

*A project report on*

# **SOFT COMPUTING TECHNIQUE FOR BLOCK CHAIN ENABLED SECURE HEALTHCARE SYSTEM**

*Submitted in partial fulfillment for the award of the degree of*

**M.Tech (Software Engineering)**

*by*

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**VIT<sup>®</sup>**

**Vellore Institute of Technology**

(Deemed to be University under section 3 of UGC Act, 1956)

**SCHOOL OF INFORMATION TECHNOLOGY & ENGINEERING**

November, 2022

## **DECLARATION**

I here by declare that the thesis entitled “SOFT COMPUTING TECHNIQUE FOR BLOCK CHAIN ENABLED SECURE HEALTHCARE SYSTEM” submitted by me, for the award of the degree of M.Tech (Software Engineering) is a record of bonafide work carried out by me under the supervision of Professor. Thandeeswaran R.

I further declare that the work reported in the thesis has not been submitted and will not be submitted, either in part or in full, for the award of any other degree or diploma in this institute or any other institute or university.

**Place: Vellore**

**Signature of the Candidate**

**Date: 11-11-2022**

**Harish R**

## **CERTIFICATE**

This is to certify that the thesis entitled “SOFT COMPUTING TECHNIQUE FOR BLOCK CHAIN ENABLED SECURE HEALTHCARE SYSTEM” submitted by HARISH R (18MIS0384), School of Information Technology & Engineering, Vellore Institute of Technology, Vellore for the award of the degree M.Tech (Software Engineering) is a record of bonafide work carried out by him/her under my supervision.

The contents of this report have not been submitted and will not be submitted either in part or in full, for the award of any other degree or diploma in this institute or any other institute or university. The Project report fulfils the requirements and regulations of VELLORE INSTITUTE OF TECHNOLOGY, VELLORE and in my opinion meets the necessary standards for submission.

**Signature of the Guide**

**Signature of the HoD**

**Internal Examiner**

**External Examiner**

## **ABSTRACT**

Recent study shows that the combination of AI and Blockchain in the field of healthcare we are able to decrease many loopholes via integrating AI & Blockchain strategies. AI algorithms works better based totally on statistics enter, which have to be strong, deduce, and make very last judgments. The machine learning algorithms paintings higher whilst information is accrued from a facts vault that is solid, comfortable, depended on, and tenable. On other hand Blockchain that's a scattered records machine on which records are saved and transferred in a manner it really is cryptographically authenticated, certified, and suitable with the aid of all mining nodes. The sensitive personal records of the sufferers are often securely saved in the Blockchain device which is stored with excessive reliable and hard, and cannot be tampered with. When Smart Agreement are used for machine mastering algorithms to form decisions and carry out analytics, the result of these choices are regularly depended on and undisputed. These blockchain secured dataset are used for the AI and ML algorithms.

We use aid vector device algorithm as a Soft Computing Technique to illustrate here. The fundamental characteristic e of help vector gadget set of rules is to find a hyper aircraft in an N-dimensional area (N — the variety of features) that separates and classes the facts factors. Our objective is to locate choice limitations that classify maximum distance among information factors of each the objects. We get higher reinforcement by way of finding margins having greater distance which additionally allows destiny data factors that may be segregated with extra confidence. The integration of AI and blockchain helps in creating robust and comfortable decentralized device for the real international software like healthcare machine wherein AI-pushed structures have to accumulate, save, and utilize.

## **ACKNOWLEDGEMENT**

It is my pleasure to express with deep sense of gratitude to Prof. Thandeeswaran R, Professor Grade 1, School of Information Technology and Engineering, Vellore Institute of Technology, for his constant guidance, continual encouragement, understanding; more than all, he taught me patience in my endeavor. My association with him is not confined to academics only, but it is a great opportunity on my part of work with an intellectual and expert in the field of IT.

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**Place: Vellore**

**Name of the student**

**Date: 11-11-2022**

**Harish R (18MIS0384)**

## **TABLE OF CONTENTS**

<b>LIST OF FIGURES.....</b>	<b>vii</b>
<b>LIST OF TABLES.....</b>	<b>viii</b>
<b>LIST OF ABBREVIATION.....</b>	<b>ix</b>
 <b>CHAPTER 1</b>	
 <b>INTRODUCTION</b>	
1.1 BACKGROUND.....	1
1.2 MOTIVATION.....	1
1.3 PROJECT STATEMENT.....	1
1.4 OBJECTIVES.....	1
1.5 SCOPE OF THE PROJECT.....	2
 <b>CHAPTER 2</b>	
 <b>LITERATURE SURVEY</b>	
2.1 SUMMARY OF THE EXISTING WORKS.....	3
2.2 CHALLENGES PRESENT IN EXISTING SYSTEM.....	6
 <b>CHAPTER 3</b>	
 <b>REQUIREMENTS</b>	
3.1 HARDWARE REQUIREMENTS.....	7
3.2 SOFTWARE REQUIREMENTS.....	7
3.3 GANTT CHART.....	8
 <b>CHAPTER 4</b>	
 <b>ANALYSIS &amp; DESIGN</b>	
4.1 PROPOSED METHODOLOGY.....	9
4.2 SYSTEM ARCHITECTURE.....	10
4.3 MODULE DESCRIPTION.....	11
4.4 ALGORITHMS USED.....	13

## **CHAPTER 5**

### **IMPLEMENTATION & TESTING**

<b>5.1 SAMPLE CODE.....</b>	<b>15</b>
<b>5.2 SAMPLE OUTPUT.....</b>	<b>53</b>
<b>5.3 TEST PLAN &amp; DATA VERIFICATION.....</b>	<b>72</b>

## **CHAPTER 6**

### **RESULTS**

<b>6.1 RESEARCH FINDINGS.....</b>	<b>76</b>
<b>6.2 RESULT ANALYSIS &amp; EVALUATION METRICS.....</b>	<b>76</b>

<b>CONCLUSION AND FUTURE WORK.....</b>	<b>77</b>
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<b>REFERENCES.....</b>	<b>78</b>
------------------------	-----------

## **LIST OF FIGURES**

<b>3.4 GANTT CHART.....</b>	<b>8</b>
<b>4.2 SYSTEM ARCHITECTURE.....</b>	<b>10</b>
<b>4.3 MODULE DESCRIPTION.....</b>	<b>11</b>



## **LIST OF TABLES**

<b>2.1 SUMMARY OF THE EXISTING WORK.....</b>	<b>3</b>
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## LIST OF ABBREVIATION

S.NO	ABBREVIATION	EXPANSION
01	DB	Database
02	JVM	Java Virtual Machine
03	JSP	Java Server Page
04	CB	Collective Behavior
05	SD	Social Dimension
06	JRE	Java Runtime Environment
07	SSD	Sparse Social Dimension
08	LGP	Line Graph Partition

## **Chapter 1**

# **Introduction**

## **1.1 BACKGROUND**

There's no common Electronic Health Record (EHR) framework incorporated between significant healthcare associations, similar to emergency clinics, clinical focuses, and masters. In light of its attributes, blockchain innovation is frequently a worthy stage for building a huge scope EHR framework for the nation. They present MedBloc, a blockchain-based secure EHR framework that licenses patients and healthcare suppliers to access and offer health records in an entirely usable yet very protective.

## **1.2 MOTIVATION**

EHR data by using both block chain and edge node. Within the architecture, a block chain-based controller manages identity and access control policies. The EHR data and apply policies specified in Abbreviated Language For Authorization (ALFA) to enforce attribute-based access control on EHR data in collaboration with the block chain.

## **1.3 PROJECT STATEMENT**

Blockchain enabled secure health care system, and to develop its needs a suitable architectural design to secure the electronic health record systems using the blockchain technology.

## **1.4 OBJECTIVES**

In this paper we propose a new and more efficient algorithm that

produces solutions which are very close to the optimal ones. Our contribution is efficient not only for the bursting of behavior-based compositions but also for architecture-based compositions of services.

## **1.5 SCOPE OF THE PROJECT**

Soft computing techniques for a blockchain enabled secure health care system, and to develop its needs a suitable architectural design to secure the electronic health record systems using the blockchain technology.

## Chapter 2

### Literature Survey

#### 2.1 SUMMARY OF THE EXISTING WORKS

<b>TITLE</b>	<b>AUTHOR</b>	<b>DESCRIPTION</b>	<b>YEAR</b>
A blockchain-based architecture for traffic signal control system.	W. Li, M. Nejad, and R. Zhang	Ever-developing incorporation of linked vehicle (CV) technology into shrewd traffic signal manage systems brings approximately sizable statistics safety issues inside the related vehicular networks. This paper provides a novel decentralized and comfortable with the aid of layout structure for related car facts protection, that is based on the rising blockchain paradigm. In a simulation have a look at, we implemented this structure to guard the Intelligent Traffic Signal System (I-SIG), a USDOT permitted CV pilot application, in opposition to congestion assaults. The results display the overall performance of the proposed architecture for the visitors sign control machine.	2021
Blockchain technology: Is this the solution to emr interoperability and security issues in developing countries	G. Kamau, C. Boore, E. Maina, and S. Njenga	The burden of disease is better by way of some distance in growing nations than in the developed global. Developing international locations nowadays are turning to technology as the silver bullet or treatment. Indeed, Information and Communication Technology has changed into a key-enabling device within the enhanced healthcare management. The digital fitness statistics or digital clinical information (EMR) a key factor of scientific informatics symbolize potential solutions for more desirable healthcare. However,	2020

		interoperability and safety of EMR structures has been the two foremost challenges of EMR within the healthcare industry. By analyzing current literature using scoping overview research technique this paper explored the capacity use of blockchain technology in enhancing the interoperability and protection of EMR structures for the benefit of various stakeholders in fitness area in developing countries including Kenya. To reap our primary goal, 5 databases were searched and 204 papers screened for inclusion. As a end result of the hunt and display screen technique, we identified 25 relevant articles.	
Guide to Attribute Based Access Control (ABAC) Definition and Consideration	Chung Tong Hu, David F. Ferraiolo, David R. Kuhn	Includes updates as of February 25, 2019] This document gives Federal organizations with a definition of characteristic based totally get entry to manage (ABAC). ABAC is a logical get entry to manipulate technique in which authorization to perform a set of operations is decided with the aid of evaluating attributes associated with the challenge, object, asked operations, and, in a few instances, surroundings conditions in opposition to coverage, guidelines, or relationships that describe the allowable operations for a given set of attributes. This file also gives concerns for using ABAC to enhance statistics sharing within corporations and among organizations while keeping manipulate of that statistics.	2019
Medrec: Using blockchain for medical data access and permission management	A. Azaria, A. Ekblaw, T. Vieira, and A. Lippman	Years of heavy regulation and bureaucratic inefficiency have slowed innovation for digital medical statistics (EMRs). We now face a crucial need for such innovation, as personalization and information science spark off sufferers to have interaction in the details in their healthcare and repair organization over	2019

		<p>their scientific statistics. In this paper, we propose MedRec: a novel, decentralized file management gadget to deal with EMRs, the usage of blockchain generation. Our gadget gives patients a complete, immutable log and clean get right of entry to to their medical data across vendors and remedy web sites. Leveraging unique blockchain properties, MedRec manages authentication, confidentiality, accountability and facts sharing- crucial considerations while dealing with sensitive records. A modular layout integrates with providers' current, nearby records storage solutions, facilitating interoperability and making our system handy and adaptable.</p>	
Blockchain based access control	D. D. F. Maesa, P. Mori, and L. Ricci	<p>Access Control systems are utilized in computer security to modify the get entry to to critical or precious sources. The rights of subjects to get right of entry to such resources are commonly expressed thru get admission to manage policies, that are evaluated at get right of entry to request time in opposition to the modern get entry to context. This paper proposes a new method primarily based on blockchain generation to post the policies expressing the right to get right of entry to a aid and to allow the dispensed transfer of such right amongst customers. In our proposed protocol the guidelines and the rights exchanges are publicly seen at the blockchain, therefore any consumer can recognize at any time the coverage paired with a resource and the topics who presently have the rights to get right of entry to the resource. This answer permits dispensed auditability, stopping a party from fraudulently denying the rights granted by an enforceable policy. We additionally display a possible working</p>	2019

		implementation primarily based on XACML regulations, deployed on the Bitcoin blockchain.	
Healthcare data gateways: found healthcare intelligence on blockchain with novel privacy risk control	X. Yue, H. Wang, D. Jin, M. Li, and W. Jiang.	Healthcare data are a valuable supply of healthcare intelligence. Sharing of healthcare information is one vital step to make healthcare device smarter and enhance the best of healthcare service. Healthcare information, one non-public asset of patient, should be owned and managed by means of affected person, instead of being scattered in one-of-a-kind healthcare systems, which prevents information sharing and places affected person privacy at risks. Blockchain is established in the monetary area that relied on, auditable computing is viable the usage of a decentralized network of friends followed by using a public ledger. In this paper, we proposed an App (called Healthcare Data Gateway (HGD)) architecture based totally on blockchain to enable affected person to personal, manipulate and percentage their personal information effortlessly and securely without violating privateness, which gives a brand new capability manner to enhance the intelligence of healthcare structures even as keeping affected person information personal.	2018

## 2.2 CHALLENGES PRESENT IN EXISTING SYSTEM

The important part will be entered physically and there'll consistently plausibility of manual mix-ups. This ought to be taken into considerations. With blockchain, the predominance of focal authority may be wiped out. as information portrays through a progressive learning process and utilizes information sciences and examination which can be used to close the accompanying course.



## Chapter 3

# Requirements

### 3.1 HARDWARE REQUIREMENTS

The hardware requirements may serve as the basis for a contract for the implementation of the system and should therefore be a complete and consistent specification of the whole system. They are used by software engineers as the starting point for the system design. It shows what the system does and not how it should be implemented.

Processor	:	Pentium Dual Core 2.00GHZ
Hard disk	:	40 GB
Mouse	:	Logitech.
RAM	:	4 GB(minimum)
Keyboard	:	110 keys enhanced.

### 3.2 SOFTWARE REQUIREMENTS

The software requirements document is the specification of the system. It should include both a definition and a specification of requirements. It is a set of what the system should do rather than how it should do it. The software requirements provide a basis for creating the software requirements specification. It is useful in estimating cost, planning team activities, performing tasks and tracking the team's and tracking the team's progress throughout the development activity.

Operating system : Windows 7 (Service Pack 1), 8, 8.1 and 10

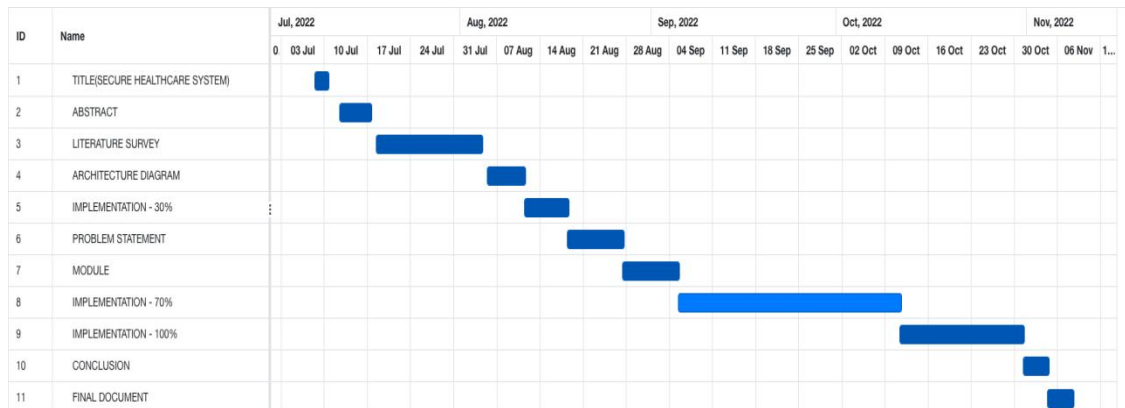
Front End : HTML, CSS, BOOTSTARP, JAVASCRIPT

Coding Language : Java servlets

Backend : MYSQL

Software Tool : ECLIPSE OR NETBEANS

### 3.3 GANTT CHART



Activity	Description of the Activity	Guide Remarks
01	Review 0 (Title selection)	Ok
02	Review 1 (Architecture)	Mention the Blockchain
03	Review 2 (Implementation)	Guided for the implementation

## **Chapter 4**

# **Analysis & Design**

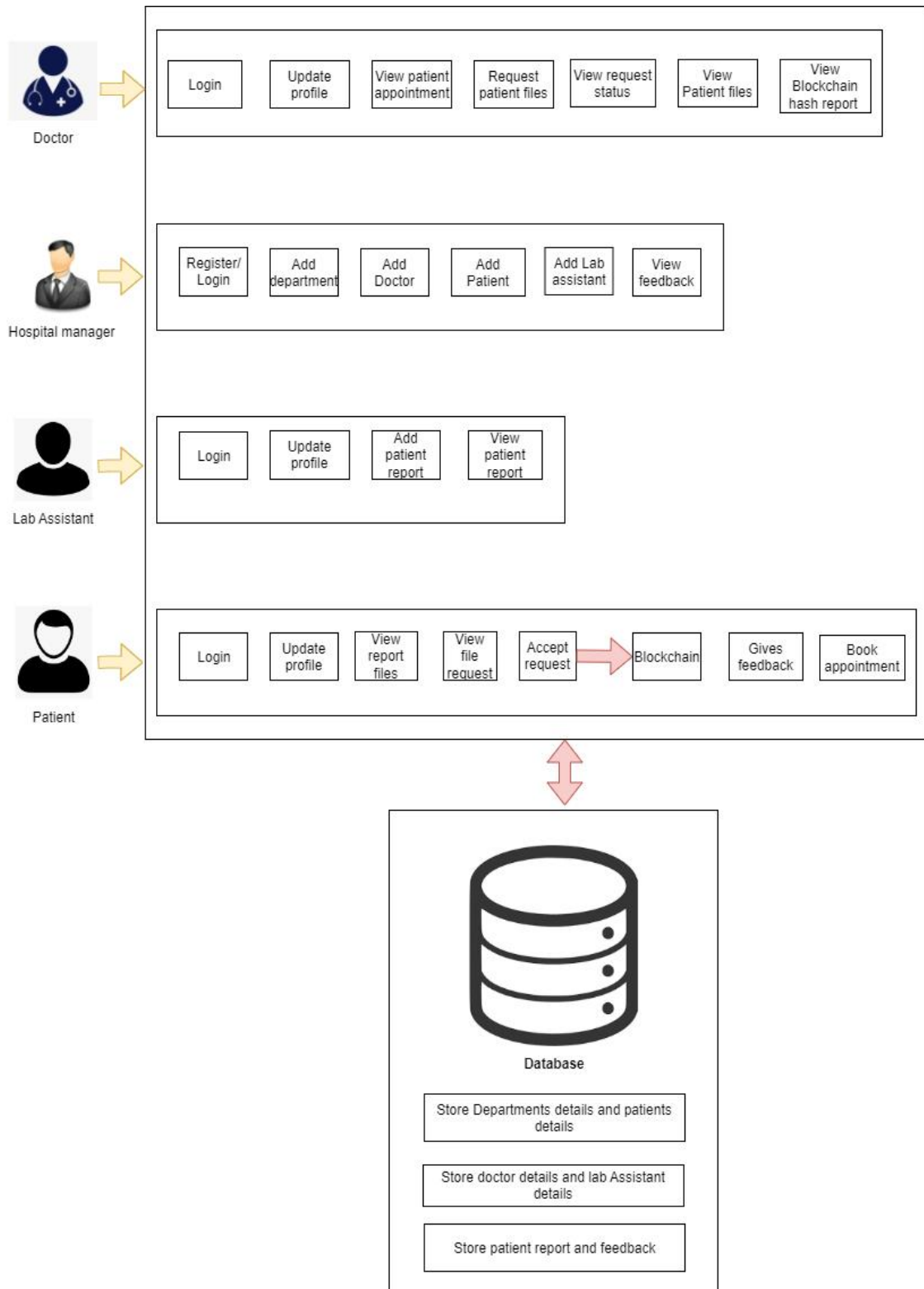
### **4.1 PROPOSED METHODOLOGY**

The proposed system is used design a suitable structure to use the tender computing techniques for a blockchain enabled secure health care system, and to broaden its desires a suitable architectural design to comfortable the electronic fitness record structures the usage of the blockchain generation and then making use of smooth computing techniques on the blockchain secured dataset. We apply blockchain technology to a health care diabetes publicly available dataset. This is a trifling prototype. This may be in addition scaled to massive commercial usage afterward.

