BLOOD GROUP MATCHING SYSTEM

Vaibhav Suntwal (221010257)
ECE
IIIT New Raipur

Abstract: In recent years there is increase in the number of diseases and most of them are related to blood which leads to deaths of many people due to not getting blood on time.And there are many deaths due to mismatch of blood groups hence there is some need for a system which can manage the blood groups of people and make correct matches.

I. INTRODUCTION

- In Transfusion of blood there is requirement of correct blood group match so that there is no death due to wrong match.
- There is limited availability of some blood types in areas but this system will be able to search the blood group type in the nearer area from the registered donors.
- This system will help by providing specific blood type in no time and saving life of people in emergency conditions
- This system will provide an efficient interface for donors and receivers to create a community

II. Oop's Concept used

- **Class**: It is the blueprint of the objects created which is a collection of attributes and methods,interfacing both of them
- **Objects**: These are the instance of class by using this we can use methods and get values of attributes
- **Polymorphism**: It is an feature of oops which has two types function overriding or function overloading.using here function overriding

```
def main_lab_func(self):
    super().main_lab_func()
    self.reg_butt=tk.Button(self.main_lab,text="REGISTER AS DONATOR",width=20,height=20,command=self.register_data
    self.reg_butt.place(x=80, y=250)
```

- **Inheritance**: It is an oops feature in which an derived class derives from existing base class so that no need to writing same methods again.here using multilevel inheritance(from one level to another)

```
class Receiver(register_page):
    def __init__(self):
        super().__init__()
        self.rec_lab=tk.Label(scr,width=100,
```

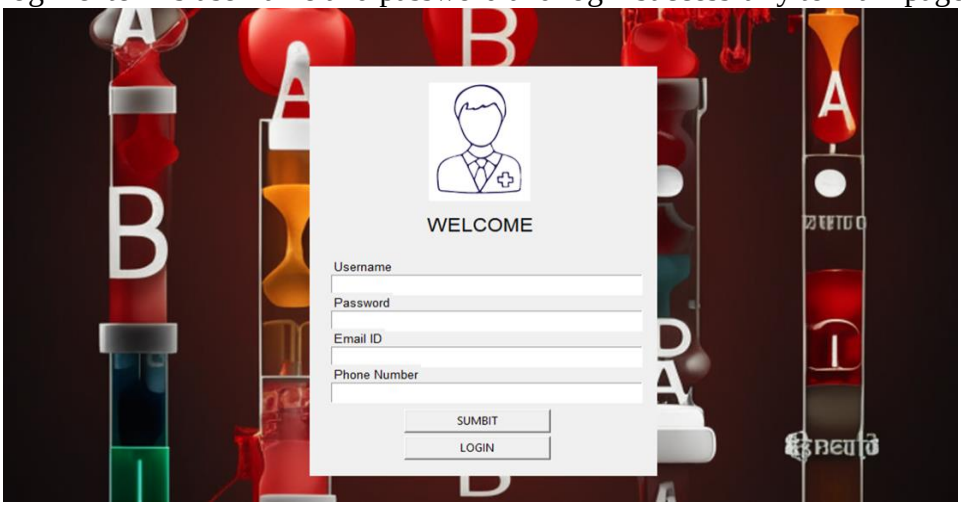
- **Constructors**: It is that special method of class which intializes the attributes and functions within it on calling its object.They do not have a return type not even void.

