*Mini Project Report On*

# SMART HEALTHCARE SYSTEM

*For the course*

**IT254:Web Technology and Applications**

*Submitted By:*

**SIDDHARTH POKHARNA (18IT146)**

**ABHISHEK KASWAN (18IT201)**

**AYUSH BHANDARI (18IT209)**

**IV SEM B.TECH (IT)**

*Under the guidance of*

**Mrs.Priyadarshini**

**Dept. of IT, NITK Surathkal**

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## Problem statement

Diagnosis of diseases is a very important task for a healthcare industry. Healthcare being a global issue more particularly in India ,being one of the most populated nations where availability of doctors in time is a major issue , so Smart Healthcare System will have details of doctor's with there specialization in nearby region and patient on entering their data the site will suggest a list of doctors with details and availability of time.

## Abstract

Nearly 80 percent of all internet users have searched for medical and health information online, according to a Research. That is a lot of requests for healthcare information, and further evidence that healthcare websites need smart, helpful, and high-quality designs.Smart healthcare system is a website which will help people to find the best doctors in the nearby area and can make appointment in advance.The use of a simple, straight-forward navigation, combined with the prominent display of the search function in the center of the home page, greatly enhances the usability.Our project will have two major components - patient , doctor. Doctors can view assigned patients and can update their availability whereas patients can search for a doctor on the basis of name or doctor specialisation and can make appointments as well as update the appointment.The purpose of the project entitled as "ONLINE HEALTH CARE SYSTEM" is to computerize and to develop a software which is user friendly simple,cost – effective and fast. It deals with the collection of patient's information, diagnosis

details, etc. Traditionally, it was done manually. The main function of the system is to register and store patient details, taking an appointment and doctor details and retrieve these details as and when required, and also to manipulate these details meaningfully System input contains patient details, diagnosis details, while system output is to get these details on to the screen. In this application, one can enter using a username and password. It is accessible by an administrator and Only they can add data into the database. The data can be retrieved easily. The data are well protected for personal use and makes the data processing very fast.

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# 1. INTRODUCTION

Healthcare being a global issue more particularly in India availability of doctors in time is a major issue.Many internet users have searched for medical and health information online, according to a Research.This Smart Healthcare System will have details of doctor's with there specialization and patient on entering their data the site will suggest a list of doctors with details and availability of time.This Health Care Management application will be like in an online Healthcare Management service provider with easy to use customizable options.The project Online health care includes registration of patients and doctors,listing the doctors on the website, storing their information, and also prescription can be given by doctors. The software has the facility to give a unique id for every patient and stores the details of every patient and the doctor automatically. We can search doctors via their names through search options and can take our meetings from there also .Users, using a username and password can enter into the web application.The data can be retrieved easily. The interface is very user-friendly. The data are well protected for personal use and makes the data processing very fast.Online health care System is powerful, flexible, and easy to use and is designed and developed to deliver real conceivable benefits.Online health care System is a software product suite designed to improve the quality and management of health care in the areas of clinical process analysis and activity-based costing.Online health care System enables you to develop your organization and improve its effectiveness and quality of work. Managing the key processes efficiently is critical to the success of health care and helps you to manage your processes.

## 2. **LITERATURE SURVEY**

- **“Design and implementation of health care management system” by Chrisantus Oden,Jenny craig:**

In this paper they designed a health care system where they recorded information about patients and diagnosis records of patients also they recorded it in different documents. Immunization information of children also saved in different sheets. They used some of the javascript properties in their system that we used in our project also. They also used more modules like:nurse module, farmacist module, Laboratorist module etc.

- **“E-health care management” by Byeong Ho Ahn, Donghoon Lee:**

Here in this paper, they looked at the existing system for hospital management and tried to create a really big online health care management that can improve each hospital facility even further and patients also can search for a better treatment. Security and encryption for the project are really good but here in this system they used an appointment system for each doctor and how we can delete these appointments too, these things we tried to implement in our project.

# 3.REQUIREMENT ANALYSIS

## 3.1.HARDWARE REQUIREMENTS FOR PRESENT PROJECT:

A hardware requirements list is often accompanied by a hardware compatibility list (HCL), especially in case of operating systems. An HCL lists tested, compatible and sometimes incompatible hardware devices for a particular operating system or application.

