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AUTOMATED ATTENDANCE SYSTEM CODE:

```
##########################################
IMPORTING
##########################################
import tkinter as tk from tkinter import ttk
from tkinter import messagebox as mess
import tkinter.simpledialog as tsd
import cv2,os import csv import numpy
as np from PIL import Image import
pandas as pd import datetime import
time
####################################
############
FUNCTIONS
##########################################


def assure_path_exists(path):
dir = os.path.dirname(path)     if
not os.path.exists(dir):
```

```
        os.makedirs(dir)

##################################################################################

def tick():
    time_string = time.strftime('%H:%M:%S')
clock.config(text=time_string)     clock.after(200,tick)

##################################################################################

def contact():
    mess._show(title='Contact us', message="Please contact us on : 'shubhamkumar8180323@gmail.com' ")

##################################################################################

def check_haarcascadefile():
```

```
   exists = os.path.isfile("haarcascade_frontalface_default.xml")
if exists:        pass     else:
       mess._show(title='Some file missing', message='Please
contact us for help')        window.destroy()


##########################################################
##################################


def save_pass():
   assure_path_exists("TrainingImageLabel/")     exists1
= os.path.isfile("TrainingImageLabel\psd.txt")     if
exists1:
       tf = open("TrainingImageLabel\psd.txt", "r")
key = tf.read()     else:
       master.destroy()
       new_pas = tsd.askstring('Old Password not found', 'Please
enter a new password below', show='*')        if new_pas ==
None:
          mess._show(title='No Password Entered',
message='Password not set!! Please try again')
else:
```

```
        tf = open("TrainingImageLabel\psd.txt", "w")
tf.write(new_pas)
        mess._show(title='Password Registered', message='New
password was registered successfully!!')          return     op =
(old.get())     newp= (new.get())     nnewp = (nnew.get())     if
(op == key):        if(newp == nnewp):
        txf = open("TrainingImageLabel\psd.txt", "w")
txf.write(newp)        else:
        mess._show(title='Error', message='Confirm new
password again!!!')
        return
else:
      mess._show(title='Wrong Password', message='Please