#### **4.1.1 ADVANTAGES OF PROPOSED SYSTEM**

- The advantage of having a blockchain secured data repository.
- Any such tampering of data will be notified and it shall ensure the integrity, authenticity and security of any such data.
- Increase accuracy
- All information on the blockchain is freely accessible, simulated intelligence is the way to furnishing clients with secrecy and protection.

## 4.2 SYSTEM ARCHITECTURE

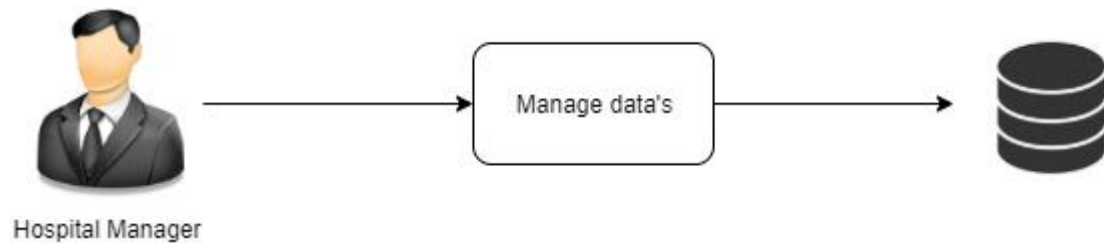


### 4.3 MODULE DESCRIPTION

- Hospital manager maintains the data's
- Doctor request patient file
- Patient view the report file
- Lab Assistant makes the report entry

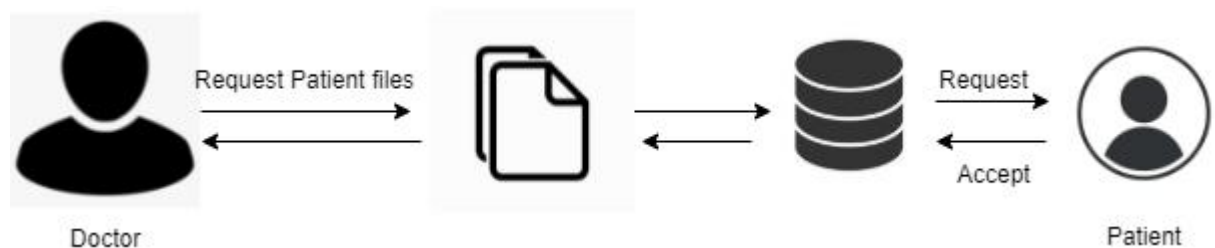
#### 4.3.1 HOSPITAL MANAGER MAINTAINS THE DATA'S

Hospital register and login then add department in the list and also can create authentication for doctor, patient, and lab Assistant and finally can view the feedback.



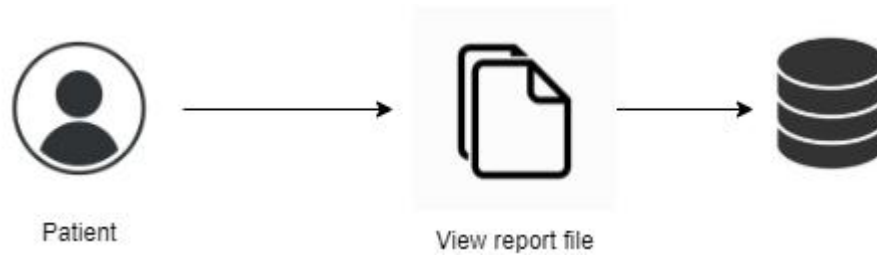
#### 4.3.2 DOCTOR REQUEST PATIENT FILE

Doctor register and login then can update profile and also request patient file to view the data. After accepting the file by patient request status been changed and can be view in request status. At last the patient files can be viewed and also view the blockchain performed on the data.



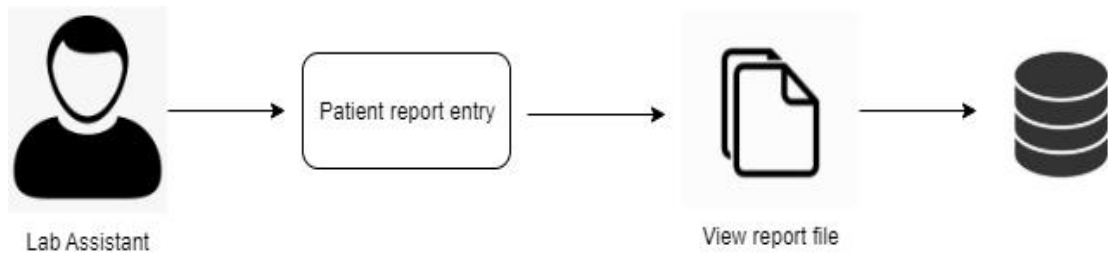
#### 4.3.3 PATIENT VIEW THE REPORT FILE

Patient register and login then can view report file and view file request the doctor request to access been sent and the by accepting the request doctor can access the data.

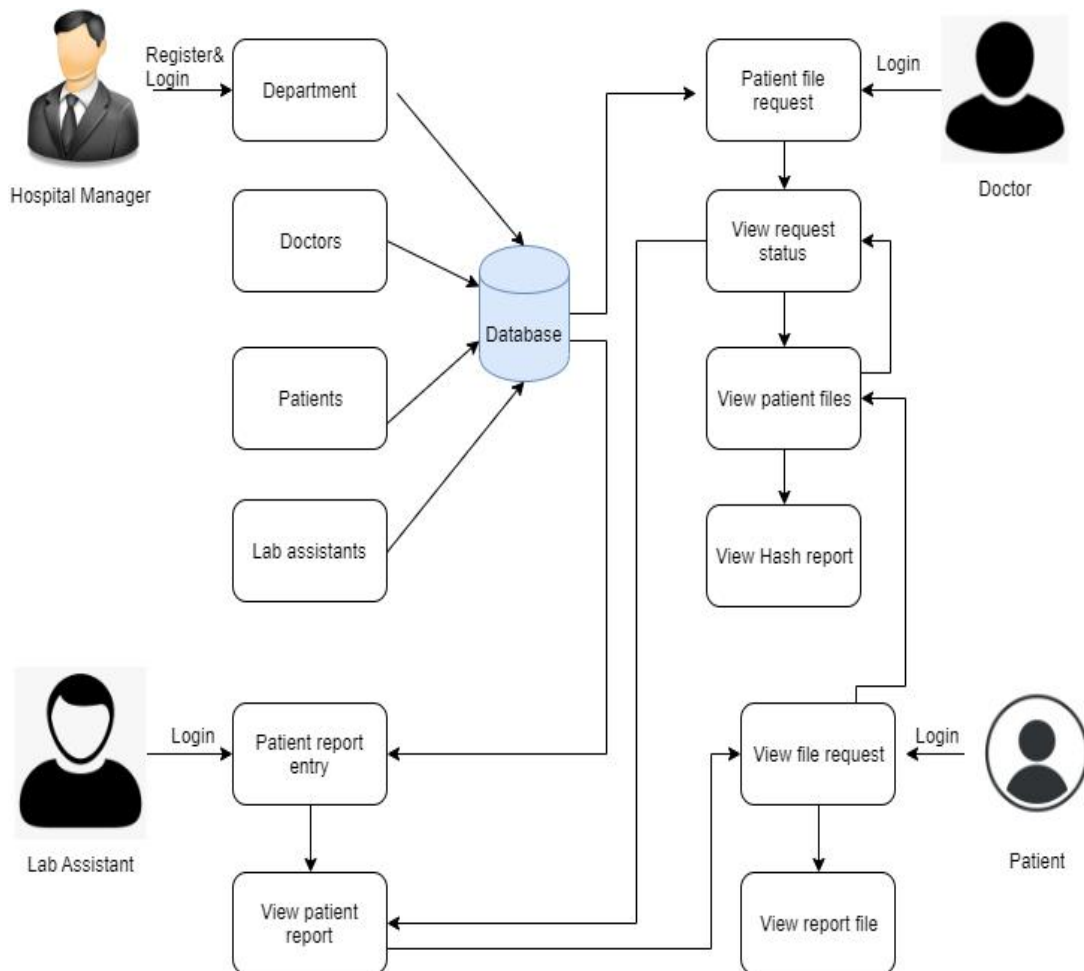


#### 4.3.4 LAB ASSISTANT MAKES THE REPORT ENTRY

Lab assistant register and login make patient report entry and can view the report files and can update the profile.



#### 4.3.5 MODULE DIAGRAM



## 4.4 ALGORITHM USED

- SHA-256 Algorithm
- AES Algorithm
- MD5 Algorithm

### 4.4.1 SHA-256 ALGORITHM

SHA 256 is a part of the SHA 2 circle of relatives of algorithms, wherein SHA stands for Secure Hash Algorithm. Published in 2001, it became a joint effort among the NSA and NIST to introduce a successor to the SHA 1 family, which become slowly losing electricity in opposition to brute pressure assaults. The importance of the 256 inside the name stands for the final hash digest price, i.E. Irrespective of the scale of plaintext/cleartext, the hash price will usually be 256 bits.

- ✧ Message Length: The duration of the cleartext ought to be less than 264 bits. The length wishes to be in the assessment vicinity to preserve the digest as random as feasible.
- ✧ Digest Length: The length of the hash digest ought to be 256 bits in SHA 256 set of rules, 512 bits in SHA-512, and so on. Bigger digests typically recommend notably extra calculations on the fee of velocity and space.
- ✧ Irreversible: By design, all hash capabilities inclusive of the SHA 256 are irreversible. You should neither get a plaintext if you have the digest ahead nor should the digest provide its unique value when you bypass it thru the hash feature again.

### 4.4.2 AES ALGORITHM

The extra famous and extensively followed symmetric encryption algorithm probable to be encountered in recent times is the Advanced Encryption Standard (AES). It is discovered as a minimum six time quicker than triple DES. A substitute for DES become wanted as its key size became too small. With growing computing power, it turned into considered prone in opposition to exhaustive key search attack. Triple DES become designed to triumph over this drawback however it become determined gradual.

The features of AES are as follows –

- ✧ Symmetric key symmetric block cipher
- ✧ 128-bit data, 128/192/256-bit keys
- ✧ Stronger and faster than Triple-DES
- ✧ Provide full specification and design details
- ✧ Software implementable in C and Java

#### **4.4.2.1 OPERATION OF AES**

AES is an iterative instead of Feistel cipher. It is based on ‘substitution–permutation network’. It contains of a chain of linked operations, some of which involve changing inputs by using particular outputs (substitutions) and others involve shuffling bits round (variations).

Interestingly, AES plays all its computations on bytes rather than bits. Hence, AES treats the 128 bits of a plaintext block as sixteen bytes. These 16 bytes are arranged in 4 columns and 4 rows for processing as a matrix – Unlike DES, the quantity of rounds in AES is variable and depends on the length of the important thing. AES uses 10 rounds for 128-bit keys, 12 rounds for 192-bit keys and 14 rounds for 256-bit keys. Each of those rounds uses a unique 128-bit spherical key, that is calculated from the unique AES key.

#### **4.4.3 MD5 ALGORITHM**

- MD5 (technically known as MD5 Message-Digest Algorithm) is a cryptographic hash function whose important purpose is to confirm that a report has been unaltered.
- Instead of confirming units of information are same with the aid of comparing the uncooked information, MD5 does this via generating a checksum on both units after which evaluating the checksums to confirm they may be the identical.
- MD5 has positive flaws, so it is not beneficial for advanced encryption applications, however it is flawlessly applicable to use it for general document verifications.
- MD5 checksums are constructed to be non-reversible, that means you cannot examine the checksum and discover the unique inputted records.



## Chapter 5

# Implementation & Testing

### 5.1 SAMPLE CODE

User\_register.jsp

```
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
    <meta charset="utf-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <title>Healthcare Template</title>
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <meta name="description" content="" />
    <meta name="keywords" content="" />
    <meta name="author" content="" />
    <!-- Facebook and Twitter integration -->
    <meta property="og:title" content="" />
    <meta property="og:image" content="" />
    <meta property="og:url" content="" />
    <meta property="og:site_name" content="" />
    <meta property="og:description" content="" />
    <meta name="twitter:title" content="" />
    <meta name="twitter:image" content="" />
    <meta name="twitter:url" content="" />
    <meta name="twitter:card" content="" />
    <link href="https://fonts.googleapis.com/css?family=Poppins:300,400,500,600,700"
rel="stylesheet">

    <!-- Animate.css -->
    <link rel="stylesheet" href="css/animate.css">
    <!-- Icomoon Icon Fonts-->
    <link rel="stylesheet" href="css/icomoon.css">
    <!-- Bootstrap -->
    <link rel="stylesheet" href="css/bootstrap.css">
    <!-- Magnific Popup -->
```

```

<link rel="stylesheet" href="css/magnific-popup.css">
<!-- Owl Carousel -->
<link rel="stylesheet" href="css/owl.carousel.min.css">
<link rel="stylesheet" href="css/owl.theme.default.min.css">
<!-- Flexslider -->
<link rel="stylesheet" href="css/flexslider.css">
<!-- Flaticons -->
<link rel="stylesheet" href="fonts/flaticon/font/flaticon.css">
<!-- Theme style -->
<link rel="stylesheet" href="css/style.css">
<!-- Modernizr JS -->
<script src="js/modernizr-2.6.2.min.js"></script>
<!-- FOR IE9 below -->
<!--[if lt IE 9]>
<script src="js/respond.min.js"></script>
<![endif]-->
</head>
<body>
<div class="colorlib-loader"></div>

<div id="page">
<nav class="colorlib-nav" role="navigation">
<div class="top-menu">
<div class="container">
<div class="row">
<div class="col-xs-12">
<div class="top">
<div class="row">
<div class="col-md-6">
<div
id="colorlib-logo"><a
href="index.html">Secure <span>Health care System</span> </a></div>
</div>
<div class="col-md-3">
<div class="num">
<span
class="icon"><i
class="icon-phone"></i></span>
<p><a
href="#">111-222-333</a><br><a
href="#">99-222-333</a></p>
</div>
</div>
<div class="col-md-3">
<div class="loc">
<span
class="icon"><i
class="icon-location"></i></span>

```

```

                <p><a href="#">88 Route West 21th Street,
Suite 721 New York NY 10016</a></p>
            </div>
        </div>
    </div>
</div>
</div>
</div>
</div>
</div>
</div>
<div class="menu-wrap">
    <div class="container">
        <div class="row">
            <div class="col-xs-8">
                <div class="menu-1">
                    <ul>
                        <li><a href="index.html">Home</a></li>
                        <li class="has-dropdown">
                            <a href="doctors.html">Doctors</a>
                            <ul class="dropdown">
                                <li><a href="doctors-single.html">Single
Doctor</a></li>
                                </ul>
                            </li>
                        <li><a href="services.html">Services</a></li>
                        <li class="has-dropdown">
                            <a href="departments.html">Departments</a>
                            <ul class="dropdown">
                                <li><a
href="departments-single.html">Plasetic Surgery Department</a></li>
                                <li><a
href="departments-single.html">Dental Department</a></li>
                                <li><a
href="departments-single.html">Psychological Department</a></li>
                                </ul>
                            </li>
                        <li><a href="blog.html">Blog</a></li>
                        <li
                                class="active"><a
href="contact.html">Contact</a></li>
                    </ul>
                </div>
            </div>
        </div>
    </div>
</div>

```

```

        </div>
    </nav>
    <aside id="colorlib-hero" class="breadcrumbs">
        <div class="flexslider">
            <ul class="slides">
                <li style="background-image: url(images/img_bg_6.jpg);">
                    <div class="overlay"></div>
                    <div class="container">
                        <div class="row">
                            <div class="col-md-8 col-md-offset-2 col-md-pull-2 slider-text">
                                <div class="slider-text-inner">
                                    <h1>Get in <strong>touch</strong></h1>
                                    <h2>html5   Bootstrap   Templates   Made   by
colorlib.com</h2>
                                </div>
                            </div>
                        </div>
                    </div>
                </li>
            </ul>
        </div>
    </aside>
    <div id="colorlib-contact">
        <div class="container">
            <div class="row">
                <div class="col-md-12 animate-box">
                    <h2>Contact Information</h2>
                    <div class="row contact-info-wrap">
                        <div class="col-md-3">
                            <p><span><i   class="icon-location"></i></span>  198  West
21th Street, <br> Suite 721 New York NY 10016</p>
                        </div>
                        <div class="col-md-3">
                            <p><span><i   class="icon-phone"></i></span>      <a
href="tel://1234567920">+ 1235 2355 98</a></p>
                        </div>
                        <div class="col-md-3">
                            <p><span><i   class="icon-mail"></i></span>      <a
href="mailto:info@yoursite.com">info@yoursite.com</a></p>
                        </div>
                        <div class="col-md-3">
                            <p><span><i   class="icon-globe-outline"></i></span>  <a
href="#">yoursite.com</a></p>
                        </div>
                    </div>
                </div>
            </div>
        </div>
    </div>

