

# **Online Medical Services System**

**BY**

**MD. MOSTAFA KAMAL  
ID: 161-15-6765**

**MD JAMAL UDDIN  
ID: 161-15-7494  
AND**

**MD. MEHEDI HASAN  
ID: 161-15-6892**

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

Supervised By

**MD ZAHID HASAN**  
Assistant Professor  
Department of CSE  
Daffodil International University



**DAFFODIL INTERNATIONAL UNIVERSITY**

**DHAKA, BANGLADESH**

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## **APPROVAL**

This Project titled “**Online Medical Services System**”, submitted by Md Mostafa Kamal, ID No. 161-15-6765, Md Jamal Uddin, ID No: 161-15-7494 and Md Mehedi Hasan, ID No: 161-15-6892 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 05 December 2019.

## **BOARD OF EXAMINERS**

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**Dr. Syed Akhter Hossain**  
**Professor and Head**

Department of Computer Science and Engineering  
Faculty of Science & Information Technology  
Daffodil International University

**Chairman**



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**Saiful Islam**  
**Senior Lecturer**

Department of Computer Science and Engineering  
Faculty of Science & Information Technology  
Daffodil International University

**Internal Examiner**

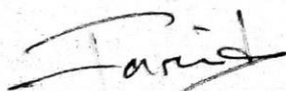


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**Shaon Bhatta Shuvo**  
**Senior Lecturer**

Department of Computer Science and Engineering  
Faculty of Science & Information Technology  
Daffodil International University

**Internal Examiner**



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**Dr. Dewan Md. Farid**  
**Associate Professor**

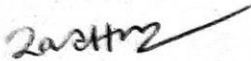
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United International University

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## DECLARATION

I declare that this project has been done by me under the supervision of **Md Zahid Hasan, Assistant Professor, Department of CSE, Daffodil International University**. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

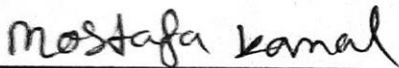
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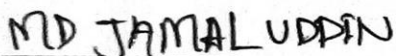
**MD Zahid Hasan**  
Assistant Professor  
Department of CSE  
Daffodil International University

**Submitted by:**



---

**Mostafa Kamal**  
ID: -161-15-6765  
Department of CSE  
Daffodil International University



---

**Md Jamal Uddin**  
ID: -161-15-7494  
Department of CSE  
Daffodil International University



---

**Md. Mehedi Hasan**  
ID: -161-15-6892  
Department of CSE  
Daffodil International University

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Finally, we would like to thank our entire course mate at Daffodil International University, who took part in this discussion while completing the course work.

## **ABSTRACT**

These are on the "Online medical services system". This project easily treatment patient by use in online, Because of online collaboration and tremendous use of information technology makes this project, especially in rural areas, people get better treatment by a specialist doctor. Sometimes many patients suffer have no proper treatment this platform more than a little bit solves this problem. In the world day by day, people face new disease especially in rural areas, people do not have better treatment because of no specialist doctor, there has no lot of money, traffic jam one of them. This project Tries to solve the problem. There are many other Online Medical Services System sites online, our project is totally focused on the perspective of Bangladeshi users. This system, we are going about to develop such an online medical services system for development and focus on whom easily to the user in our country. Especially we try to connect rural areas face to face. The design of the proposed system was done as per the user requirement. Online Medical services system was tested for different functions and find satisfactory. In near the future, we will try the system that will be connecting for smartphone users. As like the android and ios app platform.

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# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

The online medical service system is an online base medical site here people appoint their best doctors online. Doctor and patient talk with video chat and real-time messaging systems. It is a freelancing website for a doctor. People can get medical-based info here within a second as like medical info, hospital info, blood info, etc.

### 1.2 Objectives

The main goal of the online medical service system is easily connected with the patient and doctors. In rural or village, people will be easily connected to the country's best doctor. so it will be time-consuming.

### System Goals

- Online appointment
- Discuss with video chat
- Discuss with messenger
- Online prescription
- Patients previous history
- Medicine sell
- Blood bank info
- Hospital info
- Ambulance service

### 1.3 Motivation

Now a day all the world depends on technology. Technology is very effective in all sectors. But our country's medical sector isn't properly digitalized. So our plan people can get medical-based all info in one place. This will be trustful among people. Our slogan is “ **A project for Bangladesh**”.

## 1.4 Expected Outcome

This project main feature connected doctors and patient. It's online appointment and medicine sell (e-commerce ). Doctors and patient information are secure & protected.

- Online appointment and talk with doctors with video chat
- Buy medicine from city town like ( Dhaka, Rajshahi, bogura, etc). Delivery on time.
- Get doctor info that is trusted and verified by team
- Hospital info, hospital open our, their info ( address, phone no), and their expert doctor list.
- Show medicine info and practical details
- Blood bank info and easily contact with a blood donor.
- The doctor can income on their free as freelance work.
- Ambulance service ( upcoming )

## 1.5 Report Layout

Now our govt is very positive in the ICT sector but the medical sector just touches online-based service. So we will work this project for our country people. This project will be developed with advance technology as like Vue, Nuxt, WebRTC, Socketio, laravel, rest API and so on. This website will be dynamic and SPA(Single page application ) and SSR ( Server Side Rendering) which be SEO friendly. And use also is a connected database and design front-end, user-friendly.

## CHAPTER 2

### BACKGROUND

#### 2.1 Introduction

When we are beginning to make this project "Online Medical Services System", we did a high study about its background. Then gather information we are divided into different sectors and draw this project. Finally, we are implementing step by step and make a web-based project. Every section builds a new feature and also make User-friendly design. This sector show project background related work.

#### 2.2 Related work

The online medical service system is a web application who is used to every people in our country. Especially rural areas people need very much and also need doctors for this application. These working doctors and patients one to one connect both of them. This section show background related work.

##### 2.2.1 Grameenphone Tonic

Tonic is an online Health services system but has some limitation services. Tonic is a digital healthcare service for Grameenphone customers.

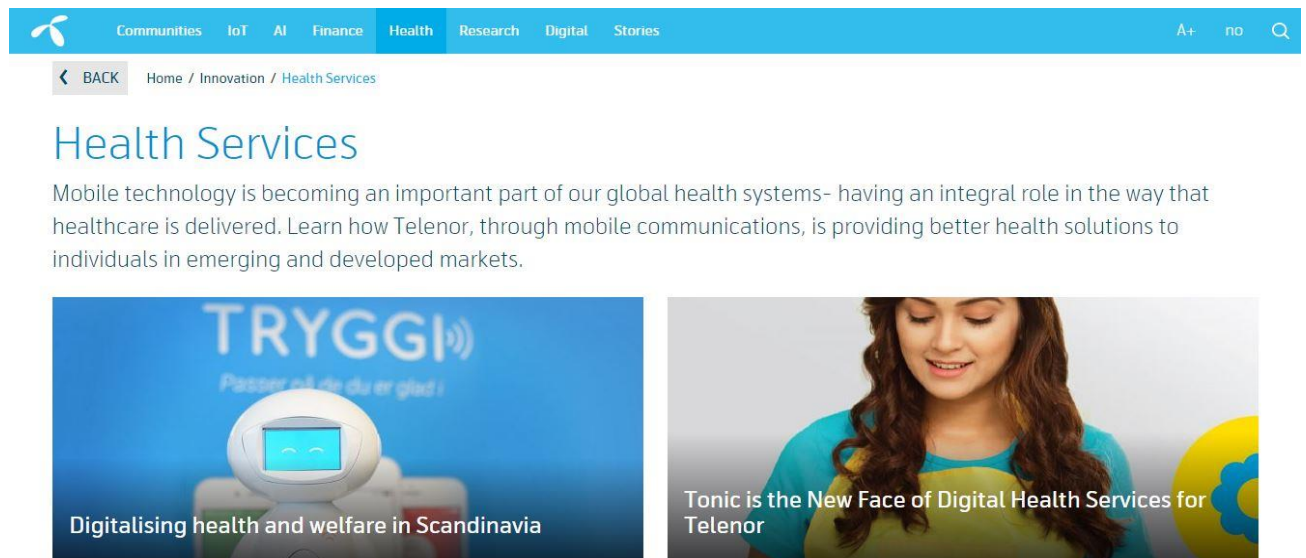


Figure 2.1: Tonic services site

Using mobile communication and information technology Tonic will be an easily accessible healthcare service. But has limitation services tonic. No video calling, No live doctors tips. This is the application of a mobile tip that has some services shown below [1].

