INFIRMARY CLINICAL SERVICES

A

Mini Project Report

Submitted in partial fulfilment of the

Requirements for the award of the Degree of

BACHELOR OF ENGINEERING

IN

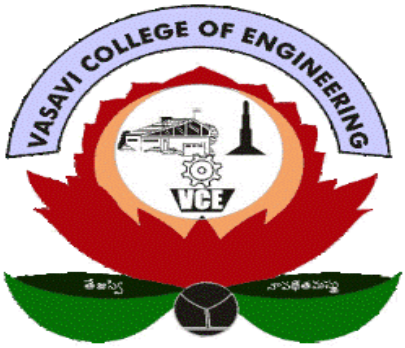
INFORMATION TECHNOLOGY

By

SWETHA SAI DAKUPATI<1602-19-737-093>

RAVIPUDI SRAVYA <1602-19-737-109>

CHEMUDU SREEYA<1602-19-737-110>



Department of Information Technology

Vasavi College of Engineering (Autonomous)

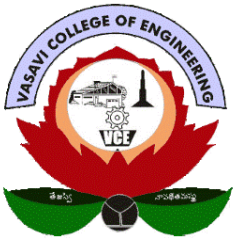
(Affiliated to Osmania University)

Ibrahimbagh, Hyderabad-31 2021-2022

Vasavi College of Engineering (Autonomous)

Hyderabad-500 031

Department of Information Technology



DECLARATION BY THE CANDIDATE

We, **Dakupati Swetha Sai,** bearing hall ticket number, **1602-19-737-093**, **Ravipudi Sravya,** bearing hall ticket number,**1602-19-737-109 and Chemudu Sreeya** bearing hall ticket number , **1602-19-737-110** are hereby declare that the project report entitled **"Infirmary Clinical services"** Department of Information Technology, Vasavi College of Engineering, Hyderabad, is submitted in partial fulfilment of the requirement for the award of the degree of **Bachelor of Engineering** in **Information Technology**

This is a record of bonafide work carried out by me and the results embodied in this project report have not been submitted to any other university or institute for the award of any other degree or diploma.

Swetha Sai Dakupati

1602-19-737-093

Ravipudi Sravya

1602-19-737-109

Chemudu Sreeya

1602-19-737-110

(Faculty In-Charge) (Head,Dept of IT)

ACKNOWLEDGEMENT

The mini project entitled **"INFIRMARY CLINICAL SERVICES"** Is the outcome of total efforts of our batch. It is our primary responsibility to innovate the things , make people indulge in our project and have a relation with our project. Without home it would have not gained a structure.

I owe immense thanks to my project Guide Mr. David Raju, Assistant Professor, Dr .HASEEBA YASEEN, Assistant Professor, Mrs.SATYADEVI , Assistant Professor Department Of Information Technology, Vasavi College Of Engineering for this sustained interest, constructive criticism and constant encouragement at every stage of this Endeavour.

Also, I whole heartedly thank Dr.T.Ramamohan Rao, Professor and Head Of Department, Vasavi College Of Engineering for his constant encouragement.

I extended my deep sense of gratitude to the Principal Dr.S.V.Ramana and the management of Vasavi College Of Engineering for providing of the best amenities to enable us to complete my project in stipulated time.

Last but not the least, I am very thankful to my parents, friends, faculty and other faculty of the department of Information Technology for their constant support for the completion of the project.

DAKUPATI SWETHA SAI

1602-19-737-093

RAVIPUDI SRAVYA

1602-19-737-109

CHEMUDU SREEYA

1602-19-737-110

TABLE OF CONTENTS

ABSTRACT

Infirmary Clinical Services is an organized computerized system designed and programmed to deal with day to day operations and management of the clinical activities. It includes features like sign-up, sign-in for the respective user like doctor, patient, admin in a user-friendly manner.

Here the patient's catalogue helps to consult doctor through chat box and check the predicted disease. Whereas, a doctor can treat a patient through chat box and can view his ratings and reviews accordingly. In Addition, both can provide feedback extensively.

By eliminating waiting hours, longer queues to achieve customization and offer personalized solutions. productivity and cost-effectiveness is also achieved concurently.

1. INTRODUCTION

ABOUT THE PROJECT

Automation of clinical services helps in prediction of disease through extensive chatbot mechanism for efficient consultation with expedient feedbacks, Effective Ratings and reviews.

1.1 PROBLEM STATEMENT & MOTIVATION

- Generally, In the health care system, it is seen that the data is considered to be more valuable than any other domain. Since accurate measures and diagnosis are more required in this field.
- People get frustrated to be in Long queues and still getting no appointment, Or appointments taking a lot of time.
- Also, productivity and cost-effectiveness is considered to be another most important detail. It solely cant be achieved through physical mode that requires a lot of manual work in terms of maintaining patient records, diet charts etc.
- Other than this, people don’t find enough time to consult a doctor physically until it worsens the scenario.

1.2 PROJECT OBJECTIVES

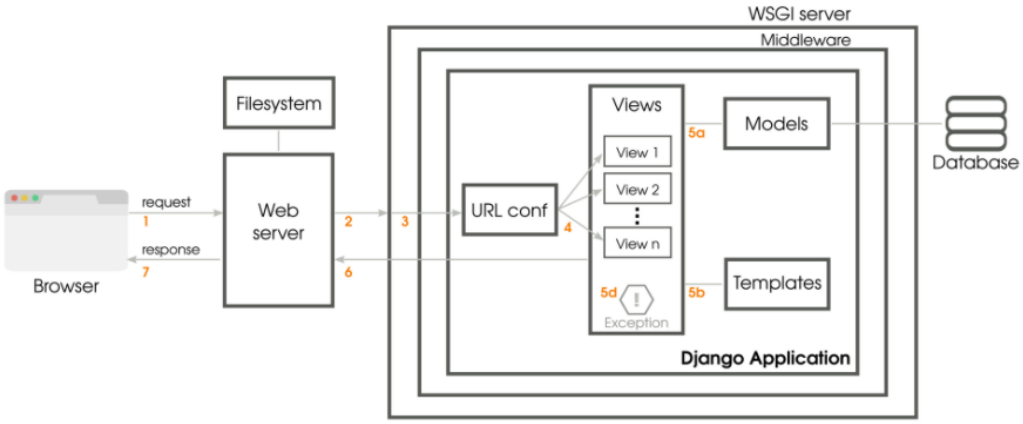
- Our objective is to automate disease prediction, provide chat box for further clarifications by maintaining records effectively through feedbacks, reviews and ratings.

2 TECHNICAL LITERATURE

Hardware requirements refer to the common set requirements defined by any operating system or software application and are usually the physical computer resources. In this, we look into the architecture, processing power, memory, secondary memory, display adapter and peripherals.

In order to use this project, one should have the following:

- **Processor:** Intel Pentium processor and above
- **Memory:** 4 GB RAM and above



3.Existing Methods

There are no existing methods that replicate our website.

4.Proposed System

4.1 System Requirements and Specifications

All computer software needs certain hardware components or other software resources to be present, in order for computers to be used efficiently. These prerequisites are known as System Requirements. Within this, we have two types – Software Requirements and Hardware Requirements.

4.1.1 Software Specifications

` Software Requirements deal with defining the software resource requirements and prerequisites that need to be installed on a computer to provide optimal functioning of an application. These preconditions are generally not included in the software installation package and need to be installed separately.

In order to use Infirmary Clinical services, one should have the following:

- **Operating System:**

  Windows 7 and above

- **Framework:**
  Django

- **Frontend:**

  - HTML
  - CSS
  - JavaScript

    - **Backend:**

- Python
- SQLite DB (Default)

4.1.2 Functional Requirements

R.1 User functionality system

R.1.1 Intially the patient has to signup himself inorder to consult a doctor for his disease. After signup, he can add the symptoms list and can view the predicted disease.

R.1.2 Doctor can view the chat box that patient has coordinated with inorder to reach out to the queries.

R.1.3 Admin can view the feedbacks provided by the user accordingly.

4.1.3 Non-Functional Requirements

R2. Security.

The security requirements are concerned with security and privacy issues. All user information is required by law to be kept private.

R 2.1 The web application shall support concerned user access privileges.

R 2.2 The web application shall protect user information.

R3. Maintainability

The maintainability requirements are concerned with the maintenance issues of the system.

R 3.1 The maintenance time of web application shall be done regularly.

R 3.2 System down time for maintenance should be less than 6 hours per

quarter of a year.

R4. Scalability

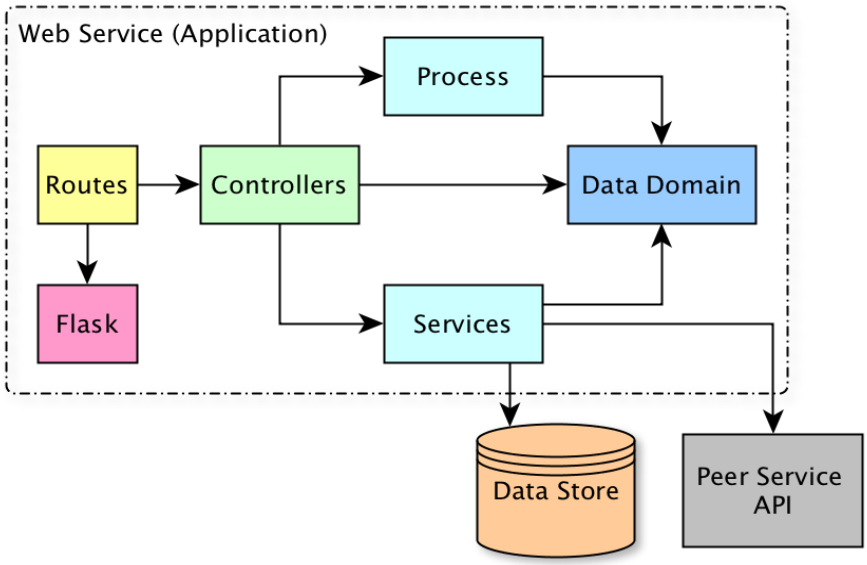
The scalability requirements are concerned with the scalable issues of the system.

R 4.1 The web application shall be able to scale up to support more workstations.

