

MEDLIFE: A COMPLETE DOCTOR'S APPOINTMENT 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

This Project titled “ **MEDLIFE: A COMPLETE DOCTOR’S APPOINTMENT SYSTEM**”, submitted by *Md Monjurul Islam* and *Md Abul Hossain Murad* 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 25/01/2023

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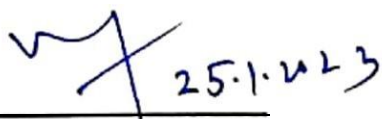
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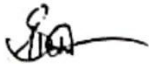
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DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Ms. Subhenur Latif, Assistant Professor, 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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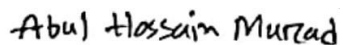


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ABSTRACT

In this following project, we are developing an online-based doctor appointment system named "MEDLIFE; A complete doctor appointment system." It is a web-based application where we have worked on both the front-end and the back-end. As we may observe in daily life, online medical appointment booking is still in its early stages of modernity. The patients are suffering as a result, and a lot of time is being wasted. We make the appointment system live so that patients can see their appointments progress in real-time, where they will be able to reach the chamber on time using this application. We have designed our website's three distinct sections: the admin panel, the user panel, and the doctor panel. Users or patients can use this site to look up a doctor and request an appointment. The status of an appointment's serial number can be viewed in real-time by users from any location. They can update their appointment serially live if they decide to stay on time or cancel the appointment if they can not come. Here, doctors can set up appointment schedules. They have the option of updating the procedure's beginning for patient visits. They will also provide live updates for serials and waiting status. As a result, patients will be informed of their appointment serial status and be able to prepare accordingly. All users, doctors, and hospitals will find our website very beneficial.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

It is a basic fact that everyone can get sick at some point in their life. When people get sick, they take treatment to get well, sometimes primary treatment or advanced treatment. Historically, people have turned to doctors when they are ill. Few patients went to the Doctor in the past, but nowadays, more and more people do. Because individuals now live technologically sophisticated lives and are more concerned about their health. People are becoming more conscious of their bodies and health as technology progresses. So acceptance of doctors for treatment is increasing. As a result, a doctor must constantly provide services to many patients. The doctors maintain their appointments through routine chambers and serials due to the ongoing increase in patients. In this modern era, even though all sectors are modern but almost everywhere still take serial manually for doctor's appointment in our country. Even though there are just a few online appointment-taking systems, they could be more efficient because they only accept serial numbers. However, despite the fact that the online appointment system makes it easier to take appointments online, they cannot upgrade the system to lessen patients' suffering due to the ongoing rise in patient numbers. The same old procedures still apply to doctor-patient interactions. Above all, we are creating this website with many features, including fixes for these issues. Our appointment method will lessen the patients' suffering and provide them with up-to-date care in line with the times. By using this platform, doctors will also modernize their patient appointments.

1.2 Motivation

People usually turn to a doctor when they are sick or have a physical problem. A patient refers to a person who is physically weak or ill and needs treatment to improve. In our nation, patients typically have to wait a long time for their appointments. Physical illness and mental stress may worsen if a sick patient waits a long time for an appointment. But

if the patient can come on time and take care of the doctor's appointment, they will have a better chance of quickly recovering both physically and mentally. The majority of the time, the patient's relatives accompany them as attendants. Most of these relatives are working people. Due to long waits with their patients for an appointment, they are currently losing a lot of work time. Thus, the reduction in each person's working hours will have a negative impact on our economy. People occasionally encounter the issue of not receiving appointment serials because the majority of appointment serials are manual. Far-off visitors endure greater hardships. Therefore, we intended to develop a website that would inform them of the appropriate times to visit the chamber. Where they may get the greatest service, save a ton of time, and view their live serial status from anywhere. They can change or postpone their serial if they arrive late. Additionally, due to their busy schedules, doctors may not always be able to arrive at the chamber on time, leaving the patients to wait in the chamber for an extended period of time. As a result, patients may experience some sort of unfavorable reaction. To foster a strong relationship between patients and doctors, we understood the necessity of building this website. With the help of this website, Patients can save their time as well as get modern services. Doctors can also modernize their patient care system.

1.3 Objective

Following that, the most important objective is,

- ◆ Updating the outdated doctor appointment system.
- ◆ Making a website that is user-friendly for both patients and doctors.
- ◆ We'll establish a channel of communication between patients and doctors.
- ◆ Making an appointment schedule or taking a serial number for the appointment is very simple to use.
- ◆ We also have a unique function that allows users to receive doctor prescriptions online.
- ◆ Making an environment devoid of syndicates.

1.4 Expected Outcome

- ◆ Users will be able to check the status of their appointment serial from anywhere.
- ◆ It will reduce hassle.
- ◆ Users will be able to save significant time.
- ◆ On the day of their serial, users will get a notification.
- ◆ Doctors will be able to upgrade their patient calling system.
- ◆ Many patients cannot to arrive on time; they may set their serial delayed.
- ◆ Anyone with a computer or device can use this application.
- ◆ An user-friendly and secure website for all.

1.5 Project Management and Finance

Our project is currently team-based. Both the front end and back end exist in our project.

Most of the time, we negotiate who will do what and then assign tasks accordingly.

We have many ambitions for our project in the future. We will build with the necessary as a well-required update when we need to update our platform. We must uphold user privacy and appropriate security because this project is large. Additionally, we intend to form alliances, accept investments, or cooperate with healthcare institutions.

1.6 Report Layout

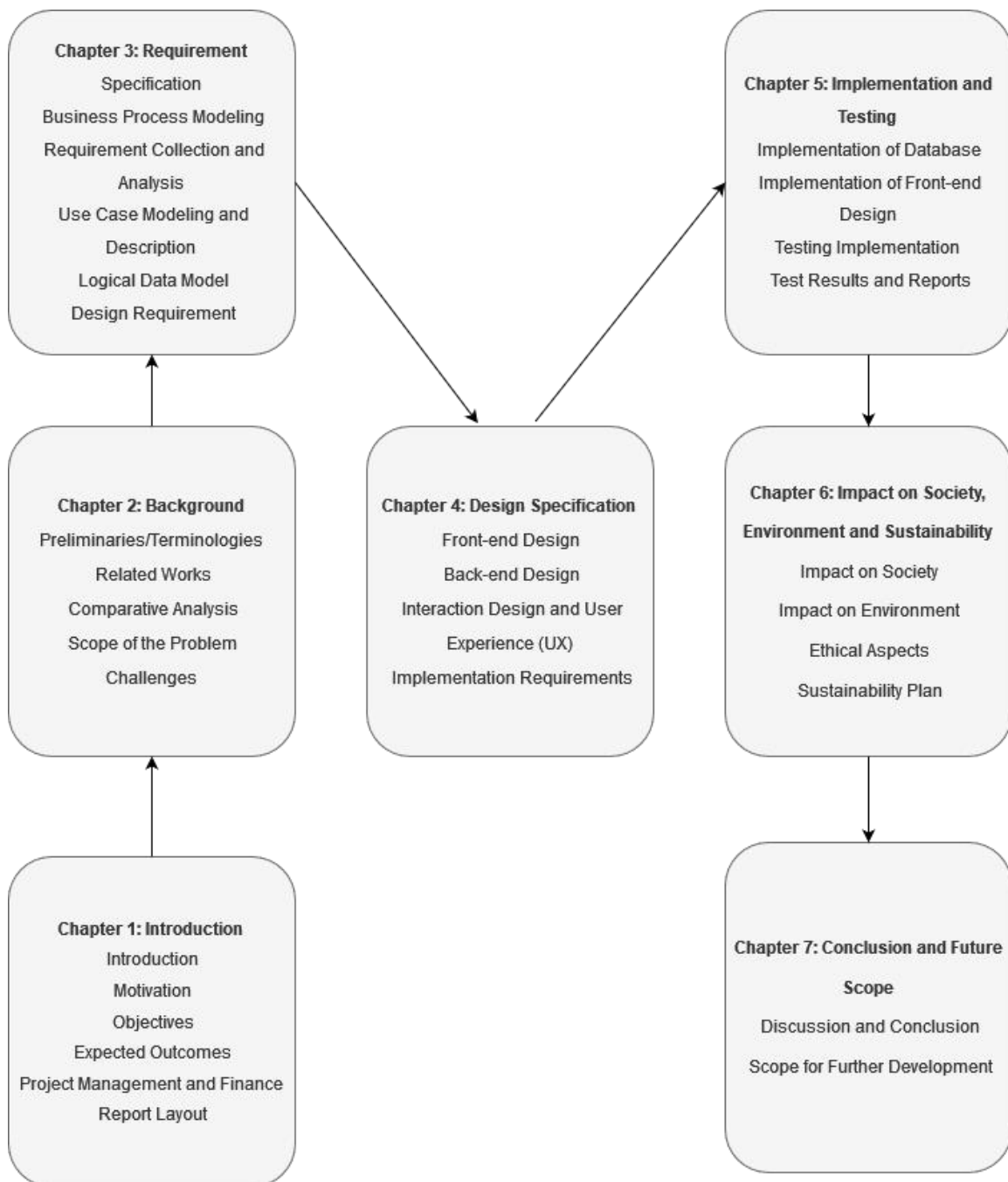


Figure: 1 Report layout diagram

CHAPTER 2

BACKGROUND STUDY

2.1 Terminologies

First and foremost, we need to talk about how we will always work to maintain the fundamental ideas of the website, no matter how far we take its development. Therefore, we will strive to focus just on the future objectives, regardless of how complex the concepts and techniques are. It is straightforward for us to work. The idea behind our program is to provide users with a live appointment schedule via an online appointment system, and appointments may be easily managed in a contemporary manner for both doctors and patients. Therefore, reducing the bother and offering a simple platform for interaction between both is our top priority.

2.2 Related Work

There are a few websites that are relevant to our platform, which we are creating as an online-based doctor appointment system platform. Some of the associated websites for online doctor appointments are:

Daktarbhai: This digital healthcare service, essentially a platform for scheduling appointments with doctors, was introduced by telecom operator Banglalink. They provide an electronic personal health record system together with a service for scheduling medical appointments that is available online. They offer functions like "doctor search," "book appointment," "personal health record," "insurance service," and others. Their online appointment system allows users to schedule a visit with a doctor either in person or online.

