Enable UART RPi:

Graphical user interface, text, application

Description automatically generated

Restart RPi.

**Connections:**

**RPi with Fingerprint Sensor**

A close-up of a computer chip

Description automatically generated with medium confidenceA screenshot of a computer

Description automatically generated with low confidence

|  |  |
| --- | --- |
| **RPi** | **Fingerprint Sensor** |
| GPIO 14 (TXD) | RX |
| GPIO 15 (RXD) | TX |
| 3.3v | V+ |
| GND | GND |

**RPi with Relay:**

Diagram

Description automatically generated

|  |  |
| --- | --- |
| **RPi** | **Relay** |
| GPIO 27 | IN |
| 3.3v | VCC |
| GND | GND |

**Relay with Lock:**

Diagram

Description automatically generated

Copy the code folder added with this document in RPi at /home/pi directory.

**Libraires Installation:**

Open terminal

Graphical user interface

Description automatically generated with low confidence

Run this command to install required libraries

*$ sudo pip3 install adafruit-circuitpython-fingerprint*

***$ sudo pip3 install rpi\_lcd***

Run script:

Open terminal run the following commands to start the script:

*$ cd code*

*$ sudo python3 biometric.py*

After running last command terminal will show information how to enroll/delete or check fingerprints

When checking fingerprint, if fingerprint is detected lock will open for 5 sec, then it will close.

**Code Explanation:**

Code has different functions to do different tasks.

**get\_fingerprint ()**

This function checks if scanned fingerprint is stored in memory. If available, it returns true else false.

**get\_num()**

this function asks user to enter position at which new fingerprint will be saved. position values can have range of 0-127

**enroll\_finger()**

This function adds new fingerprint in memory. First it will ask the position at which print will be saved in memory by calling **get\_num()** function. Then it asks you to scan finger, after scanning it will check if image captured is good or not if good it will save fingerprint in memory. You have to scan two times ion order to save fingerprint.

When you run the code from terminal it will show saved fingerprints locations and options in terminal like this.

e) enroll print

f) find print

d) delete print

type e and press enter to enroll new fingerprint.

type f and press enter to check if scanned finger is saved in memory or not. After selecting this option scan finger using sensor then code will look for that finger in memory. If print is detected it will unlock lock for 5 seconds, then again lock it.

type d and press enter to delete old fingerprint. After selecting this option, you have to select position from which you want to delete fingerprint. position values can have range of 0-127