enter correct old password.')
      return
   mess._show(title='Password Changed', message='Password
changed successfully!!')     master.destroy()

####################################################
##################################
```

```
def change_pass():     global
master     master = tk.Tk()
master.geometry("400x160")
master.resizable(False,False)
master.title("Change
Password")
master.configure(background=
"white")     lbl4 =
tk.Label(master,text='    Enter
Old
Password',bg='white',font=('ti
mes', 12, ' bold '))
lbl4.place(x=10,y=10)     global
old
   old=tk.Entry(master,width=25
,fg="black",relief='solid',font=('times', 12, ' bold '),show='*')
old.place(x=180,y=10)
   lbl5 = tk.Label(master, text='   Enter New Password',
bg='white',      font=('times',      12,      '      bold      '))
lbl5.place(x=10, y=45)     global new
```

```
   new = tk.Entry(master, width=25, fg="black",relief='solid',
font=('times', 12, ' bold '),show='*')     new.place(x=180,
y=45)

   lbl6 = tk.Label(master, text='Confirm New Password',
bg='white', font=('times', 12, ' bold '))     lbl6.place(x=10,
y=80)     global nnew

   nnew = tk.Entry(master, width=25, fg="black",
relief='solid',font=('times', 12, ' bold '),show='*')
nnew.place(x=180, y=80)

   cancel=tk.Button(master,text="Cancel",
command=master.destroy ,fg="black"  ,bg="red"
,height=1,width=25 , activebackground = "white" ,font=('times',
10, ' bold '))

   cancel.place(x=200, y=120)

   save1 = tk.Button(master, text="Save", command=save_pass,
fg="black", bg="#3ece48", height = 1,width=25,
activebackground="white", font=('times', 10, ' bold '))
save1.place(x=10, y=120)     master.mainloop()


##################################################
####################################

def psw():
```

```
   assure_path_exists("TrainingImageLabel/")     exists1
= os.path.isfile("TrainingImageLabel\psd.txt")     if
exists1:
        tf = open("TrainingImageLabel\psd.txt", "r")
        key = tf.read()
else:
        new_pas = tsd.askstring('Old Password not found', 'Please
enter a new password below', show='*')        if new_pas ==
None:
            mess._show(title='No Password Entered',
message='Password not set!! Please try again')
else:
            tf = open("TrainingImageLabel\psd.txt", "w")
tf.write(new_pas)
            mess._show(title='Password Registered', message='New
password was registered successfully!!')            return
   password = tsd.askstring('Password', 'Enter Password',
