Appendix C. User's Manual

User's Manual

Nurturing the microcontroller

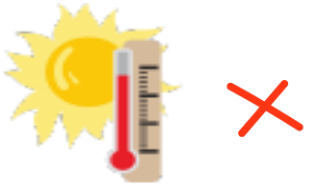
1. Power Supply of the Device

Use a power supply that produces 3A and 5V on the Raspberry Pi 4B; any power supply that doesn't meet the demand will result in the ruin of the microcontroller. Use a type C USB connector.

Perfect Power Supply for the Raspberry Pi 4B

2. Temperature of the Environment.

Don't put the raspberry pi 4 in a place that has a temperature of more than 70 degrees. Make sure to keep it cool at all times.



70 Degree Celsius

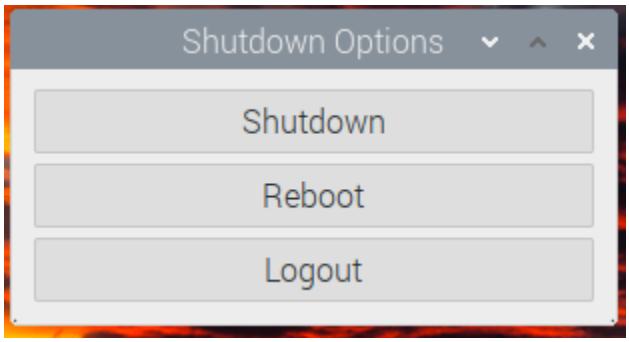
< 70 Degree Celsius

3. Avoidance on metals and conductive.

Don’t place it on top of any metal surface or any conductive materials because it can cause electrical shorts or interfere with the operation of the board.

4. Shut down appropriately.

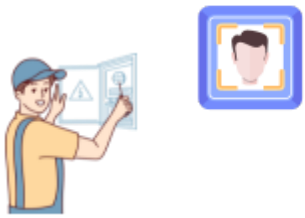
Properly shut it down: Always shut down the Raspberry Pi 4 properly before disconnecting power. This helps prevent corruption of the SD card and other data loss issues.



Before powering it on

1. Wirings and Peripherals Connection.

Check connections: Check all the connections to the Raspberry Pi 4, including the HDMI cable, power cable, and any other peripherals, to ensure they are properly connected.



2. Wi-Fi and Ethernet Connection.

Connect to the network: If a user plans to connect to a network, make sure that the Ethernet cable or WiFi dongle is properly connected.

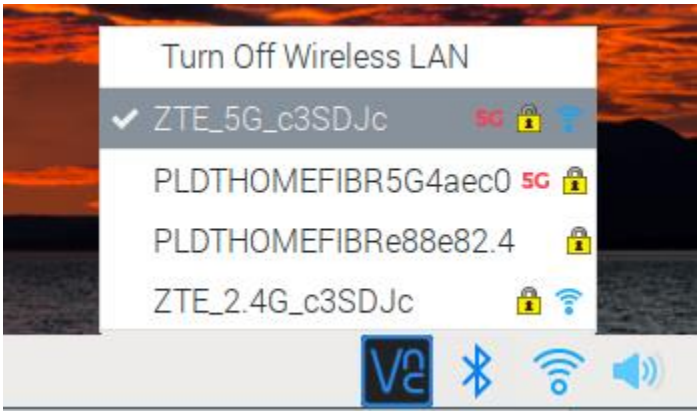
Connected to Wi-Fi

Not Yet Connected to any Wi-Fi

To connect the Raspberry Pi 4B in Wi-Fi

Click what the arrow sign is pointing out.

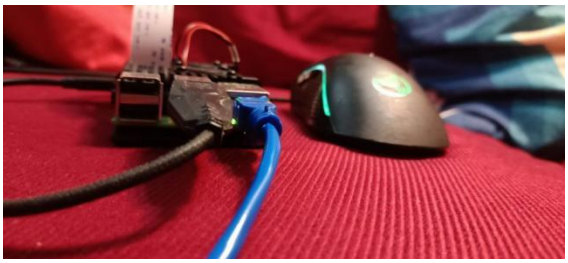
After Clicking it, Click the “Turn On Wireless LAN”



Choose the preferred Wi-Fi connection.

