“face recoganization approach for automated attendance updation”

PROJECT REPORT

TEAM MEMBERS:

Gandham.Subrahmanyam(RA2011026010188)
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GV Karthik sai(RA2011026010204)

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ABSTRACT

Traditional way of taking attendance can lead to various anomalies such as proxy,misallocation of attendance register. The proposed method overcomes the defects that exists in the traditional method.

The latest digital register tracks the student's presence by identifying and recognizing their details by using Machine learning algorithms. Authentication is that the basic issue in the field of computer primarily based communication. Face recognition is widely utilized in many applications reminiscent of system security and door system. The proposed work describes the way to take student's act victimization face recognition. The face recognition is enforced with the help of Camera and Open CV formula. The system will acknowledge the face of specific student and saves the response in information automatically. The system additionally includes the feature of retrieving the list of students who are absent during an explicit day. The various information is recorded with the assistance of a camera connected as a part of front of the classroom which is able to be continuously taking footage of students, detect the faces in image and it distinguishes appearances alongside the information and mark the attendance. This work initial audits the connected works in the field of participation administration conjointly the face acknowledgment.At that time, it presents our framework structure and plan. Finally, the experiments area unit enforced and it shows the advance of the performance of the attendance system.

1.0 BUSINESS CASE

TITLE :- An Opencv based efficient face recoganization approach for automated attendance updation

THE PROJECT:

A robotized framework for human face acknowledgment in a constant foundation for a school to stamp the participation of their Students. The coordinated face is utilized to check participation of the Student.

THE HISTORY:

- Existing system is a manual entry for the students attendance.
- Here the attendance will be carried out in the hand written registers.
- It will be a tedious job to maintain the record for the user.

LIMITATIONS:

- ★ A smart phone or a pc and internet is required for using the website.
- ★ It can't account for the faces that are captured at angles other than straight into the capturing camera.

APPROACH:

O A web/Android application can be created for this software project. O If it's a web app then Python3.6 (Frontend),SQLite3(Backend).

BENEFITS:

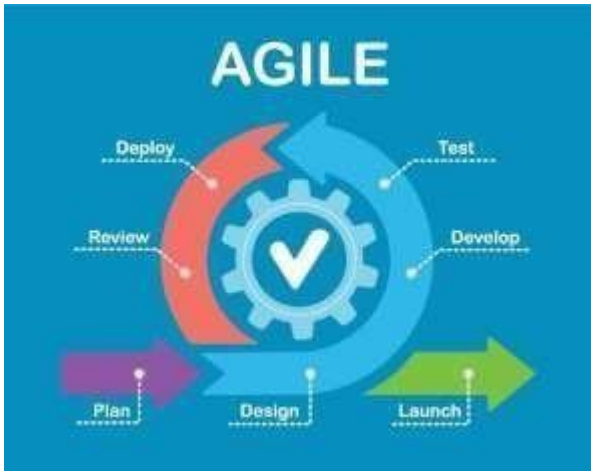
- In past there was Manual checking of participation of students, by this Data might be odds of loosing of every single understudy or there would be some fraudulent activities like proxy attendance by the students to the tutor.
- We can enhance the security of this model by implementing IRIS retina scan for more secure and robust environment. Project Problem Statement.

2 Stakeholder and User Description

Projectname	*"An Opencv based efficient face recoganization approach for automated attendance updation"*			
PROJECT STAKEHOLDER NAME	***SPECIFIC INFORMATION NEEDS***	***PROJECT INTEREST***	***IMPACT ON PROJECT***	***ROLE***
	Types & Frequency of Interest and Consultant,	*Specific Areas of Negative*	*Positive, Collaborator, Participation*	*Decision Maker, communication , Neutral User, Recipient*
TOP MANAGER	*Controlling, Allocation of Resourcesand Organisation*	*Leader and Positive*	*Making FinancialSupport Heads*	*Decision*
PROJECT MANAGER	*Solving the in-hand problems and managing all the Project processes*	*Technical and Business Positive*	*Managers*	*Decision Making and Consultant*
DEVELOPER	*Programming and Design of App and Web*	*Programmer with great Experience and skills*	*Positive*	*Collaborator*
SCHOOLS	*Using our designed Neutral*	*Private and schools*	*User application*	*government*
EDUCATONAL INSTITUTES	*Supplying all the required Students information for our database*	*All big and small institutes*	*Positive*	*Collaborator and User*
EMPLOYEES	*To do the work assigned, and report about bugs and reviews as contributing in team work*	*colleagues and obeying the team leader as well give*	*Co-operate with all the Neutral*	*Collaborator produce outputs*
STUDENTS AND TEACHERS	*Receiver of the end product and the person to be most benefitted using feedbacks*	*To use the system excessively and provide this system*	*Positive*	*User and Recipient*
REVIEWER	*Checking the demand and complaints records and*	*Reviewing all the their management*	*Negative*	*Collaborator*

Process model:

Selection of Methodology: Agile



1. Less prone toerror:

Waterfall relies heavily on initial requirements.However, if these requirements aren't documented precisely, or there was a misunderstanding around the detail of what the customer wanted, it makes things very difficult. Not so with Agile – requirements are checked and confirmed throughout theproject.

2. Moreflexible:

Once a step has been completed in Waterfall, it's difficult to go back and make changes. In contrast, Agile builds a working version of the whole project (an MVP) so the customer can shape how it's built. Seeing a working version early on in the project allows the customer to say 'I like this, but I don't like that', and so shape the product according to their requirements. This is harder to do with Waterfall because the customer has to outline all their preferences upfront, without seeing a workingversion.

3. More predictable endproduct:

With Waterfall, the product is mainly tested at the end of the project. If the customer's needs weren't captured well initially or they have changed since the start of the project, testing may come too late in the cycle to make big adjustments. The customer then has to find extra budget to get the product they now need. With Agile, testing happens regularly through the whole process, so the customer periodically checks that the product is what they envisioned. This also makes it more likely that the project will finish on time, and on budget.

4. More open tochanges/additions

Waterfall isn't geared to take into account a customer's evolving needs. If business processes change during the project Waterfall isn't set up to adapt to this. Often a client feels locked into a project that no longer meets the current business need. In contrast, Agile not only has the ability to adapt to changing needs, but it expects them and plans for them.

5. More customerinvolvement

Agile sees the customer as part of the implementation team and includes them at each part of the process. In contrast, Waterfall tends to spend a lot of time with the customer at the start, trying to document all the perceived requirements. But once this has happened, the implementation team usually takeover.

REQUIREMENTS

SystemRequirements:

ServerEndRequirements:

TheDataissecurelyencryptedinGoogle'sreputedserviceFirebase

UserEndRequirements:

- ConsistentandFastInternetConnectivity
- Mac,windows operating system
- RAMmorethan6GB
- IOSversion15.2+or Android 8+

FunctionalRequirements

- LogInPage
- ViewStudent profile
- ViewAttendance Details/Attendance requirement
- View Academic Details

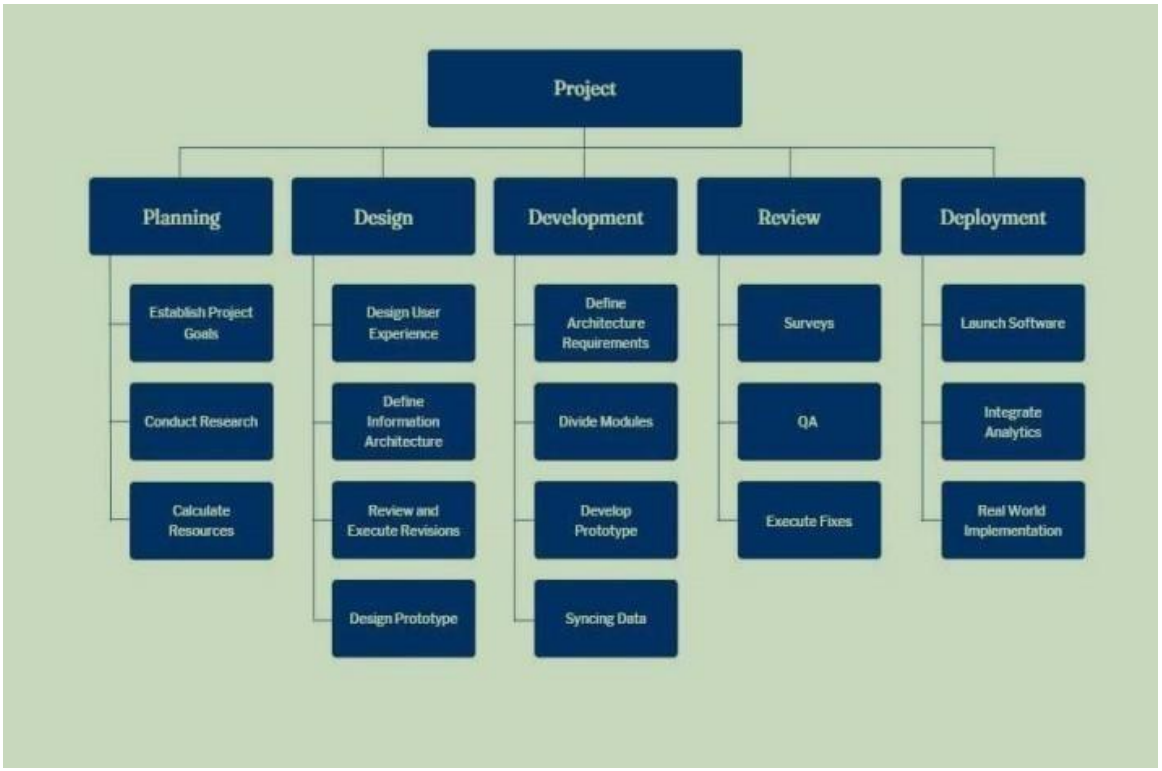
Non-FunctionalRequirements

- Scalability
- Reliability
- Regulatory
- Maintainability
- Serviceability
- Utility
- Security
- Manageability
- Dataintegrity
- Capacity
- Availability
- Usability
- Interoperability

InfrastructureRequirements:

- Pythoninstallation
- ReliableInternetConnection
- 32-Inchmonitororabove
- MacOS12+or Windows xp+
- 100GBofROMStorage
- Installation of SQLite3

PROJECTPLAN



SOFTWARE AND HARDWARE REQUIREMENT FORDEVELOPMENT

- Pythoninstallation
- ReliableInternetConnection
- 32-Inchmonitororabove
- MacOS12+orWindowsxp+
- 100GBofROMStorage
- InstallationofSQLite3

COSTESTIMATION

AcvityDescripon	**Sub-Task**	**Sub-TaskDescripon**	**Effort (inperson)**	**Cost inINR**
FrontEnd	Login-Page	Students andteachers loginthrough usernameand password	2	2000
	Face Scanner	Scanning The Studentorteacherface	2	2000

	User Interface	Exit Page.	2	3000
BackEnd	Recognizin gtheface	Recognizingtheface using open cvlibraryinpython.	3	4500
	UpdangTheData	updang theaendence	2	2000

Effort (hr)	**Cost(INR)**
1	500

Infrastructure/ResourceCost[CapEx]

<OneTimeInfrarequirements>

Infrastructure Requirement	**Qty**	**Cost perqty**	**Costperitem**
Laptops	4	50000	200000
Workers	4	15000	60000

MaintenanceandSupport Cost [OpEx]

