from tkinter import\*

from datetime import date

from tkinter.ttk import Combobox

import datetime

import tkinter as tk

from tkinter import ttk

import os

from tkinter import messagebox

import matplotlib

matplotlib.use("TkAgg")

from matplotlib.backends.backend\_tkagg import FigureCanvasTkAgg

from matplotlib.figure import Figure

import numpy as np

import matplotlib.pyplot as plt

from backend import \*

from MySQL import \*

background="#f0ddd5"

framebg="#62a7ff"

framefg="#fefbfb"

root=Tk()

root.title("Heart Attack Prediction System")

root.geometry("1450x730+60+80")

root.resizable(False,False)

root.config(bg=background)

*######Analysis<<<<<<<<<<<<<<<<<<<<*

*def* analysis():

    global prediction

    name=Name.get()

    D1=Date.get()

    today=datetime.date.today()

    A=today.year-DOB.get()

    try:

        B=selection()

    except:

        messagebox.showerror("missing","Please select gender!!")

        return

    try:

        F=selection2()

    except:

        messagebox.showerror("missing","Please select fbs!!")

        return

    try:

        I=selection3()

    except:

        messagebox.showerror("missing","Please select exang!!")

        return

    try:

        C=int(selection4())

    except:

        messagebox.showerror("missing","Please select cp!!")

        return

    try:

        G=int(restecg\_combobox.get())

    except:

        messagebox.showerror("missing","Please select restcg!!")

        return

    try:

        K=int(selection5())

    except:

        messagebox.showerror("missing","Please select slope!!")

        return

    try:

        L=int(ca\_combobox.get())

    except:

        messagebox.showerror("missing","Please select ca!!")

        return

    try:

        M=int(thal\_combobox.get())

    except:

        messagebox.showerror("missing","Please select thal!!")

        return

    try:

        D=int(trestbps.get())

        E=int(chol.get())

        H=int(thalach.get())

        J=int(oldpeak.get())

    except:

        messagebox.showerror("missing data","Few missing data entry!!")

        return

*#lets check all are working or not*

    print("A is age:", A)

    print("B is gender:", B)

    print("C is cp:", C)

    print("D is trestbps:", D)

    print("E is chol:", E)

    print("F is fbs:", F)

    print("G is restcg:", G)

    print("H is thalach:", H)

    print("I is Exang:", I)

    print("J is oldpeak:", J)

    print("K is slope:", K)

    print("L is ca:", L)

    print("M is thal:", M)

*###First graph*

    f = Figure(figsize=(5,5),dpi=100)

    a=f.add\_subplot(111)

    a.plot(["Sex","fbs","exang"],[B,F,I])

    canvas=FigureCanvasTkAgg(f)

    canvas.get\_tk\_widget().pack(side=tk.BOTTOM,fill=tk.BOTH,expand=True)

    canvas.\_tkcanvas.place(width=250,height=250,x=600,y=240)

*##second graph*

    f2 = Figure(figsize=(5,5),dpi=100)

    a2=f2.add\_subplot(111)

    a2.plot(["age","trestbps","chol","thalach"],[A,D,E,H])

    canvas2=FigureCanvasTkAgg(f2)

    canvas2.get\_tk\_widget().pack(side=tk.BOTTOM,fill=tk.BOTH,expand=True)

    canvas2.\_tkcanvas.place(width=250,height=250,x=860,y=240)

*##Third graph*

    f3 = Figure(figsize=(5,5),dpi=100)

    a3=f3.add\_subplot(111)

    a3.plot(["oldpeak","resticg","cp"],[J,G,C])

    canvas3=FigureCanvasTkAgg(f3)

    canvas3.get\_tk\_widget().pack(side=tk.BOTTOM,fill=tk.BOTH,expand=True)

    canvas3.\_tkcanvas.place(width=250,height=250,x=600,y=470)

