

CHAT BOT

by

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CSE4001 –PARALLEL AND DISTRIBUTED COMPUTING

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B. Tech. COMPUTER SCIENCE & ENGINEERING



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ABSTRACT

A chatbot is an artificial intelligence software that can simulate a conversation with a user in natural language through messaging applications, websites, mobile apps or through the telephone. Today almost every company has a chatbot deployed to engage with the users and they are mainly used for customers support . We created a multi-threaded web UI for chatbot using flask framework . Inputs are taken from the user through html form and after processing , chatbot gives the vital response. According to the user input , the server opens the required website automatically .Bot is designed where existing educational advising services have been uploaded and set up an online natural language interactive interface that will support a conversation and provide links which will direct users to the solutions . Multiple users can operate at the same time by logging in . By supporting the user to access the college websites according to their need it reduces time consumption and difficulty level . This CHATBOT can be very well utilized by the users to guide them in any process.

INTRODUCTION

Nowadays, Speech and textual forms of conversation are the primary communication forms between humans and computers that occur through web applications. The purpose of a CHATBOT is to help the users by answering to the queries . CHATBOT is a computer program that processes a user's natural-language input and generates relatively smart, affluent, and intelligent responses sent back to the user to provide guidance . CHATBOT help with human request and allow conversation throughout every part of a day and improve productivity by assuming control over all services where people are not required. However, the most significant advantage of using CHATBOT is that it can reach a wide-ranging users on a messaging system and automate customized messages in

fraction of seconds . Some common examples of CHATBOT are Amazon chat customer service, HDFC bank bot EVA, etc. These CHATBOT has been utilized in several industries to convey specific information or perform tasks, used in telling the weather , making flight / railway reservations , answering educational-based queries, or purchasing any products.

MOTIVATION

Since the workload given to the students are relatively high , it becomes difficult for them to balance their tasks .Particularly the Freshers have to face all the new challenges at one go and it becomes a challenge for them . As a result, we came up with this idea of developing a CHATBOT that helps students/faculties and acts as a coach. The key point of this platform is its simplicity in use .By creating an account , he/she can utilise all the services .Our CHATBOT meets all the curriculum requirements , placement information , academic details , examination schedules , upcoming college events and other college related guidance for the students as well as college faculties . It also serves for the parents and visitors to help them with placements and admissions.

IMPLEMENTATION DETAILS

Softwares Used:-

- Python
- MySQL
- HTML
- CSS
- JAVASCRIPT
- Flask framework

We have used python to implement the back-end of our project since it has the flask framework which supports multithreading and multiprocessing. Flask framework is multiprocessing by default and doesn't need any extra commands for the activation of multithreading. HTML along with CSS and JAVASCRIPT are used for the front-end of the project to make it look better and to provide the user a user friendly experience.

We have written two codes for the whole program one for establishing all the connections and one to run the chatbot.

In the connections code the python and MySQL are connected, MySQL is used for signup and login of the users, it helps store the credentials of the user in the database and also stores the suggestions given by the users.

The connection code is given below:-

```
from chatbot import chatbot
from flask import Flask, render_template,
request, session, logging, url_for, redirect, flash
from flask_recaptcha import ReCaptcha
import mysql.connector
import os

app = Flask(__name__)
recaptcha = ReCaptcha(app=app)
app.secret_key=os.urandom(24)
app.static_folder = 'static'

app.config.update(dict(
    RECAPTCHA_ENABLED = True,
    RECAPTCHA_SITE_KEY = "6LdbAx0aAAAAANl04WHtDbraFMufACHccHbn09L",
    RECAPTCHA_SECRET_KEY = "6LdbAx0aAAAAAMmkgBKJ2Z9xsQjMD5YutoXC6Wee"
))

recaptcha=ReCaptcha()
recaptcha.init_app(app)

app.config['SECRET_KEY'] = 'bot'
```

```

#database connectivity
conn=mysql.connector.connect(host='localhost',port='3306',user='root',password
='',database='query')
cur=conn.cursor()

@app.route("/index")
def home():
    if 'id' in session:
        return render_template('index.html')
    else:
        return redirect('/')

@app.route('/')
def login():
    return render_template("login.html")

@app.route('/register')
def about():
    return render_template('register.html')

@app.route('/forgot')
def forgot():
    return render_template('forgot.html')

@app.route('/login_validation',methods=['POST'])
def login_validation():
    email=request.form.get('email')
    password=request.form.get('password')

    cur.execute("""SELECT * FROM `users` WHERE `email` LIKE '{}' AND
`password` LIKE '{}'""".format(email,password))
    users = cur.fetchall()
    if len(users)>0:
        session['id']=users[0][0]
        flash('You were successfully logged in')
        return redirect('/index')
    else:
        flash('Invalid credentials !!!')
        return redirect('/')
    # return "The Email is {} and the Password is {}".format(email,password)
    # return render_template('register.html')

@app.route('/add_user',methods=['POST'])