4.2 Architecture

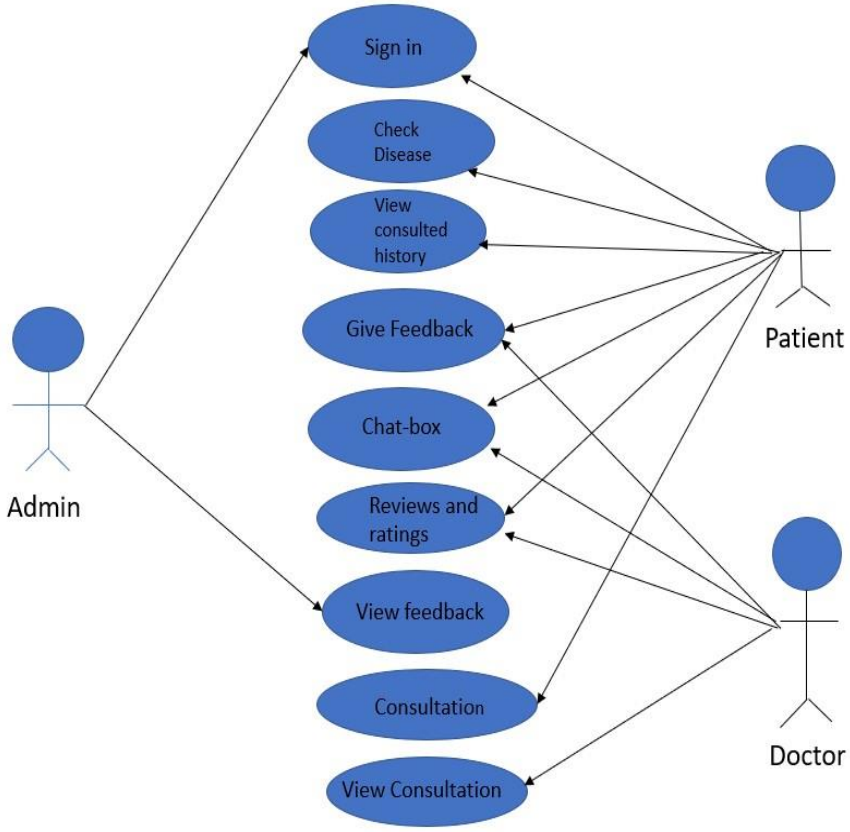
Flask is based on MVC Architecture: Model View and Controller:

- Model: It includes all the data and its related logic
- View: Present data to the user or handles user interaction
- Controller: An interface between Model and View components

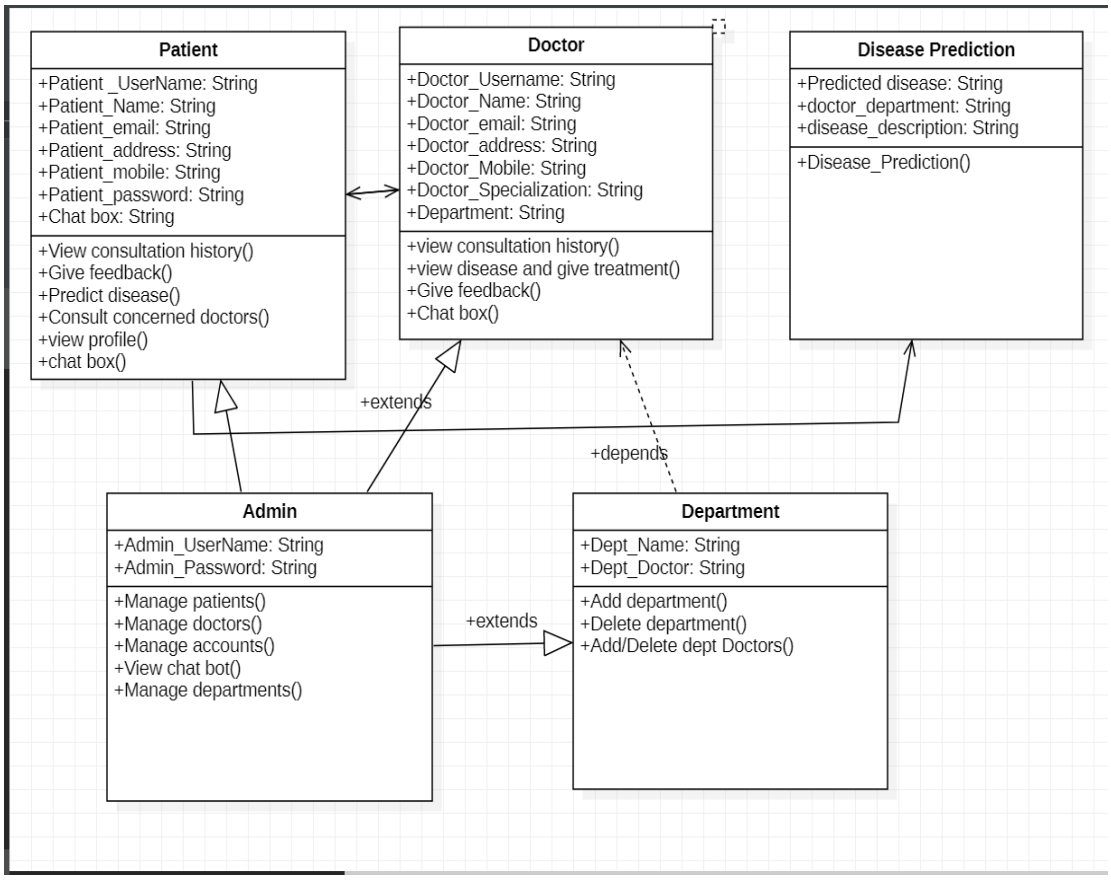


5. Design

5.1 UML diagrams / UX diagrams

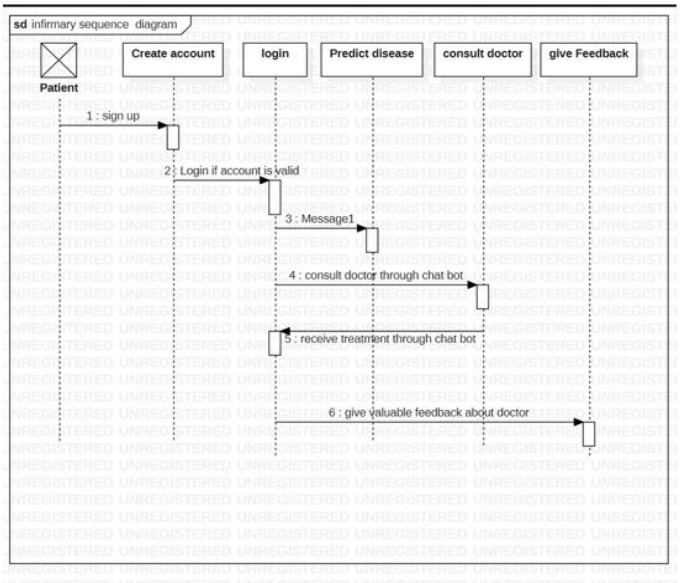


Class Diagram:

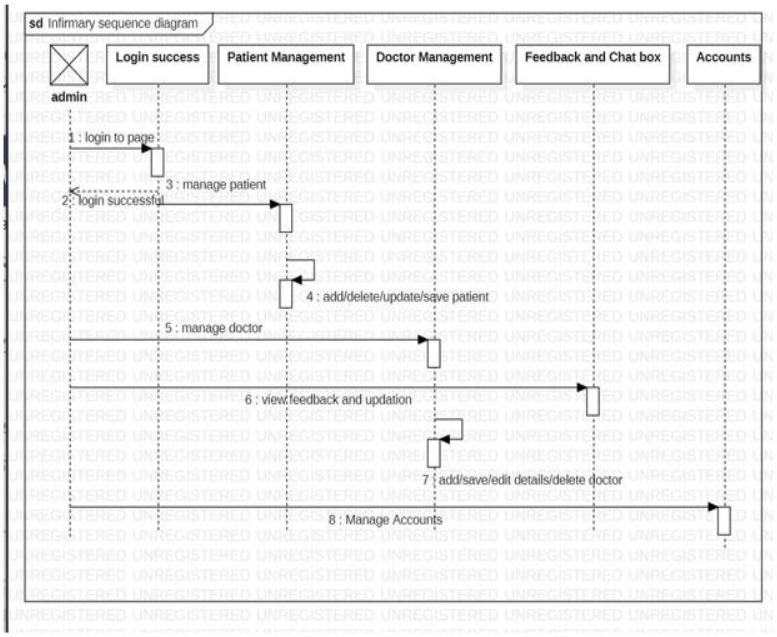


Sequence Diagram:

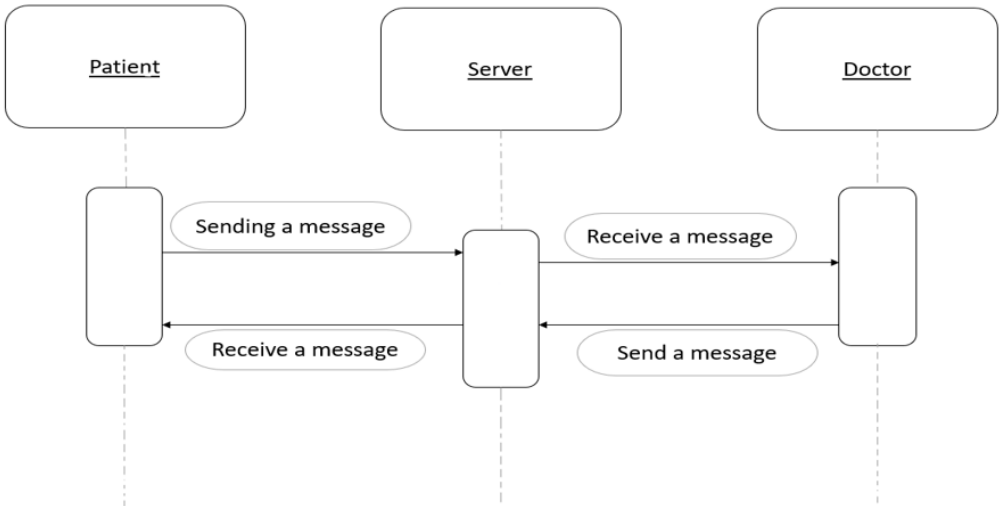
- Sequence Diagram for Use cases: To Predict disease