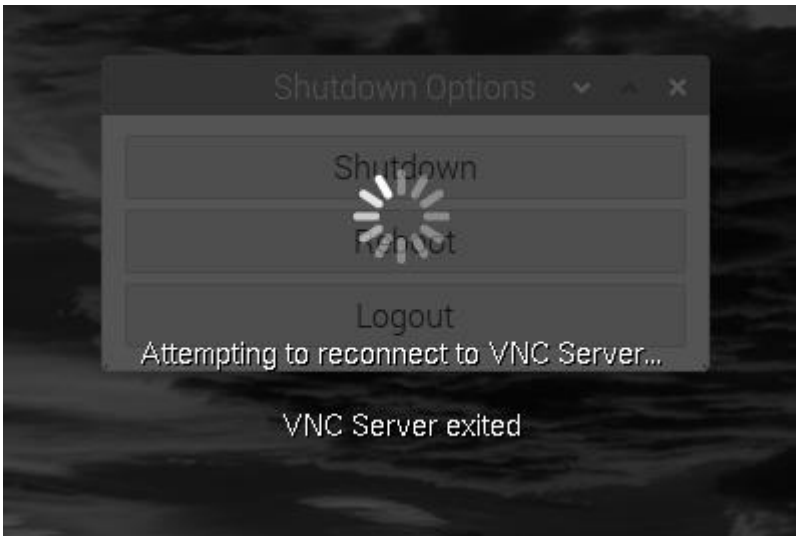
3. Optional: Adding peripherals on Raspberry Pi 4B

If a user wants to add connections like a mouse, keyboard, etc., make sure that they are connected properly.



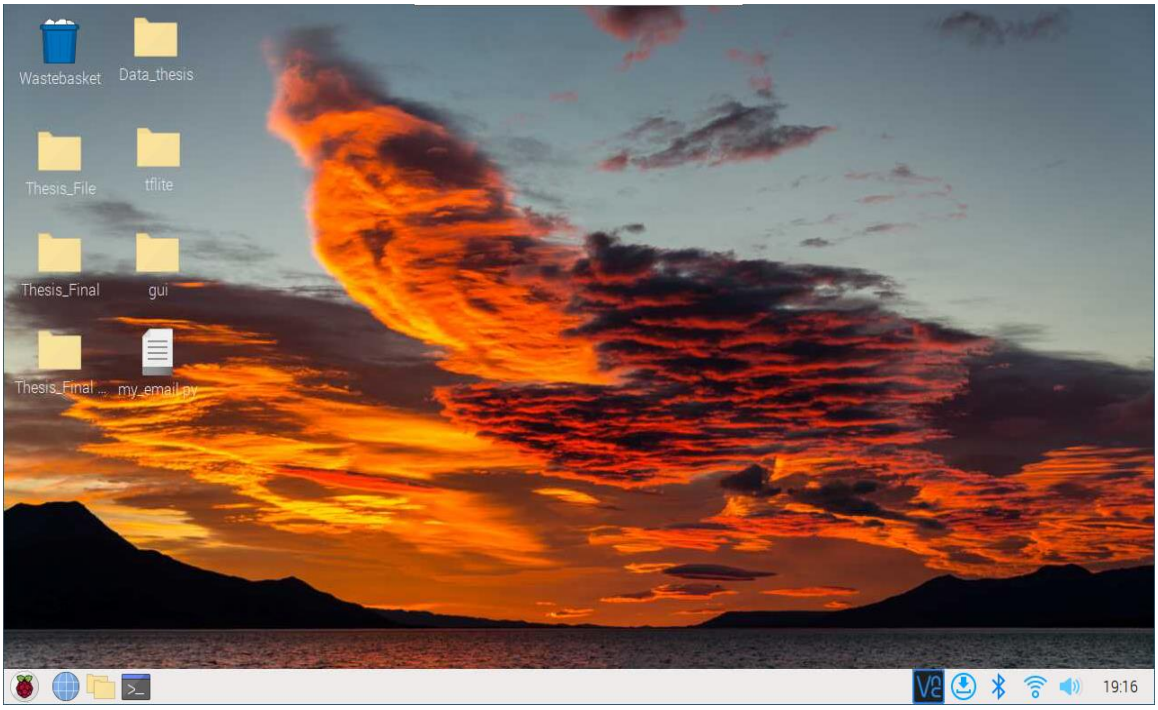
4. Powering it up

Wait for boot: wait for the Raspberry Pi 4 to boot up and for the operating system to load. This may take a few minutes, depending on the operating system and any installed applications. Be patient.