```

```

        </div>
    </div>
    <div class="col-md-12 animate-box">
        <div class="row">
            <div class="col-md-6">
                <h2>Registration</h2>
                <form action="process.jsp">
                    <div class="row form-group">
                        <div class="col-md-6">
                            <label for="name">Name</label>
                            <input type="text" id="name"
class="form-control mb" name="name" placeholder="Your name">
                        </div>
                        <div class="col-md-6">
                            <label for="phone">Phone</label>
                            <input type="text" id="phone"
class="form-control" name="phone" placeholder="Your phone">
                        </div>
                    </div>
                    <div class="row form-group">
                        <div class="col-md-12">
                            <label for="email">Email</label>
                            <input type="email" id="email"
class="form-control" name="email" placeholder="Your email address">
                        </div>
                    </div>
                    <div class="row form-group">
                        <div class="col-md-12">
                            <label for="password">Password</label>
                            <input type="password" id="password"
class="form-control" name="password" placeholder="Your password">
                        </div>
                    </div>
                    <div class="row form-group">
                        <div class="col-md-12">
                            <label for="message">Address</label>
                            <textarea name="text" id="message" cols="30"
rows="10" class="form-control" name="address" placeholder="Enter your address"></textarea>
                        </div>
                    </div>
                    <div class="form-group text-center">
                        <input type="submit" value="Register">
                    </div>
                </form>
            </div>
        </div>
    </div>

```

```

</div>
<div class="col-md-6">
<!-- <div id="map" class="colorlib-map"></div> -->
<iframe id="map"
class="colorlib-map"
src="https://maps.google.com/maps?q=strydo%20technologies%20vellore&t=k&z=13&ie=UTF8
&iwloc=&output=embed" allowfullscreen="" loading="lazy"></iframe>
</div>
</div>
</div>
</div>
</div>
<div id="colorlib-footer" role="contentinfo">
<div class="overlay"></div>
<div class="container">
<div class="row row-pb-md">
<div class="col-md-3 colorlib-widget">
<h3>Head Office</h3>
<ul class="colorlib-footer-links">
<li>291 South 21th Street, <br> Suite 721 New York NY
10016</li>
<li><a href="tel://1234567920"><i class="icon-phone"></i> +
1235 2355 98</a></li>
<li><a href="mailto:info@yoursite.com"><i
class="icon-mail"></i> info@yoursite.com</a></li>
<li><a href="http://luxehotel.com"><i
class="icon-location4"></i> yourwebsite.com</a></li>
<li>Mon-Thu: 9:30 – 21:00</li>
<li>Fri: 6:00 – 21:00</li>
<li>Sat: 10:00 – 15:00</li>
</ul>
</div>
<div class="col-md-2 colorlib-widget">
<h3>Departments</h3>
<p>
<ul class="colorlib-footer-links">
<li><a href="#">Neurology</a></li>
<li><a href="#">Traumatology</a></li>
<li><a href="#">Gynaecology</a></li>
<li><a href="#">Nephrology</a></li>
<li><a href="#">Cardiology</a></li>
<li><a href="#">Pulmonary</a></li>
</ul>

```

```

    </p>
</div>
<div class="col-md-2 colorlib-widget">
  <h3>Useful Links</h3>
  <p>
    <ul class="colorlib-footer-links">
      <li><a href="#">Home</a></li>
      <li><a href="#">Departments</a></li>
      <li><a href="#">Doctors</a></li>
      <li><a href="#">Services</a></li>
      <li><a href="#">News</a></li>
      <li><a href="#">Contact</a></li>
    </ul>
  </p>
</div>
<div class="col-md-2 colorlib-widget">
  <h3>Support</h3>
  <p>
    <ul class="colorlib-footer-links">
      <li><a href="#">Documentation</a></li>
      <li><a href="#">Forums</a></li>
      <li><a href="#">Help & Support</a></li>
      <li><a href="#">Scholarship</a></li>
      <li><a href="#">Student Transport</a></li>
      <li><a href="#">Release Status</a></li>
    </ul>
  </p>
</div>

<div class="col-md-3 colorlib-widget">
  <h3>Make an Appointment</h3>
  <form class="contact-form">
    <div class="form-group">
      <label for="name" class="sr-only">Name</label>
      <input type="text" class="form-control" name="name"
id="name" placeholder="Name">
    </div>
    <div class="form-group">
      <label for="email" class="sr-only">Email</label>
      <input type="email" class="form-control" id="email"
placeholder="Email">
    </div>
    <div class="form-group">
      <label for="message" class="sr-only">Message</label>

```

```

        <textarea class="form-control" id="message" rows="3"
placeholder="Message"></textarea>
    </div>
    <div class="form-group">
        <input type="submit" id="btn-submit" class="btn btn-primary
btn-send-message btn-md" value="Send Message">
    </div>
</form>
</div>
</div>
</div>
<div class="row copyright">
    <div class="col-md-12 text-center">
        <p>
            <small class="block">&copy; <!-- Link back to Colorlib can't be
removed. Template is licensed under CC BY 3.0. -->
            Copyright &copy;<script>document.write(new Date().getFullYear());</script> All rights reserved
            | This template is made with <i class="icon-heart" aria-hidden="true"></i> by <a
href="https://colorlib.com" target="_blank">Colorlib</a>
            <!-- Link back to Colorlib can't be removed. Template is licensed under CC BY 3.0. --></small>
            <small class="block">Demo Images: <a href="http://unsplash.co/"
target="_blank">Unsplash</a> , <a href="https://www.pexels.com/"
target="_blank">Pexels</a></small>
        </p>
    </div>
</div>
</div>
</div>
</div>
<div class="gototop js-top">
    <a href="#" class="js-gotop"><i class="icon-arrow-up"></i></a>
</div>
<!-- jQuery -->
<script src="js/jquery.min.js"></script>
<!-- jQuery Easing -->
<script src="js/jquery.easing.1.3.js"></script>
<!-- Bootstrap -->
<script src="js/bootstrap.min.js"></script>
<!-- Waypoints -->
<script src="js/jquery.waypoints.min.js"></script>
<!-- Stellar Parallax -->
<script src="js/jquery.stellar.min.js"></script>
<!-- Carousel -->
<script src="js/owl.carousel.min.js"></script>
<!-- Flexslider -->

```



```

<script src="js/jquery.flexslider-min.js"></script>
<!-- countTo -->
<script src="js/jquery.countTo.js"></script>
<!-- Magnific Popup -->
<script src="js/jquery.magnific-popup.min.js"></script>
<script src="js/magnific-popup-options.js"></script>
<!-- Sticky Kit -->
<script src="js/sticky-kit.min.js"></script>
<!-- Google Map -->
<script
src="https://maps.googleapis.com/maps/api/js?key=AIzaSyCefOgb1ZWqYtj7raVSmN4PL2WkTr
c-KyA&sensor=false"></script>
<script src="js/google_map.js"></script>
<!-- Main -->
<script src="js/main.js"></script>
</body>
</html>

```

## Patients.jsp

```

<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<%@ page import="java.sql.*"%>
<%@ page import="com.connection.*"%>
<%@ page import="com.bean.Patient"%>
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="utf-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge">
<meta name="viewport" content="width=device-width, initial-scale=1">
<link href="images1/logo.png" rel="icon" />
<title>Soft Computing Technique for Block Chain Enabled
Secure Healthcare System</title>
<!-- Bootstrap -->
<link href="css1/bootstrap.min.css" rel="stylesheet">
<link href="css1/style.css" rel="stylesheet">
<script src="js1/jquery.js"></script>
<script type="text/javascript">
    $(document).ready(function() {
        $('#doctorlist').show();
        $('<div>.doctor li:first-child a</div>').addClass('active');
        $('<div>.doctor li a</div>').click(function(e) {
            var tabDiv = this.hash;
            $('<div>.doctor li a</div>').removeClass('active');

```

```

        $(this).addClass('.active');
        $('.switchgroup').hide();
        $(tabDiv).fadeIn();
        e.preventDefault();
    });
});
</script>
</head>
<body>
    <div class="container-fluid">
        <!-- Header Start ----->
        <div class="row header">
            <div class="col-md-10">
                <h2>
                    Soft Computing Technique for Block Chain Enabled
Secure Healthcare System
                </h3>
            </div>

            <div class="col-md-2 ">
                <ul class="nav nav-pills ">
                    <li class="dropdown dmenu"><a href="#" class="dropdown-toggle"
                        data-toggle="dropdown" role="button" aria-haspopup="true"
aria-expanded="false"><%=session.getAttribute("uname")%> <span
                            class="caret"></span></a>
                        <ul class="dropdown-menu ">
                            <li><a href="profile.jsp">Change Profile</a></li>
                            <li role="separator" class="divider"></li>
                            <li><a href="logout.jsp">Logout</a></li>
                        </ul></li>
                    </ul>
                </div>
            </div>
        <!-- Header Ends ----->
        <%
            if (session.getAttribute("uname") != null && session.getAttribute("uname") != "")
{
    %>
    <div class="row">
        <!-- Menu Area Start ----->
        <div class="col-md-2 menucontent">
            <a href="#"><h1>Dashboard</h1></a>
            <ul class="nav nav-pills nav-stacked">
                <li role="presentation"><a href="department.jsp">Department</a></li>

```

```

        <li role="presentation"><a href="doctor.jsp">Doctors</a></li>
        <li role="presentation"><a href="patients.jsp">Patients</a></li>
        <li role="presentation"><a href="nurse.jsp">Lab Assistant</a></li>
        <li role="presentation"><a href="viewFeedback.jsp">View
Feedback</a></li>
        <li role="presentation"><a href="profile.jsp">Profile</a></li>
    </ul>
</div>
<!-- Menu Ares Ends ----->
<!-- Content Ares Start ----->
<div class="col-md-10 maincontent">
    <!------- Menu Tab ----->
    <div class="panel panel-default contentinside">
        <div class="panel-heading">Manage Patient</div>
        <!------- Panel body Start ----->
        <div class="panel-body">
            <ul class="nav nav-tabs doctor">
                <li role="presentation"><a href="#doctorlist">Patient
List</a></li>
                <li role="presentation"><a href="#adddoctor">Add
Patient</a></li>
            </ul>
            <!------- Display Patients Data List Start ----->
            <div id="doctorlist" class="switchgroup">
                <table class="table table-bordered table-hover">
                    <tr class="active">
                        <td>Id</td>
                        <td>Patient Name</td>
                        <td>Age</td>
                        <td>Sex</td>
                        <td>Blood Grp</td>
                        <td>Options</td>
                    </tr>
                </table>
                <%
Connection con = ConnectionProvider.getCon();
Statement st = con.createStatement();
ResultSet rs = st.executeQuery("select * from patient");
while (rs.next()) {
%>
<form action="DeletePatient" method="post">
<tr>
<td><input type="text" name="pid"
value="<%=rs.getInt(1)%>" class="form-control"></td>
<td><%=rs.getString(2)%></td>

```

```

                <td><%=rs.getString(9)%></td>
                <td><%=rs.getString(7)%></td>
                <td><%=rs.getString(10)%></td>
                <td><a
href="editPatients.jsp?id=<%=rs.getInt(1)%>"      class="btn      btn-primary">Edit</a><input
type="submit"   class="btn   btn-danger"   value="Delete" class="glyphicon   glyphicon-trash"
aria-hidden="true">

                </td>
            </tr>
        </form>
        <%
        }
        %>
    </table>
</div>
<!-------      Display Patient Data List Ends      ----->
<!-------      Add Patient Start      ----->
        <div id="adddoctor" class="switchgroup">
            <div class="panel panel-default">
                <div class="panel-body">
<form class="form-horizontal" action="patientProcess.jsp"
                method="post">
                    <div class="form-group">
                        <label                                class="col-sm-2
control-label">Name</label>
                        <div class="col-sm-10">
<input type="text" class="form-control" name="patientname"
                                placeholder="Name">
                        </div>
                    </div>
                    <div class="form-group">
                        <label class="col-sm-2 control-label">Email</label>
                        <div class="col-sm-10">
<input type="email" class="form-control" name="email"
                                placeholder="Email">
                        </div>
                    </div>
                    <div class="form-group">
                        <label class="col-sm-2 control-label">Password</label>
                        <div class="col-sm-10">
<input type="password" class="form-control" name="pwd"
                                placeholder="Password">
                        </div>
                    </div>
                </div>
            </div>
        </div>

```

```

        <div class="form-group">
<label class="col-sm-2 control-label">Address</label>
        <div class="col-sm-10">
<input type="text" class="form-control" name="add"
        placeholder="Address">
        </div>
    </div>
    <div class="form-group">
<label class="col-sm-2 control-label">Phone</label>
        <div class="col-sm-10">
<input type="text" class="form-control" name="phon"
        placeholder="Phone No.">
        </div>
    </div>
    <div class="form-group">
<label class="col-sm-2 control-label">Sex</label>
        <div class="col-sm-2">
<select class="form-control" name="sex">
            <option>Male</option>
            <option>Female</option>
        </select>
        </div>
    </div>
    <div class="form-group">
<label class="col-sm-2 control-label">Birth Date</label>
        <div class="col-sm-10">
<input type="date" class="form-control" name="bdate"
        placeholder="Birth date">
        </div>
    </div>
    <div class="form-group">
<label class="col-sm-2 control-label">Age</label>
        <div class="col-sm-10">
<input type="text" class="form-control" name="age"
        placeholder="Age">
        </div>
    </div>
    <div class="form-group">
<label class="col-sm-2 control-label">Blood Group</label>
        <div class="col-sm-2">
<select class="form-control" name="bgroup">
<option>A<sup>+</sup></option>
            <option>A<sup>-</sup></option>
            <option>B<sup>+</sup></option>
            <option>B<sup>-</sup></option>

```

```

        <option>AB<sup>+</sup></option>
        <option>AB<sup>-</sup></option>
        <option>O<sup>+</sup></option>
        <option>O<sup>-</sup></option>
    </select>
</div>
</div>
<div class="form-group">
    <div class="col-sm-offset-2 col-sm-10">
        <input type="submit" class="btn btn-primary"
            value="Add
            Patient">
    </div>
</div>
</form>
</div>
</div>
</div>
</div>
<!------- Add Patients Ends ----->
</div>
<!------- Panel body Ends ----->
</div>
</div>
</div>
<script src="js/bootstrap.min.js"></script>
<%
    } else {
        response.sendRedirect("index.jsp");
    }
%>
</body>
</html>

```

### Doctor.jsp

```

<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<%@ page import="java.sql.*"%>
<%@ page import="com.connection.*"%>
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="utf-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge">

```

```

<meta name="viewport" content="width=device-width, initial-scale=1">
<link href="images1/logo.png" rel="icon" />
<title>Soft Computing Technique for Block Chain Enabled
Secure Healthcare System</title>
<!-- Bootstrap -->
<link href="css1/bootstrap.min.css" rel="stylesheet">
<link href="css1/style.css" rel="stylesheet">
<script src="js1/jquery.js"></script>
<script type="text/javascript">
    $(document).ready(function() {

        $('#doctorlist').show();
        $('.doctor li:first-child a').addClass('active');
        $('.doctor li a').click(function(e) {
            var tabDiv = this.hash;
            $('.doctor li a').removeClass('active');
            $(this).addClass('active');
            $('.switchgroup').hide();
            $(tabDiv).fadeIn();
            e.preventDefault();
        });
    });
</script>
</head>
<body>
    <div class="container-fluid">
        <!-- Header Start ----->
        <div class="row header">
            <div class="col-md-10">
                <h2>
Soft Computing Technique for Block Chain Enabled Secure Healthcare System
                </h2>
            </div>
            <div class="col-md-2 ">
                <ul class="nav nav-pills ">
                    <li class="dropdown dmenu"><a href="#" class="dropdown-toggle"
data-toggle="dropdown" role="button" aria-haspopup="true"
aria-expanded="false"><%=session.getAttribute("uname")%> <span
class="caret"></span></a>
                        <ul class="dropdown-menu ">
                            <li><a href="profile.jsp">Change Profile</a></li>
                            <li role="separator" class="divider"></li>
                            <li><a href="logout.jsp">Logout</a></li>
                        </ul></li>
                </ul>
            </div>
        </div>
    </div>

```

```

        </ul>
    </div>
</div>
<!-- Header Ends ----->
<%if (session.getAttribute("uname") != null && session.getAttribute("uname") != "")
{
    <div class="row">
        <!-- Menu Area Start ----->
        <div class="col-md-2 menucontent">
            <a href="#"><h1>Dashboard</h1></a>
            <ul class="nav nav-pills nav-stacked">
<li role="presentation"><a href="department.jsp">Department</a></li>
            <li role="presentation"><a href="doctor.jsp">Doctors</a></li>
            <li role="presentation"><a href="patients.jsp">Patients</a></li>
            <li role="presentation"><a href="nurse.jsp">Lab Assistant</a></li>
<li role="presentation"><a href="viewFeedback.jsp">View Feedback</a></li>
            <li role="presentation"><a href="profile.jsp">Profile</a></li>
            </ul>
        </div>
        <!-- Menu Ares Ends ----->
        <!-- Content Ares Start ----->
        <div class="col-md-10 maincontent">
            <!-- Menu Tab ----->
            <div class="panel panel-default contentinside">
                <div class="panel-heading">Manage Doctor</div>
                <!-- Panel body Start ----->
                <div class="panel-body">
                    <ul class="nav nav-tabs doctor">
<li role="presentation"><a href="#doctorlist">DoctorList</a></li>
                    <li role="presentation"><a href="#adddoctor">Add Doctor</a></li>
                    </ul>
                    <!-- Display Doctor Data List Start ----->
                    <div id="doctorlist" class="switchgroup">
                        <table class="table table-bordered table-hover">
                            <tr class="active">
                                <td>Doctor ID</td>
                                <td>Doctor Name</td>
                                <td>Department</td>
                                <td>Phone No.</td>
                                <td>Options</td>
                            </tr>
                        </table>
                    </div>
                </div>
            </div>
        </div>
    }
}
    Connection con = ConnectionProvider.getCon();
    Statement st = con.createStatement();

