Get Your Doctor: Online Platform for Medical help

A Research Project submitted in partial fulfillment of the Requirements for the Degree of Bachelor of Science (Engineering) in Computer Science and Engineering.

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Approval

The Research Project Report about online platform for medical help **Get Your Doctor: Online Platform for Medical Help** Submitted by **Subrata Sutradhar (ID: CE17010)** and **Nafis Shahriar Tasin (ID: CE17021)** to the Department of Computer Science and Engineering, Mawlana Bhashani Science and Technology University, Santosh,Tangail-1902, Bangladesh, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science (Engineering) in Computer Science and Engineering and approved as to its style and contents.

Board of Examiners

1..... (Supervisor)

2……..... (Examiner)

3……..... (Examiner)

Declaration

We, hereby, declare that the Project development work which is presented by the outcome of the investigation performed by us under the supervision of Md. Mahfuz Reza, Associate Professor, Department of Computer Science and Engineering, Mawlana Bhashani Science and Technology University, Santosh,Tangail-1902, Bangladesh.

We also declare that no part of this project has been or is being submitted elsewhere for the award of any degree or diploma.

Countersigned

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Abstract

Though the choices of healthcare are highly personal, most would like to agree that excellence and expertise in medical care is very important. For patients visiting doctors and healthcare specialists, the value of receiving first-class medical care is usually measured in the quality of the treatment, in a longer life span and also in a financial outlay that is anchored on affordability.Get Your Doctor is an online platform where patients can easily find doctors according to their need. Here doctors can be searched in different specialty. Also an appointment can be made to a doctor. The details of a doctor and their schedule can be added by the doctors. Some doctors may consult patients in different hospitals and add their schedules according to that hospital. Here the detail information of the patient will be provided during the registration which will help the doctors to get a grasp about the patient without asking too many questions. Here the prescriptions can easily be shared to the patient and to the dispensary which will help the patients to get medicines in a easier way. The tests required can be sent to the hospital and the hospital will provide the test reports digitally to the patient and the doctor. The reports will be stored so that in future the doctor can easily look up the past reports about the patient. Doctors may even provide online consultancy. The reviews of patients about a doctor will also help others to choose a doctor. Not all doctors place priority on making their patients feel valued. More importantly, not all doctors follow standards and professional guidelines. Here the main focus is towards makings things digital so that the works of a doctor are easier and also the patient can get services quiet easily.

Acknowledgment

First of all, we would like to express our deepest indebtedness and gratitude to the most powerful, gracious Almighty Allah for giving us knowledge, energy, and patience for completing the project work successfully. We are very much grateful tomy project supervisor **Md. Mahfuz Reza, Associate Professor, Departmentof Computer Science and Engineering, Mawlana Bhashani Science and Technology University (MBSTU),** for his continuous guidance, valuable suggestions, constructive comments and endless encouragement throughout the research work and the preparation of this project.

We are indebted to our mates, who are engaged in various analyses as theycontributed a lot to form this project.

In addition, thanks to those who helped me directly and indirectly during the different stages of the present project work.

Finally, we record with deep appreciation the patience, understanding, and encouragement shown by my parents, teachers, and friends throughout the period ofmy study.

Preface

This project includes nine chapters which are briefed as follows:

Chapter-1

Chapter 1 provides the introduction of the system we designed. It describes whatthe system intends to do.

Chapter-2

Chapter 2 provides the project definition and requirement analysis of the system.

Chapter-3

Chapter 3 discusses the object oriented design of the whole system.

Chapter-4

Chapter 4 discusses about the technical tools of the system.

Chapter-5

Chapter 5 provides a detailed discussion based on the testing, security and maintenance of the system.

Chapter-6

Chapter 6 provides in detailed the project features and functionalities.

Chapter-7

Chapter 7 discusses about the limitations, future scopes and conclusion of the project.

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Chapter 1

Introduction

1.1 Project Definition

Get your doctor (GYD) is an online platform for getting various medical help. It will help people to find a platform where they can easily find appropriate doctors according to their affordability, nearest location, experiences it will be beneficial for a lot of patients. The reviews of patients about a doctor will also help others to choose a doctor. Not all doctors place priority on making their patients feel valued. More importantly, not all doctors follow standards and professional guidelines.

1.2 Project Purpose

Though the choices of healthcare are highly personal, most would like to agree that excellence and expertise in medical care is very important. For patients visiting doctors and healthcare specialists, the value of receiving first-class medical care is usually measured in the quality of the treatment, in a longer life span and also in a financial outlay that is anchored on affordability.
The objective of this project is to provide an user friendly platform that will be beneficial to the patients to find a doctor according to their need.

1.3 Project Scope

This project application will help the users to get multiple medical help from one site.
Here, the scopes of our website are given below:

- List of doctors: An ordered list of doctors sorted by various important factors.
- Expertise of doctors: Field of speciality and academic information along with the range of experience of any doctor will be visible to the users.
- Guest users: It's not mandatory to have an account to search for medical help,it will significantly reduce the hassle in emergency time.
- Privacy: The privacy of the users are well maintained.

1.4 Requirements

For creating this application some requirements are needed. We provide these requirements in three parts these are:

- Project Requirements
- Software Requirements
- Hardware Requirements

1.4.1 Project Requirement

- Complete ERD (Entity Relationship Diagram)
- Complete Interaction Diagram
- Complete source code and run files for the front end and back end
- Complete database re-generation script.

1.4.2 Software Requirement

- Framework: Express JavaScript.
- Language: JavaScript.
- Database: MongoDB.
- Web design: HTML, CSS.
- API: Third-Party API.

1.4.3 Hardware Requirement

- CPU: Pentium 4 or upper version.
- RAM: 2GB or upper.
- HDD: As much as large so that stores a large amount of data.

Chapter 2

Project Definition and Requirement Analysis

The main objective of this project is providing a platform that is user friendly and that will be beneficial to the patients to find a doctor according to their need. They can get proper information to select a proper doctor according to their affordability, time, experience, review etc. This will also save patients' valuable time. Once patients have a list of available physicians, they can narrow the list even further by filtering doctors by characteristics important to them.

2.1 Project Goals

The objective of this project is to provide an user friendly platform that will be beneficial to the patients to find a doctor according to their need.

- To reduce manual appointment.
- To provide a user friendly interface for users.
- To make reduce paper work.
- To make efficient online consultancy.

2.2 Advantages of this System

In this application, there are some special advantages that are improving the drawbacks of the existing manual system. These advantages are below:

- **Save Times:** The application will be saving valuable time. Users can find doctors very easily and the further steps are very user friendly.
- **Dynamic Process:** It is a dynamic process. The user can visit the site without login but if anyone wants to make an appointment must login if they have an account otherwise they must sign up. Every admin module works in this application dynamically for admin if he login once.