## Features

1. Given some tips
2. Services Provide Customer care.
- 3.No connect Doctors and patients.

### 2.2.2 Doctorola

Doctorola is an online medical services system but has some limitation fracture. This web application has some features shown below picture [2].

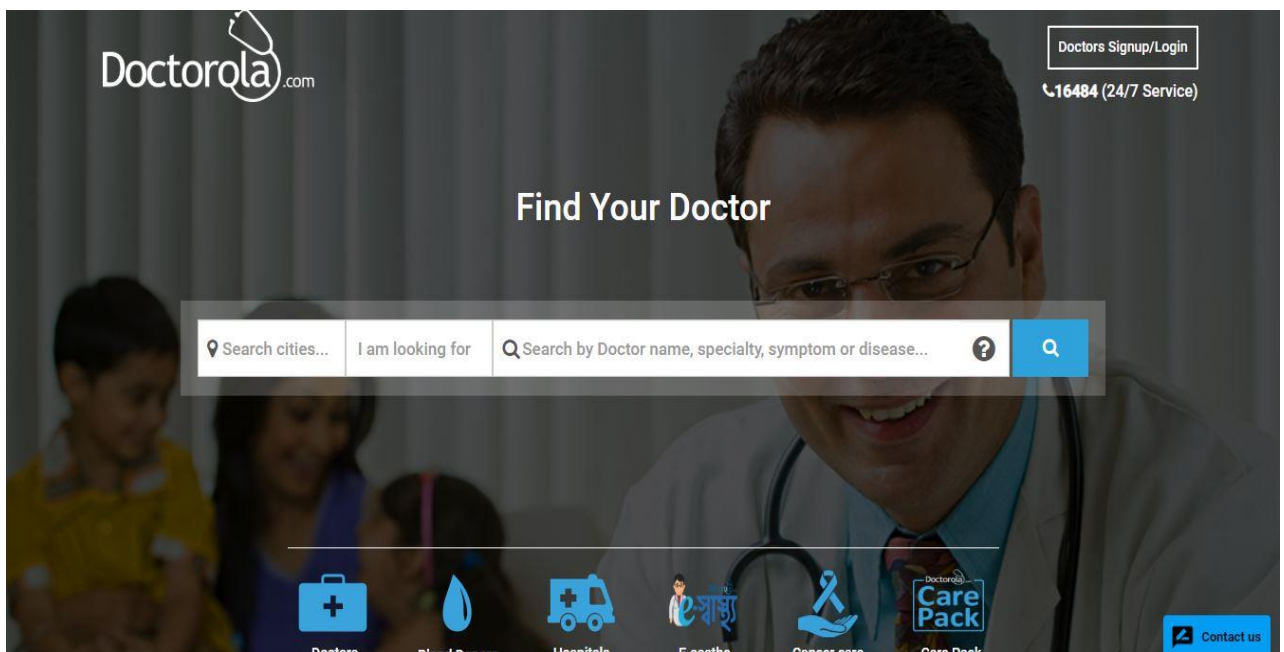


Figure 2.2: Doctorola site

## Features

1. Hospital services.
- 2.E-health services.
3. Blood Donors.
- 4.Cancer Care.

## **2.3 Comparative Studies**

Tonic and Doctorola online health service site. Tonic very limit services provide patients. No videos calling system, No ambulances services. Doctoral also provides limit services. No provides pharmacy information. No video calling doctor and patient [1].

Those site has partial service as like online doctor, online appointment. But Our site is all in one. People get medical-based all info just a moment. The patient can appoint country best doctors and get the suggestion, prescribe via video call and real-time messaging [2].

Medicine e-commerce system people can buy medicine at a cheap price because we collect medicine from pharmaceutical. People can get home delivery within a day inside Dhaka and outside of Dhaka, they can get within 2day on a fixed point stall or place.

People can get most of the blood bank, social blood group information, and contact number. They can also find available donor nearest their city or town.

People can know Hospital open hours, doctor lists and hospital reviews, and other info from our site.

Ambulance services get patient on area. When a patient needs an ambulance.

Video tips from an expert doctor given in every week. The patient knows many tips on this site. The patient can do comment on live video what he wants to know.

## **2.4 Scope of the Problem**

1. The emergency patient manages a seat in the hospital.
2. Protect this web application hacker and crackers.

## **2.5 Challenges**

### **Many Patients handling**

At one-time many patients and doctors interconnection. Then live chat, appointment accepts, Video calls handling, payment conformation and provides a prescription. Also, be

provides medicine who needs. Sometimes the ambulance arrangement finds out the patient's condition which needs this. Doctors' and patients' satisfaction acquire.

### **History allocation**

Doctors and patient previous chat, prescribe medicine file. Which doctors provide the patient. Quality Doctors list and patient Reviews also be allocated.

### **Payment gateway**

Payment gateways are a challenge for this project. Most of the gateway charge is a minimum of 2.5% .

### **Verify doctor**

Another challenging part is doctor verification. So need doctor info from doctor association within their API. This is very difficult to collect their API if govt can't give permission.

## **CHAPTER 3**

### **Requirement Specification**

#### **3.1 Business Process Model**

Our project is a business based model will be patient appointment and treatment charge fee dependent provides the license. We provide many offers on different occasion. As usually EID, Durga puja, New Year, Independent Day, International Mother language Day and so on. Another Discount we provide poor people and old people. Our offers Range 5-100%. Especially the Rural area people living in below poverty we are focused on this and give them especially discount. We ensure well treatment finds proper time this site. Also, provide discounts offers non-profit organizations as usually orphans, student, and Teachers. Another thing is that we provide ambulance services and medicine home delivery services. We are provided with a discount offer for both of its. Also, Arrange Blood donation and free blood checking. Online medical services system organize many events in different occasion. It includes our business policy.

#### **3.2 Requirement Collection and Analysis**

When we are starting this project first analysis and fill up requirements. Then we complete this project.

1. Used Coding: The fundamental requirements of our project needs know coding .HTML, CSS,SASS (.scss),Vue.js,Nuxt.js,webRTC ,socket.io,Laravel,RESTful API ,Jwt token, JavaScript, PHP, MySQL, jQuery, Ajax and so on.
2. Tools and compiler: Atom, chrome, sublime text and wamp server.

#### **3.3 Use Case Modeling and Description**

Unified Modeling Language (UML), This is a use case diagram that can summarize the details of the system's users (also known as actors) and their interactions the system [3].