```



```

        ResultSet rs = st.executeQuery("select * from doctor");
        while (rs.next()) {
            %>
            <form action="DeleteDoctor" method="post">
                <tr>
                    <td><input type="text" name="docId"
value="<%=rs.getInt(1)%>" class="form-control"></td>
                    <td><%=rs.getString(2)%></td>
                    <td><%=rs.getString(7)%></td>
                    <td><%=rs.getString(6)%></td>
                    <td><a
href="editDoctor.jsp?id=<%=rs.getInt(1)%>" class="btn btn-primary"
                        data-toggle="modal"> Edit
                    </a> <input type="submit" class="btn btn-danger" value="Delete"
                        class="glyphicon glyphicon-trash" aria-hidden="true">
                    </td>
                </tr>
            </form>
            <%
            }
            %>
        </table>
    </div>
    <!------- Display Doctor Data List Ends ----->
    <!------- Doctor Edit Info Modal Start Here ----->
    <div class="modal fade" id="myModal" tabindex="-1" role="dialog"
        aria-labelledby="myModalLabel">
        <div class="modal-dialog" role="document">
            <div class="modal-content">
                <div class="modal-header">
                    <button type="button" class="close" data-dismiss="modal"
                        aria-label="Close">
                        <span aria-hidden="true">&times;</span>
                    </button>
                    <h4 class="modal-title" id="myModalLabel">Edit Doctor
                        Information</h4>
                </div>
                <div class="modal-body">
                    <div class="panel panel-default">
                        <div class="panel-body">
                            <form class="form-horizontal" action="editDoct.jsp" method="post">
                                <div class="form-group">
                                    <label class="col-sm-2 control-label">Doctor Id:</label>
                                    <div class="col-sm-10">

```

```

<input type="number" class="form-control" name="doctid"
      placeholder="Doctor ID" value="" readonly="readonly">
      </div>
    </div>

    <div class="form-group">
      <label class="col-sm-2 control-label">Name</label>
      <div class="col-sm-10">
        <input type="text" class="form-control" name="doctname"
              placeholder="Name">
        </div>
      </div>
      <div class="form-group">
        <label class="col-sm-2 control-label">Email</label>
        <div class="col-sm-10">
          <input type="email" class="form-control" name="email"
                placeholder="Email">
          </div>
        </div>
        <div class="form-group">
          <label class="col-sm-2 control-label">Password</label>
          <div class="col-sm-10">
            <input type="password" class="form-control" name="pwd"
                  placeholder="Password">
            </div>
          </div>
        </div>
      <div class="form-group">
        <label class="col-sm-2 control-label">Address</label>
        <div class="col-sm-10">
          <input type="text" class="form-control" name="add"
                placeholder="Address">
          </div>
        </div>
        <div class="form-group">
          <label class="col-sm-2 control-label">Phone</label>
          <div class="col-sm-10">
            <input type="text" class="form-control" name="phon"
                  placeholder="Phone No.">
            </div>
          </div>
          <div class="form-group">
            <label class="col-sm-2 control-label">Department</label>
            <div class="col-sm-10">
              <select class="form-control" name="dept">

```

```

        <option selected="selected">Departtment</option>
        <option>Nerology</option>
    </select>
</div>

</div>

<div class="modal-footer">
    <button type="button" class="btn btn-default"
        data-dismiss="modal">Close</button>
    <input type="submit" class="btn btn-primary" value="Update">
        </button>
</div>
</form>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
<!------- Modal ends here ----->
<!------- Add Doctor Start ----->
<div id="adddoctor" class="switchgroup">
    <div class="panel panel-default">
        <div class="panel-body">
            <form class="form-horizontal" action="doctorProcess.jsp"
                method="post">
                <div class="form-group">
                    <label class="col-sm-2 control-label">Name</label>
                    <div class="col-sm-10">
                        <input type="text" class="form-control" name="doctname"
                            placeholder="Name"
                            required="required">
                    </div>
                </div>
                <div class="form-group">
                    <label class="col-sm-2 control-label">Email</label>
                    <div class="col-sm-10">
                        <input type="email" class="form-control" name="email"
                            placeholder="Email" required="required">
                    </div>
                </div>
                <div class="form-group">
                    <label class="col-sm-2 control-label">Password</label>
                    <div class="col-sm-10">
                        <input type="password" class="form-control" name="pwd"

```

```

placeholder="Password" required="required">
    </div>
</div>
<div class="form-group">
<label class="col-sm-2 control-label">Address</label>
    <div class="col-sm-10">
        <input type="text" class="form-control" name="add"
            placeholder="Address" required="required">
    </div>
</div>
<div class="form-group">
<label class="col-sm-2 control-label">Phone</label>
    <div class="col-sm-10">
<input type="text" class="form-control" name="phon"
    placeholder="Phone No." required="required">
    </div>
</div>
<div class="form-group">
<label class="col-sm-2 control-label">Department</label>
    <div class="col-sm-10">
        <select class="form-control" name="dept">
<option selected="selected">Select Department</option>
<%
    Statement stmt = con.createStatement();
    ResultSet resultset = stmt.executeQuery("select dept_name from department");
    while (resultset.next())
{
    <%>
    <option><%=resultset.getString(1)%></option>
    <%
    }
    <%>
    </select>
    </div>
</div>
<div class="form-group">
<div class="col-sm-offset-2 col-sm-10">
    <input type="submit" class="btn btn-primary"
        value="Add Doctor">
    </div>
</div>
</form>
</div>
</div>

```

```

        </div>
        <!-- Add Doctor Ends -->
    </div>
    <!-- Panel body Ends -->
</div>
</div>
</div>
<script src="js1/bootstrap.min.js"></script>
<%
    } else {
        response.sendRedirect("index.jsp");
    }
%>
</body>
</html>

```

### Doctorlogin.jsp

```

<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html>
    <head>
        <meta charset="UTF-8">
        <meta name="viewport" content="width=device-width, initial-scale=1">
        <script src="Styles/jquery-3.3.1.min.js" type="text/javascript"></script>
        <script src="Styles/bootstrap-4.1.0.min.js" type="text/javascript"></script>
        <link href="Styles/bootstrap-4.1.0.min.css" rel="stylesheet" type="text/css"/>
        <link href="Styles/MainStyle.css" rel="stylesheet" type="text/css"/>
        <title></title>
        <style type="text/css">
            .btnContactSubmit
{
    width: 50%;
    border-radius: 1rem;
    padding: 1.5%;
    color: #fff;
    background-color: #0062cc;
    border: none;
    cursor: pointer;
    margin-right: 6%;
    background-color: white;
    color: blue;

```

```

        margin-top: 4%;
    }
    .register .nav-tabs .nav-link:hover{
        border: none;
    }
    .text-align{
        margin-top: -3%;
        margin-bottom: -9%;
        padding: 10%;
        margin-left: 30%;
    }
    .form-new{
        margin-right: 22%;
        margin-left: 20%;
    }
    .register-heading{
        margin-left: 21%;
        margin-bottom: 10%;
        color: #e9ecef;
    }
    .register-heading h1 {
        margin-left: 21%;
        margin-bottom: 10%;
        color: #e9ecef;
    }
    .btnLoginSubmit{
        border: none;
        padding: 2%;
        width: 25%;
        cursor: pointer;
        background: #29abe2;
        color: #fff;
    }
    .btnForgetPwd{
        cursor: pointer;
        margin-right: 5%;
        color: #f8f9fa;
    }
    .register{
        background: -webkit-linear-gradient(left, #3931af, #00c6ff);
        margin-top: 3%;
        padding: 3%;
        border-radius: 2.5rem;
    }

```

```

.nav-tabs .nav-link{
    border: 1px solid transparent;
    border-top-left-radius: .25rem;
    border-top-right-radius: .25rem;
    color: white;
}
</style>
</head>
<body>
    <?php
    session_start();
    ?>
    <div class="container register">
        <div class="row">
            <div class="col-md-12">
                <ul class="nav nav-tabs nav-justified" id="myTab" role="tablist">
                    <li class="nav-item">
                        <a class="nav-link active" id="home-tab" data-toggle="tab" href="#home" role="tab"
                        aria-controls="home" aria-selected="true">Login Form 1</a>
                    </li>
                    <li class="nav-item">
                        <a class="nav-link" id="profile-tab" data-toggle="tab" href="#profile" role="tab"
                        aria-controls="profile" aria-selected="false">Login Form 2</a>
                    </li>
                </ul>
                <div class="tab-content" id="myTabContent">
                    <div class="tab-pane fade show active text-align form-new" id="home" role="tabpanel"
                    aria-labelledby="home-tab">
                        <h3 class="register-heading">Login Form 1</h3>
                        <div class="row register-form">
                            <div class="col-md-12">
                                <form method="post">
                                    <div class="form-group">
                                        <input type="text" name="LGform1_user" class="form-control" placeholder="Your Email *"
                                        value="" required="" />
                                    </div>
                                    <div class="form-group">
                                        <input type="password" name="LGform1_pwd" class="form-control" placeholder="Your
                                        Password *" value="" required="" />
                                    </div>
                                    <div class="form-group">
                                        <input type="submit" name="LGform1" class="btnContactSubmit" value="Login" />
                                    </div>
                                </form>

```





```

    <meta name="author" content="" />
<!-- Facebook and Twitter integration -->
    <meta property="og:title" content="" />
    <meta property="og:image" content="" />
    <meta property="og:url" content="" />
    <meta property="og:site_name" content="" />
    <meta property="og:description" content="" />
    <meta name="twitter:title" content="" />
    <meta name="twitter:image" content="" />
    <meta name="twitter:url" content="" />
    <meta name="twitter:card" content="" />
    <link          href="https://fonts.googleapis.com/css?family=Poppins:300,400,500,600,700"
rel="stylesheet">
    <!-- Animate.css -->
    <link rel="stylesheet" href="css/animate.css">
    <!-- Icomoon Icon Fonts-->
    <link rel="stylesheet" href="css/icomoon.css">
    <!-- Bootstrap  -->
    <link rel="stylesheet" href="css/bootstrap.css">
    <!-- Magnific Popup -->
    <link rel="stylesheet" href="css/magnific-popup.css">
    <!-- Owl Carousel  -->
    <link rel="stylesheet" href="css/owl.carousel.min.css">
    <link rel="stylesheet" href="css/owl.theme.default.min.css">
    <!-- Flexslider  -->
    <link rel="stylesheet" href="css/flexslider.css">
    <!-- Flaticons  -->
    <link rel="stylesheet" href="fonts/flaticon/font/flaticon.css">
    <!-- Theme style  -->
    <link rel="stylesheet" href="css/style.css">
    <!-- Modernizr JS -->
    <script src="js/modernizr-2.6.2.min.js"></script>
    <!-- FOR IE9 below -->
    <!--[if lt IE 9]>
    <script src="js/respond.min.js"></script>
    <![endif]-->
</head>
<body>
<div class="colorlib-loader"></div>
<div id="page">
<nav class="colorlib-nav" role="navigation">
    <div class="top-menu">
        <div class="container">
            <div class="row">

```

```

<div class="col-xs-12">
  <div class="top">
    <div class="row">
      <div class="col-md-6">
        <div id="colorlib-logo"><a
href="index.html">Secure<span> Health care System</span></a></div>
      </div>
      <div class="col-md-3">
        <div class="num">
          <span class="icon"><i class="icon-phone"></i></span>
          <p><a href="#">111-222-333</a><br><a href="#">99-222-333</a></p>
        </div>
      </div>
      <div class="col-md-3">
        <div class="loc">
          <span class="icon"><i class="icon-location"></i></span>
          <p><a href="#">88 Route West 21th Street, Suite 721 New York NY 10016</a></p>
        </div>
      </div>
    </div>
  </div>
</div>
<div class="menu-wrap">
  <div class="container">
    <div class="row">
      <div class="col-xs-8">
        <div class="menu-1">
          <ul>
            <li><a href="index.html">Home</a></li>
            <li class="has-dropdown">
              <a href="doctors.html">Doctors</a>
            </li>
            <li><a href="services.html">Services</a></li>
            <li class="has-dropdown">
              <a href="departments.html">Departments</a>
              <ul class="dropdown">
                <li><a href="departments-single.html">Plasetic Surgery Department</a></li>
                <li><a href="departments-single.html">Dental Department</a></li>
                <li><a href="departments-single.html">Psychological Department</a></li>
              </ul>
            </li>
          </ul>
        </div>
      </div>
    </div>
  </div>
</div>

```



```

<p><span><i                                     class="icon-mail"></i></span>
<a href="mailto:info@yoursite.com">info@yoursite.com</a></p>
</div>
<div class="col-md-3">
<p><span><i class="icon-globe-outline"></i></span> <a href="#">yoursite.com</a></p>
</div>
</div>
</div>
<div class="col-md-12 animate-box">
<div class="row">
<div class="col-md-6">
<h2>Lab Assistant Login</h2>
<form action="LoginLab" method="post">
<div class="row form-group">
<div class="col-md-12">
<label for="email">Email</label>
<input      type="email"      id="email"      class="form-control"      name="email"
placeholder="example@gmail.com">
</div>
</div>
<div class="row form-group">
<div class="col-md-12">
<label for="subject">Password</label>
<input      type="password"      id="password"      class="form-control"      name="password"
placeholder="Your password">
</div>
</div>
<div class="form-group text-center">
<input type="submit" value="Login" class="btn btn-primary">
</div>
</form>
</div>
<div class="col-md-6">
<div id="map" class="colorlib-map"></div>
</div>
</div>
</div>
</div>
</div>
<div id="colorlib-footer" role="contentinfo">
<div class="overlay"></div>
<div class="container">
<div class="row row-pb-md">

```

```

<div class="col-md-3 colorlib-widget">
    <h3>Head Office</h3>
    <ul class="colorlib-footer-links">
        <li>291 South 21th Street, <br> Suite 721 New York NY 10016</li>
        <li><a href="tel://1234567920"><i class="icon-phone"></i> + 1235 2355 98</a></li>
        <li><a href="mailto:info@yoursite.com"><i class="icon-mail"></i> info@yoursite.com</a></li>
        <li><a href="http://luxehotel.com"><i class="icon-location4"></i> yourwebsite.com</a></li>
        <li>Mon-Thu: 9:30 – 21:00</li>
        <li>Fri: 6:00 – 21:00</li>
        <li>Sat: 10:00 – 15:00</li>
    </ul>
</div>
<div class="col-md-2 colorlib-widget">
    <h3>Departments</h3>
    <p>
        <ul class="colorlib-footer-links">
            <li><a href="#">Neurology</a></li>
            <li><a href="#">Traumatology</a></li>
            <li><a href="#">Gynaecology</a></li>
            <li><a href="#">Nephrology</a></li>
            <li><a href="#">Cardiology</a></li>
            <li><a href="#">Pulmonary</a></li>
        </ul>
    </p>
</div>
<div class="col-md-2 colorlib-widget">
    <h3>Useful Links</h3>
    <p>
        <ul class="colorlib-footer-links">
            <li><a href="#">Home</a></li>
            <li><a href="#">Departments</a></li>
            <li><a href="#">Doctors</a></li>
            <li><a href="#">Services</a></li>
            <li><a href="#">News</a></li>
            <li><a href="#">Contact</a></li>
        </ul>
    </p>
</div>
<div class="col-md-2 colorlib-widget">
    <h3>Support</h3>
    <p>
        <ul class="colorlib-footer-links">
            <li><a href="#">Documentation</a></li>
            <li><a href="#">Forums</a></li>

```

```

        <li><a href="#">Help & Support</a></li>
        <li><a href="#">Scholarship</a></li>
        <li><a href="#">Student Transport</a></li>
        <li><a href="#">Release Status</a></li>
    </ul>
</p>
</div>
<div class="col-md-3 colorlib-widget">
    <h3>Make an Appointment</h3>
    <form class="contact-form">
        <div class="form-group">
            <label for="name" class="sr-only">Name</label>
            <input type="name" class="form-control" id="name" placeholder="Name">
        </div>
        <div class="form-group">
            <label for="email" class="sr-only">Email</label>
            <input type="email" class="form-control" id="email" placeholder="Email">
        </div>
        <div class="form-group">
            <label for="message" class="sr-only">Message</label>
            <textarea class="form-control" id="message" rows="3" placeholder="Message"></textarea>
        </div>
        <div class="form-group">
            <input type="submit" id="btn-submit" class="btn btn-primary btn-send-message btn-md"
            value="Send Message">
        </div>
    </form>
</div>
</div>
<div class="row copyright">
    <div class="col-md-12 text-center">
        <p>
            <small class="block">&copy; <!-- Link back to Colorlib can't be removed. Template is licensed
            under CC BY 3.0. -->
            Copyright &copy; <script>document.write(new Date().getFullYear());</script> All rights reserved
            | This template is made with <i class="icon-heart" aria-hidden="true"></i> by <a
            href="https://colorlib.com" target="_blank">Colorlib</a>
            <!-- Link back to Colorlib can't be removed. Template is licensed under CC BY 3.0. --></small>
            <small class="block">Demo Images: <a href="http://unsplash.co/"
            target="_blank">Unsplash</a> , <a href="https://www.pexels.com/"
            target="_blank">Pexels</a></small>
        </p>
    </div>
</div>

```

```

        </div>
    </footer>
</div>
<div class="gototop js-top">
    <a href="#" class="js-gotop"><i class="icon-arrow-up"></i></a>
</div>
<!-- jQuery -->
<script src="js/jquery.min.js"></script>
<!-- jQuery Easing -->
<script src="js/jquery.easing.1.3.js"></script>
<!-- Bootstrap -->
<script src="js/bootstrap.min.js"></script>
<!-- Waypoints -->
<script src="js/jquery.waypoints.min.js"></script>
<!-- Stellar Parallax -->
<script src="js/jquery.stellar.min.js"></script>
<!-- Carousel -->
<script src="js/owl.carousel.min.js"></script>
<!-- Flexslider -->
<script src="js/jquery.flexslider-min.js"></script>
<!-- countTo -->
<script src="js/jquery.countTo.js"></script>
<!-- Magnific Popup -->
<script src="js/jquery.magnific-popup.min.js"></script>
<script src="js/magnific-popup-options.js"></script>
<!-- Sticky Kit -->
<script src="js/sticky-kit.min.js"></script>
<!-- Google Map -->
<script
src="https://maps.googleapis.com/maps/api/js?key=AIzaSyCefOgb1ZWqYtj7raVSmN4PL2WkTr
c-KyA&sensor=false"></script>
<script src="js/google_map.js"></script>
<!-- Main -->
<script src="js/main.js"></script>
</body>
</html>