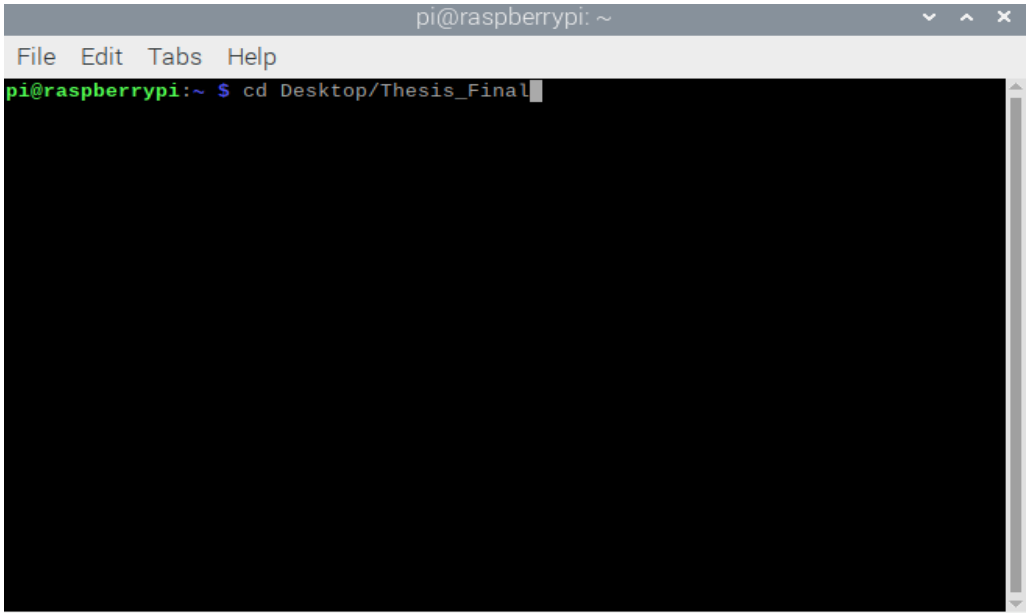


Running the Face Recognition

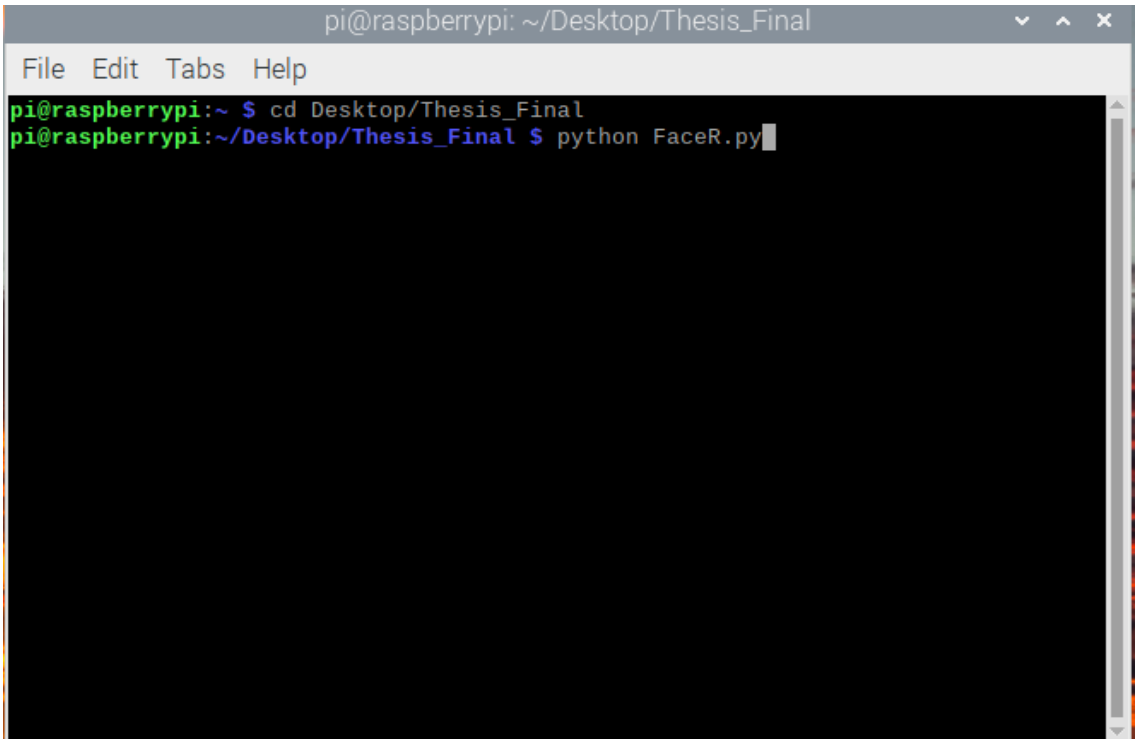
1. Open the terminal as the arrow sign point out.



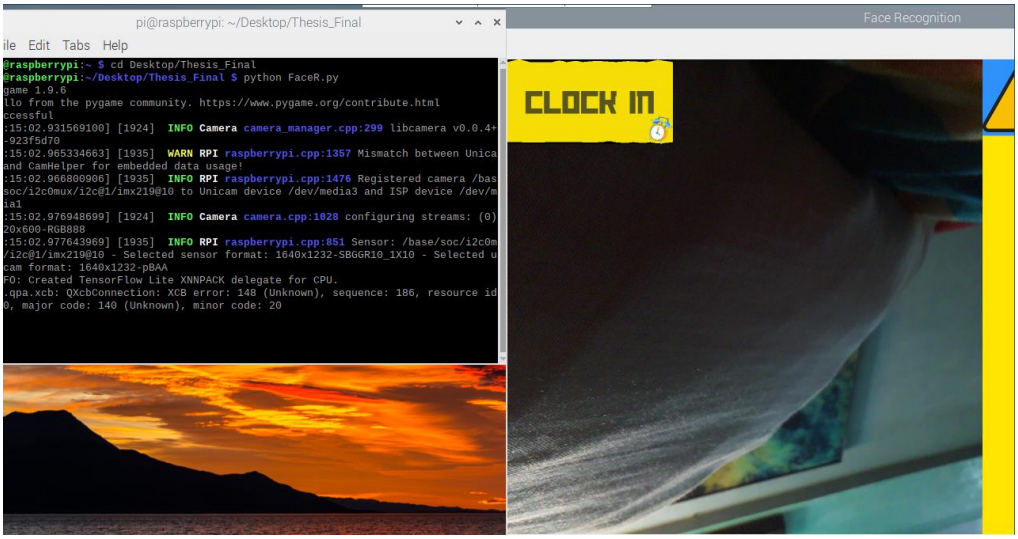
2. After clicking it, type on the terminal "*cd Desktop/Thesis_Final*".