1. Use case diagram Scenarios in which user system.
2. Use case Diagram goals that the user system or application help those entities (known as actors) achieve

## Login for Patient

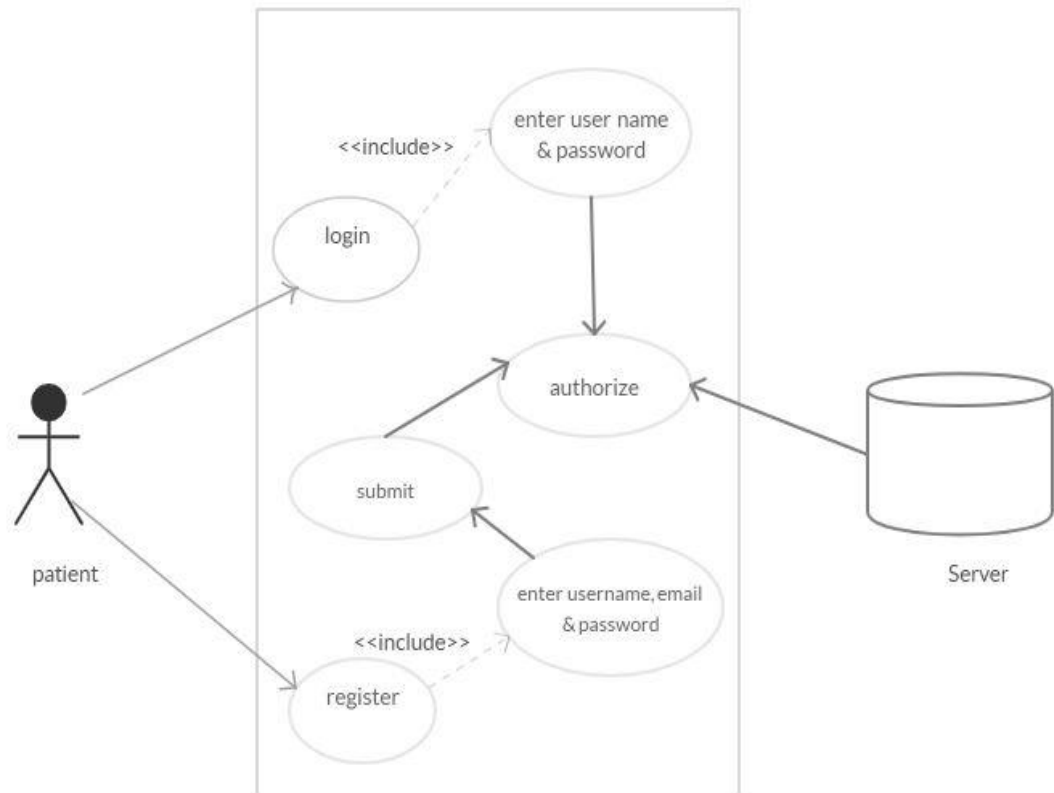


Figure 3.1: Log in for patient

### Use Case Details

User name	: Login (Patient)
Precondition	: None
Actor	: Patient
Primary Path	: 1. Enter Username. 2. Enter Password 3. Click “Login” button
Exceptional path	3.1: Invalid Login ID/ password, back to step



New user	: Enter Registration
Primary Path	: 1. Enter Username. 2. Enter Email 3. Enter Password 4. Click “submit” button

This section all information check-in server and authorize. If all information correct then access and login user.

**Patient appointment and payment Method**

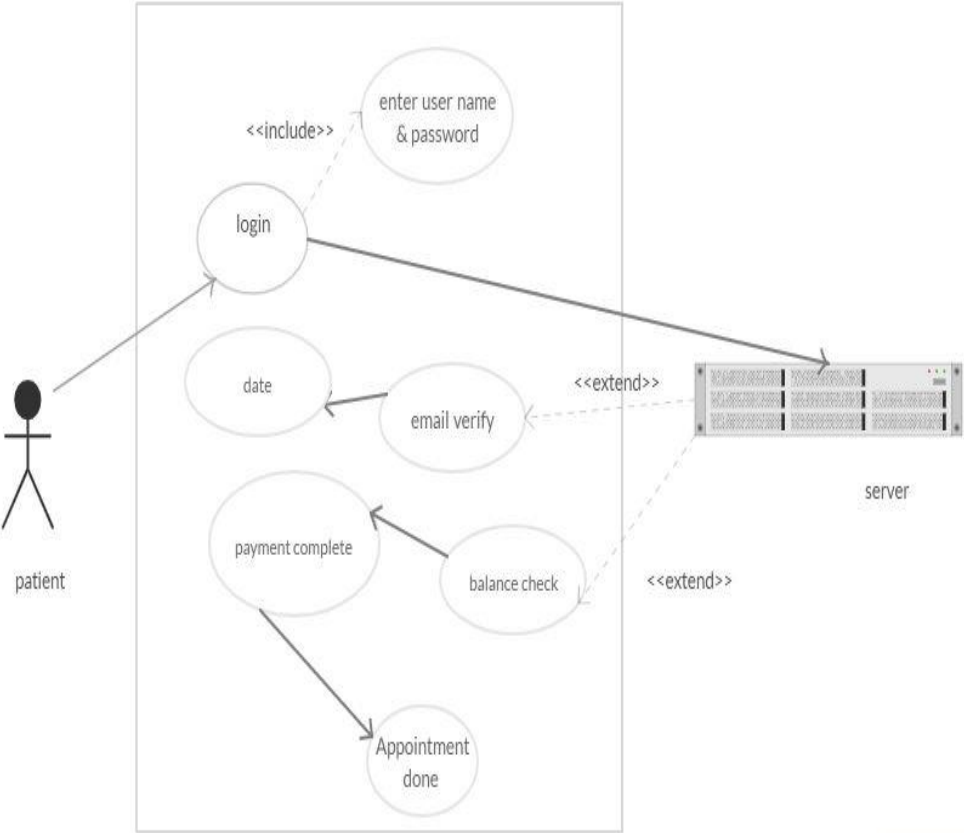


Figure 3.2: Patient appointment and payment Method

## Use Case Details

User name	: Patient
Actor	: Patient
Precondition	: Login
Primary Path	: 1. Email verify 2. Balance Check 3. Payment complete 4. Appointment

This section all information check-in servers. If all information correct then access and login user. The user completes payment and gets an appointment.

## Use case for Doctors

Doctors first visit this website. Then doctors registration his email, user name, password and also verify govt. registration no provides. The Doctors use this site and earn. Doctors' behaviors and treatment experience get a rating inpatient.