show='*')     if (password == key):        TrainImages()
elif (password == None):
        pass
else:
```

```
        mess._show(title='Wrong Password', message='You have
entered wrong password')
##################################################################
####################################

def clear():
    txt.delete(0, 'end')
    res = "1)Take Images  >>>  2)Save Profile"
message1.configure(text=res)



def clear2():
    txt2.delete(0, 'end')
    res = "1)Take Images  >>>  2)Save Profile"
message1.configure(text=res)

##################################################################
####################################

def TakeImages():
    check_haarcascadefile()
```

```
   columns = ['SERIAL NO.', '', 'ID', '', 'NAME']
assure_path_exists("StudentDetails/")
assure_path_exists("TrainingImage/")     serial = 0
   exists = os.path.isfile("StudentDetails\StudentDetails.csv")
if exists:
      with open("StudentDetails\StudentDetails.csv", 'r') as
csvFile1:
         reader1 = csv.reader(csvFile1)
for l in reader1:                serial =
serial + 1        serial = (serial // 2)
csvFile1.close()     else:
      with open("StudentDetails\StudentDetails.csv", 'a+') as
csvFile1:
         writer = csv.writer(csvFile1)
writer.writerow(columns)
         serial = 1
csvFile1.close()     Id =
(txt.get())     name =
(txt2.get())     if
((name.isalpha()) or ('
' in name)):
```

```
        cam = cv2.VideoCapture(0)
        harcascadePath = "haarcascade_frontalface_default.xml"
detector = cv2.CascadeClassifier(harcascadePath)
sampleNum = 0        while (True):
            ret, img = cam.read()
            gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)
faces = detector.detectMultiScale(gray, 1.3, 5)            for
(x, y, w, h) in faces:
                cv2.rectangle(img, (x, y), (x + w, y + h), (255, 0, 0), 2)
                # incrementing sample number
sampleNum = sampleNum + 1
                # saving the captured face in the dataset folder
TrainingImage
                cv2.imwrite("TrainingImage\ " + name + "." + str(serial)
+ "." + Id + '.' + str(sampleNum) + ".jpg",
                            gray[y:y + h, x:x + w])
                # display the frame
                cv2.imshow('Taking Images', img)
            # wait for 100 miliseconds
            if cv2.waitKey(100) & 0xFF == ord('q'):
break
```

```
        # break if the sample number is morethan 100
elif sampleNum > 100:
            break       cam.release()
cv2.destroyAllWindows()       res =