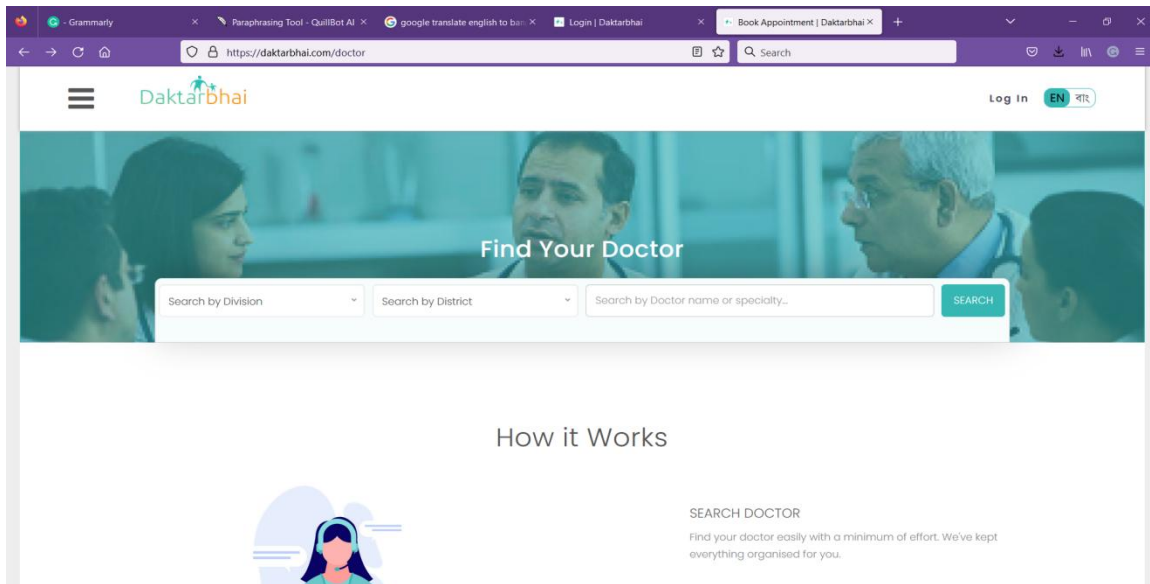


Figure: 2.1.1 darkarbhai.com

United Hospital; One of Bangladesh's biggest hospitals in the private sector is this one. In order to meet the needs of its diverse patient population, United Hospital has 12 cutting-edge operating rooms and the capacity to house more than 500 patients. Even though the hospital's doctors visit outpatients, telemedicine services are available. They have an online doctor appointment system like every other contemporary hospital. Users require a smartphone or computer, internet access, and social media for communication, such as Skype or WhatsApp.

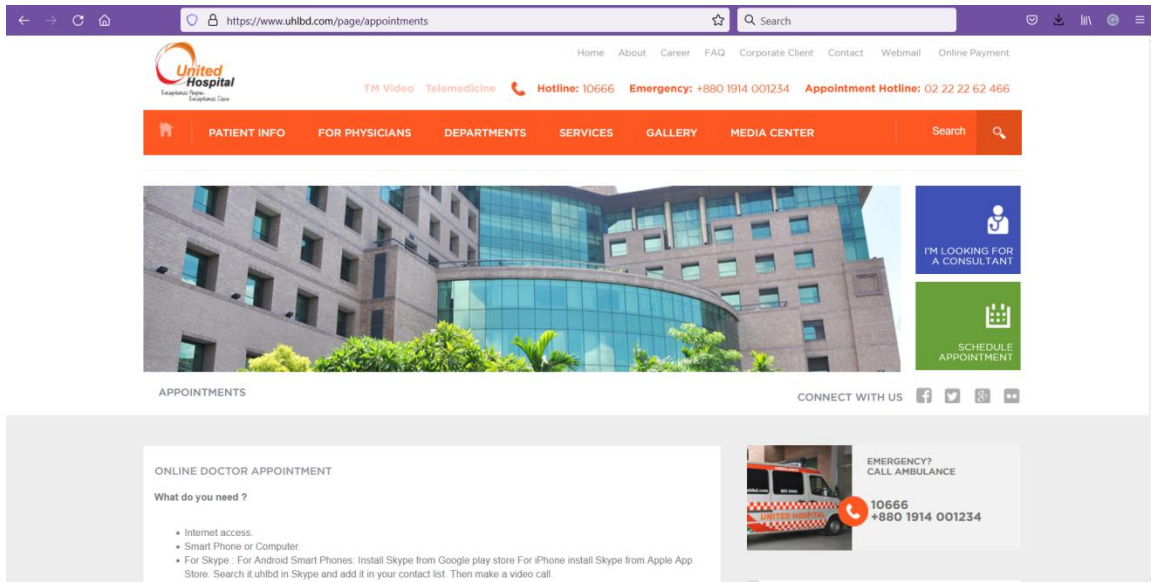


Figure: 2.1.2 United Hospital Online Doctor Appointment

This hospital's one feature, A telemedicine service, is offered online. Patients are given an appointment sequence for telemedicine visits over the phone, and they must pay their fees before the telemedicine visit time. Patients can schedule appointments from home and consult with doctors through video calls.

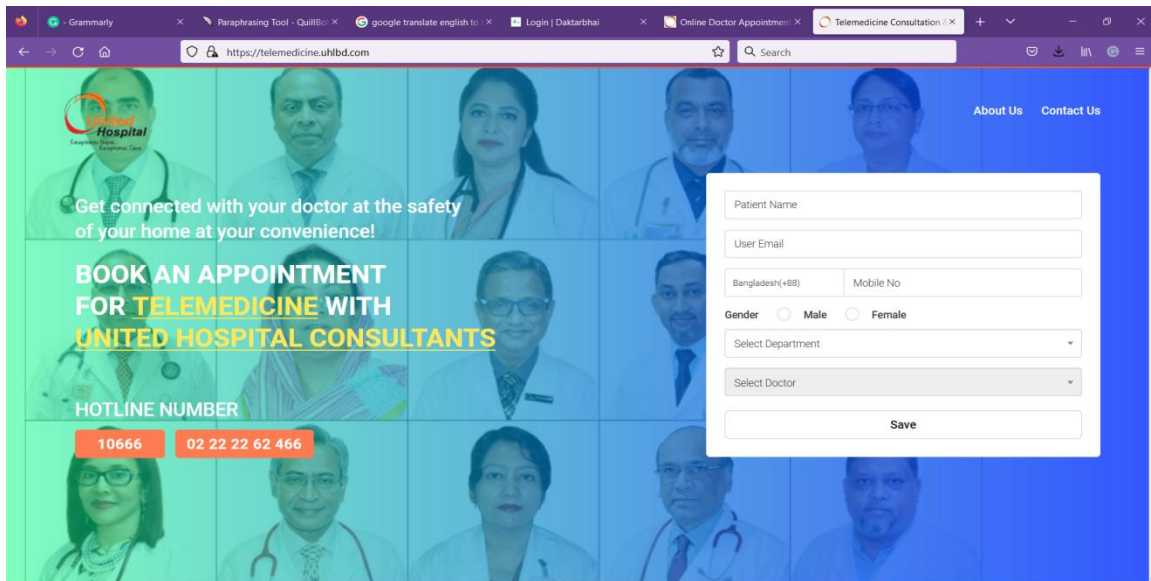


Figure: 2.1.3 telemedicine.uhlbd.com

Square Hospital Ltd; A tertiary care hospital, Square Hospitals Limited is Bangladesh's

leading contributor to private healthcare services. One of the businesses of Square Group, the leading business conglomerate in the nation, is Square Hospital. This hospital's website has several features, including an online doctor appointment system.

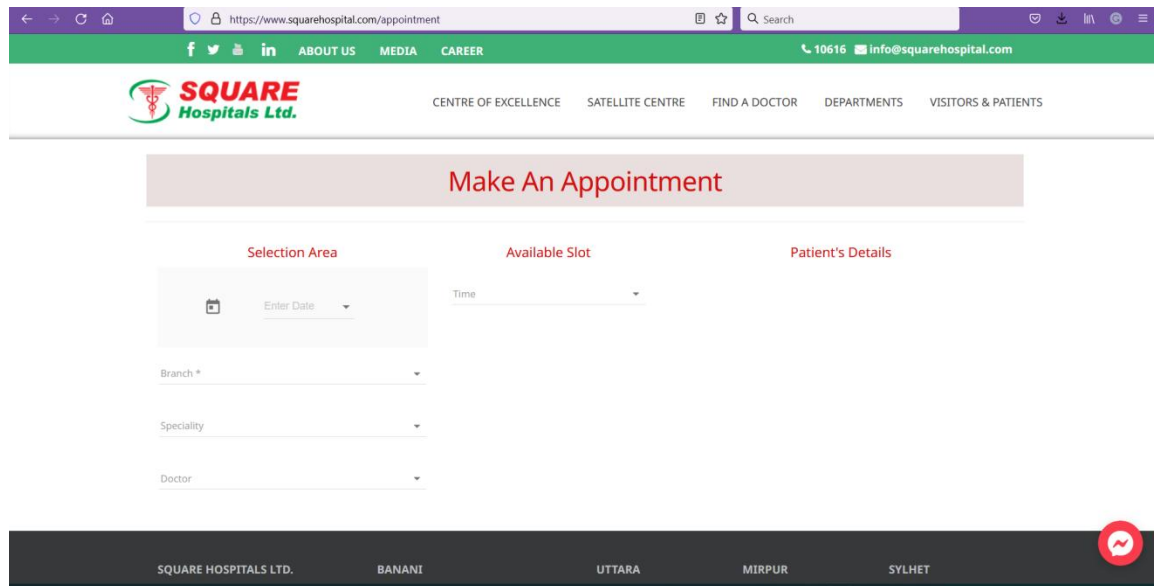


Figure: 2.1.4 Square Hospital Ltd Appointment

2.3 Comparative Analysis

We already discussed three different forms of online-based doctor appointment systems in the section on related work. They are all Bangladeshi websites. A tool for making appointments is present on all websites. These websites all have a system for booking doctor appointments online. This function is also on our website, but we complete it. These three websites perform the same function: accepting online medical appointments. However, patients must still visit the doctor by hand; in other words, even if they made their online appointment, the doctor still call all of the patient's appointments in the chamber manually. The Square and United Hospital is one of our nation's most technologically advanced and digitally integrated hospitals, but they still see patients by hand. Patients can make online appointments, but most of the time, they must wait for the doctor when the time comes. Even when offering video call treatment, some appointment systems can only schedule appointments and provide notifications, and some cannot

retrieve their serial numbers. Thus, they frequently endure suffering. We incorporate similar features like doctor searches, notification alerts, appointment scheduling, personal dashboards, Etc. on our website, but we do it while improving usability. Users can view the progress of their appointments in real-time thanks to our extraordinary service. It contrasts sharply with all of these websites.

2.4 Scope of the Problem

We attempt to create something advanced and innovative because manual work is time-consuming and too difficult in the modern world. This web platform was developed as a result. It will include all appointment-related functions, benefiting both patients and physicians. Some brokers who work with them sell appointment serials illegally, which will also assist in safeguarding the reputation of many doctors and hospitals. They cannot accomplish this on this website so that patients and authorities can benefit and work in a welcoming environment. We aim to develop our website well and reach the pinnacle of creative ability. However, maintaining user data is the biggest issue, and maintaining the finest security protocols for our users is crucial. So, to solve this issue, we must protect user data.

2.5 Challenges

We should provide the most effective website to all Bangladeshi stakeholders to provide the finest web-based appointment system platform. As a result, we could experience some challenges, but we always try our best to find solutions. These issues include;

- ◆ Creating the most user-friendly design possible for the website.
- ◆ Configuring many features to make it easy to use
- ◆ We provide the usability and smoothness of the site our full attention as we design it.
- ◆ Assure our users of the highest security measures, so security threats never threaten them.
- ◆ As our Project is still in its early stages, we are concentrating on advertising.

CHAPTER 3

REQUIREMENTS SPECIFICATIONS

3.1 Business Process Modeling

By providing data-driven visual representations of the most effective procedures, business process modeling provides organizations same as for website business models with an easy approach to comprehend and optimize workflows. Using business process modeling software, the process can be represented digitally and subsequently converted into an operational automated process. In general, it offers a system that demonstrates control over the process.

