Jyothi Engineering College
NAAC Accredited College with NBA Accredited Programmes*
Approved by AICTE & affiliated to APJ Abdul Kalam Technological University
A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR
JYOTHI HILLS, VETTIKATTIRI P.O, CHERUTHURUTHY, THRISSUR. PIN-679531 PH : +91- 4884-259000, 274423 FAX : 04884-274777
NBA accredited B.Tech Programmes in Computer Science & Engineering, Electronics & Communication Engineering, Electrical & Electronics Engineering and Mechanical Engineering valid for the academic years 2016-2022. NBA accredited B.Tech Programme in Civil Engineering valid for the academic years 2019-2022.

QRT BOT

Group No. : 21

Department of CSE
Jyothi Engineering College
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Group Members

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Guide : Mr. Unnikrishnan P (Assistant Professor)

GIT : https://github.com/ShilpaSivadas24/Group21_FinalProject

Vision of the Department

- Creating eminent and ethical leaders in the domain of Computational Sciences through quality professional education with a focus on holistic learning and excellence.

Mission of the Department

- To create technically competent and ethically conscious graduates in the field of Computer Science and Engineering by encouraging holistic learning and excellence.
- To prepare students for careers in Industry, Academia and the Government.
- To instill Entrepreneurial Orientation and research motivation among the students of the department.
- To emerge as a leader in education in the region by encouraging teaching, learning, industry and societal connect.

Introduction

- The COVID-19 global pandemic has produced a human and economic crisis unlike any recent memory
- COVID-19 is killing people on a large scale
- COVID-19 results in psychological issues due to both pandemic stress and the physical affects of the disease
- Currently, there is a lot of misinformation and lack of awareness about COVID-19.

Objectives

- Determine if a user has a high chance of being COVID-19 positive
- Allow users to interact with a chatbot which further analyses the users' emotion
- Raise awareness among people regarding COVID-19.

Literature Survey

1) Medbot: Conversational artificial intelligence powered chatbot for delivering tele-health after covid-19

Advantage:

- Available in many local dialects

Disadvantage:

- Does not consider mental health

2. Sentiment analysis: Capturing favorability using natural language processing

Advantage:

- Uses simple algorithm compared to other sentimental analysis systems
- Works with high accuracy

Disadvantage:

- Cannot discern when word can have multiple meanings

Literature Survey

3) Chatbot for Disease Prediction and Treatment Recommendation using Machine Learning

Advantage:

- Alternative to the conventional method of visiting a hospital -making an appointment with a doctor to get diagnosis

Disadvantage:

- Disease detection - less accurate

4)Compassion Driven Conversational Chatbot Aimed for better Mental Health

Advantage:

- Entirely free and available 24x7

Disadvantage:

- Currently text-based interface

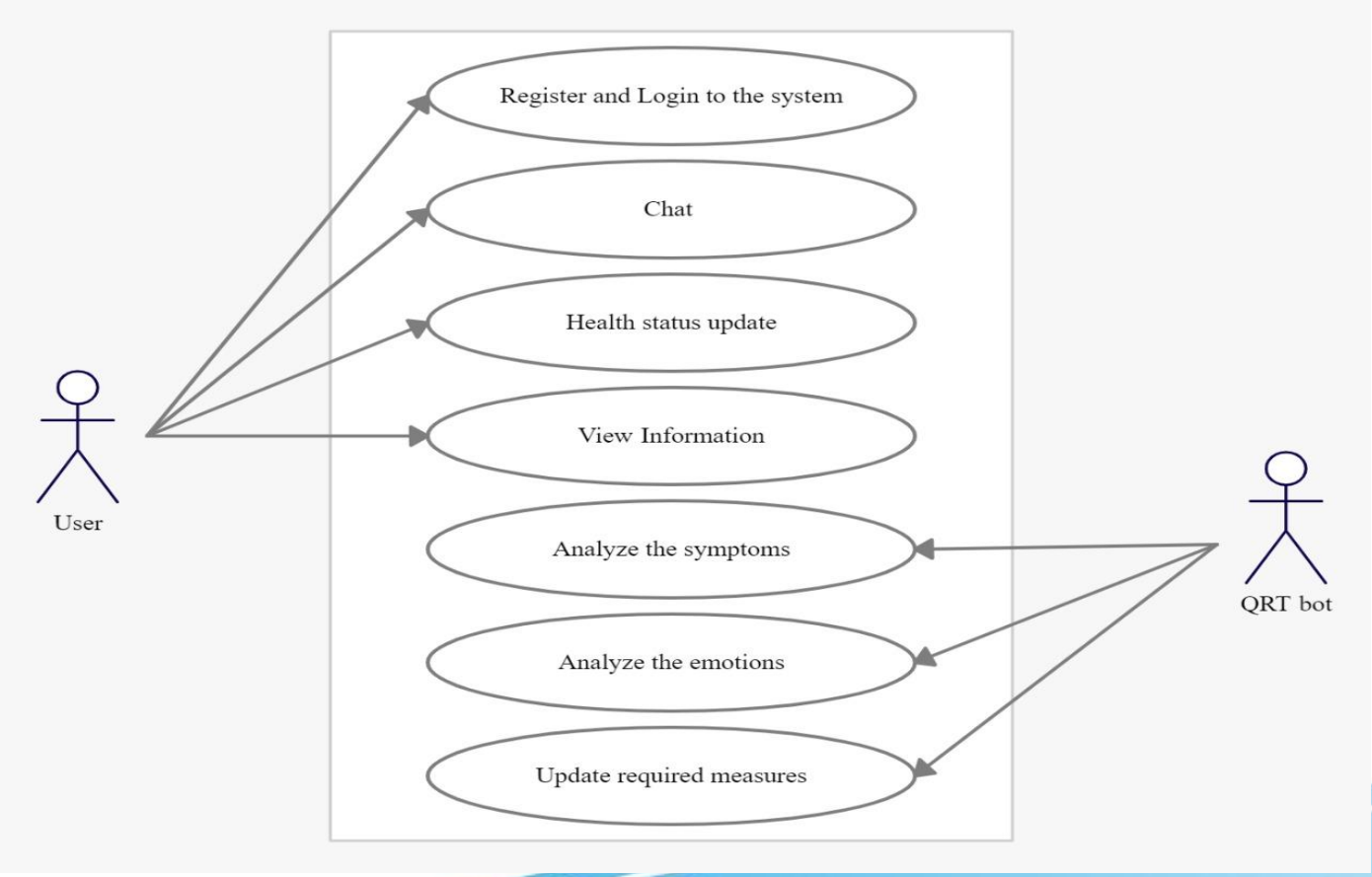
Proposed System

A simple chatbot that effectively allow users to check if they have high chance of being Covid-19 positive and also provide health support / emotional support during quarantine.