## Login for Doctors

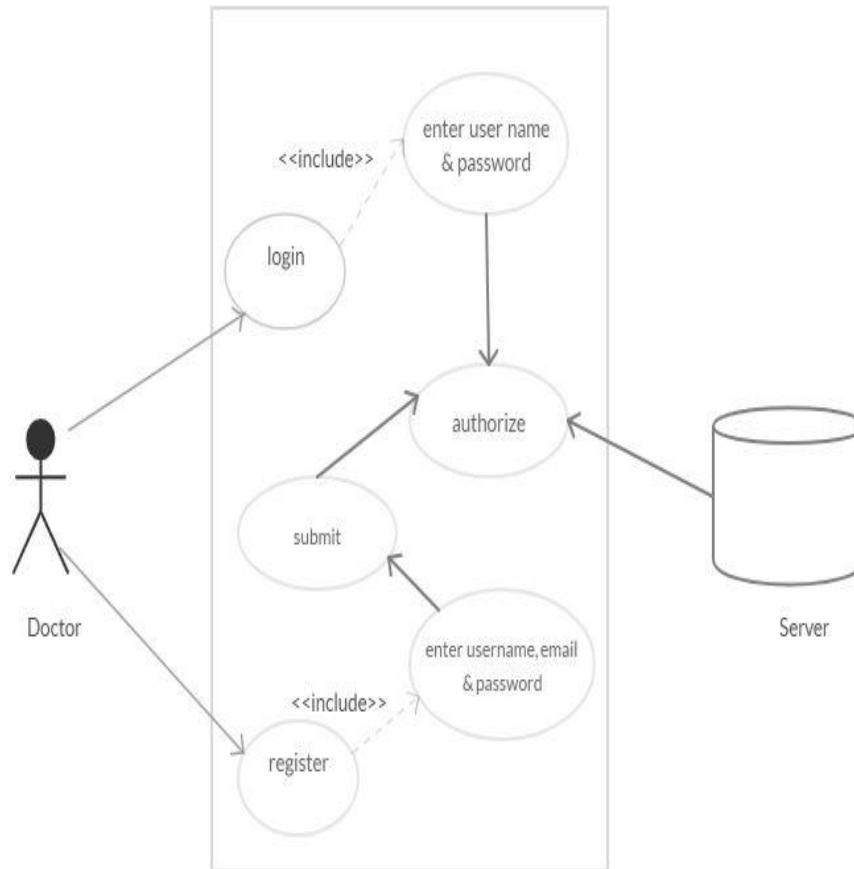


Figure 3.3: login for doctors

### Use Case Details

User name	: Login (Doctors)
Precondition	: None
Actor	: Patient
Primary Path	: 1. Enter Username. 2. Enter Password 3. Click “Login” button
Exceptional path	3.1: Invalid Login ID/ password, back to step 1 or 2.

New user	: Enter Registration
Primary Path	: 1. Enter Username. 2. Enter Email 3. Enter Password 4. Click “submit” button

This section all information check-in server and authorize. If all information correct then access and login user.

### Doctors Payment Withdraw Method

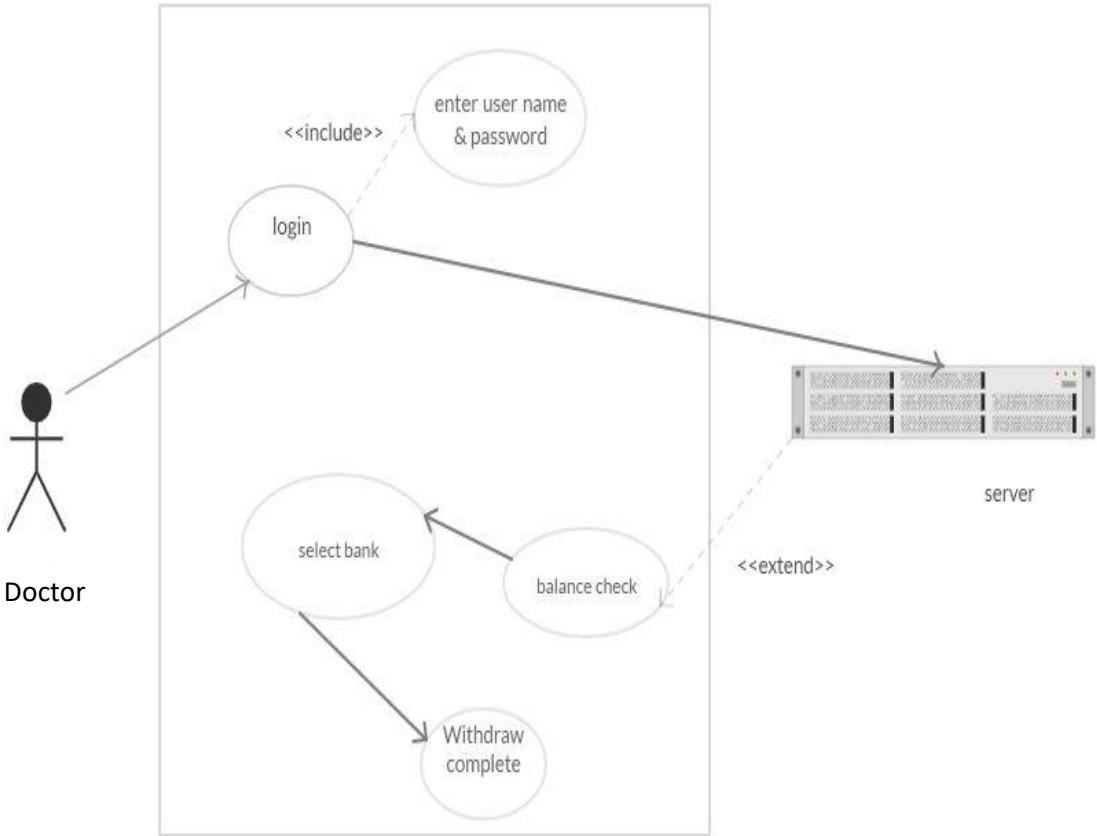


Figure 3.4: Payment Withdraw

## Use Case Details

User name	: Doctors
Actor	: doctors
Precondition	: Login
Primary Path	: 1. Balance Check 2. Select bank 3. Payment Withdraw

This section all information check-in servers. If all information correct then access and login user. Then doctors select bank and Payment Withdraw.

