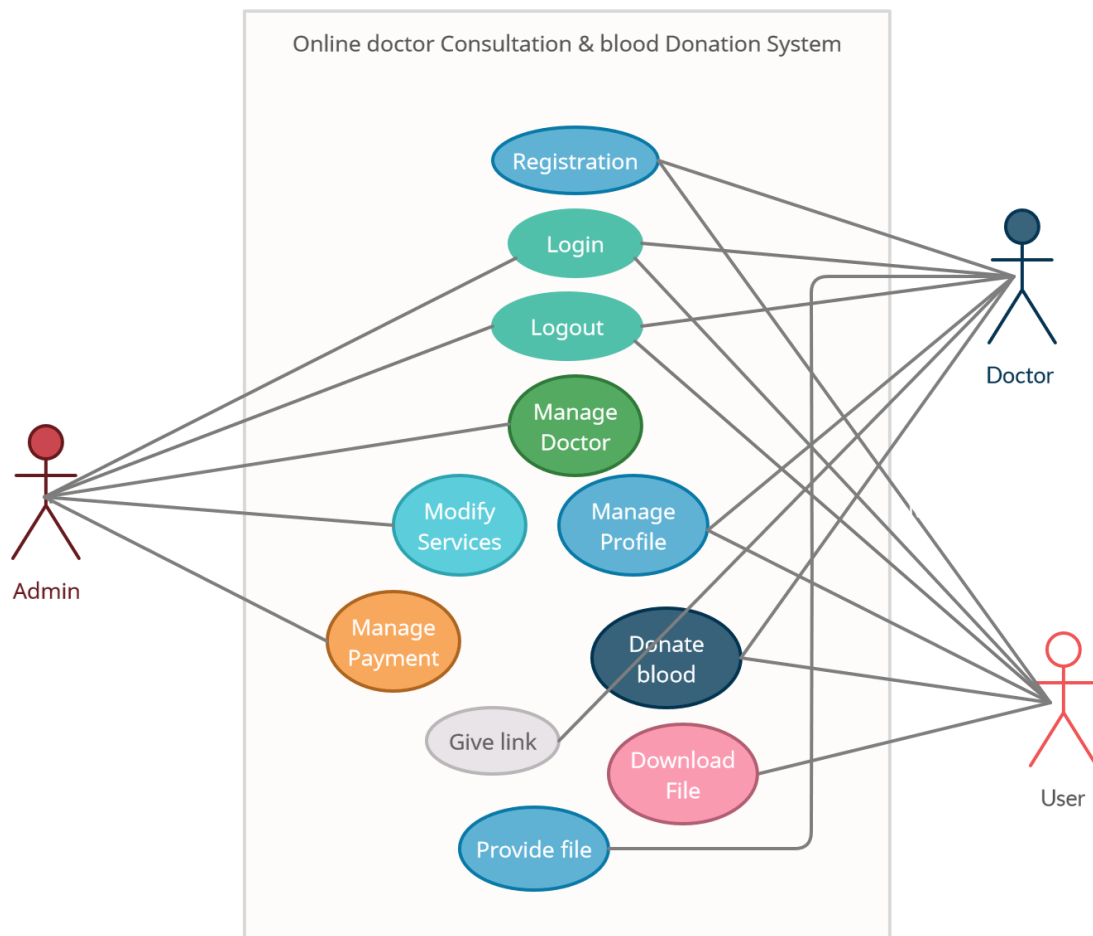


Figure 3.2: Use case Diagram of our project

3.3 Logical Data Model

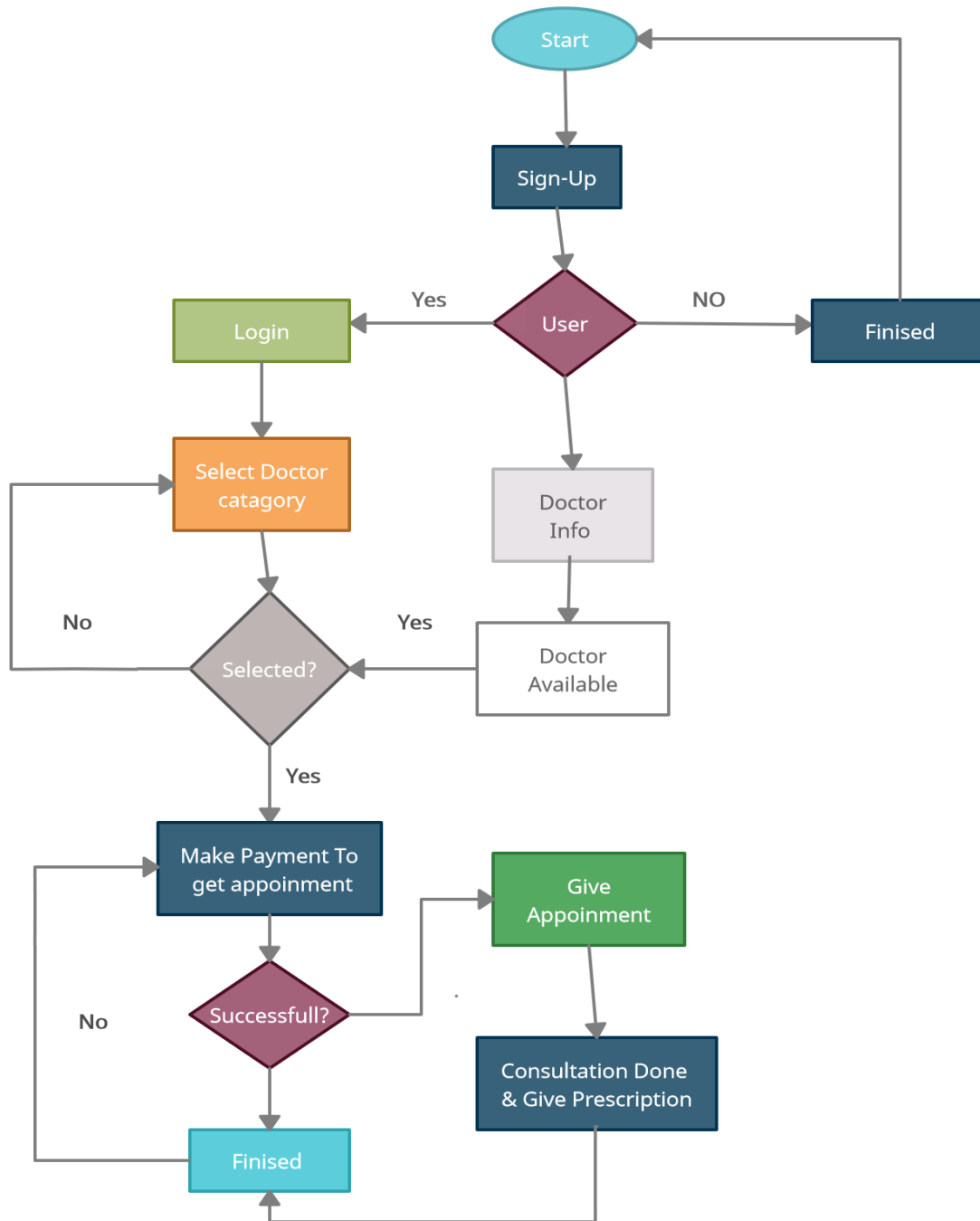


Figure 3.4: Logical Data Model Diagram of our project

3.4 Design Requirement

Being as a dynamic website we have use web programming language such as html, CSS, JavaScript and bootstrap framework for developing front-end. And for the backend we have used node.js and for database we have used mongo DB. As we know to develop a website we must need html because html describes the structure of a website. Then we need CSS. It is used