- **Security:** It is a very secure application. The admin must log in first for using the models of the application. Here every admin is verified through the email validation by admin.
- **Flexibility:** This application system is flexible for all users. It is very much user-friendly. An authorized admin can use this application very easily for adding new items and order management.

2.3 System Analysis

The general organization of the system and its specifics are described in this section. This section defines the number of layers in client-server technology. In this phase, the tiers required for package architecture, database design, data structure design, etc. are clearly defined. A very important component of managing the entire development cycle is analysis and design. Any flaw discovered during this phase of software development could be costly to fix later.

A user interface is a crucial component of a system that people interact with. It contains screen displays for system navigation, screens and forms for data collection, and the reports the system generates.

2.3.1 Analysis Model

This document is essential to the software development life cycle (SDLC) since it outlines all of the application's requirements. The construction codes that are applied to structures throughout the load combination procedure are also discussed. It is utilized for both design and load-bearing and structural behavior analysis. It will serve as the fundamentals throughout the testing process and is intended for usage by developers. Future requirements modifications will need to go through a formal change approval procedure.

For iterative development, the SPIRAL MODEL was recommended. The spiral model was the first to describe and state the importance of iteration models, not the first to introduce iterative development.

A simple iteration model normally takes three to six months to complete. The analytical process comprises multiple stages. The defined target for a particular demand is the first phase, and the client's revision of the current state of development is the second. The project's aim guides each step. At each stage of the project, efforts are made in the engineering and analysis parts to improve the overall competence of the development process.

The basic steps for the Spiral model can be refactored as follows:

- A proper definition of system requirement is required for continuing the process. The entire external user or internal user is involved in the aspect of a system module for representing the required module.
- For the system, a predefined task or procedure is created.
- From requirements construction of the design process is the first prototype. It is the scaled-down process, that process to the final module.
- The fourfold procedure is the second prototype and important part.
- With the analysis of strength, weakness and risk estimate the 2nd prototype.
- Planning based on analysis applied for designing this prototype.
- Implementing and testing the whole module.
- If the risk is too high then the customer may abort the process and the project may go to the dark. The risk is an important factor in the prototype analysis and estimation of the whole process. The project success rate extremely depends on it.
- The project prototype carries out such a way that all steps are successfully finished. After a successful prototype, the second prototype may start and it will follow and maintain the same procedure.
- Without customer satisfaction, the project has no meaning. After the customer's approval, all the process indicates full gain with the refactoring risks.
- After finishing the implementation, testing the final system is a thoroughly evaluated process. The routine maintenance and scaling is also part of the project structure.

2.3.2 Graphical User Interface

The interface was created with a graphical idea in mind, connected through a web interface, in order to maximize the flexibility of uses. A GUI is a software interface that makes use of the visual capabilities of the computer to make the application easier to use. Many users discover they are more productive. The top-level GUIs have been classified as

- Administrative user interface
- The operational or generic user interface.

In order to collect accurate data, the administrative user interface focuses on consistent data that is practically a part of organizational operations. Along with powerful data search features, the interface supports administrators with transactional states including data insert, delete, upgrade, report, and helpline for users.

The system's generic user interface assists users in transactions by providing them with the necessary data and services.

2.3.3 Modules

After finishing this application it has been identified to be presented with the following modules. Modules are divided into two parts. In this application, we have a user module and an admin module.

√ User Modules

- ➢ To search a specific doctor.
- ➢ View available doctors.
- ➢ Find doctors according to category.
- ➢ See patient details.
- ➢ Provide Prescriptions.
- ➢ Get Test Reports
- ➢ Login/Sign up.
- ➢ Online Consultancy.

√ Admin Modules

Admin has overall control of the system.

- ➢ View hospital and doctor lists.
- ➢ Manage hospital and doctor list.
- ➢ Database management.
- ➢ Add a new catagory.

2.4 System Planning

Application of knowledge, expertise, tools, and techniques to project activities in order to meet project requirements is known as project planning. Execute and assess feasibility studies for the project, including cost-benefit analysis, technical feasibility, temporal feasibility, and operational feasibility. PERT charts should be used to create the project schedule.

To determine if the suggested system is practical for the business, a feasibility study is conducted. If the feasibility study is to be used as a decision-making tool, it must respond to three crucial point:

- Finding better way to do the job that will benefit the user.
- Cost and the savings of the alternatives.
- Recommendations.

2.5 Feasibility Study

A feasibility study evaluates and analyzes the project's potential using in-depth inquiry and research to provide decision makers with all the information they need. The goal of a feasibility study is to logically and objectively identify the advantages and disadvantages of a planned or current business initiative, as well as the possibilities and risks given by the environment, the resources needed to move forward, and finally, the likelihood of success. The cost necessary and value to be realized are, in the simplest terms, the two factors used to assess feasibility.

The historical context of the company or project, a description of the good or service, accounting statements, information on the operations and management, marketing research and policies, financial data, legal requirements, and tax obligations should all be included in a well-designed feasibility study. In general, feasibility assessments come before project implementation and technological development.

2.5.1 Technology and System Feasibility

The assessment is based on an outline design of system requirements, to determine whether the company has the technical expertise to handle the completion of the project. When writing a

feasibility report, the following should be taken into consideration:

- A brief description of the business to assess more possible factor/s which could affect the study.
- The human and economic factor.
- The possible solutions to the problems

At this level, the concern is whether the proposal is both technically and legally feasible (assuming moderate cost).

2.5.2 Operational Feasibility

Operational feasibility is a metric used to access how successfully a proposed system address Issues, seizes opportunities and complies with requirements found during the requirements.analysis stage of system development.

The operational feasibility analysis examines how well the planned development projects mesh with the goals of the current company environment and development schedule, delivery date , corporate culture and existing business process.

2.5.3 Economic Feasibility

The purpose of the economic feasibility assessment is to determine the positive economic benefitsto the organization that the proposed system will provide. It includes quantification and identification of all benefits expected. This assessment typically involves a cost/ benefits analysis.

2.5.4 Technical Feasibility

The technical feasibility assessment is focused on gaining an understanding of the present Technical resources of the organization and their applicability to the expected needs of the Proposed system. It is an evaluation of the hardware and software and how it meets the needs ofThe proposed system.

Chapter 3

Object Oriented Design

3.1 Design Specification

A System block diagram describes a series of activities that interprets how modules of software work. A data flow diagram describes how the task of software flow among resource find the machine or user uses the application software for software development, a data flow diagram is a portrayal of series of some steps a process that must be executed.