*##fourth graph*

    f4 = Figure(figsize=(5,5),dpi=100)

    a4=f4.add\_subplot(111)

    a4.plot(["slope","ca","thal"],[K,L,M])

    canvas4=FigureCanvasTkAgg(f4)

    canvas4.get\_tk\_widget().pack(side=tk.BOTTOM,fill=tk.BOTH,expand=True)

    canvas4.\_tkcanvas.place(width=250,height=250,x=860,y=470)

*#### input data*

    input\_data=(A,B,C,D,E,F,G,H,I,J,K,L,M)

    input\_data\_as\_numpy\_array=np.asanyarray(input\_data)

    input\_data\_reshape=input\_data\_as\_numpy\_array.reshape(1,-1)

    prediction = model.predict(input\_data\_reshape)

    print(prediction[0])

    if (prediction[0]==0):

        print("The person does not have a heart disease")

        report.config(text=f"Report:{0}",fg="#8dc53f")

        report1.config(text=f"{name},you do not have a heart disease")

    else:

        print("The prson has heart disease")

        report.config(text=f"Report:{1}",fg="#ed1c24")

        report1.config(text=f"{name},you have a heart disease")

*## info window (operated by window button)<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<*

*def* Info():

    icon\_window=Toplevel(root)

    icon\_window.title("Info")

    icon\_window.geometry("700x600+400+100")

*#icon\_image*

    icon\_image=PhotoImage(file="Images/info.png")

    icon\_window.iconphoto(False,icon\_image)

*#Heading*

    Label(icon\_window,text="Information related to dataset",font="robot 19 bold").pack(padx = 20, pady=20)

*#info*

    Label(icon\_window,text="age - age in years",font="arial 11").place(x=20,y=100)

    Label(icon\_window,text="sex - sex (1 = male ; 0 = female)",font="arial 11").place(x=20,y=130)

    Label(icon\_window,text="cp - chest pain type (0 = typical angina; 1 = atypical angina; 2 = non - anginal pain; 3 = asymptomatic)",font="arial 11").place(x=20,y=160)

    Label(icon\_window,text="trestbps - resting blood pressure (in mm Hg on admission to the hospital)",font="arial 11").place(x=20,y=190)

    Label(icon\_window,text="chol - serum cholesterol in mg/dl",font="arial 11").place(x=20,y=220)

    Label(icon\_window,text="fbs - fasting blood sugar > 120 mg/dl (1 = true; 0 = false)",font="arial 11").place(x=20,y=250)

    Label(icon\_window,text="restecg - resting electrocardiographic results (0=normal; 1 = having ST-T; 2 = hypertrophy)",font="arial 11").place(x=20,y=280)

    Label(icon\_window,text="thalach - maximum heart rate achieved",font="arial 11").place(x=20,y=310)

    Label(icon\_window,text="exang - exercise induced angina (1 = yes; 0 = no)",font="arial 11").place(x=20,y=340)

    Label(icon\_window,text="oldpeak - ST depression induced by exercise relative to rest",font="arial 11").place(x=20,y=370)

    Label(icon\_window,text="slope - the slope of the peak exercise ST segment (0 = upsloping; 1 = flat; 2 = downsloping)",font="arial 11").place(x=20,y=400)

    Label(icon\_window,text="ca - number of major vessels (0-3) coloured by fluoroscopy",font="arial 11").place(x=20,y=430)

    Label(icon\_window,text="thal - 0 = normal; 1 = fixed defect; 2 = reversible defect",font="arial 11").place(x=20,y=460)

    icon\_window.mainloop()

*###it is for closing window*

*def* logout() :

    root.destroy()

*####Clear (with the healp of clear we can clear more entry field at once)*

*def* Clear():

    Name.get('')

    DOB.get('')

    trestbps.get('')

    chol.get('')

    thalach.set('')

    oldpeak.set('')

*###Save*

*def* Save():

    B2=Name.get()

    C2=Date.get()

    D2=DOB.get()

    today = datetime.date.today()

    E2=today.year-DOB.get()

    try:

            F2=selection()

    except:

        messagebox.showerror("Missing Data","Please select Gender!")

    try:

        J2=selection2()

    except:

        messagebox.showerror("Missing Data","Please select fbs!")

    try:

        M2=selection3()

    except:

        messagebox.showerror("Missing Data","Please select Exang!")

    try:

        G2=selection4()

    except:

        messagebox.showerror("Missing Data","Please select cp!")

    try:

        K2=restecg\_combobox.get()

    except:

        messagebox.showerror("Missing Data","Please select restcg!")

    try:

        O2=selection5()

    except:

        messagebox.showerror("Missing Data","Please select slope!")

    try:

        P2=ca\_combobox.get()

    except:

        messagebox.showerror("Missing Data","Please select ca!")

    try:

        Q2=thal\_combobox.get()

    except:

        messagebox.showerror("Missing Data","Please select thal!")

    H2=trestbps.get()

    I2=chol.get()

    L2=thalach.get()

    N2=float(oldpeak.get())

    print(B2)

    print(C2)

    print(D2)

    print(E2)

    print(F2)

    print(G2)

    print(H2)

    print(I2)

    print(J2)

    print(K2)

    print(L2)

    print(M2)

    print(N2)

    print(O2)

    print(P2)

    print(Q2)

    Save\_Data\_MySql(B2,C2,int(D2), int(E2),int(F2),int(G2),int(H2),int(I2),int(J2),int(K2),int(L2),int(M2),int(N2),int(O2),int(P2),int(Q2),int(prediction[0]))

*#$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$*

*#icon1*

image\_icon=PhotoImage(file="Images/icon.png")

root.iconphoto(False,image\_icon)

*##header section2*

logo=PhotoImage(file='Images/header.png')

myimage=Label(image=logo,bg=background)

myimage.place(x=0,y=0)

*##<<<<<<frame 3*

Heading\_entry=Frame(root,width=800,height=190,bg="#df2d4b")

Heading\_entry.place(x=600,y=20)

Label(Heading\_entry,text="Registration no.",font="arial 13",bg="#df2d4b",fg=framefg).place(x=30,y=0)

Label(Heading\_entry,text="Date",font="arial 13",bg="#df2d4b",fg=framefg).place(x=430,y=0)

Label(Heading\_entry,text="Patient Name",font="arial 13",bg="#df2d4b",fg=framefg).place(x=30,y=90)

Label(Heading\_entry,text="Birth Year",font="arial 13",bg="#df2d4b",fg=framefg).place(x=430,y=90)

Entry\_image=PhotoImage(file="Images/Rounded Rectangle 1.png")

Entry\_image2=PhotoImage(file="Images/Rounded Rectangle 2.png")

Label(Heading\_entry,image=Entry\_image,bg="#df2d4b").place(x=20,y=30)

Label(Heading\_entry,image=Entry\_image,bg="#df2d4b").place(x=430,y=30)

Label(Heading\_entry,image=Entry\_image2,bg="#df2d4b").place(x=20,y=120)

Label(Heading\_entry,image=Entry\_image2,bg="#df2d4b").place(x=430,y=120)

Registration=IntVar()

reg\_entry=Entry(Heading\_entry,textvariable=Registration,width=30,font="arial 15",bg="#0e5363",fg="white",bd=0)

reg\_entry.place(x=30,y=45)

Date=StringVar()

today=date.today()

d1=today.strftime("%d/%m/%Y")

date\_entry=Entry(Heading\_entry,textvariable=Date,width=15,font='arial 15',bg='#0e5363',fg="white",bd=0)

date\_entry.place(x=500,y=45)

Date.set(d1)

Name=StringVar()

name\_entry=Entry(Heading\_entry,textvariable=Name,width=20,font="arial 20",bg="#ededed",fg="#222222",bd=0)

name\_entry.place(x=30,y=130)

DOB=IntVar()

dob\_entry=Entry(Heading\_entry,textvariable=DOB,width=20,font="arial 20",bg="#ededed",fg="#222222",bd=0)

dob\_entry.place(x=450,y=130)