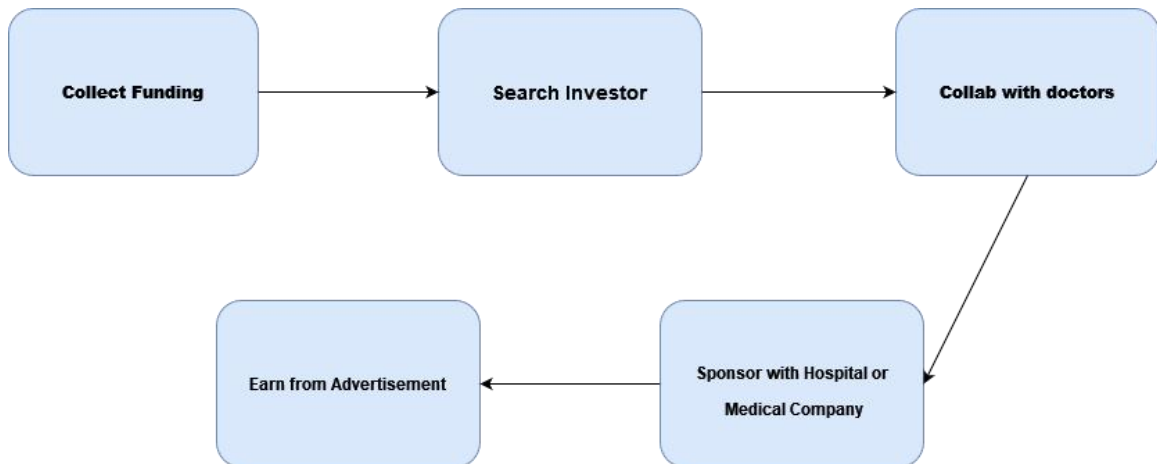


Figure: 3.1.1 Business process modeling

3.2 Requirement Collection and Analysis

This section deals with design, development, implementation, analysis, and device performance to build a user-friendly platform. In order to create an excellent website with stunning visuals and all the necessary functionality, we must analyze and collect all requirements. We require a few essential requirements and collections to finish our website. Such as;

- ◆ Understanding requirements
- ◆ Planning

- ◆ Documentations
- ◆ Designing
- ◆ Developing
- ◆ Develop a good profile
- ◆ Strong security
- ◆ Responsive admin panel
- ◆ User and doctor panel
- ◆ Testing and deployment process
- ◆ Implementation

3.1 Use Case Modeling and Description

Here is an explanation of our project's use cases and modeling.

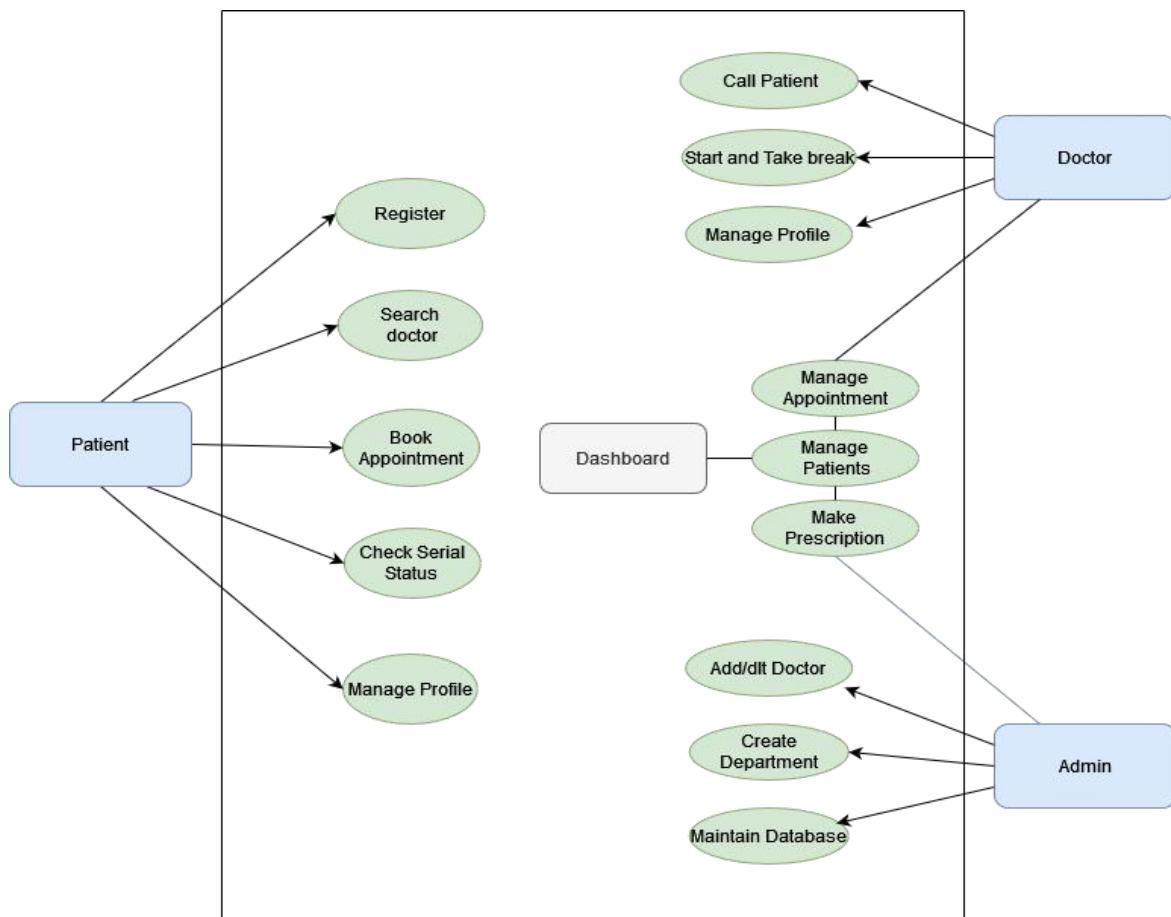


Figure: 3.1.2 Use case modeling description

3.2 Design Requirement

A website is one of the most vital parts of a brand's or individual's online presence, so it must be appropriately designed. It should be designed with the users in mind and deliver a satisfying user experience. The user will not utilize a website that a developer does not make easy to use, and the website will not find a market. They will search for equivalent remedies to it. For project management, design requirements are also necessary. Creating a positive first impression on visitors to a website is possible. Design requirements include the architectural design, flowchart, content, usability, aesthetics, visibility, interaction, case diagram, Etc. As part of our project, we used cutting-edge and contemporary solutions to improve the usability and accessibility of our website for both technical novices and more experienced users. We continue improving and updating it with the most advanced tools for improved security and privacy.

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-end Design

Every visitor sees or interacts with when visiting a website is considered part of the front end. HTML, CSS, Bootstrap, JQuery, Javascript, Tailwind, React, Etc, and many more tools are used in front-end design to construct a user interface. We used many frameworks and modules to create a perfectly user-friendly interface when designing our website.

- ◆ HTML: The standard markup language for constructing Web pages is called HTML, which explains how a Web page is organized.
- ◆ CSS: Cascading Style Sheets, or CSS, is a language that specifies how HTML components should appear on a screen, paper, or other media.
- ◆ Bootstrap: The most widely used CSS framework for creating flexible and mobile-first websites.
- ◆ JQuery: A JavaScript library with many features, jQuery is quick and compact.
- ◆ Javascript: Javascript is used to create dynamic and interactive web content. It is a very well-known programming language worldwide.

Landing Page: Our homepage or welcome page is displayed here. This page will load first for everyone who visits our page.

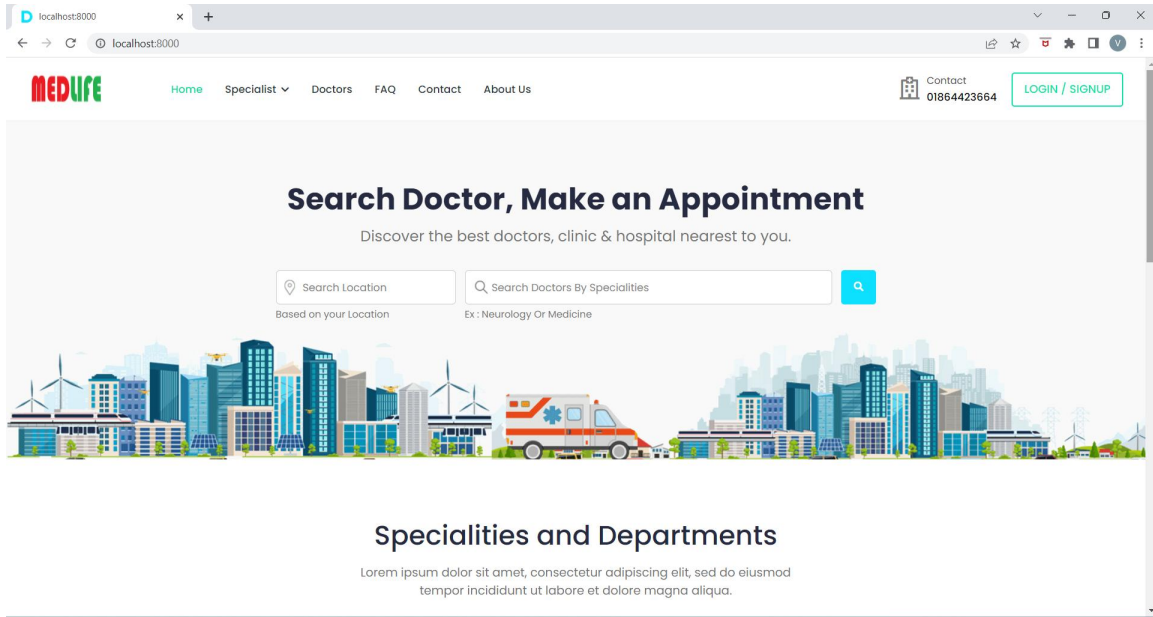


Figure: 4.1 Home Page

Appointment Section: Users can schedule appointments in this area. The doctors can be found by using a name or department search. If the doctor they wish to see has a schedule open, they can make an appointment. They must first log in for this.

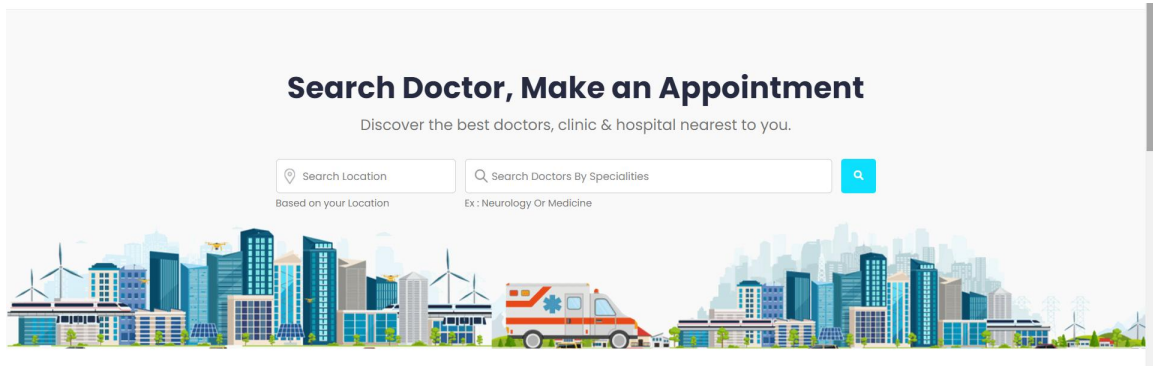


Figure: 4.1.1 Make an appointment

Header Section: Typically shown in this header area are the website logo, contact information, and navigation bar.