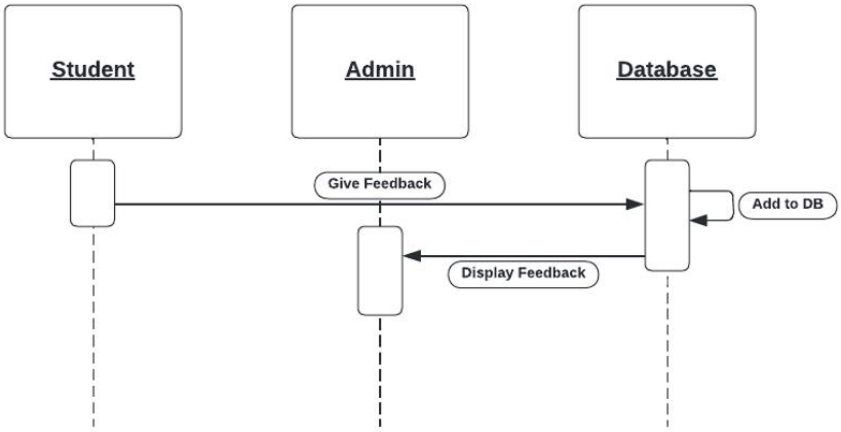
- Sequence Diagram for Use cases: User Management



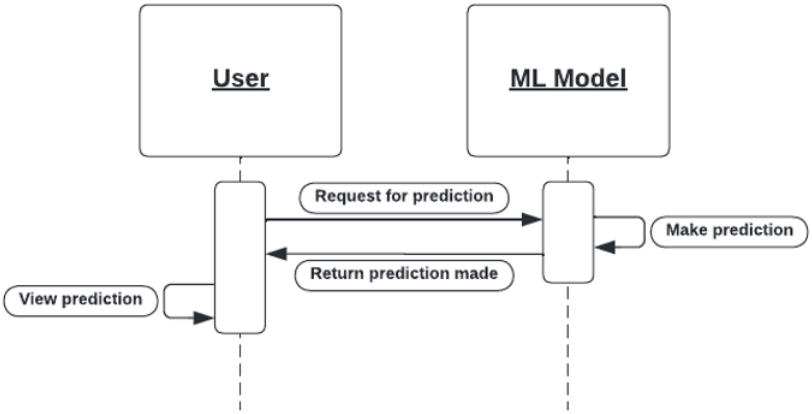
- Sequence Diagram for Use cases: Chat Box



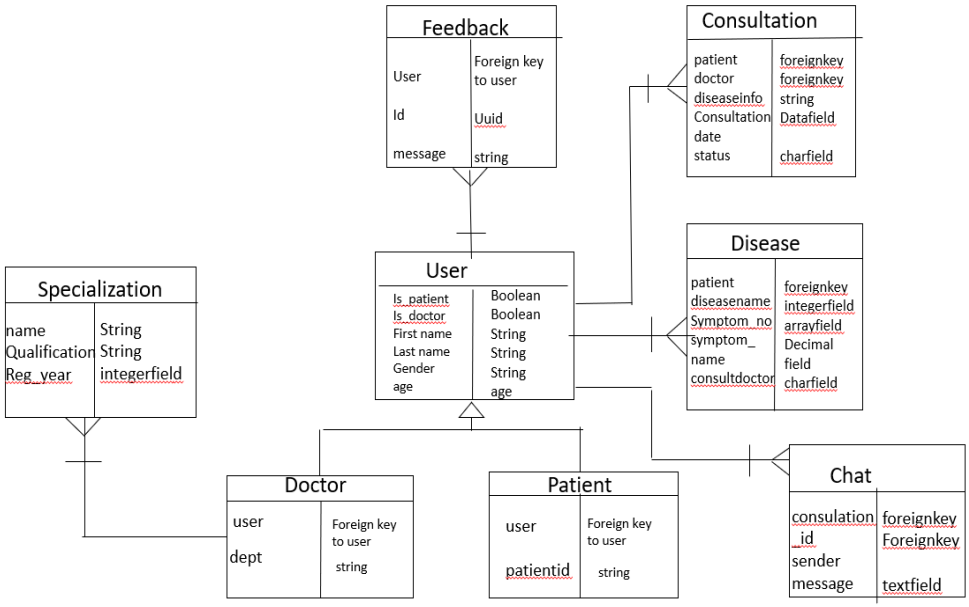
- Sequence Diagram for Use cases: Give Feedback (Patient) and view feedback(Doctor)



- Sequence Diagram for Use cases: Predict disease based on symptoms.