"Images Taken for ID : " + Id       row
= [serial, '', Id, '', name]
    with open('StudentDetails\StudentDetails.csv', 'a+') as
csvFile:
        writer = csv.writer(csvFile)
writer.writerow(row)       csvFile.close()
    message1.configure(text=res)
else:       if (name.isalpha() ==
False):          res = "Enter Correct
name"
message.configure(text=res)
##############################
#########################
##############################
########
```

```
def TrainImages():
    check_haarcascadefile()
    assure_path_exists("TrainingImageLabel/")    recognizer
= cv2.face_LBPHFaceRecognizer.create()    harcascadePath
= "haarcascade_frontalface_default.xml"    detector =
cv2.CascadeClassifier(harcascadePath)    faces, ID =
getImagesAndLabels("TrainingImage")    try:
        recognizer.train(faces, np.array(ID))
except:
        mess._show(title='No Registrations', message='Please
Register someone first!!!')        return
    recognizer.save("TrainingImageLabel\Trainner.yml")
res = "Profile Saved Successfully"
message1.configure(text=res)
    message.configure(text='Total  Registrations  till  now    :  '  +
str(ID[0]))
##################################################
# ##########################################3


def getImagesAndLabels(path):
    # get the path of all the files in the folder
```

```
    imagePaths = [os.path.join(path, f) for f in os.listdir(path)]
    # create empth face list
faces = []
    # create empty ID list
    Ids = []
    # now looping through all the image paths and loading the
Ids and the images     for imagePath in imagePaths:
        # loading the image and converting it to gray scale
pilImage = Image.open(imagePath).convert('L')
        # Now we are converting the PIL image into numpy array
imageNp = np.array(pilImage, 'uint8')
        # getting the Id from the image
        ID = int(os.path.split(imagePath)[-1].split(".")[1])
        # extract the face from the training image sample
        faces.append(imageNp)        Ids.append(ID)     return faces,
        Ids

##################################################################
########################################

def TrackImages():
```

```
    check_haarcascadefile()
assure_path_exists("Attendance/")
assure_path_exists("StudentDetails/")     for
k in tv.get_children():
        tv.delete(k)
msg = ''     i = 0
j = 0
    recognizer = cv2.face.LBPHFaceRecognizer_create()  #
cv2.createLBPHFaceRecognizer()
    exists3 = os.path.isfile("TrainingImageLabel\Trainner.yml")