3.2 Use Case Diagram

The use case is used in system analysis to identify, clarify and organize system requirements. A use case diagram one kind of flow chart instinctive symbols represents the system elements which are like an actor, usecase, the association includes relationship.

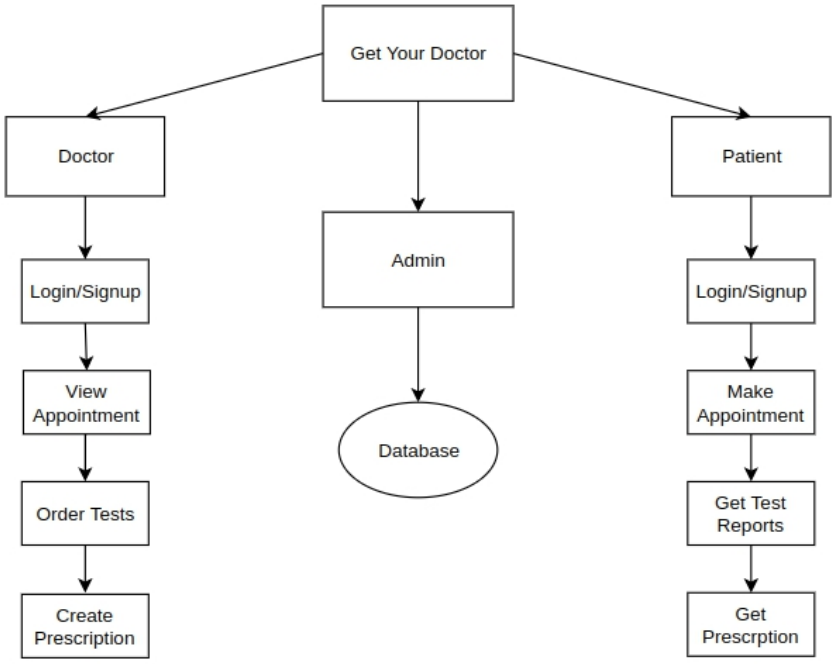

Figure 1 : Project Flow Chart

The Front end users will have following features

- **Sign in**
- **Log in**
- **Log out**
- **Make an appointment**
- **Doctor Lists**
- **Hospital Lists**
- **Get Prescriptions**
- **Order Tests**
- **Get Test Reports**
- **Patient Lists**
- **Admin (Hospital)**
- **User (Patient, Doctor)**

Figure 2 : Design Specification

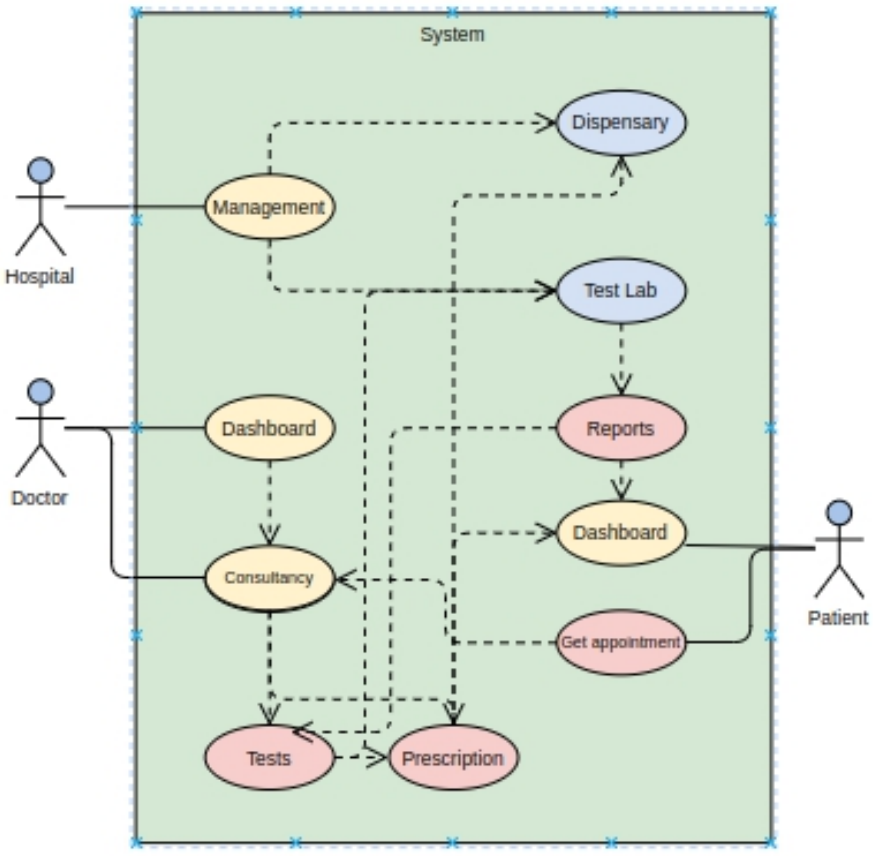

Figure 3: Use case Diagram

Chapter 4

Technical Tools

4.1 Visual Studio Code Editor

Microsoft originate the source-code deskman VS Code for Windows, Linux, and macOS. Unscramble support, formulation highlighting, intelligent code accomplishment, snippets, code editing, and non-discriminatory Git are among the attributes.

4.2 Express JavaScript Framework

Express is a minimal and flexible Node.js web application framework that provides a robust set offeatures to develop web and mobile applications. It facilitates the rapid development of Node basedWeb applications. Following are some of the core features of Express framework

- Allows to set up middleware's to respond to HTTP Requests.
- Defines a routing table which is used to perform different actions based on HTTP Method and URL.
- Allows to dynamically render HTML Pages based on passing arguments to templates.

4.3 Postman

Postman is an API client that makes it creating, sharing, testing and document APIs easier for developers. This is done by allowing users to create and save simple and complex HTTP/s requests, as well asread their responses. The result - more efficient and less tedious work.

4.4 MongoDB/ MongoDB Atlas

MongoDB is a database program which is source-available cross-platform and document-oriented. It is Classified as a NoSQL database program, MongoDB generally uses documents which are JSON-like with some optional schemas. MongoDB Inc has developed MongoDB.

4.5 React JavaScript Library

ReactJS offers elegant solutions to front-end programming's many persistent issues, allowing you to create web apps easily which are dynamic and interactive. It's fast, scalable, adaptable and has a strong developer community that is growing rapidly.