```

```

def add_user():
    name=request.form.get('name')
    email=request.form.get('uemail')
    password=request.form.get('upassword')

    #cur.execute("UPDATE users SET password='{ }'WHERE name =
    '{ }'".format(password, name))
    cur.execute("""INSERT INTO users(name,email,password)
VALUES('{ }','{ }','{ }')""".format(name,email,password))
    conn.commit()
    cur.execute("""SELECT * FROM `users` WHERE `email` LIKE
    '{ }'""".format(email))
    myuser=cur.fetchall()
    flash('You have successfully registered!')
    session['id']=myuser[0][0]
    return redirect('/index')

@app.route('/suggestion',methods=['POST'])
def suggestion():
    email=request.form.get('uemail')
    suggesMess=request.form.get('message')

    cur.execute("""INSERT INTO suggestion(email,message)
VALUES('{ }','{ }')""".format(email,suggesMess))
    conn.commit()
    flash('You suggestion is succesfully sent!')
    return redirect('/index')

@app.route('/add_user',methods=['POST'])
def register():
    if recaptcha.verify():
        flash('New User Added Successfully')
        return redirect('/register')
    else:
        flash('Error Recaptcha')
        return redirect('/register')

@app.route('/logout')
def logout():
    session.pop('id')
    return redirect('/')

@app.route("/get")
def get_bot_response():
    userText = request.args.get('msg')

```

```

        return str(chatbot.get_response(userText))

if __name__ == "__main__":
    # app.secret_key=""
    app.run()

```

First we have imported all the required libraries in python. Some of the libraries which we imported are:-

- Flask
- Tensorflow
- Chatterbot
- MySQL connector

Then we have connected python to MySQL then we have taken different functions for login, logout, signup, chatbot responses etc. this code is mainly for the connection between python and MySQL and to call the chat bot code.

The second code that we used in the project is for the chatbot, which is the main attribute for our project, the chat bot works on a basic principle it should display a menu and ask the user to choose one of it and the bot should respond to the choice which was taken by the user. We have made this chat bot for student enquiry and all the links which are required by the user are stored in it so that user can be redirected to whatever page he wants to with the guidance from the chatbot.

The code is given below:-

```

from chatterbot import ChatBot
from chatterbot.trainers import ListTrainer
import spacy
spacy.load('en_core_web_sm')
# from spacy.lang.en import English

```

```

from chatterbot.trainers import ChatterBotCorpusTrainer

# Creating ChatBot Instance
chatbot = ChatBot('<b>BOT</b>')

# nlp = spacy.load("en_core_web_sm")

chatbot = ChatBot(
    'ChatBot',
    storage_adapter='chatterbot.storage.SQLStorageAdapter',
    logic_adapters=[
        {
            'import_path': 'chatterbot.logic.BestMatch',
            'default_response': "Hi there, Welcome to VIT 🙋 If you need any
assistance, I'm always here.Go ahead and write the number of any query.
😊🌟<br><br> Which of the following user groups do you belong to?
<br><br>1.&emsp;Student's Section Enquiry.</br>2.&emsp;Faculty Section
Enquiry. </br>3.&emsp;Parent's Section Enquiry.</br>4.&emsp;Visitor's Section
Enquiry.</br><br>",
            'maximum_similarity_threshold': 0.90
        }
    ],
    database_uri='sqlite:///database.sqlite3'
)
trainer = ListTrainer(chatbot)

conversation = [
    "Hi",
    "Hello!",
    "Hey",

    "How are you?",
    "I'm good.</br> <br>Go ahead and write the number of any query. 😊🌟 <br>
1.&emsp;Student's Section Enquiry.</br>2.&emsp;Faculty Section Enquiry.
</br>3.&emsp;Parent's Section Enquiry.</br>4.&emsp;Visitor's Section
Enquiry.</br>",

    "Great",
    "Go ahead and write the number of any query. 😊🌟 <br> 1.&emsp;Student's
Section Enquiry.</br>2.&emsp;Faculty Section Enquiry. </br>3.&emsp;Parent's
Section Enquiry.</br>4.&emsp;Visitor's Section Enquiry.</br>",

    "good",
    "Go ahead and write the number of any query. 😊🌟 <br> 2.&emsp;Faculty
Section Enquiry. </br>3.&emsp;Parent's Section Enquiry.</br>4.&emsp;Visitor's
Section Enquiry.</br>",