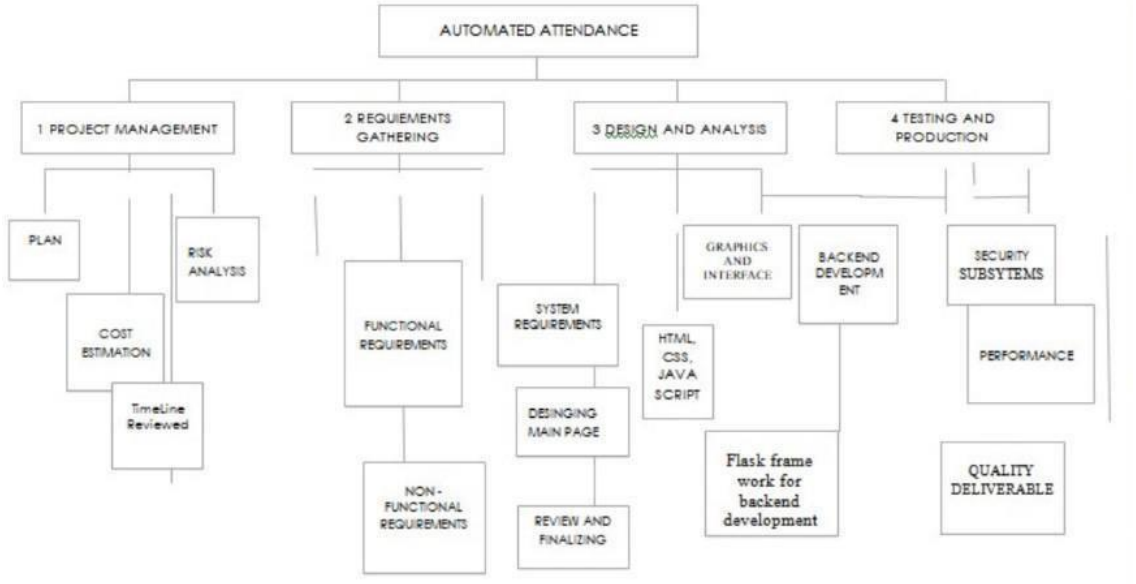
Category	**Details**	**Qty**	**Cost per qty perannum**	**Costperitem**
License	Operang SystemDatabase Middleware IDE	10	10000	100,000
Infrastructures	Server,Storage and Network	20	20000	400,000

JOBDESCRIPTIONANDRESPONSIBILITES

Name	Role	Responsibilies
Karthik	Key Business User (ProductOwner)	Provide clear business and userrequirements
Gunashekar	ProjectManager	Managethe project
Ganesh	BusinessAnalyst	DiscussandDocument Requirements
Harikesh	TechnicalLead	Design theend-to-end architecture
Gunashekar	UX Designer	Designthe userexperience
Harikesh	FrontendDeveloper	Developuserinterface
Karthik	BackendDeveloper	Design, Develop and Unit TestServices/API/DB
Harikesh	Cloud Architect	Design the cost effecve, highlyavailableandscalable architecture
Karthik	CloudOperaons	ProvisionrequiredServices
Gunashekar	Tester	DefineTest Casesand Perform Tesng

5.PROJECT EFFORT BASED ON RESOURCES:

PREPAREWORKBREAKDOWNSTRUCTURE



0.0AutomatedAttendance

1.0ProjectManagement

2.0RequirementsGathering

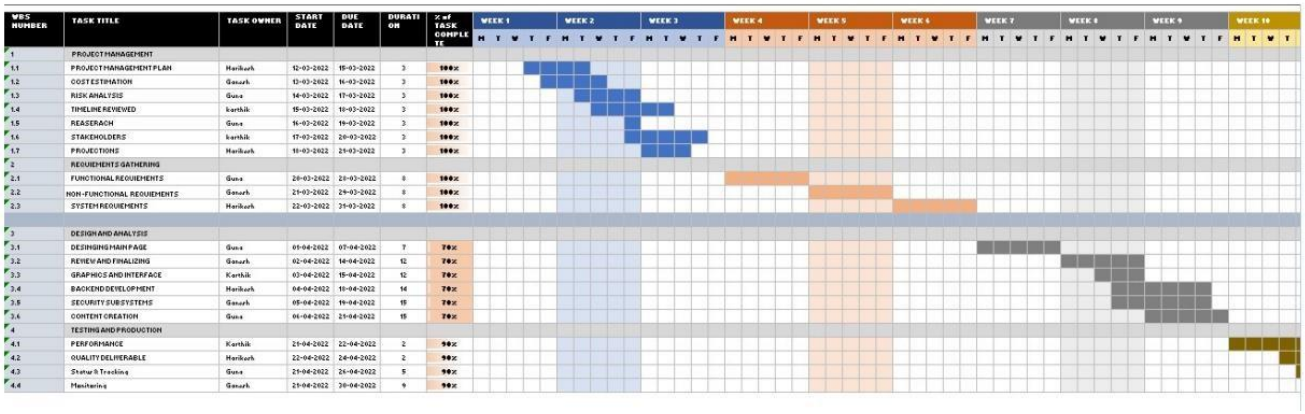
3.0Analysis&Design

TestingAndProduction

- 4.1HTMLDesignand Creation

- 4.2BackendSoftware
  - 4.2.1DatabaseImplementation
  - 4.2.2MiddlewareDevelopment
  - 4.2.3SecuritySubsystems
  - 4.2.4CatLog Engine
  - 4.2.5TransactionProcessing
- 4.3GraphicsandInterface
- 4.4ContentCreation

TIMELINE – GANTT CHART



WBS NUMBER	TASK TITLE	TASK OWNER	START DATE	DUE DATE	DURATION	% of TASK COMPLETE
1	PROJECT MANAGEMENT					
1.1	PROJECT MANAGEMENT PLAN	Harikurh	12-03-2022	15-03-2022	3	100%
1.2	COST ESTIMATION	Gouarh	13-03-2022	16-03-2022	3	100%
1.3	RISK ANALYSIS	Guna	14-03-2022	17-03-2022	3	100%
1.4	TIMELINE REVIEWED	karthik	15-03-2022	18-03-2022	3	100%
1.5	REASERACH	Guna	16-03-2022	19-03-2022	3	100%
1.6	STAKEHOLDERS	karthik	17-03-2022	20-03-2022	3	100%
1.7	PROJECTIONS	Harikurh	18-03-2022	21-03-2022	3	100%
2	REQUIEMENTS GATHERING					
2.1	FUNCTIONAL REQUIEMENTS	Guna	20-03-2022	28-03-2022	8	100%
2.2	NON-FUNCTIONAL REQUIEMENTS	Gouarh	21-03-2022	29-03-2022	8	100%
2.3	SYSTEM REQUIEMENTS	Harikurh	22-03-2022	30-03-2022	8	100%
3	DESIGN AND ANALYSIS					
3.1	DESINGING MAIN PAGE	Guna	01-04-2022	07-04-2022	7	70%
3.2	REVIEW AND FINALIZING	Gouarh	02-04-2022	14-04-2022	12	70%
3.3	GRAPHICS AND INTERFACE	Karthik	03-04-2022	15-04-2022	12	70%
3.4	BACKEND DEVELOPMENT	Harikurh	04-04-2022	18-04-2022	14	70%
3.5	SECURITY SUBSYSTEMS	Gouarh	05-04-2022	19-04-2022	15	70%
3.6	CONTENT CREATION	Guna	01-04-2022	15-04-2022	15	70%
4	TESTING AND PRODUCTION					
4.1	PERFORMANCE	Karthik	21-04-2022	22-04-2022	2	90%
4.2	QUALITY DELIVERABLE	Harikurh	22-04-2022	24-04-2022	2	90%
4.3	Status Tracking	Guna	21-04-2022	26-04-2022	5	90%
4.4	Monitoring	Gouarh	21-04-2022	30-04-2022	9	90%

RISKMANAGEMENT

Risk and Mitigation

Response	Strategy	Examples
Avoid	**Risk avoidance** is a strategy where the project team takes action to remove the threat of the risk or project from impact.	• Avoiding crashing of websites • Avoid taking extra time in completing our assigned schedule
Transfer	**Risk transfer** is a risk management technique in which risk is transferred to a third party.	• Software License • warranty
Mitigate	**Risk mitigation** is a systematic process of organizational risk avoidance, risk control, risk transfer and risk assumption	• Regularly maintaining servers • Regularly clear the schedule without postponing
Accept	**Risk acceptance** is a strategy and it is accepted when it turns out to be the most economical option to do nothing about it.	• audio/video glitch for a few seconds • Couldn't bring library and chatbox at their respective positions as soon as the interface is shown to the user

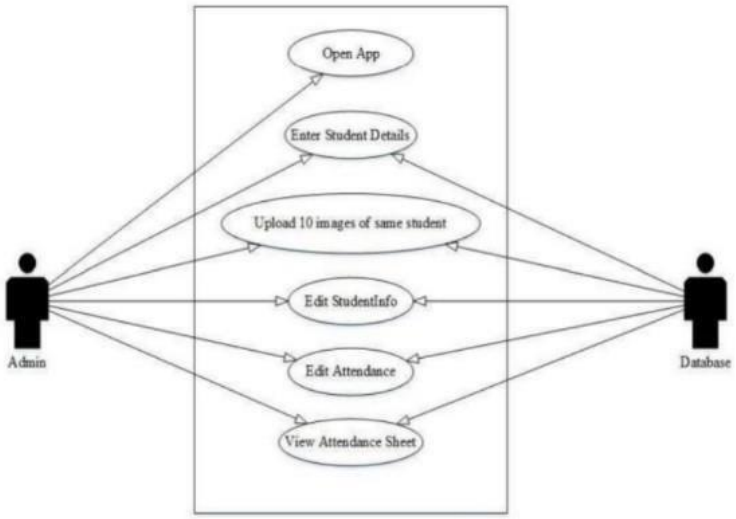
RISKANALYSIS–SWOT&RMMM

Strength	**Weakness**
• Avoid proxy • Efficient • Relevant and unique content • Technology	• Good internet connection is required • Poor Mobile optimization • Loss of data
Opportunities	**Threats**
• New technologies • Good internet signal strength even in rural areas • Internet on mobiles	• New entrants • Security protocols • Server crash • Software piracy

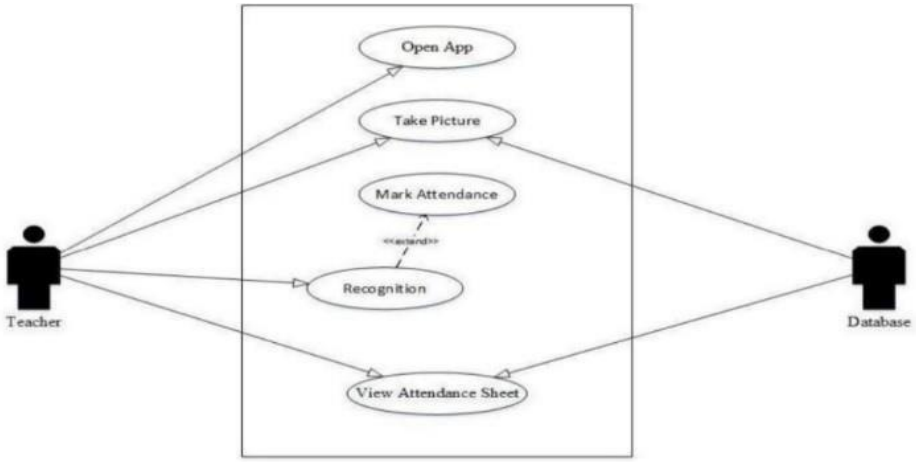
6.Modelling UML Use case Diagram &Capturing USE case Scenarios :

6.1.1USECASEDAIGRAM

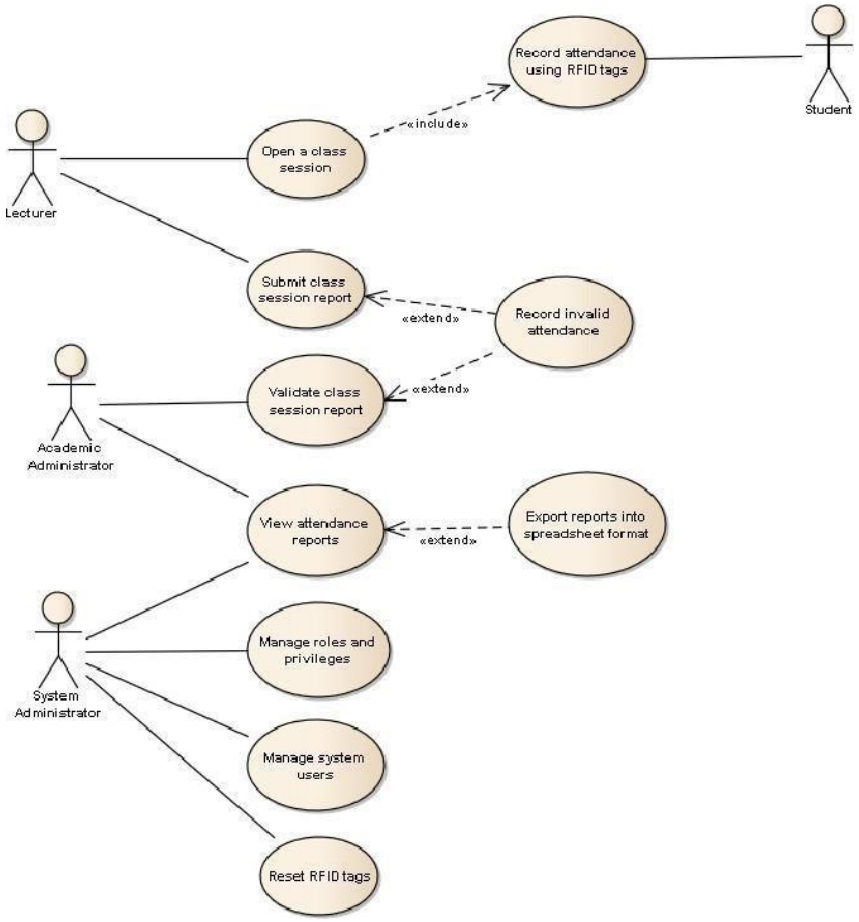
USE CASE DIAGRAM FOR ADMIN:



USE CASE DIAGRAM FOR TEACHER:



IdentifyingActorsandUseCases



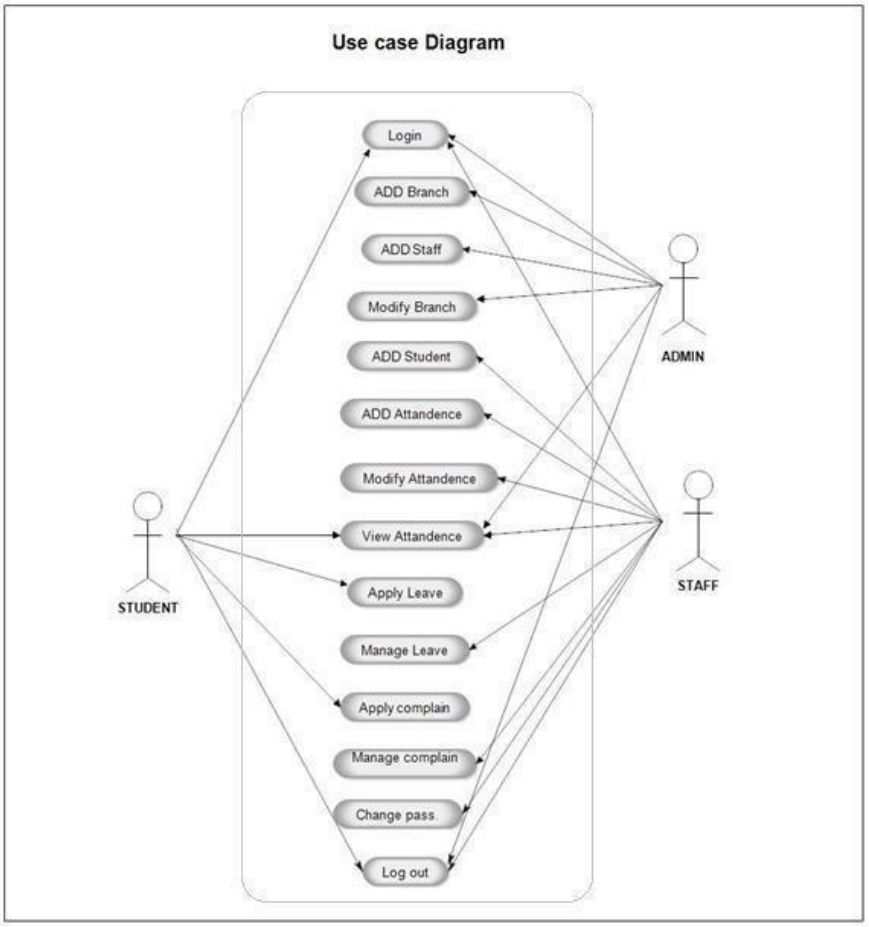
USECASEDESCRIPTION

The use case diagram are usually referred to as behaviour diagram used to describe the actions of alluserinasystem.Alluserdescribe inusecase areactorsandthefunctionalityasactionofsystem.
The Use case diagram is a collection of diagram and text together that make action on goal of aprocess.

Usecasediagramelements:

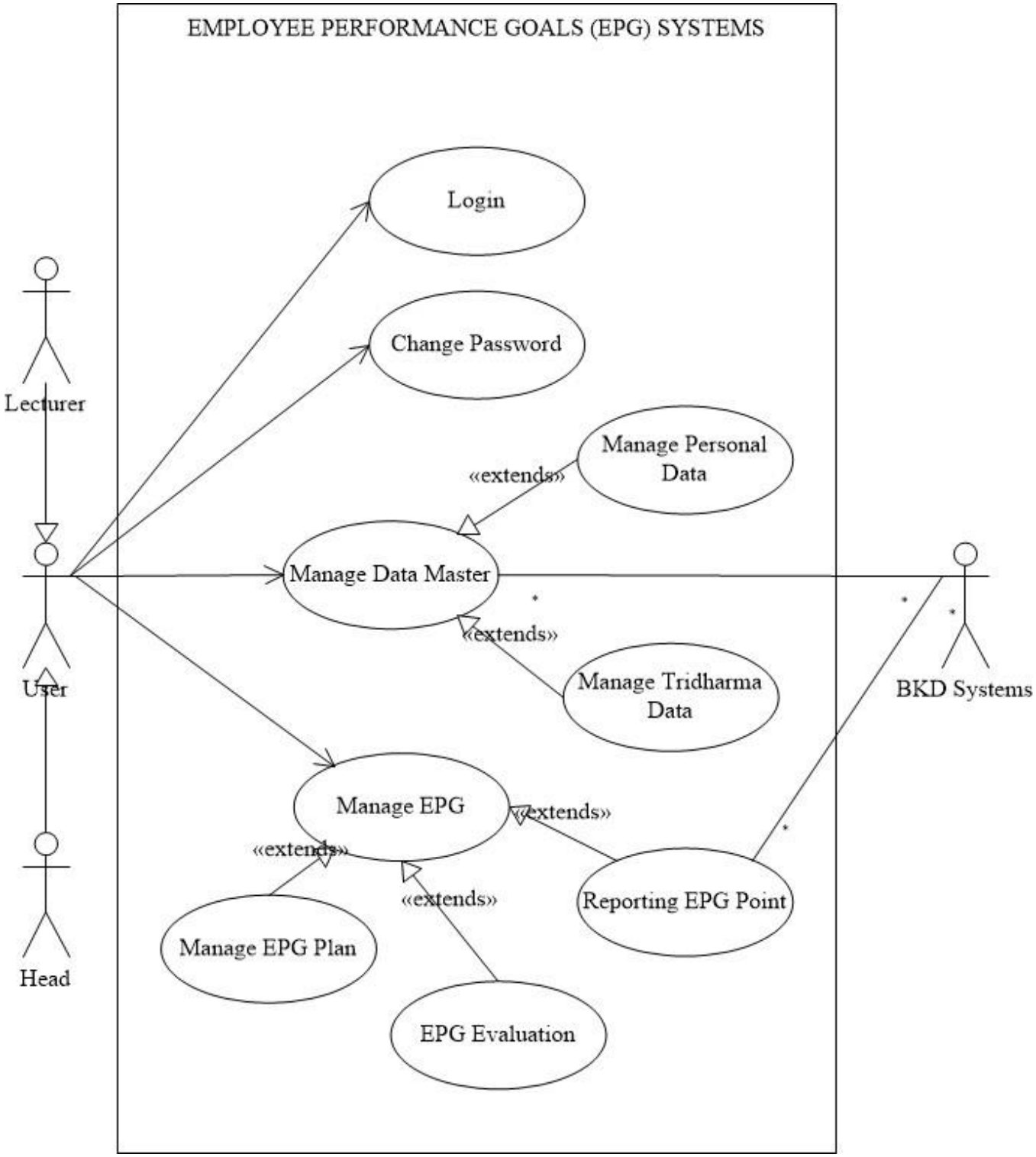
Theusecasediagramconsistofsixgraphicselements thatrepresentwholesystem:

- Systems
- Actors
- Usecases
- Association
- Dependencies
- Generalization



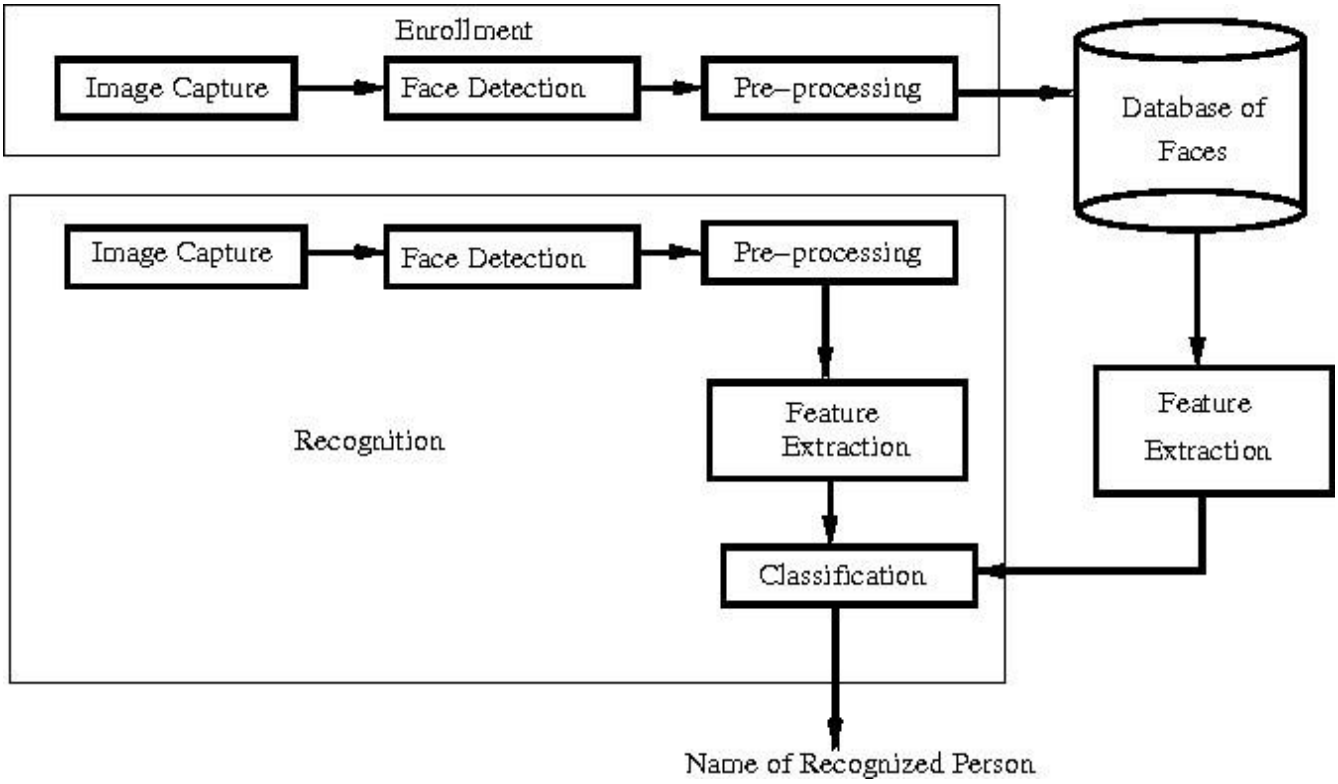
7.Modelling Class Diagram & functioning of classes :

CLASS DIAGRAM



8.Modelling Structural UML Diagrams :

SYSTERM ARCHITECTURE



STATE DAIGRAM

STATE CHART DESCRIPTION

1) STATES:

A) Sign up:

This state goes when user is new to this application. This contains the name,number,gender and age whichhelps in analysis of the user health.

B) Displaying data:

This option is for who is already a user or the signup once . which show the data analysis of the user

C) Data visualization:

This is the basic analysis of data and showing using Graphic user interface . which makes a user to observe andfollow the tip.