to give visually attractive looks to the web pages. Visual attraction is very important for a website.” Then for the frontend design we used react as we all know react makes a website looks attractive and interactional & also reduce html code. And for reducing pressure on database it also helps to increase webpage load time. And lastly for the development part we used node.js.

3.5 Data Flow Diagram

Level 1 DFD:

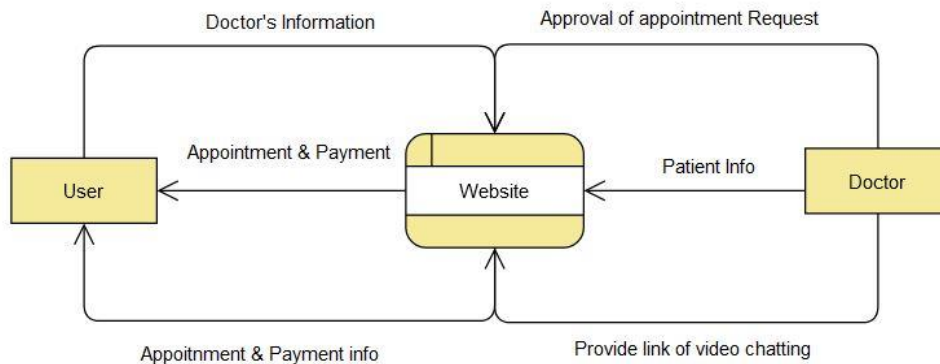


Figure 3.5.1: DFD level 1

Level 2 DFD:

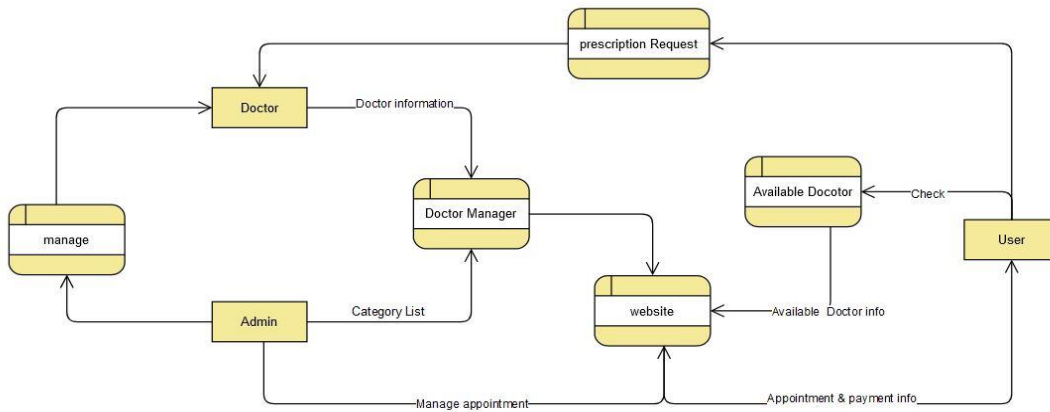


Figure 3.5.2: DFD level 2

Level 3 DFD:

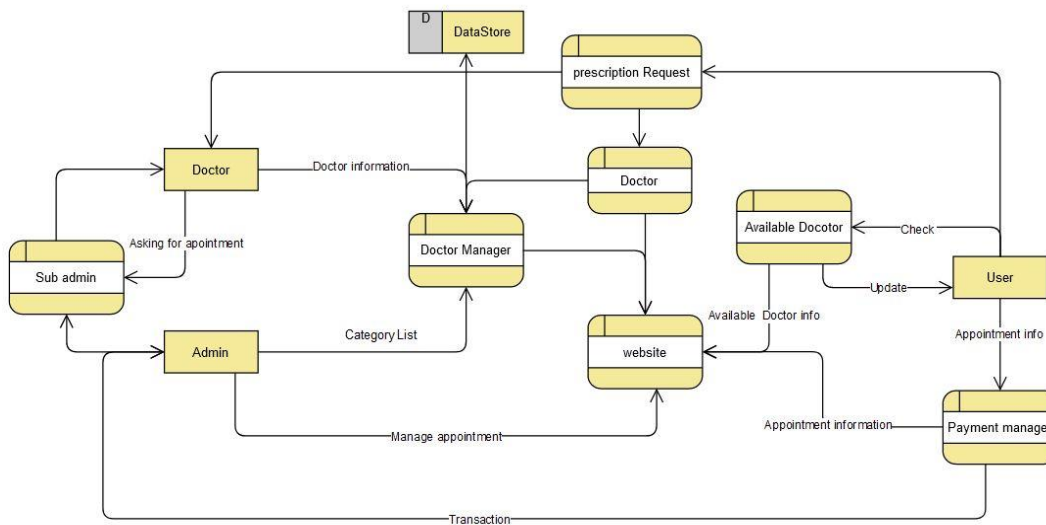


Figure 3.5.3: DFD Level 3

3.6 Activity Diagram

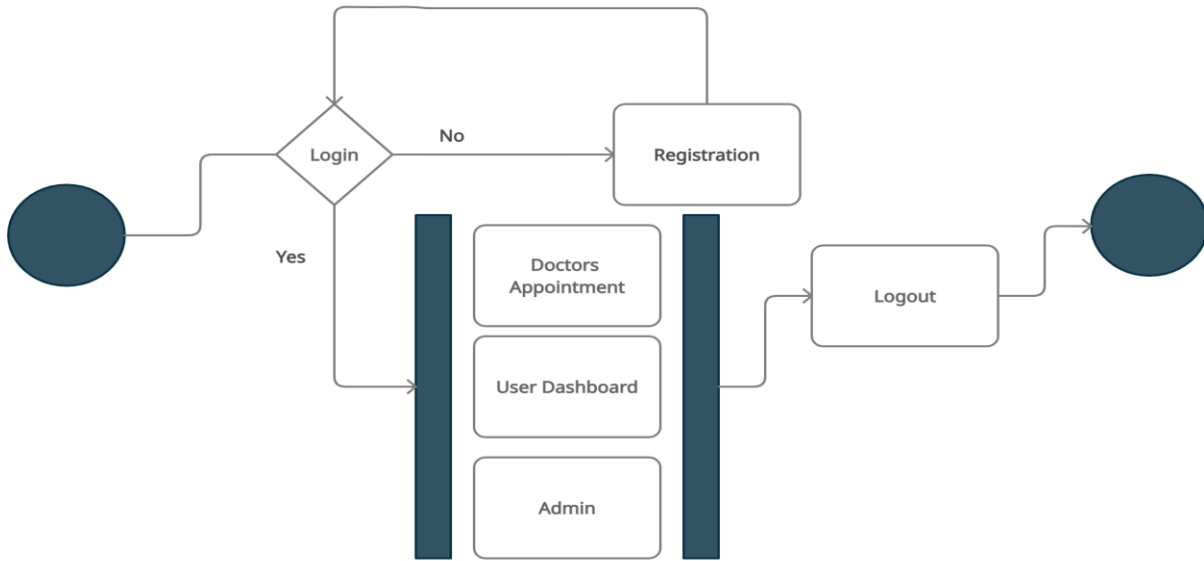


Figure 3.6.1: Activity diagram for Login logout

Activity diagram for Appointment Process:

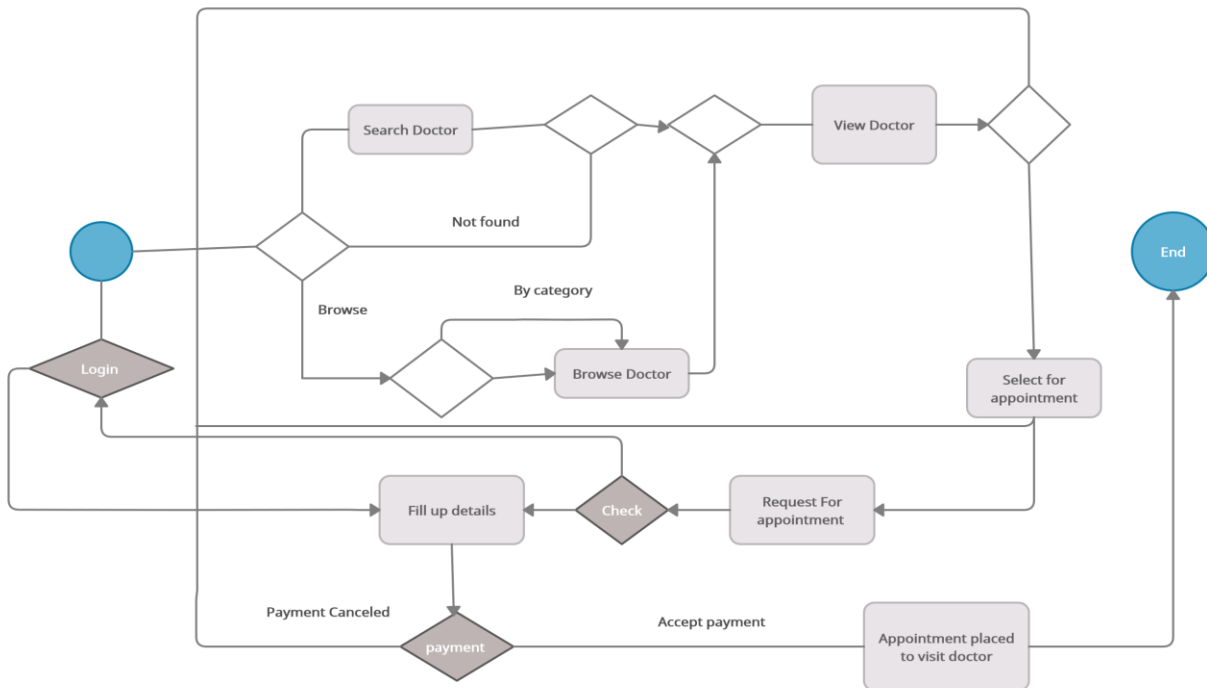


Figure 3.6.2: Activity diagram for Appointment Process.

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-end Design

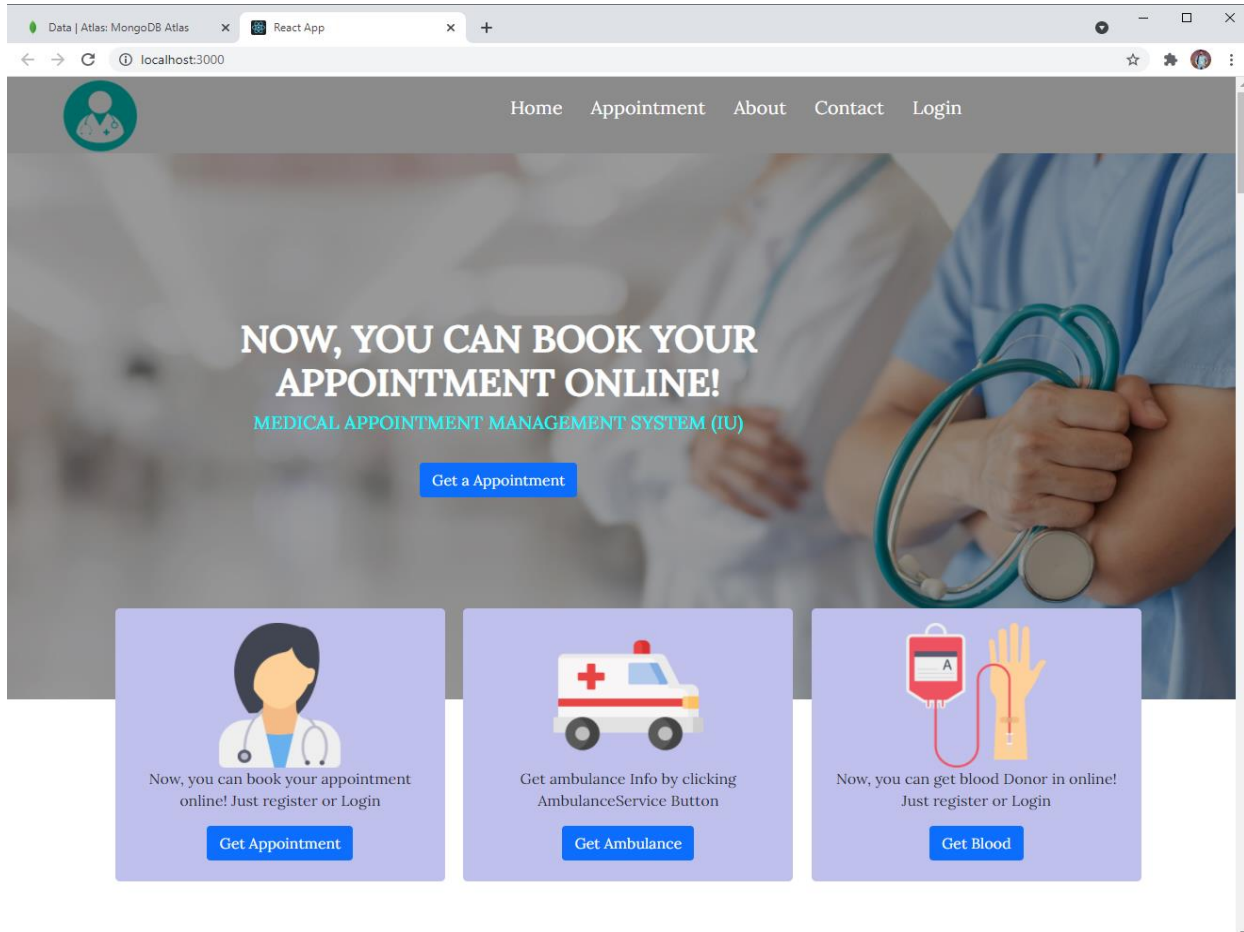
Front end design refers to the appearance of a website from the outside. It makes a website legible and understandable to humans. Everything a user sees on a web page is called front-end design. The front end of a website is designed using languages such as html, CSS JavaScript bootstrap & react. It facilitates communication between users and the server. The most crucial part of website creation is front end design. A website's attractive and simple user interface not only attracts visitors, but also makes it easy for them to communicate with the server. Our system's front end has been designed to be simple and straightforward to use. It makes it simple for the customer to work with the system.