```

### Viewpatientfiles.jsp

```

<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<%@ page import="java.sql.*"%>
<%@ page import="com.connection.*"%>
<%@ page import="com.bean.Patient"%>
<%@ page import="com.patient.*"%>

```

```

<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="utf-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge">
<meta name="viewport" content="width=device-width, initial-scale=1">
<link href="images1/logo.png" rel="icon" />
<title>Soft Computing Technique for Block Chain Enabled
Secure Healthcare System</title>
<!-- Bootstrap -->
<link href="css1/bootstrap.min.css" rel="stylesheet">
<link href="css1/style.css" rel="stylesheet">
<script src="js1/jquery.js"></script>
<script type="text/javascript">
    $(document).ready(function() {
        $('#doctorlist').show();
        $('.doctor li:first-child a').addClass('active');
        $('.doctor li a').click(function(e) {
            var tabDiv = this.hash;
            $('.doctor li a').removeClass('active');
            $(this).addClass('active');
            $('.switchgroup').hide();
            $(tabDiv).fadeIn();
            e.preventDefault();
        });
    });
</script>
</head>
<body>
    <div class="container-fluid">
        <!-- Header Start ----->
        <div class="row header">
            <div class="col-md-10">
                <h2>
                    Soft Computing Technique for Block Chain Enabled
                    Secure Healthcare System
                </h3>
            </div>
            <div class="col-md-2 ">
                <ul class="nav nav-pills ">
                    <li class="dropdown dmenu"><a href="#" class="dropdown-toggle"
                        data-toggle="dropdown" role="button" aria-haspopup="true"
                        aria-expanded="false"><%=session.getAttribute("uname")%>
                    <span class="caret"></span></a>

```



```

        <ul class="dropdown-menu ">
            <li><a href="profile.jsp">Change Profile</a></li>
            <li role="separator" class="divider"></li>
            <li><a href="logout.jsp">Logout</a></li>
        </ul></li>
    </ul>
</div>
</div>
<!-- Header Ends ----->
<% String val1=request.getAttribute("v1")!=null?request.getAttribute("v1").toString():"";%>
<%
if (session.getAttribute("uname") != null && session.getAttribute("uname") != "") {
    %>
    <div class="row">
        <!-- Menu Area Start ----->
        <div class="col-md-2 menucontent">
            <a href="#"><h1>Dashboard</h1></a>
            <ul class="nav nav-pills nav-stacked">
<li role="presentation"><a href="UpdateDoctorProfile.jsp">Update Profile</a></li>
<li role="presentation"><a href="DoctorFileRequest.jsp">Patient File Request </a></li>
        <li role="presentation"><a href="DoctorRequestStatus.jsp">View Request Status</a></li>
<li role="presentation"><a href="ViewPatientFiles.jsp">View Patient Files</a></li>
        <li role="presentation"><a href="ViewPatientHashFiles.jsp">View Patient Hash
Reports</a></li>
            </ul>
        </div>
        <!-- Menu Area Ends ----->
        <!-- Content Area Start ----->
        <div class="col-md-10 maincontent">
            <!-- Menu Tab ----->
            <div class="panel panel-default contentinside">
                <div class="panel-heading">View Patient Files</div>
                <!-- Panel body Start ----->
                <div class="panel-body">
                    <div class="panel panel-default">
                        <div class="panel-body">
<form class="form-horizontal" action="ViewPatientFiles"
                                method="post">
                                    <div class="form-group">
<label class="col-sm-2 control-label">Select Patient</label>
                                        <div class="col-sm-10">
<select class="form-control" name="patientDetails">
                                %>
Connection con = ConnectionProvider.getCon();

```

```

Statement st = con.createStatement();
ResultSet rs = st.executeQuery("select patient_id,patient_name from patient");
while (rs.next()) {
    %>
    <option value="<%=rs.getInt(1)%>"><%=rs.getString(2)%></option>
    <%
    }
    %>
</select>
</div>

</div>
<div class="form-group">

<div class="col-sm-offset-2 col-sm-10">
<input type="submit" class="btn btn-primary" value="View Patient Files">
    </div>
</div>

<div class="form-group">
    <div class="col-sm-8">
<label class="col-sm-8 control-label"><%= val %></label>
</div>
    </div>
</form>
</div>
</div>
</div>
<!------- Add Patients Ends ----->
</div>
<!------- Panel body Ends ----->
</div>
</div>
</div>
<script src="js1/bootstrap.min.js"></script>
<%
    } else {
        response.sendRedirect("doctorLogin.jsp");
    }
    %>
</body>
</html>|>

```

RegisterDao.java

```

package com.user;
import java.sql.Connection;

```

```

import java.sql.PreparedStatement;
import com.bean.User;
import com.connection.ConnectionProvider;
public class RegisterDao {
    public static int register(User u) {
        int status = 0;
        int id = 0;
        try {
            Connection con = ConnectionProvider.getCon();
            PreparedStatement ps = con.prepareStatement("insert into user values(?,?,?,?,?,?)");
            ps.setInt(1, id);
            ps.setString(2, u.getName());
            ps.setString(3, u.getEmail());
            ps.setString(4, u.getAddress());
            ps.setString(5, u.getPhone());
            ps.setString(6, u.getPassword());
            status = ps.executeUpdate();
        } catch (Exception e) {
        }
        return status;
    }
}

```

### LoginDao.java

```

package com.user;
import java.io.IOException;
import java.sql.Connection;
import java.sql.ResultSet;
import java.sql.Statement;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpSession;
import com.connection.ConnectionProvider;
/**
 * Servlet implementation class LoginDao
 */
@WebServlet("/LoginDao")
public class LoginDao extends HttpServlet {
    private static final long serialVersionUID = 1L;
    /**
     * @see HttpServlet#HttpServlet()

```

```

    */
public LoginDao() {
    super();
    // TODO Auto-generated constructor stub
}
/**
 * @see HttpServlet#doGet(HttpServletRequest request, HttpServletResponse response)
 */
protected void doGet(HttpServletRequest request, HttpServletResponse response) throws
ServletException, IOException {
    // TODO Auto-generated method stub
    response.getWriter().append("Served at: ").append(request.getContextPath());
}
/**
 * @see HttpServlet#doPost(HttpServletRequest request, HttpServletResponse response)
 */
protected void doPost(HttpServletRequest request, HttpServletResponse response) throws
ServletException, IOException {
    // TODO Auto-generated method stub
    // TODO Auto-generated method stub
    String email = request.getParameter("email");
    String password = request.getParameter("password");
    try {
        HttpSession hs = request.getSession();
        Connection con = ConnectionProvider.getCon();
        Statement stmt = con.createStatement();

        ResultSet rs = stmt.executeQuery("select name,email,password from user where email='" +
email + "'and password='" + password + "'");
        if (rs.next()) {
            hs.setAttribute("uname", rs.getString(1));
            response.sendRedirect("department.jsp");
        } else {
            response.sendRedirect("index.html");
        }
    } catch (Exception e) {
        e.printStackTrace();
    }
    doGet(request, response);
}
}

```

Requestfileaccess.java

```

/*
 * To change this license header, choose License Headers in Project Properties.

```

```

* To change this template file, choose Tools | Templates
* and open the template in the editor.
*/

package com.doctor;
import static com.block.MD5.getMd5;
import com.block.SHA256Helper;
import com.connection.ConnectionProvider;
import java.io.IOException;
import java.io.PrintWriter;
import java.sql.Connection;
import java.sql.Statement;
import java.text.SimpleDateFormat;
import java.util.Date;
import javax.servlet.RequestDispatcher;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpSession;

/**
 *
 * @author THILIPAN
 */
public class RequestFileAccess extends HttpServlet {

    /**
     * Processes requests for both HTTP <code>GET</code> and <code>POST</code>
     * methods.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    protected void processRequest(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
        HttpSession session = request.getSession();
        String patientId = request.getParameter("patientDetails");
        String doctorId=session.getAttribute("doctor_id").toString();
        String doctorName=session.getAttribute("uname").toString();
        Date date = new Date();
        String strDateFormat = "dd MMM yyyy HH:mm:ss a";
        SimpleDateFormat sdf = new SimpleDateFormat(strDateFormat);
        System.out.println(sdf.format(date));
        String HashValue=SHA256Helper.generateHash(patientId+strDateFormat);

```

```

        try {
            Connection connection = ConnectionProvider.getCon();
            Statement statement = connection.createStatement();
            int add = statement
                .executeUpdate("insert into filerequest(PatitentID, DoctorID,
DoctorName, RequestStatus,HASH, CreatedDate) values("
                    + patientId + "," + doctorId + "," + doctorName +
"", 'Pending', ""+HashValue+"", ""+sdf.format(date).toString()+"");
            if (add > 0) {
RequestDispatcher rd=request.getRequestDispatcher("DoctorFileRequest.jsp");
request.setAttribute("v1", "File Access Requested Successfully");
                rd.forward(request, response);
            } else {
                response.sendRedirect("DoctorFileRequest.jsp");
            }
        } catch (Exception e) {
            e.printStackTrace();
        }
    }

    // <editor-fold defaultstate="collapsed" desc="HttpServlet methods. Click on the + sign on
the left to edit the code.">

    /**
     * Handles the HTTP <code>GET</code> method.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    @Override
    protected void doGet(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
        processRequest(request, response);
    }

    /**
     * Handles the HTTP <code>POST</code> method.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    @Override
    protected void doPost(HttpServletRequest request, HttpServletResponse response)

```

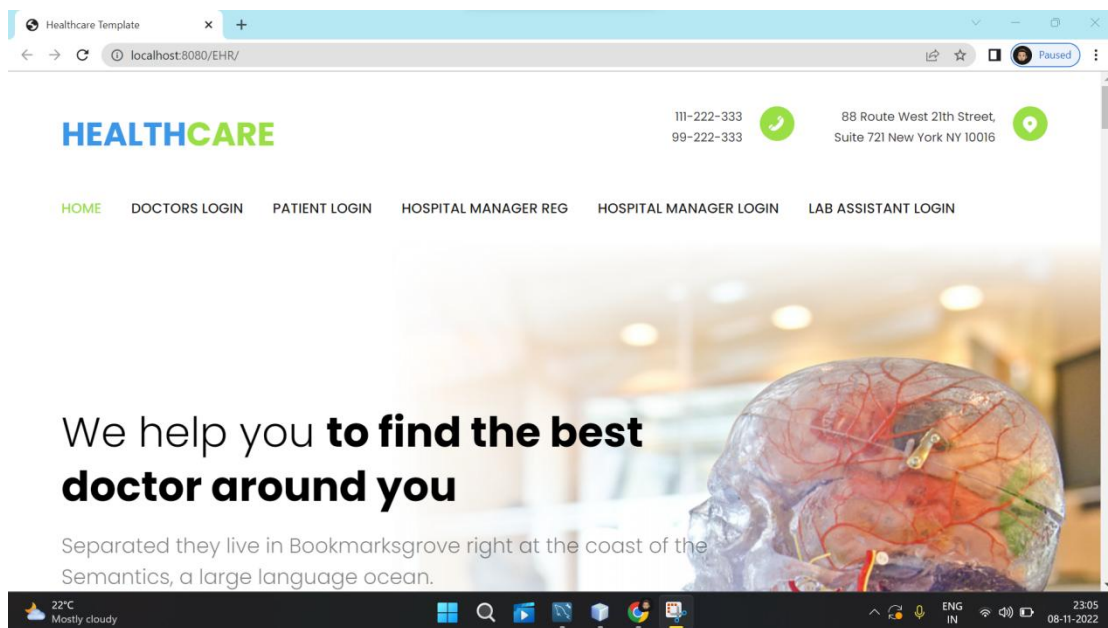
```

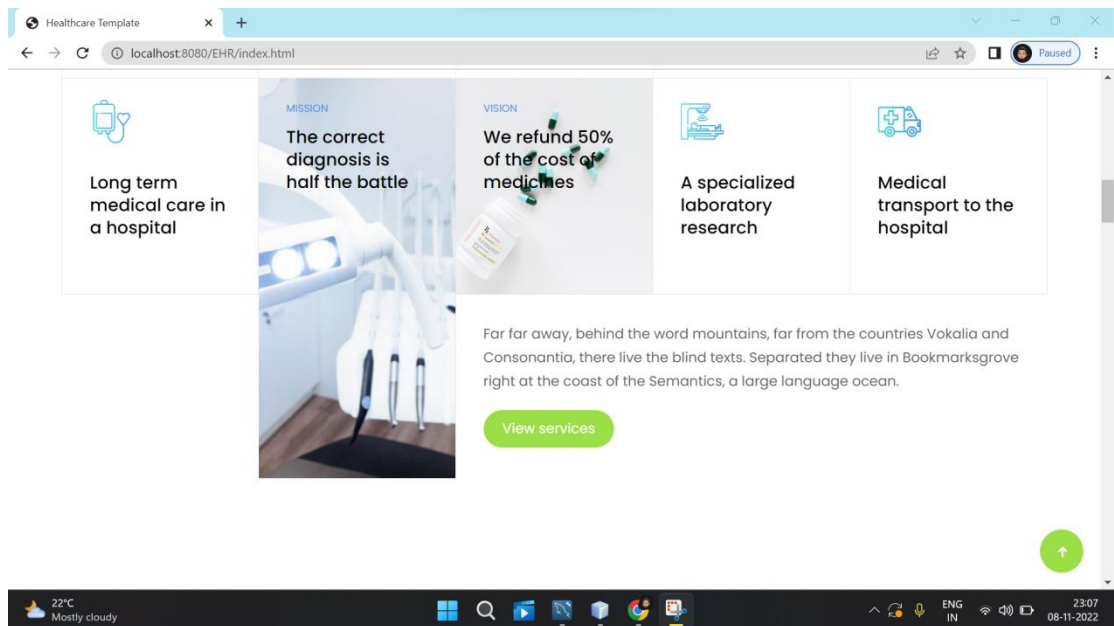
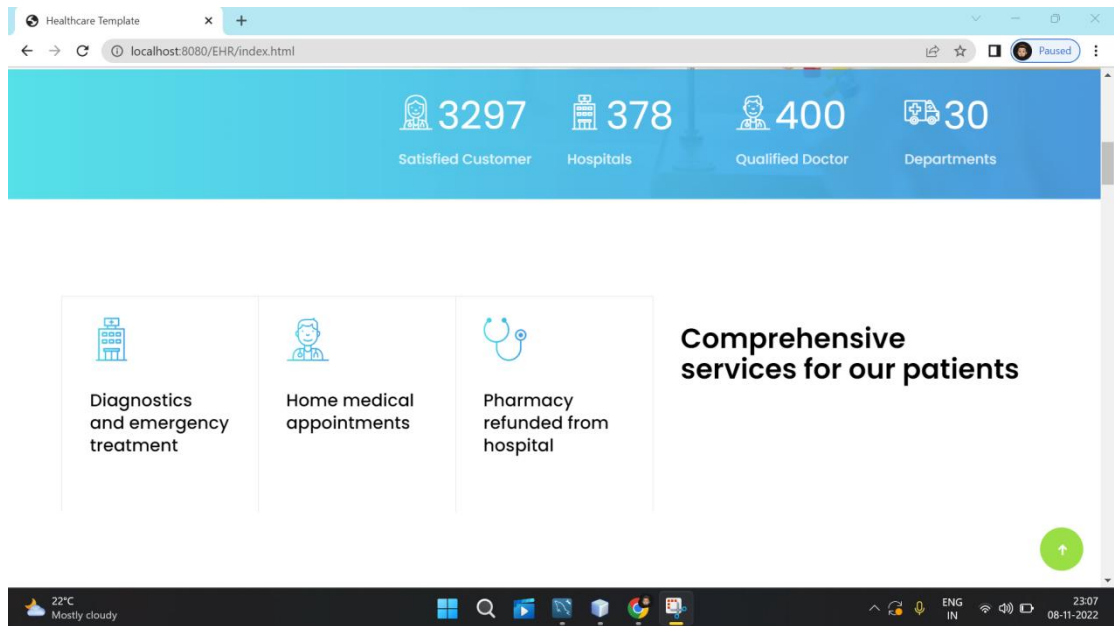
        throws ServletException, IOException {
    processRequest(request, response);
}
/**
 * Returns a short description of the servlet.
 *
 * @return a String containing servlet description
 */
@Override
public String getServletInfo() {
    return "Short description";
} // </editor-fold>