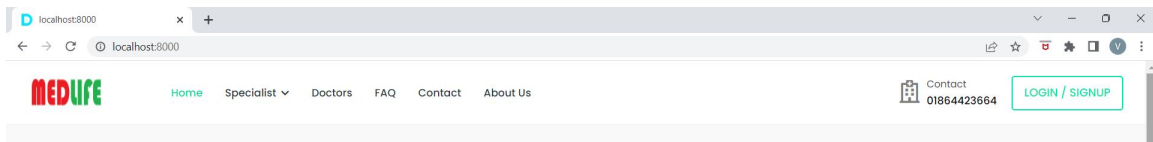


Figure: 4.1.2 Header section

Footer Section: This area often includes details about the business, social media connections, contact information, names of partners, and many other features.

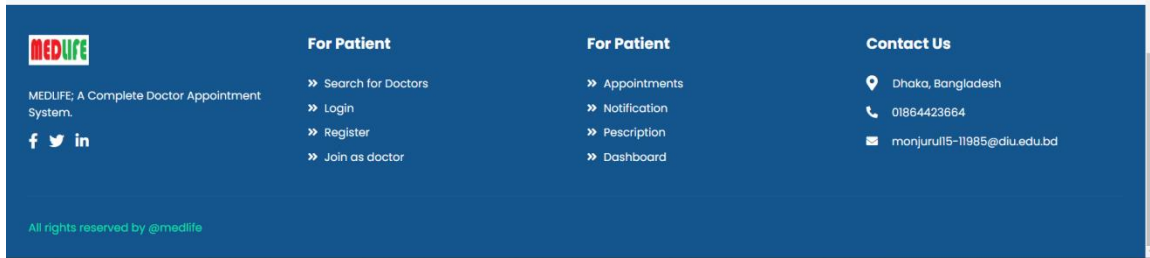


Figure: 4.1.3 Footer Section

Body Section: There are more appointment booking methods on the homepage, where one can book an appointment by clicking on the specialist or department section and the book our doctor section.

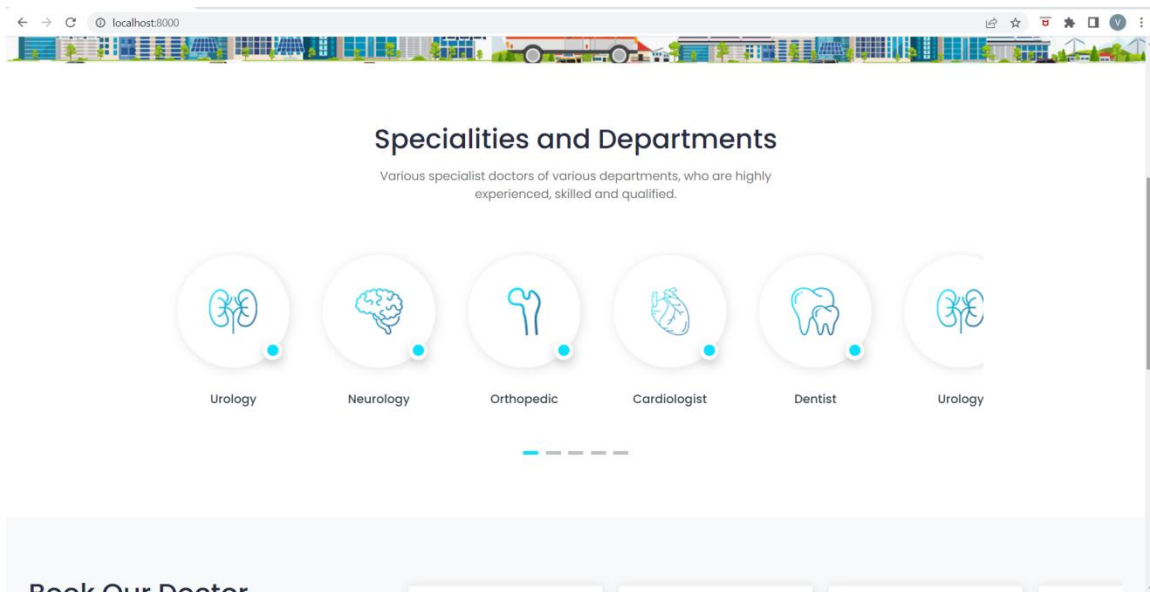


Figure: 4.1.4 Specialist or Department Section

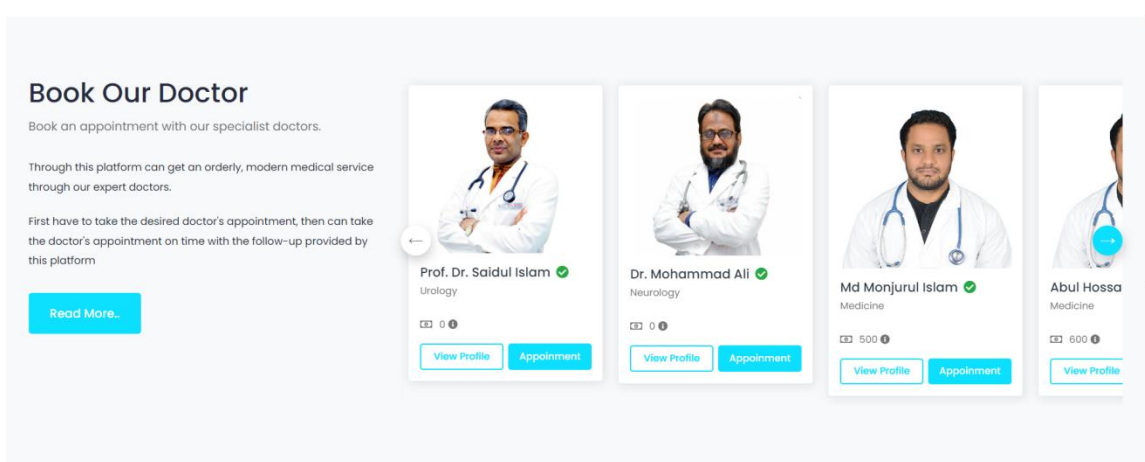


Figure: 4.1.5 Book Our Doctor Section

Login Page: Our website's login page is located here. Users, doctors, and admin can log in using their email addresses and passwords in this section. However, they must first create an account.

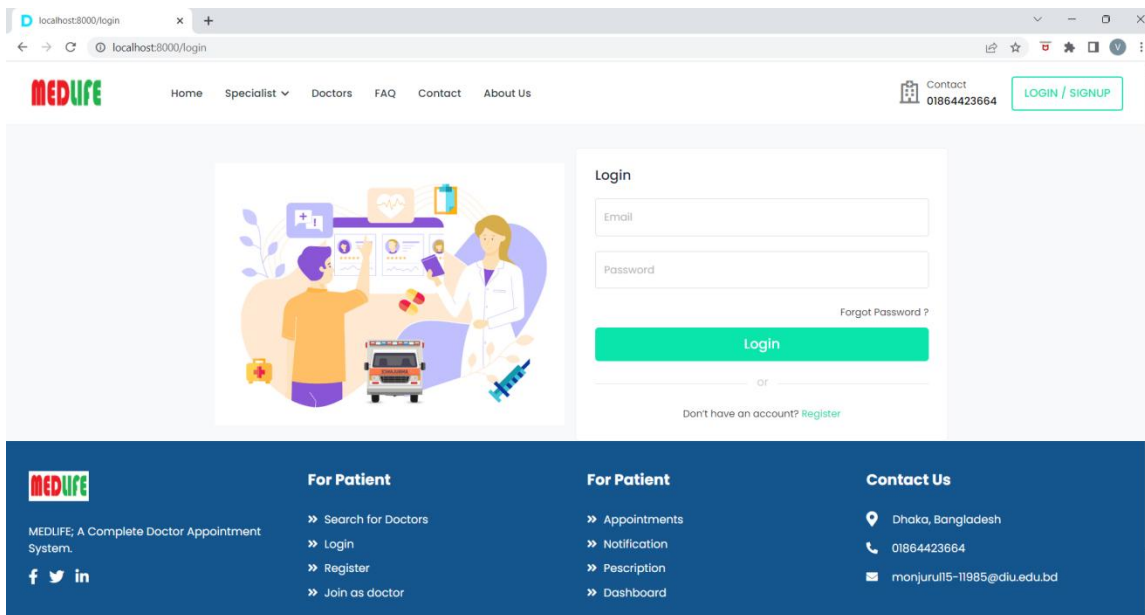


Figure: 4.1.6 Login page

Sign-Up Page: The first step for each new user that visits our website is to register with the required information, including Name, Email, Password, and Gender, for privacy reasons.

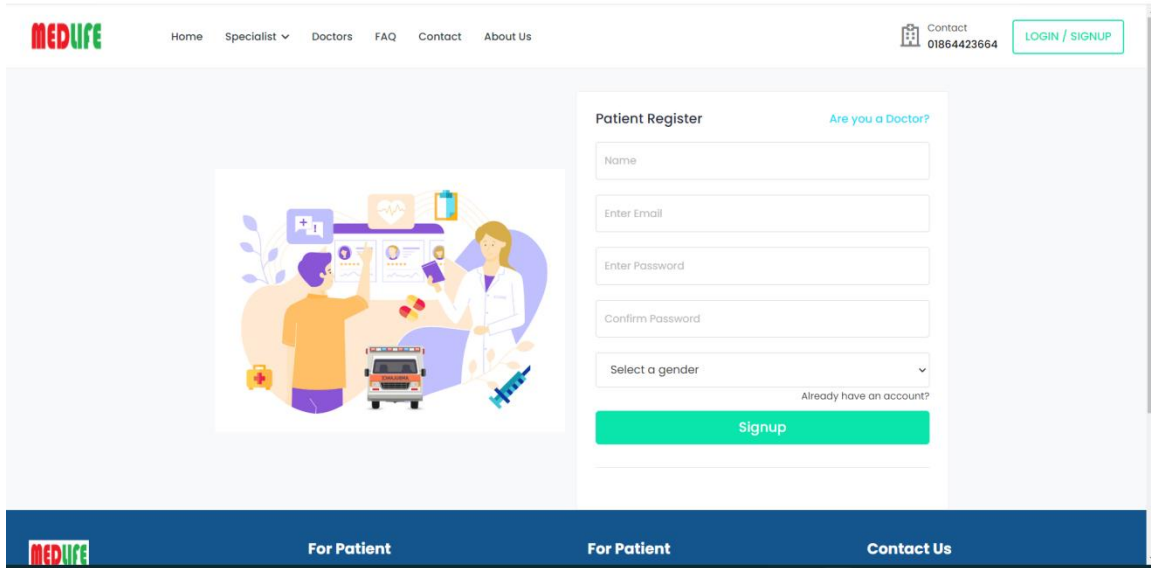


Figure: 4.1.7 Register page

Forget Password Page: Users could reset their password by using email address from this page if they forgot it.