III. Modules Imported

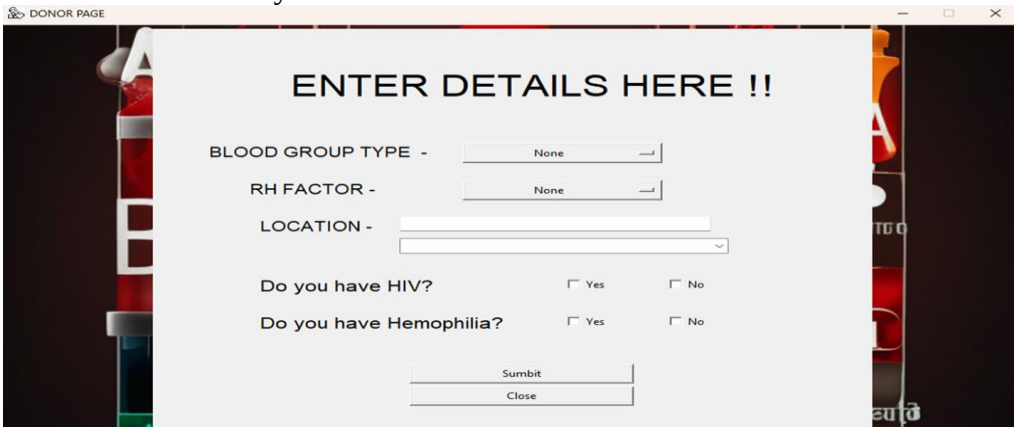
- **Tkinter**: It is a library in python used to create GUI (Graphical User Interface) making the program more efficient and enjoyable.
- **Firebase_admin:** It is an python library to connect with firebase system and store and receive data from firebase
- **Twilio:**It is a python library used for sending otp to mobile numbers.
- **Geocoder**: It is a part imported from mapbox library which provides api key for getting longitude and latitude for place search.
- **Webbrowser**: It is a library in python to interact with high level interfaces to interact with web browsers.
- **Nltk**: It is a natural language toolkit in python helpful for nlp.
- **sklearn:**It is a simple and efficient tool for predictive data analysis in python

IV Methodologies

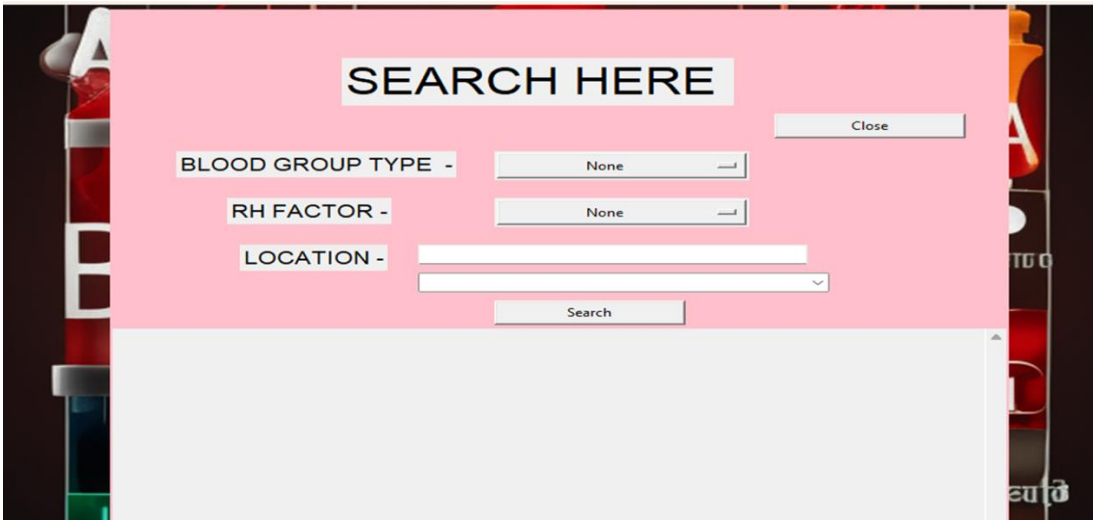
- **Login System**:Here a login system is created where person can enter their username,password,emai-lid and phone number.After that a otp screen comes and a otp is sent to user phone.After entering successful registration happens,The person who is already registered can login enter his username and password and login successfully to main page



