FINAL REPORT

On

ONLINE MEDICAL SERVICES

By

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CIS 5898 – PROJECT IN COMPUTER INFORMATION SYSTEM

For

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MAY 1ST, 2020

CONTENTS:

INTRODUCTION

The main objective of Online Medical Services is to find available timings of a doctor for the patient to visit. In this system, administrator logs into the system, by entering related username and password and can view doctors list who are added with system and admin can view registered patients with system. While before taking the appointment from the doctor, patient checks the administrator added doctors list and then takes the appointment. Administrator adds doctor details like name, contact number, email etc. and can update doctor details when it is needed. Patient registers himself with the system, and finds the doctor availability and then book the slot to visit. Also, patients can view previous suggestions given by the doctor also.

ALGORITHM/ PROJECT SOLUTION

This application allows the patient to find doctor availability to visit as per his convenience.
Now a days most of the patients going to hospitals to visit the related doctors to take the treatment. They are spending maximum time in the hospital to take the treatment from the doctors. But this system, providing good facility to the patients without wasting their time to take the treatment from the doctors.

DESIGNING A DATABASE:

Database systems are designed to manager large bodies of information. The management of data involves both the definition of the structure for the storage of information and the provision of mechanisms for the manipulation of information. In addition the database system must provide for the safety of information stored in the database despite system crashes or attempts by users, the system must avoid possible anomalous results.

Good design is a key factor of successful database building. A well designed database can lead to more efficient use of queries, forms, and reports, and can increase the reliability of the extracted information. In addition, an effectively designed database will be easier to expand as you organization’s information requirements grow and change.

Database provides several ways to ensure data integrity by providing integrity constants. The constraints will ask involve define the rules that restrict the valued values for a column in a table. Database management systems that maintain data records and indices in tables. Relationships may be created and maintained across and among the data and tables. In a relational database, relationships between data items are expressed by means of tables. Interdependencies among these tables are expressed by data values rather than by pointers. This allows a high degree of data independence. An RDBMS has the capability to recombine the data items from different files, providing powerful tools for data usage.

MODULES:

ADMINISTRATOR:

Administrator login into the system by giving username and password. When username and password submitted by the administrator, those values pass to jsp (JavaServerPages), which is presented in the webserver and then whether the given username and password existed in the specified database table or not. If those are existed, then admin home page opens. Otherwise, if login is failed, error message displays for the administrator. Here taken database is MySQL database. To make connection with database (mysql), JDBC API is used. JDBC API provided set of classes. The used objects in JSP is Connection, Statement, and Result.

Add Doctor:

Administrator gets this option to add doctor details here. In order to add doctor details to the database, administrator needs to enter doctor name, age, gender, work timings, specialization etc. and submits. Then those details pass to the server, and then server process them to add to related database table which is related to the doctor.

Update Doctor:

Any doctor related details need to modify, then administrator selects that doctor name to get that doctor related details into the form, once administrator got doctor related details, then modifies them and then updates into the database. So that patients gets updated details.

Delete Doctor:

Admin should update that doctor related data into the database. To remove doctor details, admin selects doctor name, and then submits so that server process the details associated to that id and removes from the database.

View Doctors:

Administrator logs into the system, to view the doctors list. To view doctor related details, admin needs to select doctor name from the list and submits to the server, so that server takes the name what admin submitted, connects to the database, and gets related details from the database, and shows as related details.

View Patients:

Administrator logs into the system, can view the patients who are registered with the system. To view patient related details, admin needs to select patient name from the list and submits to the server, so that server takes the name what admin submitted, connects to the database, and gets related details from the database, and shows as related details.

PATIENT:

Find Free Time:

Patient logs into the system to find free time for each doctor by selecting doctor name. When doctor name is selected by the patient, then that doctor related information gets for the user, so that he finds related information about the doctors and sends request for doctor.

View Response:

After patient logs into the system, patient can view the response which is given by the doctor. Doctor updates the response, after patient request is made.

View Donors:

Patient also can view donor related details if any organ needed for the patient. This system, can view donor name, contact number and email to contact.

DOCTOR:

Doctor logs into the system to find which the patients are waiting for appointment to take the treatment, and then gives the appointment.

Free Timings:

Doctor logs into the system, and then updates his available time for the patient. To update these details, doctor logs into the system and then adds the free time and then update those details. So that those details pass to the server, and then server process them and then updates doctor’s database

View Requests:

After free time updated by the doctor, he gets requests from the patient so that doctors accept those requests came from the patients. So that updates in the database.

DONOR:

Donor registers himself here (Donor registration). Donor logs into the system, updates organs related information to the database along with personal info. so, if any patient is in search for organ donor, patient can personally contact him with the given donor information. After data is given to the server, connects to the database and updates the data.

Add organs Info:

Here, the donor after registering himself with new donor registration. He logins with his/her username and password and add the organs in which he wants to donate.

IMPLEMENTATION

Software configuration:

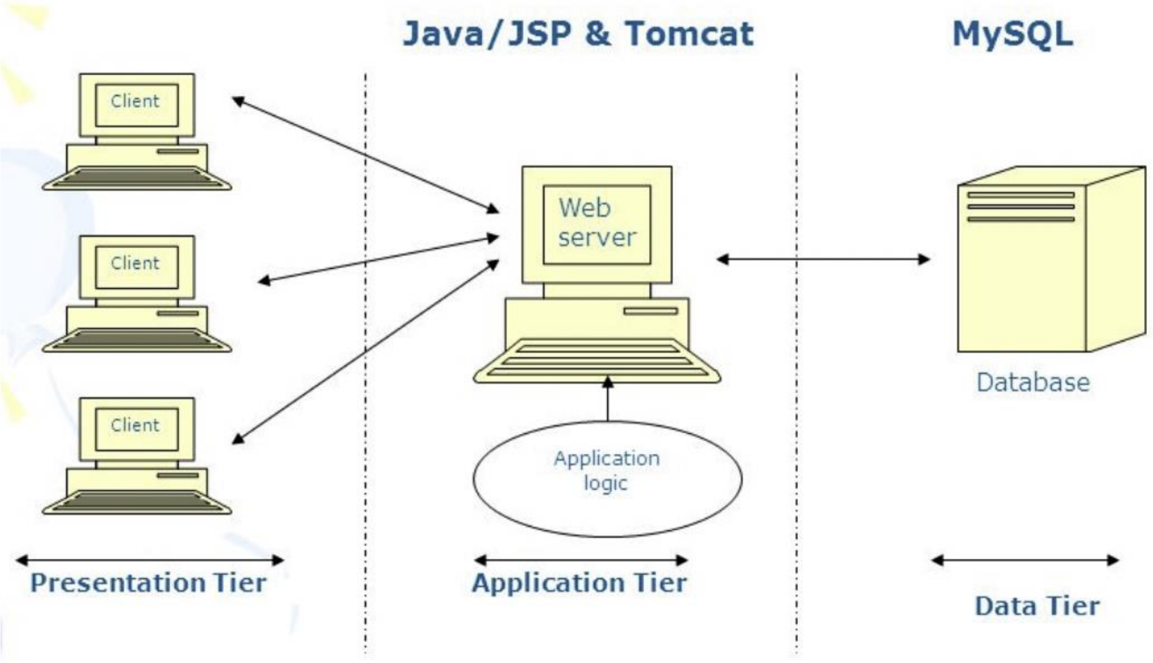
Software Requirement

Operating System	:	Win 7 or higher
Language	:	JAVA (Java Server Pages)
Front End	:	HTML
Client Side Script	:	Java Script
Web Server	:	Tomcat
RDBMS/Back End	:	MYSQL

Hardware Requirement

Processor	: P4 or higher
RAM	: 512 Mb
Hard disk	:10Gb

System Architecture:



Technologies Using:

JDBC

JDBC could be a standard API specification developed so as to move data from frontend to backend. This API consists of classes and interfaces written in Java. It basically acts as an interface (not the one we use in Java) or channel between your Java program and databases i.e. it establishes a link between the two in order that a programmer could send data from Java code , and store it within the database for future use. The JDBC API supports both two-tier and three-tier processing models for database access , but generally, JDBC Architecture consists of two layers

JDBC API: This provides the application-to-JDBC Manager connection.

JDBC Driver API: This supports the JDBC Manager-to-Driver Connection

Web Server and Client

Web Server is a software that can process the client request and send the response back to the client. For example, Apache is one of the most widely used web server. Web Server runs on some physical machine and listens to client request on specific port.

A web client is a software that helps in communicating with the server. Some of the most widely used web clients are Firefox, Google Chrome, Safari etc. When we request something from server (through URL), web client takes care of creating a request and sending it to server and then parsing the server response and present it to the user.

HTML and HTTP

Web Server and Web Client are two separate software's, so there should be some common language for communication. HTML is the common language between server and client and stands for Hyper Text Markup Language.

Web server and client needs a common communication protocol, HTTP (Hyper Text Transfer Protocol) is the communication protocol between server and client. HTTP runs on top of TCP/IP communication protocol.

Some of the important parts of HTTP Request are:

HTTP Method – action to be performed, usually GET, POST, PUT etc.

URL – Page to access

Sample HTTP Request:
1. GET /FirstServletProject/jsps/hello.jsp HTTP/1.1
2. Host: localhost:8080
3. Cache-Control: no-cache
Some of the important parts of HTTP Response are:

- **Status Code** – An integer to indicate whether the request was success or not. Some of the well-known status codes are 200 for success, 404 for Not Found and 403 for Access Forbidden.
- **Content Type** – Text, html, image, pdf etc. Also known as MIME type

- **Content** – Actual data that is rendered by client and shown to user.

MIME Type or Content Type:

If you see above sample HTTP response header, it contains tag “Content-Type”. It’s also called MIME type and server sends it to client to let them know the kind of data it’s sending. It helps client in rendering the data for user. Some of the mostly used mime types are text/html, text/xml, application/xml etc.

Server (Tomcat):

Tomcat is an open source web server developed by Apache Group. Apache Tomcat is the servlet container that is used in the official Reference Implementation for the Java Servlet and JavaServer Pages technologies. The Java Servlet and JavaServer Pages specifications are developed by Sun under the Java Community Process. Web Servers like Apache Tomcat support only web components while an application server supports web components as well as business components (BEAs Weblogic, is one of the popular application server).To develop a web application with jsp/servlet install any web server like JRun, Tomcat etc to run your application.

Some of the important work done by web container are:

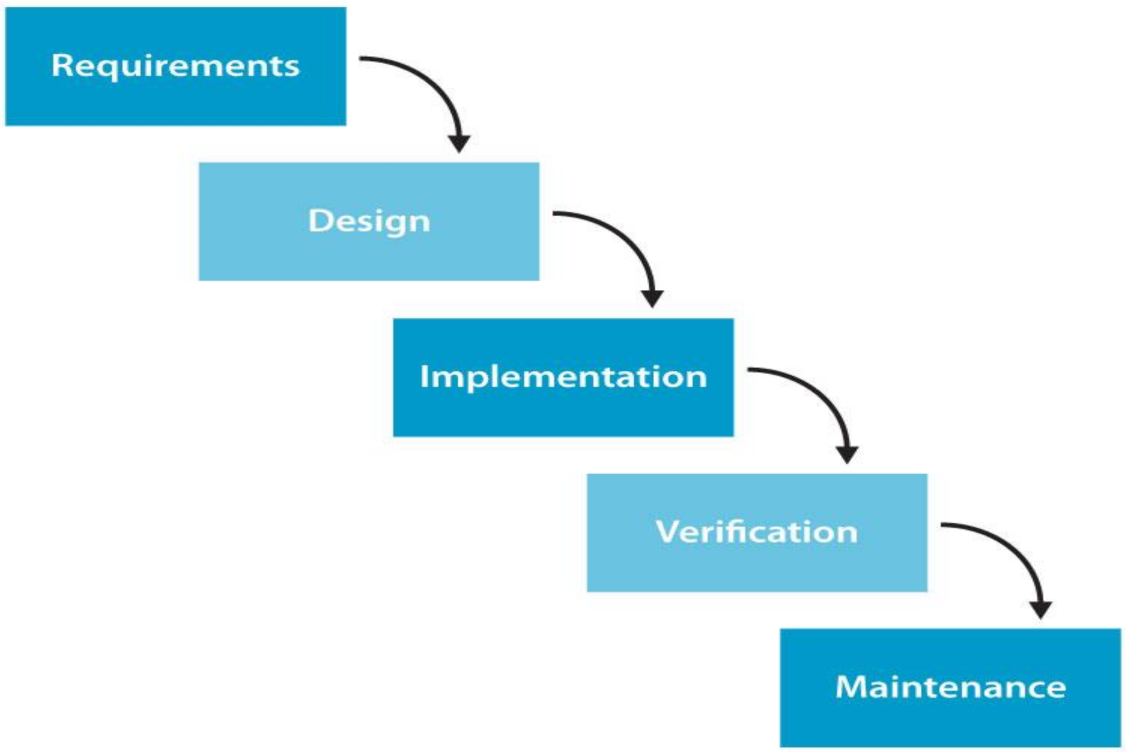
- **Communication Support** – Container provides easy way of communication between web server and the servlets and JSPs. Because of container, we don’t need to build a server socket to listen for any request from web server, parse the request and generate response.
- **Lifecycle and Resource Management** – Container takes care of managing the life cycle of servlet. Container takes care of loading the servlets into memory, initializing servlets, invoking servlet methods and destroying them. Container also provides utility like JNDI for resource pooling and management.
- **Multithreading Support** – Container creates new thread for every request to the servlet and when it’s processed the thread dies. So servlets are not initialized for each request and saves time and memory.
- **JSP Support** – JSPs doesn’t look like normal java classes and web container provides support for JSP. Every JSP in the application is compiled by container and converted to Servlet and then container manages them like other servlets.
- **Miscellaneous Task** – Web container manages the resource pool, does memory optimizations, run garbage collector, provides security configurations, support for multiple applications, hot deployment and several other tasks behind the scene that makes our life easier.

Networking:

Networking is the word basically relating to computers and their connectivity. It is very often used in the world of computers and their use in different connections. The term networking implies the link between two or more computers and their devices, with the vital purpose of sharing the data stored in the computers, with each other. The networks between the computing devices are very common these days due to the launch of various hardware and computer software which aid in making the activity much more convenient to build and use.

Peer-to-Peer Network:

A peer-to-peer network is an IT infrastructure in which two or more computer systems connect in order to share resources. Here the used SDLC model used as Waterfall model. Waterfall model is good while designing the application. After requirements is collected, then this model should be followed to start the application. The development should be in different phases. So that outcome of data is efficient in this model.



Key advantages of a P2P network

Due to its architecture, a P2P network can offer many advantages to its users, including:

- **Easy file sharing:** An advanced P2P network can share files quickly over large distances.
- **Reduced costs:** There is no need to invest in a separate computer for a server when setting up a P2P network.
- **Adaptability:** P2P network extends to include new clients easily. This benefit makes these networks more flexible than client-server networks.
- **Reliability:** Unlike a client-server network, which can fail if the central server malfunctions, a P2P network will likely remain functional even if the central server crashes.

- **High performance:** While a client-server network performs less effectively when more clients join the network, a P2P network can improve its performance when more clients join it. This is because each client in a P2P network is also a server that contributes resources to the network.
- **Efficiency:** Emerging P2P networks enable collaboration between devices that have different resources that can benefit the whole network.

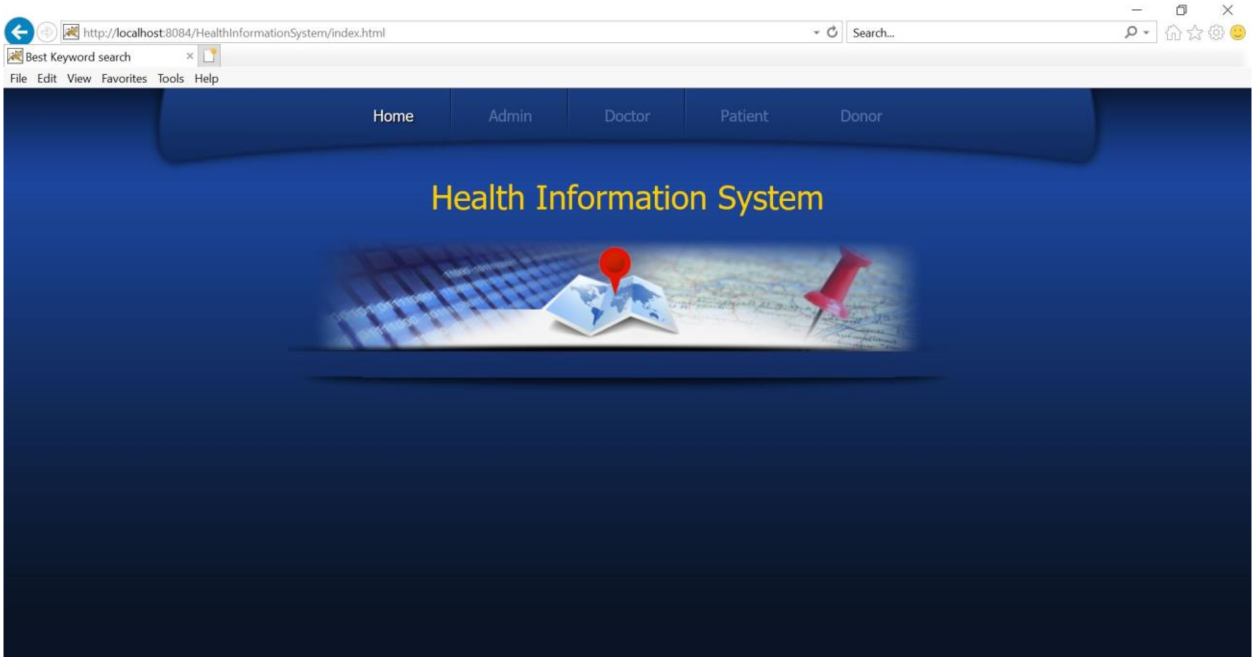
GANTT CHART:

Task Name	Start Date	End Date	Duration
Abstract	01/18/2020	**01/22/2020**	4
Project Plan and Proposal document	01/23/2020	**02/01/2020**	9
Creating database for admin, doctor	02/2/2020	02/11/2020	9
Creating database tables for doctor, patient, donor	02/12/2020	02/20/2020	8
Creating html pages for admin login, doctor registration , doctor login	02/21/2020	02/28/2020	7
Creating html pages for patient registration, patient login	02/29/2020	03/10/2020	10
Creating html pages for add doctor, update doctor, delete doctor	03/11/2020	03/17/2020	6
Creating html pages for donor registration, donor login **(midterm project)**	03/18/2020	**03/22/2020**	4
Creating jsp for add doctor, update doctor, delete doctor. (**midterm progress 2)**	03/23/2020	**04/03/2020**	11
Creating jsp for updating available dates for doctor. Creating jsp for patient login, view doctor availability. **(progress report – mid April)**	04/04/2020	**04/17/2020**	13

Creating jsp for view donor availability.	04/19/2020	04/21/2020	2
Final Report **(Final progress report)**	04/22/2020	**04/24/2020**	2
Final Submission	04/25/2020	**05/01/2020**	6

SCREENSHOTS:

First comes the home page of the project,


http://localhost:8084/HealthInformationSystem/index.html
Search...
Best Keyword search
File Edit View Favorites Tools Help
Home
Admin
Doctor
Patient
Donor
Health Information System

I have created 4 modules for the project here i.e.