4.2 Back-end Design

The most logical component of a website is the back end design. It's sometimes referred to as server-side design. A website's back end design contributes to its dynamic nature. It specifies how the site should function. Web developers are back end designers who are responsible for the site's security, structure, and content. The most difficult and important component of website building is the back end. The backend, or server side, is responsible for the entire web-based system. Authentication, session, data validation, database management, data passing, security, and other complex sections are all dealt with by a backend developer. To provide all of the logic to our system, we selected JavaScript as the server site language. The node.js is utilized to systematize the entire process. Our data is saved in a mongo DB database, which is also utilized to manage our system's database.

4.3 Interaction Design and User Experience (UX)

Firstly, our interface of the website as given picture below.



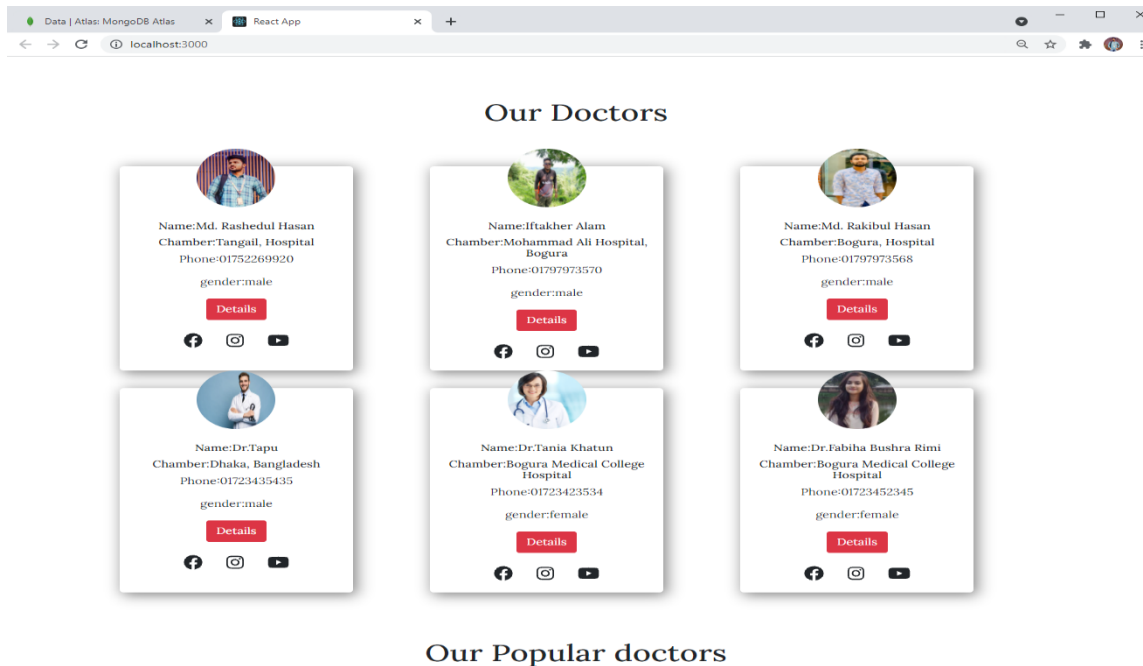


Figure 4.3.1: Our website Home page

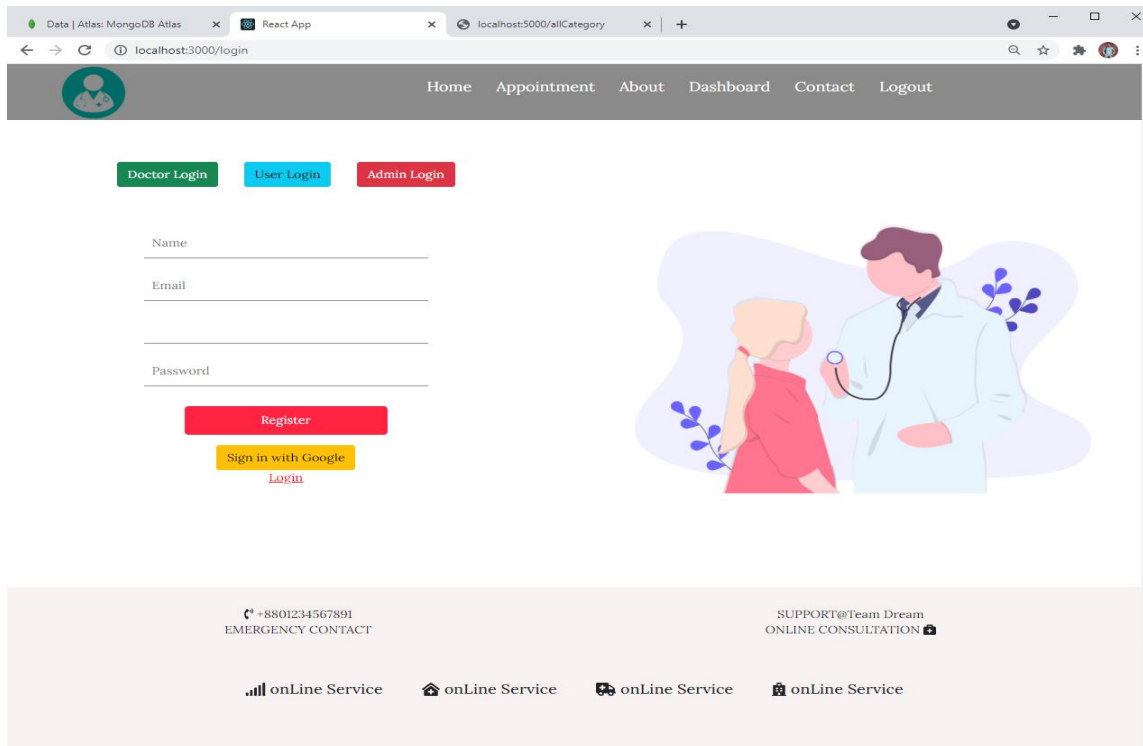


Figure 4.3.2: Our website Login page

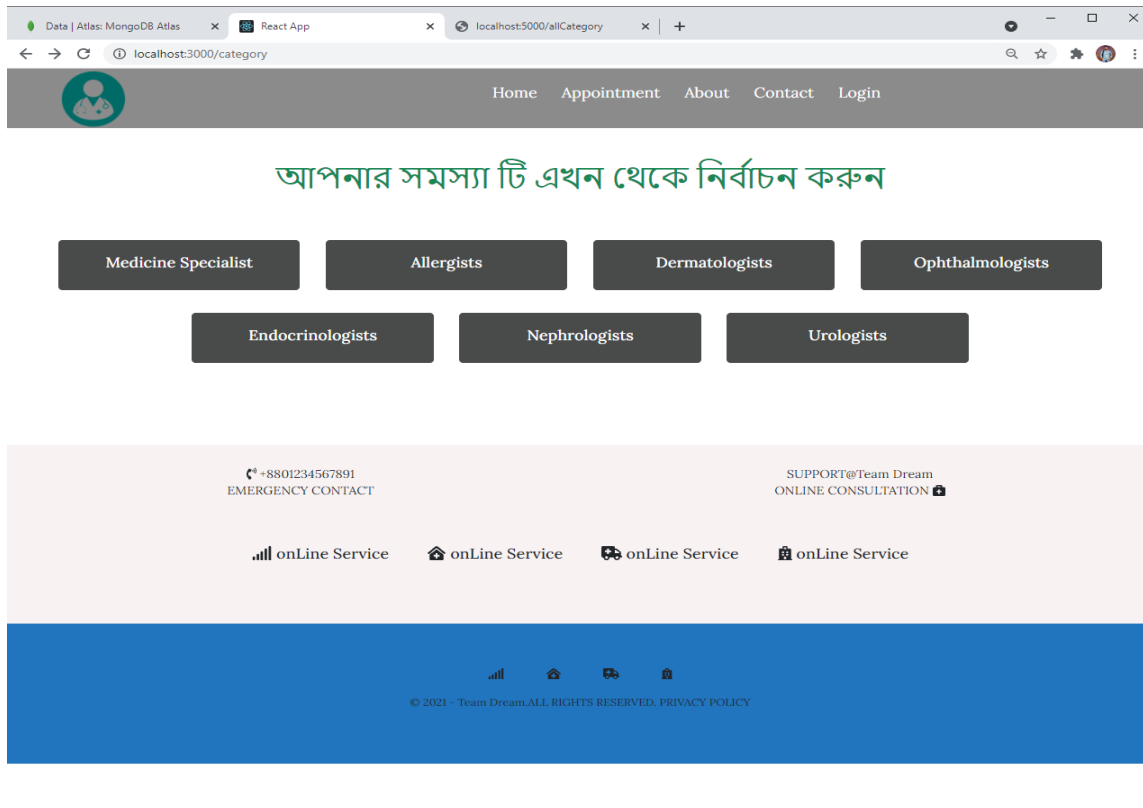


Figure 4.3.3: Our website Appointment Section.