Processor: Intel dual Core ,i3
RAM: 1 GB
Hard Disk: 80 GB

## 3.2. SOFTWARE REQUIREMENTS:

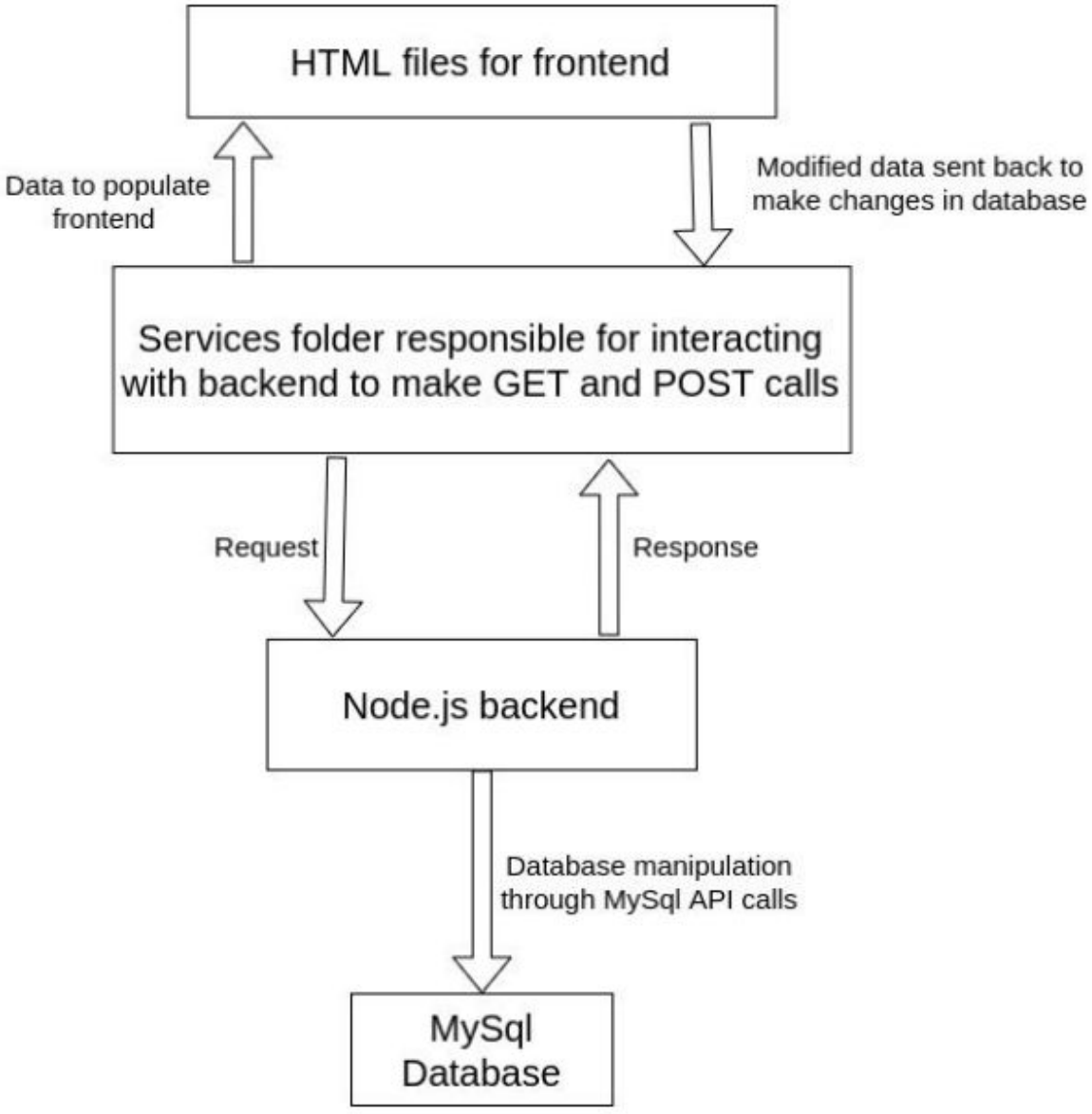
Software Requirements deal with defining software resource requirements and prerequisites that need to be installed on a computer to provide optimal functioning of an application.

Front-end: Mysql
Back-end: Node js
Database: Mysql

Main Packages that are used in this web application are:
Npm , Express , bcrypt for Node js
OS: Windows XP/8/10, ubuntu 16.04 and above.
Browser: Firefox , chrome or any other similar browser.

# 4. SYSTEM DESIGN / ARCHITECTURE

Application architecture for our project is something like this:



# 5. **METHODOLOGY**

## 5.1:Tools and Technology.

Html CSS +javascript
Nodejs
Mysql

## 5.2:The modules developed in this application are:

- DOCTOR MODULE
- PATIENT MODULE

From frontend js will send and request from the server. Server will further send this to the database and pass back the response through the server.

1. **Doctor Module:**

Doctor can sign in and put his portfolio on the web app.The doctor will check his schedule and meet the patients as well. He or she can save data related to patient illness, history of the patient. Separate options will be provided for saving these data. The doctor can also view the patient related visit data in the form of a report. The doctor will also prescribe medications and options will be provided with the same meds.

2. **Patient Module:**

Patients can also sign up for the website and then only he will be allowed to search for doctors and meet them.The patient module will have the option to view the patient history via appointment details. Patients can also delete appointments of the future.Patient can look up for any doctor by name or by speciality.

## 5.3 Working:

In the backend, Node.js runs the main file which first sets up the connection to the database in MySQL.
There are middleware functions for:

- GET operations that returns all the patient records
- POST operations at the various paths to submit a new patient record
- PUT operations to update an existing patient record
- DELETE operations to delete an existing patient record

In FrontEnd We have used HTML,CSS,JS,BOOTSTRAP.

**In Patient module**:-

The main_page is the main front page which has various buttons like signup,signin,doctor's signin,list as practitioner.

After Signup users get the email (nodemailer is used for this purpose) that his account is successfully created and gets signed in.After that he has various options like manage appointments or to take appointments which redirects them to corresponding pages.We have a search field on the same page which lets you search the doctor on basis of doctor name and zip code.Below that we have various specializations from which users can choose and will be redirected to the doctors of that specialization and can take the appointment from that page.

In manage appointments we have three options New Appointment , Delete Appointment , All Appointments.In New appointment You can take new appointment , in Delete Appointment you can delete any upcoming appointments , in All Appointments you can see all past and future Appointments and the total number of appointments till now on our site.

In the list as practitioner page doctor can fill the details and can register himself as the doctor on our website. It will send them the mail that they have joined the team of dochere.

Users can see the doctor details via searching about their details.

**In Doctor's module**:-

In the doctor's module doctor can sign in himself if he is a practitioner on our site already or he will have to list as practitioner first and then he can sign in himself.

When the doctor gets signed in he will see the Today's Appointments and the buttons for future and past appointments.

In past Appointments doctor can give a prescription to the user and the prescription will be mailed to the user so that he can access it any time.

In Today's Appointments doctor can delete some appointments if he wants to.

Doctors can see the details of the user and the date of appointment.

Modules used in NodeJs:-

**Express**:-The **express** framework is built on top of the node. js framework and helps in fast-tracking development of server-based applications. Routes are used to divert users to different parts of the web applications based on the request made.

**Body-parser**:- Body parser allows express to read the **body** and then **parse** that into a Json object that we can understand.