```

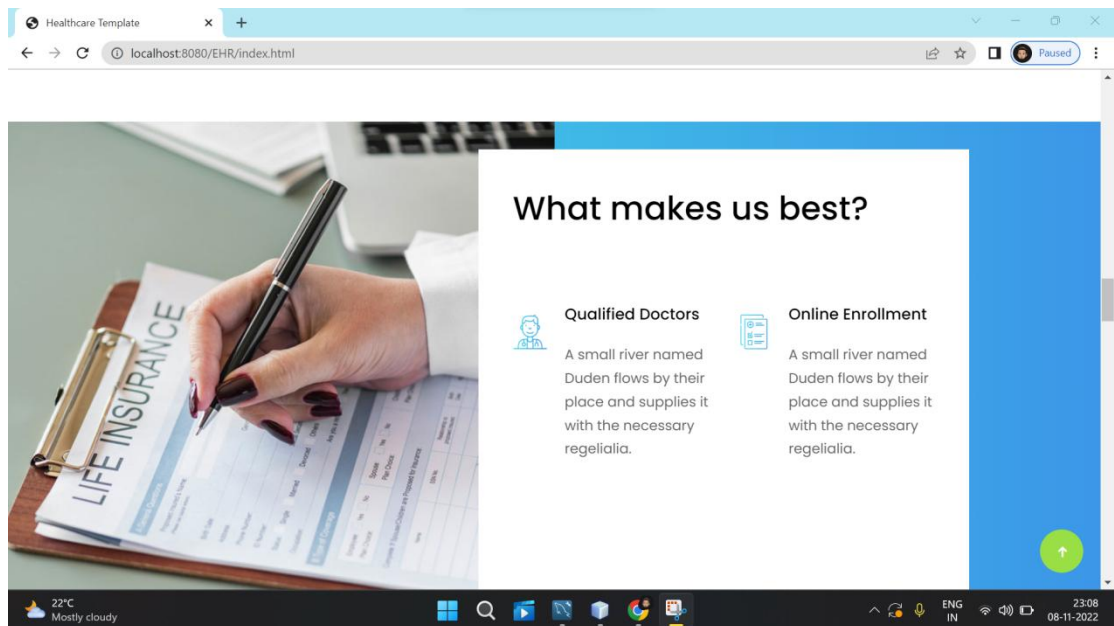
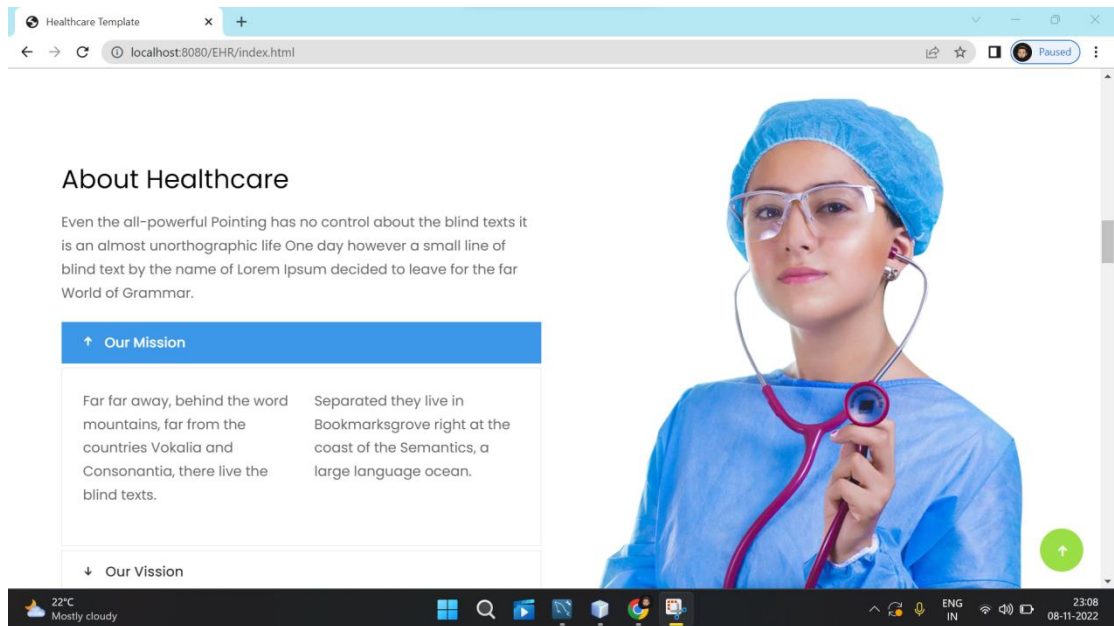
## 5.2 SAMPLE OUTPUT

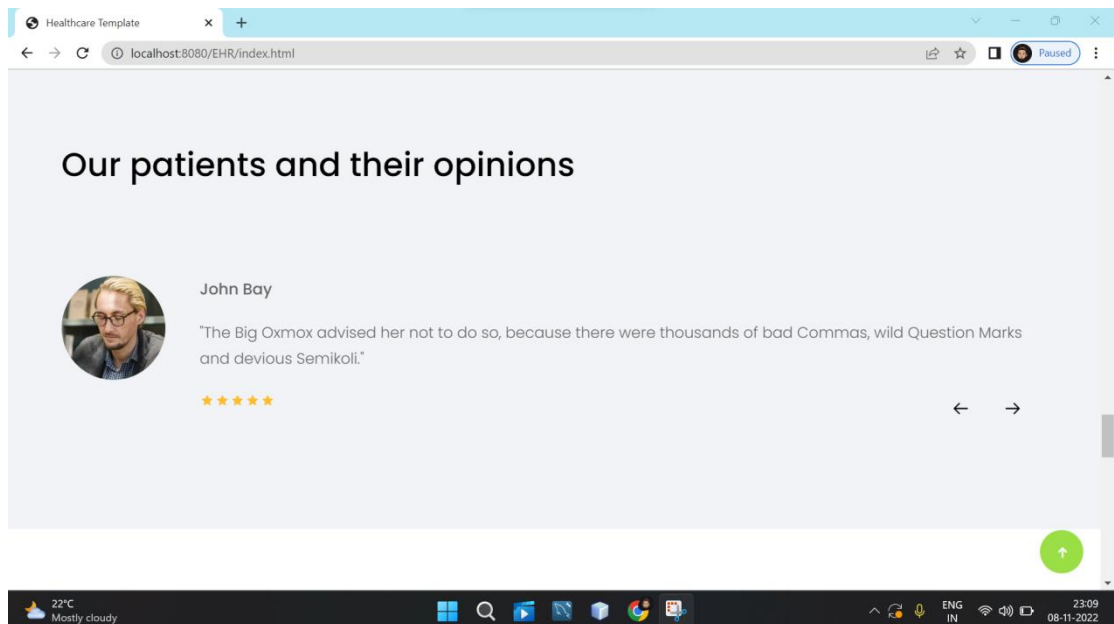
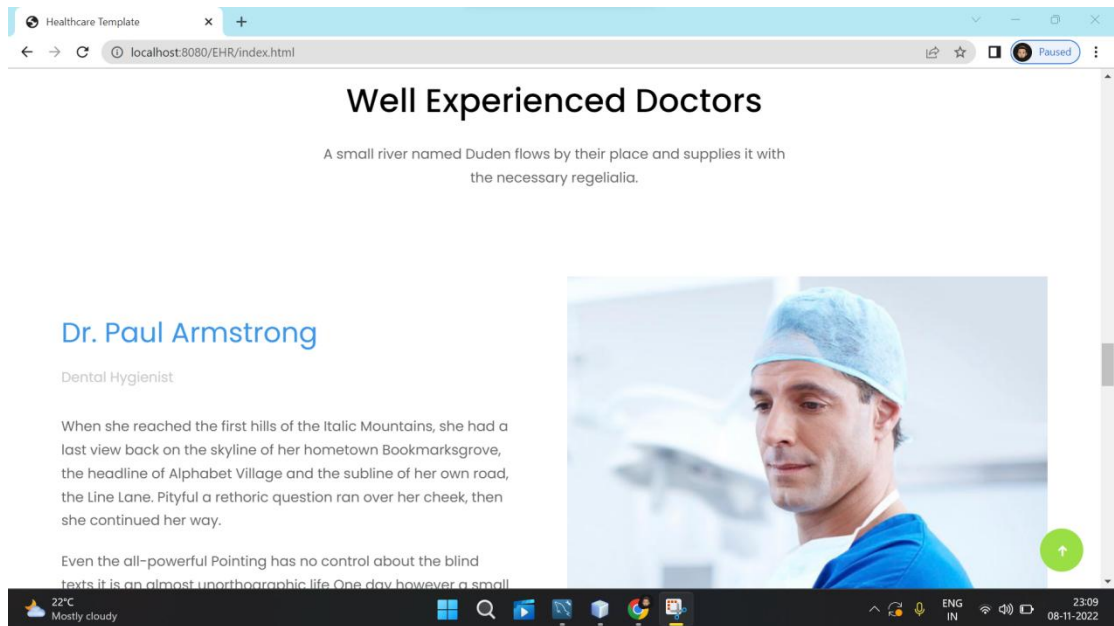
### 5.2.1 HOME PAGE

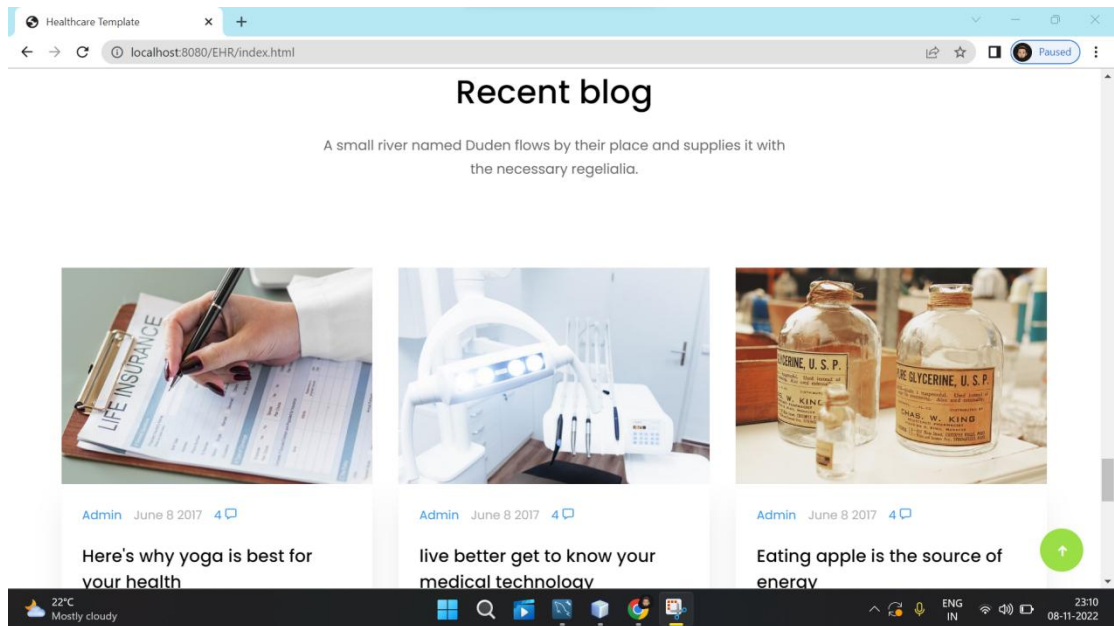




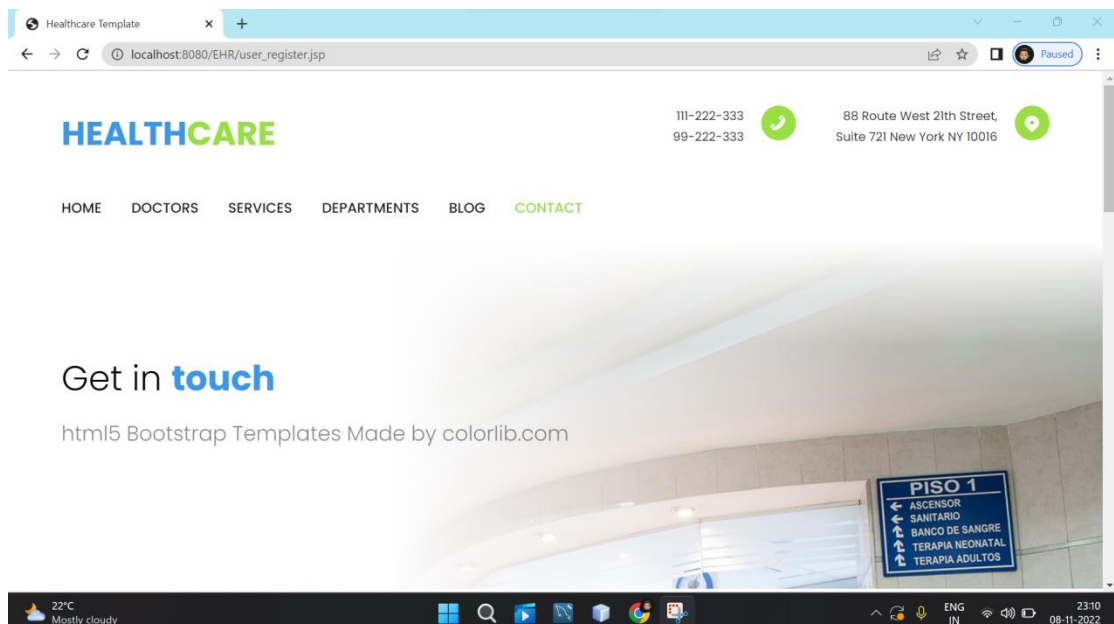


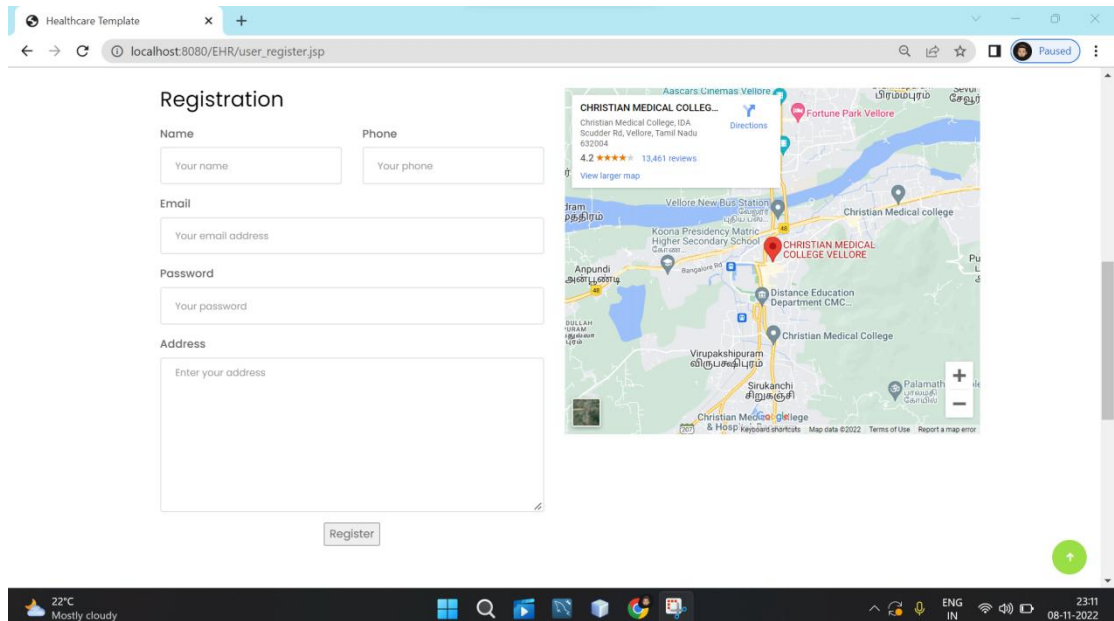




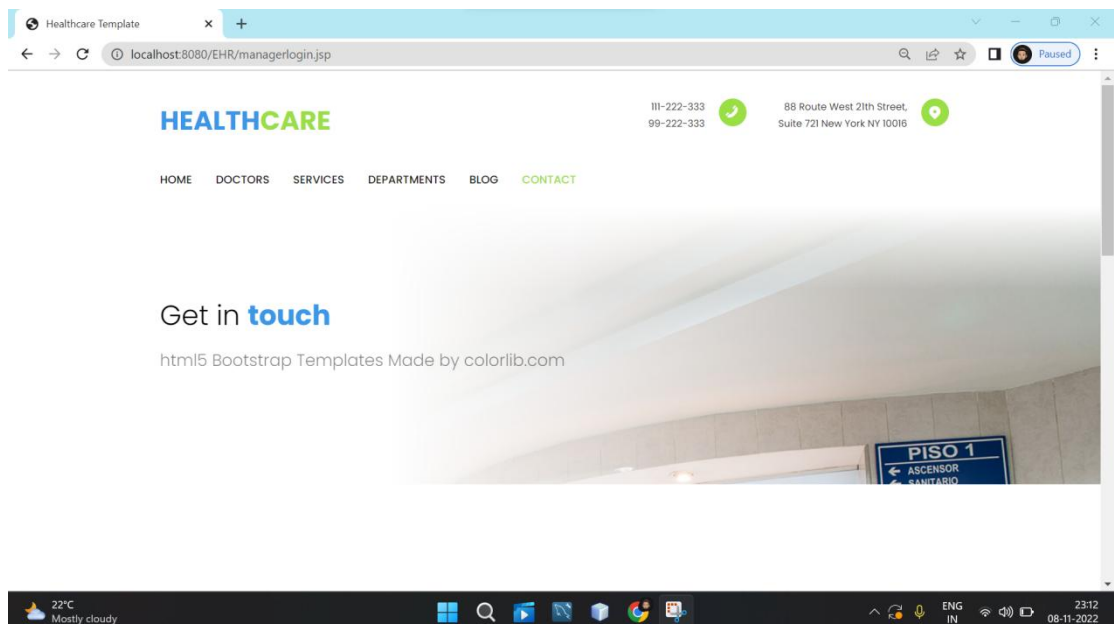


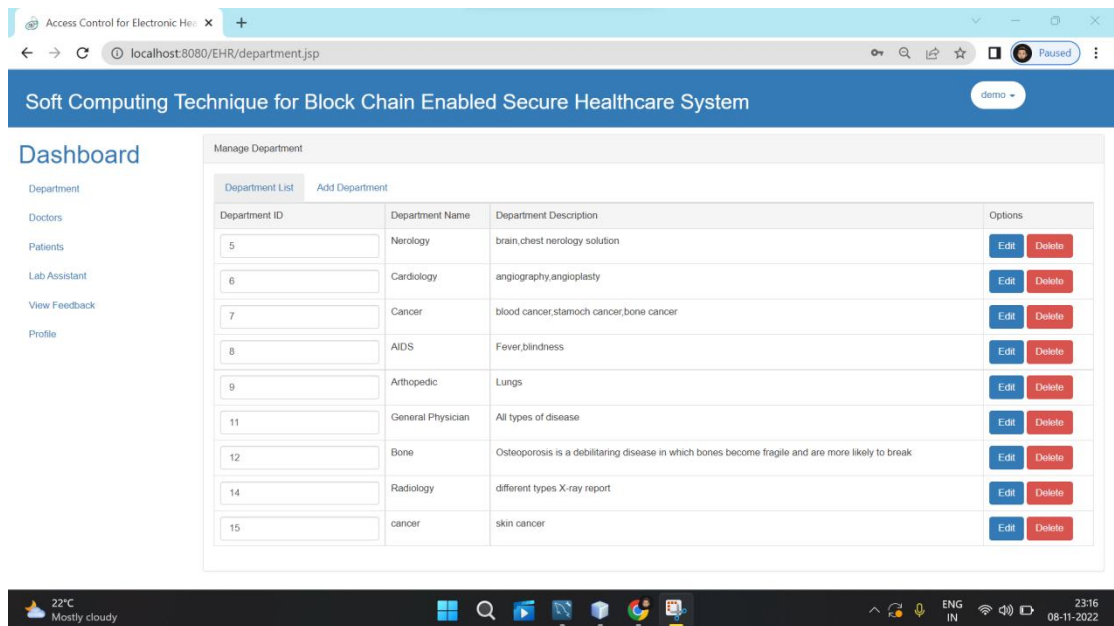
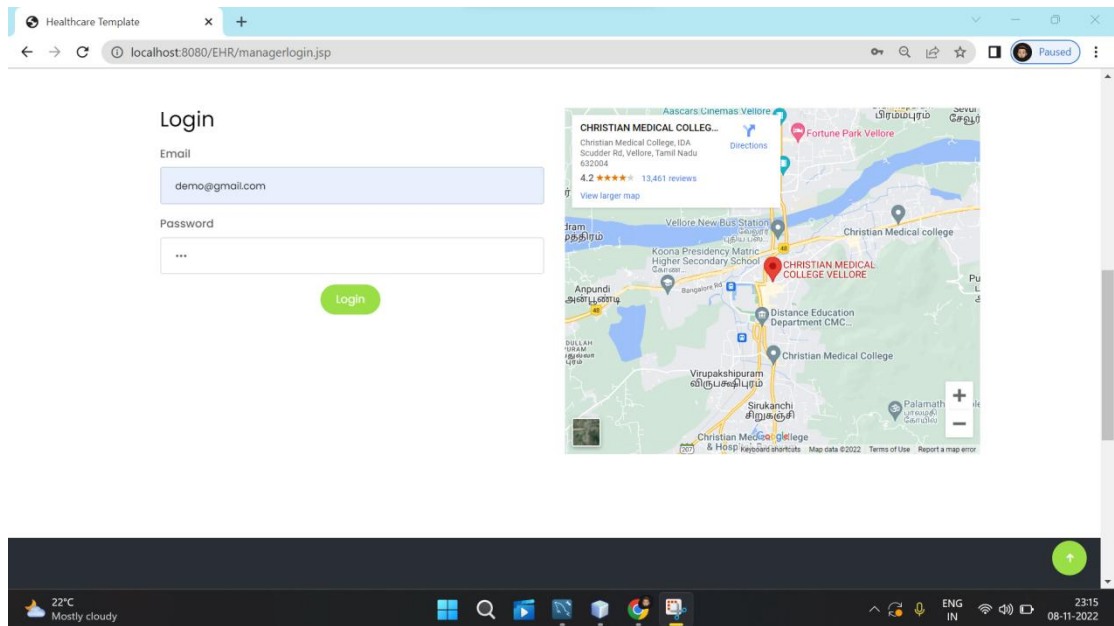
## 5.2.2 HOSPITAL REGISTRATION