User Experience: As you seen the previous picture we attempted to create a user-friendly, easy-to-use, and responsive website. We try our best to provide a simple user interface to provide best user experience that is very easy to understand. Hopefully user will enjoy a grateful experience.

4.4 Implementation Requirements

To develop the desire website, we have so requirements that is need for the website. In given below we are discussing all of those.

- ❖ Node.js should be used to create the system's backend.
- ❖ MongoDB is the database of choice for storing and managing all data.
- ❖ Validating all forms on the client side with Firebase to lessen the burden on the server.
- ❖ Unauthorized access is required to impede proper session management implementation.
- ❖ Various error messages should be displayed if any erroneous data is entered into the form.
- ❖ All database queries should function properly.
- ❖ The react library should be utilized in front-end design to make it more appealing and responsive across all devices.
- ❖ To create the system in a much more holistic fashion, the node.js should be used.

Chapter 5

Implementation and Testing

5.1 Implementation of Database

We used MongoDB to construct our database. Below there are the screenshot of our database.

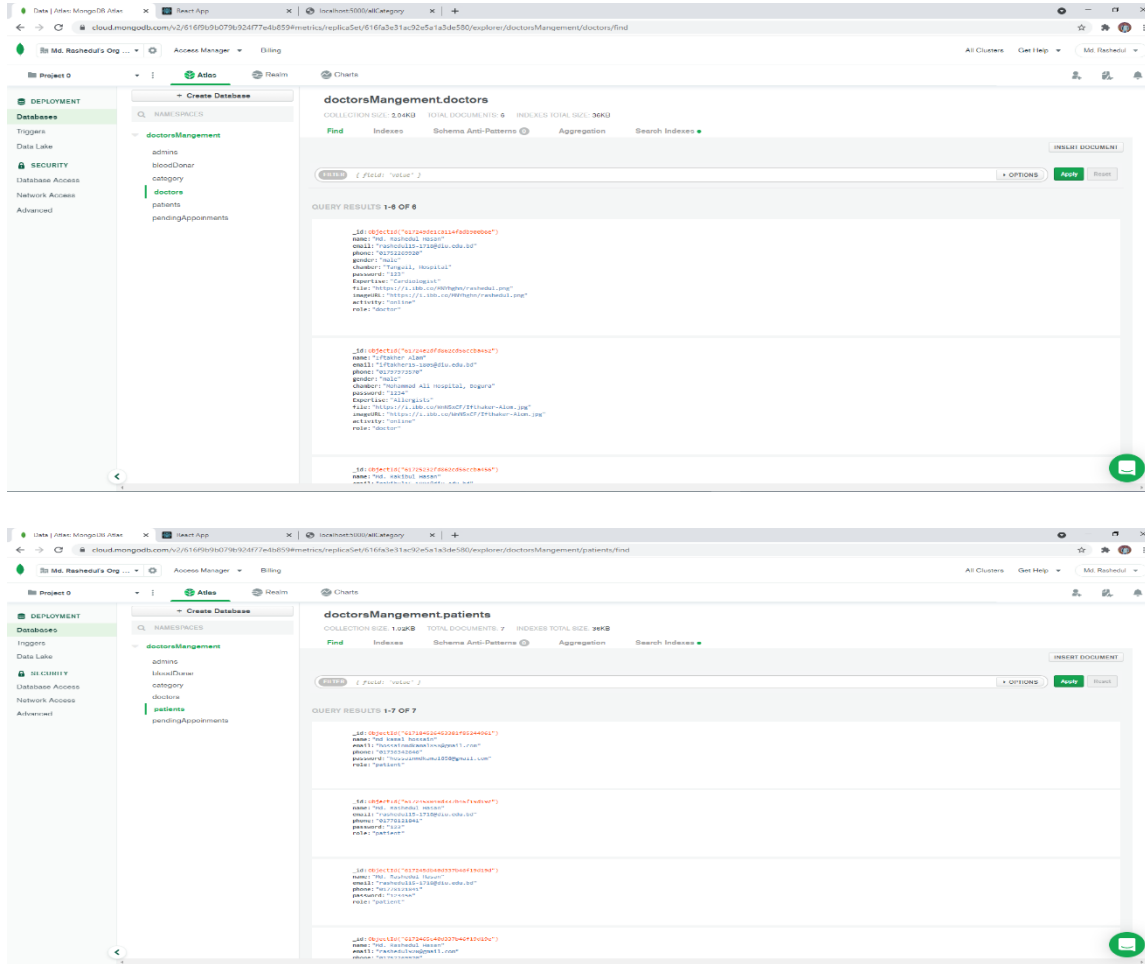


Figure5.1: Database Implementation

5.2 Implementation of Front-end Design

Our main goal is creating a front-end was to make the user interface as simple as possible. As a result, we've made every effort to keep our web pages as simple as possible. We also keep in mind that the design should be appealing and user-friendly while implementing front end design.