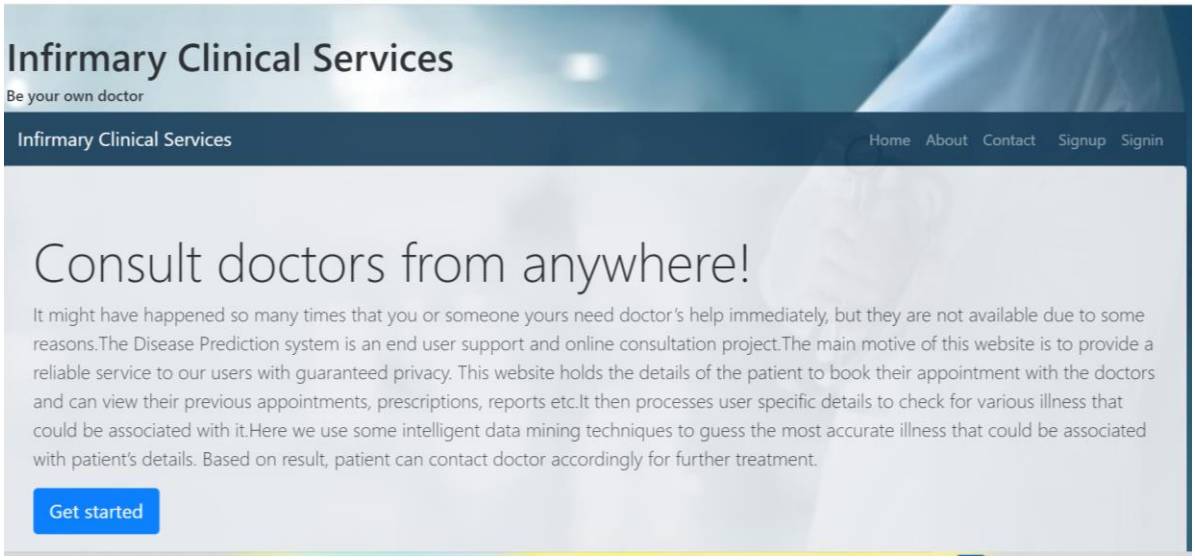


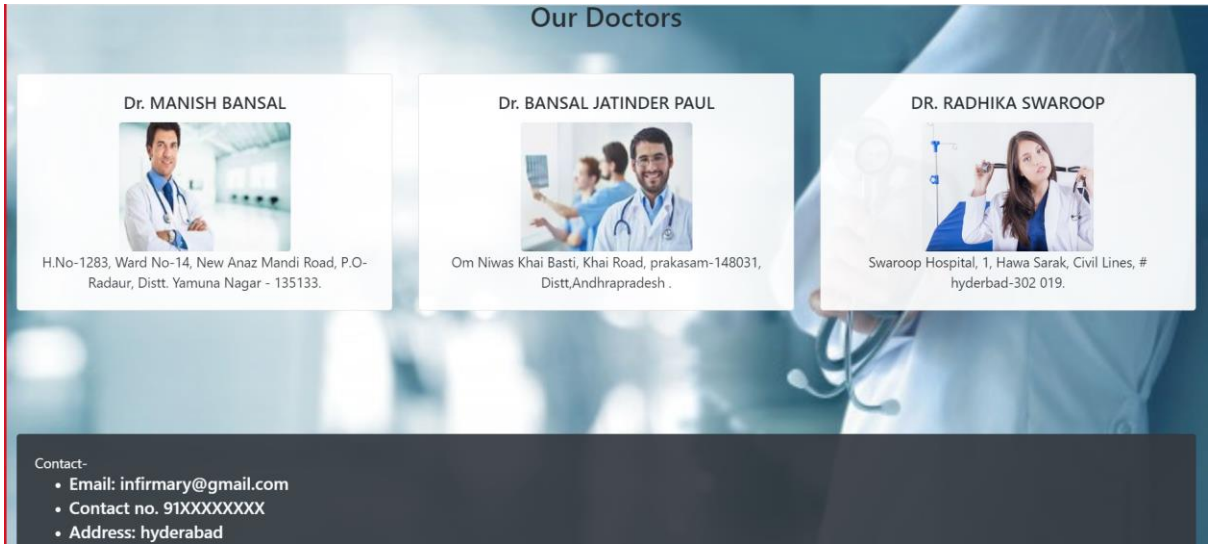
5.2 Database schema

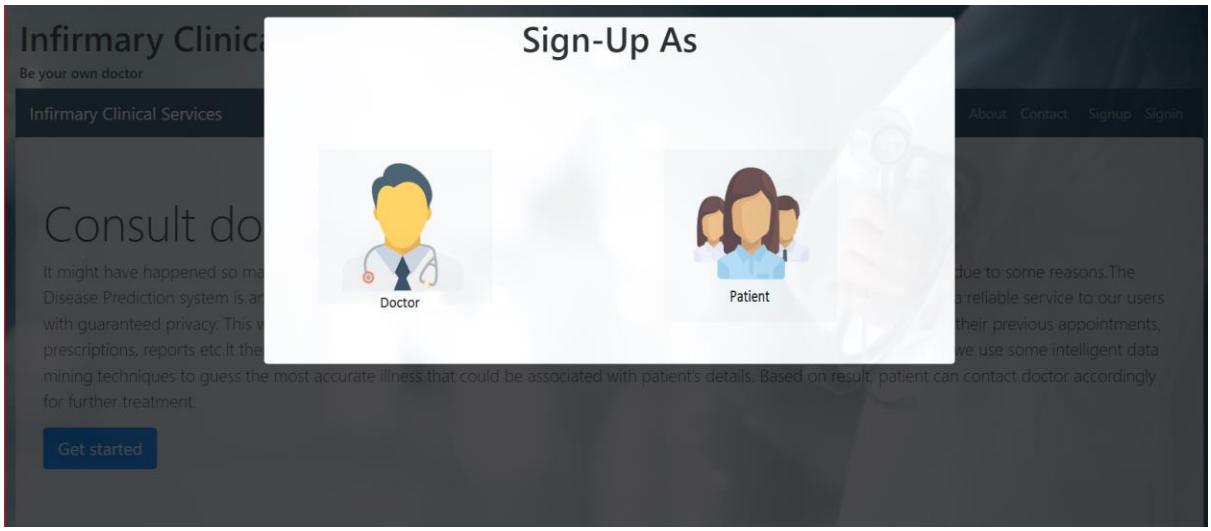


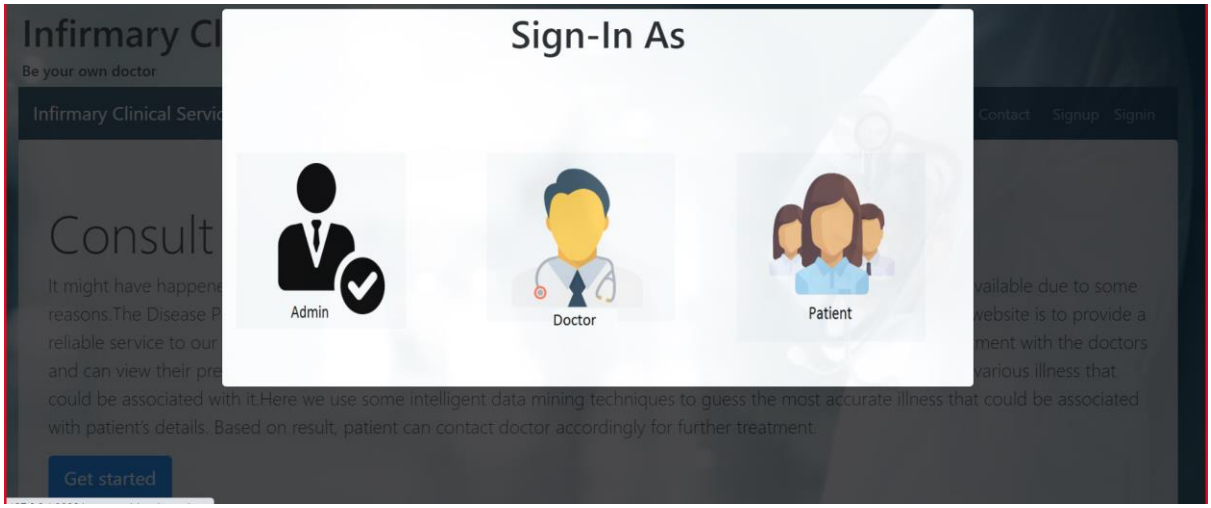
6. Implementation and Testing

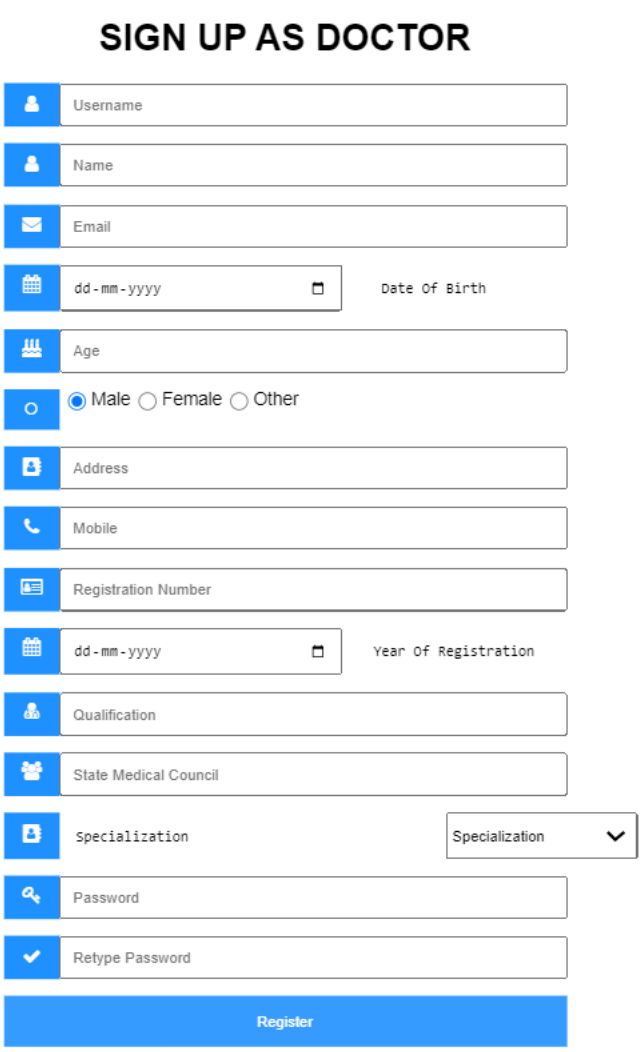
6.1 Screenshots and Test cases




Our Doctors
Dr. MANISH BANSAL
H.No-1283, Ward No-14, New Anaz Mandi Road, P.O-Radaur, Distt. Yamuna Nagar - 135133.
Dr. BANSAL JATINDER PAUL
Om Niwas Khai Basti, Khai Road, prakasam-148031, Distt,Andhrapradesh .
DR. RADHIKA SWAROOP
Swaroop Hospital, 1, Hawa Sarak, Civil Lines, # hyderbad-302 019.
Contact-
Email: infirmary@gmail.com
Contact no. 91XXXXXXXX
Address: hyderabad


Infirmary Clinic
Be your own doctor
Infirmary Clinical Services
About Contact Signup Signin
Consult do
Get started
Sign-Up As
Doctor
Patient


Infirmary Cl
Be your own doctor
Contact Signup Signin
Consult
Get started
Sign-In As
Admin
Doctor
Patient


SIGN UP AS DOCTOR
Username
Name
Email
dd-mm-yyyy
Date Of Birth
Age
Male
Female
Other
Address
Mobile
Registration Number
dd-mm-yyyy
Year Of Registration
Qualification
State Medical Council
Specialization
Specialization
Password
Retype Password
Register