```



```

"fine",
"Go ahead and write the number of any query. 😊👉 <br> 2.&emsp;Faculty
Section Enquiry. </br>3.&emsp;Parent's Section Enquiry.</br>4.&emsp;Visitor's
Section Enquiry.</br>",

"Thank You",
"Your Welcome 😊",

"Thanks",
"Your Welcome 😊",

"Bye",
"Thank You for visiting!..",

"What do you do?",
"I am made to give Information about VIT",

"What else can you do?",
"I can help you know more about VIT",

    "1",
    "<b>STUDENT <br>The following are frequently searched terms related to
student . Please select one from the options below : <br> <br> 1.1 Curriculars
<br>1.2 Extra-Curriculars<br>1.3 Administrative<br>1.4 Examination <br>1.5
Placements </b>",

    "1.1",
    "<b> CURRICULAR <br> These are the top results: <br> <br> 1.1.1 Moodle
<br> 1.1.2 Academic Calendar <br> 1.1.3 Syllabus </b>",
    "1.1.1",
    "<b> 1.1.1 Moodle <br>The link to Moodle 📄 <a href="
'lms.vit.ac.in/login/index.php' ">Click Here</a> </b>",
    "1.1.2",
    "<b> > 1.1.2 Academic Calender<br>The link to Academic Calender📄<a href="
'https://vtopcc.vit.ac.in/vtop/initialProcess' ">Click Here</a> </b>",
    "1.1.3",
    "<b> 1.1.3 Syllabus<br>The link to Syllabus 📄 <a href="
'https://vtopcc.vit.ac.in/vtop/initialProcess' ">Click Here</a> </b>",

    "1.2",
    "<b>EXTRA-CURRICULAR<br>These are the top results: <br> <br> 1.2.1
Events<br> 1.2.2 Student Chapters <br> 1.2.3 Student's Council</b>",
    "1.2.1",
    "<b> > 1.2.1 Events<br>The link to Events📄 <a href="
'https://vitchennaievents.com/conf1/' ">Click Here</a></b>",

```

```

"1.2.2",
"<b > 1.2.2 Student Chapters<br>The link to Student Chapters🔗<a href="
'https://chennai.vit.ac.in/' ">Click Here</a> </b>",
"1.2.3",
"<b > 1.2.3 Student's Council <br>The link to Student's Council🔗 <a
href=" 'https://chennai.vit.ac.in/' ">Click Here</a> </b>",

"1.3",
"<b>1.3 ADMINISTRATIVE<br>These are the top results: <br> <br> 1.3.1
Students Portal<br> 1.3.2 Notices </b>",
"1.3.1",
"<b> 1.3.1 Students Portal<br>The link to Students Portal🔗 <a href="
'https://vtopcc.vit.ac.in/vtop/initialProcess' ">Click Here</a> </b>",
"1.3.2",
"<b> 1.3.2 Notices<br>The link to Notices🔗 <a href="
'https://vtopcc.vit.ac.in/vtop/initialProcess' ">Click Here</a> </b>",

"1.4",
"<b > EXAMINATION <br>These are the top results:<br> 1.4.1 Notices<br>
1.4.2 Examination Process <br> 1.4.3 Question Paper Archive </b>",
"1.4.1",
"<b > 1.4.1 Notices<br>The link to Notices🔗 <a href="
'https://vtopcc.vit.ac.in/vtop/initialProcess' ">Click Here</a> </b>",
"1.4.2",
"<b > 1.4.2 Examination Process<br>The link to Examination Process🔗<a
href=" 'https://vtopcc.vit.ac.in/vtop/initialProcess' ">Click Here</a> </b>",
"1.4.3",
"<b > 1.4.3 Question Paper Archive<br>The link to Archives🔗 <a href="
'https://vtopcc.vit.ac.in/vtop/initialProcess' ">Click Here</a> </b>",

"1.5",
"<b > PLACEMENTS These are the top results:<br> 1.5.1 Placements<br> 1.5.2
Our Recruiters <br> 1.5.3 Placement Statistics </b>",
"1.5.1",
"<b> 1.5.1 Placements<br>The link to Placements🔗 <a href="
'https://placement.vit.ac.in/login?course=true&type=Lab' ">Click Here</a>
</b>",
"1.5.2",
"<b> 1.5.2 Our Recruiters<br>The link to Recruiters🔗<a href="
'https://placement.vit.ac.in/login?course=true&type=Lab' ">Click Here</a>
</b>",
"1.5.3",
"<b > 1.5.3 Placement Statistics<br>The link to Placement Statistics🔗 <a
href=" 'https://placement.vit.ac.in/login?course=true&type=Lab' ">Click
Here</a> </b>",