*############ Body ############# 4*

Detail\_entry=Frame(root,width=490,height=260,bg="#dbe0e3")

Detail\_entry.place(x=30,y=450)

*##### radio button ######5*

Label(Detail\_entry,text="sex:",font="arial 13",bg=framebg,fg=framefg).place(x=10,y=10)

Label(Detail\_entry,text="fbs:",font="arial 13",bg=framebg,fg=framefg).place(x=180,y=10)

Label(Detail\_entry,text="exang:",font="arial 13",bg=framebg,fg=framefg).place(x=335,y=10)

*def* selection():

    if gen.get()==1:

        Gender=1

        return(Gender)

        print(Gender)

    elif gen.get()==2:

        Gender=0

        return(Gender)

        print(Gender)

    else:

        print(Gender)

*def* selection2():

    if fbs.get()==1:

        Fbs=1

        return(Fbs)

        print(Fbs)

    elif fbs.get()==2:

        Fbs=0

        return(Fbs)

        print(Fbs)

    else:

        print(Fbs)

*def* selection3():

    if exang.get()==1:

        Exang=1

        return(Exang)

        print(Exang)

    elif exang.get()==2:

        Exang=0

        return(Exang)

        print(Exang)

    else:

        print(Exang)

gen=IntVar()

R1=Radiobutton(Detail\_entry,text='Male', variable=gen, value=1,command=selection)

R2=Radiobutton(Detail\_entry,text='Female', variable=gen, value=2,command=selection)

R1.place(x=43,y=10)

R2.place(x=93,y=10)

fbs=IntVar()

R3=Radiobutton(Detail\_entry,text='True', variable=fbs, value=1,command=selection)

R4=Radiobutton(Detail\_entry,text='False', variable=fbs, value=2,command=selection)

R3.place(x=213,y=10)

R4.place(x=263,y=10)

exang=IntVar()

R5=Radiobutton(Detail\_entry,text='Yes', variable=exang, value=1,command=selection)

R6=Radiobutton(Detail\_entry,text='No', variable=exang, value=2,command=selection)

R5.place(x=387,y=10)

R6.place(x=430,y=10)

*####### Combobox ##### 6*

Label(Detail\_entry,text="cp:",font='arial 13',bg=framebg,fg=framefg).place(x=10,y=50)

Label(Detail\_entry,text="restecg:",font='arial 13',bg=framebg,fg=framefg).place(x=10,y=90)

Label(Detail\_entry,text="slope:",font='arial 13',bg=framebg,fg=framefg).place(x=10,y=130)

Label(Detail\_entry,text="ca:",font='arial 13',bg=framebg,fg=framefg).place(x=10,y=170)

Label(Detail\_entry,text="thal:",font='arial 13',bg=framebg,fg=framefg).place(x=10,y=210)

*def* selection4():

    input=cp\_combobox.get()

    if input=="0=typical angina":

        return(0)

    elif input=="1=atypical angina":

        return(1)

    elif input=="2=non-anginal pain":

        return(2)

    elif input=="3=asymptomatic":

        return(3)

    else:

        print(Exang)

*def* selection5():

    input=slope\_combobox.get()

    if input=="0=upsloping":

        return(0)

    elif input=="1=flat":

        return(1)

    elif input=="2=downsloping":

        return(2)

    else:

        print(Exang)

cp\_combobox=Combobox(Detail\_entry,values=['0=typical angina','1=atypical angina','2=non-anginal pain','3=asymptomatic'],font="arial 12",state="r",width=14)

restecg\_combobox=Combobox(Detail\_entry,values=['0','1','2'],font="arial 12",state="r",width=11)

slope\_combobox=Combobox(Detail\_entry,values=['0=upsloping','1=flat','2=downsloping'],font="arial 12",state="r",width=12)

ca\_combobox=Combobox(Detail\_entry,values=['0','1','2','3','4'],font="arial 12",state="r",width=14)

thal\_combobox=Combobox(Detail\_entry,values=['0','1','2','3'],font="arial 12",state="r",width=14)

cp\_combobox.place(x=50,y=50)

restecg\_combobox.place(x=80,y=90)

slope\_combobox.place(x=70,y=130)

ca\_combobox.place(x=50,y=170)

thal\_combobox.place(x=50,y=210)