SIGN UP AS PATIENT

Username

Name

Email

dd-mm-yyyy

Age

Male Female Other

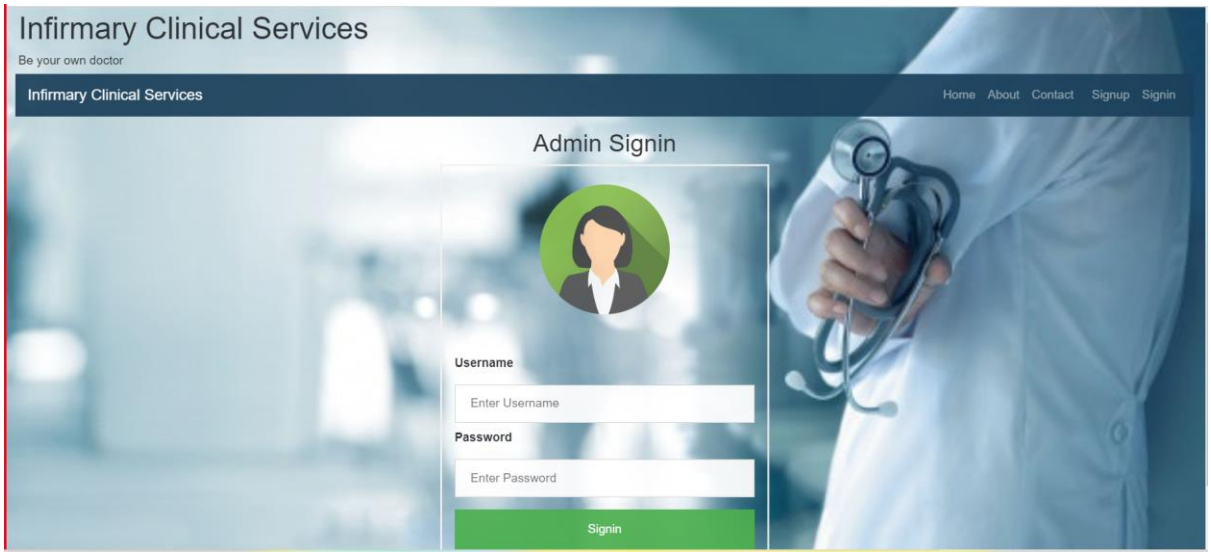
Address

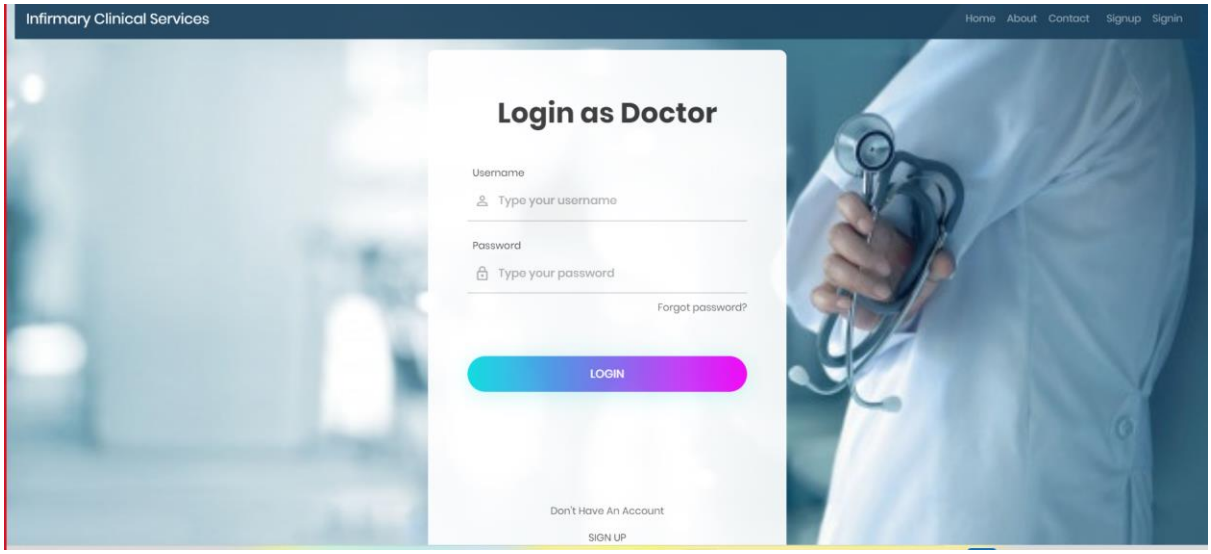
Mobile

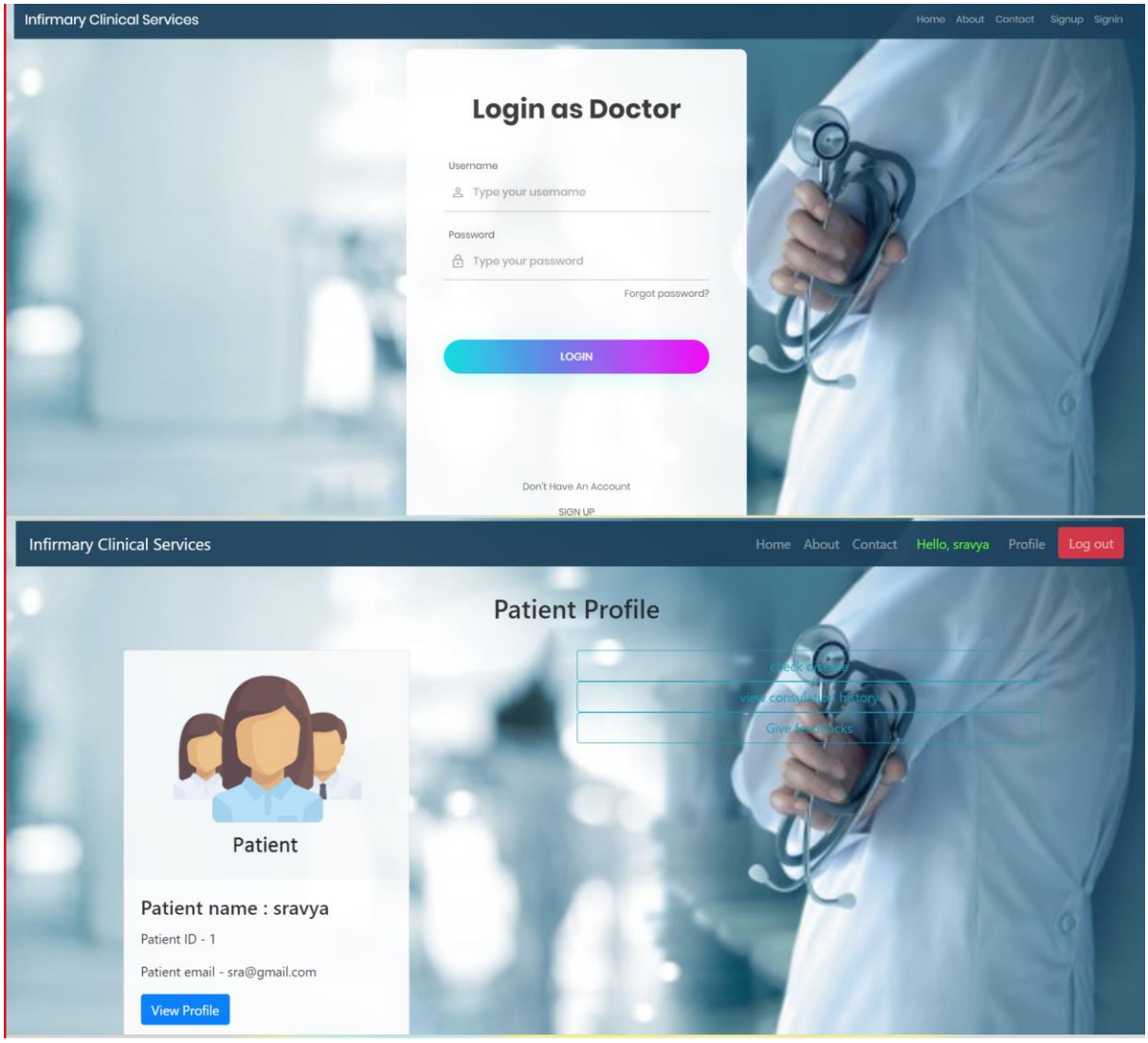
Password

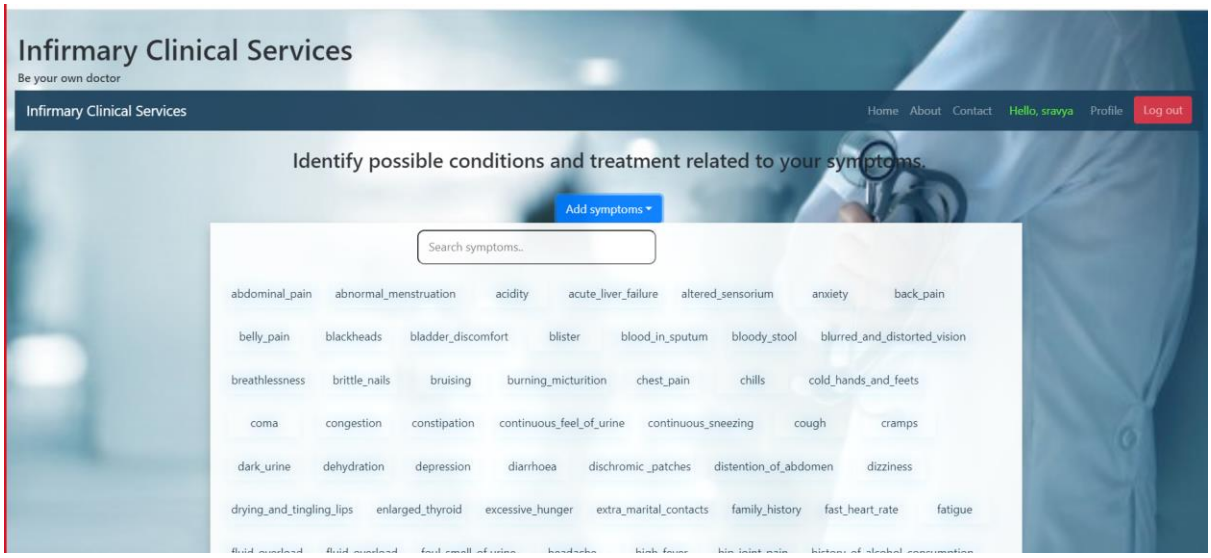
Retype Password

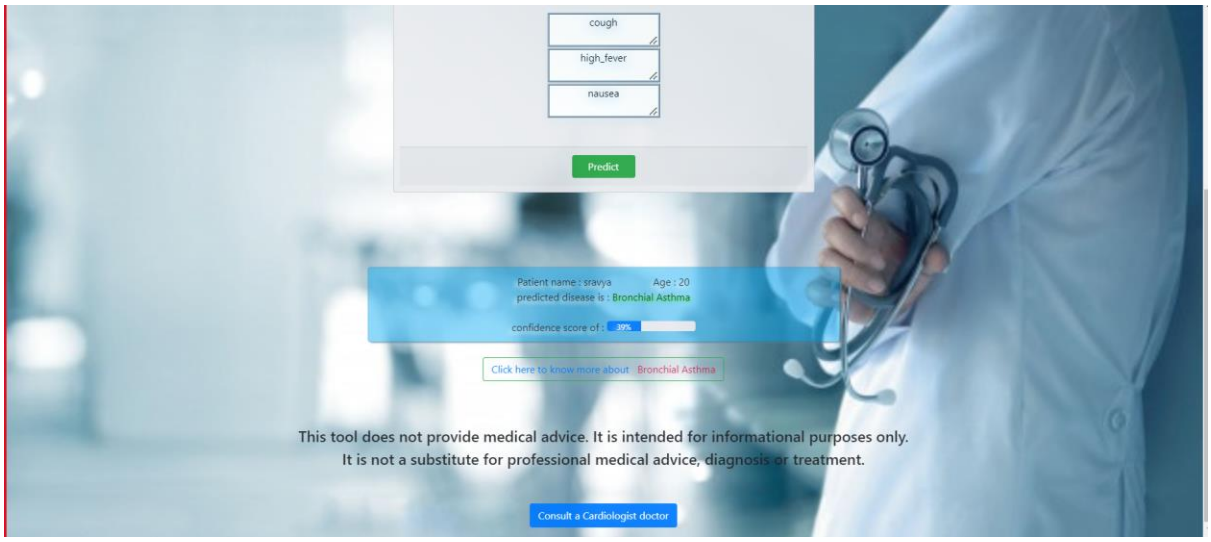
Register

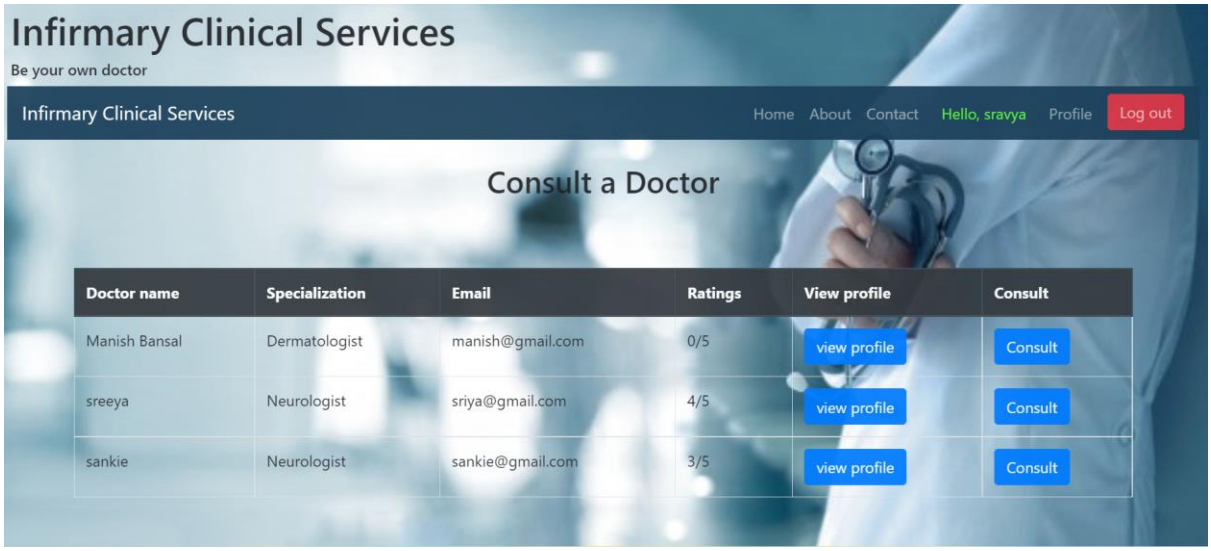


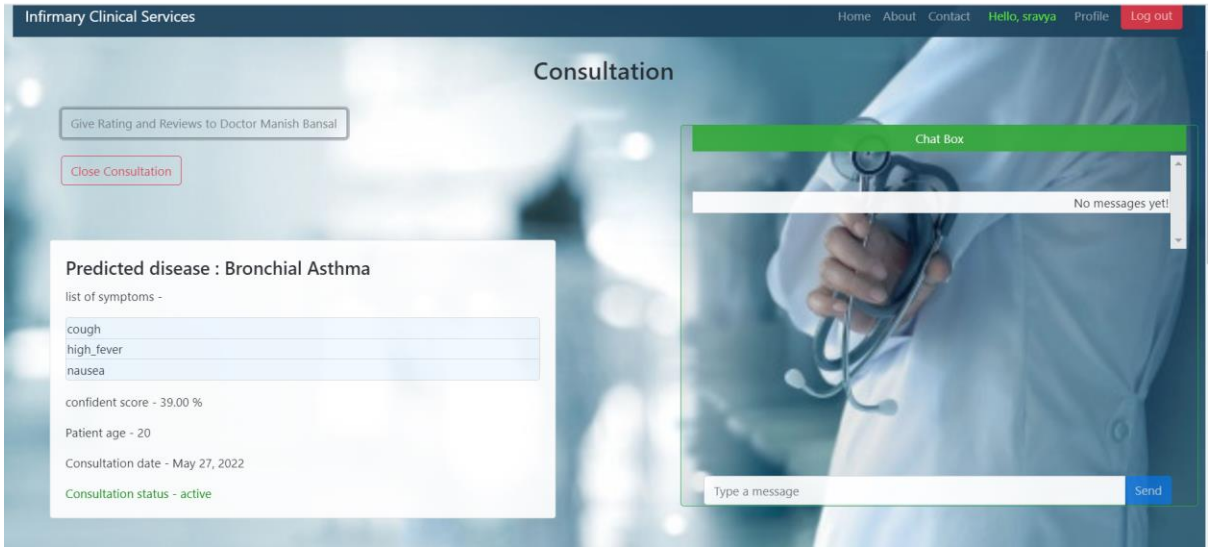

Infirmary Clinical Services
Home About Contact Signup Signin
Login as Doctor
Username
Type your username
Password
Type your password
Forgot password?
LOGIN
Don't Have An Account
SIGN UP

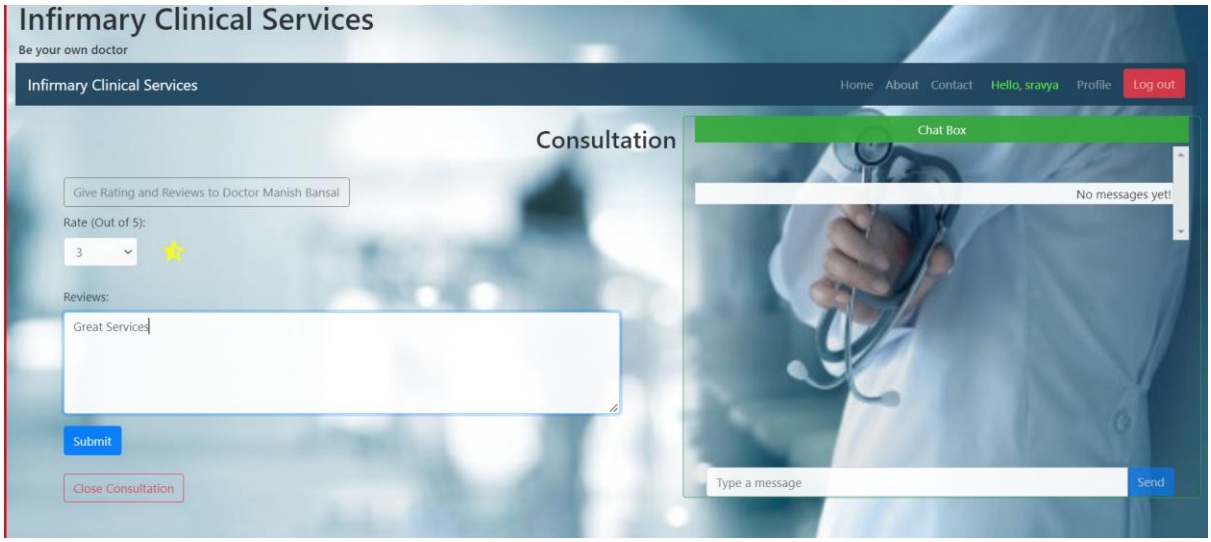

Infirmary Clinical Services
Home About Contact Signup Signin
Login as Doctor
Username
Type your username
Password
Type your password
Forgot password?
LOGIN
Don't Have An Account
SIGN UP
Infirmary Clinical Services
Home About Contact Hello, sravya Profile Log out
Patient Profile
Patient
Patient name : sravya
Patient ID - 1
Patient email - sra@gmail.com
View Profile

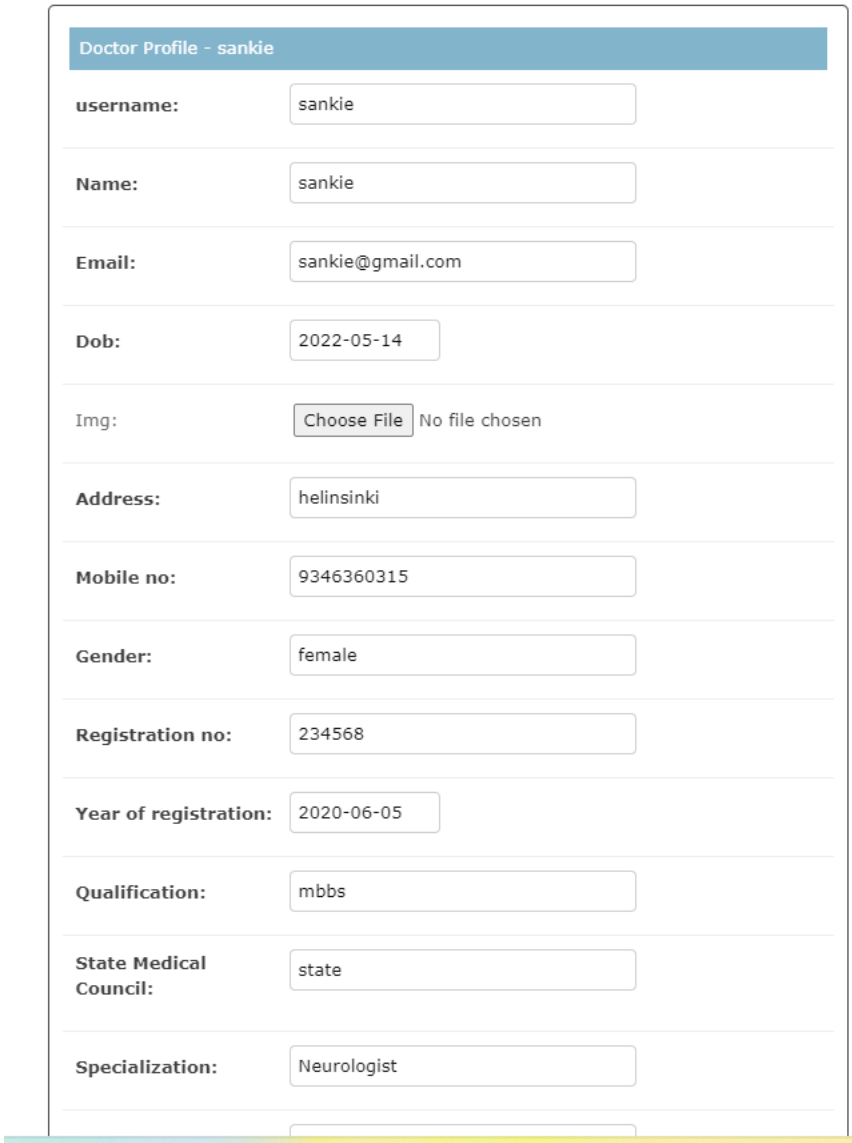

Infirmary Clinical Services
Be your own doctor
Infirmary Clinical Services