```

```

"2",
"<b >FACULTY<br>The following are frequently searched terms related to
faculty. Please select one from the options below :</br></br>2.1 Portals &
Administration<br>2.2  Change Personal Details<br>2.3  Examination </b>",

"2.1",
"<b > PORTALS & ADMINISTRATION These are the top results:<br> 2.1.1
Biometric Attendance System <br>2.1.2 Moodle </b>",
"2.1.1",
"<b> 2.1.1 Biometric Attendance<br>The link to Biometric Attendance🔗<a
href='https://vtopcc.vit.ac.in/vtop/initialProcess' ">Click Here</a> </b>",
"2.1.2",
"<b> 2.1.2 Moodle<br>The link to Moodle🔗<a href='
'https://lms.vit.ac.in/login/index.php' ">Click Here</a> </b>",

"2.2",
"<b > CHANGE PERSONAL DETAILS These are the top results:<br> <br> 2.2.1
Site Login <br> </b>",
"2.2.1",
"<b> 2.2.1 Site Login<br>The link to Site Login🔗<a href='
'https://vtopcc.vit.ac.in/vtop/initialProcess' ">Click Here</a> </b>",

"2.3",
"<b > EXAMINATION <br>These are the top results:<br> <br> 2.3.1
Notices<br> 2.3.2 Question Paper Archive </b>",
"2.3.1",
"<b> 2.3.1 Notices <br>The link to Notices 🔗 <a href='
'https://examcc.vit.ac.in/login/index.php' ">Click Here</a> </b>",
"2.3.2",
"<b> 2.3.2 Question Paper Archive <br>The link to Archive🔗<a href='
'https://examcc.vit.ac.in/login/index.php' ">Click Here</a> </b>",

"3",
"<b> PARENTS <br>The following are frequently searched terms related to
Parents. Please select one from the options below : <br> <br> 3.1 About Us
<br>3.2 Notices <br>3.3 Fee Payment <br>3.4 Placements </b> " ,

"3.1",
"<b > ABOUT US<br>These are the top results:<br> <br> 3.1.1 About VIT<br>
3.1.2 Director's Address <br> 3.1.3 Principal's Address </b>",
"3.1.1",
"<b > 3.1.1 About CRCE<br>The link to About CRCE🔗 <a href='
'https://chennai.vit.ac.in/' ">Click Here</a> </b>",
"3.1.2",
"<b > 3.1.2 Director's Address <br>The link to Director's Address🔗<a
href='https://chennai.vit.ac.in/' ">Click Here</a> </b>",

```

```

"3.1.3",
"<b > 3.1.3 Principal's Address <br>The link to Principal's Address🔗 <a href=" 'https://chennai.vit.ac.in/' ">Click Here</a> </b>",

"3.2",
"<b > NOTICES<br>These are the top results:<br> <br> 3.2.1 All
Notices </b>",
"3.2.1",
"<b > 3.2.1 All Notices <br>The link to All Notices🔗 <a href="
'https://vtopcc.vit.ac.in/vtop/initialProcess' ">Click Here</a> </b>",

"3.3",
"<b > ABOUT US<br>These are the top results:<br> <br>3.3.1 Payment Details
<br> 3.3.2 Online Payment Portal </b>",
"3.3.1",
"<b> 3.3.1 Payment Details<br>The link to Payment Details 🔗 <a href="
'https://vtopcc.vit.ac.in/vtop/initialProcess' ">Click Here</a> </b>",
"3.3.2",
"<b > 3.3.2 Payment Portal <br>The link to Payment Portal🔗<a href="
'https://vtopcc.vit.ac.in/vtop/initialProcess' ">Click Here</a> </b>",

"3.4",
"<b > PLACEMENTS These are the top results:<br> <br>3.4.1 Placements<br>
3.4.2 Our Recruiters <br> 3.4.3 Placement Statistics </b>",
"3.4.1",
"<b> 3.4.1 Placements<br>The link to Placements🔗 <a href="
'https://placement.vit.ac.in/login?course=true&type=Lab' ">Click Here</a>
</b>",
"3.4.2",
"<b> 3.4.2 Our Recruiters<br>The link to Recruiters🔗<a href="
'https://placement.vit.ac.in/login?course=true&type=Lab' ">Click Here</a>
</b>",
"3.4.3",
"<b > 3.4.3 Placement Statistics<br>The link to Placement Statistics🔗 <a href="
'https://placement.vit.ac.in/login?course=true&type=Lab' ">Click
Here</a> </b>",

"4",
"<b VISITORS <br>The following are frequently searched terms related to
visitors. Please select one from the options below : <br> <br> 4.1 About
Us<br>4.2 Programs We Offer <br>4.3 Student Bodies <br>4.4 Extra-Curricular
</b>",

"4.1",
"<b > ABOUT US<br>These are the top results:<br> <br>4.1.1 About VIT<br>
4.1.2 Director's Address <br> 4.1.3 Principal's Address </b>",