if exists3:
        recognizer.read("TrainingImageLabel\Trainner.yml")
    else:
        mess._show(title='Data Missing', message='Please click on
Save Profile to reset data!!')        return
    harcascadePath = "haarcascade_frontalface_default.xml"
faceCascade = cv2.CascadeClassifier(harcascadePath);


    cam = cv2.VideoCapture(0)     font =
cv2.FONT_HERSHEY_SIMPLEX
```

```
   col_names = ['Id', '', 'Name', '', 'Date', '', 'Time']     exists1 =
os.path.isfile("StudentDetails\StudentDetails.csv")     if
exists1:
      df = pd.read_csv("StudentDetails\StudentDetails.csv")
else:
      mess._show(title='Details Missing', message='Students
details are missing, please check!')       cam.release()
cv2.destroyAllWindows()       window.destroy()     while
True:
      ret, im = cam.read()
      gray = cv2.cvtColor(im, cv2.COLOR_BGR2GRAY)
faces = faceCascade.detectMultiScale(gray, 1.2, 5)
for (x, y, w, h) in faces:
          cv2.rectangle(im, (x, y), (x + w, y + h), (225, 0, 0), 2)
serial, conf = recognizer.predict(gray[y:y + h, x:x + w])          if
(conf < 50):
              ts = time.time()
              date =
datetime.datetime.fromtimestamp(ts).strftime('%d-%m-%Y')
timeStamp =
```

```
datetime.datetime.fromtimestamp(ts).strftime('%H:%M:%S')
aa = df.loc[df['SERIAL NO.'] == serial]['NAME'].values
            ID = df.loc[df['SERIAL NO.'] == serial]['ID'].values
            ID = str(ID)
ID = ID[1:-1]
bb = str(aa)
bb = bb[2:-2]
            attendance = [str(ID), '', bb, '', str(date), '',
str(timeStamp)]


else:

            Id = 'Unknown'
bb = str(Id)
         cv2.putText(im, str(bb), (x, y + h), font, 1, (255, 255, 255),
2)
      cv2.imshow('Taking Attendance', im)
if (cv2.waitKey(1) == ord('q')):
         break     ts
= time.time()
   date = datetime.datetime.fromtimestamp(ts).strftime('%d-
%m-%Y')
```

```
   exists = os.path.isfile("Attendance\Attendance_" + date +
".csv")
if exists:
      with open("Attendance\Attendance_" + date + ".csv", 'a+')
as csvFile1:
         writer = csv.writer(csvFile1)
writer.writerow(attendance)
csvFile1.close()     else:
      with open("Attendance\Attendance_" + date + ".csv", 'a+')
as csvFile1:
         writer = csv.writer(csvFile1)
         writer.writerow(col_names)
writer.writerow(attendance)        csvFile1.close()
   with open("Attendance\Attendance_" + date + ".csv", 'r') as
csvFile1:
      reader1 = csv.reader(csvFile1)
for lines in reader1:           i = i + 1
if (i > 1):               if (i % 2 != 0):