Home About Contact Hello, sravya Profile Log out
Identify possible conditions and treatment related to your symptoms.
Add symptoms
Search symptoms..
abdominal_pain abnormal_menstruation acidity acute_liver_failure altered_sensorium anxiety back_pain
belly_pain blackheads bladder_discomfort blister blood_in_sputum bloody_stool blurred_and_distorted_vision
breathlessness brittle_nails bruising burning_micturition chest_pain chills cold_hands_and_feets
coma congestion constipation continuous_feel_of_urine continuous_sneezing cough cramps
dark_urine dehydration depression diarrhoea dischromic _patches distention_of_abdomen dizziness
drying_and_tingling_lips enlarged_thyroid excessive_hunger extra_marital_contacts family_history fast_heart_rate fatigue

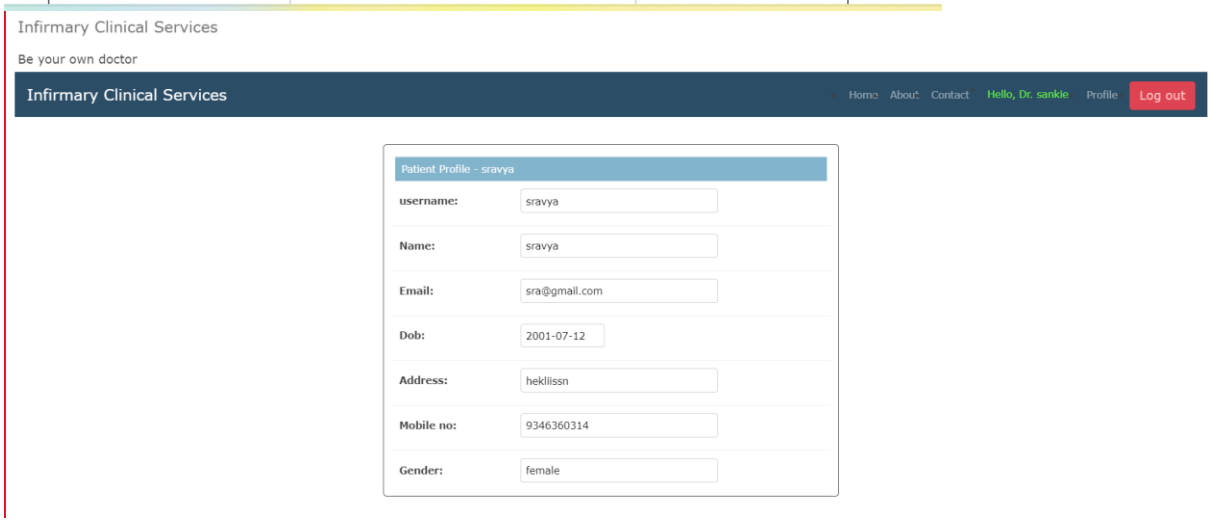

cough
high_fever
nausea
Predict
Patient name : sravya Age : 20
predicted disease is : Bronchial Asthma
confidence score of : 39%
Click here to know more about Bronchial Asthma
This tool does not provide medical advice. It is intended for informational purposes only.
It is not a substitute for professional medical advice, diagnosis or treatment.
Consult a Cardiologist doctor