```

```

"4.1.1",
"<b > 4.1.1 About CRCE<br>The link to About CRCE🔗 <a href="
'https://chennai.vit.ac.in/' ">Click Here</a> </b>",
"4.1.2",
"<b > 4.1.2 Director's Address <br>The link to Director's Address🔗<a
href=" 'https://chennai.vit.ac.in/' ">Click Here</a> </b>",
"4.1.3",
"<b > 4.1.3 Principal's Address <br>The link to Principal's Address🔗 <a
href=" 'https://chennai.vit.ac.in/' ">Click Here</a> </b>",

"4.2",
"<b > PROGRAMS WE OFFER <br>These are the top results:<br> <br>4.2.1
Under-Graduate <br> 4.2.2 Post-Graduate<br> 4.2.3 Ph.D </b>",
"4.2.1",
"<b > 4.2.1 Under-Graduate<br>The link to Under-Graduate🔗 <a href="
'https://chennai.vit.ac.in/' ">Click Here</a> </b>",
"4.2.2",
"<b > 4.2.2 Post-Graduate <br>The link to Post-Graduate🔗<a href="
'https://chennai.vit.ac.in/' ">Click Here</a> </b>",
"4.2.3",
"<b > 4.2.3 Ph.D <br>The link to Ph.D🔗 <a href="
'https://chennai.vit.ac.in/' ">Click Here</a> </b>",

"4.3",
"<b > STUDENT BODIES <br>These are the top results:<br> <br>4.3.1 Students
Council <br> 4.3.2 Students Chapter <br> 4.3.3 Students Project Groups </b>",
"4.3.1",
"<b > 4.3.1 Students Council <br>The link to Students Council 🔗 <a
href=" 'https://chennai.vit.ac.in/' ">Click Here</a> </b>",
"4.3.2",
"<b > 4.3.2 Students Chapter <br>The link to Students Chapter 🔗<a href="
'https://chennai.vit.ac.in/' ">Click Here</a> </b>",
"4.3.3",
"<b > 4.3.3 Students Project Groups <br>The link to Students Project
Groups🔗 <a href=" 'https://chennai.vit.ac.in/' ">Click Here</a> </b>",

"4.4",
"<b > EXTRA-CURRICULAR <br>These are the top results:<br> <br>4.4.1
Events <br> 4.4.2 Institute Innovation Cell </b>",
"4.4.1",
"<b > 4.4.1 Events <br>The link to Events 🔗 <a href="
'https://chennai.vit.ac.in/' ">Click Here</a> </b>",
"4.4.2",
"<b > 4.4.2 Institute Innovation Cell <br>The link to Institute Innovation
Cell 🔗<a href=" 'https://chennai.vit.ac.in/' ">Click Here</a> </b>",

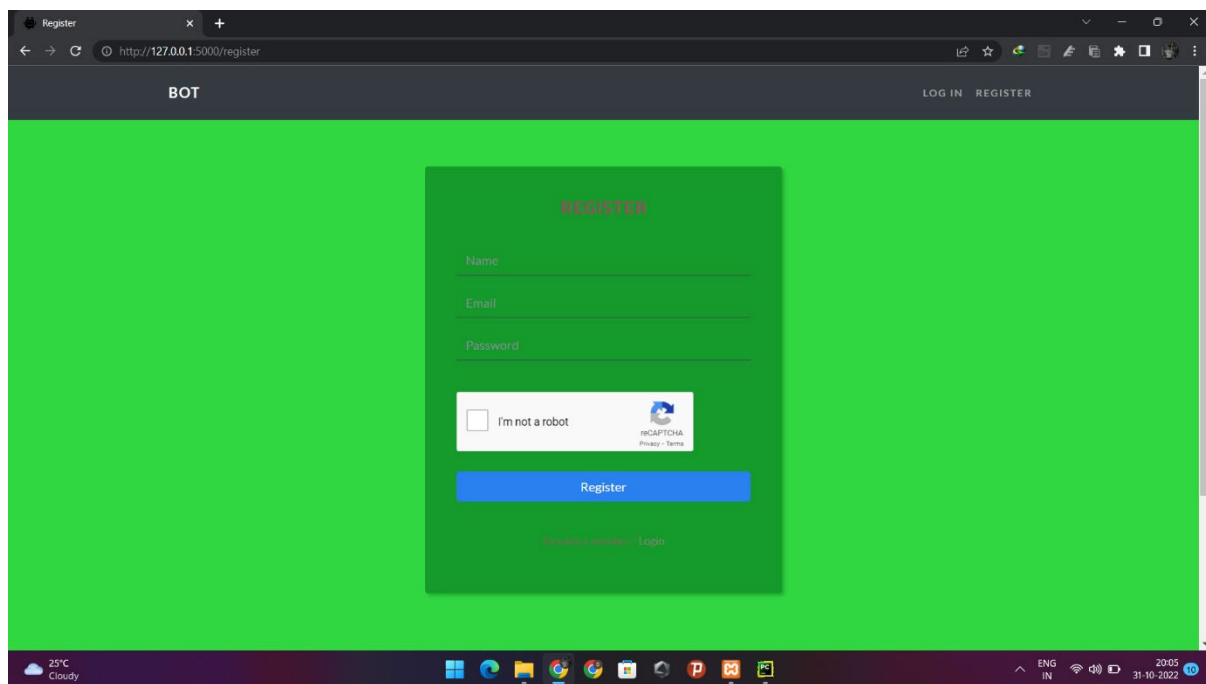
```

```
]
trainer.train(conversation)
```