                iidd = str(lines[0]) + '   '
```

```
                tv.insert('', 0, text=iidd, values=(str(lines[2]),
str(lines[4]), str(lines[6])))    csvFile1.close()
cam.release()    cv2.destroyAllWindows()

########################################## USED STUFFS
##########################################

global key
key = ''

ts = time.time()
date = datetime.datetime.fromtimestamp(ts).strftime('%d-%m-
%Y')
day,month,year=date.split("-")

mont={'01':'January',
     '02':'February',
     '03':'March',
     '04':'April',
     '05':'May',
     '06':'June',
```

```
    '07':'July',
    '08':'August',
    '09':'September',
    '10':'October',
    '11':'November',
    '12':'December'
    }

########################################## GUI
FRONTEND
##########################################

window = tk.Tk() window.geometry("1280x720")
window.resizable(True,False)
window.title("Attendance System")
window.configure(background='#262523')

frame1 = tk.Frame(window, bg="#00aeff")
frame1.place(relx=0.11, rely=0.17, relwidth=0.39,
relheight=0.80)
```

```
frame2 = tk.Frame(window, bg="#00aeff")
frame2.place(relx=0.51, rely=0.17, relwidth=0.38,
relheight=0.80)

message3 = tk.Label(window, text="Face Recognition Based
Attendance System" ,fg="white",bg="#262523" ,width=55
,height=1,font=('times', 29, ' bold ')) message3.place(x=10,
y=10)

frame3 = tk.Frame(window, bg="#c4c6ce")
frame3.place(relx=0.52, rely=0.09, relwidth=0.09,
relheight=0.07)

frame4 = tk.Frame(window, bg="#c4c6ce")
frame4.place(relx=0.36, rely=0.09, relwidth=0.16,
relheight=0.07)

datef = tk.Label(frame4, text = day+"-"+mont[month]+"-
"+year+"  |  ", fg="orange",bg="#262523" ,width=55
,height=1,font=('times', 22, ' bold '))
datef.pack(fill='both',expand=1)

clock = tk.Label(frame3,fg="orange",bg="#262523" ,width=55
```

```
,height=1,font=('times', 22, ' bold '))
clock.pack(fill='both',expand=1) tick()

head2 = tk.Label(frame2, text="                For New
Registrations                ", fg="black",bg="#3ece48"
,font=('times', 17, ' bold ') )
head2.grid(row=0,column=0)

head1 = tk.Label(frame1, text="                For Already
Registered                ", fg="black",bg="#3ece48"
,font=('times', 17, ' bold ') ) head1.place(x=0,y=0)

lbl = tk.Label(frame2, text="Enter ID",width=20  ,height=1
,fg="black"  ,bg="#00aeff" ,font=('times', 17, ' bold ') )
lbl.place(x=80, y=55)

txt = tk.Entry(frame2,width=32 ,fg="black",font=('times', 15, '
bold '))
txt.place(x=30, y=88)