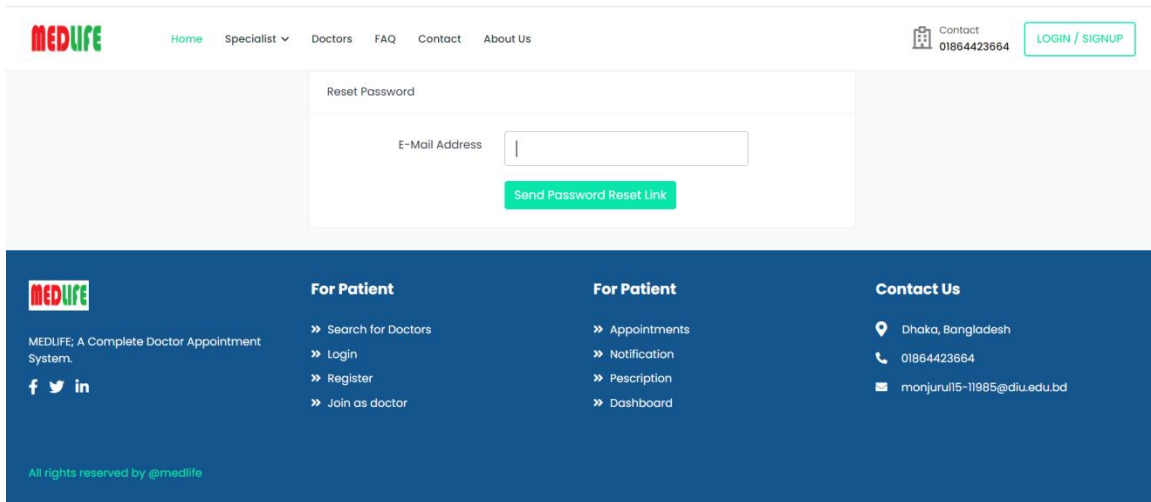


Figure: 4.1.8 Reset Password page

Doctors Page: For visitors to our website to be able to see qualified doctors, this area will provide information about doctors.

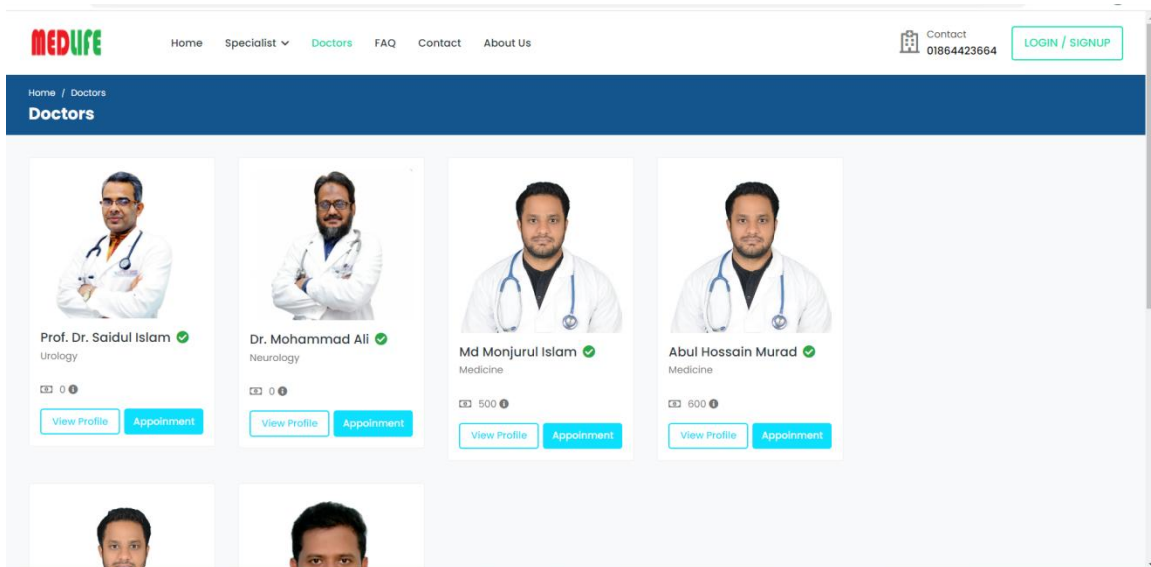


Figure: 4.1.9 Doctor's information page

Appointment Section: Users can make an appointment with the desired doctor after checking the appointment schedule time.

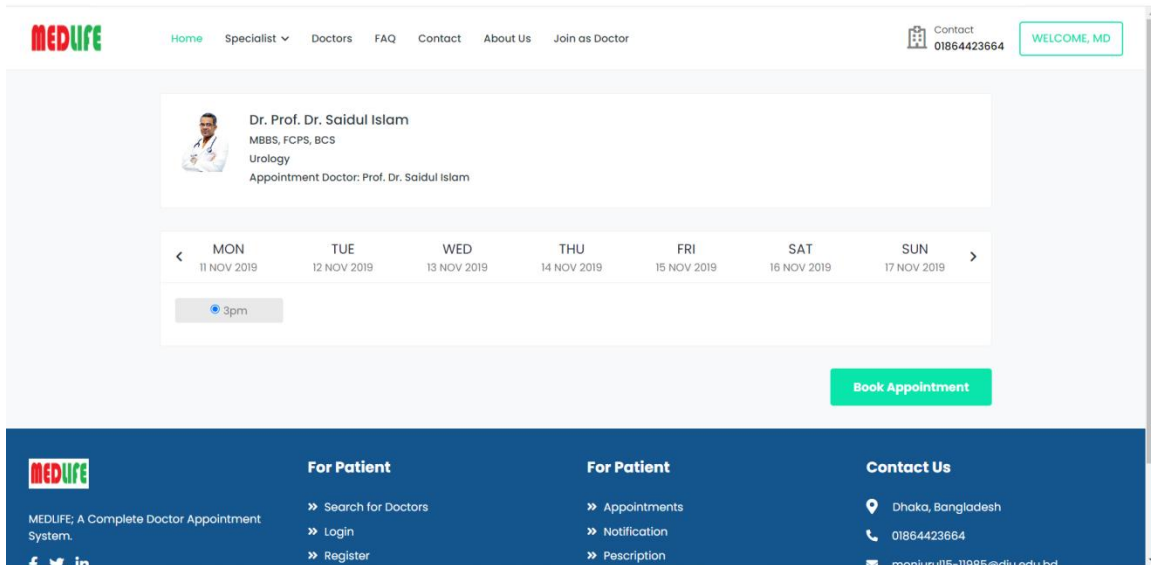


Figure: 4.2 Appointment Section page

FAQ page: Frequently asked question and answer about this website and its usage are provided on this page.

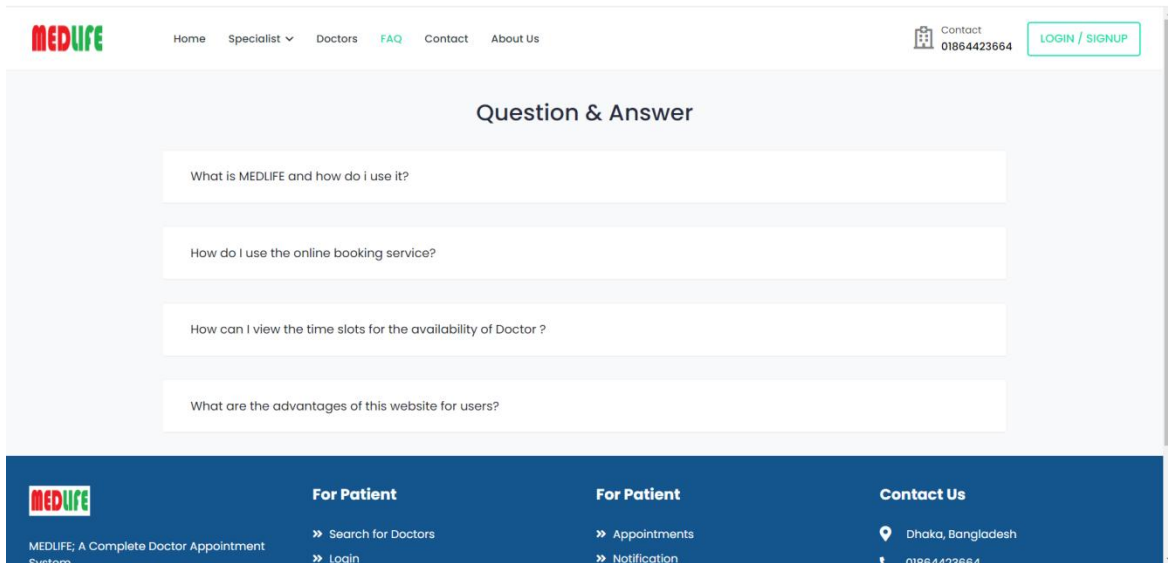


Figure: 4.2.1 FAQ page

Contact Us Page: Users may simply contact or submit messages to us using our contact page if they have any concerns, questions, or other issues.

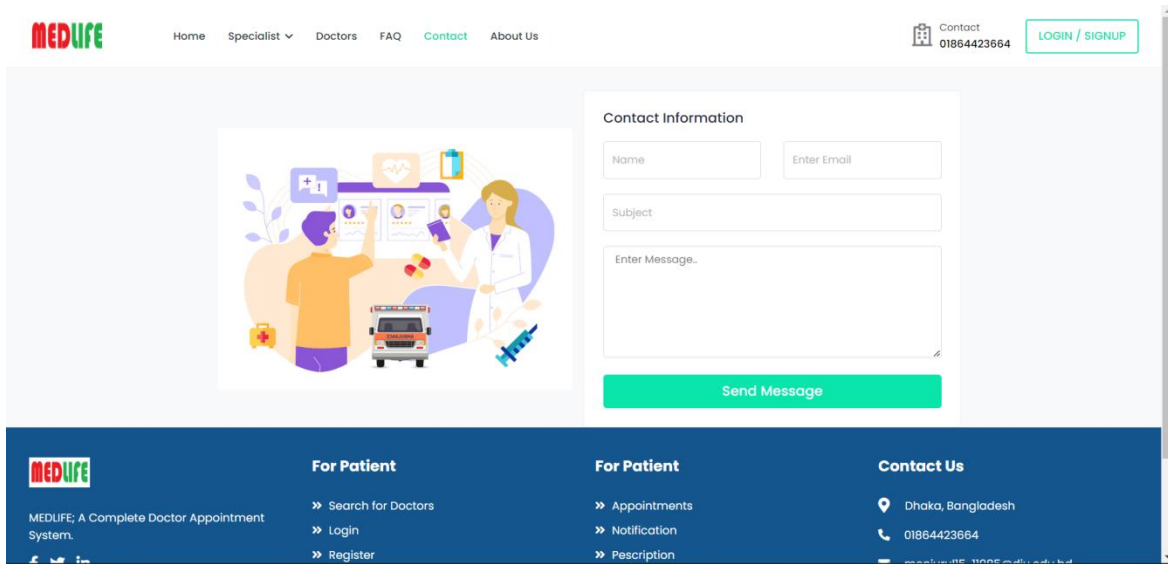


Figure: 4.2.2 Contact us page

Doctor Join Page: After completing the information form, users can apply to become a doctor on this website, which the admin will later approve. They must first log in to the website to apply to become a doctor.