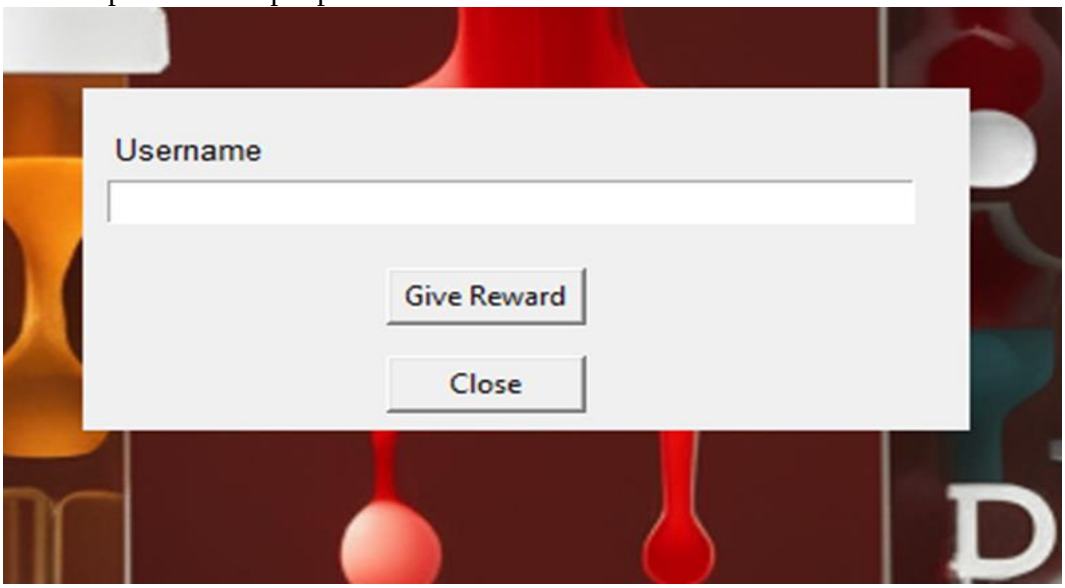
- **Register as Donor:** Here the person can register by providing details to his blood type, rh factor and location which is stored in firebase database and after registering once he can't register more than once.It has used a mapbox geocoder to give hint for the location searched helping to get desired location easily.



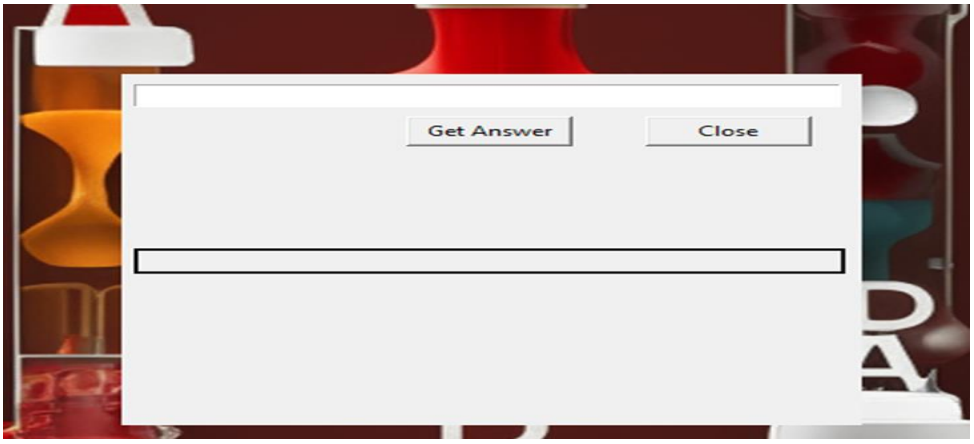
- **Search System**: So the person who wants urgent blood can search for his blood type and near location.haversine formula is used here which calculates distance between two coordinates in the form of latitude and longitude and generates the list of people within certain radius.and by clicking on particular label the person will be redirect to whatsapp with his phone number