Functional Requirements

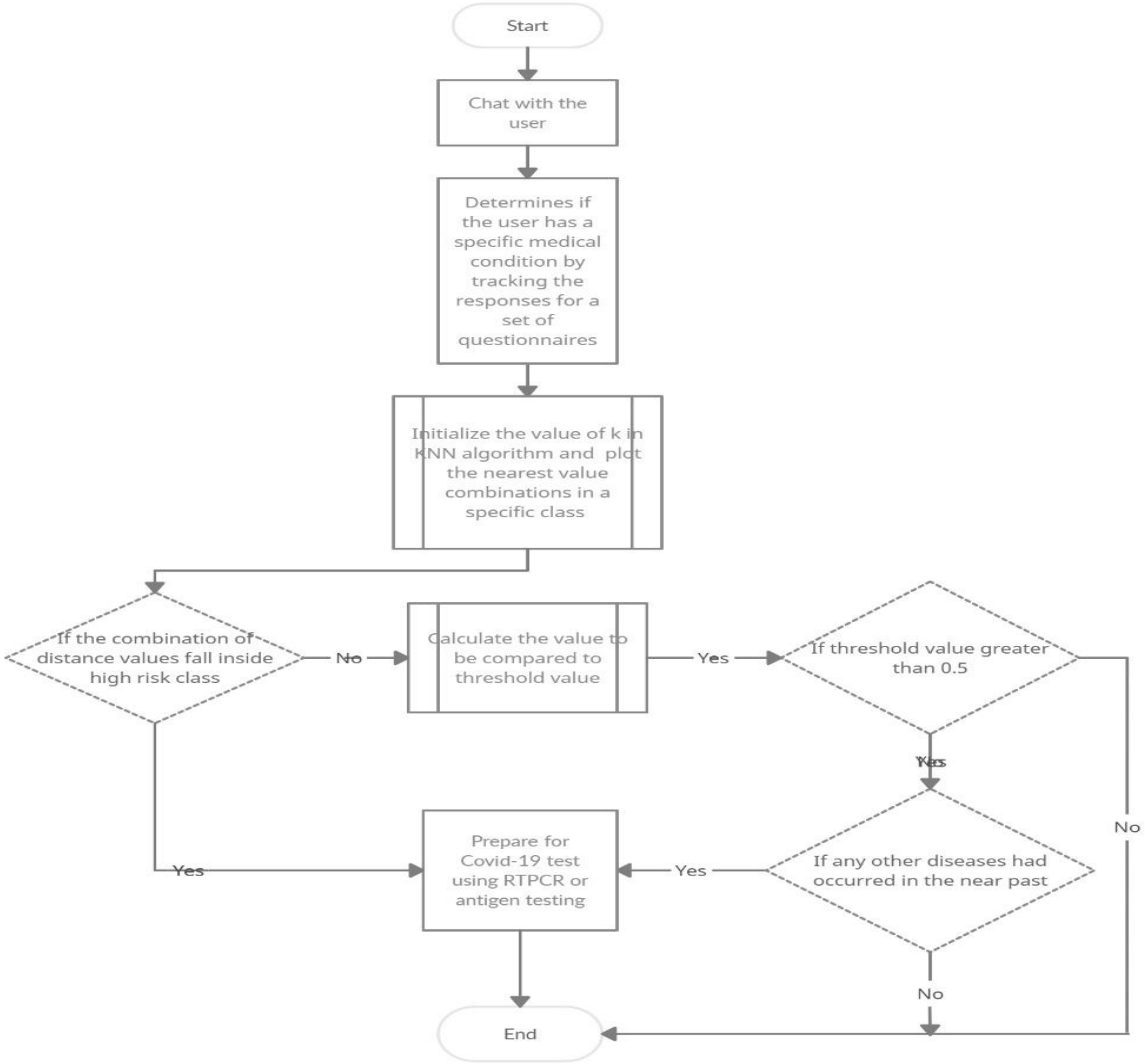
- **User interface**: The user interface module where the user needs to login.
- **Data Pre-processing and Feature extraction**: User replies are taken as input from the chat.
- **Request analysis/Return response**: The user is informed with preventive measures and other counter measures.