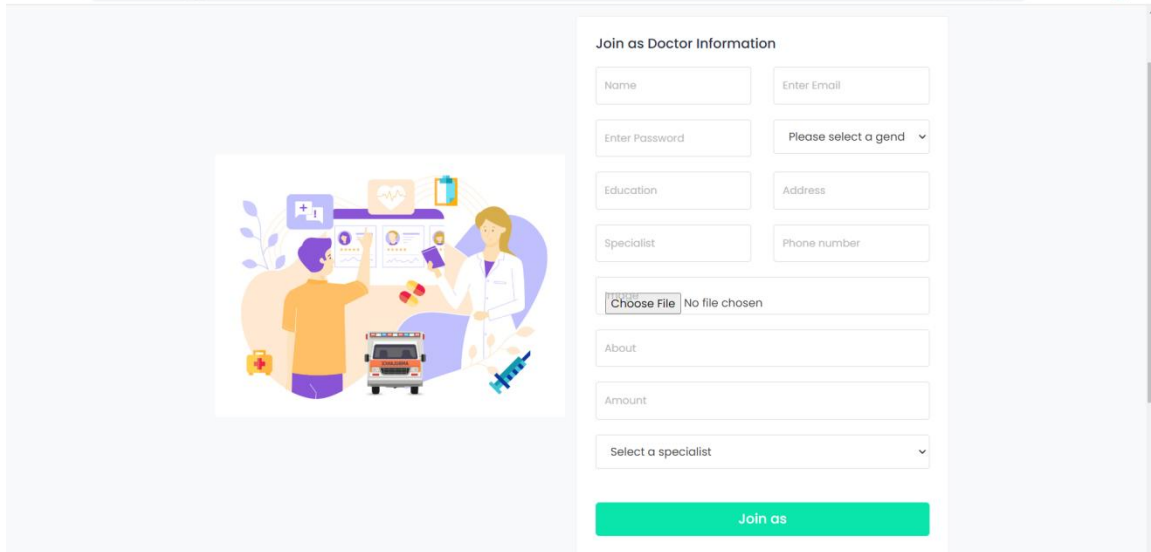


Figure: 4.2.3 Join As Doctor page

About Us Page: This page contains about us information and business policy of our website.

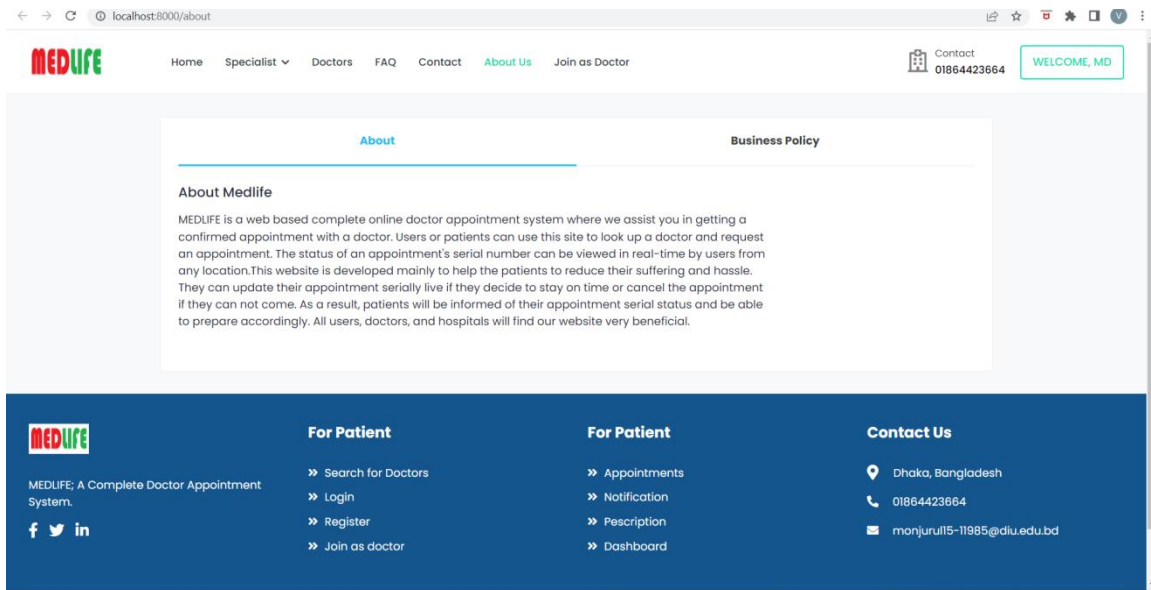


Figure: 4.2.4 About Us page

Doctor Dashboard: A doctor dashboard will be shown after logging into the doctor's account. Where the doctor has access to all the information, can schedule appointments, write prescriptions, and can also view the patient's appointments.

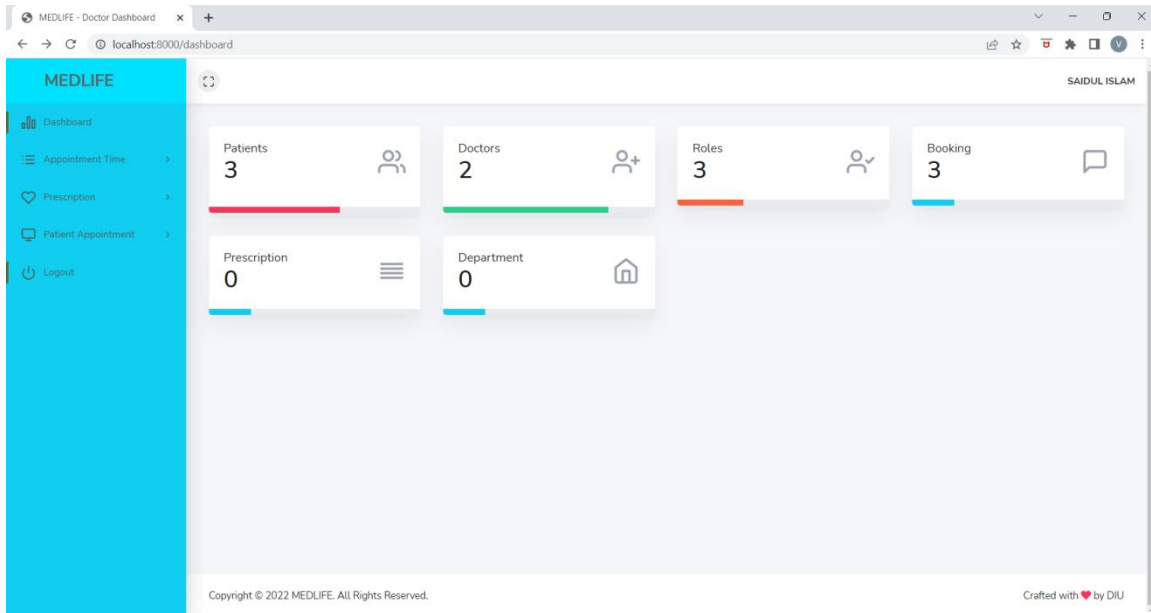


Figure: 4.2.5 Doctor dashboard

The doctor can check all scheduled appointments.

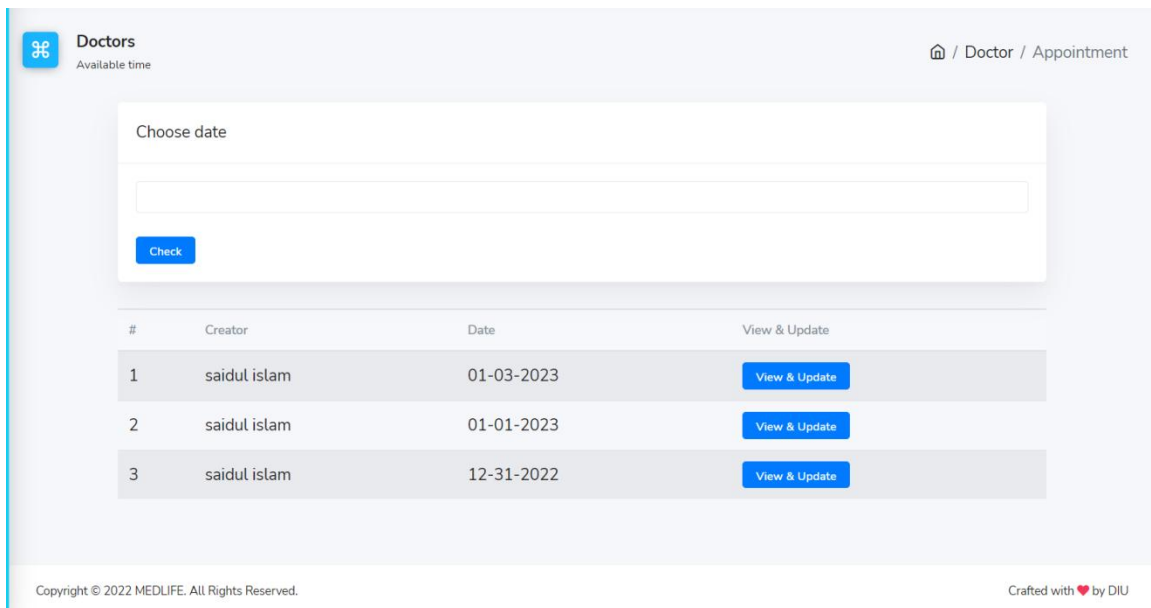


Figure: 4.2.6 Appointment schedule

The doctor can start the appointments for the patients so that they would receive real-time updates when the doctor begins seeing them. A doctor can pause time

anytime he needs a break so that users are informed of his absence. The users can use this website's live updating feature once they have finished an appointment.

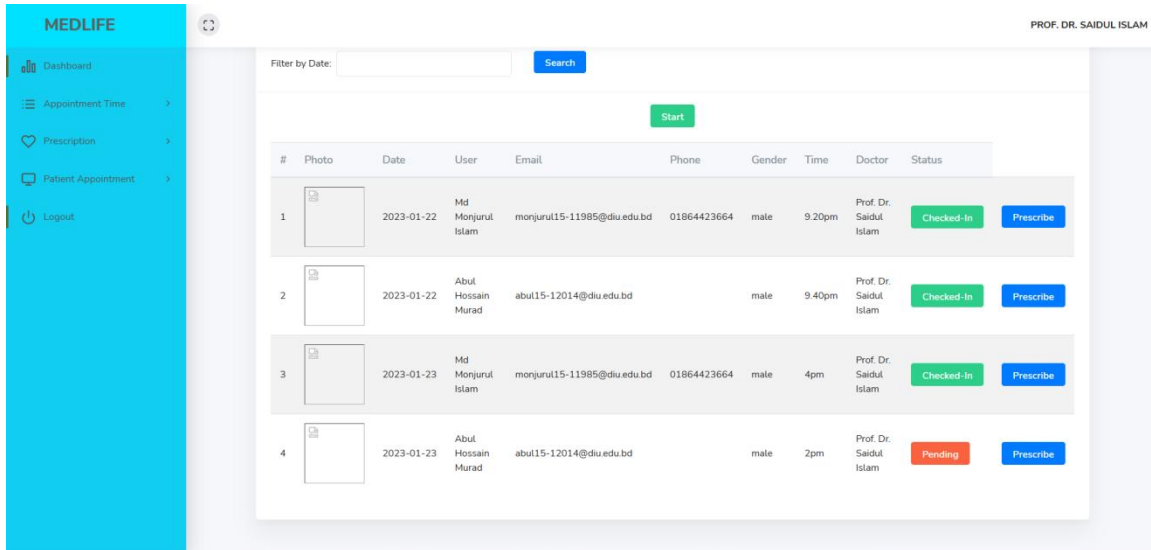


Figure: 4.2.7 Appointment list

Apart from this, doctors can also give prescriptions to patients online.