Label(Detail\_entry, text="Smoking:", font="arial 13", width=7, bg="#dbe0e3", fg="black").place(x=240, y=50)

Label(Detail\_entry, text="trestbps:", font="arial 13", width=7, bg=framebg, fg=framefg).place(x=240, y=90)

Label(Detail\_entry, text="chol:", font="arial 13", width=7, bg=framebg, fg=framefg).place(x=240, y=130)

Label(Detail\_entry, text="thalach:", font="arial 13", width=7, bg=framebg, fg=framefg).place(x=240, y=170)

Label(Detail\_entry, text="oldpeak:", font="arial 13", width=7, bg=framebg, fg=framefg).place(x=240, y=210)

trestbps=StringVar()

chol=StringVar()

thalach=StringVar()

oldpeak=StringVar()

trestbps\_entry=Entry(Detail\_entry,textvariable=trestbps,width=10,font="arial 15",bg="#ededed",fg="#222222",bd=0)

chol\_entry=Entry(Detail\_entry,textvariable=chol,width=10,font="arial 15",bg="#ededed",fg="#222222",bd=0)

thalach\_entry=Entry(Detail\_entry,textvariable=thalach,width=10,font="arial 15",bg="#ededed",fg="#222222",bd=0)

oldpeak\_entry=Entry(Detail\_entry,textvariable=oldpeak,width=10,font="arial 15",bg="#ededed",fg="#222222",bd=0)

trestbps\_entry.place(x=320,y=90)

chol\_entry.place(x=320,y=130)

thalach\_entry.place(x=320,y=170)

oldpeak\_entry.place(x=320,y=210)

square\_report\_image=PhotoImage(file="Images/Report.png")

report\_background=Label(image=square\_report\_image,bg=background)

report\_background.place(x=1120,y=340)

report=Label(root,font="arial 25 bold",bg="white",fg="#8dc63f")

report.place(x=1170,y=550)

report1=Label(root,font="arial 10 bold",bg="white")

report1.place(x=1130,y=610)

graph\_image=PhotoImage(file="Images/graph.png")

Label(image=graph\_image).place(x=600,y=270)

Label(image=graph\_image).place(x=860,y=270)

Label(image=graph\_image).place(x=600,y=500)

Label(image=graph\_image).place(x=860,y=500)

analysis\_button=PhotoImage(file="Images/Analysis.png")

Button(root,image=analysis\_button,bd=0,bg=background,cursor='hand2',command = analysis).place(x=1130,y=240)

*#####info button#####*

info\_button=PhotoImage(file="Images/info.png")

Button(root,image=info\_button,bd=0,bg=background,cursor='hand2', command =Info).place(x=10,y=240)

save\_button=PhotoImage(file="Images/save.png")

Button(root,image=save\_button,bd=0,bg=background,cursor='hand2', command= Save).place(x=1370,y=250)

button\_mode=True

choice="smoking"

*def* changemode():

    global button\_mode

    global choice

    if button\_mode:

        choice="non\_smoking"

        mode.config(image=non\_smoking\_icon,activebackground="white")

        button\_mode=False

    else:

        choice="smoking"

        mode.config(image=smoking\_icon,activebackground="white")

        button\_mode=True

    print(choice)

smoking\_icon=PhotoImage(file="Images/smoker.png")

non\_smoking\_icon=PhotoImage(file="Images/non-smoker.png")

mode=Button(root,image=smoking\_icon,bg="#dbe0e3",bd=0,cursor="hand2",command=changemode)

mode.place(x=350,y=495)

logout\_icon=PhotoImage(file="Images/logout.png")

logout\_button=Button(root,image=logout\_icon,bg="#df2d4b",cursor="hand2",bd=0,command=logout)

logout\_button.place(x=1390,y=60)

root.mainloop()