Another key consideration is that the website should be responsive to various devices such as smartphones, tablets, and laptops. As a result, we employed the bootstrap responsive approach to build our site mobile-friendly. To ensure user-friendly interaction, we employed JavaScript and jQuery. The following elements are included in our front-end design: -

- ❖ The main page has a simple but appealing design.
- ❖ Easily understandable for the user to use.
- ❖ User friendly registration page for the user.
- ❖ Everything is simple and well organized for the user.
- ❖ Can use any kind of devices user cause it's a responsive site.

5.3 Testing Implementation

It is just as crucial to test software as it is to build it. We've done our best to make our web-based system as safe as possible. As a result, we tested our system by putting certain test cases in place.

Those test cases are described below-

System Interface: By using website as user we will test if it runs well or not.

Login Form for the Different Users: Only approved users with the appropriate user name and password have access to specific departments, such as Patients, Doctors, and the hospital where he or she interns. When a user name and password are entered incorrectly, the System denies access to the services.

Home Page for System Administration(Admin): The system administrator can create and change system users, as well as see the services provided by various departments for easier tracking in the event of hospital mismanagement.

Home Page for Patient Appointments: This website allows patients to schedule an appointment and see the doctor's available time. They may also see the doctor's current time.

Page for Doctor Registration: This is the system's Doctor Registration page. This page allows you to register your doctor's name, designation, department, available time, chamber time, and other details.

5.4 Test Results and Reports

Test No.	Description	Test Data	Expected Result	Actual Result
01	Check Password and Confirm password input is same or not.	Password: abc123 Confirm Password : r123df	Messages should be presented as follows: There is a discrepancy in the password confirmation.	Pass
02	To check the input email is in valid Or not	Email : rakibul@gmail.com	As input validation, a message should be displayed.	Pass
03	During registration check the input mail is already registered	Email: example@gmail.com	A message should be displayed as the input mail is already taken	Pass
04	To check click the login button with invalid email or password or both.	Email=rakibul@gmail.com Password=abhghjj4	If the account is not genuine, a notice should be displayed.	Pass
05	Using a valid email address and password to log in	Email="abc@gmail.com" Password="1231"	To return to the home page, click here.	Pass

Table 5.4: Testing report of our system

Chapter 6

Impact on Society, Environment and Sustainability

6.1 Impact on Society

Our project will serve the online medical Consultation and can get blood and can get ambulance services. This will very effective in crisis situation in our country/society. Like we face covid-19 from past almost 2years. First we see that many doctors are not willing to give medical services in physically because there is a high chance of spreading covid-19. In this situation we were in a big problem to get medical services. But by using our website we can prevent this kind of crisis time. And by using website we are saving time. So this will impact in our society to face this type of problem and by saving time our economic growth will increase also.

6.2 Impact on Environment

This project will have no negative impact on the environment cause our project in automated and web based and doctor will give documents as pdf file so no paper will use. As we know to make paper we cut more trees by doing that we need less paper so environment will safe.

6.3 Ethical Aspects

Our website is fully ethical. We have ensured the data security & safety of user and the Doctors. And nothing unethical thing would be happened by our website.

6.4 Sustainability Plan

We think our website will sustain for long time. Cause as our country is digitalizing day by day and people are also used to use online platform because it saves time. So if this kind of website can integrate in the Government hospital then rural people can use this to get service easily. And for the long term use we also use this website as well.

Chapter 7

Conclusion and Future Scope

7.1 Discussion and Conclusion

We completed our web-based project in order to obtain experience and knowledge in web design and development. We, the members of the group, are highly enthusiastic in pursuing a career in web design and development. As a result, this initiative is extremely beneficial to our future. We have gained a broad understanding of web development and have learnt a great deal about it. We now have the ability to create a full web-based system that meets the needs of users. During the development process, we encountered several problems and attempted to find the best solution. As a result, we learnt how to cope with issues that may emerge while building web-based applications. And we have successfully done our main goal that is to develop a website for people where they can get their medical services.

7.2 Scope for Further Developments

To talk about further study firstly talk about the limitations of our project. Our limitations are cannot provide facilities like doctor's can't see some patient that have serious issue where they have to see the x-ray report or some report like a doctor see in face to face consultation time. So in future we can add a feature where patient will upload their report and doctor can see that and give consultation. Like that Many features will be added in the near future to increase its efficiency.

Some of them are highlighted in the table below —

- ❖ We can add Artificial Intelligence bot for give doctor recommendations.
- ❖ We can add review option where user can review doctor.
- ❖ Blood Donation system will be in area wise. User can select donor by their needed area in Bangladesh.
- ❖ Ambulance service will also in area wise. And we can also add ambulance driver login.
- ❖ More payment option can be added.

So those are the scope of our projects further development scope.

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Online Doctor Consultation & Blood Donation System

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