### 3.4 Logical Data Model

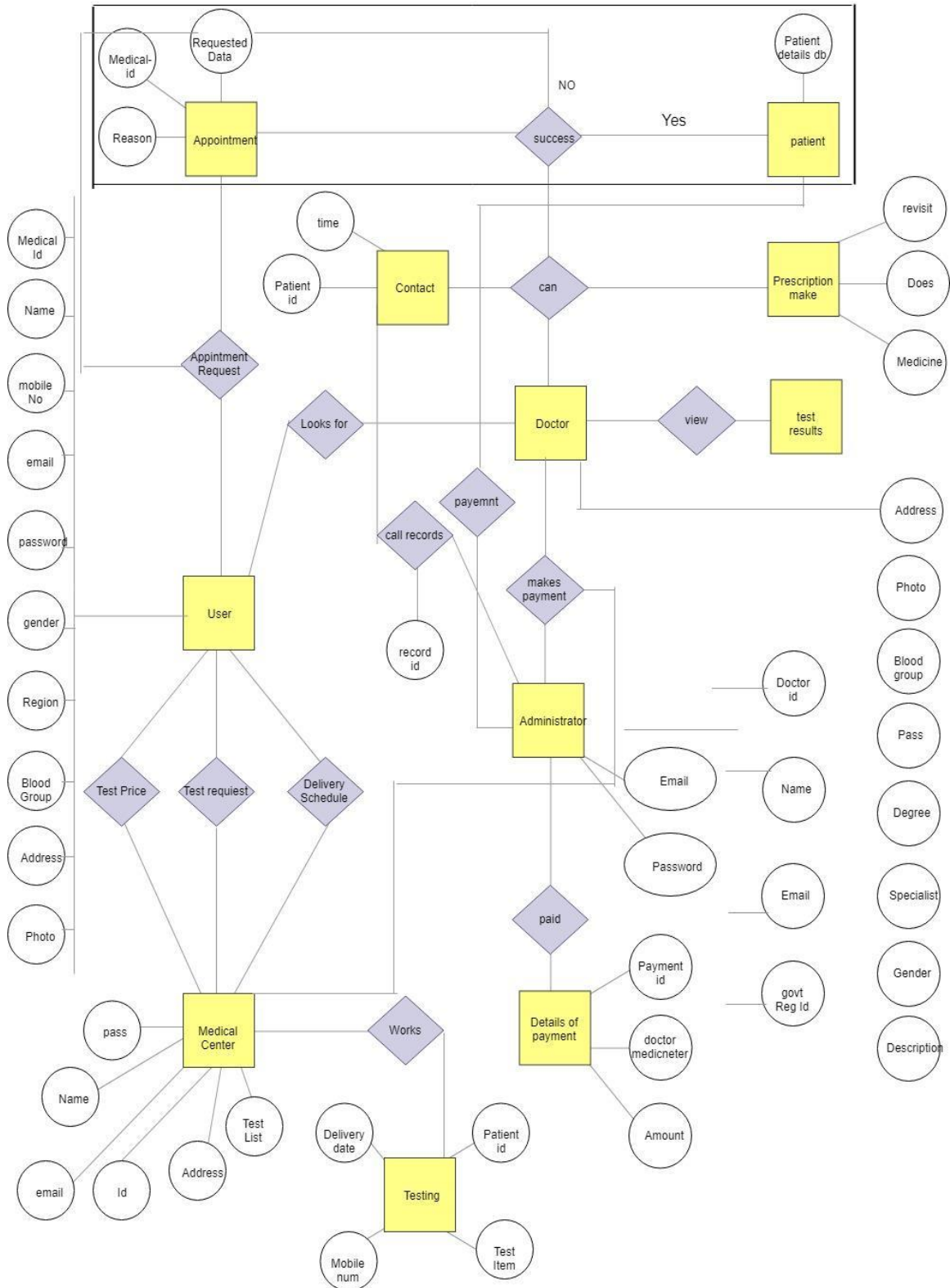


Figure 3.5: logical diagram

### **3.5 Design Requirements**

The web-based application needs design specification details that have information that provides user interfaces. As usually patients and doctors get easier information.

Design use much technologies : The fundamental requirements of our project needs know coding .HTML, CSS,SASS(.scss),Vue.js,Nuxt.js,webRTC ,socket.io,Laravel,RESTful API ,Jwt token, JavaScript, PHP, MySQL, jQuery, Ajax and so on.

#### **3.5.1 Front-end Design**

1. Patient and doctors login interface
2. The new user Registration interface
3. Medical information
4. Pharmacy information
5. Ambulance
6. Layout design
7. Medical information and schedule e.t.c.

#### **3.5.2 Back-end Design**

1. All process control back-end
2. video calling
3. Message chat
4. Appointment confirmation
5. Appointment date information
6. payment status
7. Payment Withdraw
8. Prescription from doctor e.t.c

# CHAPTER 4

## Design Specification

### 4.1 Front-end Design

Font page represent website main view. The web-based application needs design specification details that have information that provides user interfaces is called UI(user interfaces) [4].