**MySQL**:-To connect database.

**Nodemailer:**-Nodemailer is a single module with zero dependencies for Node.js, designed for sending emails. You have to turn on the less secure feature in gmail to use this module in gmail.

**bcryptjs**:-Using **bcrypt** is a secure way to store passwords in a database. Salted hashing — Generating random bytes (the salt) and combining it with the password before hashing creates unique hashes across each user's password.

**URL**:-The **URL module** splits up a web address into readable parts.

**EJS**:-EJS or Embedded Javascript Templating is a templating engine used by Node.js. Template engine helps to create an HTML template with minimal code. Also, it can inject data into HTML template at the client side and produce the final HTML.

# 6. **IMPLEMENTATION**

## 6.1.Functionalities

- Patient
    - Saving of patient details with unique id on mysql database
    - Search for Doctor (on basis of name or specialisation)
    - Check ,change or cancel appointment
- Doctor
    - Saving of doctor details with unique id on mysql database
    - View appointment(i.e  view assigned patient)
    - Sending prescription via mail to visited patients

## 6.2.Progress throughout the project:

We have started Literature work and designing the layout of the project in march.After that we started with designing user interface along with sign up and login pages. In April we also completed home page designs and forms like appointment form, list as practitioner form etc. then in may we started working on database and back-end. Sending notifications to doctors and patients through mail And prescription all these things are also attached.

## 6.3.Proposed work and progress table:

1. Sending  a notification to the patient about the confirmation of the appointment.
2. Better UI and better Front-end.
3. Add login and signup option for doctors also.

Below is the Progress table for our project:

| Milestones | March | April | May | June |
|---|---|---|---|---|
| Designing UI | Login and signup pages | Homepage<br>Appointment form | 1)Doctor specialisation<br>2)Change ,update ,delete appointment by patient<br>3)Search doc on basis of name and specialisation | View of past appointment by doc and patients |
| Database | Saving of patient and doctor details | Saving of appointment details | Modify database according to new pages | Updating database |
| Patient modules | | Appointment added | Appointment feature completed<br>Search feature completed | Welcome mail,appointment mail |
| Doctor modules | | | Doctor division on basis on name and specialisation added | Prescription mail by doc<br>and view appointment completed |