Admin

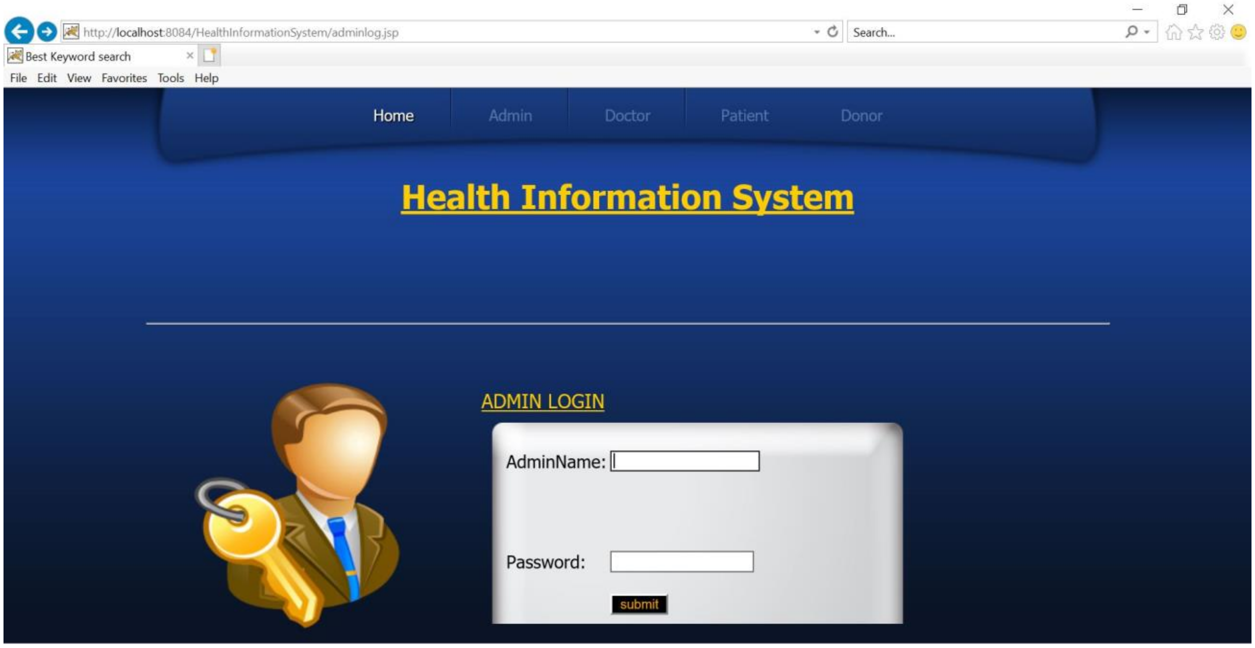
Doctor

Patient and

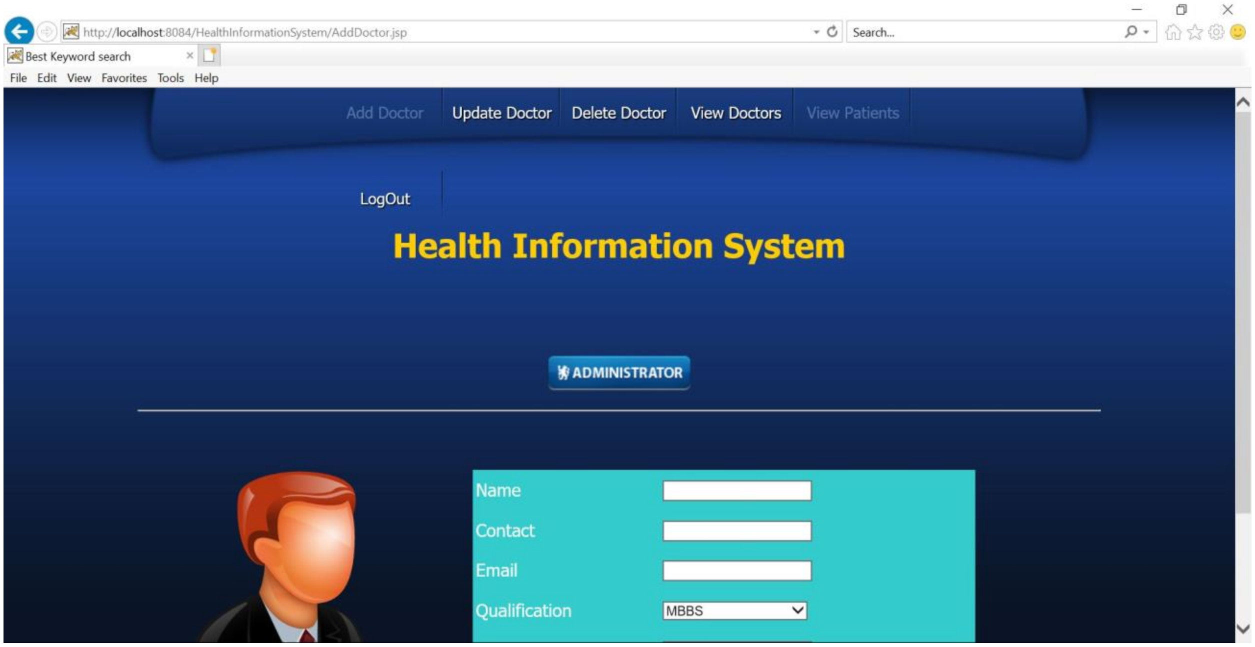
Donor.

Administrator:

Admin should enter related username and password. Entering incorrect name and password gives an alert message.


http://localhost:8084/HealthInformationSystem/adminlog.jsp
Search...
Best Keyword search
File Edit View Favorites Tools Help
Home
Admin
Doctor
Patient
Donor
Health Information System
ADMIN LOGIN
AdminName:
Password:
submit

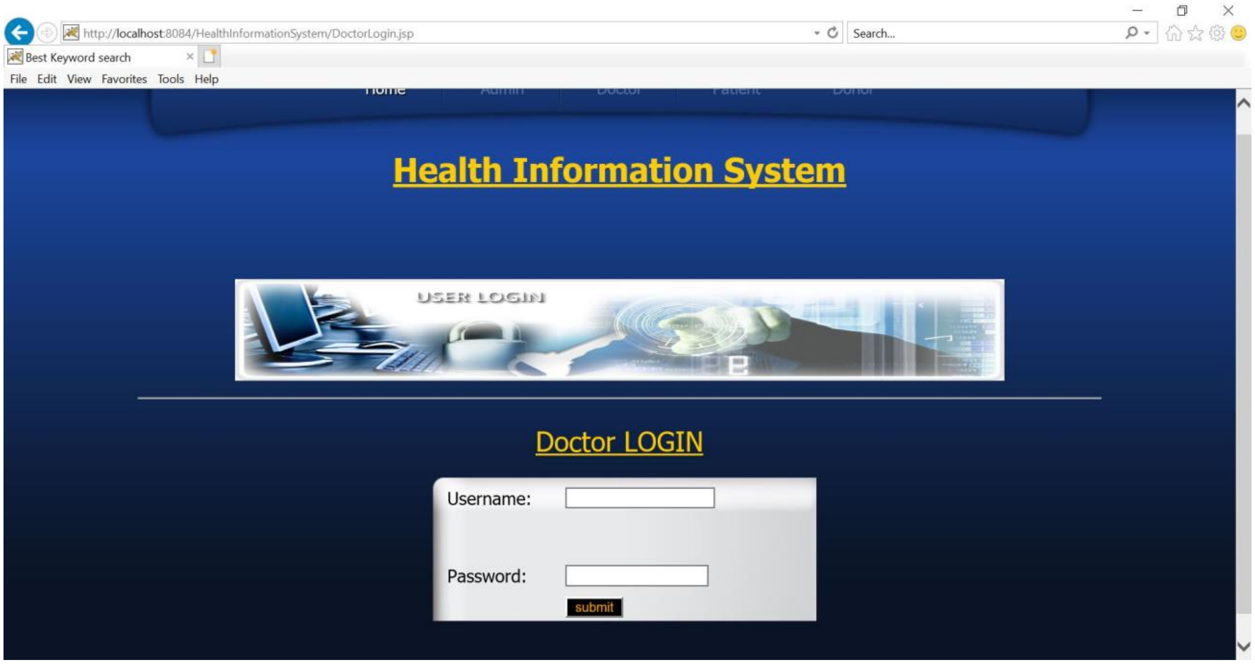
So, after entering correct username and password. The administrator enters a page where he can **add** the **doctor** details like name, age, qualification, years of experience etc. The administrator can also **update and delete the doctor** details when required. After adding the doctor's he can view them in **view doctors.** Before taking the appointment from the doctor, patients can view the doctor's list in order to take an appointment.