After typing the command on the terminal, the user must type next "*python*



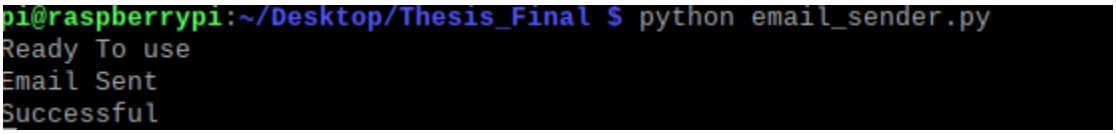
This will execute the system. Note: this may take a few minutes to open up, therefore the user must wait so it won't generate any error.

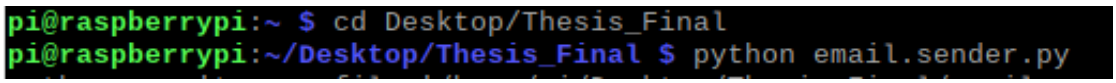


3. The buttons on the prototype represent the recording of the exact time and date of every person who enters the school. The blue color indicates the time of entry, while the yellow color indicates the time of exit. The user can store their attendance by clicking the buttons.

5. To stop the program, the user can click the "q" button to exit the system or minimize the application and press the exit on the terminal. In case the user encounters an error while using the system, they can also just click the exit button on the terminal to stop the program.

6. To enable the notification function of the prototype the user must open the terminal and type the "*cd Desktop/Thesis_Final*". Next is to execute the program by typing the "*python email_sennder.py*", wait for it to run successfully, it will show a message "*Ready to use".*





During the operation of the system

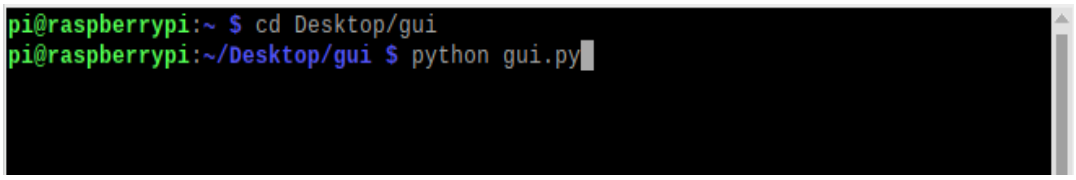
1. Avoid placing the lens of the camera in a bright environment; this can cause the camera to become vague that result a low accuracy on the face recognition system.