## 5.2.3 HOSPITAL LOGIN





Access Control for Electronic Health Records | localhost:8080/EHR/doctor.jsp

### Soft Computing Technique for Block Chain Enabled Secure Healthcare System

demo

#### Dashboard

- Department
- Doctors
- Patients
- Lab Assistant
- View Feedback
- Profile

#### Manage Doctor

Doctor List | Add Doctor

Doctor ID	Doctor Name	Department	Phone No.	Options
1	Dr. Harish	Cardiology	7397748992	<a href="#">Edit</a> <a href="#">Delete</a>

22°C Mostly cloudy | 23:16 08-11-2022

Access Control for Electronic Health Records | localhost:8080/EHR/patients.jsp

### Soft Computing Technique for Block Chain Enabled Secure Healthcare System

demo

#### Dashboard

- Department
- Doctors
- Patients
- Lab Assistant
- View Feedback
- Profile

#### Manage Patient

Patient List | Add Patient

Id	Patient Name	Age	Sex	Blood Grp	Options
1	satish	22	Male	A+	<a href="#">Edit</a> <a href="#">Delete</a>

22°C Mostly cloudy | 23:16 08-11-2022

Access Control for Electronic Hei x +

localhost:8080/EHR/nurse.jsp

Soft Computing Technique for Block Chain Enabled Secure Healthcare System demo

### Dashboard

- Department
- Doctors
- Patients
- Lab Assistant
- View Feedback
- Profile

#### Manage Nurse

Lab Assistant List Add Lab Assistant

Lab Assistant ID	Lab Assistant Name	Email	Address	Phone No.	Options
1	Surya	surya@gmail.com	Vellore	1234567890	<a href="#">Edit</a> <a href="#">Delete</a>

22°C Mostly cloudy

23:17 08-11-2022

Online Hospital Management Sy x +

localhost:8080/EHR/profile.jsp

Soft Computing Technique for Block Chain Enabled Secure Healthcare System demo

### Dashboard

- Department
- Doctors
- Patients
- Lab Assistant
- View Feedback
- Profile

#### Manage Profile

Name demo

Email demo@gmail.com

Address null

Phone 6518381367

[Update Profile](#)

#### Change Password

Password \*\*\*

New Password Enter New Password

Confirm New Password Confirm New Password

[Update Password](#)

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23:18 08-11-2022

Access Control for Electronic Health Records | localhost:8080/EHR/viewFeedback.jsp

## Soft Computing Technique for Block Chain Enabled Secure Healthcare System

demo

### Dashboard

- Department
- Doctors
- Patients
- Lab Assistant
- View Feedback
- Profile

#### Manage Feedback

View Feedback

Name	Email	Contact	Feedback
satish	satish@gmail.com	1245679039	Need some improvements

22°C Mostly cloudy | 23:19 08-11-2022

## 5.2.4 DOCTOR LOGIN

Healthcare Template | localhost:8080/EHR/doctorLogin.html

# HEALTHCARE

111-222-333 99-222-333 | 88 Route West 21th Street, Suite 721 New York NY 10016

HOME DOCTORS SERVICES DEPARTMENTS BLOG CONTACT

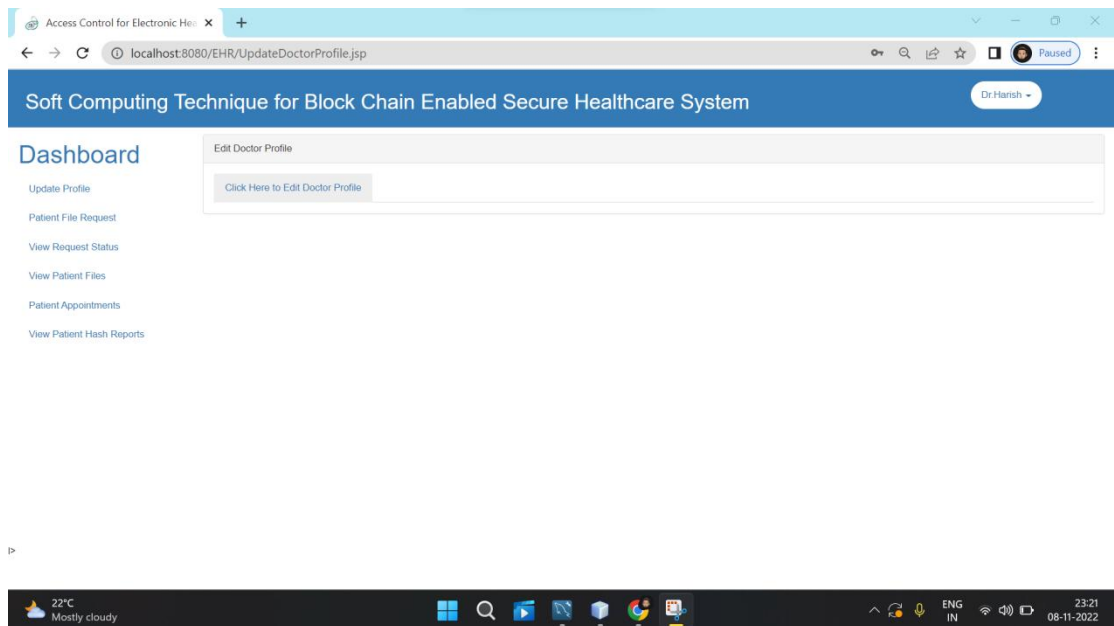
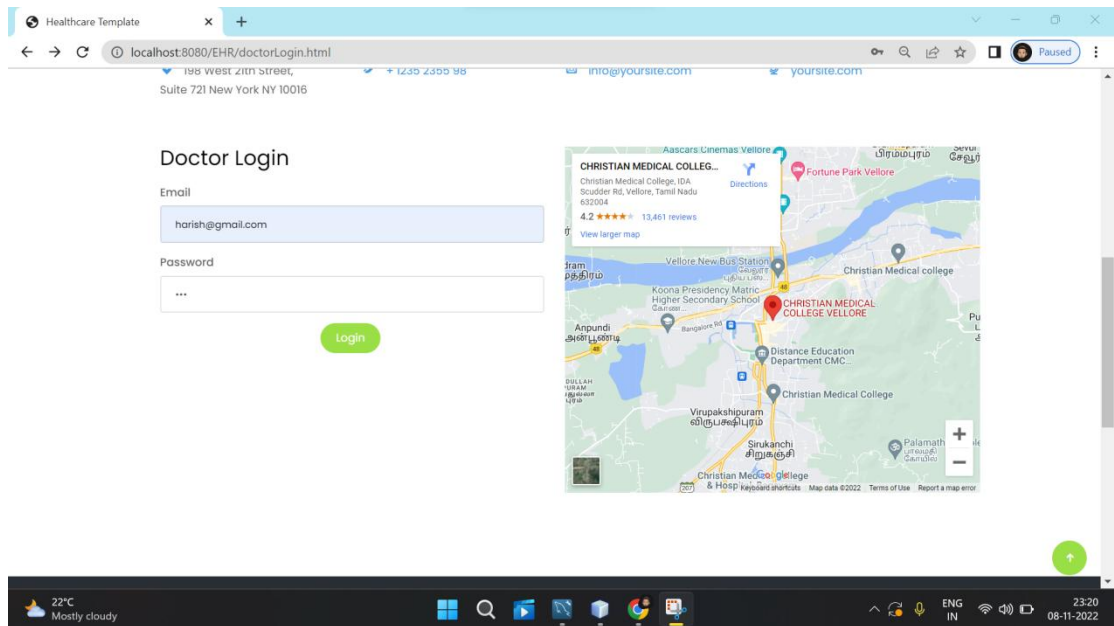
## Get in touch

html5 Bootstrap Templates Made by colorlib.com

PISO 1  
ASCENSOR  
SANTUARIO

22°C Mostly cloudy | 23:20 08-11-2022





Access Control for Electronic Health Records | localhost:8080/EHR/RequestFileAccess

## Soft Computing Technique for Block Chain Enabled Secure Healthcare System

Dr. Harish

### Dashboard

- Update Profile
- Patient File Request
- View Request Status
- View Patient Files
- View Patient Hash Reports

#### Patient File Request

Select Patient: satish

Request File Access

File Access Requested Successfully

22°C Mostly cloudy | 23-21 08-11-2022

Access Control for Electronic Health Records | localhost:8080/EHR/DoctorRequestStatus.jsp

## Soft Computing Technique for Block Chain Enabled Secure Healthcare System

Dr. Harish

### Dashboard

- Update Profile
- Patient File Request
- View Request Status
- View Patient Files
- View Patient Hash Reports

#### Edit Doctor Profile

ID	Patient Name	Doctor Name	Request Status	Hash Value	Created Date
1	satish	Dr. Harish	Approved	e91d3c1d54659bb8b52506912cfb8512cd337cc1dd48f6ca67d39aafca7bc2f7	04 Nov 2022 10:58:21 AM
2	satish	Dr. Harish	Pending	e91d3c1d54659bb8b52506912cfb8512cd337cc1dd48f6ca67d39aafca7bc2f7	08 Nov 2022 23:21:21 PM

22°C Mostly cloudy | 23-21 08-11-2022

Access Control for Electronic Health Records with Hybrid Blockchain-Edge Architecture

Dr. Harish

### Dashboard

- Update Profile
- Patient File Request
- View Request Status
- View Patient Files
- View Patient Hash Reports

#### View Patient Files

Select Patient:

[View Patient Files](#)

#### View Patient Reports

ID	Patient Name	Lab Assistant Name	BMP	CBC	BP	KCL	PMS	HEARTRATE	PULSE	CreatedDate
1	satish	Surya	5.0	6.0	3.5	6.5	2.5	3.8	8.8	04 Nov 2022 11:16:13 AM

Access Control for Electronic Health Records with Hybrid Blockchain-Edge Architecture

Dr. Harish

### Dashboard

- Update Profile
- Patient File Request
- View Request Status
- View Patient Files
- View Patient Hash Reports

#### View Patient Files

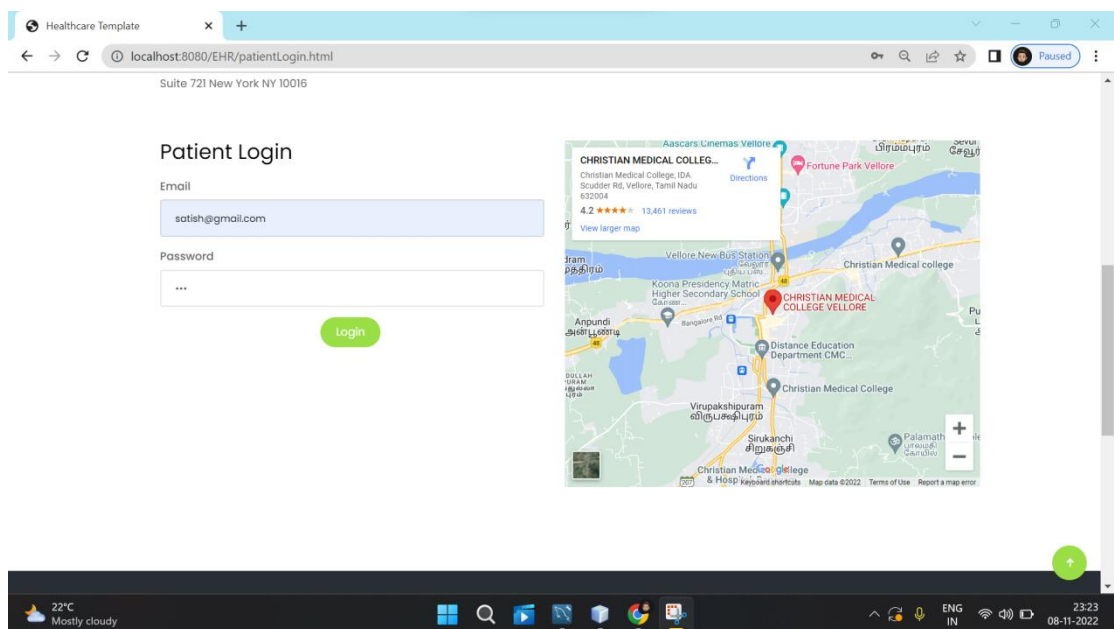
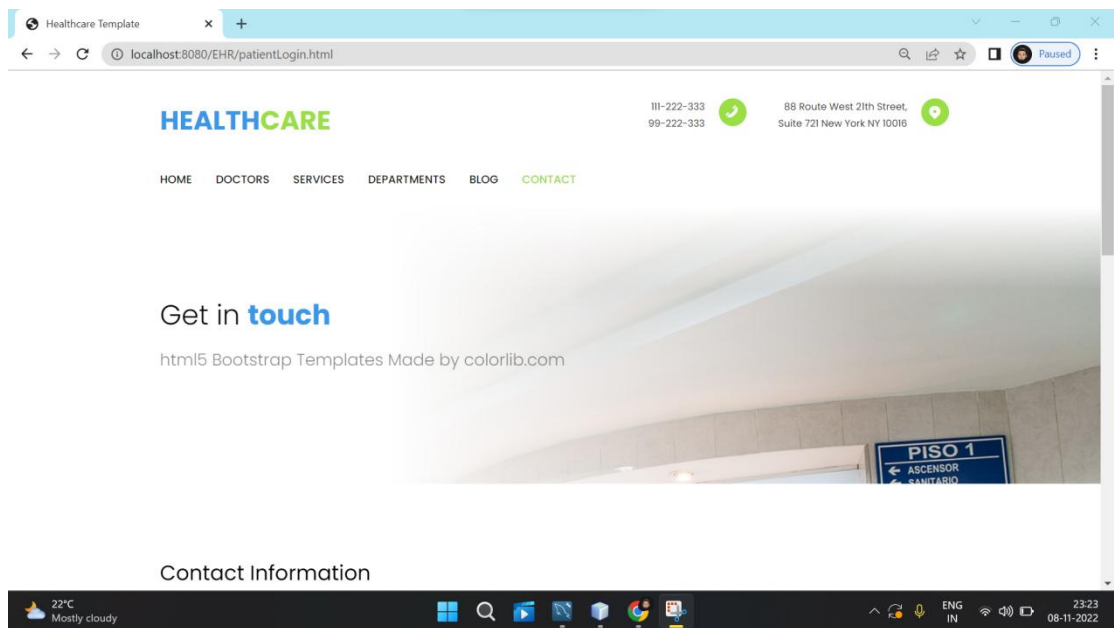
Select Patient:

[View Patient Files](#)

#### View Patient Reports

ID	Patient Name	Lab Assistant Name	BMP	CBC	BP
1	satish	Surya	a19a1584344c1c3783bf51524a5e4b86f2cc09356c9dbfb6af9c2236e314362	8ab31b5afaea56114427e1f01b81d001b079a0f59539f6db3f099816ca794055	8a199b120c400d89c3f

## 5.2.5 PATIENT LOGIN



Access Control for Electronic Health Records

localhost:8080/EHR/updatePatientProfile.jsp

## Soft Computing Technique for Block Chain Enabled Secure Healthcare System

satish

### Dashboard

- Update Profile
- View Report Files
- View File Request
- Feedback

Edit Patient Information

Click Here to Edit Patient Information

22°C Mostly cloudy

ENG IN

23:24 08-11-2022

Access Control for Electronic Health Records

localhost:8080/EHR/ViewPatientReportDetails.jsp

## Soft Computing Technique for Block Chain Enabled Secure Healthcare System

satish

### Dashboard

- Update Profile
- View Report Files
- View File Request
- Feedback

View Patient Reports

ID	Patient Name	Lab Assistant Name	BMP	CBC	BP	KCL	PMS	HEARTRATE	PULSE	CreatedDate
1	satish	Surya	5.0	6.0	3.5	6.5	2.5	3.8	8.8	04 Nov 2022 11:16:13 AM

22°C Mostly cloudy

ENG IN

23:24 08-11-2022

Access Control for Electronic Hei
+

localhost:8080/EHR/ViewPatientFileRequest.jsp

Paused

Soft Computing Technique for Block Chain Enabled Secure Healthcare System
satisfish

Dashboard

Update Profile
View Report Files
View File Request
Feedback

View File Request Access

ID	Patient Name	Doctor Name	Request Status	Hash Value	Created Date	Access	restrict
1	satisfish	Dr. Harish	Approved	e91d3c1d54659bb8b52506912cfb8512cd337cc1dd488ca67d39aafca7bc2f7	04 Nov 2022 10:58:21 AM	Approved	Rejected
2	satisfish	Dr. Harish	Pending	e91d3c1d54659bb8b52506912cfb8512cd337cc1dd488ca67d39aafca7bc2f7	08 Nov 2022 23:21:21 PM	Approved	Rejected

22°C Mostly cloudy
23:25 08-11-2022

Access Control for Electronic Hei
+

localhost:8080/EHR/afterPatientLogin.jsp

Paused

Soft Computing Technique for Block Chain Enabled Secure Healthcare System
satisfish

Dashboard

Book An Appointment
Update Profile
View Appointment
Feedback

Book An Appointment

Doctor List
Book An Appointment

Name
Name

Email
Email...