UML Diagram

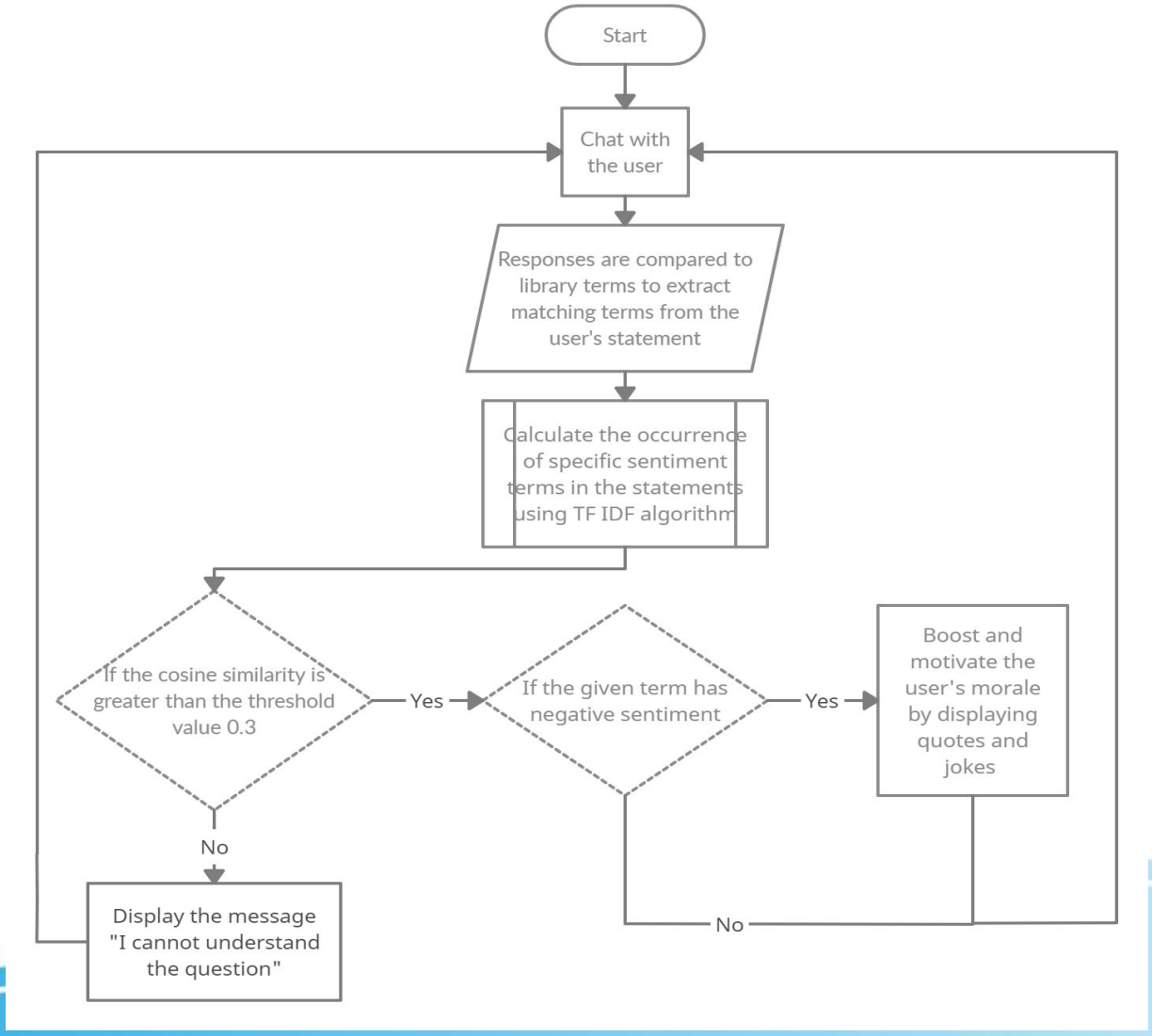

Register and Login to the system
Chat
Health status update
View Information
Analyze the symptoms
Analyze the emotions
Update required measures
User
QRT bot

Implementation Flowchart

1) Covid Symptom Analysis



2) Emotion Analysis



Implementation

- User registers on chatbot application. They need to submit some personal details and health details which will be confidential
- The chatbot allows user to login to the system
- From the symptoms identified by the user, chatbot predicts whether he has to take a RT PCR test or not
- Chatbot recognizes users emotions through his chat replies and act accordingly.