2. It is necessary that the fan be turned on since the model requires a lot of computational power to perform its task.

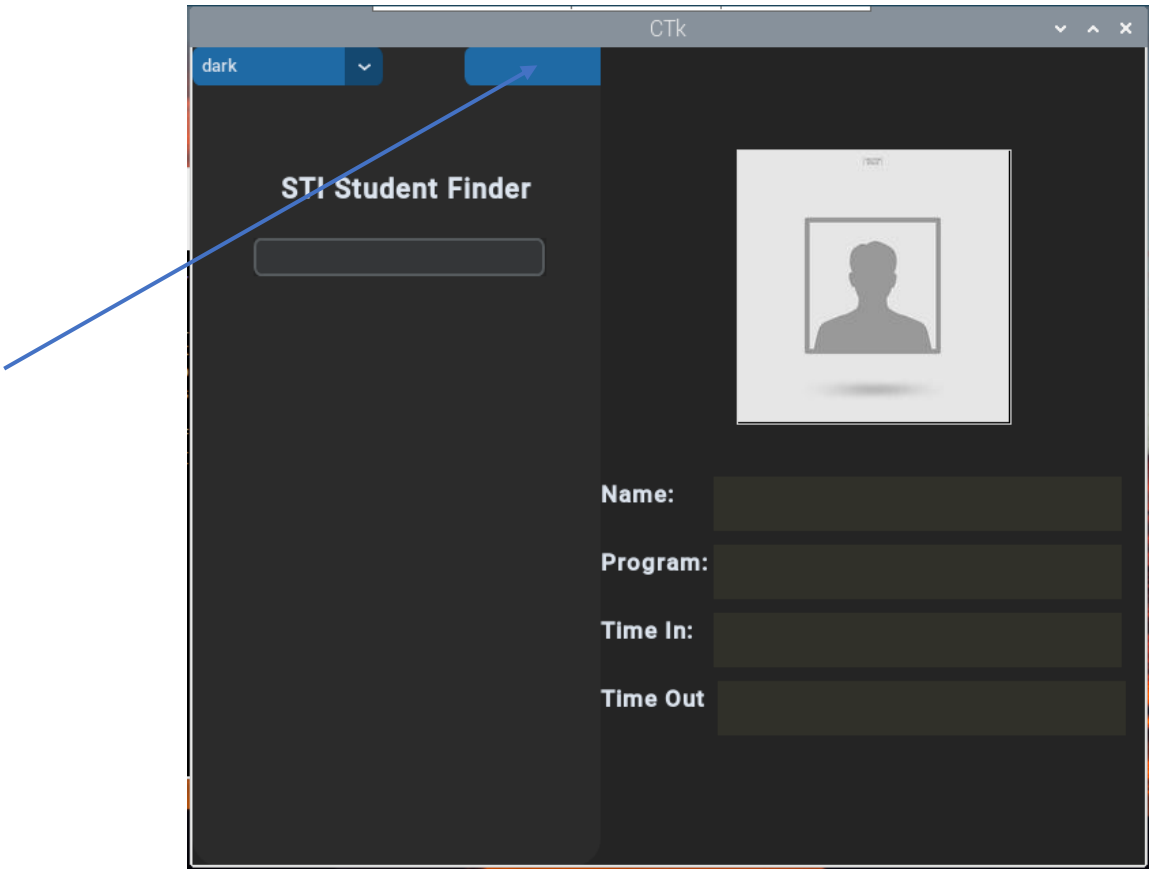
3. Always put it on a cool environment.

Using the Student Finder GUI

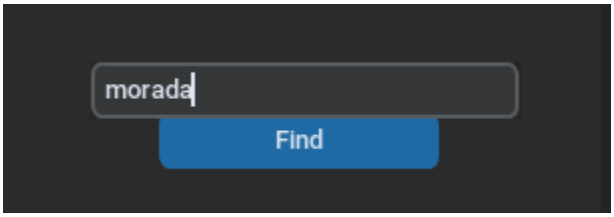
1. Type in the terminal "*cd Desktop/gui"* afterwards is run the script by typing "*python gui.py".*



2. After entering the command in the terminal wait for the GUI to start up. And click the Option Box on the on the upper right and click the program of the who the person wants to find.

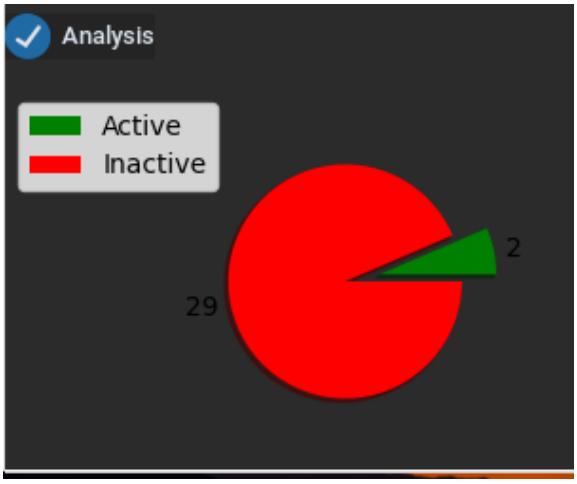


3. The person needs to type the surname of the person, and click the button that has a named find.



4. Select the person who the user intended to find, and the click the search button to show up the information of the right side.

5. The user can also put a check mark on the analysis to know how many are active students and inactive students on the specified programs.



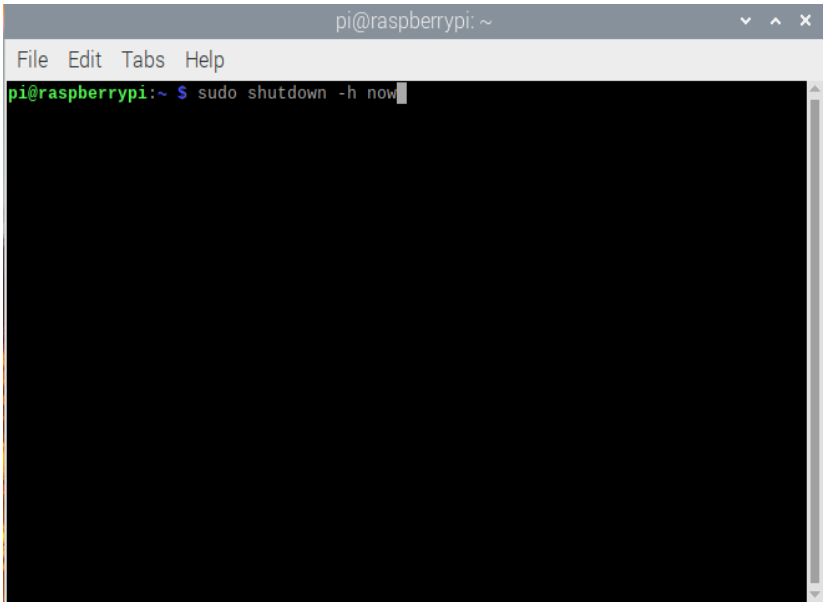
Before shutting it down

1.Close all the running applications.