Infirmary Clinical Services
Be your own doctor
Infirmary Clinical Services
Home About Contact Hello, sravya Profile Log out
Consult a Doctor
Doctor name Specialization Email Ratings View profile Consult
Manish Bansal Dermatologist manish@gmail.com 0/5 view profile Consult
sreeya Neurologist sriya@gmail.com 4/5 view profile Consult
sankie Neurologist sankie@gmail.com 3/5 view profile Consult


Infirmary Clinical Services
Home About Contact Hello, sravya Profile Log out
Consultation
Give Rating and Reviews to Doctor Manish Bansal
Close Consultation
Predicted disease : Bronchial Asthma
list of symptoms -
cough
high_fever
nausea
confident score - 39.00 %
Patient age - 20
Consultation date - May 27, 2022
Consultation status - active
Chat Box
No messages yet!
Type a message
Send

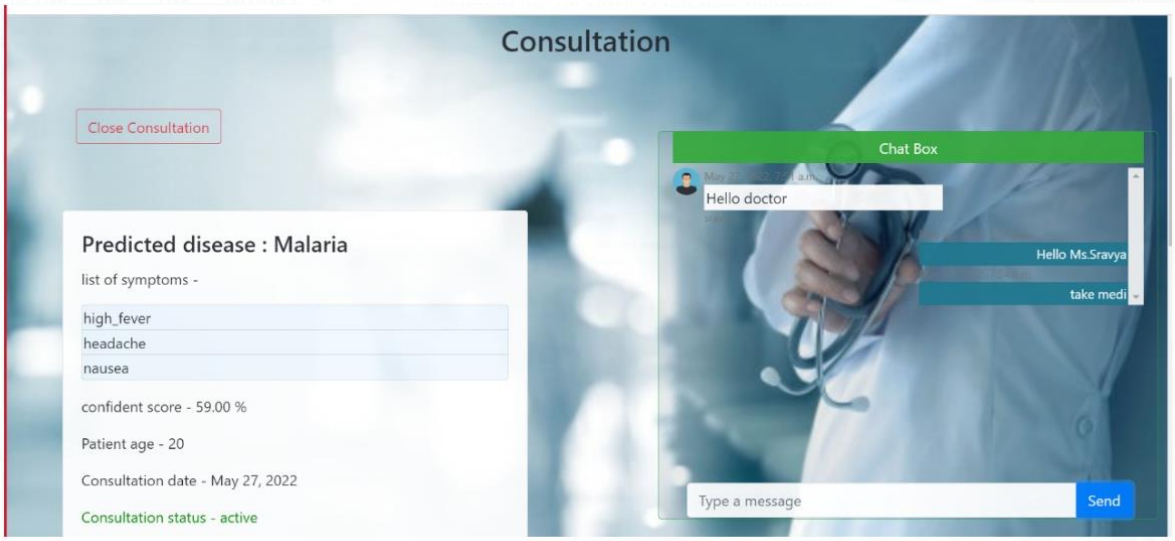

Infirmary Clinical Services
Be your own doctor
Infirmary Clinical Services
Home About Contact Hello, sravya Profile Log out
Consultation
Give Rating and Reviews to Doctor Manish Bansal
Rate (Out of 5):
3
Reviews:
Great Services
Submit
Close Consultation
Chat Box
No messages yet!
Type a message
Send

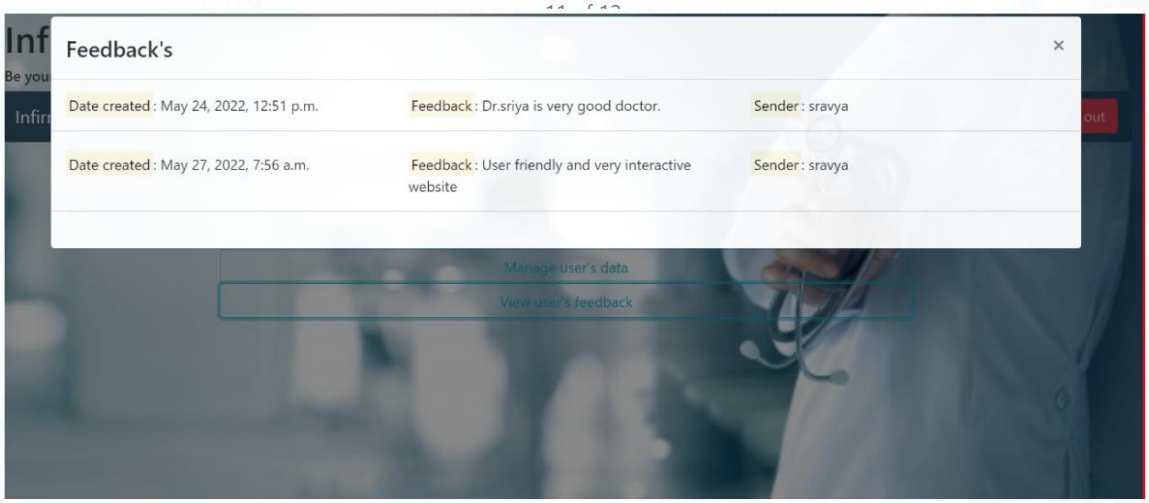

Doctor Profile - sankie
username: sankie
Name: sankie
Email: sankie@gmail.com
Dob: 2022-05-14
Img: Choose File No file chosen
Address: helinsinki
Mobile no: 9346360315
Gender: female
Registration no: 234568
Year of registration: 2020-06-05
Qualification: mbbs
State Medical Council: state
Specialization: Neurologist

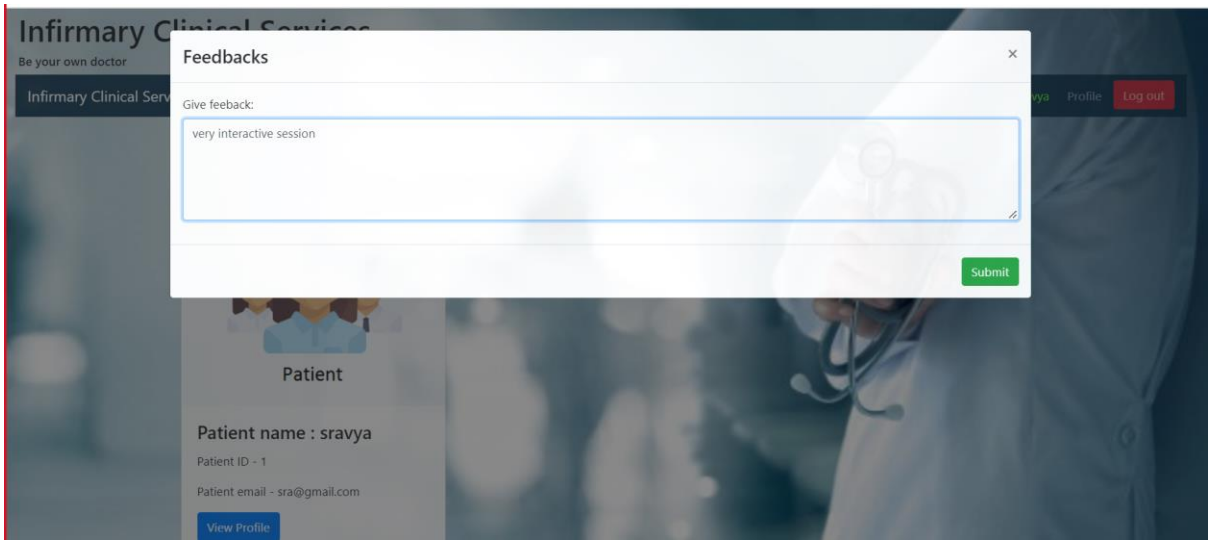

Infirmary Clinical Services
Be your own doctor
Infirmary Clinical Services
Home About Contact Hello, Dr. sankie Profile Log out
Patient Profile - sravya
username: sravya
Name: sravya
Email: sra@gmail.com
Dob: 2001-07-12
Address: hekliissn
Mobile no: 9346360314
Gender: female