Registration Page

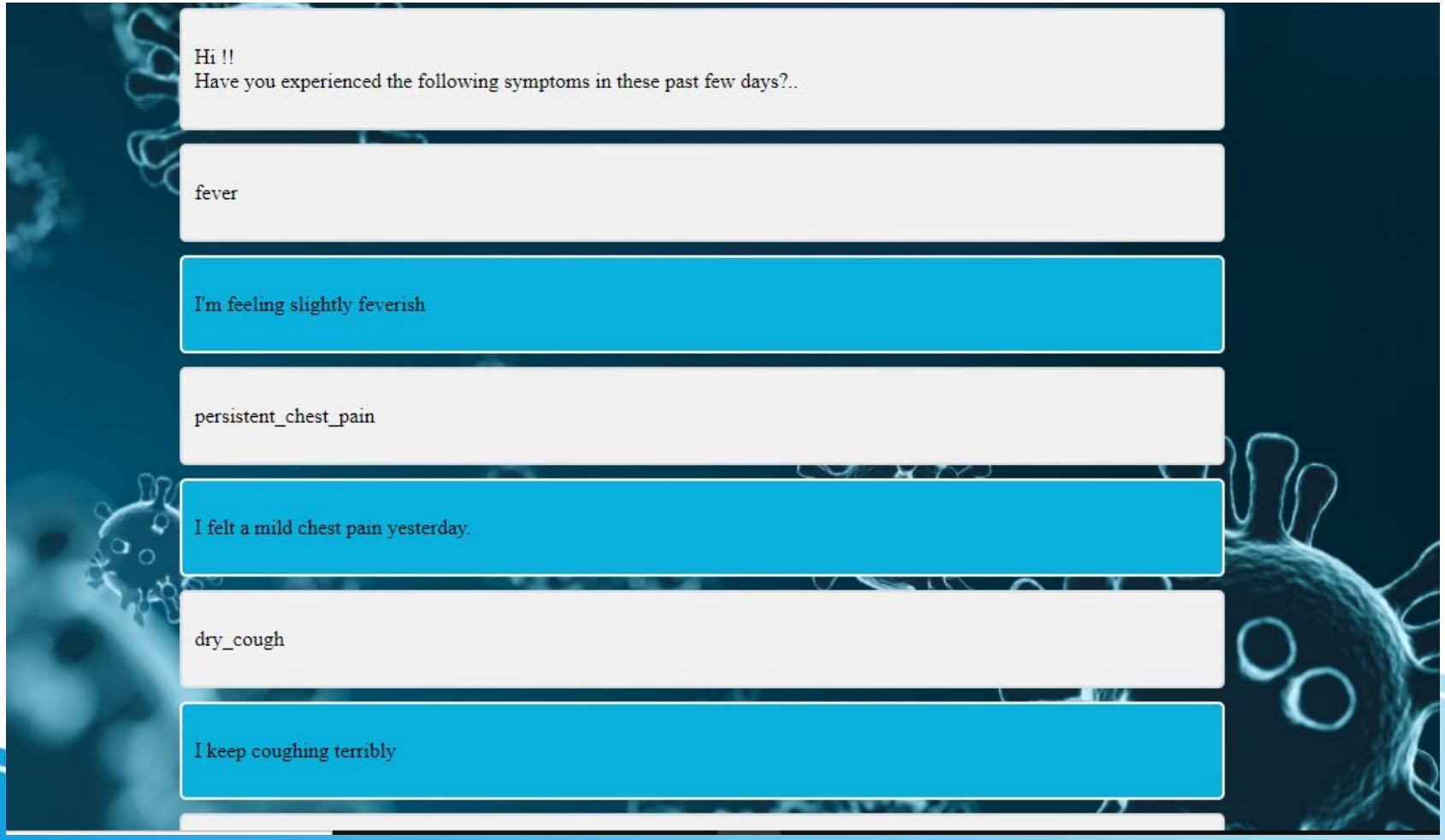
Login Page

QRTBOT
Hii there! Welcome to QRTBOT. I am here to help you understand covid-19 related issues. I can help you examine covid related symptoms
USER NAME
arya
PASSWORD
LOGIN

Health Status Update

Symptom Prediction

- We use K-nearest neighbor algorithm (KNN) for Symptom Prediction
- KNN identifies the symptoms from the interaction with the user
- Split the dataset into training and test sets with 80-20 ratio


Hi !!
Have you experienced the following symptoms in these past few days?..
fever
I'm feeling slightly feverish
persistent_chest_pain
I felt a mild chest pain yesterday.
dry_cough
I keep coughing terribly