The User must first shutdown all of the applications that is running actively.

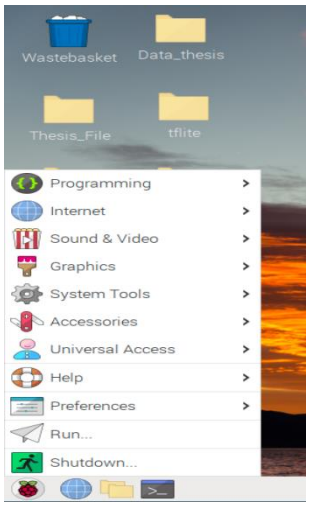
2. Shutting Down on the Terminal

The user can shut down the Raspberry Pi 4 using the command line by typing "sudo shutdown -h now."



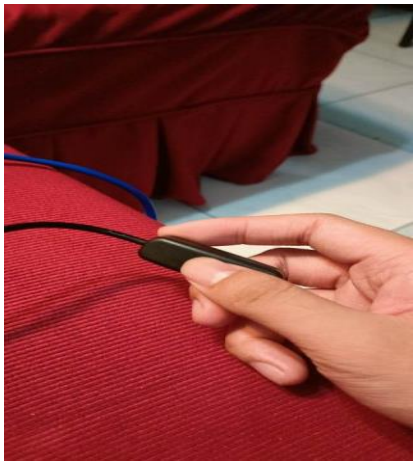
3. Shutting down on the desktop environment.

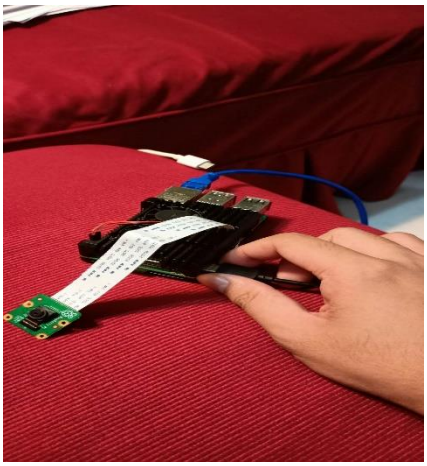
If the user is using the desktop environment, click on the "Shutdown" button in the menu to initiate the shutdown process.



4. Wait for the Raspberry Pi 4 to complete the shutdown process before disconnecting the power supply.

5. Once the Raspberry Pi 4 has completely powered down, you can safely disconnect the power supply by clicking the button on the power supply and removing the USB connector.

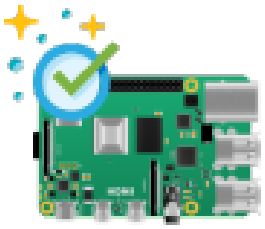




Note it's necessary to do a proper shutdown on the raspberry to prevent any data corruption and damage on the operating system.

Maintenance for the Raspberry pi 4 and system

- Clean the board on a regular basis with a soft, dry cloth to remove any dust or dirt that has gathered. Any liquid cleansers should be avoided since they might harm the components.



- Maintain software updates and libraries update: To guarantee best performance and security, keep your Raspberry Pi 4's operating system and software up to date.

- Check for hardware concerns: Check for any indicators of hardware difficulties, such as loose connections or broken components, on a regular basis. Address any concerns as soon as possible to avoid additional damage.

- Delete the image and information of all the old students on the data because this can cause a lag on the system if the old students are still included on the data.

All of the tips listed above can ensure reliable operation and prolong the life of the Raspberry Pi 4

APPENDIX D. TECHNICAL MANUAL

Technical Manual:

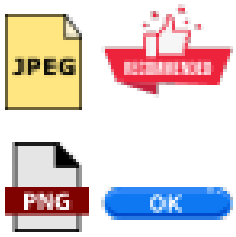
Setting up the system:

1. Ensure of all the libraries are updated.

2. Debug the system in case of encountering any error.

Inserting data on the system

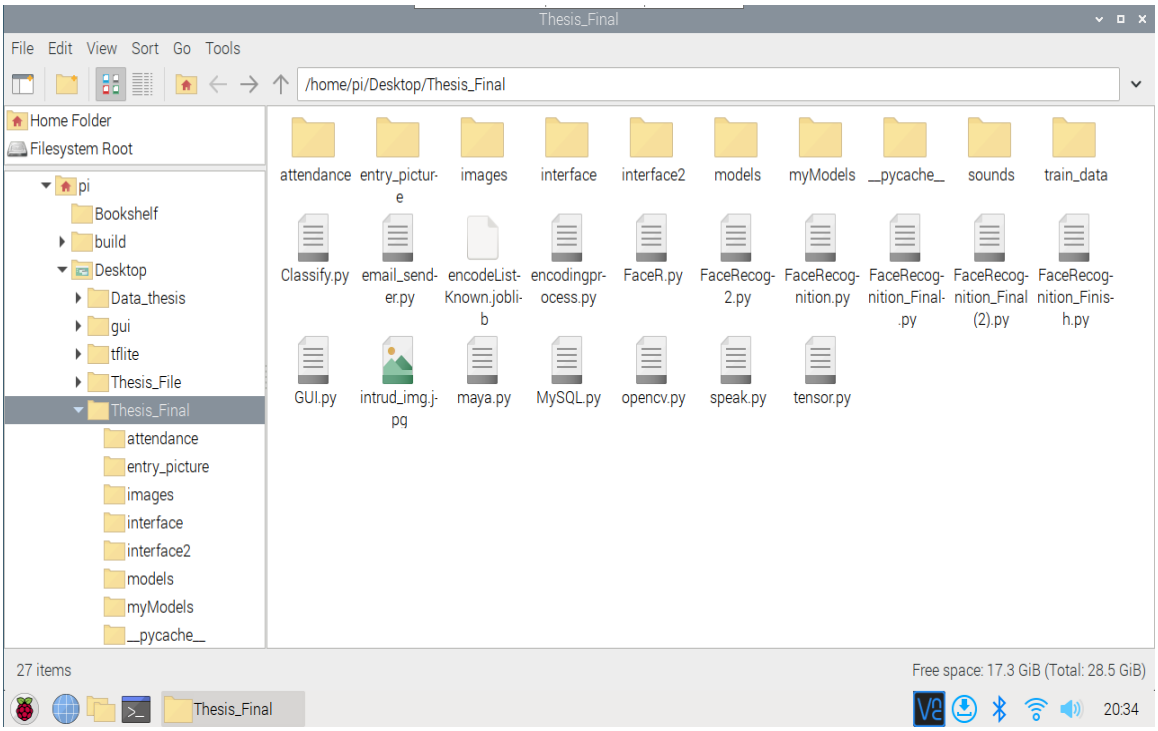
1. Take a picture of the chosen person, jpeg format is preferable.



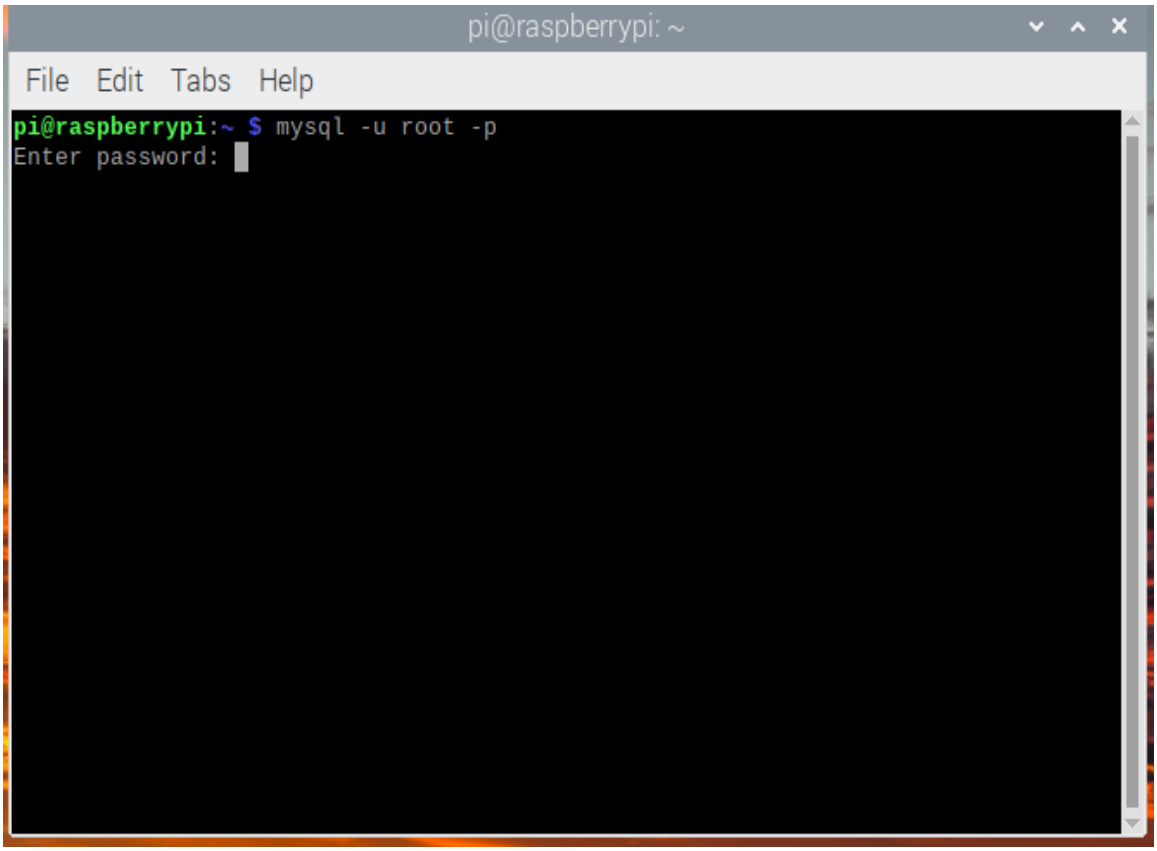
2. Make sure that the picture is in high resolution to increase the accuracy of the system. One picture is enough.