Qualification MBBS

Doctor:

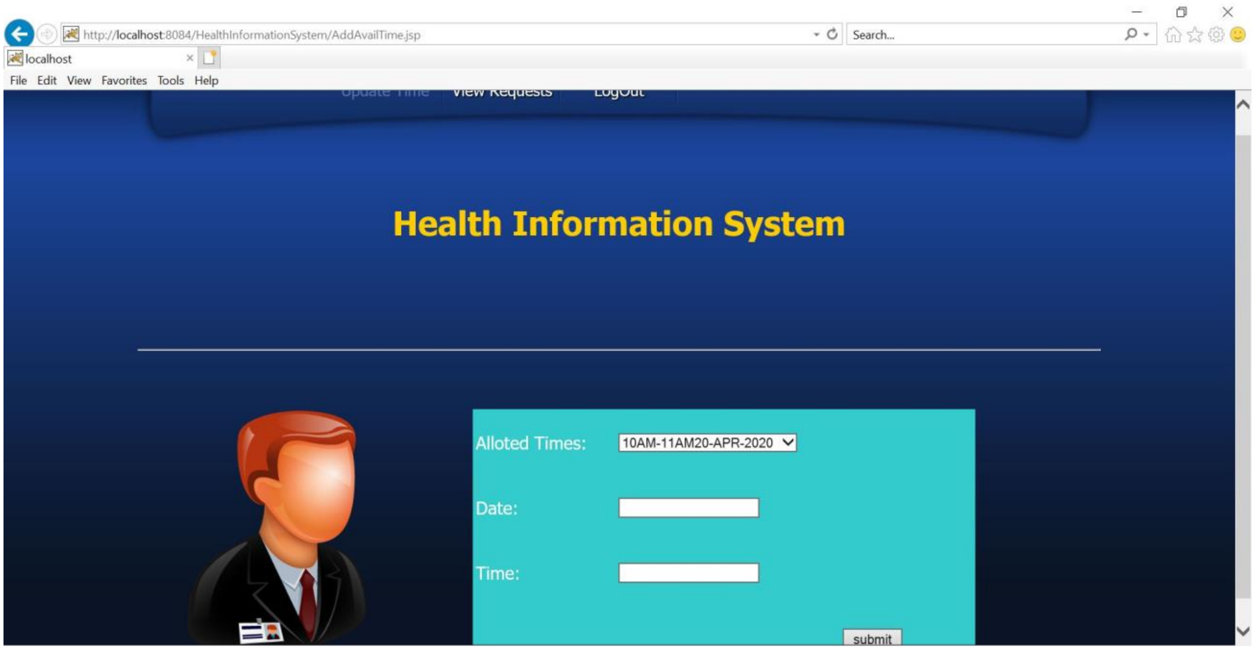
Adding the doctor details, we can view them in MySQL database. So, here the doctor logins to take appointments from the patients.


http://localhost:8084/HealthInformationSystem/DoctorLogin.jsp
Search...
Best Keyword search
File Edit View Favorites Tools Help
Home
Admin
Doctor
Patient
Donor
Health Information System
USER LOGIN
Doctor LOGIN
Username:
Password:
submit

Clicking on submit, doctor he can update his free time and also view requests from the patients.

Here if the doctor does not allot any slots to the patients then it shows not allotted. If there are any allotted time with the patients, he can view all the allotted time slots at a time. The doctor can now **update the free time** in a day with multiple time slots. clicking on submit, the patients can now view the doctor updated time slots and requests for an appointment.

View requests are the requests sent by the patients requesting appointment from the doctor. the doctor may accept or deny the requests here because if he is busy with appointments, he can deny the request.



http://localhost:8084/HealthInformationSystem/AddAvailTime.jsp

Health Information System

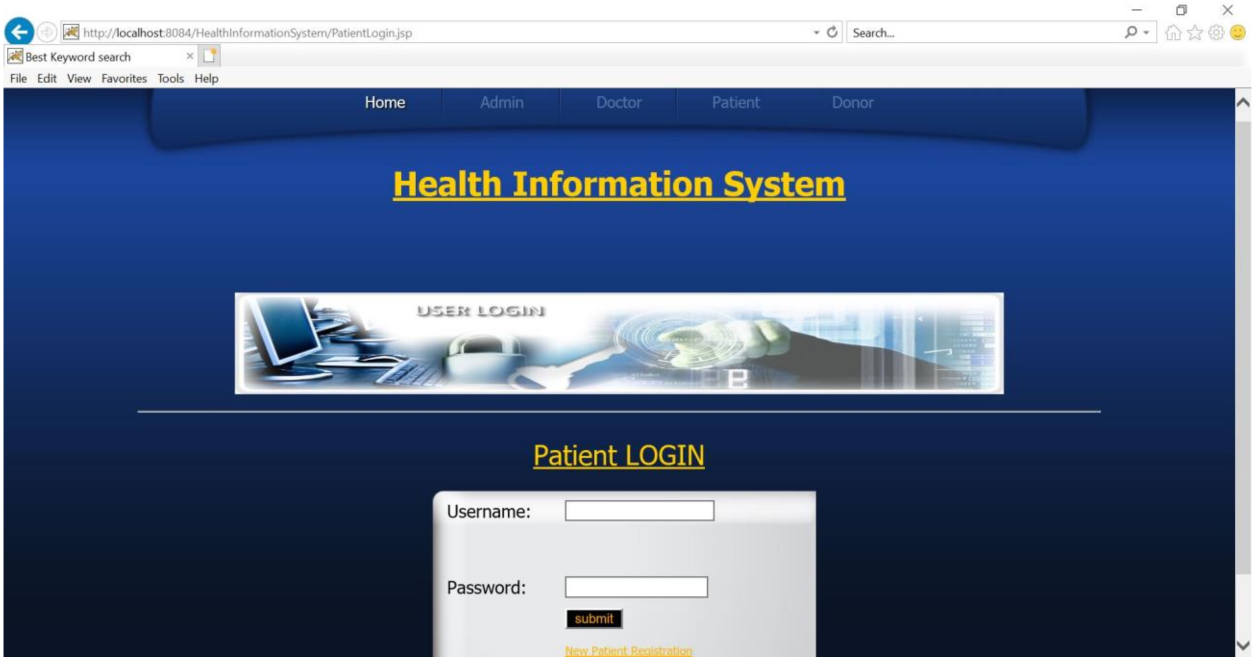
Alloted Times: 10AM-11AM20-APR-2020

Date:

Time:

Patient:

Patient registers himself/herself with new patient registration by creating their own username and password.



http://localhost:8084/HealthInformationSystem/PatientLogin.jsp

Health Information System

Patient LOGIN

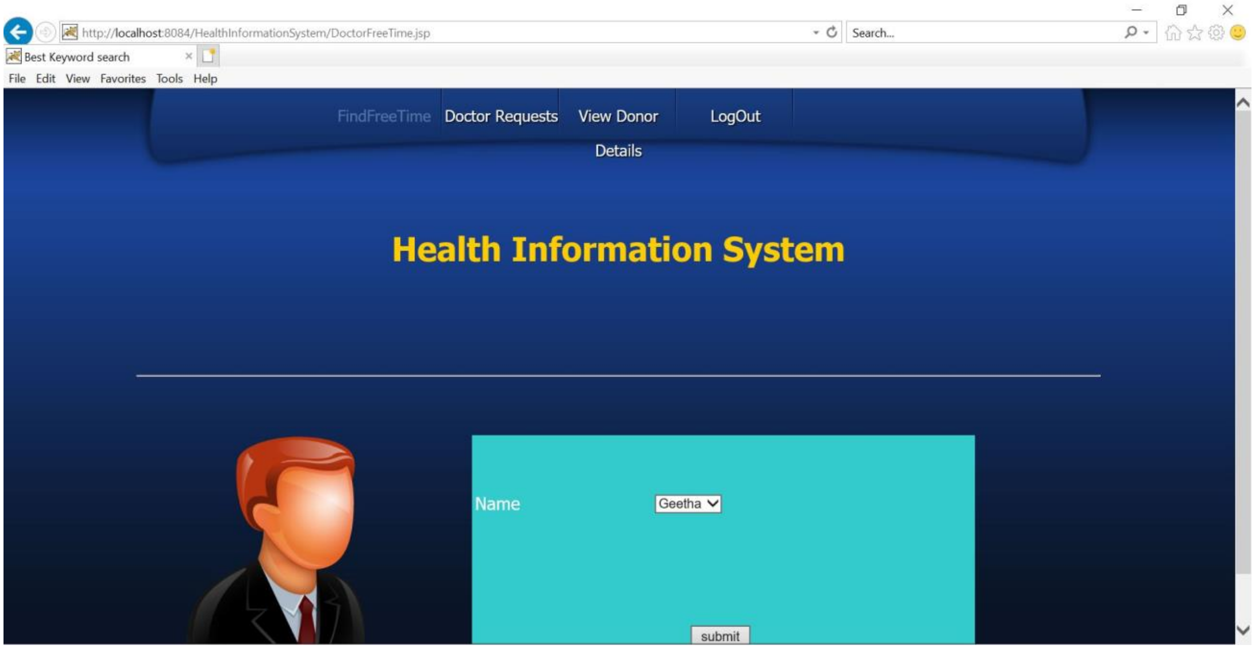
Username:

Password:

On submitting, patient can now view the doctor's list who are available to give an appointment. Clicking on submit, patient can view the date and multiple time slots here. He can select which time slot he wants to and request for appointment.

After requesting, doctor can accept or deny as said above. If a doctor wants to take an appointment for a patient he can view the response in Doctor requests.

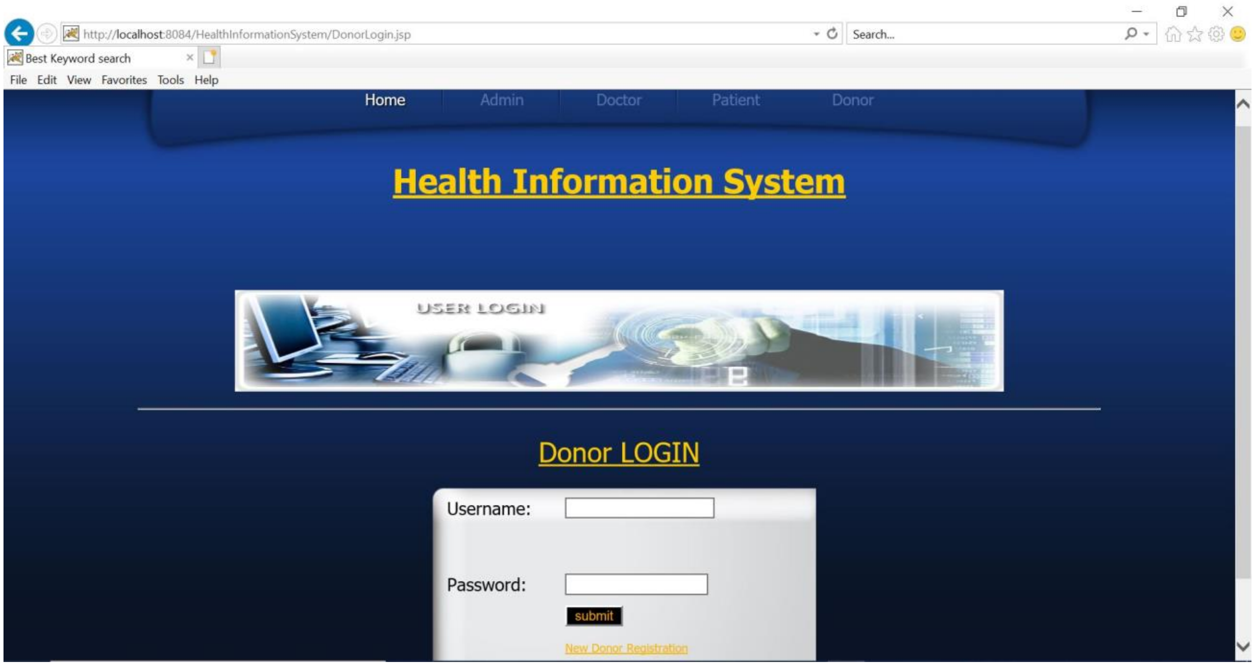
If a patient is in need with organ donation. He can view the donor details here like name, email id and contact num. Here, the patient contacts him personally with donor details.