app.py | covid_19_result.csv | login.html | style.css

Plugins supporting *.csv files found.

```
Fever,Tiredness,Dry_Cough,Difficulty_in_Breathing,
0,0,1,0,0,0,0,0,0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0,0,1,0,0,0,0,0,0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0,0,1,0,0,0,0,0,0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0,0,1,0,0,0,0,0,0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0,0,1,0,0,0,0,0,0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0,0,1,0,0,0,0,0,0,0,0,0,0,0,0
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0,0,1,0,0,0,0,0,0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1,1,1,1,1,0,1,1,1,1,0,1,0,0,1,1
1,1,1,1,1,0,1,1,1,1,0,1,0,1,0,0
1,1,1,1,1,0,1,1,1,1,0,1,1,0,0,0
```
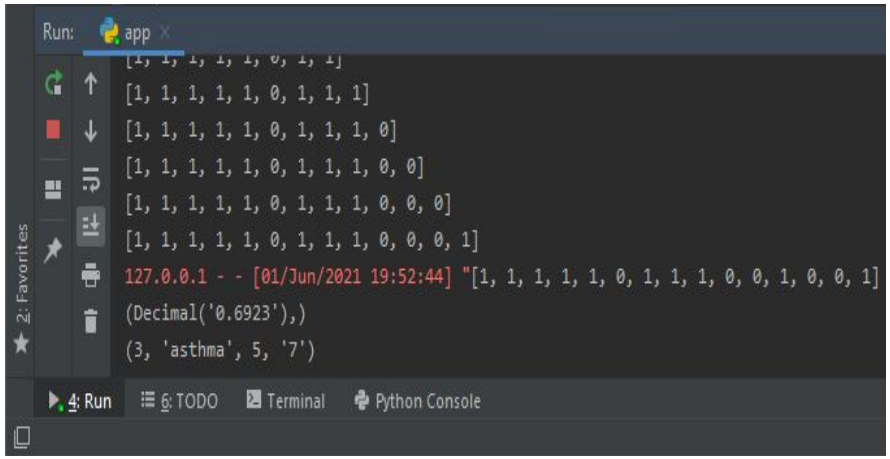
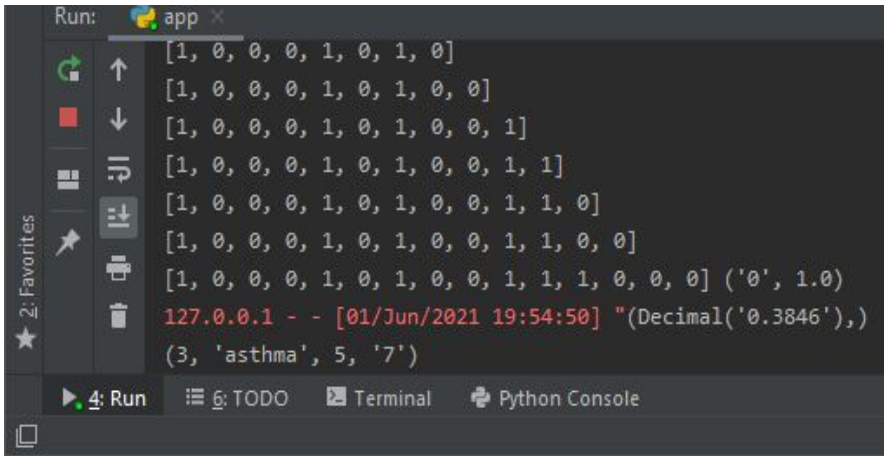

```
131     if c[0] == '1':
132         result = "Positive"
133         return '''<script> alert("Get an RT-PCR test done"); window.location="/userhome"</script>'
134     else:
```

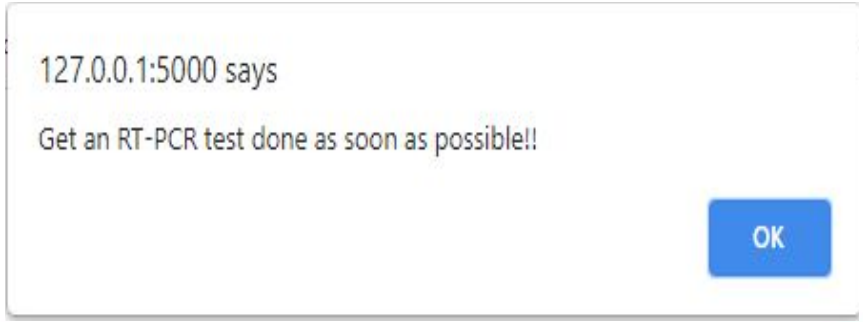
app.py | covid_19_result.csv | login.html | style.css | FAQ.html | userhome.html | index.html