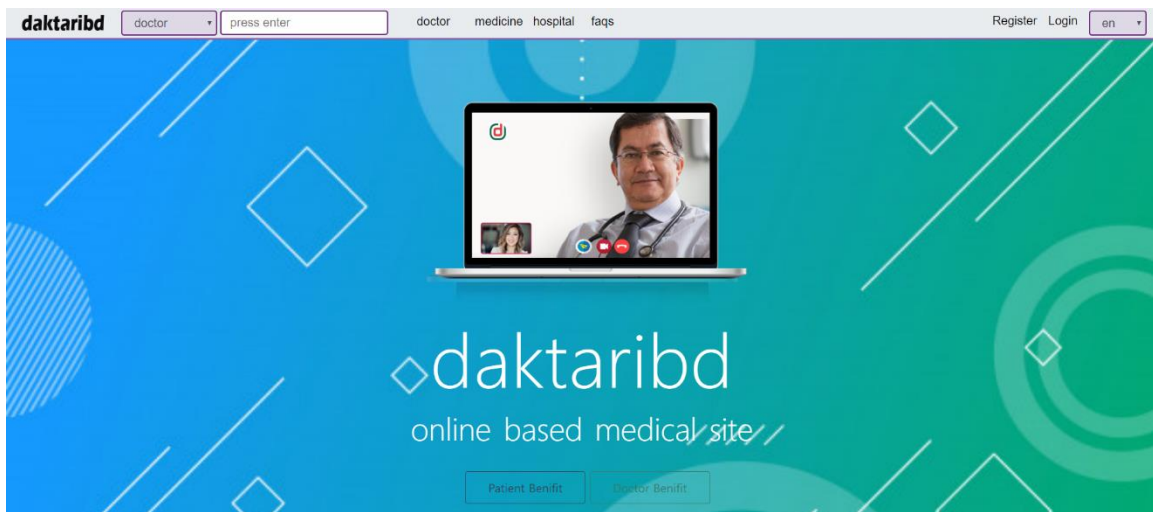


Figure 4.1: Font-end home page

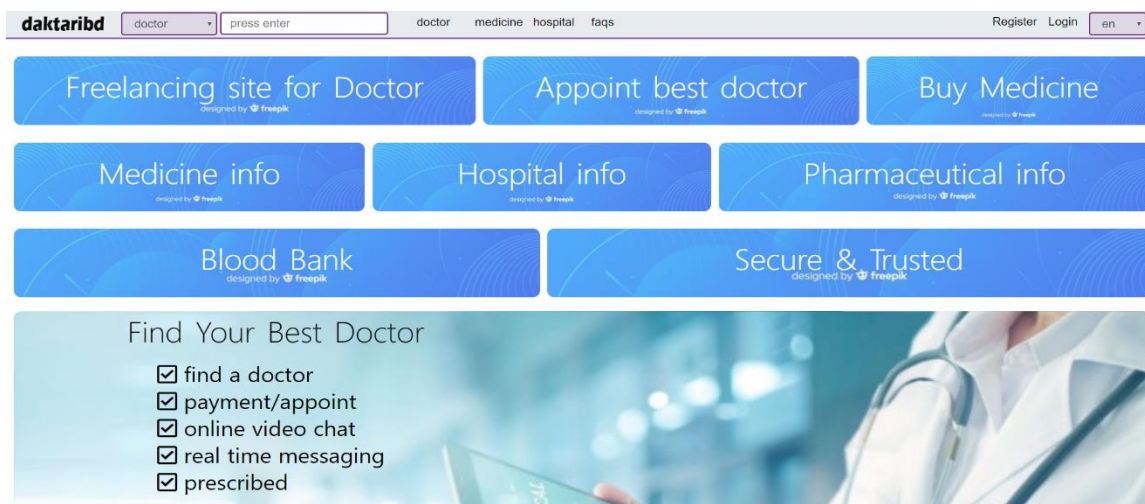


Figure 4.2: Font-end home page



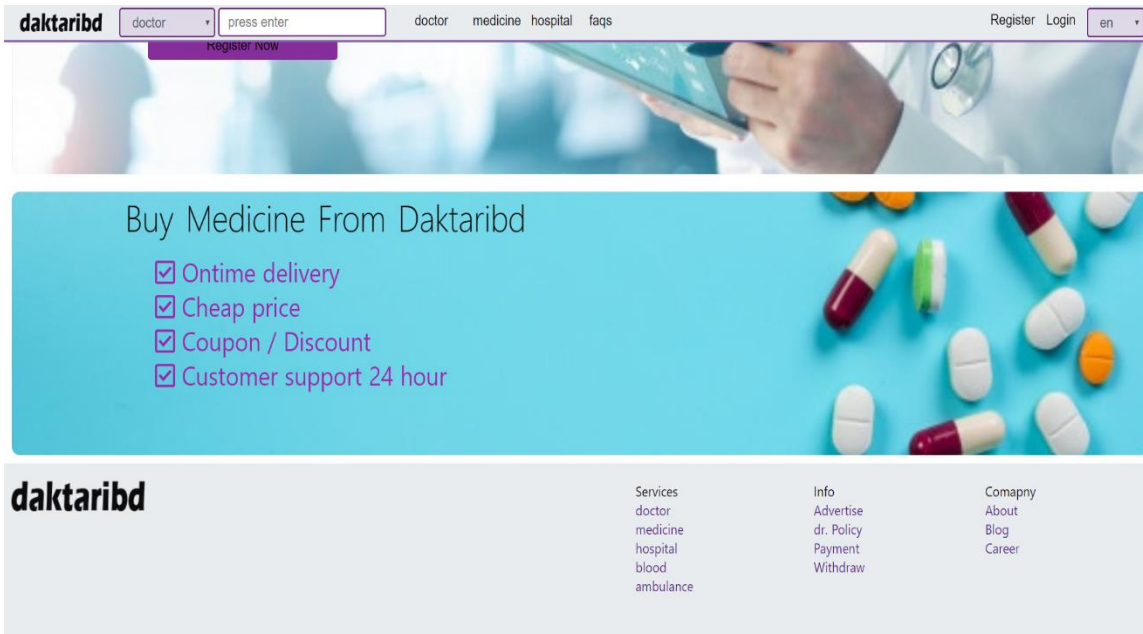


Figure 4.3: Font-end home page

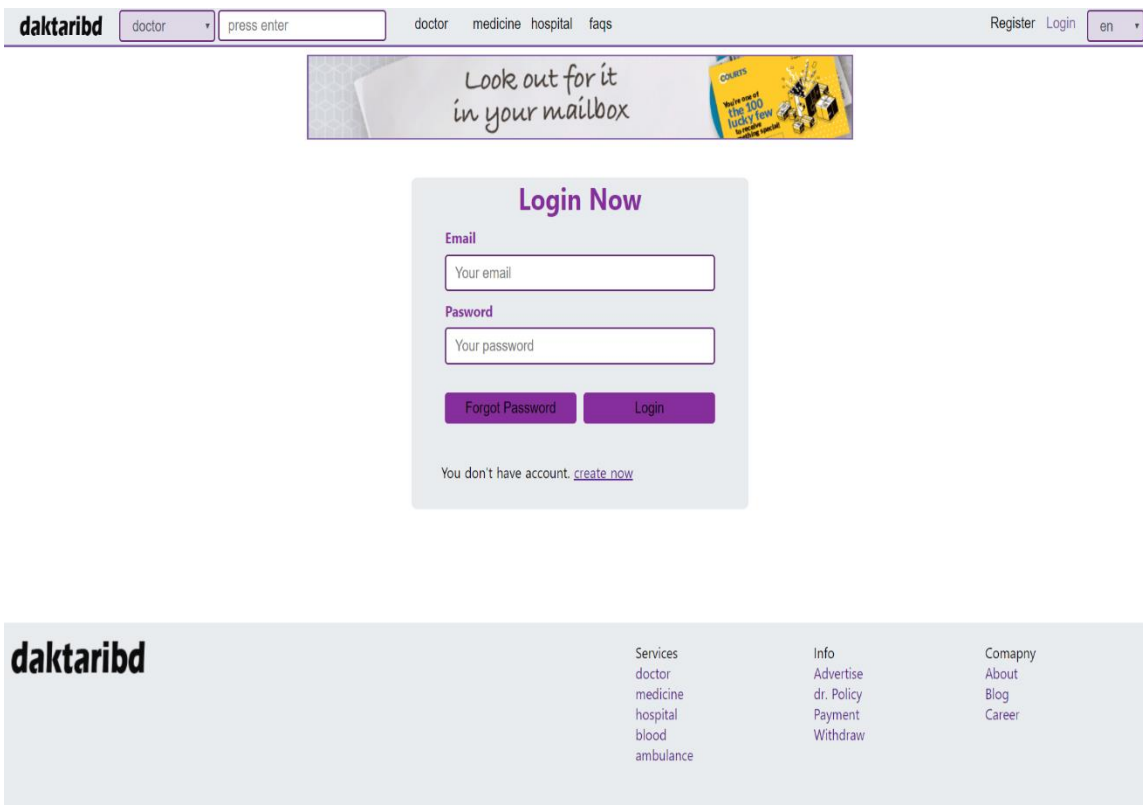


Figure 4.4: Font-end home login

**daktaribd** doctor  doctor medicine hospital faqs Register Login en

**New Catalogue Out Now!**

### Register Now

**Email**

**First Name**

**Pasword**

Choose

You already have a account. [login now](#)

**daktaribd**

Services  
 doctor  
 medicine  
 hospital  
 blood  
 ambulance


Info  
 Advertise  
 dr. Policy  
 Payment  
 Withdraw

Comapny  
 About  
 Blog  
 Career

Figure 4.5: Font-end home registration

**daktaribd** doctor  doctor medicine hospital faqs Register Login en

### Appoint Now

  
 dr. who  
 Assistance professor DMC  
 10AM

Select date

Morning

Afternoon

Night

Figure 4.6: Font-end home appoint

## 4.2 Back-end Design

Back-end control all processes as like login, video calling, Prescription from a doctor, message chat e.t.c. Also, the work payment gateway and its help user.