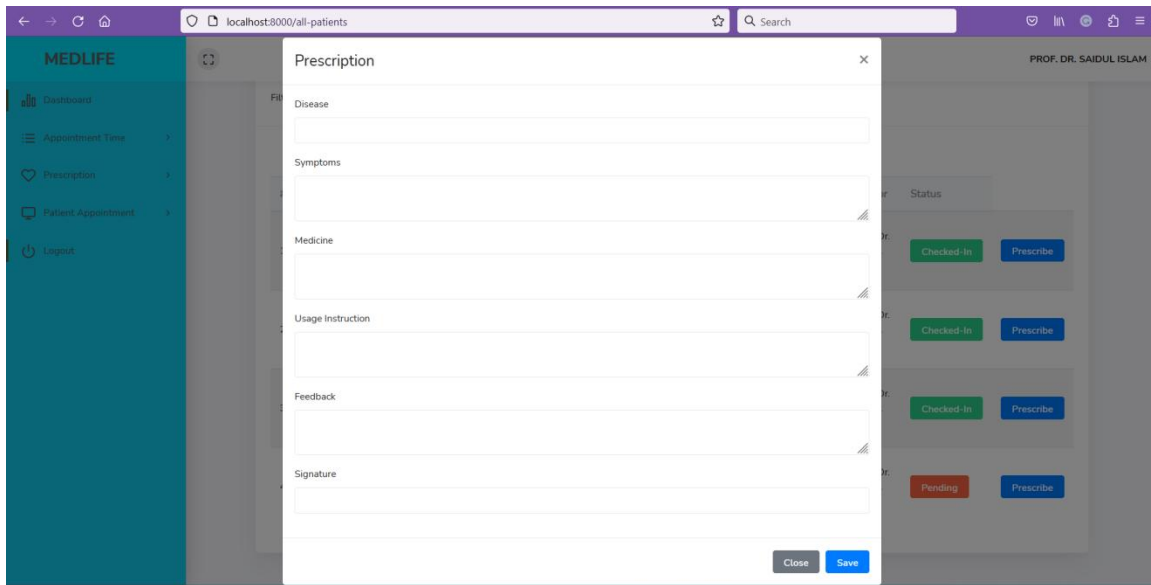


Figure: 4.2.8 Online Prescription Form

User Profile Page: The user account name appears as an additional route in the navbar area when the login procedure is complete. When a user clicks on their

account in the navbar area, they are redirected to their profile, where they may update their data.

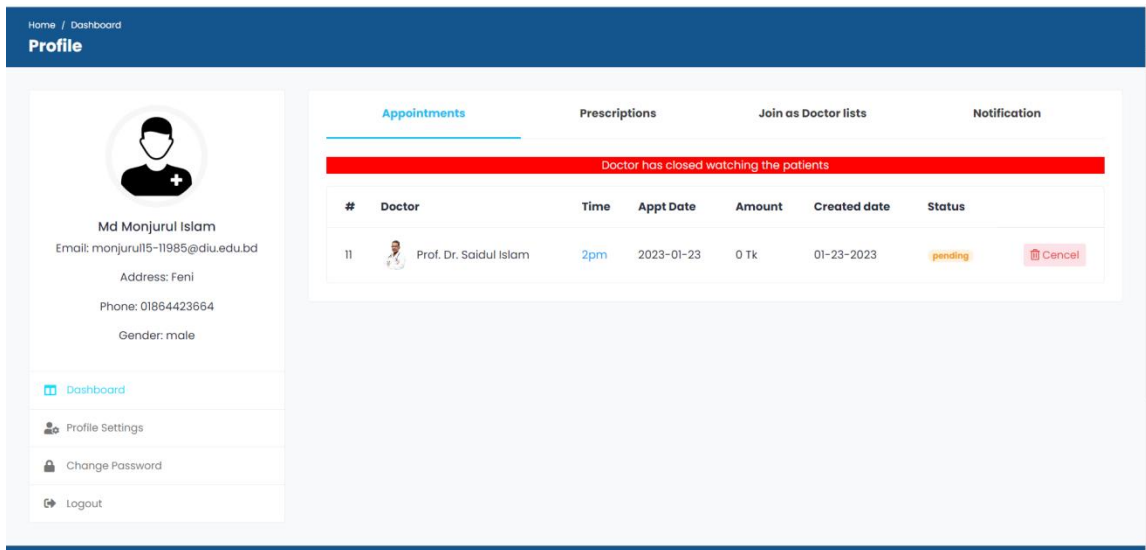


Figure: 4.2.9 User profile and appointment list

Users may view their previously scheduled appointment lists and serial appointments from the appointment area. On this website, users may also view their prescriptions.

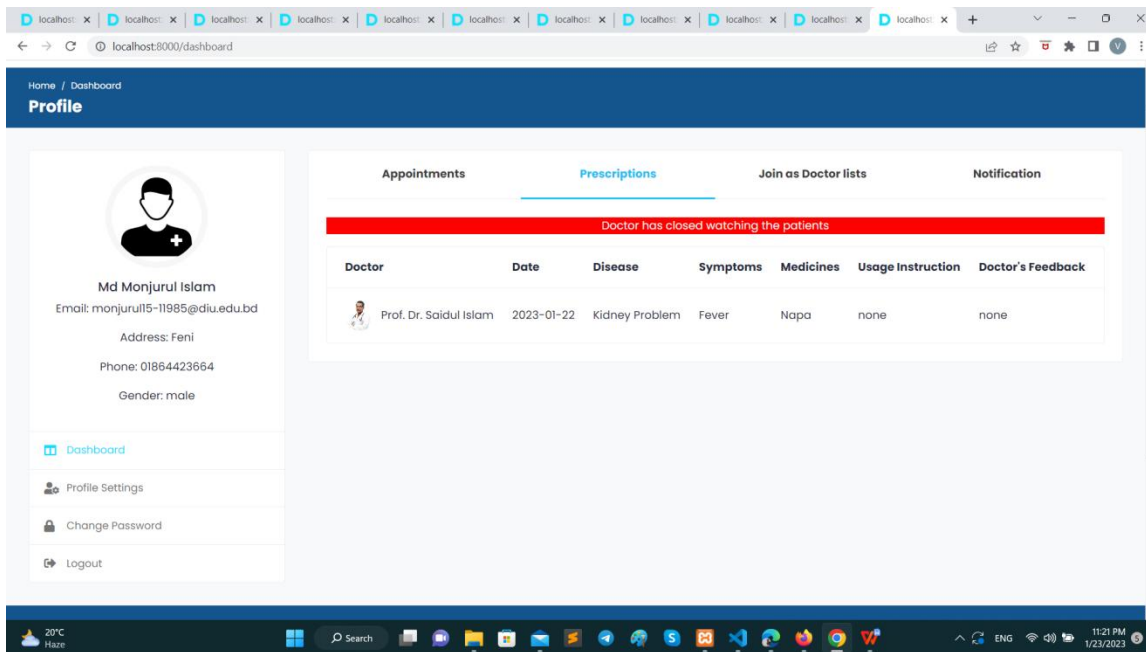


Figure: 4.3 User prescription list

Users get emails after taking appointments through this website and can also see notifications along with emails on appointment dates.

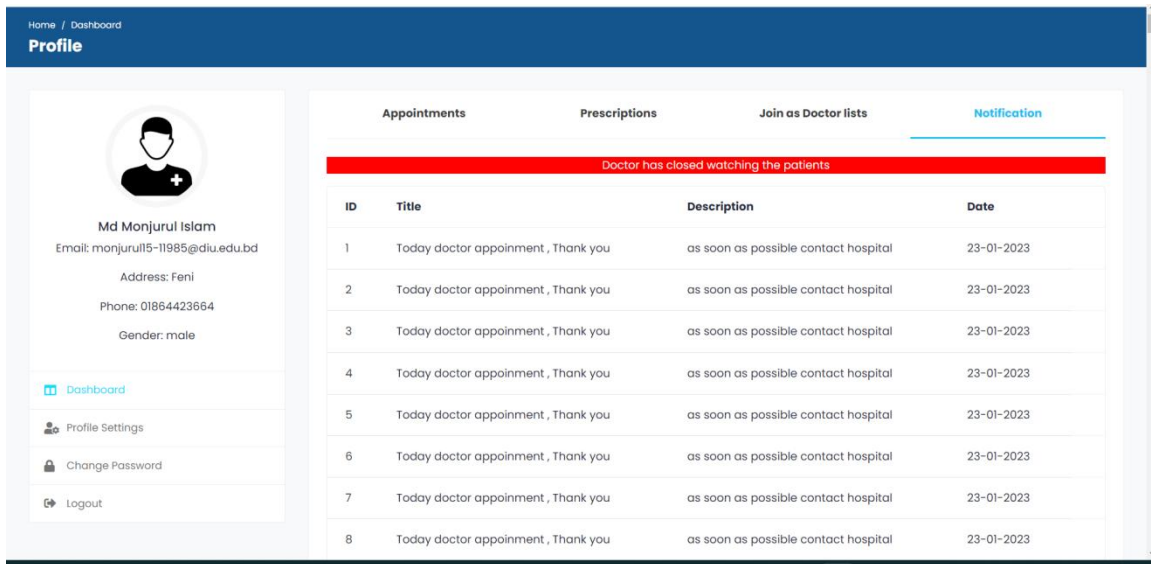


Figure: 4.3.1 User Appointment Notification list

Admin Panel: The admin dashboard has all the options, including managing users data, FAQ update, manage contact information, and adding or removing doctors. This panel can also handle departments, time scheduling, appointments, etc.