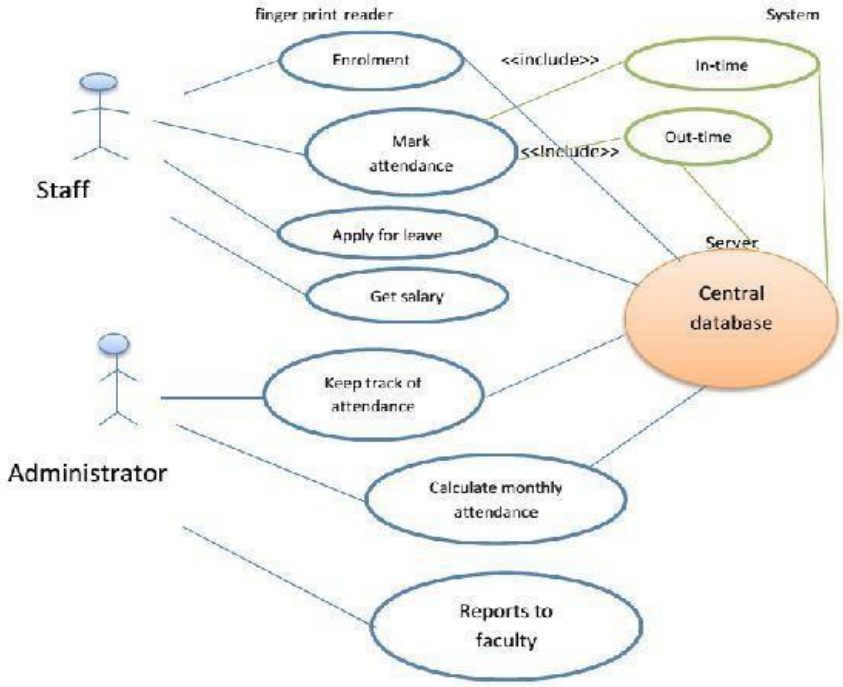
D) Modes:

The heart rates changes according to task we do so according to the user work and stats we can change the mode which increases the accuracy of the analysis.which reduces the errors occurs due to bad rate reading. **E) Calling Emergency number:**

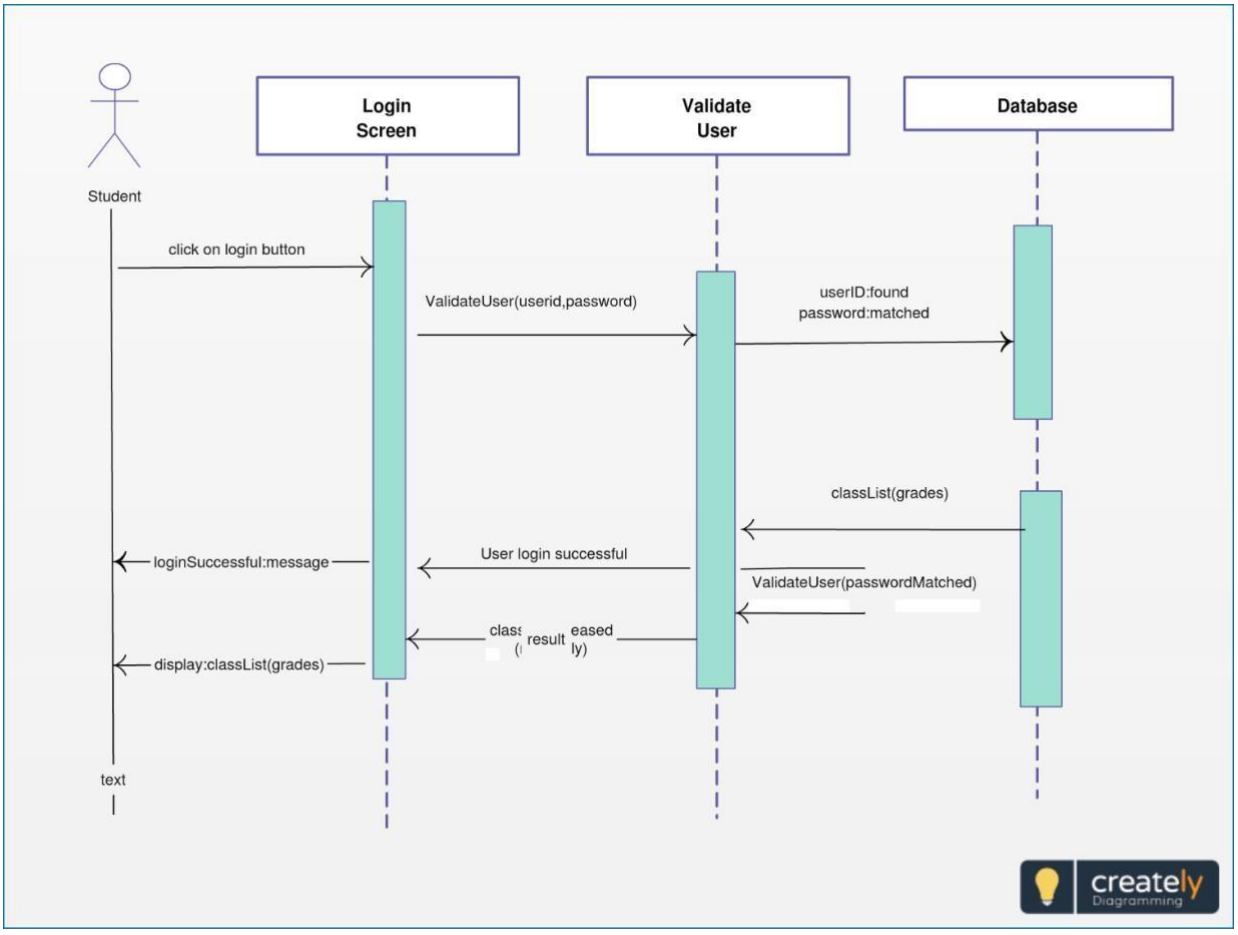
This will enable itself which makes the user not to suffer during emergency which will automatically call the number which can send the help immediately.

2) Transition:

There are only two transition in this application which from start to the sign up and direct data page and other is from the Database to the calling server.



Sequence Diagram



Sequence Diagram Description

1. LIFE LINE:

A) USER

B) DATABASE C) USER1

2. MESSAGE AND TYPES:

A) **Recursive Message:** Recursive mes- sage is a kind of message that represents the invocation of message ofthe same lifeline. It's target points to an activation on top of the activation where the message was invoked from.

B) **Create Message**: A message defines a particular communication between Lifelines of an Interaction and is a kind of message that represents the instantiation of (target) lifeline.

3.DESCRIPTION:

In this after the registration part the database collects the heart rates and analyse according to the results of the analysis it will call for Emergency number and Help the user

9.1.1 Dataflow Diagram :

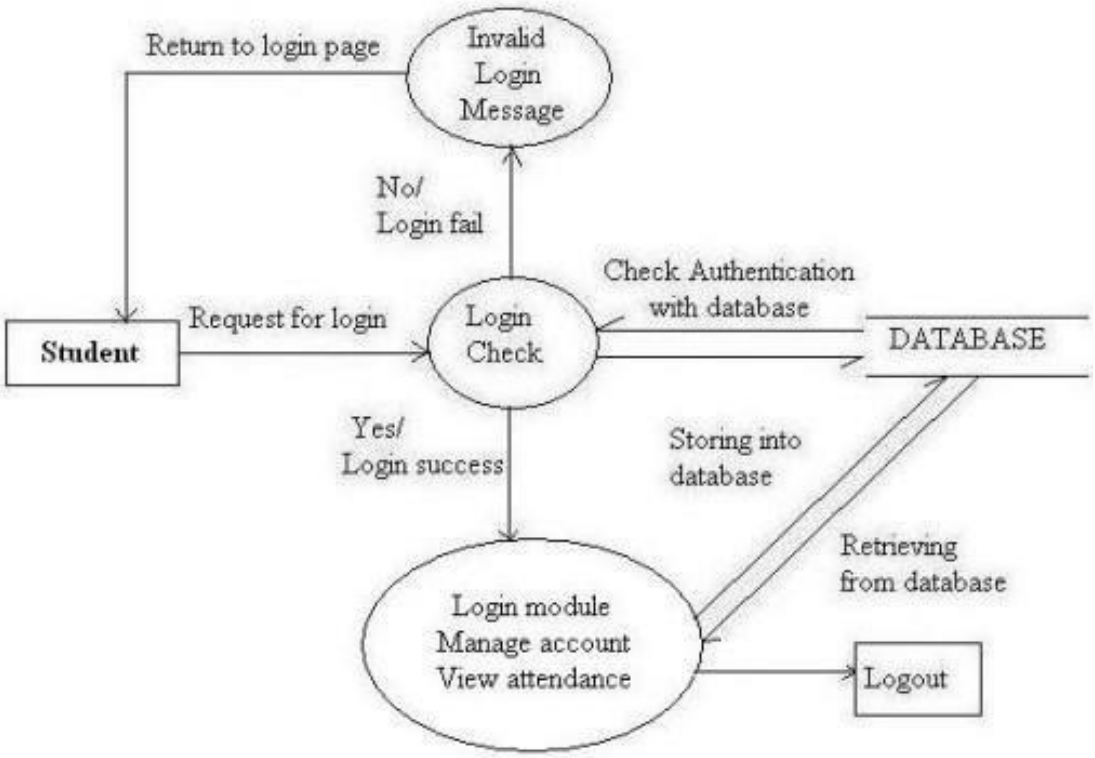
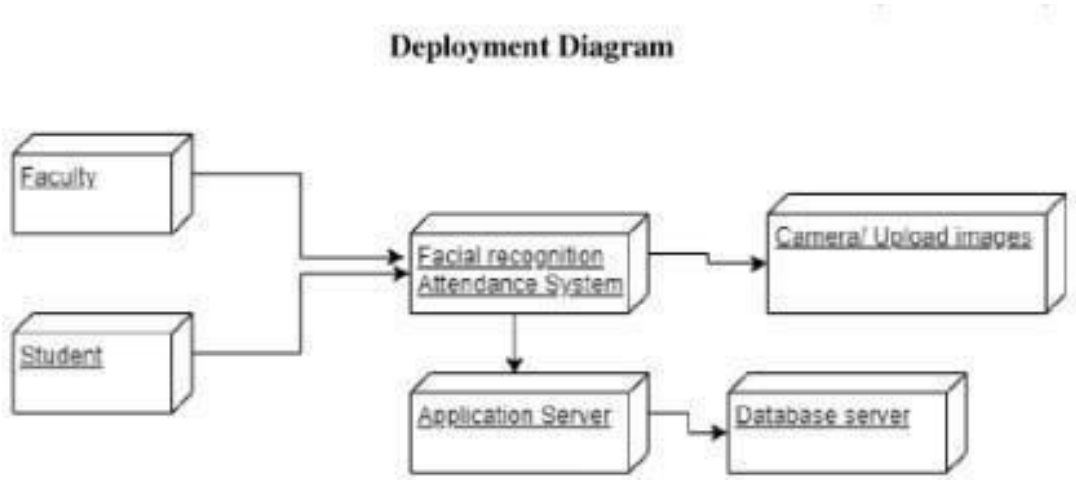


Fig: DFD of Student.