## 6.4.Snapshots of project:

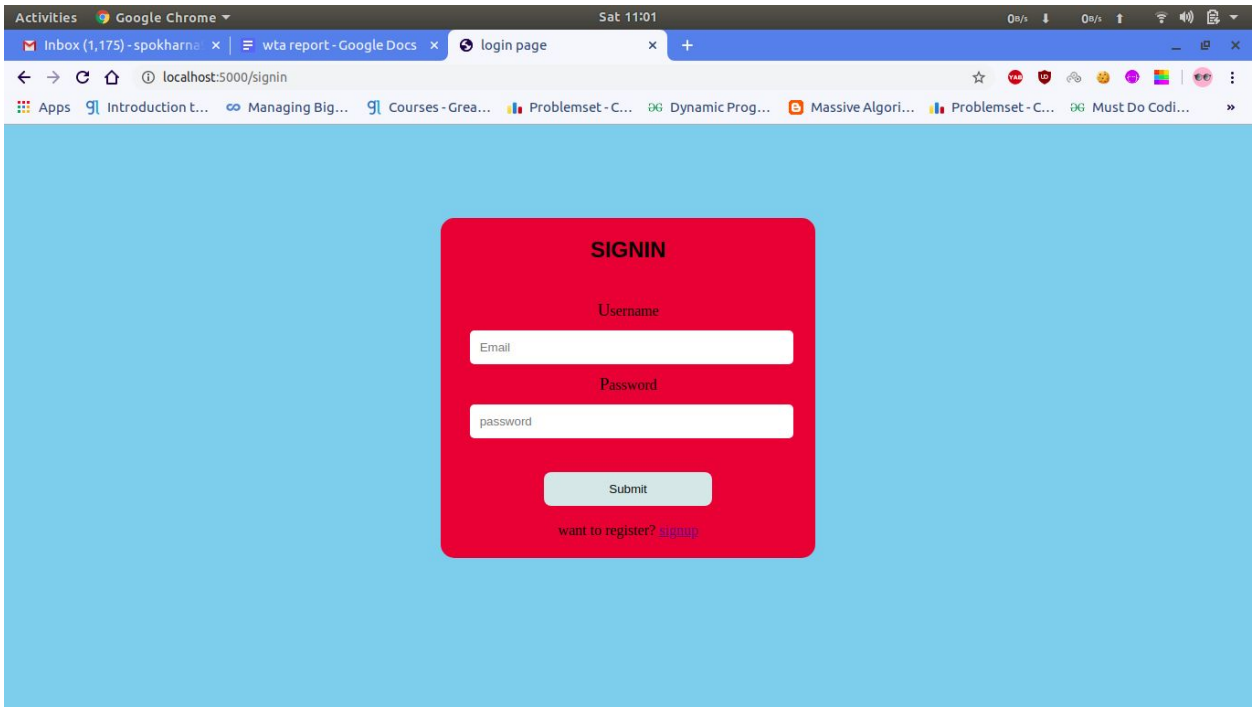



FIG 1:Login

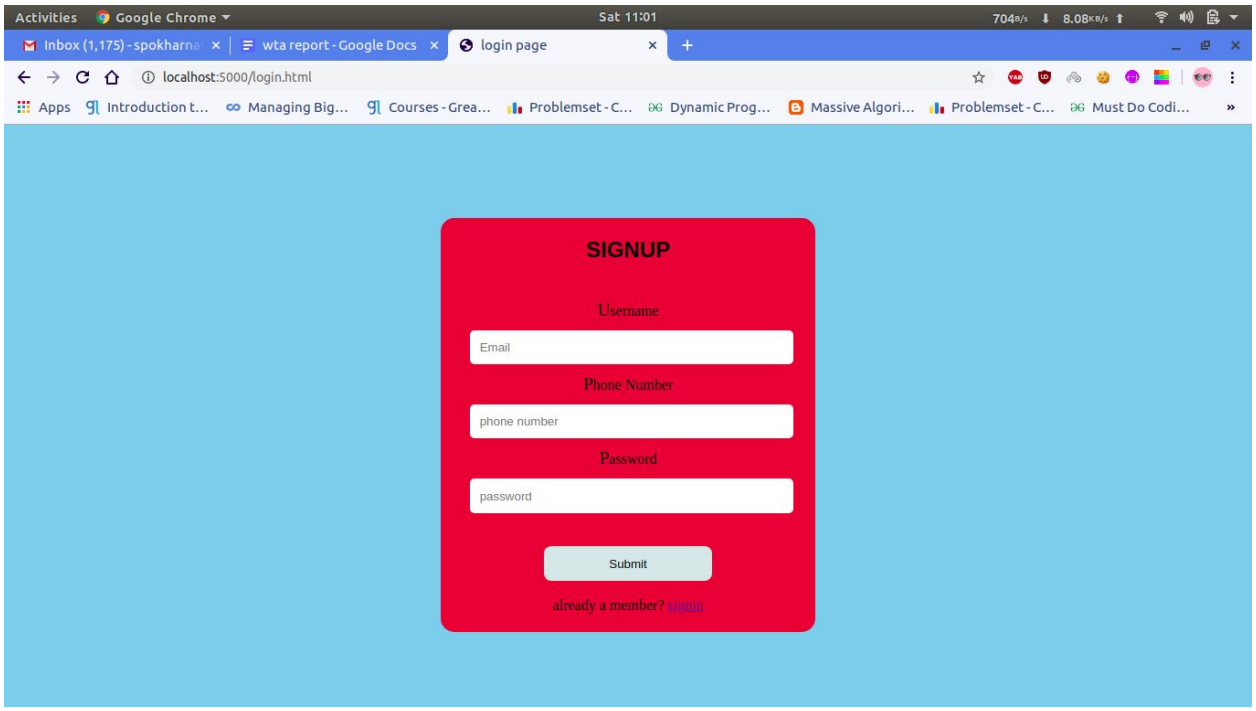



FIG2:Sign up

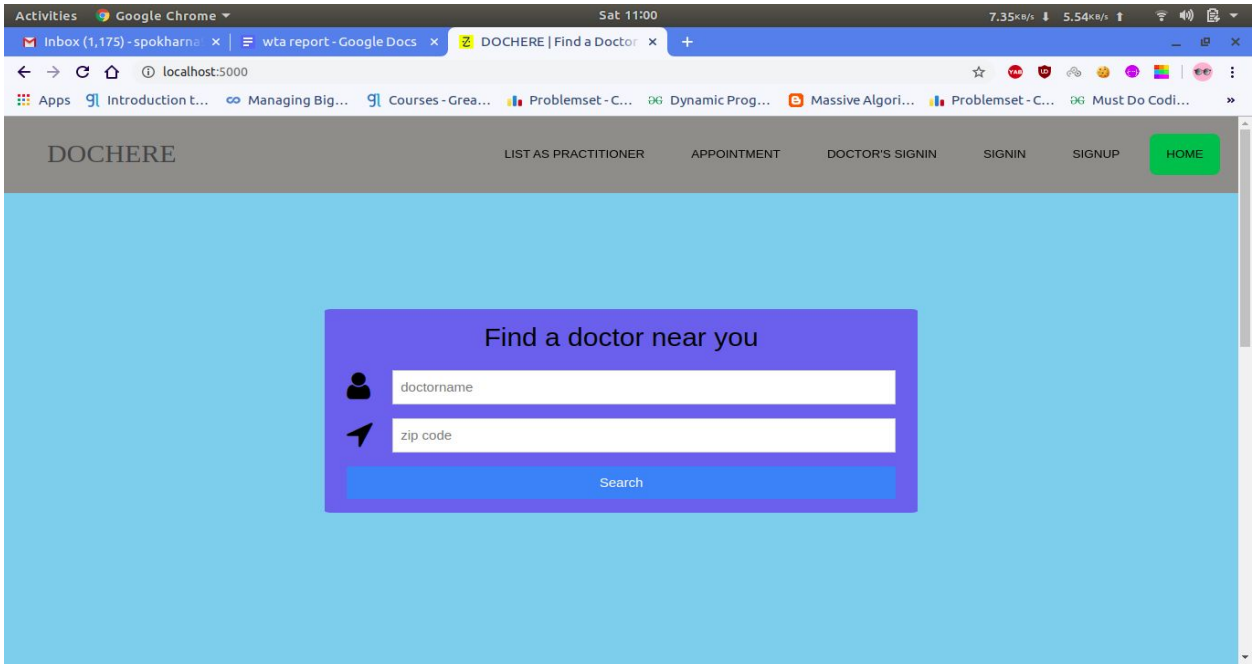