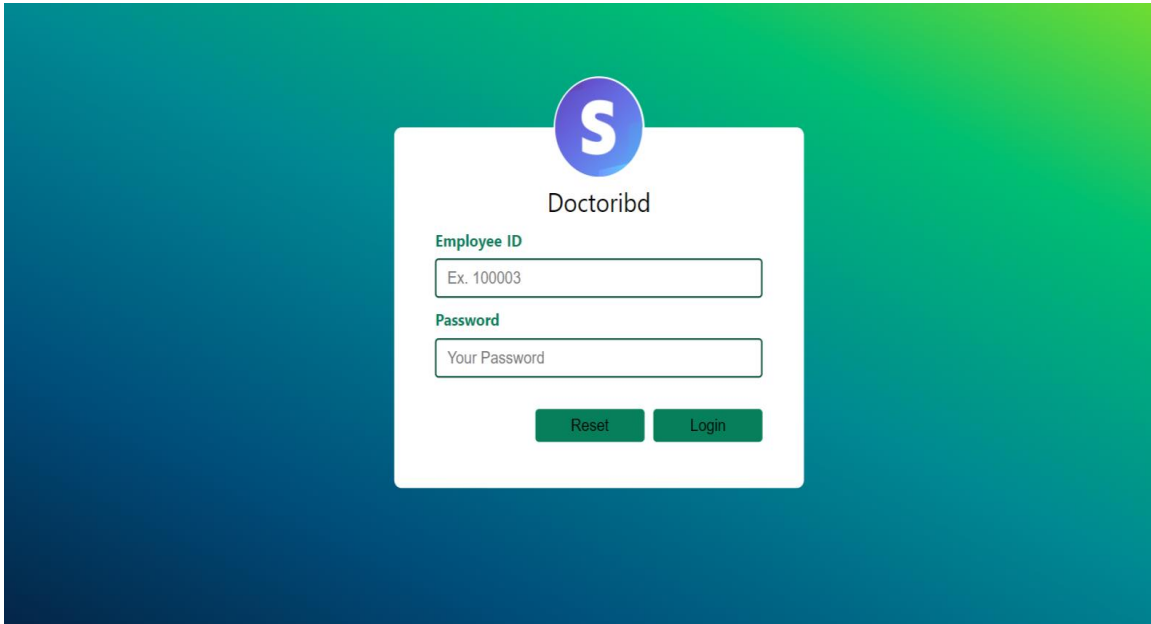


Figure 4.7: back-end home admin login

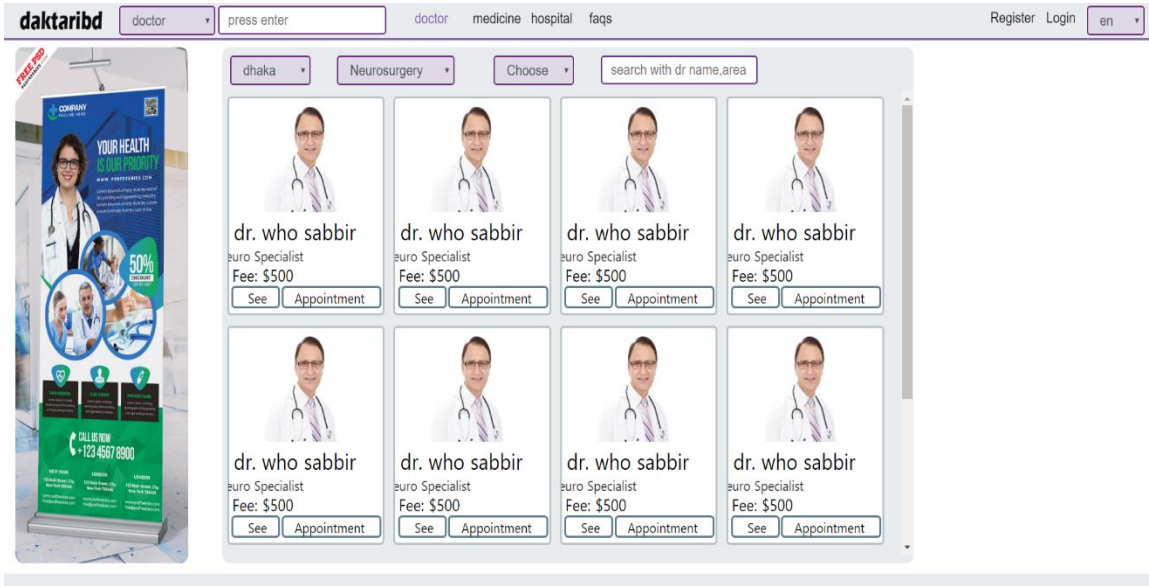


Figure 4.8: back-end doctor list

**Doctoribd** 🔔 👤 ➡

Employee  
Department  
list  
post  
Doctor  
Patient  
Medicine  
Appointment  
Hospital  
Pharmaceutical  
Account ap-dept.

### Add Emp. Post

Pick Department  
Account ▼

Name

Description

Id	Name	Department	Status	Employee	Action
1	head	Account	active	1	
1	head	Account	active	1	
1	senior	Account	active	1	
1	junior	Account	active	1	
1	head	Account	active	1	
1	intern	Account	active	1	
1	head	Medicine	active	1	
1	head	Doctor	active	1	
1	head	Account	active	1	
1	head	Account	active	1	
1	head	Account	active	1	

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Figure 4.9: back-end employee list

**daktaribd** doctor  doctor medicine hospital faqs Register Login en ▼

**dr. who** available fee \$ 500 Withdraw Open hour Appointment Edit

- About
- Education
- Experience
- Admin
- Coupon
- Balance
- Account
- Security
- Appointment

h1 are you ok

**daktaribd**

Services  
doctor  
medicine  
hospital  
blood  
ambulance

Info  
Advertise  
dr. Policy  
Payment  
Withdraw

Comapny  
About  
Blog  
Career

Figure 4.10: back-end doctor profile

## Reset Password

**Your verify code**

**Resend code** **Verify**

Verification code is sent [kamal@gmail.com](mailto:kamal@gmail.com) . Check your email.

Figure 4.11: back-end password reset

## Reset Password

**New Password**

**Re Password**

**Reset**

Figure 4.12: back-end password reset

### 4.3 Interaction Design and UI/UX

User experience (UX) design is the process design connect in user that provide meaningful and relevant experiences to users. It is involved in the user and admin panel.

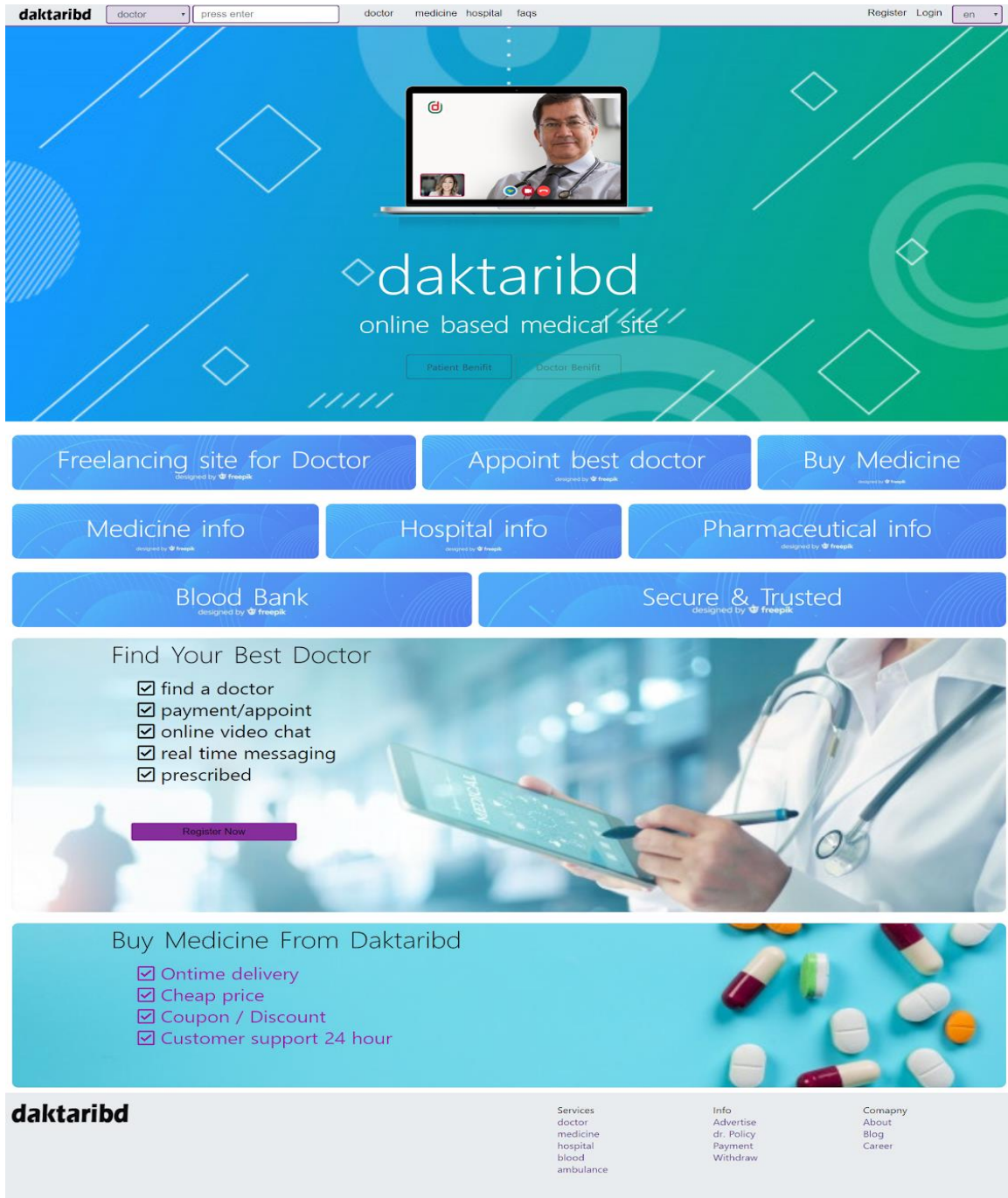


Figure 4.13: home page ux design

## 4.4 Implementation Requirements

Every software development system needs to select language and frameworks. This depends on project requirement and team member ability.