http://localhost:8084/HealthInformationSystem/DoctorFreeTime.jsp
Search...
Best Keyword search
File Edit View Favorites Tools Help
FindFreeTime
Doctor Requests
View Donor Details
LogOut
Health Information System
submit

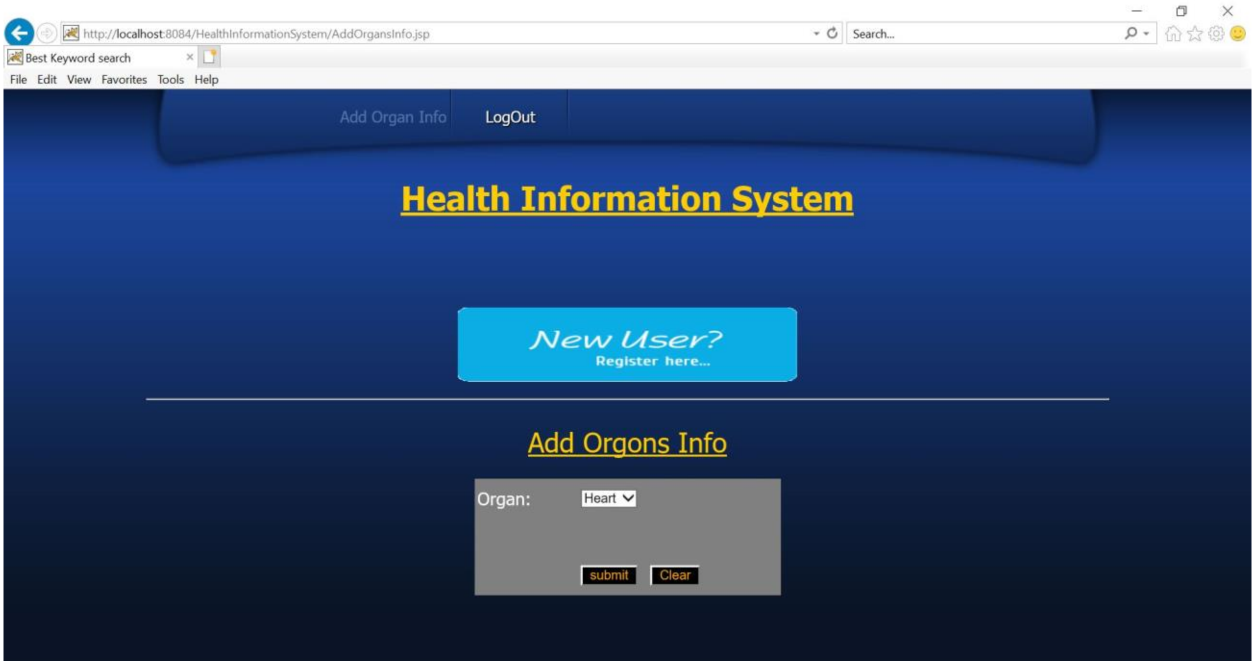
Name Geetha

Donor:

Donor registers himself/herself here with their name, email, gender etc. and when the donor logs in,



He enters a page where he can specify what organ he wants to donate and can submit the request.


http://localhost:8084/HealthInformationSystem/AddOrgansInfo.jsp
Search...
Best Keyword search
File Edit View Favorites Tools Help
Add Organ Info
LogOut
Health Information System
New User?
Register here...
Add Orgons Info

Organ: Heart

REFERENCES:

Book : HTML Black Book

Author : Steven Holzner

Publisher : IconLogic

Book: The Essential Guide to CSS and HTML Web Design

Author: Craig Grannell

Publisher: Apress

Book: JSP 2.0: The Complete Reference

Author: Phillip Hanna

Pblisher: oreilly

Book: Java Servlet & JSP Cookbook

Author: Bruce W. Perry

Publisher: murach

Book: Advanced MySQL 8

Author: Tejaswi Malepati Eric Vanier Birju Shah

Publisher: Amazon

https://www.lovelycoding.org/2014/04/Java-Project-Ideas-United-State.html

RESULTS:

In the current system each patient needs to approach the reception in the hospital, and then need to find the related information from them. So, that based on that information, patient needs to take appointment from the reception and then consults the doctor for treatment.

This approach is much better way for both doctor and patients because the main advantage of this approach is time consuming and the patient doesn't need to wait for the doctor for longer periods take to the appointment.

In the beginning, I have a thought on doing like this, if the patient is new i.e., consulting for the first time then the doctor generally checks the patient and writes the prescription accordingly. If the patient is old i.e., consulting the same patient for second time, the doctor based on previous prescriptions gives the suggestions to the patient. Then I found it difficult because prescriptions are a paper written part where the doctor suggests the patients based on the disease. I couldn't get to know how to work on medicines and how to do that in database.

APPENDICES:

Date : May 1st , 2020

Accomplishments: The major changes I have made in this final report is about the functionality of the appointments and made some changes that doctor can do multiple time slots in a same day. I have also made some changes in the modules and removed some modules which are not necessary.

After the latest meeting I have done the report and uploaded the screenshots of all the modules.

I have also provided the source code and SQL file.

Software Requirements:

Windows 8/10 Operating System

NetBeans IDE version 8.2

MySQL