4.6 Node JavaScript

One of the most widely used programming languages is JavaScript. Professional developers have been found to most frequently employ the robust Node.js runtime environment. An event-driven JavaScript runtime is Node.js. Node is a fantastic environment for developing effective network applications, among its many other potential uses for JavaScript development.

4.7 Languages

1. JavaScript: A spirited programming language is invoked JavaScript. Its administration qualify client-side script to interconnect with users and added dynamic pages, and it is most again and again used as a section of web pages. It is an oop language that may be interpreted. initially known as Live maniscript, JavaScript was renamed to JavaScript by Netscape, maybe in answer to the buzz that Java was bring about. Under the term Live maniscript, JavaScript initially appeared in Netscape 2.0 in 1995. Netscape, Internet Explorer, and other web browsers all contain the general-purpose language's core.

- JavaScript is a insubstantial, interpreted programming language.
- Designed for creating network-centric applications.
- Complementary to and consolidated with Java.
- Complementary to and consolidated with HTML.
- Open and cross-platform

2. HTML: The common markup language for texts wanton to be viewed in a web browser is invoked Hypertext Markup Language (HTML). Technologies like (CSS) and programming languages like JS can help.HTML documents are computerized from a web store or local

storage by web browsers, who then move them into multimedia web pages. HTML at first featured cues for the document's design and explanations explains the structure of a web page. HTML permits for the insertion of scripts put down in scripting languages like JS that adjust the appearance and delighted of web pages. The style and layout of delighted are determined by the use of CSS. Since 1997, the World Wide Web Consortium (W3C), which earlier on oversaw the HTML pennon and now oversees the CSS standard, has pushed for the usage of CSS rather than clear-cut presentational HTML.

3. CSS: A style sheet language called Cascading Style Sheets (CSS) is accustomed to describe how a content produced in a markup language like HTML is hand over. The World Wide Web's basement technologies, along with HTML and JS, include CSS.

Layout, color, and font may all be isolated from text and donation using CSS. By specifying the pertinent CSS in a separate.css file, this separation can make the content more accessible, give the specification of presentation characteristics more flexibility and control, allow multiple pages to share formatting, and reduce complexity and repetition. The ability to offer the same HTML page in many styles for various rendering techniques, such as on-screen, in print, via voice (through speech-based browser or screen reader), and on Braille-based solid devices, is also made feasible by the detachment of formatting and document. If a user accesses the tactual on a mobile device, CSS furthermore provides rules for not common formatting.

When many style rules match an factor, the priority system is accustomed to determine which rule should be applied, hence the name cascading. This system of cascading priorities are predictable.

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Chapter 5

Testing, Security and Maintenance

5.1 Methodology used for testing

Completion of a web-based application will achieve its fulfillment only after it has been thoroughly tested, it makes a feeling that the project of this application is completed, the project cannot go through without this stage. Actually, in this stage, we can decide whether the project is able to run in real-time environment execution without any breakdowns.

5.1.1 Testing methods

Software testing methods are traditionally divided into two methods which are black-box testing and white box testing. These two methods are used to describe the testing results from the point of view of those methods.

5.1.1.1 Black box testing

In black-box testing the whole software is tested as a black box without any knowledge of the internal implementation. Black box testing methods are a combination of some methods which are given below

- Equivalence partitioning
- Boundary value analysis
- All pairs testing
- Fuzz testing
- Model-based testing
- Traceability matrix
- Exploratory testing
- Specification-based testing

5.1.1.2 White box testing

When tester access to the internal data structure and algorithm white box testing works as a contrast to black-box testing. The white box testing method is also used for evaluation as the completeness of the test suit that was created with the black box testing. The software team is allowed to examine all the parts of the software and ensure that the most important functions have been tested. There are some other methods outside of these traditional testing methods. These are

- Gray box testing
- Acceptance testing
- Regression testing
- Non-functional testing

Using this testing varied on software companies or the market of the software.

5.2 Security

The project contains a high level of security as a software system required. The digitalization of the system has two types of users as clients and admin with their personal securities. Anyone without mail authentication can't use any secure operation in this application. No user can't edit a system database or system except his own changeable information like name, password, etc. Admin can't access or edit users' personal information.

5.3 Maintenance

When we start to complete the software development life cycle we find a stage called software maintenance. Software maintenance is a term used in software engineering when the software is delivered like correction, bug fix, performance increase. Software is applying based on the real world. So when the real world changes we need to change the model of software. There are multiple reasons that software might need maintenance. Client needs, host needs, organization structure change or even the need to reset the software to the initial condition it was. So the main purpose of software maintenance is to correct faults after delivery and update software applications when demand is changed based on the real world. Improving performance or other

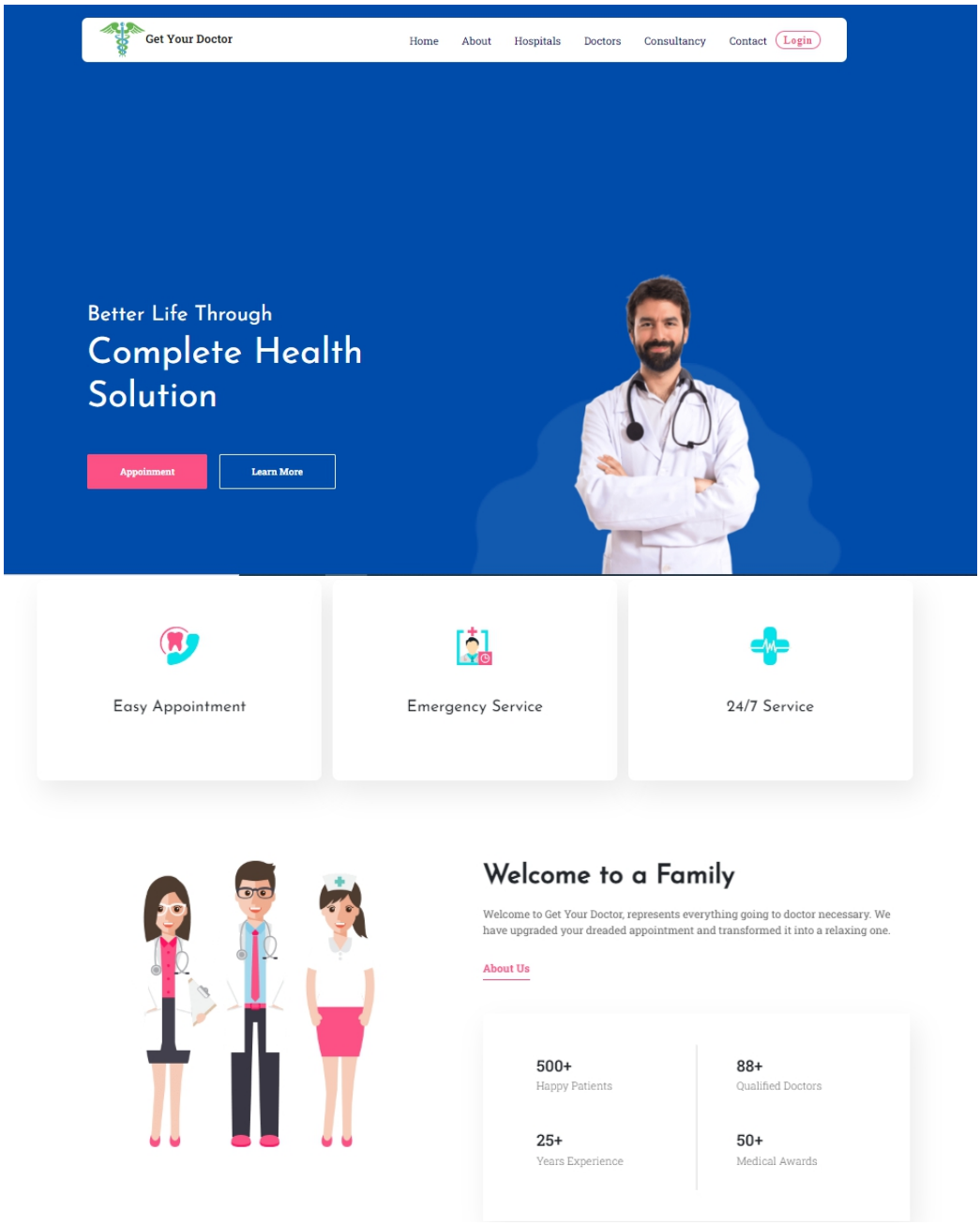
attributes is also part of software maintenance. Software maintenance could differ in many ways. Based on the size and the nature of maintenance there are four types of maintenance.