Contact
Contact...

Age
Age...

Day
dd-mm-yyyy

Speciality
Speciality...

Description
Description...

Doctor Id
Doctor Id...

Book Appointment

22°C Mostly cloudy
23:25 08-11-2022

Access Control for Electronic Health Records | localhost:8080/EHR/viewAppointment.jsp

## Soft Computing Technique for Block Chain Enabled Secure Healthcare System

satish

### Dashboard

- Book An Appointment
- Update Profile
- View Appointment
- Feedback

#### View Appointment

ApId	Name	Email	Contact	Age	Day	Speciality	Description	Doctor Id	Action
<input type="text" value="2"/>	satish	satish@gmail.com	7397748992	22	2022-11-05	Neurology	I want to check properly what is happening	1	<a href="#">Delete</a>

22°C Mostly cloudy | 23:26 08-11-2022

Access Control for Electronic Health Records | localhost:8080/EHR/feedback.jsp

## Soft Computing Technique for Block Chain Enabled Secure Healthcare System

satish

### Dashboard

- Book An Appointment
- Update Profile
- View Appointment
- Feedback

#### Feedback

Click Here to Give Feedback

**Name**

**Email**

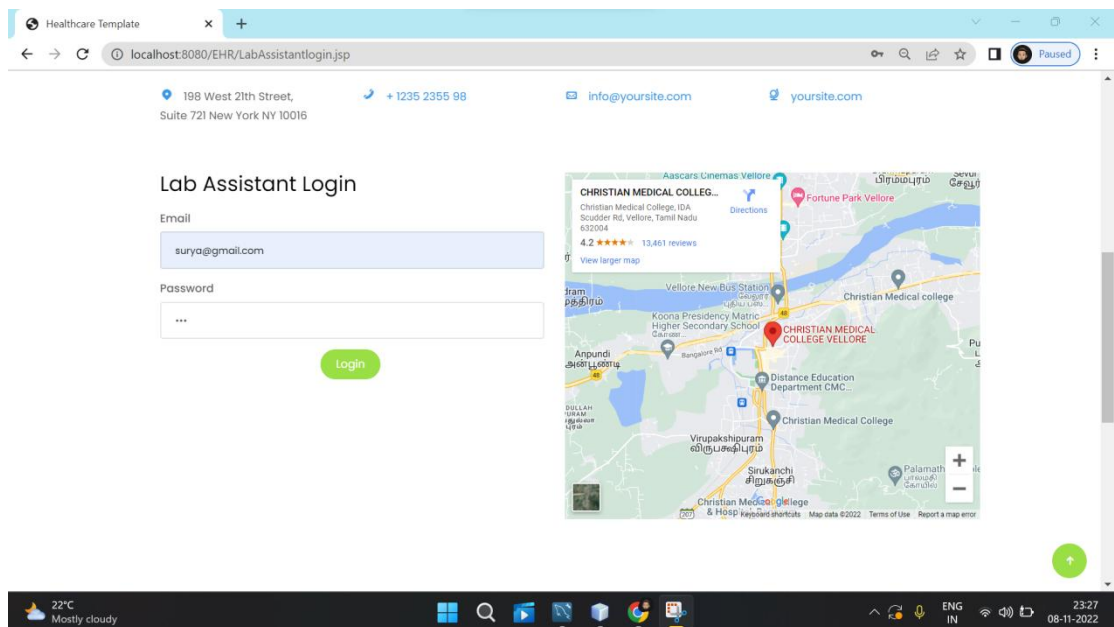
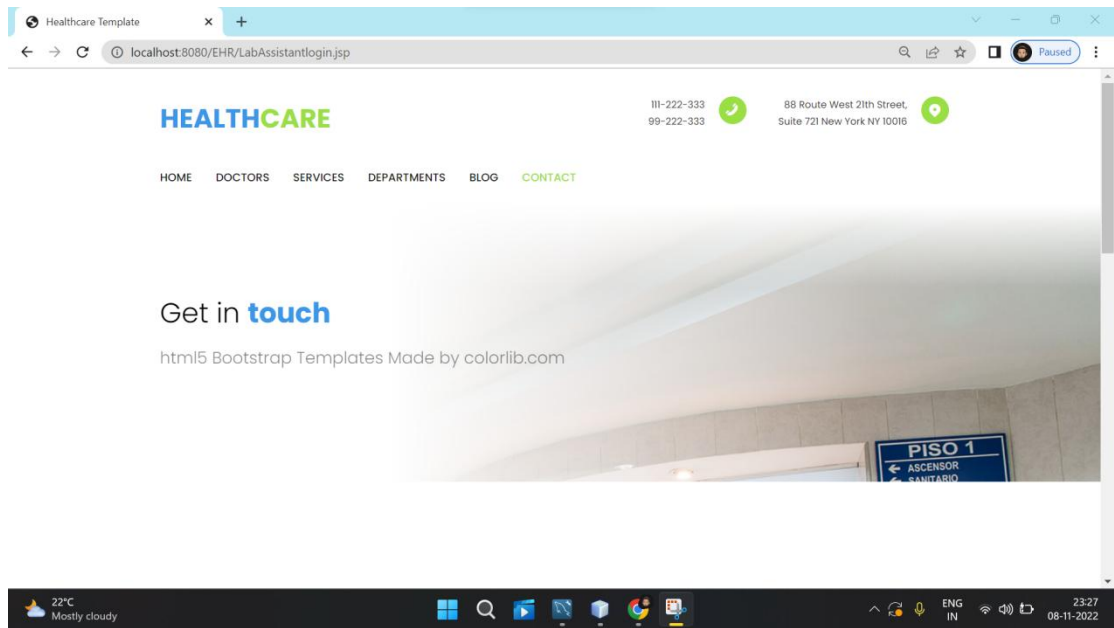
**Contact**

**Suggestion**

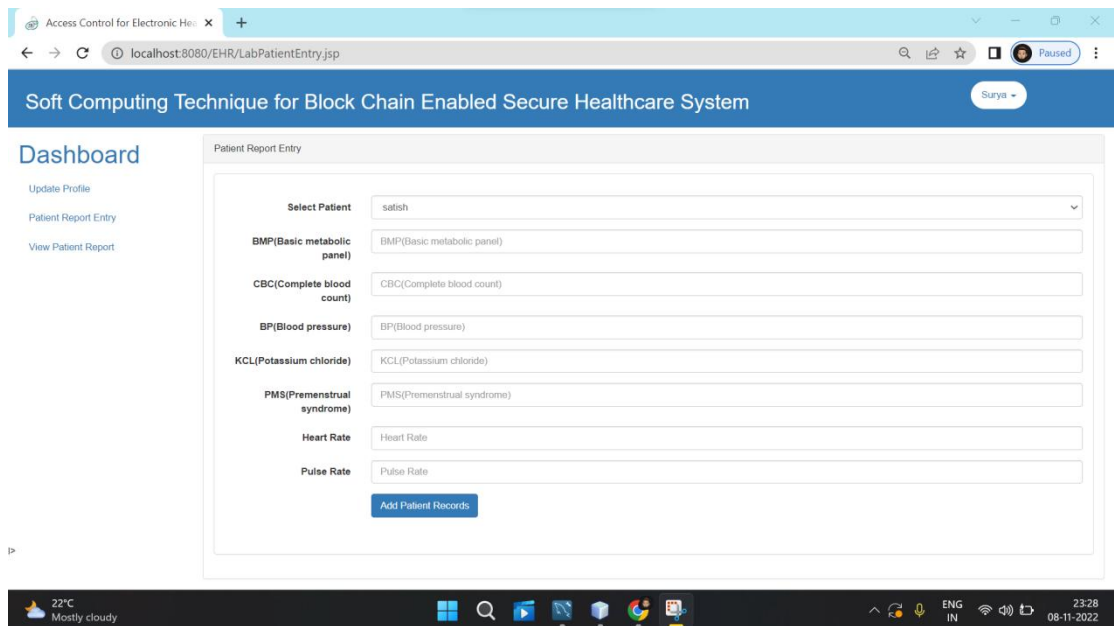
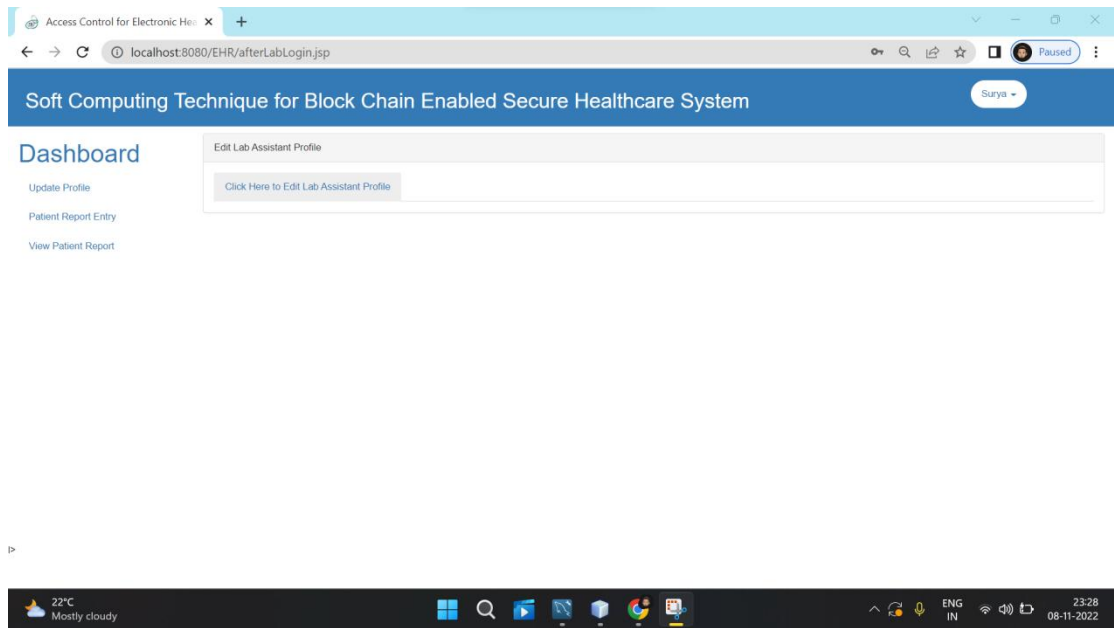
[Submit Feedback](#)

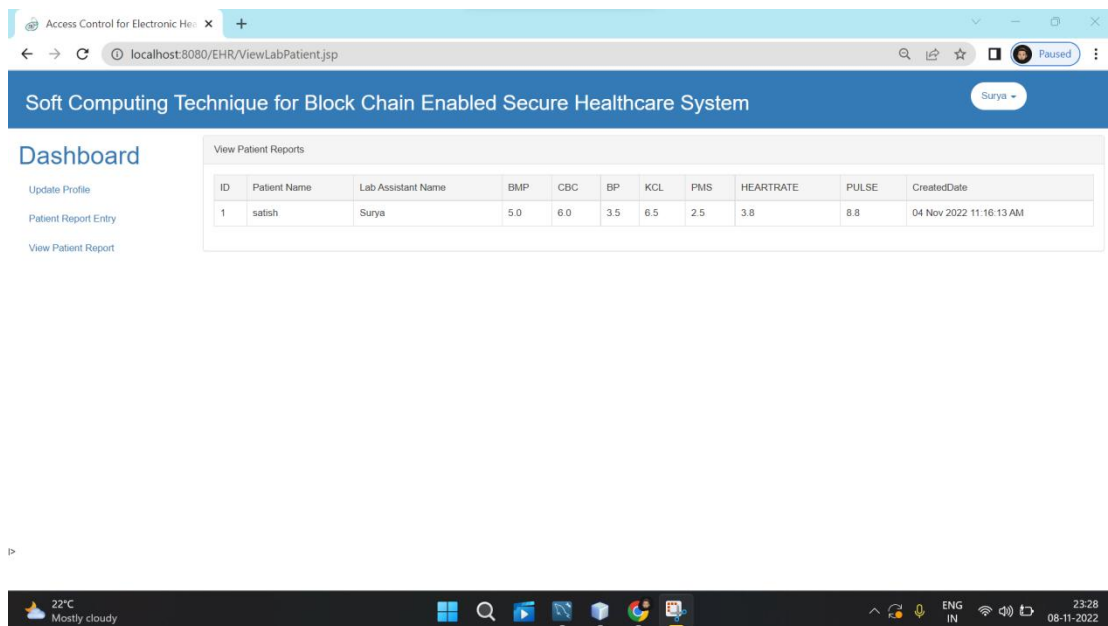
22°C Mostly cloudy | 23:27 08-11-2022

## 5.2.6 LAB ASSISTANT LOGIN









## 5.3 TEST PLAN & DATA VERIFICATION

### Types of Tests

#### Unit testing

Unit testing involves the design of test cases that validate that the internal program logic is functioning properly, and that program input produce valid outputs. All decision branches and internal code flow should be validated. It is the testing of individual software units of the application .it is done after the completion of an individual unit before integration. This is a structural testing, that relies on knowledge of its construction and is invasive. Unit tests perform basic tests at component level and test a specific business process, application, and/or system configuration. Unit tests ensure that each unique path of a business process performs accurately to the documented specifications and contains clearly defined inputs and expected results.

#### Functional test

Functional tests provide systematic demonstrations that functions tested are available as specified by the business and technical requirements, system documentation, and user manuals.

Functional testing is centered on the following items:

Valid Input : identified classes of valid input must be accepted.

Invalid Input : identified classes of invalid input must be rejected.

Functions : identified functions must be exercised.

Output : identified classes of application outputs must be exercised.

Systems/ Procedures : interfacing systems or procedures must be invoked.

#### System Test

System testing ensures that the entire integrated software system meets requirements. It tests a configuration to ensure known and predictable results. An example of system testing is the configuration oriented system integration test. System testing is based on process descriptions and flows, emphasizing pre-driven process links and integration points.

#### Performance Test

The Performance test ensures that the output be produced within the time limits, and the time taken by the system for compiling, giving response to the users and request being send to the system for to retrieve the results.

#### Integration Testing

Software integration testing is the incremental integration testing of two or more integrated software components on a single platform to produce failures caused by interface defects.

#### Acceptance Testing

User Acceptance Testing is a critical phase of any project and requires significant participation by the end user. It also ensures that the system meets the functional requirements.

#### Build the test plan

Any project can be divided into units that can be further performed for detailed processing. Then a testing strategy for each of this unit is carried out. Unit testing helps to identity the possible bugs in the individual component, so the component that has bugs can be identified and can be rectified from errors.

Access Control for Electronic Health Records | localhost:8080/EHR/LabPatientEntry.jsp

## Soft Computing Technique for Block Chain Enabled Secure Healthcare System

Surya

### Dashboard

- Update Profile
- Patient Report Entry
- View Patient Report

#### Patient Report Entry

Select Patient

satish

BMP(Basic metabolic panel)

BMP(Basic metabolic panel)

CBC(Complete blood count)

CBC(Complete blood count)

BP(Blood pressure)

BP(Blood pressure)

KCL(Potassium chloride)

KCL(Potassium chloride)

PMS(Premenstrual syndrome)

PMS(Premenstrual syndrome)

Heart Rate

Heart Rate

Pulse Rate

Pulse Rate

Add Patient Records

22°C  
Mostly cloudy

23:28  
08-11-2022

Access Control for Electronic Health Records | localhost:8080/EHR/ViewPatientReportDetails.jsp

## Soft Computing Technique for Block Chain Enabled Secure Healthcare System

Satish

### Dashboard

- Update Profile
- View Report Files
- View File Request
- Feedback

#### View Patient Reports

ID	Patient Name	Lab Assistant Name	BMP	CBC	BP	KCL	PMS	HEARTRATE	PULSE	CreatedDate
1	satish	Surya	5.0	6.0	3.5	6.5	2.5	3.8	8.8	04 Nov 2022 11:16:13 AM



## **Chapter 6**

### **Results**

#### **6.1 RESEARCH FINDINGS**

The electronic health records or electronic medical records (EMR) a key component of medical informatics symbolize potential solutions for enhanced healthcare. A novel, decentralized record management system to handle EMRs, using blockchain technology. blockchain to enable patient to own, control and share their own data easily and securely without violating privacy, which provides a new potential way to improve the intelligence of healthcare systems.

#### **6.2 RESULT ANALYSIS AND EVALUATION METRICS**

- ❖ A blockchain is a collection of blocks which are tied to each other using hash values.
- ❖ The hash values are computed based on the values of each block, which includes the block number, the nonce value, the actual data of the block and the hash value of the previous block.
- ❖ Using this chain of blocks secured by hashing we get to trust the blockchain.
- ❖ Each block in the blockchain consists of multiple values such as the Block Number, the Nonce value, the actual data to be stored in the block, the hash value of the previous block. For the first block of the blockchain, we set the hash value of the previous block to be zero, or any constant, which is common for all Peers.

## Chapter 7

### Conclusion & Future Work

Blockchain can control decentralized industrial facilities and coordination stages for different segments of artificial intelligence, inclusive of facts, calculations, and registering power. These will domesticate the development and appropriation of simulated intelligence to an exceptional level. Blockchain will likewise allow simulated intelligence's choices to be increasingly honest, logical, and dependable. As all statistics on the blockchain is freely accessible, simulated intelligence is the way to furnishing customers with secrecy and safety.

Blockchain can empower records sharing because it gives straightforwardness and duty with respect to which purchaser's statistics, while, and by means of whom. As blockchain puts the manipulate of information once more into customer's palms, they will have extra accept as true with in sharing information and knowing that their information might be applied accurately to give higher personalization or to different top notch motivation. Specialists and scientists may want to get to (anonymized and considerable) clinical records and cases, generously speeding up the revelation of answers for infections and the improvement of higher remedy best models and clinical strategies.

Patients with unusual maladies, specially, might find out new expectancies, as professionals ought to get to comparative cases from everywhere in the globe. Machine Learning fashions can legitimately be taken care of records (besides the rights may be overseen through a focal electricity). This will enlarge the precision and effectiveness of machine mastering models consequently their ease of use. The Human offerings enterprise straightforwardly relates to the life of an man or woman. This could help patients just as professionals .

In the future, we plan to research on applying the principles of EHR for improvising encryption performance.

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