FIG 3:Search doctor on basis of name

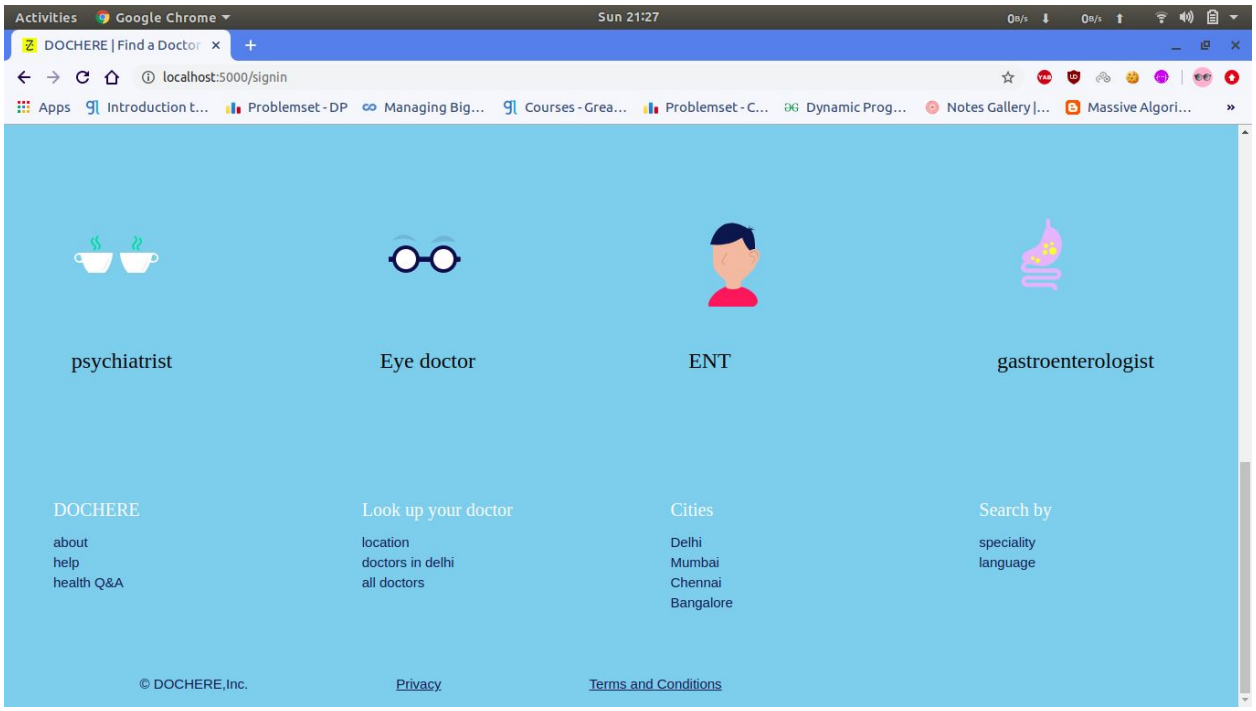
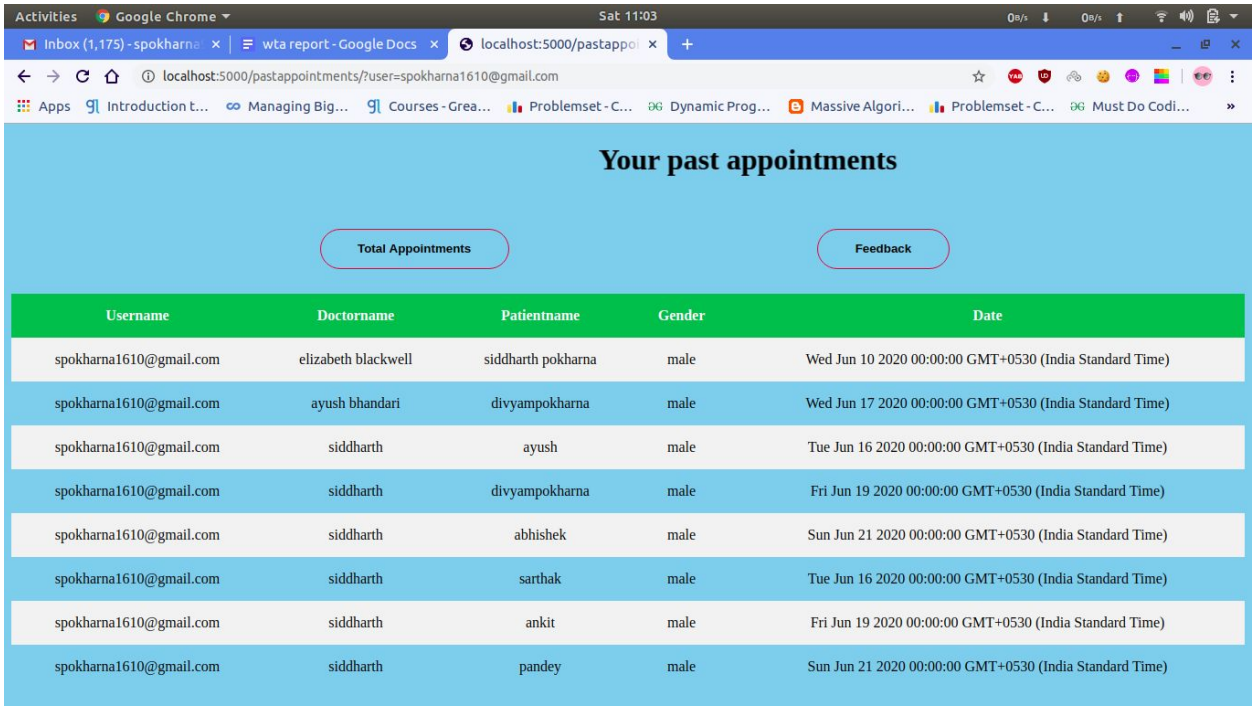
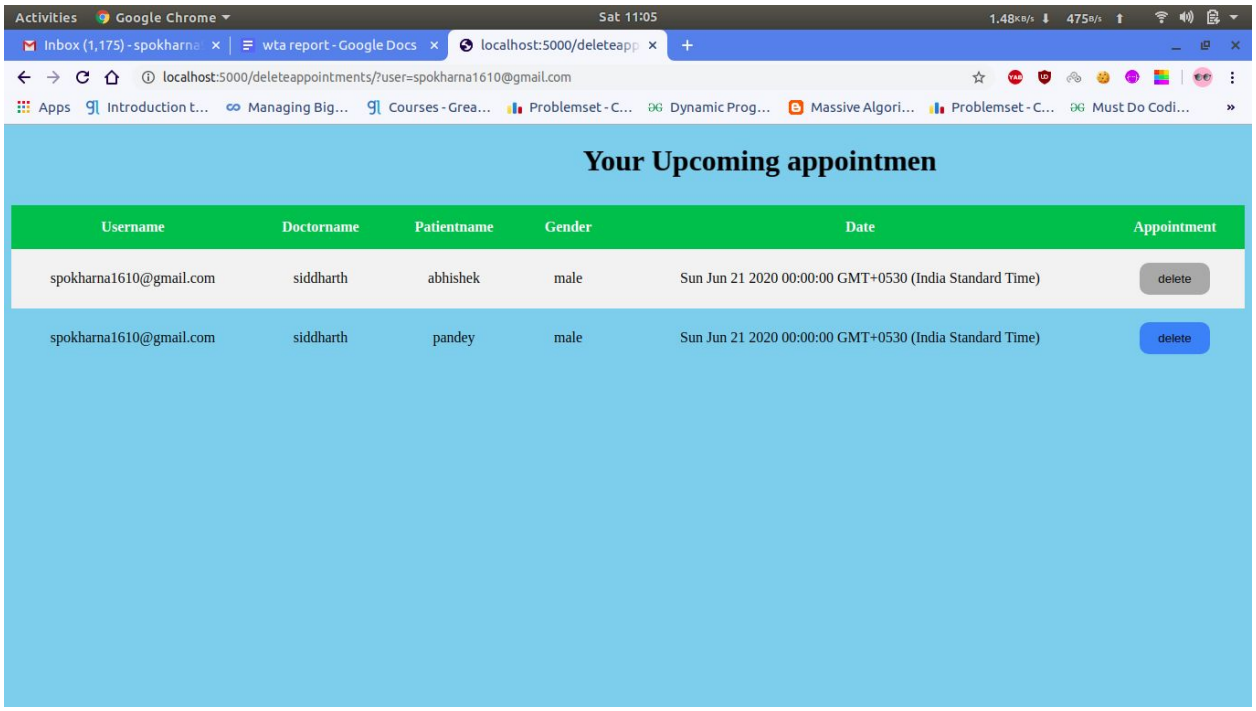