3.

4. Put the picture in the images and train_data folder that can be found in the Face Recognition Directory.



5. Input the information about the person into the database of the system. The system uses MariaDB, which can be acquired by opening the bash command and typing the following command: mv MariaDB. mysql –u root -p" Click enter afterwards, and type this password: "123456789".



The user may experience that the password is not showing on the terminal. It's part of the OS since the raspberry pi 4B uses Linux in order to make the system more secured. The user must continue typing this and ensure that the user didn't type the wrong password because this might result an error.

6. Once the database is accessed, type "USE Students" on the terminal and use the insert function to store data.

```
MariaDB [(none)]> USE Students;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
MariaDB [Students]>
```

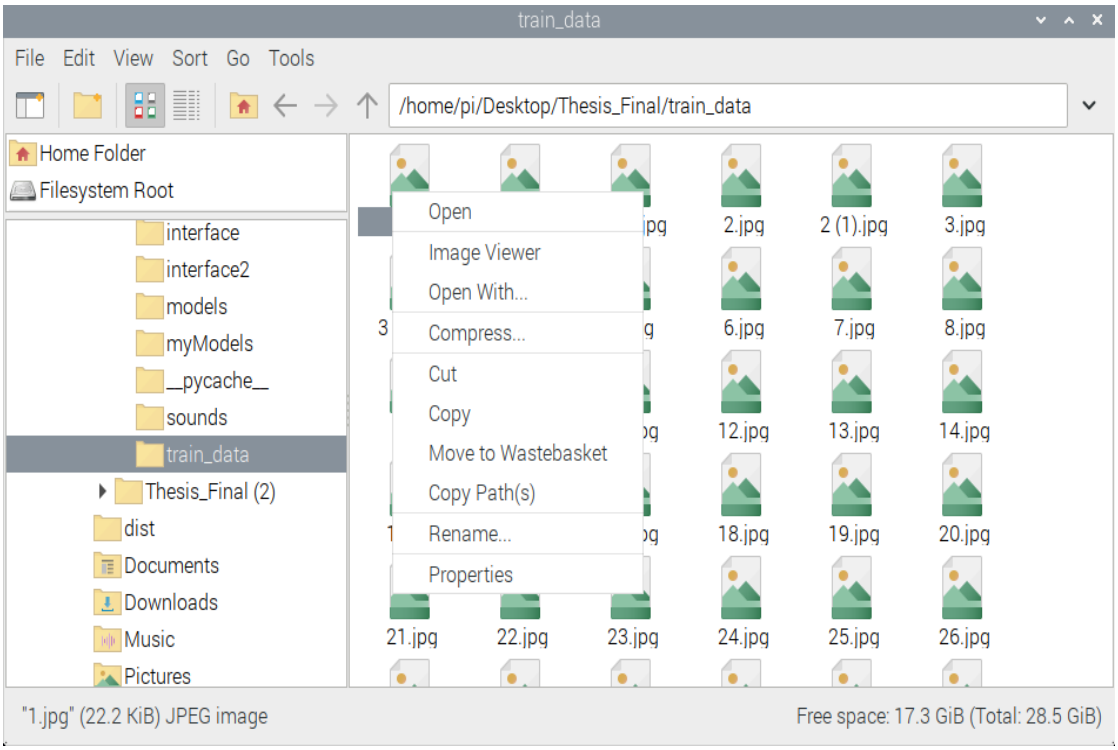
```
MariaDB [Students]> INSERT INTO Students VALUES(ID, Student_ID,Last Name, First Name, Program, Contact Number, Email);
```

7. Finally, after storing the image and information of the person, run the encodingprocess.py to encode the picture of the person on the system.

```
pi@raspberrypi:~ $ cd Desktop/Thesis_Final
pi@raspberrypi:~/Desktop/Thesis_Final $ python encodingprocess.py
```

Removing data on the system

1. Delete the picture of the former students and faculties in the image folder.



2. Access the database and use the delete function of mysql in order to remove the existing data.

```
MariaDB [Students]> DELETE FROM Students WHERE ID = Id Num;
```

3. Run the encodeprocess.py to update the data.

```
pi@raspberrypi:~ $ cd Desktop/Thesis_Final
pi@raspberrypi:~/Desktop/Thesis_Final $ python encodingprocess.py
```