- **Corrective maintenance:** Ideals with a simple bug fix, spelling check or modification requested in a user report.
- **Adaptive maintenance:** It may conclude system upgrades or keeping the software up to date with the latest features and trends.
- **Perfective maintenance:** This might be related to a new feature upgrade, keep the software usable or scale the software for new users.
- **Preventive maintenance:** It ensures the safety of the software in the future. Some modifications aren't necessary for the present condition but could be a bigger problem for some modification or maintenance that might be necessary.

Chapter 6

Project Features and Functionalities

6.1 Home Page User Interface



This the user interface of the home page.

Figure 4: Home page user interface

6.2 Find Doctors by Category

To find the doctors according to category. Clicks the specific category to find that specialist doctor.

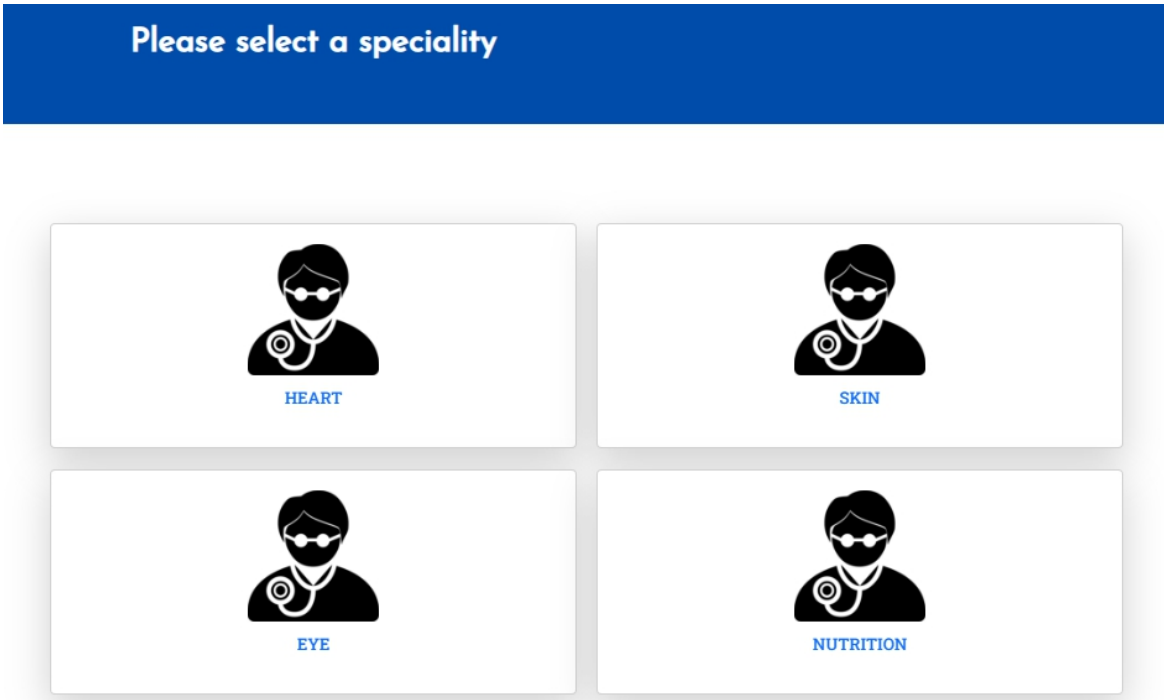


Figure 5: Doctor catagory user interface.