FIG4:Division of Doctor on basis of specialisation




| Username | Doctorname | Patientname | Gender | Date |
|---|---|---|---|---|
| spokharna1610@gmail.com | elizabeth blackwell | siddharth pokharna | male | Wed Jun 10 2020 00:00:00 GMT+0530 (India Standard Time) |
| spokharna1610@gmail.com | ayush bhandari | divyampokharna | male | Wed Jun 17 2020 00:00:00 GMT+0530 (India Standard Time) |
| spokharna1610@gmail.com | siddharth | ayush | male | Tue Jun 16 2020 00:00:00 GMT+0530 (India Standard Time) |
| spokharna1610@gmail.com | siddharth | divyampokharna | male | Fri Jun 19 2020 00:00:00 GMT+0530 (India Standard Time) |
| spokharna1610@gmail.com | siddharth | abhishek | male | Sun Jun 21 2020 00:00:00 GMT+0530 (India Standard Time) |
| spokharna1610@gmail.com | siddharth | sarthak | male | Tue Jun 16 2020 00:00:00 GMT+0530 (India Standard Time) |
| spokharna1610@gmail.com | siddharth | ankit | male | Fri Jun 19 2020 00:00:00 GMT+0530 (India Standard Time) |
| spokharna1610@gmail.com | siddharth | pandey | male | Sun Jun 21 2020 00:00:00 GMT+0530 (India Standard Time) |

FIG5:Patient can view his  upcoming and previous appointment with doctors




| Username | Doctorname | Patientname | Gender | Date | Appointment |
|---|---|---|---|---|---|
| spokharna1610@gmail.com | siddharth | abhishek | male | Sun Jun 21 2020 00:00:00 GMT+0530 (India Standard Time) | delete |
| spokharna1610@gmail.com | siddharth | pandey | male | Sun Jun 21 2020 00:00:00 GMT+0530 (India Standard Time) | delete |

Fig 6:Upcoming Appointments and option to delete.