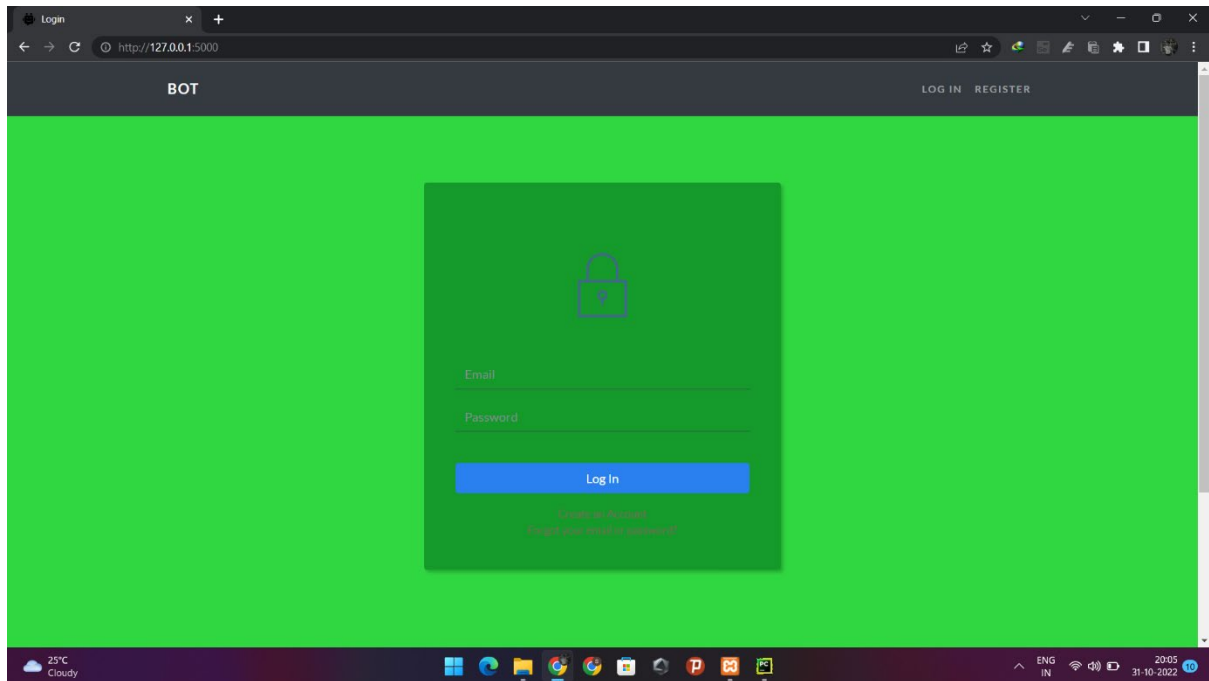
First we have imported the chatter bot and spacy libraries and the chatbot responses are written after that, The code automatically creates a database so that the chatbot is easily trained and does not require any manual coding of the database.