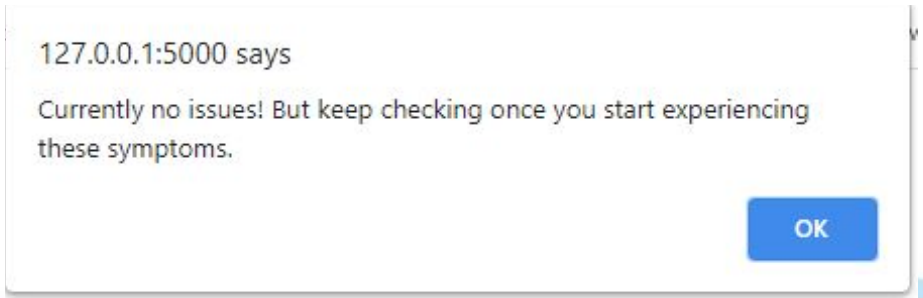
Match Case | Words | Regex

```
43  if out[0] > 0.5 and outp is not None:
44      return '''<script> alert("Get an RT-PCR test done as soon as possible!!"); window.location="/userho
45  else:
46      return '''<script> alert("Currently no issues! But keep checking once you start experiencing these
47
```


Run: app
[1, 1, 1, 1, 1, 0, 1, 1, 1]
[1, 1, 1, 1, 1, 0, 1, 1, 1, 0]
[1, 1, 1, 1, 1, 0, 1, 1, 1, 0, 0]
[1, 1, 1, 1, 1, 0, 1, 1, 1, 0, 0, 0]
[1, 1, 1, 1, 1, 0, 1, 1, 1, 0, 0, 0, 1]
127.0.0.1 - - [01/Jun/2021 19:52:44] "[1, 1, 1, 1, 1, 0, 1, 1, 1, 0, 0, 1, 0, 0, 1]
(Decimal('0.6923'),)
(3, 'asthma', 5, '7')
4: Run
6: TODO
Terminal
Python Console
2: Favorites


Run: app
[1, 0, 0, 0, 1, 0, 1, 0]
[1, 0, 0, 0, 1, 0, 1, 0, 0]
[1, 0, 0, 0, 1, 0, 1, 0, 0, 1]
[1, 0, 0, 0, 1, 0, 1, 0, 0, 1, 1]
[1, 0, 0, 0, 1, 0, 1, 0, 0, 1, 1, 0]
[1, 0, 0, 0, 1, 0, 1, 0, 0, 1, 1, 0, 0]
[1, 0, 0, 0, 1, 0, 1, 0, 0, 1, 1, 1, 0, 0, 0] ('0', 1.0)
127.0.0.1 - - [01/Jun/2021 19:54:50] "(Decimal('0.3846'),)
(3, 'asthma', 5, '7')
4: Run
6: TODO
Terminal
Python Console
2: Favorites


127.0.0.1:5000 says
Get an RT-PCR test done as soon as possible!!
OK


127.0.0.1:5000 says
Currently no issues! But keep checking once you start experiencing these symptoms.
OK

Emotion Analysis

- We use Term Frequency-Inverse Document Frequency(TF-IDF) for emotion analysis
- The words are converted to vectors and Sentence matching is done using TF-IDF
- If the cosine similarity is greater than 0.3 the sentence is similar to the one in the dataset else not
- If the value of negative emotion is greater the reply is considered to be negative, chatbot cheers him up and if the value of positive and neutral emotion is greater, reply is positive it continues the chat.