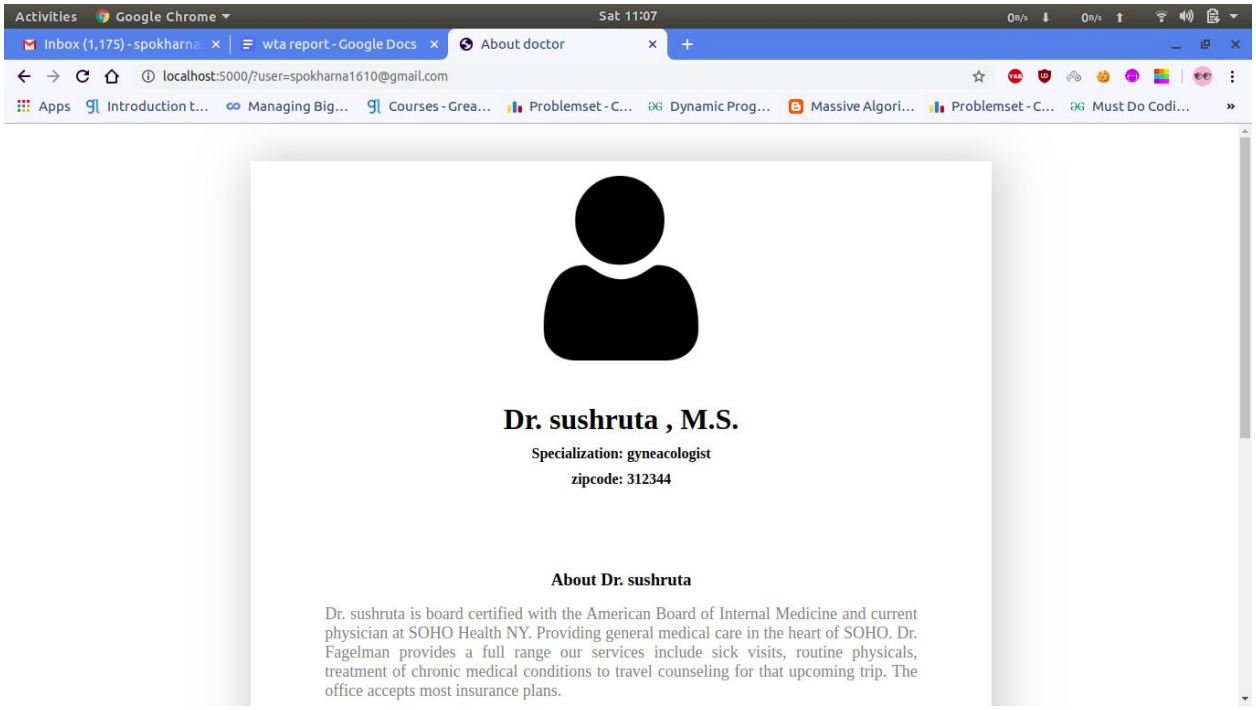



Fig 7:Doctor's Profile

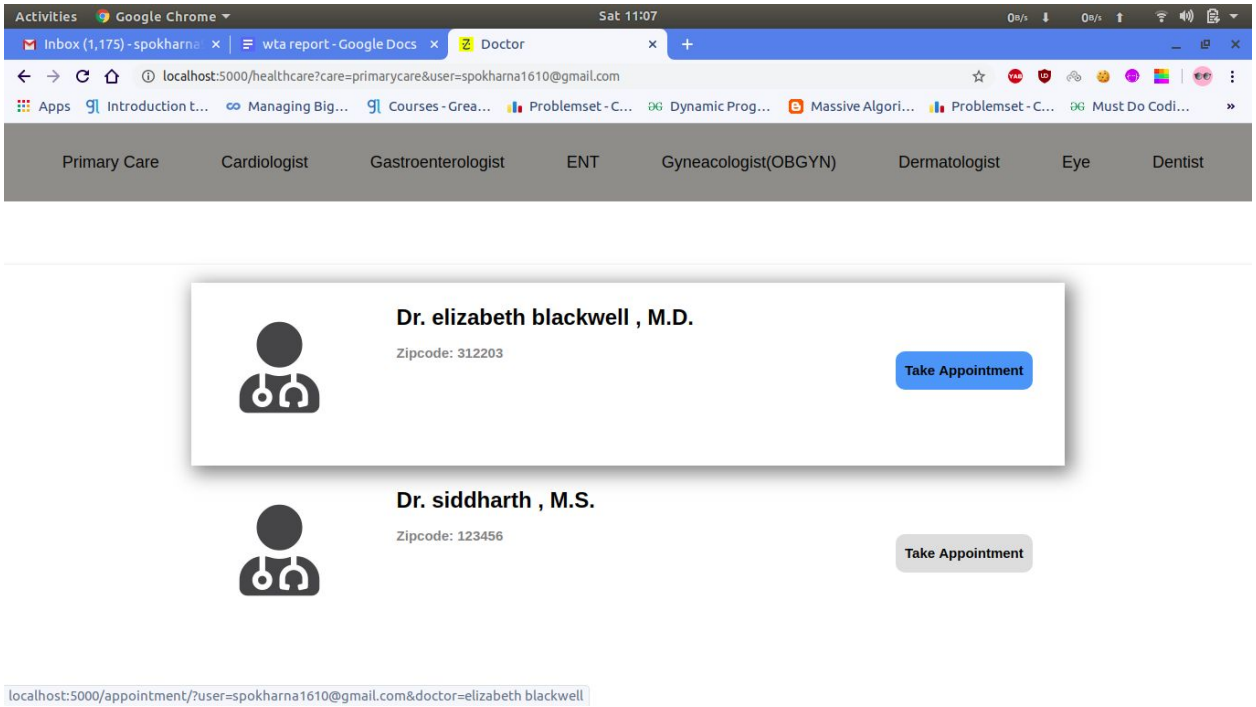



Fig 8: doctors according to their specialization.