6.3 Doctors

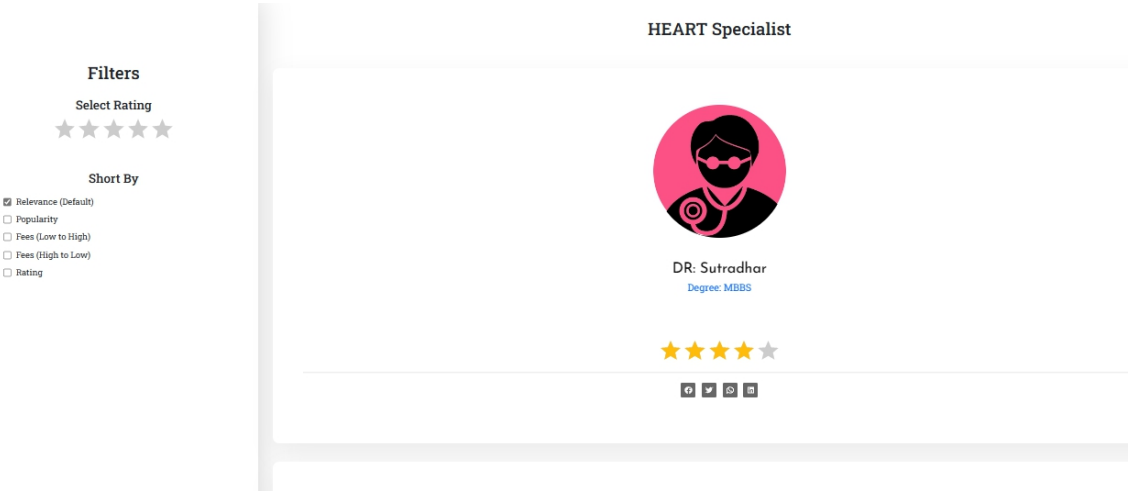


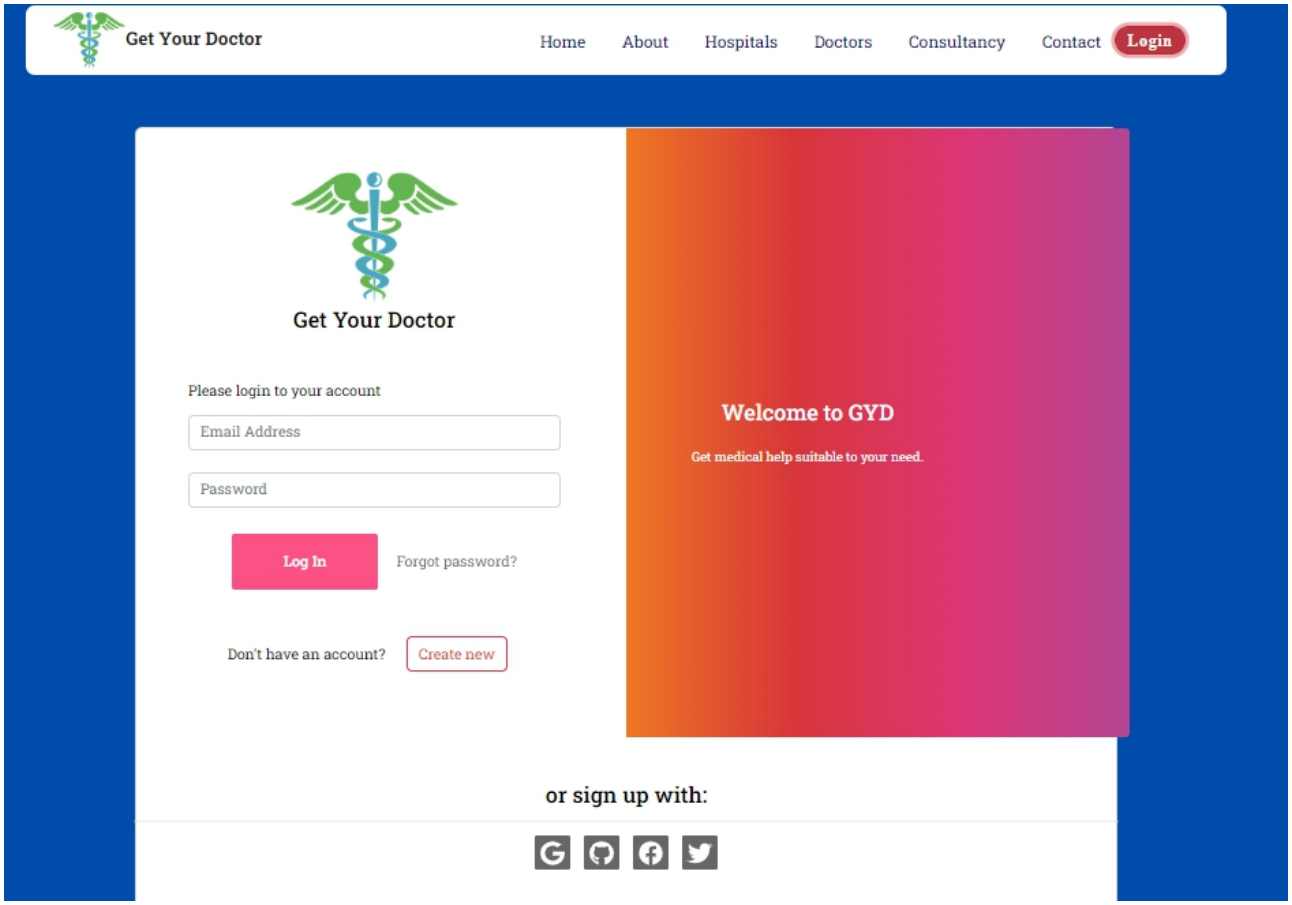
Figure 6: List of doctors.

6.4 Hospitals

List of hospitals.

Figure 7: Hospital page user interface

6.5 Sign In Sign Up



A user will log in if he has a registered account otherwise he must create new account.