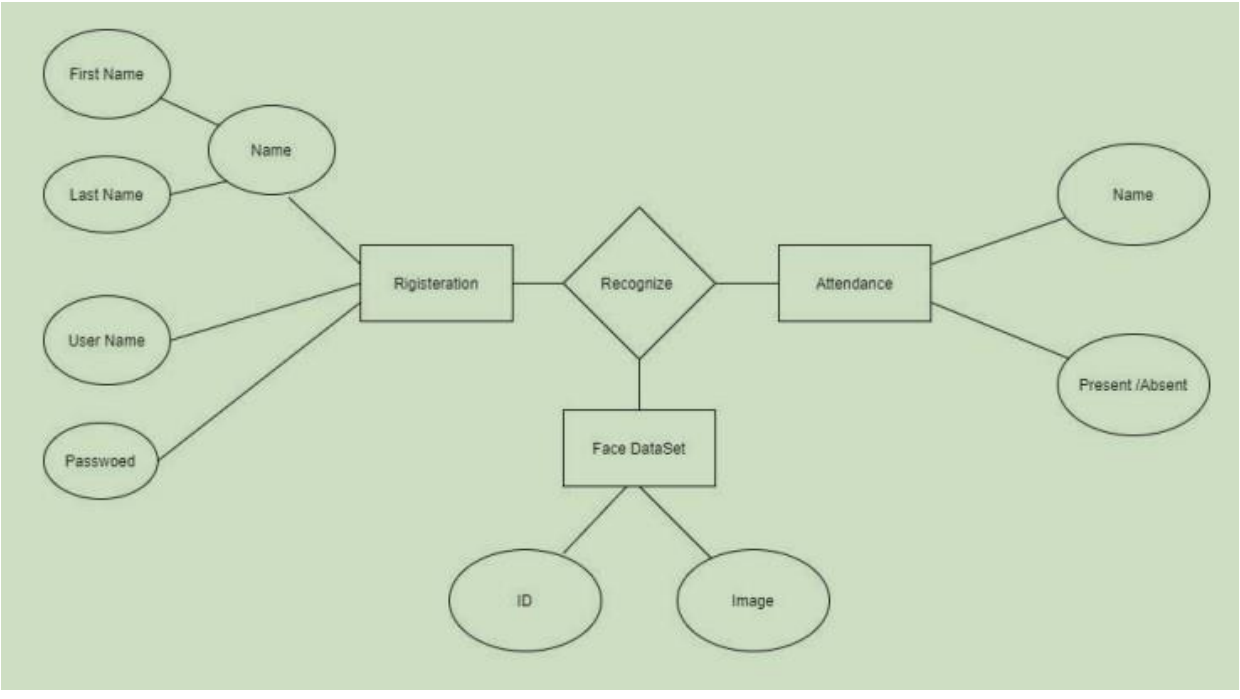
10.1 Deployment Diagram :



Deployment Diagram:

This Diagram shows how the clients/servers are connected tothe Database. Hard-ware or Software Object shown by three Dimensionalbox called Node. Some of examples are Maintenance Server, Web Server, Agents, Application Server etc.

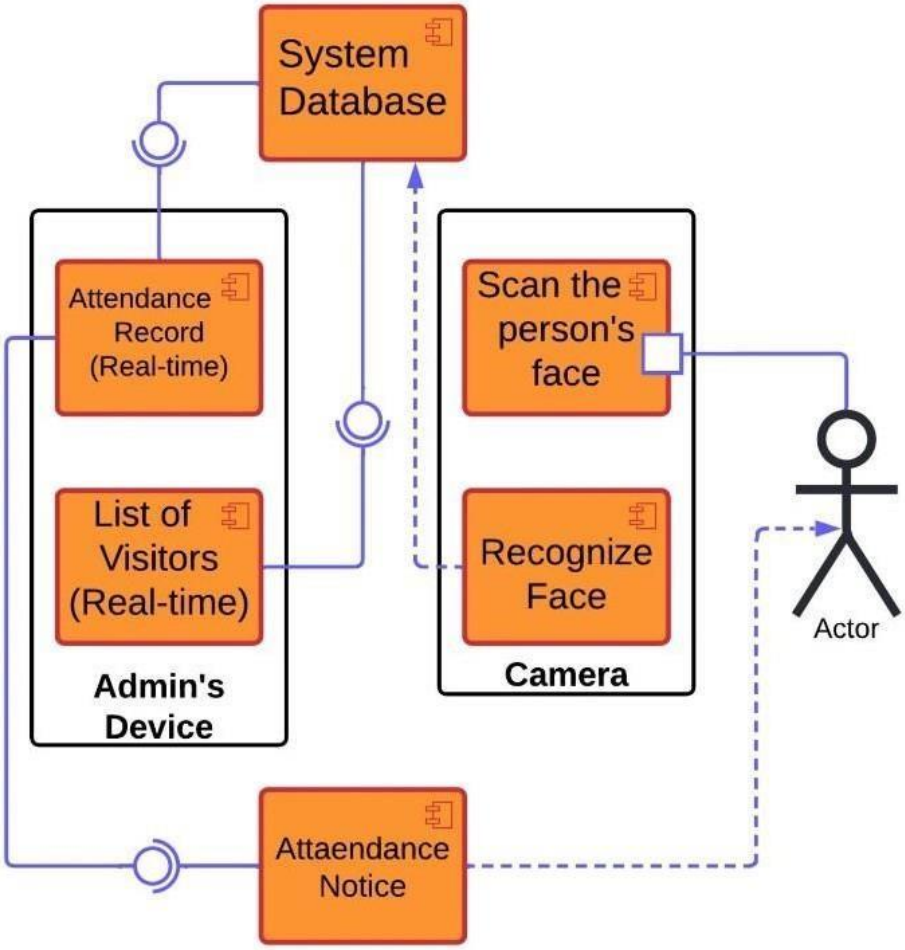
11 Entity- Relationship Diagram :



ER Diagram:

ER diagram stands for Entity Relationship Diagram, also known as ERD is a diagram that displays the relationship of entity sets stored in a database. In other words, ER diagrams help to explain the logical structure of databases. ER diagrams are created based on three basic concepts: entities, attributes and relationships.

12. Component Diagram :



COMPONENT DIAGRAM :

A component diagram, also known as a UML component diagram, describes the organization and wiring of the physical components in a Railway Reservation System.

Component diagrams are often drawn to help model implementation

details and double-check that every aspect of the system's required functions is covered by planned development

13. MODULES

13.1.1 Module & Module Description :

USER MODULE :

- ***· The Login Module is a portal module that allows users to type a user name and password to log in.***
- ***· You can add this module on any module tab to allow users to log in to thesystem.***
- ***· If user hasn't yet registered for this site then the user can Register and Log-in.***

DATA MODULE :

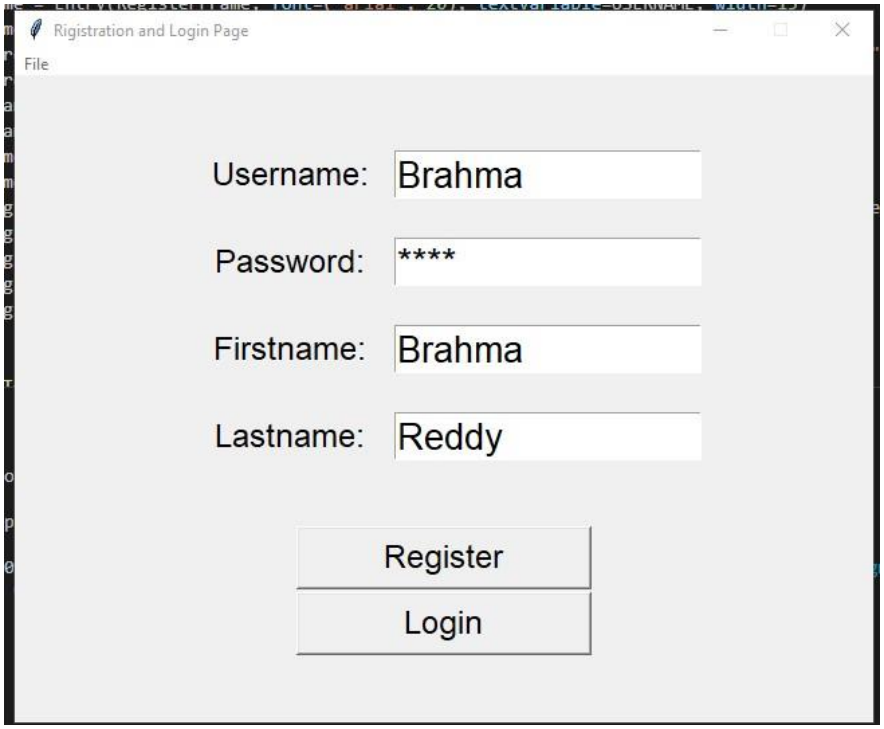
This module contains the data analysis and gives the user tips and the basic output for it.

IMPLEMENTATION:

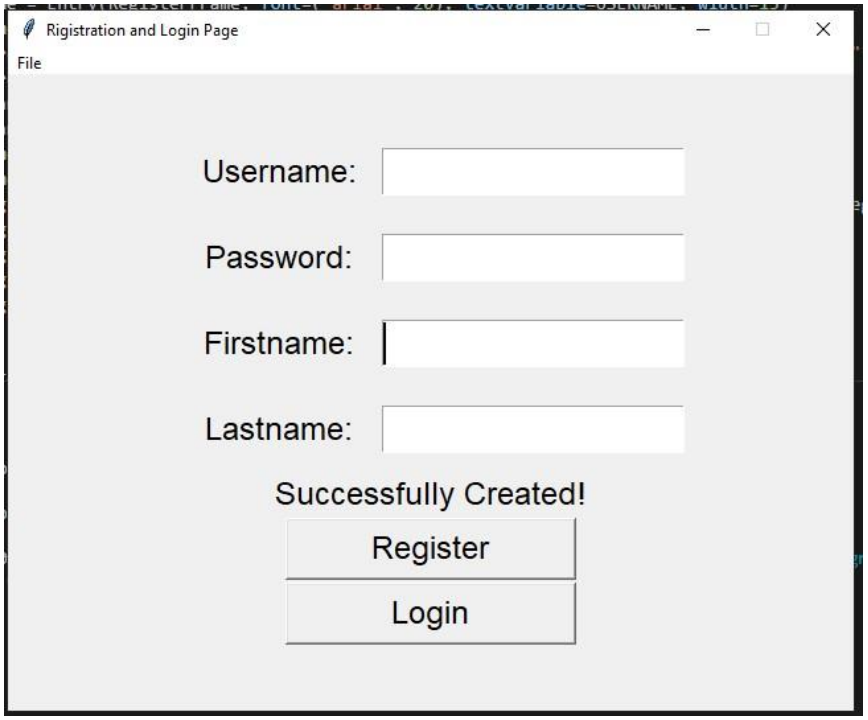
Module Implementation:

HOME PAGE:

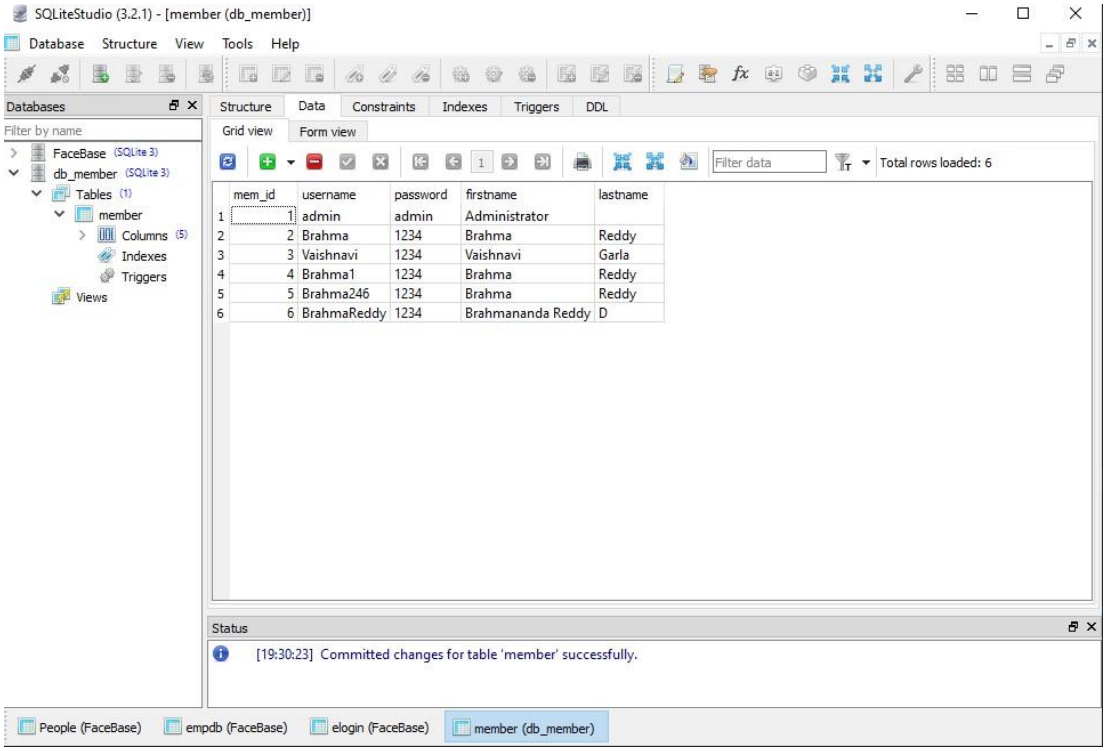
Register Page



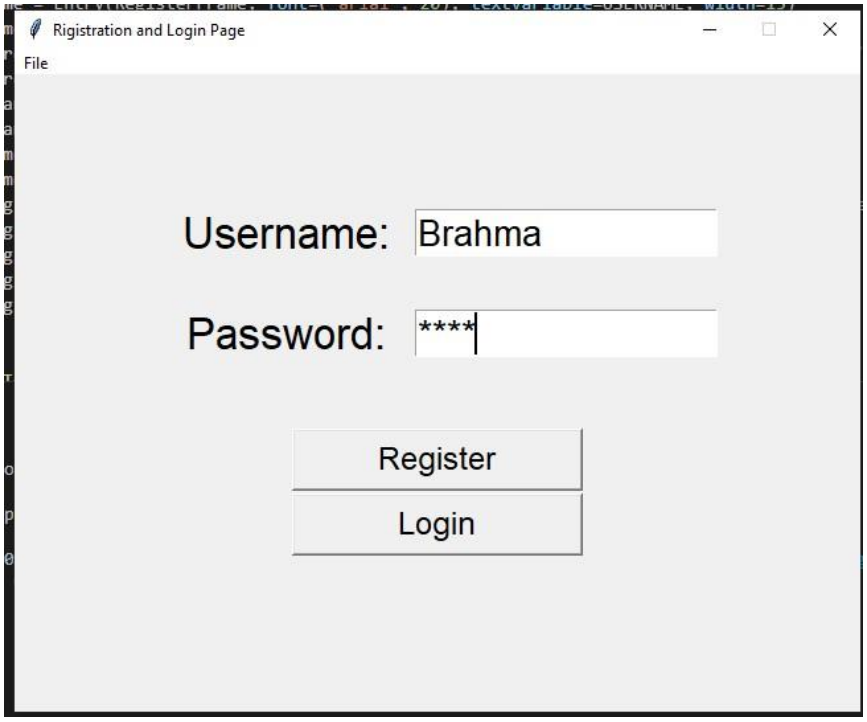
Successfully Created Page



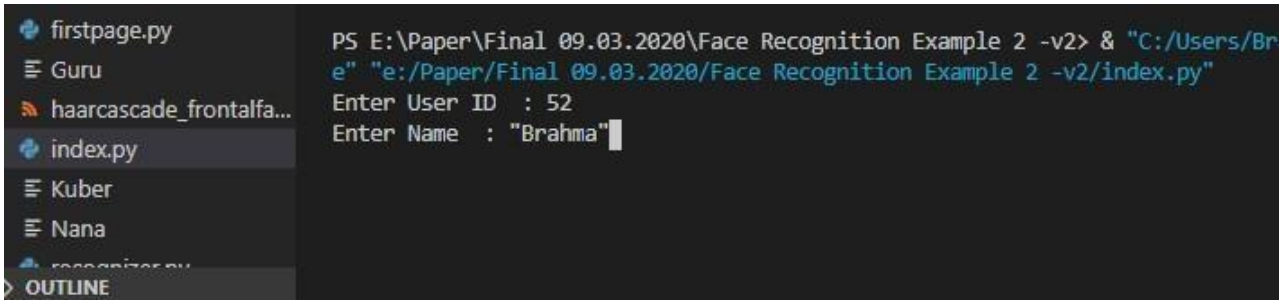
Registered User Details



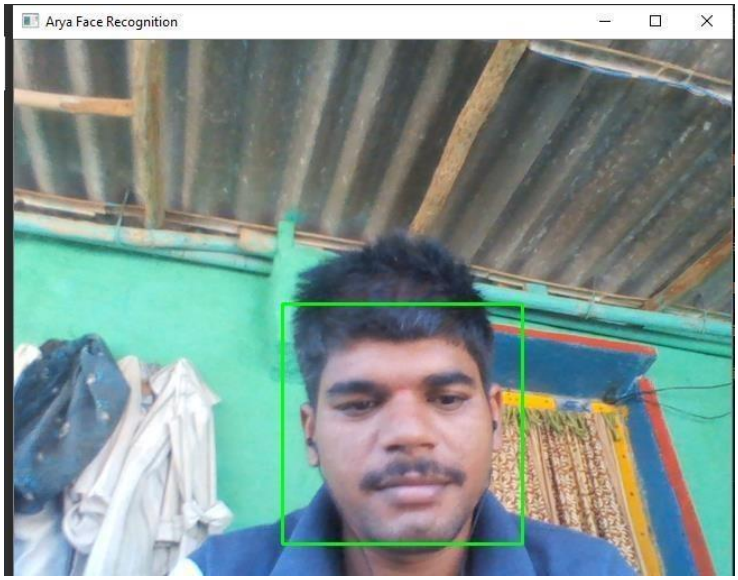
Login Page



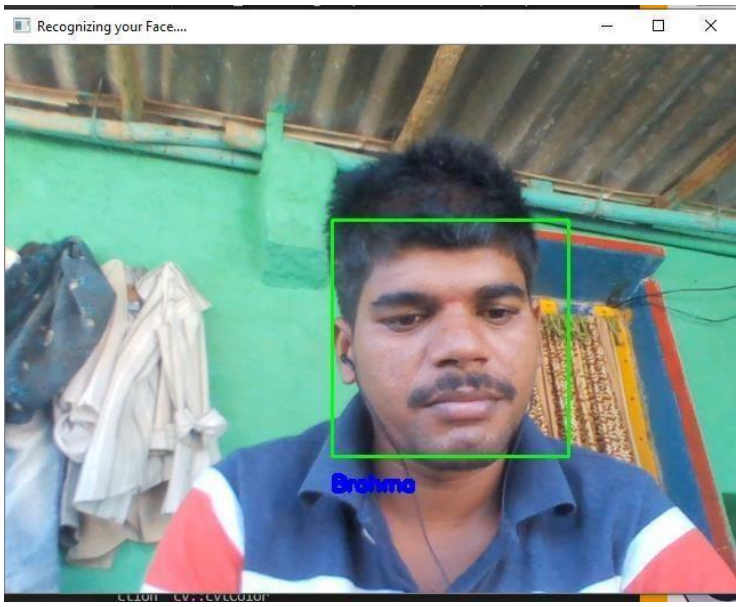
Create Dataset



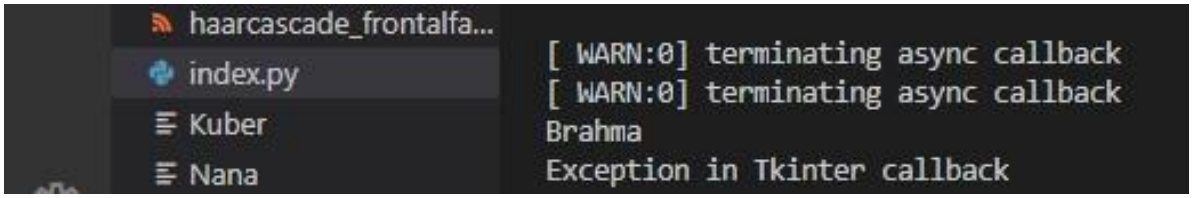
Data Capture



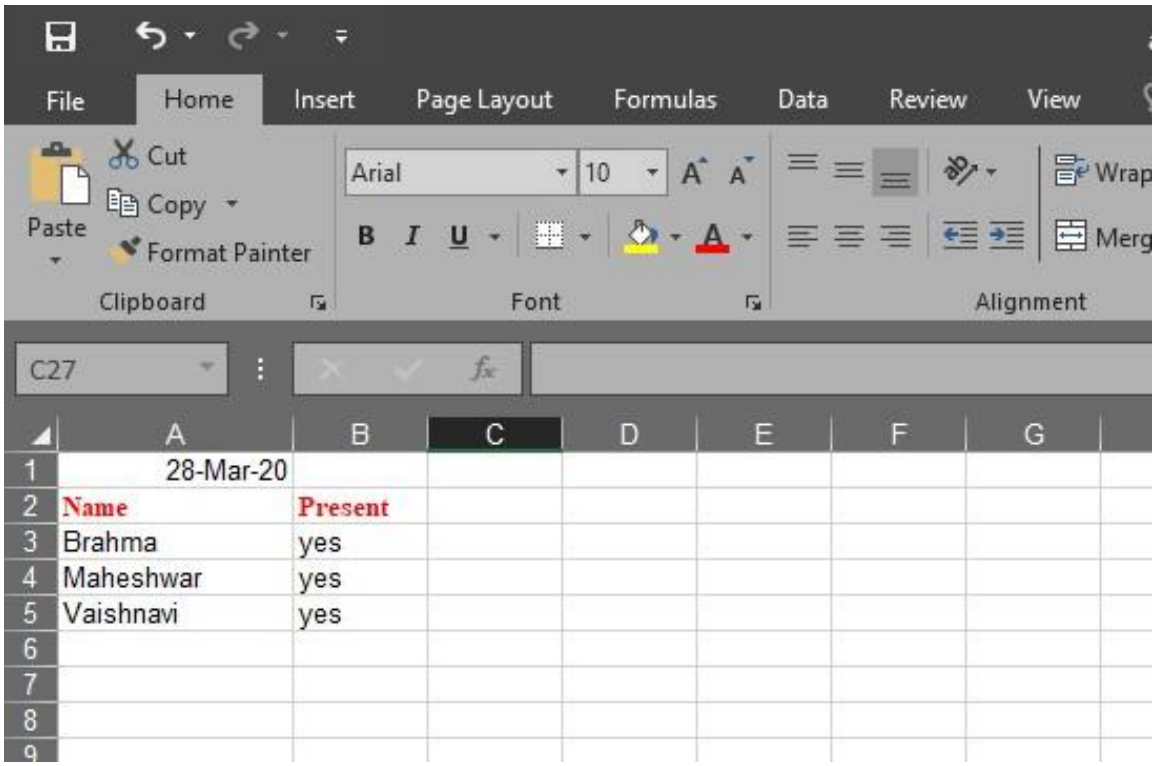
Recognizing Faces



Recognized Photo Name



Attendance Sheet



CODING:

LOGIN PAGE CODE

```
from tkinter import *
import tkinter.messagebox as tkMessageBox
import sqlite3 import os root = Tk()
root.title("Rigistration and Login Page")
'''
def function3():
os.system("py firstpage.py")
'''
width = 640 height = 480 screen_width =
root.winfo_screenwidth() screen_height =
root.winfo_screenheight() x =
(screen_width/2) - (width/2) y =
(screen_height/2) - (height/2)
```

```
root.geometry("%dx%d+%d+%d" % (width, height, x, y)) root.resizable(0,
0)
USERNAME = StringVar()
PASSWORD = StringVar()
FIRSTNAME = StringVar()
LASTNAME = StringVar()
def Database():
global conn, cursor
conn = sqlite3.connect("db_member.db")
cursor = conn.cursor()
cursor.execute("CREATE TABLE IF NOT EXISTS `member` (mem_id INTEGER
PRIMARY KEY
AUTOINCREMENT NOT NULL, username TEXT, password TEXT, firstname
TEXT, lastname TEXT)") def Exit():
result = tkMessageBox.askquestion('System', 'Are you sure you want to exit?',
icon="warning") if result == 'yes': root.destroy() exit() def LoginForm(): global
LoginFrame, lbl_result1
LoginFrame = Frame(root)
LoginFrame.pack(side=TOP, pady=80)
lbl_username = Label(LoginFrame, text="Username:", font=('arial', 25), bd=18)
lbl_username.grid(row=1)
lbl_password = Label(LoginFrame, text="Password:", font=('arial', 25), bd=18)
lbl_password.grid(row=2)
lbl_result1 = Label(LoginFrame, text="", font=('arial', 18))
lbl_result1.grid(row=3, columnspan=2)
username = Entry(LoginFrame, font=('arial', 20), textvariable=USERNAME, width=15)
username.grid(row=1, column=1)
password = Entry(LoginFrame, font=('arial', 20), textvariable=PASSWORD,
width=15, show="*") password.grid(row=2, column=1)
btn_login = Button(LoginFrame, text="Login", font=('arial', 18), width=35,
command=function3)
btn_login.grid(row=4, columnspan=2, pady=5)
lbl_register = Label(LoginFrame, text="Register", fg="Blue", font=('arial', 12))
lbl_register.grid(row=0, sticky=W) lbl_register.bind('<Button-1>',
ToggleToRegister) def RegisterForm(): global RegisterFrame, lbl_result2
RegisterFrame = Frame(root)
RegisterFrame.pack(side=TOP, pady=40)
lbl_username = Label(RegisterFrame, text="Username:", font=('arial', 18), bd=18)
lbl_username.grid(row=1)
lbl_password = Label(RegisterFrame, text="Password:", font=('arial', 18), bd=18)
lbl_password.grid(row=2)
lbl_firstname = Label(RegisterFrame, text="Firstname:", font=('arial', 18), bd=18)
lbl_firstname.grid(row=3)
lbl_lastname = Label(RegisterFrame, text="Lastname:", font=('arial', 18), bd=18)
lbl_lastname.grid(row=4)
lbl_result2 = Label(RegisterFrame, text="", font=('arial', 18))
lbl_result2.grid(row=5, columnspan=2)
username = Entry(RegisterFrame, font=('arial', 20), textvariable=USERNAME,
width=15)
username.grid(row=1, column=1)
```

```
password = Entry(RegisterFrame, font=('arial', 20), textvariable=PASSWORD,
width=15, show="*") password.grid(row=2, column=1)
firstname = Entry(RegisterFrame, font=('arial', 20), textvariable=FIRSTNAME,
width=15)
firstname.grid(row=3, column=1)
lastname = Entry(RegisterFrame, font=('arial', 20), textvariable=LASTNAME,
width=15)
lastname.grid(row=4, column=1)
btn_login = Button(RegisterFrame, text="Register", font=('arial', 18), width=35,
command=Register)
btn_login.grid(row=6, columnspan=2, pady=5)
lbl_login = Label(RegisterFrame, text="Login", fg="Blue", font=('arial',
12)) lbl_login.grid(row=0, sticky=W) lbl_login.bind('<Button-
1>',ToggleToLogin) def ToggleToLogin(event=None):
RegisterFrame.destroy()
LoginForm() def
ToggleToRegister(event=None):
LoginFrame.destroy()
RegisterForm() def
Register():
Database()
if USERNAME.get == "" or PASSWORD.get() == "" or FIRSTNAME.get() == "" or
LASTNAME.get ==
"": lbl_result2.config(text="Please complete the required field!",
fg="orange") else:
cursor.execute("SELECT * FROM `member` WHERE `username` = ?",
(USERNAME.get(),))
if cursor.fetchone() is not None:
lbl_result2.config(text="Username is already taken", fg="red")
else:
cursor.execute("INSERT INTO `member` (username, password, firstname, lastname)
VALUES(?, ?, ?, ?)",
(str(USERNAME.get()), str(PASSWORD.get()), str(FIRSTNAME.get()),
str(LASTNAME.get()))) conn.commit()
USERNAME.set("")
PASSWORD.set("")
FIRSTNAME.set("") LASTNAME.set("")
lbl_result2.config(text="Successfully Created!", fg="black")
cursor.close() conn.close() def function3(): Database() if
USERNAME.get == "" or PASSWORD.get() == "":
lbl_result1.config(text="Please complete the required field!", fg="orange") else:
cursor.execute("SELECT * FROM `member` WHERE `username` = ? and
`password` = ?",
(USERNAME.get(), PASSWORD.get())) if
cursor.fetchone() is not None:
#lbl_result1.config(text="You Successfully Login", fg="blue")
os.system("py firstpage.py") else:
lbl_result1.config(text="Invalid Username or password",
fg="red") LoginForm() menubar = Menu(root) filemenu =
Menu(menubar, tearoff=0) filemenu.add_command(label="Exit",
command=Exit) menubar.add_cascade(label="File",
```

```
menu=filemenu) root.config(menu=menubar) if__name___== '
main_': root.mainloop()
```

GUI PAGE CODE

```
import tkinter
from datetime import datetime from
tkinter import * from tkinter import
messagebox # import module from
tkinter for UI
# 3from tkinter import * import os, cv2 from
tkinter import Tk, Label, Button, N, E, W, S def
function1():
os.system("py dataset_capture.py") def
function2():
os.system("py training_dataset.py") def
function3():
os.system("py recognizer.py") def function4():
os.startfile(os.getcwd() + "/firebase/attendance_files/attendance" +
str(datetime.now().date()) + '.xls') def function5():
os.startfile(os.getcwd() + "/developers/diet1frame1first.html")
def function6(): root.destroy() root = tkinter.Tk()
root.configure(background="orange"
) root.geometry("550x650") #photo1
= PhotoImage(file="1.png") photo2
= PhotoImage(file="2.png") photo3
= PhotoImage(file="3.png") photo4
= PhotoImage(file="4.png") photo5
= PhotoImage(file="5.png") photo6
= PhotoImage(file="6.png") photo7
= PhotoImage(file="7.png")
root.title("AUTOMATIC ATTENDANCE MANAGEMENT USING FACE
RECOGNITION")
root.resizable(0,0)
#btn7 = Button(
#root, image=photo7, command=function1, border=0, text="Create Dataset" #)
#btn7.pack(pady=5)
btn1 = Button(root, image=photo2, command=function1, border=0, text="Create
Dataset") btn1.pack(pady=5)
btn2 = Button(root, image=photo3, command=function2, border=0,
text="Train Dataset") btn2.pack(pady=5)
btn3 = Button(root, image=photo4, command=function3, border=0, text="Recognize
+ Attendance" ) btn3.pack(pady=5)
btn4 = Button(root, image=photo5, command=function4, border=0, text="Attendence
Sheet" )
btn4.pack(pady=5)
btn5 = Button(root, image=photo6, command=function5, border=0, text="About
Developer" ) btn5.pack(pady=5)
btn6 = Button(root, image=photo7, command=function6, border=0, text="Exit" )
btn6.pack(pady=5)
root.mainloop()
```

DATASET CAPTURE PAGE CODE

```
#Dataset Creator
import sqlite3 as sq
import cv2 import
numpy as np
faceDetect = cv2.CascadeClassifier('haarcascade_frontalface_default.xml')
cam = cv2.VideoCapture(0) def insertORUpdate(Id,Name): conn =
sq.connect("FaceBase.db")
cmd = "select * from People where ID="+str(Id) cursor =
conn.execute(cmd) isRecordExist=0 for row in cursor:
isRecordExist = 1 if(isRecordExist==1): cmd = "update People set
Name="+str(Name)+" where ID="+str(Id) else:
cmd = "Insert into People(ID,Name) Values
("+str(Id)+","+str(Name)+")" conn.execute(cmd) conn.commit()
conn.close() id = input('Enter User ID : ') name = input('Enter Name : ')
insertORUpdate(id,name) sampleNum= 0 while (True): ret,img =
cam.read()
grey = cv2.cvtColor(img,cv2.COLOR_BGR2GRAY)
faces = faceDetect.detectMultiScale(grey,1.3,5)
for(x,y,w,h) in faces:
sampleNum = sampleNum+1
cv2.imwrite("dataset/User."+str(id)+"."+ str(sampleNum)+".jpeg",grey[y:y+h,x:x+w])
cv2.rectangle(img,(x,y),(x+w,y+h),(0,255,0),2) cv2.waitKey(100)
cv2.imshow("Arya Face Recognition",img)
cv2.waitKey(1) if sampleNum > 19:
cam.release()
cv2.destroyAllWindows() break
```

CAPTURED IMAGES TRAINING CODE

```
import os import cv2
import numpy as np
from PIL import Image
recognizer = cv2.face.LBPHFaceRecognizer_create()
path='dataset' def getImagesWithID(path):
imagePaths = [os.path.join(path,f) for f in os.listdir(path)]
#print (imagePaths)
faces=[] IDs=[] for imagePath in imagePaths:
faceImg = Image.open(imagePath).convert('L')
faceNp = np.array(faceImg,'uint8')
ID = int(os.path.split(imagePath)[-1].split('.')[1])
faces.append(faceNp) IDs.append(ID)
cv2.imshow("Training ", faceNp)
cv2.waitKey(10) return IDs,
faces
Ids,faces = getImagesWithID(path)
recognizer.train(faces,np.array(Ids))
recognizer.save('recognizer/trainingData.yml')
cv2.destroyAllWindows()
#getImagesWithID(path)
```

IMAGE RECOGNIZER CODE

```
import cv2,os import numpy as np from PIL import
Image import pickle import sqlite3 import time
```

```
recognizer = cv2.face.LBPHFaceRecognizer_create()
recognizer.read('recognizer/trainingData.yml')
faceDetect = cv2.CascadeClassifier('haarcascade_frontalface_default.xml') path
= 'dataset'
masval= "Unknown"
start=time.time()
period=8 def
getProfile(id):
conn = sqlite3.connect("FaceBase.db")
cmd="select * from People where ID="+str(id)
cursor=conn.execute(cmd)
profile = None for
row in cursor:
profile = row conn.close()
return profile
cam = cv2.VideoCapture(0) font =
cv2.FONT_HERSHEY_SIMPLEX
thickness = 2 while
(True):
ret,im = cam.read()
grey = cv2.cvtColor(im,cv2.COLOR_BGR2GRAY) faces =
faceDetect.detectMultiScale(grey,1.3,5) for(x,y,w,h) in faces: id, conf =
recognizer.predict(grey[y:y+h,x:x+w])
cv2.rectangle(im,(x,y),(x+w,y+h),(0,255,0),2) profile=getProfile(id)
if(conf<70): if(profile!=None): cv2.putText(im, str(profile[1]), (x,
y+h+30), font, 0.6,(255,0,0),4)
#cv2.cv.PutText(cv2.cv.fromarray(im),str(profile[1]), (x,y+h),font, 255)
#cv2.cv.PutText(cv2.cv.fromarray(im),str(profile[1]), (x,y+h),font, 255)
masval= profile[1] else:
cv2.rectangle(im,(x,y),(x+w,y+h),(0,0,255),2)#Red
cv2.putText(im,"Unknown",(x,
y+h+30),cv2.FONT_HERSHEY_SIMPLEX,0.6,(0,0,255),2) masval=
"Unknown"
cv2.imshow('Recognizing your Face ...
',im) if time.time()>start+period: break; if
cv2.waitKey(100) & 0xFF == ord('q'):
break; cam.release(); print (masval)
cv2.destroyAllWindows();
```

ATTENDANCE SHEET CODE

```
import firebase_admin; from firebase_admin import credentials; from
firebase_admin import storage; def upload_file(filename):
cred=credentials.Certificate('firebase/Brahma-firebase-Brahma-
j4p7g-
2cab53e953.json');
default_app=firebase_admin.initialize_app(cred,{
'storageBucket': 'Brahma.Brahma.com'
});
bucket=storage.bucket();
uploadBlob = bucket.blob('attendance/'+filename);
#uploadBlob = bucket.get_blob('attendance2018-09-10.xls'); print(uploadBlob);
```

```
uploadBlob.upload_from_filename(filename='firebase/attendance_files/'+filename);
print('file uploaded! ');
```

Test Case:

For Register page

Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Ste :ution ps	Expected Outcome	Actual Outcome	Status	Remarks
01	creating the user name in signup page	length(user name) >35	1. click on the username box 2. Ente r the username	Should not Accept The Username	user name not accepted	Pass	success
02	creating the user name in signup page	length(user name)<3	1 click on the username box 2.Enter the userna me	Should Not accept the username	user name not accepted	pass	success
03	creating the user name in signup page	length(user name)>=3 and length(user name)<36	1.User clicks on the username box 2.Enter the userna me on username box	Should Accept the username	user name accep ted	Pass	success
04	creating the user name in signup page	Only Alphabets in user name	1.User clicks on the username box 2.Enter the userna me on username box	Should Accept the username	user name accep ted	Pass	success

05	creating the user name in signup page	Only Numericals in user name	1. User clicks on the username box 2. Enter the username on username box	Should Accept the username	user name not accepted	Pass	success
06	creating the user name in signup page	Only Special Characters in user name	1. User clicks on the username box 2. Enter the username on username box	Should Not accept the username	user name not accepted	pass	success
06	creating the user name in signup page	Alphanumeric input in user name	1. User clicks on the username box 2. Enter the username on username box	Should Accept the username	user name has accepted	pass	success
07	creating the user name in signup page	Alphanumeric with Special Characters in the user name	1. User clicks on the username box 2. Enter the username on username box	Should Accept the username	user name has accepted	pass	success
08	creating the user name in signup page	Entered Already Existed Username	1. User clicks on the username box 2. Enter the username on username box	Should not Accept the username	user name has not accepted	pass	success