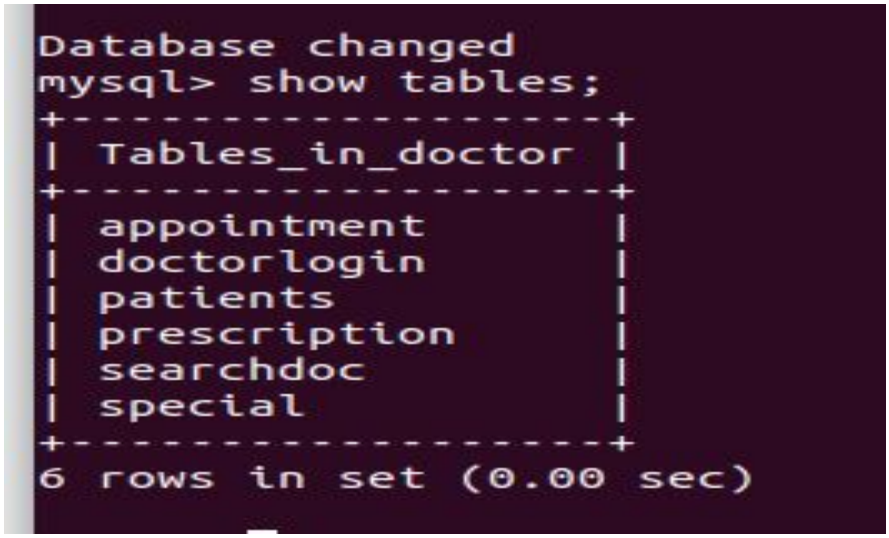



Fig 9:Different tables in database

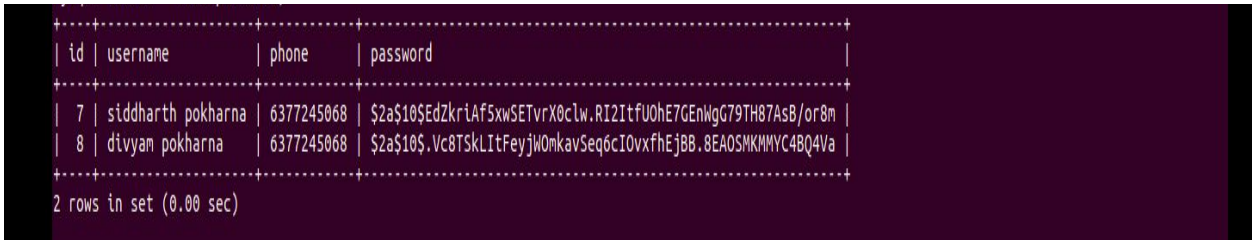



Fig 10:Saving patient details on database


Fig 11:Search on basis of name of Doctor

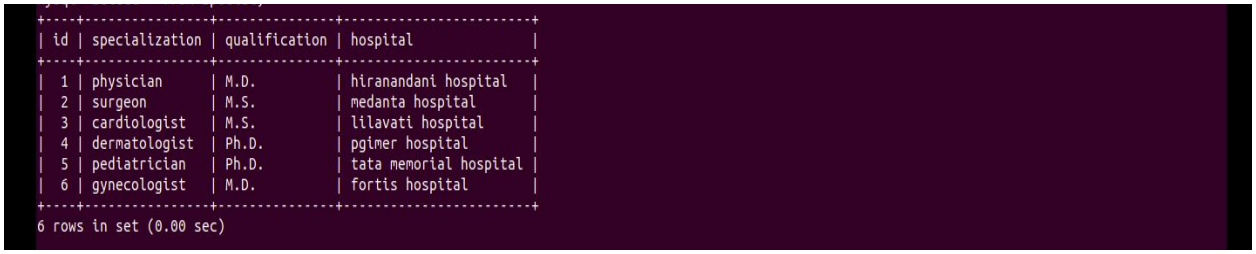
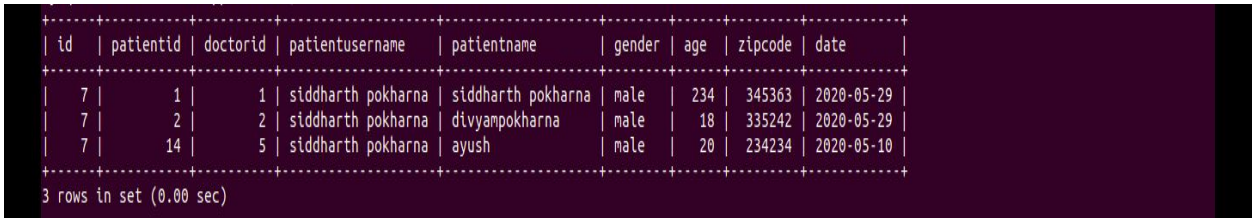


Fig 12:Specialisation Table



| id | patientid | doctorid | patientusername | patientname | gender | age | zipcode | date |
|---|---|---|---|---|---|---|---|---|
| 7 | 1 | 1 | siddharth pokharna | siddharth pokharna | male | 234 | 345363 | 2020-05-29 |
| 7 | 2 | 2 | siddharth pokharna | divyampokharna | male | 18 | 335242 | 2020-05-29 |
| 7 | 14 | 5 | siddharth pokharna | ayush | male | 20 | 234234 | 2020-05-10 |

3 rows in set (0.00 sec)

Fig13:Saving of patient's appointment with doctor using userid and doctorid as foreign key in database.

```
mysql> select * from doctorlogin;
+-----+-----------------------------+--------------------------------------------------------------+
| did | doctormail                  | password                                                     |
+-----+-----------------------------+--------------------------------------------------------------+
|   7 | spokharna2002@gmail.com     | $2a$10$/syqHh54OUfoq/yvkt1HZuv.8d1bVSunlVxSDyX2Rd3/EsRo1FW2W |
|   8 | ayushbhandari8909@gmail.com | $2a$10$IGcuZ6PBVffJ.7gvDjRK/eah4L7MC7omDxQ1fFnOXbg4lKGvn4Aqq |
|  10 | sarthak@gmail.com           | $2a$10$A.58FE6fRz2AqM.rnuQoRu3khBzQwuVoWZGpHT1m.jd.oiJWLJjDa |
|  11 | sid@gmail.com               | $2a$10$iAvY5NUJw9jIVrNWjvutZ.VCyjf4oMgDkxZodLKSD0Rwyru4VU4WK |
+-----+-----------------------------+--------------------------------------------------------------+
4 rows in set (0.00 sec)
```

Fig 14:Doctors account details with hashed passwords

# 7. RESULT AND ANALYSIS

We were able to accomplish our goals for the project and were also able to add modification in our project as per our guide .

The modification made were:

1) Better UI design
2) Adding of feature of prescription via mail by doctor for previously visited patient ensuring the availability of prescription all the time
3) Avoiding entry of specialisation on form when taking appointment in particular specialisation.

# 8. CONCLUSION

Since we are entering and updating details of the patients online in the”online health care System”, the data will be secured here. Using this web application we can check out patient history with a single click and it is convenient for both patient and doctor.Thus processing information will be more secure and faster. It guarantees accurate maintenance of Patient details. It easily reduces the work that doctors used to do to maintain the record and that way it reduces the human effort and helps people in need.

# 9. REFERENCES


1) ZOCDOC for frontend(https://www.zocdoc.com/)
2) Databases features (https://www.udemy.com/)
3) An overview of health standard by Timothy J.st Cyr