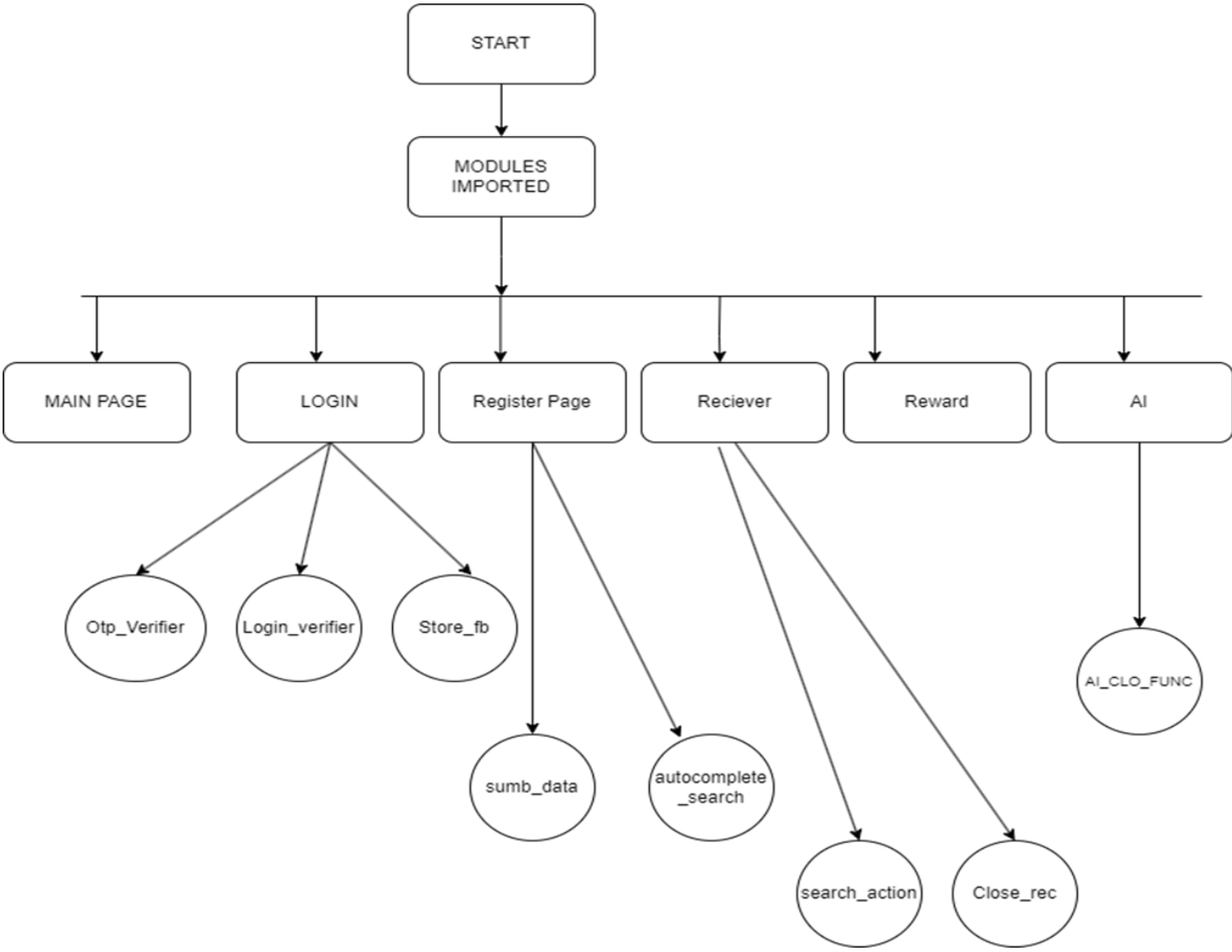
- **Reward System**:The receiver person can give the reward to the username on getting blood which will the promote the people to donate more blood



- Ai ChatBot:Here we are using ai chatbot which uses nlp to generate answers to blood related questions which helps to solve the query of the people regarding blood transfusion.It first tracks the best matched question and then answer to particular index of answer stored as txt file.used here **TF-IDF -** Where TF is term frequency which is calculated by no. of particular word in doc by total number of word and IDF is inverse document frequency.multiply them to get TF-IDF.
  Cosine similarity -It is the calculation of similarity between two vectors to find out suitable match question



III.**WORKING**



On starting the program the registration page opens and the user can register or click on login.after registration he need to verify it through mobile and then the main page class opens.here there are many buttons register receiver ,reward ,chatbot.then on clicking the register he will be able to register as donor and on search he will be able to search for the available donors in his local area.He can also give reward to user for promoting more blood donor and there is an AI chatbot for resolving people's blood related doubt and create awareness.

IV. **CONCLUSION**

- Having a GUI interface makes an efficient and non confusing system where user can easily register and search for donors.
- With this the lives of many people can be saved and helpful for humanity.

- Having a search system filtering diseased and non diseased people and finding locations near to them have a great beneift.
- Storing data in firebase making its interface different for different users and making it more secure
- Using a haversine formula for finding the people in near location.
- Used an Ai chatbot to clear doubts related to blood creating awareness about blood transfusions.

V. REFERENCE

[1] https://firebase.google.com/

[2] https://youtu.be/0WafQCaok6g(how to add scrollbar in tkinter)

[3] https://www.mapbox.com/

[4] https://docs.python.org/3/library/tkinter.html

[5] https://www.kaggle.com/code/uthamkanth/beginner-tf-idf-and-cosine-similarity-from-scratch