09	Enter the First Name in signup page	Length(first name)<1	1. User clicks on the First name box 2. Enter the First Name on First Name box	Should not accept the First name	user name has not accepted	pass	success
10	Enter the First Name in signup page	Length(first name)>15	1. User clicks on the First name box 2. Enter the First Name on First Name box	Should not accept the First name	user name has not accepted	pass	success
11	Enter the First Name in signup page	Length(first name)>=1 and Length(first name)<=15	1. User clicks on the First name box 2. Enter the First Name on First Name box	Should accept the First name	user name has accepted	pass	success
12	Enter the First Name in signup page	Only Alphabets in first name	1. User clicks on the First name box 2. Enter the First Name on First Name box	Should accept the First name	first name has accepted	pass	success
13	Enter the First Name in signup page	Only Numericals in first name	1. User clicks on the First name box 2. Enter the First Name on First Name box	Should Not accept the First name	first name has not accepted	pass	success

14	Enter the First Name in signup page	Only AlphaNumeric in first name	1. User clicks on the First name box 2. Enter the First Name on First Name box	Should Not accept the First name	first name has not accepted	pass	success
15	Enter the First Name in signup page	Only SpecialCharacters in first name	1. User clicks on the First name box 2. Enter the First Name on First Name box	Should Not accept the First name	first name has not accepted	pass	success
16	Enter the Last Name in signup page	Length<1	1. User clicks on the Last Name box 2. Enter the Last Name on Last Name box	Should not accept the Last name	last name has not accepted	pass	success
17	Enter the Last Name in the signp page	Length>15	1. User clicks on the Last Name box 2. Enter the Last Name on Last Name box	Should not accept the Last name	it has not accepted	pass	success
18	Enter the Last Name	Length>=1 and length<=15	1. User clicks on the Last Name box 2. Enter the Last Name on Last Name box	Should accept the Last name	it has accepted	pass	success

19	Enter the Last Name	Only Alphabets	1. User clicks on the First name box 2. Enter the Last Name on Last Name box	Should accept the Last name	it has accepted	pass	success
20	Enter the Last Name	Only Numericals	1. User clicks on the Last name box 2. Enter the Last Name on Last Name box	Should Not accept the Last name	it has not accepted	pass	success
21	Enter the Last Name	Only AlphaNumeric	1. User clicks on the Last name box 2. Enter the Last Name on Last Name box	Should Not accept the Last name	it has not accepted	pass	success
22	Enter the Last Name	Only SpecialCharacters	1. User clicks on the Last name box 2. Enter the Last Name on Last Name box	Should Not accept the Last name	it has not accepted	pass	success
23	Enter the email Id	Length>3 and Length<=320	1.User clicks on the email Id box 2.Enter the email Id on mail Id box	should Accept the Mail Id	It has accepted	pass	success
24	Enter the email Id	email Id with out @domain name	1.User clicks on the email Id box 2.Enter the email Id on mail Id box	should not Accept the Mail Id	It has not accepted	pass	success

25	Enter the email Id	email Id with @domain name	1.User clicks on the email Id box 2.Enter the email Id on mail Id box	should Accept the Mail Id	It has accepted	pass	success
26	Enter the phone number	length=10	1. User clicks on the Phone No box 2. Enter the Phone No on phone no box	Should Accept th Phone No	It has accepted the phone No	pass	success
27	Enter the phone number	Only numeric	1. User clicks on the Phone No box 2. Enter the Phone No on phone no box	Should Accept th Phone No	It has accepted the phone No	pass	success
28	Enter the phone number	Only Alphabets	1. User clicks on the Phone No box 2. Enter the Phone No on phone no box	Should Not Accept th Phone No	It has Not accepted the phone No	pass	success
29	Enter the phone number	AlphaNumeric	1. User clicks on the Phone No box 2. Enter the Phone No on phone no box	Should Not Accept th Phone No	It has Not accepted the phone No	pass	success
30	Enter the gender	Selecting from the options	1.User clicks on the gender box 2.User selects the gender on gender box	Should Accept the gender	It has t accepted the phone No	pass	success

31	Enter The Password	length<6	1. User clicks on the Password box 2. Enter the password o n Password box	Should Not Accept the password	it has not accepted the password	pass	success
32	Enter The password	length>100	1. User clicks on the Password box 2. Enter the password o n Password box	Should Not accept the password	It has not accepted the password	pass	success
33	Enter The password	length>=6 and length<=100	1. User clicks on the Password box 2. Enter the password o n Password box	Should Accept the password	should accept the password	pass	success
34	Enter The password	Only Alphabets	1. User clicks on the Password box 2. Enter the password o n Password box	Should Not accept the password	It has not accepted the password	pass	success
35	Enter The password	Only Numericals	1. User clicks on the Password box 2. Enter the password o n Password box	Should Not accept the password	It has not accepted the password	pass	success

36	Enter The password	Only Special Characters	1. User clicks on the Password box 2. Enter the password o n the Password box	Should Not accept the password	It has not accepted the password	pass	succes s

37	Enter The password	Only Alphanumeric	1. User clicks on the Password box 2. Enter the password on the Password box	Should Not accept the password	It has not accepted the password	pass	succes s
38	Enter The password	Alphanumeric With special Characters	1. The user clicks on the Password box 2. Enter the passwor d on the Password box	Should Not accept the password	It has not accepted the password	pass	succes s
39	Enter the password	Entering the password	1. The user clicks on the Password box 2. Enter the passwor d on the Password box	the entered should be shown in star characters	the password is shown in star characters	pass	succes s
40	Enter the Confir m Passwo rd	Different password	1. The user clicks on the Confirm Password box 2. Enter the Differen t password on the Confirm Password box	Should show the ‘try again’ password	It has not accepted the password	pass	succes s

41	Enter the Confir m Passwo rd	Same password	1. The user clicks on Confi rm Password box 2. Enter the Differen t password on the	Should accept the password	It has accepte d the password	pass	succes s
			Confirm Password box				
39	Enter the Confir m passwo rd	Entering the same password	1. The user clicks on the Password box 2. Enter the passwor d on the Password box	the entered should be shown in star characters	the password is shown in star characters	pass	succes s
41	Select the create accoun t option	Some boxes are not filled	1. The user will select the create option	Should not create an account	It has not created an account	pass	succes s
42	Select the create accoun t option	All boxes are filled	1. The user will select the create option	Should create an account	it has created an account	pass	succes s

Non-Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1	To see the password	show password option box	select the show password box	It should show the password	It has shown the password	pass	success

2	want to change to dark mode	change to the dark mode	select the dark mode icon	It should change to the dark mode	it has changed to dark mode	Pass	success
3	want to change to lightmode	change to the light mode	select the light mode button	it should change to the lighmode	it has changed to light mode	pass	success

For Login page

Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
01	Entering the Username in login page	enter the username	1. User Clicks the username box 2. Enter the username in the username box	Should Accept The Username	It has accepted	Pass	success
02	Enter the username	If the entered username is not in the database	1. User clicks on the username box 2. Enter the username in username box	Should Not accept the username and show'Invalid Username'	It has not accepted and shown 'invalid username'	pass	success
03	Enter The Password	Entered Correct password	1.User clicks on the Password box 2.Enter the password on Password box	Should Accept the password	it has accepted the password	pass	success
04	Enter The password	Entered the incorrect password	1.User clicks on the Password box 2.Enter the password on Password box	Should Not accept the password and should show 'invalid password'	It has not accepted the password and shown 'Invalid password	pass	success

05	To go to next page	Clicks on login button	1.User clicks on the login button	Should go to next page	goes to next page	pass	success

Non-Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1	To see the password	show password option box	select the show password box	It should show the password	It has shown the password	pass	success
2	want to change to dark mode	change to dark mode	select the dark mode icon	It should change to dark mode	it has changed to dark mode	Pass	success
3	want to change to light mode	change to light mode	select the light mode button	it should change to light mode	it has changed to light mode	pass	success
4.	Forgot password	wants to change the password	select the forgot password option	It goes to forgot password page	it went to forgot password page	Pass	success
5.	Forgot username	To know the username	Select the forgot username option	It goes to forgot username page	went to forgot username page	Pass	success
6.	Create account	Wants to create an account	Select the create account option	it goes to the signup page	it went to the signup page	pass	success
7.	Privacy	Wants to see privacy details	Select the privacy details option	It shows privacy details	it has shown privacy details	pass	success
8.	Terms	Want to see the terms	Select the terms option	It shows the terms	It has shown terms	Pass	success
9.	Help	Wants to goto to help page	Select the help option	It goes to help page	It went to help page	Pass	success

For Face Detection Page

Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1	Recognition of Student face	if noise in student face >10%	1.student needs to stand in front of camera 2.face detection process will start taking place	Error message should appear	error message has appeared	Pass	success
2	Recognition of student face	if noise in student face <5%	1. student needs to stand in front of camera 2.face detection process will start taking place	the student should be taken to the next step of process	student has been taken to the next step	Pass	success
3	Recognition of student face	if noise in student face is between 5%-10%	1.voter needs to stand in front of camera 2.face detection process will start taking place	the voter should be taken to the next step of process	Voter has been taken to the next step	Pass	success
4	Recognition of voters face	If multiple objects detected in the background	1. student needs to stand in front of camera 2.face detection process will start taking	Error message should appear	error message has appeared	Pass	success

			place				

5	Recognition of student face	if no multiple objects detected in the background	1. student needs to stand in front of camera 2.face detection process will start taking place	the student should be taken to the next step of process	student has been taken to the next step	Pass	success
6	Recognition of student face	if student face is not oriented properly	1. student needs to stand in front of camera 2.face detection process will start taking place	Error message should appear	error message has appeared	Pass	success
7	Recognition of student face	if student face is oriented properly	1. student needs to stand in front of camera 2.face detection process will start taking place	the student face should be taken to the next step of process	student has been taken to the next step	Pass	success
8	Recognition of student face	if student complete face is captured properly	1. student needs to stand in front of camera 2.face detection process will start taking place	the student face should be taken to the next step of process	student has been taken to the next step	Pass	success
9	Recognition of student face	if student complete face is partially captured	1. student face needs to stand in front of camera 2.face	Error message should appear	error message has appeared	Pass	success

			detection process will start taking place				
10	Recognition of student face	if student face is not captured	1. student needs to stand in front of camera 2.face detection process will start taking place	Error message should appear	error message has appeared	Pass	success

Non- Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
	The software should be able to detect the facial landmarks and the background must be ignored.	Background is detected.	1.studentneeds to stand in front of camera 2.face detection process will start taking place	Error message should appear	error message has appeared	Pass	success
2.	The software should be able to detect the facial landmarks and the	Face is detected.	1.studentneeds to stand in front of camera 2.face detection process will start taking	Error message should appear	error message has appeared	Pass	success

	backgroun d must be ignored.		place.				

3.	The system accuracy of the model is over 90%.	Accuracy 90 percent.	1. student needs to stand in front of camera 2. face detection process will start taking place.	The next process to proceed.	The next process to proceed.	Pass	success
4.	The output response operation must be fast and under 5 seconds per person.	time taken>5	1. student needs to stand in front of camera 2. face detection process will start taking place	Error message should appear	error message has appeare d	Pass	success
5.	The output response operation must be fast and under 5 seconds per person.	time taken<=5	1. studentneed s to stand in front of camera 2. face detection process will start taking place	Error message should appear	error message has appeare d	Pass	success

EFFORTS AND RESOURCES

Website development process

Conclusion:

To over come these issues we have developed this website.

The development process for this website is characterized bythe efforts made by whole team and It also requires lots hardware and software infrastructures. The hardware may include PC with core i7processor, 16 GB RAM and Graph - icCard at least MX150, and software like HTML,CSS ,JAVA- SCRIPT Etc.

The integration effort Comprises not only the design and realizationof interfaces, but also test of those interfaces. Themore complex the subsystem

are, the more-effort is requiredfor the interface test sincethe necessary test drivers stubs should be equally complex.

RESOURCES

Wikipedia:For Several references on various topics.
GeeksForGeeks:For learning technical Concepts.W3Schools For Diagram and related things. Engineering for Change