Figure 8: Sign in sign up user interface

6.6 Patient Registration

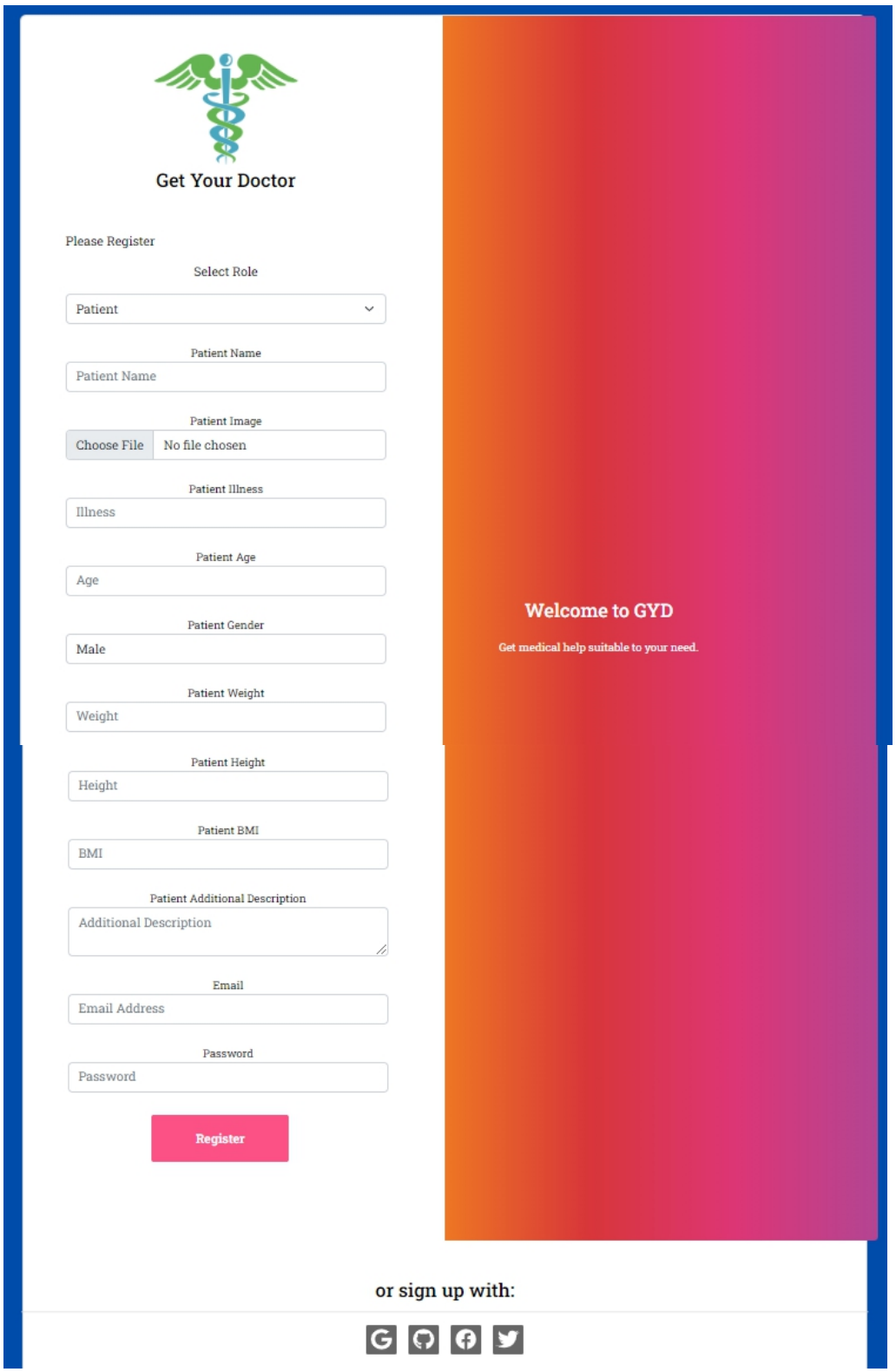


Figure 9: Patient registration interface

6.7 Doctor Registration

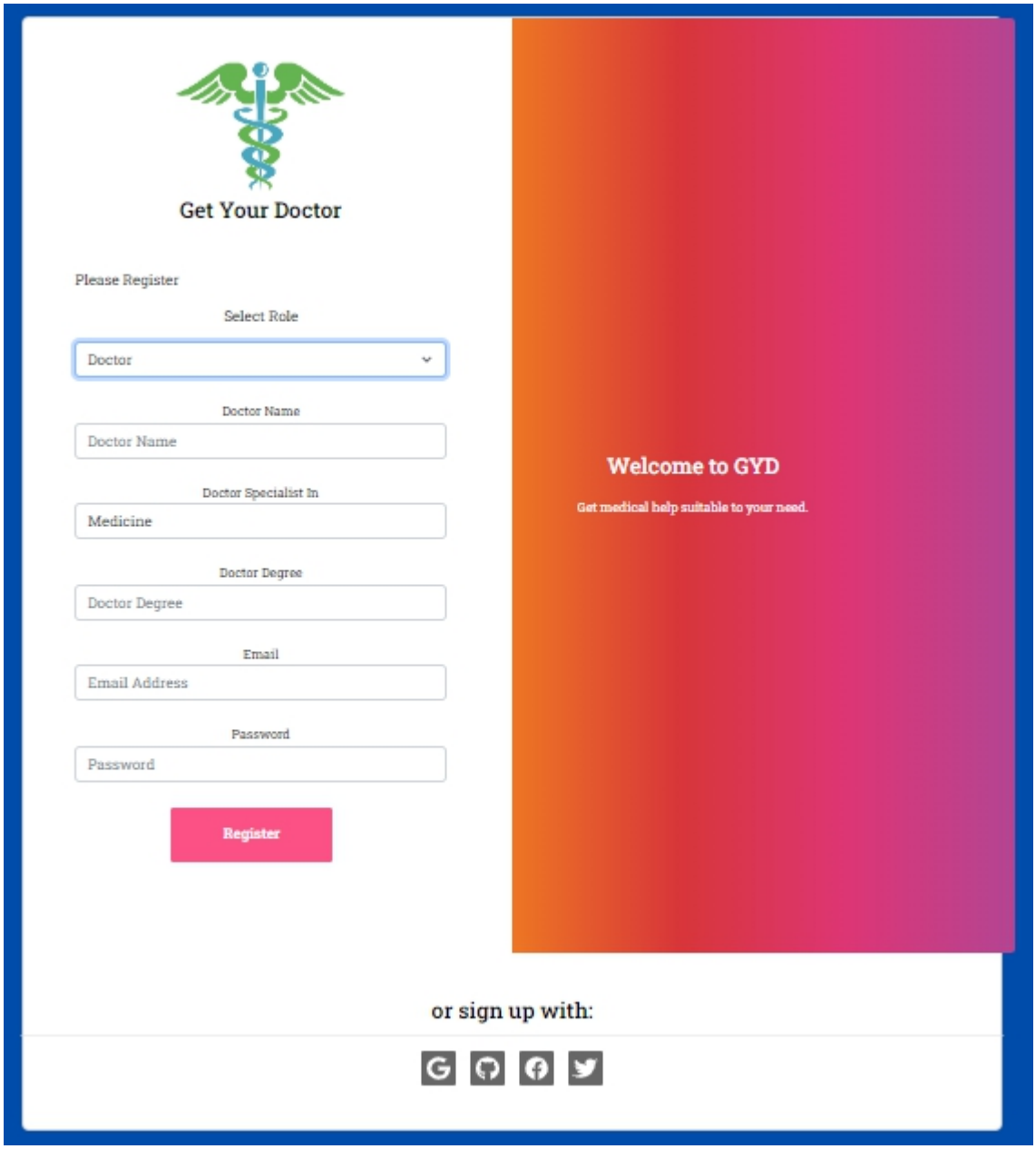


Figure 10 : Doctor registration interface

6.8 Making an Appointment

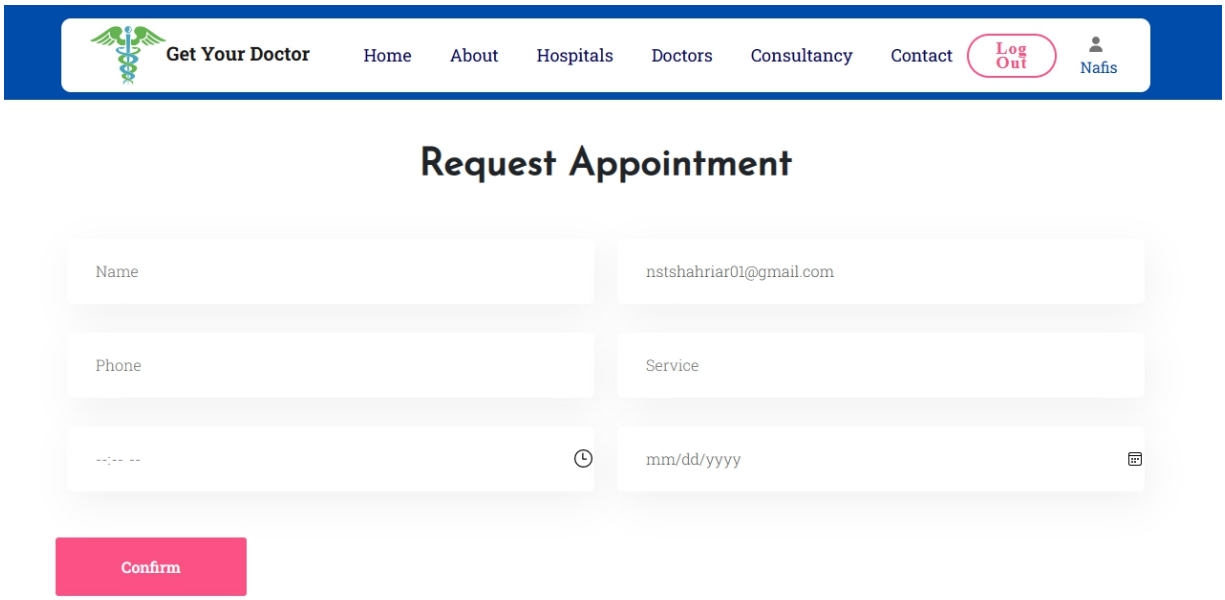


Figure 11 : Appointment page user interface

6.9 Prescriptions

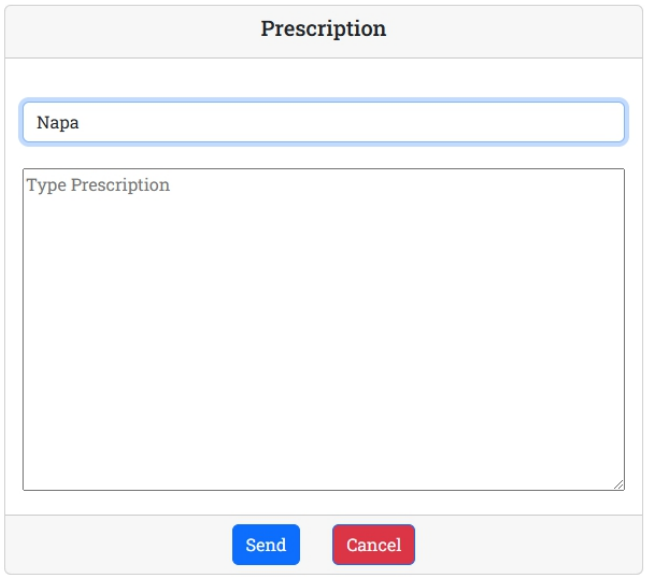


Figure 12 : Making Prescription.

6.10 Tests

The doctor will send the required test lists to the hospital and the patient. The hospital will send the reports to the doctor and the patient and store it to the database.

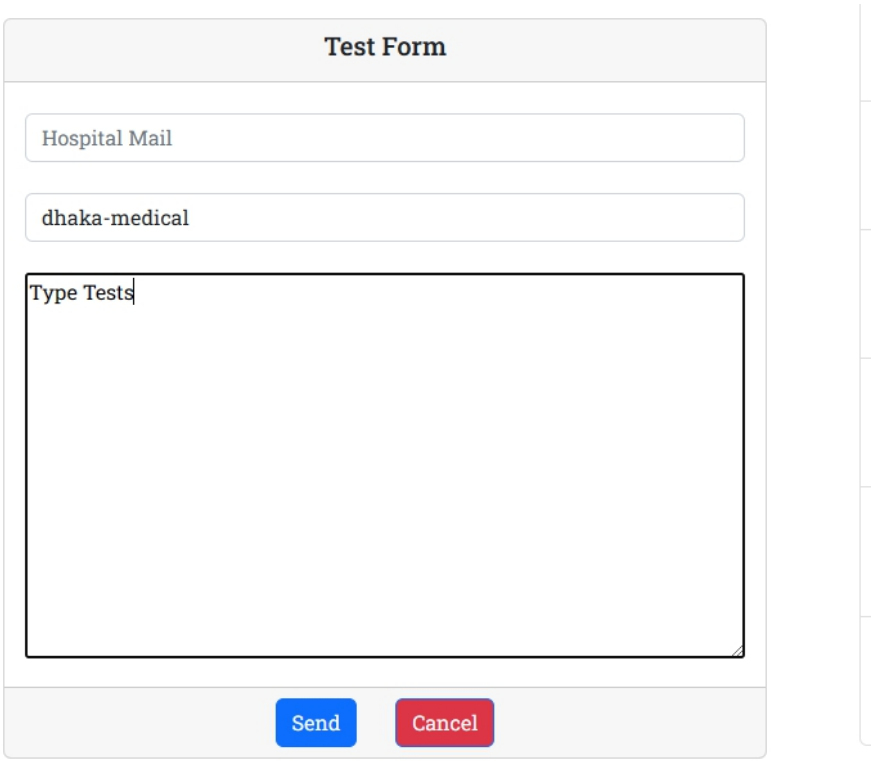


Figure 13 : Ordering Tests

Chapter 7

Limitations, Future Scope and Conclusion of the project

Limitations

Throughout our research with the topic, a few areas were overlooked. Some of those limitations can be pretended as follows:

- The payment process is done manually.
- Although it is responsive but web version.
- Mechanical failure can cause unpredictable effects on the total process.
- No one can make an appointment during a site crash.

Future Scope

- Payment gateway API will be added to get more payment gateway options and payment processes dynamically.
- The idea of entering the global market place by performing search engine optimization (SEO) on this project can be considered.

Conclusion

The goal of this project is to build a software which is capable of providing necessary medical help in any emergency situation.

It will reduce the barrier of distance of time significantly. At the same time, doctors will be able to engage with people from different backgrounds easily which will be beneficial in gathering more diverse experience.

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