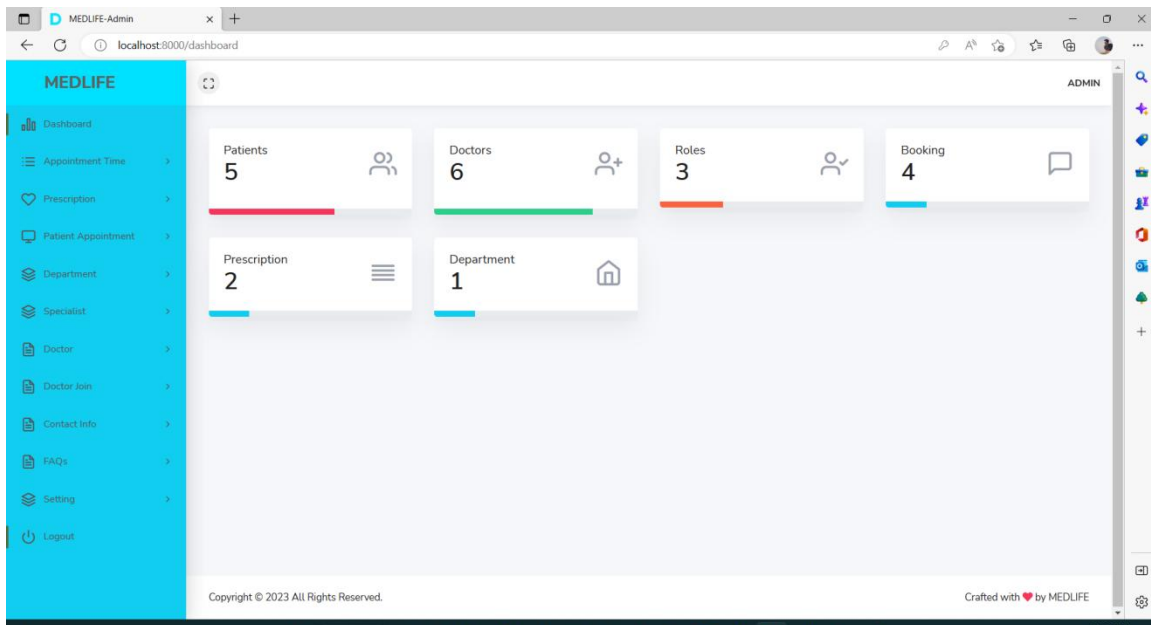


Figure: 4.3.2 Admin dashboard

Admin can also update the website interface information, such as title, contact information, social media links, website logo, etc., from the setting option.

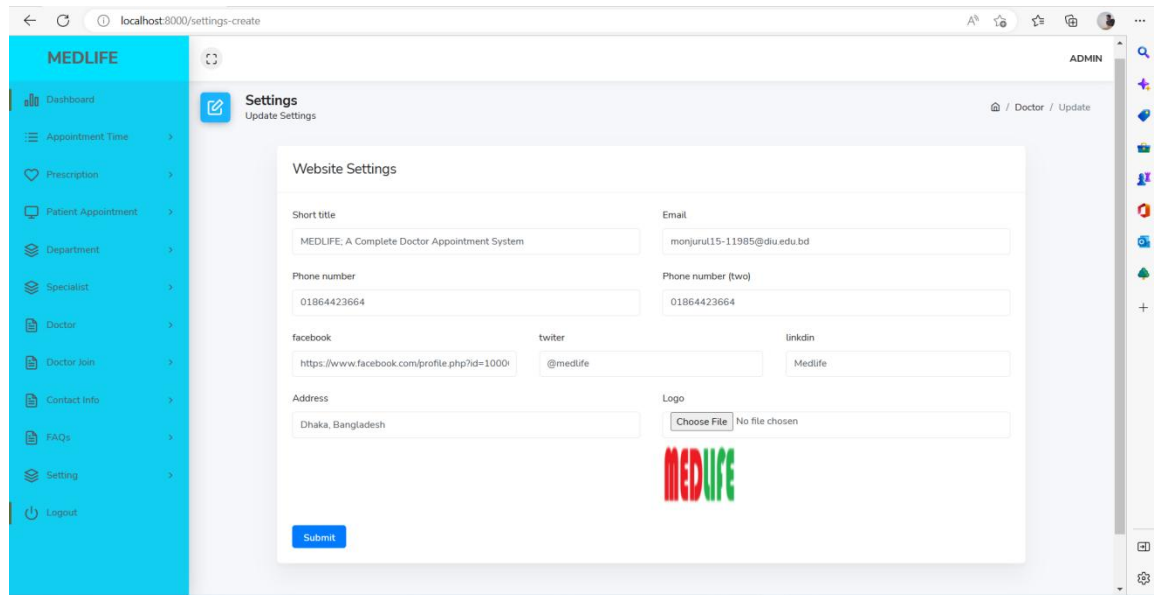


Figure: 4.3.3 Interface Setting Option

4.2 Back-end Design

The section of the website that is invisible is called the backend. It is what gives an internet website intelligence. Data storage, data organization, and client-side functionality are all their responsibilities. When the front and backend are in communication, data is sent and received for a web page to display. We use PHP version 8 and the Laravel framework version 9 for backend programming to create our website. Laravel is a free and open-source PHP web framework, and PHP is a server-side programming language embedded in HTML. We built a MySQL database for our website and used PHP to Connect File.

4.3 Interaction Design and User Experience

A platform is user-friendly if it has a neat appearance, a quick loading time, an excellent color scheme, a smooth refresh, and a quick loading time. Additionally, if we do not prioritize a positive user experience, users will not use our website and will instead visit

another one. In such a case, we need to ensure that the UX is at its finest, which will be our first attention.

4.4 Implementation Requirements

- ◆ HTML version 5, CSS version 4, Bootstrap version 5, JQuery, and JavaScript used to build front-end designs.
- ◆ We used PHP version 8 and its framework, Laravel version 9, for the back-end design of our website.
- ◆ We use the MySQL database for our website and XAMPP for the web server.
- ◆ In order to create an account for users and doctors, he must meet all requirements.
- ◆ An active, responsible admin panel manages the website.

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation of Database

A computer database is a structured data set that can be accessed and processed. Data was stored in the MySQL database in our needed project and the XAMPP software we used to construct the database on our web server. Create a database and tables after setting up MySQL with the hardware, software, and settings where a table will generate logically with all the data. After which, configure users, security, and data backup.

5.2 Implementation of Interaction

Although individuals in the modern world are used to the digitization and can easily connect online, they still need to manually visit their doctors to schedule appointments because there is no live appointment system. Although other online appointment systems can help individuals schedule meetings, such platforms cannot shorten their wait times. We addressed these problems in our platform to improve the user experience for our valued users. We are fostering a solid relationship between the doctors and the patients, which is one of our key goals.

5.3 Software Testing Methodology

The term "software testing methodology" refers to the strategies and types of testing that are employed to confirm that the application being tested satisfies user requirements. Any development methodology must include software testing as a core component. Various testing approaches are available, including Waterfall, Agile, and other QA models. It is quite easy to organize and plan with a software engineering paradigm. Thus, utilizing a waterfall methodology, projects with clearly defined and articulated criteria may be tested quickly. In this process, the testing team doesn't go on to the following phase until the last phase has been finished.

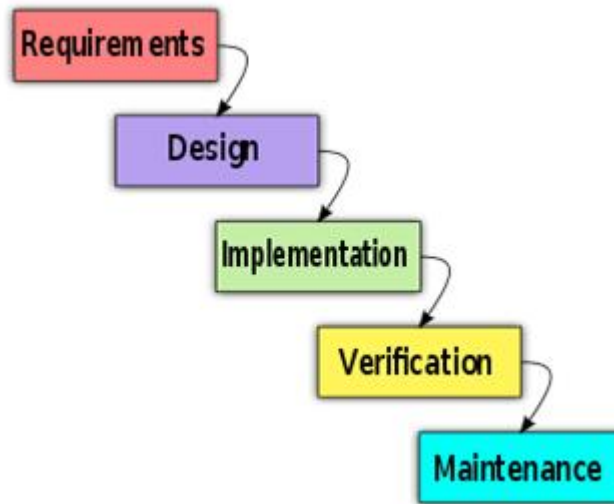


Figure: 5.1 Waterfall methodology of software testing

5.4 Test Results and Reports

Features

- ◆ Users can search doctors and check whether the serial is available or not
- ◆ The ability to book an appointment and check its progress is available to patients.
- ◆ Patients will get mail on the day of their appointments.
- ◆ Users can manage their profile.
- ◆ Doctors have a personal dashboard where they can control their appointment schedule.
- ◆ Doctor can take a break in the middle of the serial.
- ◆ From the dashboard, the Admin can manage appointments, create departments, and perform many other tasks.

Report

Merits,

- ◆ For better live update service, it makes use of online connectivity.
- ◆ For function usage, very simple architecture.
- ◆ The website is quite reliable for persistent use because of its user-friendly UI.

Demerits,

- ◆ Regarding UI, this website may include some areas to work.
- ◆ For more planned implementations, more time is required.

CHAPTER 6

IMPACT ON SOCIETY, ENVIRONMENT, AND SUSTAINABILITY

6.1 Impact on Society

Most of the websites for online appointment scheduling that are accessible in our nation are mostly their own. A few of the great websites offer telemedicine services. Even though some modernized hospitals offer online scheduling, patients are still called by hand to set appointments. Even though people from remote places can book serials online, these hospitals are located in developed cities, so patients still need to travel there and wait for a doctor. They do not even know when the doctor will start seeing patients. Additionally it can be noted that the serial is frequently unavailable or delayed if an appointment cannot be made online, requires a direct phone call, or requires the patient to visit the hospital physically. Consequently, they will endure significant suffering. As a result, there is a mixed discrepancy between those living in urban areas and those living in rural areas. We have made an effort to fix this problem. Through this platform, we have enabled everyone to take advantage of the same chances. As a result, the suffering of the patients will be lessened, and communication and connection based on equality will be established with the doctor. Even in underdeveloped cities or rural areas, hospitals and doctors can operate their services utilizing our website. It will develop into a modernized service like a well-organized social system. Everyone will have access to superior doctor services without bothering about appointments.

6.2 Ethical Aspects

Usually noticed that patients frequently endure great suffering only to make an appointment with the doctor. We created this website with the moral duty to provide them with efficient and effective medical care while also considering their needs as a

human. One can schedule an early appointment for emergencies because we have left that opportunity to move the appointment serial back and forth. Taking into account others' urgent needs will raise moral standards.

6.3 Sustainability Plan

As we work to improve it, our goal is to advance this website to the next level. Nevertheless, first, we want to see how the public will react. With our users and our doctors, we will work to establish a strong rapport. In order to satisfy our users, we make sure that our site is easy to use on any device. We aim always to provide users with better feedback and make it available to everyone for free as a significant aspect of this sustainability. We have a strategy to work with hospitals or other healthcare groups since we require much financial help.

CHAPTER 7

CONCLUSION & FUTURE SCOPE

7.1 Discussion and Conclusion:

The primary goal of this initiative is to assist all people involved and resolve the key problem. People suffer from this issue, but there have never been adequate remedies. This type of platform was not user-friendly. Thus doctors did not want to use it. Now, the major accomplishment is for everyone to realize that their suffering has been alleviated. This project will reduce many paper works and make things easy for everyone associated with it. With the help of our website, everyone may enjoy the convenience of having a hassle-free platform to consult with their doctor, where both patients and doctors will bring joy to their souls, enabling them to lead a contemporary and comfortable life. By combining web engineering with medical science, this project forges new connections.

7.2 Scope for Further Development

The plans for this website are highly ambitious. We need to add additional features to make it a fully complete platform for the medical sector and more applicable and effective. Some of these features are described below,

- ◆ We intend to create a mobile application with all the medical sector's capabilities.
- ◆ For additional distinctive features, we will make use of several panels. Users can know all the costs and information about the hospital. This platform will offer all hospital services, excluding surgery and offline care.
- ◆ Our future goal is to give the results of medical tests on this platform using AI and ML.
- ◆ In this platform, which is what we intend, there will be an E-commerce feature where all medical equipment, tools, medications, and online ambulance service features would be available.
- ◆ In the future, a highly secure online payment channel will be available.

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MEDLIFE: A COMPLETE DOCTOR'S APPOINTMENT SYSTEM

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