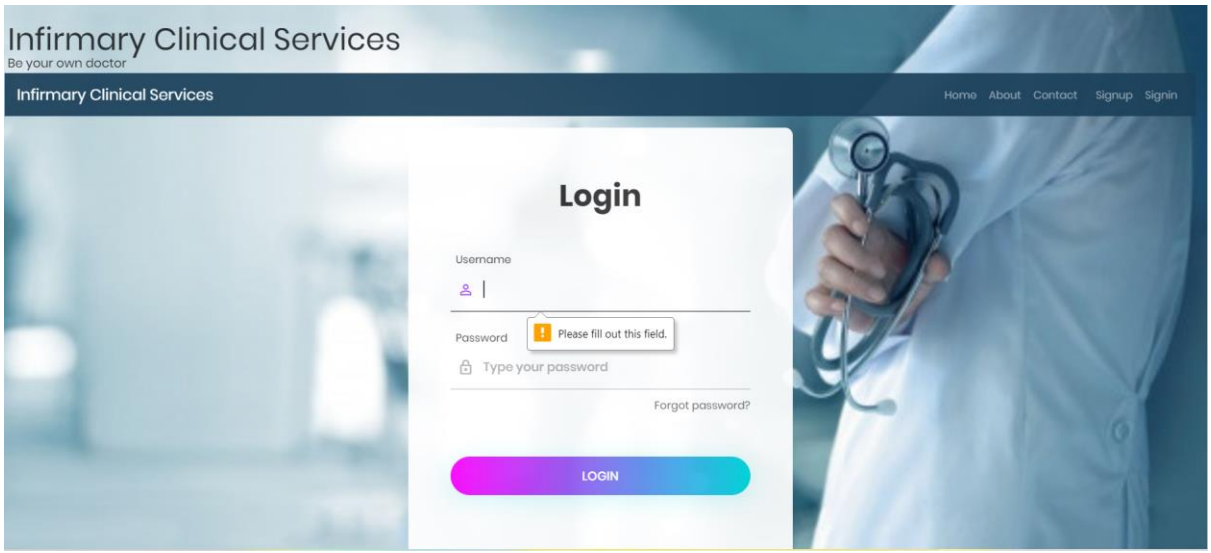
Ratings and Reviews

PATIENT NAME	RATINGS	REVIEWS
sravya	3/5	Great Service









2)Algorithm to be Highlighted

```
def  make_consultation(request, doctorusername):
   if request.method == 'POST':
      patientusername = request.session['patientusername']
      puser = User.objects.get(username=patientusername)
      patient_obj = puser.patient
      #doctorusername = request.session['doctorusername']
      duser = User.objects.get(username=doctorusername)
      doctor_obj = duser.doctor
      request.session['doctorusername'] = doctorusername
      diseaseinfo_id = request.session['diseaseinfo_id']
      diseaseinfo_obj = diseaseinfo.objects.get(id=diseaseinfo_id)
      consultation_date = date.today()
      status = "active"
      consultation_new = consultation( patient=patient_obj, doctor=doctor_obj,
diseaseinfo=diseaseinfo_obj, consultation_date=consultation_date,status=status)
```

```
        consultation_new.save()
        request.session['consultation_id'] = consultation_new.id
        print("consultation record is saved sucessfully.....")
        return redirect('consultationview',consultation_new.id)

def rate_review(request,consultation_id):
   if request.method == "POST":
        consultation_obj = consultation.objects.get(id=consultation_id)
        patient = consultation_obj.patient
        doctor1 = consultation_obj.doctor
        rating = request.POST.get('rating')
        review = request.POST.get('review')
        rating_obj =
rating_review(patient=patient,doctor=doctor1,rating=rating,review=review)
        rating_obj.save()
        rate = int(rating_obj.rating_is)
        doctor.objects.filter(pk=doctor1).update(rating=rate)
  return redirect('consultationview',consultation_id)

def checkdisease(request):

  diseaselist=['Fungal infection','Allergy','GERD','Chronic cholestasis','Drug
Reaction','Peptic ulcer diseae','AIDS','Diabetes ',
  'Gastroenteritis','Bronchial Asthma','Hypertension ','Migraine','Cervical
spondylosis','Paralysis (brain hemorrhage)',
  'Jaundice','Malaria','Chicken pox','Dengue','Typhoid','hepatitis A', 'Hepatitis B',
'Hepatitis C', 'Hepatitis D',
  'Hepatitis E', 'Alcoholic hepatitis','Tuberculosis', 'Common Cold', 'Pneumonia',
'Dimorphic hemmorhoids(piles)',
  'Heart attack', 'Varicose veins','Hypothyroidism', 'Hyperthyroidism',
'Hypoglycemia', 'Osteoarthristis',
  'Arthritis', '(vertigo) Paroymsal  Positional Vertigo','Acne', 'Urinary tract
infection', 'Psoriasis', 'Impetigo']
symptomslist=['itching','skin_rash','nodal_skin_eruptions','continuous_sneezing','s
hivering','chills','joint_pain',

'stomach_pain','acidity','ulcers_on_tongue','muscle_wasting','vomiting','burning_m
icturition','spotting_ urination',

'fatigue','weight_gain','anxiety','cold_hands_and_feets','mood_swings','weight_los
s','restlessness','lethargy',

'patches_in_throat','irregular_sugar_level','cough','high_fever','sunken_eyes','breat
hlessness','sweating',

'dehydration','indigestion','headache','yellowish_skin','dark_urine','nausea','loss_of
_appetite','pain_behind_the_eyes',
```

'back_pain','constipation','abdominal_pain','diarrhoea','mild_fever','yellow_urine',
'yellowing_of_eyes','acute_liver_failure','fluid_overload','swelling_of_stomach',

'swelled_lymph_nodes','malaise','blurred_and_distorted_vision','phlegm','throat_irritation',

'redness_of_eyes','sinus_pressure','runny_nose','congestion','chest_pain','weakness_in_limbs',

'fast_heart_rate','pain_during_bowel_movements','pain_in_anal_region','bloody_stool',

'irritation_in_anus','neck_pain','dizziness','cramps','bruising','obesity','swollen_legs',
'swollen_blood_vessels','puffy_face_and_eyes','enlarged_thyroid','brittle_nails',

'swollen_extremeties','excessive_hunger','extra_marital_contacts','drying_and_tingling_lips',

'slurred_speech','knee_pain','hip_joint_pain','muscle_weakness','stiff_neck','swelling_joints',
'movement_stiffness','spinning_movements','loss_of_balance','unsteadiness',

'weakness_of_one_body_side','loss_of_smell','bladder_discomfort','foul_smell_of urine',

'continuous_feel_of_urine','passage_of_gases','internal_itching','toxic_look_(typhos)',

'depression','irritability','muscle_pain','altered_sensorium','red_spots_over_body','belly_pain',
'abnormal_menstruation','dischromic _patches','watering_from_eyes','increased_appetite','polyuria','family_history','mucoid_sputum',

'rusty_sputum','lack_of_concentration','visual_disturbances','receiving_blood_transfusion',

'receiving_unsterile_injections','coma','stomach_bleeding','distention_of_abdomen',

'history_of_alcohol_consumption','fluid_overload','blood_in_sputum','prominent_veins_on_calf',

'palpitations','painful_walking','pus_filled_pimples','blackheads','scurring','skin_peeling',

```
'silver_like_dusting','small_dents_in_nails','inflammatory_nails','blister','red_sore_
around_nose',
 'yellow_crust_ooze']

 alphabaticsymptomslist = sorted(symptomslist)



 if request.method == 'GET':

    return render(request,'patient/checkdisease/checkdisease.html',
{"list2":alphabaticsymptomslist})
 elif request.method == 'POST':

    ## access you data by playing around with the request.POST object

    inputno = int(request.POST["noofsym"])
    print(inputno)
    if (inputno == 0 ) :
       return JsonResponse({'predicteddisease': "none",'confidencescore': 0 })

    else :

      psymptoms = []
      psymptoms = request.POST.getlist("symptoms[]")

      print(psymptoms)
      testingsymptoms = []
      #append zero in all coloumn fields...
      for x in range(0, len(symptomslist)):
        testingsymptoms.append(0)

      #update 1 where symptoms gets matched...
      for k in range(0, len(symptomslist)):
        for z in psymptoms:
           if (z == symptomslist[k]):
              testingsymptoms[k] = 1


      inputtest = [testingsymptoms]
      print(inputtest)
      predicted = model.predict(inputtest)
      print("predicted disease is : ")
      print(predicted)
```

```
        y_pred_2 = model.predict_proba(inputtest)
        confidencescore=y_pred_2.max() * 100
        print(" confidence score of : = {0} ".format(confidencescore))

        confidencescore = format(confidencescore, '.0f')
        predicted_disease = predicted[]

        #consult_doctor codes----------

        #   doctor_specialization = ["Rheumatologist","Cardiologist","ENT
specialist","Orthopedist","Neurologist",
        #
"Allergist/Immunologist","Urologist","Dermatologist","Gastroenterologist"]


        Rheumatologist = [  'Osteoarthristis','Arthritis']

        Cardiologist = [ 'Heart attack','Bronchial Asthma','Hypertension ']

        ENT_specialist = ['(vertigo) Paroymsal  Positional Vertigo','Hypothyroidism'
]

        Orthopedist = []

        Neurologist = ['Varicose veins','Paralysis (brain
hemorrhage)','Migraine','Cervical spondylosis']

        Allergist_Immunologist = ['Allergy','Pneumonia',
        'AIDS','Common Cold','Tuberculosis','Malaria','Dengue','Typhoid']

        Urologist = [ 'Urinary tract infection',
         'Dimorphic hemmorhoids(piles)']

        Dermatologist = [  'Acne','Chicken pox','Fungal
infection','Psoriasis','Impetigo']

        Gastroenterologist = ['Peptic ulcer diseae', 'GERD','Chronic
cholestasis','Drug Reaction','Gastroenteritis','Hepatitis E',
        'Alcoholic hepatitis','Jaundice','hepatitis A',
         'Hepatitis B', 'Hepatitis C', 'Hepatitis D','Diabetes ','Hypoglycemia']

        if predicted_disease in Rheumatologist :
          consultdoctor = "Rheumatologist"

        if predicted_disease in Cardiologist :
          consultdoctor = "Cardiologist”
```

```
        elif predicted_disease in ENT_specialist :
          consultdoctor = "ENT specialist"

        elif predicted_disease in Orthopedist :
          consultdoctor = "Orthopedist"

        elif predicted_disease in Neurologist :
          consultdoctor = "Neurologist"

        elif predicted_disease in Allergist_Immunologist :
          consultdoctor = "Allergist/Immunologist"

        elif predicted_disease in Urologist :
          consultdoctor = "Urologist"

        elif predicted_disease in Dermatologist :
          consultdoctor = "Dermatologist"

        elif predicted_disease in Gastroenterologist :
          consultdoctor = "Gastroenterologist"

        else :
          consultdoctor = "other"
        request.session['doctortype'] = consultdoctor

        patientusername = request.session['patientusername']
        puser = User.objects.get(username=patientusername)
        #saving to database.....................

        patient = puser.patient
        diseasename = predicted_disease
        no_of_symp = inputno
        symptomsname = psymptoms
        confidence = confidencescore

        diseaseinfo_new =
diseaseinfo(patient=patient,diseasename=diseasename,no_of_symp=no_of_symp,
symptomsname=symptomsname,confidence=confidence,consultdoctor=consultdo
ctor)
        diseaseinfo_new.save()
        request.session['diseaseinfo_id'] = diseaseinfo_new.id

        print("disease record saved sucessfully.....................")

        return JsonResponse({'predicteddisease': predicted_disease
,'confidencescore':confidencescore , "consultdoctor": consultdoctor})
```

6.2 Results

We were able to execute all the modules successfully. We were able to observe the prediction of disease using machine learning and In addition, able to provide user an appropriate chat box for further clarifications and extensive communication with the respective doctor.

7. Conclusion and Future Scope

To conclude, we have worked on automating the clinical services work by implementing a web application for admin, doctors and patients. Patient upon adding the symptoms, is able to predict disease with a confidence score. Also a patient is able to give ratings and reviews. Chat box helps doctor and patient for providing further clarifications and records are being maintained effectively in addition to a feedback mechanism.

8. References

1. **https://www.ncbi.nlm.nih.gov/books/NBK4384**
2. **Green L, Lewis F. Measurement and Evaluation in Health Education and Health Promotion.**
3. **International Journal for Research in Engineering Application & Management (IJREAM)**
4. **https://www.freecodecamp.org/news/html-css-and-javascript-explained-for-beginners/**