lbl2 = tk.Label(frame2, text="Enter Name",width=20  ,fg="black"
,bg="#00aeff" ,font=('times', 17, ' bold ')) lbl2.place(x=80,
y=140)
```

```
txt2 = tk.Entry(frame2,width=32 ,fg="black",font=('times', 15, ' bold ')  )

txt2.place(x=30, y=173)


message1 = tk.Label(frame2, text="1)Take Images  >>>  2)Save Profile" ,bg="#00aeff" ,fg="black"  ,width=39 ,height=1, activebackground = "yellow" ,font=('times', 15, ' bold '))
message1.place(x=7, y=230)


message = tk.Label(frame2, text="" ,bg="#00aeff" ,fg="black"  ,width=39,height=1, activebackground = "yellow" ,font=('times', 16, ' bold '))

message.place(x=7, y=450)


lbl3 = tk.Label(frame1, text="Attendance",width=20  ,fg="black"  ,bg="#00aeff"  ,height=1 ,font=('times', 17, ' bold '))

lbl3.place(x=100, y=115)


res=0

exists = os.path.isfile("StudentDetails\StudentDetails.csv") if

exists:
```

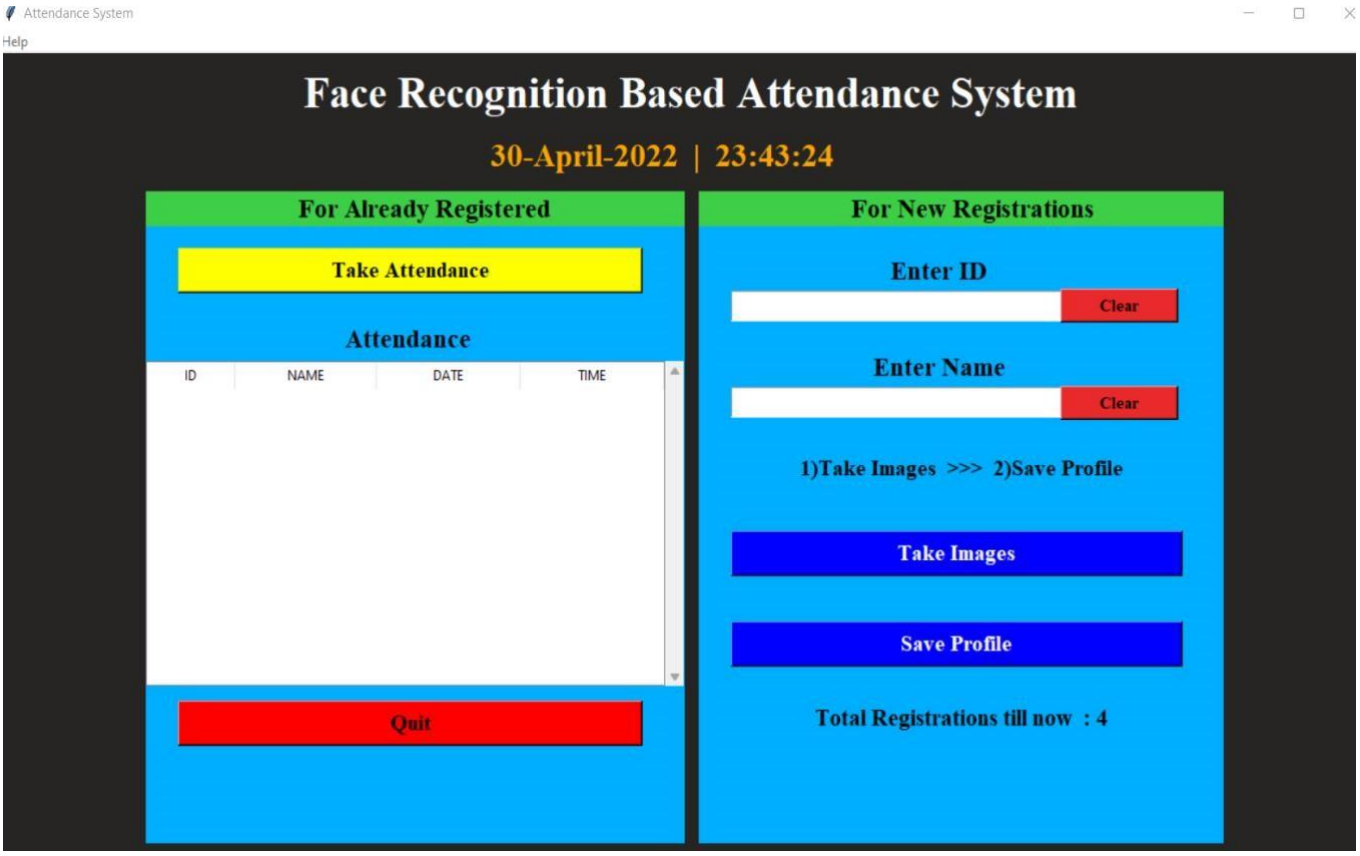
```
   with open("StudentDetails\StudentDetails.csv", 'r') as
csvFile1:
       reader1 = csv.reader(csvFile1)
for l in reader1:
           res = res + 1
res = (res // 2) - 1
csvFile1.close() else:
   res = 0
message.configure(text='Total Registrations till now  : '+str(res))


###################### MENUBAR
################################


menubar = tk.Menu(window,relief='ridge') filemenu
= tk.Menu(menubar,tearoff=0)
filemenu.add_command(label='Change Password', command =
change_pass)
filemenu.add_command(label='Contact Us', command =
contact)
filemenu.add_command(label='Exit',command =
window.destroy)
```

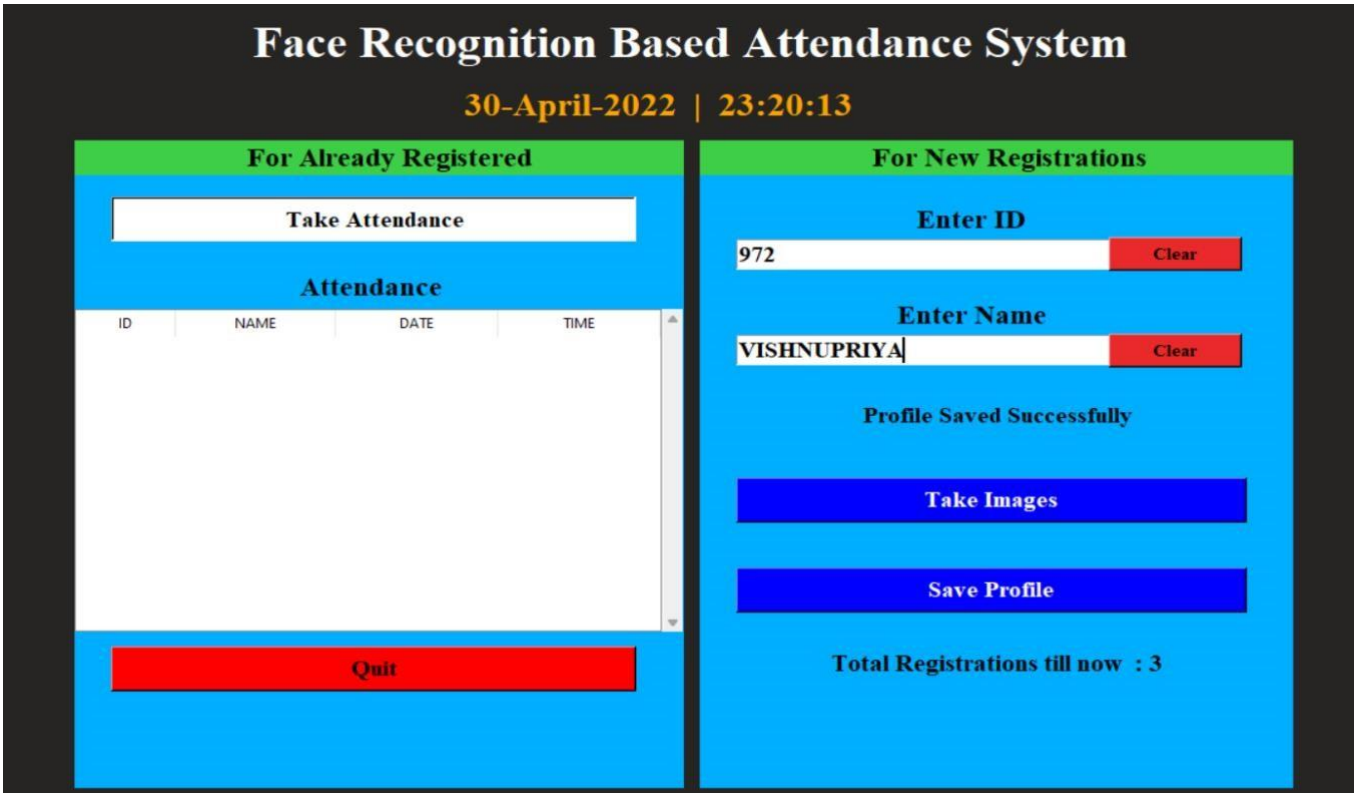
```
menubar.add_cascade(label='Help',font=('times', 29, ' bold
'),menu=filemenu)

################### TREEVIEW ATTENDANCE TABLE
#####################

tv= ttk.Treeview(frame1,height =13,columns =
('name','date','time')) tv.column('#0',width=82)

tv.column('name',width=130)

tv.column('date',width=133)

tv.column('time',width=133)

tv.grid(row=2,column=0,padx=(0,0),pady=(150,0),columnspan=
4)

tv.heading('#0',text ='ID') tv.heading('name',text

='NAME') tv.heading('date',text ='DATE')

tv.heading('time',text ='TIME')

######################### SCROLLBAR
###################################
```

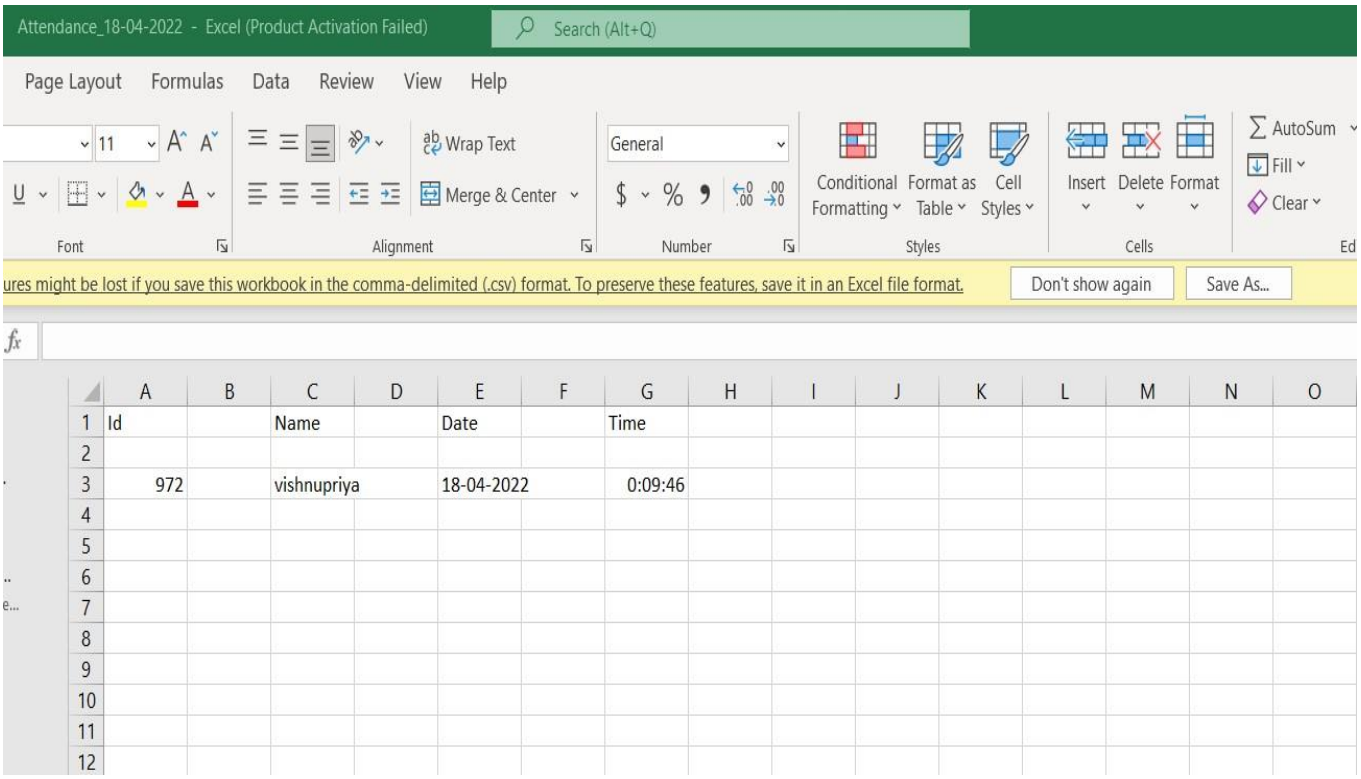
```
scroll=ttk.Scrollbar(frame1,orient='vertical',command=tv.yview)
scroll.grid(row=2,column=4,padx=(0,100),pady=(150,0),sticky='
ns')

tv.configure(yscrollcommand=scroll.set)


###################### BUTTONS
##################################


clearButton = tk.Button(frame2, text="Clear", command=clear