EXPERIMENTAL RESULTS AND DISCUSSION

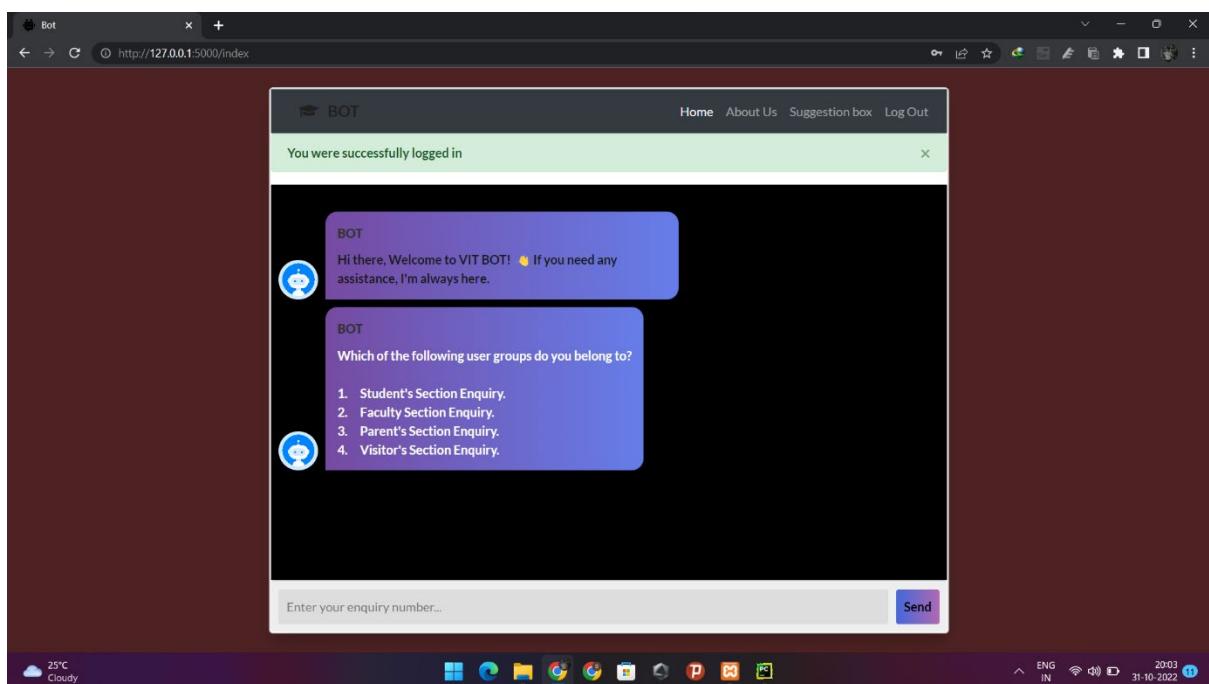
Signup page:-

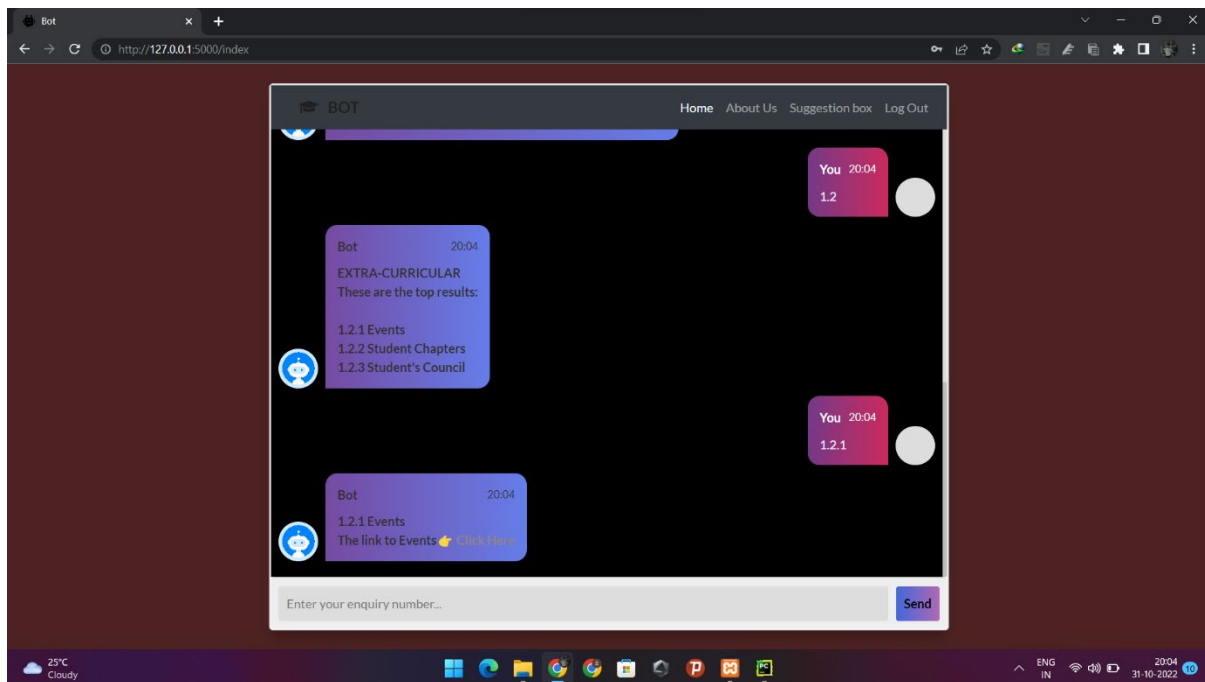


Login Page:-



Chatbot:-



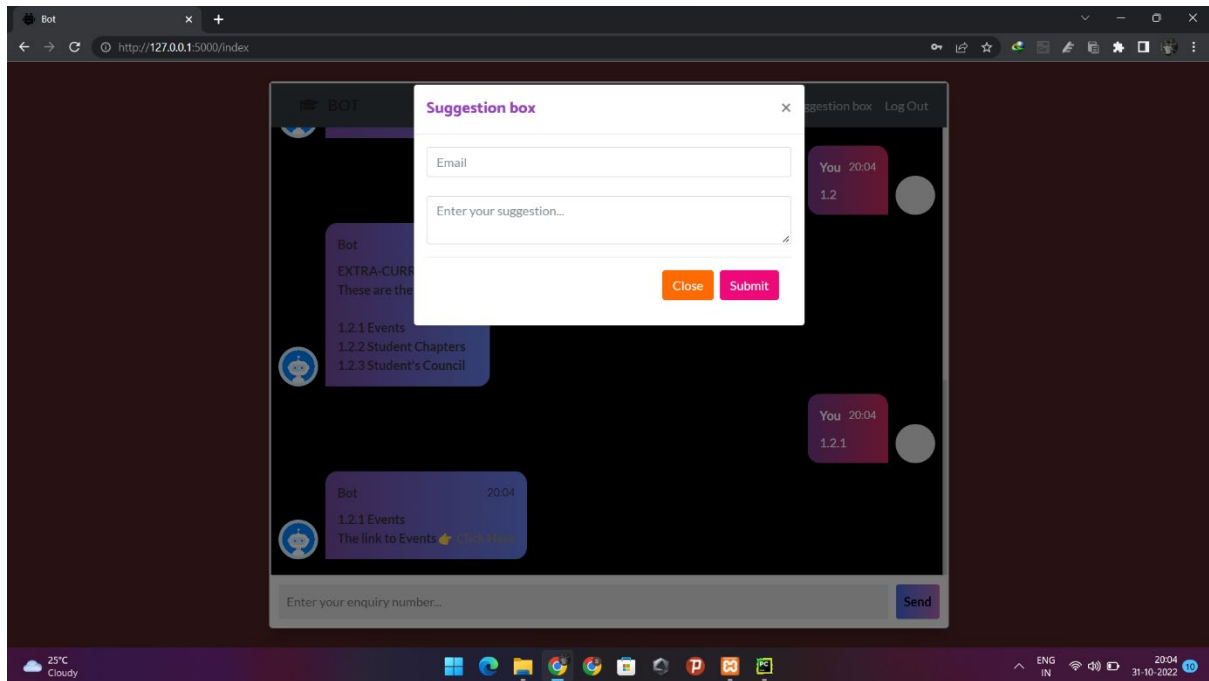


The code is run using the command `python run server.py` the connection code which combines everything is the `server.py` for this project, As expected when the command is given the link is generated and we are able to access the chatbot by giving the email id and password or by creating a new login if you are a new user.

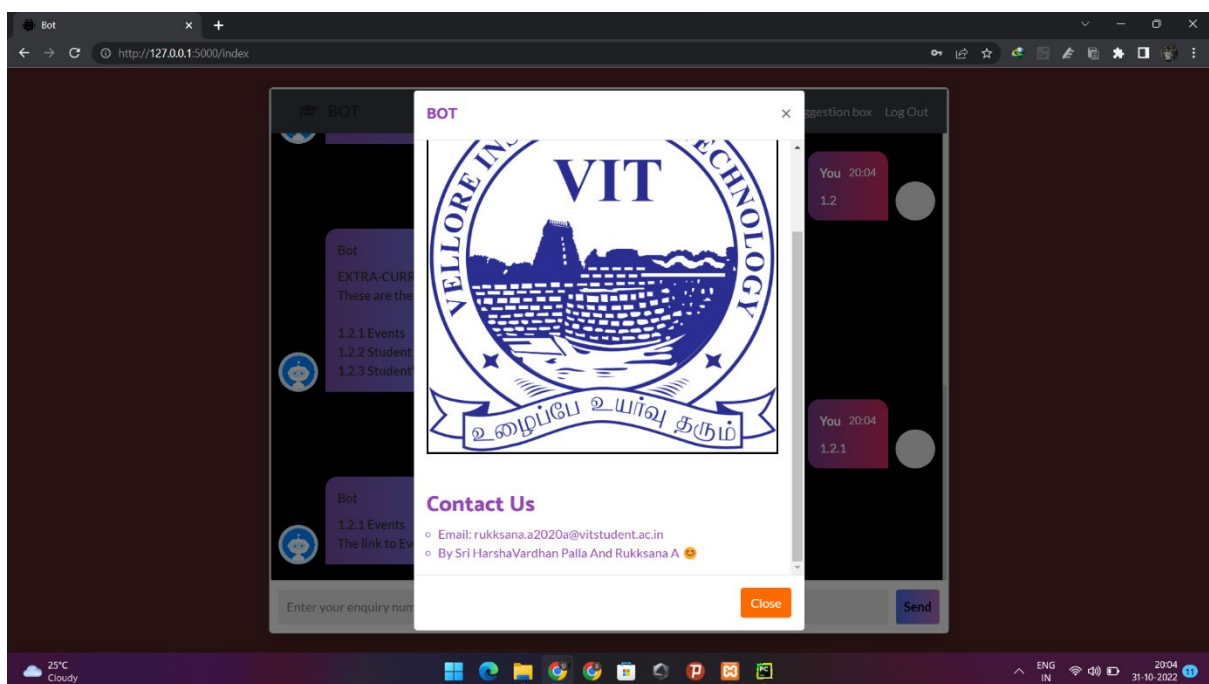
The chatbot is giving the proper responses and is providing links to redirect the user to the desired webpage according to his requirement, the user can give his suggestions in the suggestion box and its getting stored in the database.

The about us tab is also working without any glitches. When the program has is exited the thread IDs where the objects have been created are printed in the terminal since flask is used in the project it is run in parallel using multiple threads and the code is also set to run in parallel in the pycharm editor.

Sugestion:-



About us:-



CONCLUSION AND FUTURE WORK

The Main Objective of the project is to develop a chatbot that will be used to identify answers related to users submitted questions using parallel computing . The chatbot is developed with the help of flask which will help easy the coding and provide better results. College Enquiry Chatbot is helpful in guiding students with correct and most up to date sources of information. It is advantageous for international applicants for queries such as fee payment and academic matters. Students can get the information at their fingertips rather than visiting college office. It improves efficiency by taking over tasks for which humans are not essential.

The future work of the chatbot is to improve its efficiency, provide a better and friendly UI for the user and to implement more modules.