1 Messages | 2 Table Data | 3 Info

Limit rows First row 0 # of rows 1000

id	question		ans		negative_answer
7	Nice to meet you.	17B	Nice meeting you too	20B	Thank you
8	How do you do?	14B	I'm doing well. How are you?	28B	I'm doing well.
9	It is a pleasure to meet you.	29B	Thank you. You too.	19B	Thank you
10	Top of the morning to you!	26B	And the rest of the day to you.	31B	Thank you kindly.
11	What's up?	11B	The sky's up but I'm fine thanks. What about you?	49B	Not much.
12	let me ask you a question	25B	happily you	11B	Yaa
13	Not so great	12B	Okay	4B	How can I help you?
14	nice chatting with you	22B	You as well have a nice day	27B	Thank you
15	Have a great day!	17B	You too and a great day	23B	Thank you
16	I am afraid	11B	It's ok	7B	Try not to be too scared.
17	I feel like I am drowning.	26B	No worries!	11B	Put your thoughts to sleep. Do not
18	I don't think I've ever moved so fast in a panic in all ...	64B	I am there	10B	I am here for you..
19	Today was horrible and it was only half a day	46B	Chill!	6B	Just chill! everything is gonna be
20	My anxiety is playing around HELP!!!!!	38B	No worries	10B	Don't worry Whatever is good for y
21	My blood is boiling	19B	Calm down	9B	I know you are really angry right
22	Im so angry	11B	relax	5B	Just relax everything is gonna be
23	i feel furious	14B	It's okay!	10B	I completely understand you feelin
24	So angry I wanna cry	20B	Just chill	10B	I can see you're upset. I'm sorry
25	People irritate me	19B	alright	7B	You have every right to be annoyed
26	I'm so annoyed	14B	Relax	5B	Just relax everything is gonna be
27	I am just so bitter today	25B	It's alright	12B	Just take a moment…and a couple of
28	I'm just still . So happy	26B	You are awesome!	16B	That's cool
29	My morning started off amazing!! Hopefully the whole day ...	85B	I'm always happy to see you:)	29B	OK!
30	Depression sucks!	18B	Don't worry	11B	Why don't you watch this movie 'TE

abase: qrtbot Table: dataset

Hi How can i help you...
I'm feeling so annoyed
Just relax everything is gonna be alright.
I feel people irritate me a lot
You have every right to be annoyed but anything you say at the moment is a heat of the moment response. You might unintentionally hurt the people who care about you the most.
Can you suggest me something so that I can keep myself engaged? Might be some books.
I would suggest you start with something light and humorous. My suggestion would be Roald Dahl. He's witty and can make you laugh in seemingly impossible situations.

```
(26, "I'm so annoyed", 'Relax', 'Just relax everything is gonna be alright.')
{'neg': 0.49, 'neu': 0.291, 'pos': 0.218, 'compound': -0.4341}

(25, 'People irritate me ', 'alright', 'You have every right to be annoyed but anything you say at the moment is a heat of the moment response. You might unintentionally hurt the
{'neg': 0.412, 'neu': 0.588, 'pos': 0.0, 'compound': -0.4215}
, 'can you suggest some books?', "I would suggest you start with something light and humorous. My suggestion would be Roald Dahl. He's witty and can make you laugh in seemingly
eg': 0.0, 'neu': 0.838, 'pos': 0.162, 'compound': 0.4019}

(55, "I'm so excited!", 'So happy to hear you!', 'Great')
{'neg': 0.0, 'neu': 0.401, 'pos': 0.599, 'compound': 0.4561}
```

Application

- Website that anybody can visit, regardless of device
- Can see clear, objective facts about COVID-19
- Users can chat with chatbot and get mental relief.

Conclusion

- Easy-to-access website with all functionality
- Inform people of best practices to battle COVID-19
- Can reduce strain on hospitals.

Future Work

- Based on user's location, notify them the nearest test centers
- Informs user the availability of vaccine in nearby health centers or hospitals.

References

- Mathew, Rohit Binu, et al. "**Chatbot for Disease Prediction and Treatment Recommendation using Machine Learning**" , 2019 3rd International Conference on Trends in Electronics and Informatics (ICOEI). IEEE, 2019
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- Adam S. Miner ,Liliana Laranjo and A. Baki Kocaballi, "**Chatbots in the fight against the COVID-19 pandemic**" npj Digital Medicine (2020) 3:65 ;
- Bharti, Urmil and Bajaj, Deepali and Batra, Hunar and Lalit, Shreya and Lalit, Shweta and Gangwani, Aayushi, "**Medbot: Conversational artificial intelligence powered chatbot for delivering tele-health after covid-19**",2020 5th International Conference on Communication and Electronics Systems (ICCES)
- Nasukawa, Tetsuya, and Jeonghee Yi, **"Sentiment analysis: Capturing favorability using natural language processing"**, Proceedings of the 2nd international conference on Knowledge capture.

Thank You