,fg="black"  ,bg="#ea2a2a"  ,width=11 ,activebackground =
"white" ,font=('times', 11, ' bold ')) clearButton.place(x=335,

y=86)

clearButton2 = tk.Button(frame2, text="Clear",
command=clear2  ,fg="black"  ,bg="#ea2a2a"  ,width=11 ,
activebackground = "white" ,font=('times', 11, ' bold '))
clearButton2.place(x=335, y=172) takeImg =
tk.Button(frame2, text="Take Images",
command=TakeImages  ,fg="white"  ,bg="blue"  ,width=34

,height=1, activebackground = "white" ,font=('times', 15, ' bold
'))

takeImg.place(x=30, y=300)

trainImg = tk.Button(frame2, text="Save Profile",
command=psw ,fg="white"  ,bg="blue"  ,width=34  ,height=1,
activebackground = "white" ,font=('times', 15, ' bold '))
```

```
trainImg.place(x=30, y=380)

trackImg = tk.Button(frame1, text="Take Attendance", command=TrackImages ,fg="black" ,bg="yellow" ,width=35 ,height=1, activebackground = "white" ,font=('times', 15, ' bold '))

trackImg.place(x=30,y=50)

quitWindow = tk.Button(frame1, text="Quit", command=window.destroy ,fg="black" ,bg="red" ,width=35 ,height=1, activebackground = "white" ,font=('times', 15, ' bold '))

quitWindow.place(x=30, y=450)


###################### END ######################################


window.configure(menu=menubar) window.mainloop()


##################################################################################################
```

OUTPUT SCREENSHOTS:


Attendance System
Help
Face Recognition Based Attendance System
30-April-2022 | 23:43:24
For Already Registered
Take Attendance
Attendance
ID
NAME
DATE
TIME
Quit
For New Registrations
Enter ID
Clear
Enter Name
Clear
1)Take Images >>> 2)Save Profile
Take Images
Save Profile
Total Registrations till now : 4


Face Recognition Based Attendance System
30-April-2022 | 23:20:13
For Already Registered
Take Attendance
Attendance
ID
NAME
DATE
TIME
Quit
For New Registrations
Enter ID
972
Clear
Enter Name
VISHNUPRIYA
Clear
Profile Saved Successfully
Take Images
Save Profile
Total Registrations till now : 3


Attendance_18-04-2022 - Excel (Product Activation Failed)
Search (Alt+Q)
Page Layout
Formulas
Data
Review
View
Help
Wrap Text
Merge & Center
General
Conditional Formatting
Format as Table
Cell Styles
Insert
Delete
Format
AutoSum
Fill
Clear
Font
Alignment
Number
Styles
Cells
ures might be lost if you save this workbook in the comma-delimited (.csv) format. To preserve these features, save it in an Excel file format.
Don't show again
Save As...
Id
Name
Date
Time
972
vishnupriya
18-04-2022
0:09:46