### HTML

HTML is a stand hypertext client site language. It is us for text or documentation and animation website show on the browser site. Html work body structure and also many think.

It is also used for UI(user interfaces) on the client site [4].

As like

1. Shown table content.
2. Video show in site.
3. Header and footer content

### HTML

```
<!DOCTYPE html>
<html lang="en">

<head>

  <!--RESOURCES FILES-->
  <link rel="stylesheet" href="resources/css/style.css">
  <link rel="stylesheet" href="resources/css/responsive.css">

</head>

<body>
```

Figure 4.14: compiler code

## CSS

CSS working design on the website and also font size. Color Manipulation and its work combine in HTML. It uses the design of attractive and beautiful user interfaces. It is also table design and content design etc [7].

## Code

```
1  .box {
2      border: 1px solid black;
3      height: 200px;
4  }
5  .box {
6      border: 1px solid black;
7      height: 200px;
8  }
9  .box {
10     border: 1px solid black;
11     height: 200px;
12 }
```

Figure 4.15: CSS code

## SASS (.scss)

CSS has about 3 pre-processor (sass, stylus and less). Now Sass is more popular. SASS stands for Syntactically Awesome Style Sheets.

Sass is the most mature, stable, and powerful professional grade CSS extension language in the world [7].

## Vue.js

JavaScript has a lot of progressive frameworks as like React, Vue, Angular. Vue.js is an open-source Model–view–View Model JavaScript framework for building user interfaces and single-page applications.

Vue is popular for SPA based project (as like ERP software-based)



## **Nuxt.js**

Nuxt.js is a Vue framework. Vue has rendering issues because of all code store in app.js. so many crawlers can't read the app.js code so SEO break.

Nuxt is an SSR ( server-side rendering) .Nuxt.js is a free and open-source web application framework based on Vue.js, Node.js, Webpack, and Babel.js. The framework is advertised as "meta-framework for universal applications".Original author(s): Alexandre Chopin, Sebastien Chopin

## **webRTC**

wevRTC means web realtime time communication. Most of video calling software or site use webRTC.

WebRTC is a free, open project that provides browsers and mobile applications with Real-Time Communications (RTC) capabilities via simple APIs. The WebRTC components have been optimized to best serve this purpose.

## **socket.io**

Socket.io use for real-time communication. Its uses for real-time chatting system or real-time data show, analytic, streaming, etc.

Socket.IO enables real-time, bidirectional and event-based communication.

It works on every platform, browser or device, focusing equally on reliability and speed.

## **PHP**

PHP is a popular programming language in world . About 70% website developed base use on PHP ( WordPress,Joomla,laravel,Symfony etc) [6].

## Code

```
1 <?php include "includes/header.php" ?>
2
3 <!-- Begin Page Content -->
4 <div class="container-fluid">
5
6     <!-- Page Heading -->
7     <h1 class="h3 mb-4 text-gray-800">All Comments</h1>
8
9     </div>
0 <!-- /.container-fluid -->
1
2 </div>
3 <!-- End of Main Content -->
4 <?php include "includes/footer.php" ?>
5
6
```

Figure 4.16: PHP code

## Laravel

Laravel is the most popular PHP framework. Laravel is a free, open-source PHP web framework, created by Taylor Otwell and intended for the development of web applications following the model–view–controller architectural pattern and based on Symfony [13].

### Main feature that is awesome

- Authentication system Processing In use Laravel
- Collection Data
- ORM
- Mailing

## **RESTful API**

REST is an acronym for REpresentational State Transfer. It uses for spa base project or ajax request, native apps data collecting purpose.

Basically, the methodology is the endpoint. It is an architectural style for distributed hypermedia systems and was first presented by Roy Fielding in 2000 in his famous dissertation [5].

## **Jwt token**

JWT JSON web token is open-source. It decodes, verifies and generates token with a different algorithm. It's used for spa based project login system [5].

## **Mysql**

MySQL is an open-source relational database management system. Its name is a combination of "My", the name of co-founder Michael Widenius's daughter, and "SQL", the abbreviation for Structured Query Language [5].

## CHAPTER 5

### Implementation and Testing

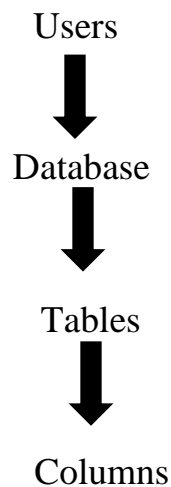
#### 5.1 Implementation of Database

Every dynamic website needs a database to connect and storage of data list prepare. A database management system handles the requests generated from the SQL interface, producing or modifying data in response to these requests. This involves a multilevel processing system.

#### level structure processing by the user or application

1. Parser: Data parsing and storage.
2. Executer: Data token and Executer.
3. Transactions: Transactions data table create.
4. Table cache: It data loss sometimes.
5. Disks: Final output is given.

#### MySQL Implementation



## **5.2 Testing Implementation**

System testing is a very important step in dynamic websites and static websites. There are many testing systems follow in model time.

As like Black Box Testing, white box testing, stress testing, and cross-browser testing system.

### **5.2.1 Black Box Testing**

Black Box Testing system we are given input find to test output. This testing system internal variable input variable test many steps then find the output. Black Box Testing is the best testing system at this time. It is a popular testing system.

### **5.2.2 White Box Testing**

White Box Testing almost the same as a black-box testing system. Many steps passing then find output. This gives a clear idea about what is going on during the execution of the system. The points at which the bug occurs were all clear and were removed.

### **5.2.3 Cross Browser Testing**

Cross Browser Testing is a type of testing to verify if an application works across different browsers as expected and degrades gracefully. Cross Browser Testing is the process of verifying your application's compatibility with different browsers.

1. Mozilla Firefox
2. Chrome
3. Opera
4. Microsoft Edge
5. Safari e.t.c.

## **5.3 Test Results and Reports**

Online medical services performance is better. When we test this website every time is better to get feedback.

## **CHAPTER 6**

### **Conclusion and Future Scope**

#### **6.1 Discussion and Conclusion**

The online Medical Services system is done with many features that help develop medical treatment system. It is done HTML, CSS,SASS(.scss),Vue.js,Nuxt.js,webRTC ,socket.io,Laravel,RESTful API ,Jwt token, JavaScript, PHP, MySQL, jQuery, Ajax etc. Online Medical services are dynamic and user-friendly website. This website benefit in our country. Also, benefits doctors and patient. Especially in rural areas, people benefit very much. This project provides services starting as soon as possible. Online Medical Services is secure services system do not flash any information. Whatever is doctors or patients.

#### **6.2 Scope for Further Developments**

The online Medical Services system needs high publicity to cause it's famous in our country. That needs to develop our community strong. In near future online medical services, develop android and ios. The online Medical services system needs advertising when a rural area people well knowledge of this project. So needs highly qualified employees.

1. Do Smartphone user-friendly apps develop .
2. It can be supplied for international Use.
3. Foreign doctors connect this website.
4. Spread worldwide.

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