[Fingerprint Sensor with Raspberry Pi](https://circuitdigest.com/microcontroller-projects/raspberry-pi-fingerprint-sensor-interfacing)

**1.Feature list and user requirements**

 Using this Raspberry Pi FingerPrint System, we can enroll new fingerprints into the system and delete already existing ones, also search for already existing ones. Everybody can enroll to our Firebase, but only admins can delete.

You will see 4 buttons. First is for enrolment, you have only to put your finger twice intermintent on the sensor and he will add you to our database. The second button is for deletion and only if you have admin rights you can do this. The third and the fourth buttons are for navigation through the database fingerprints. When you choose the number of the fingerprint you want to delete press the first button and it will act as an “OK”. If you don’t press any button( don’t take any action), search for your fingerprint will be running.

**2.System architecture**

USB to

Serial

Access

Control

Control

Keys

Raspberry

PI

LCD

With potentiometer

Fingerprint

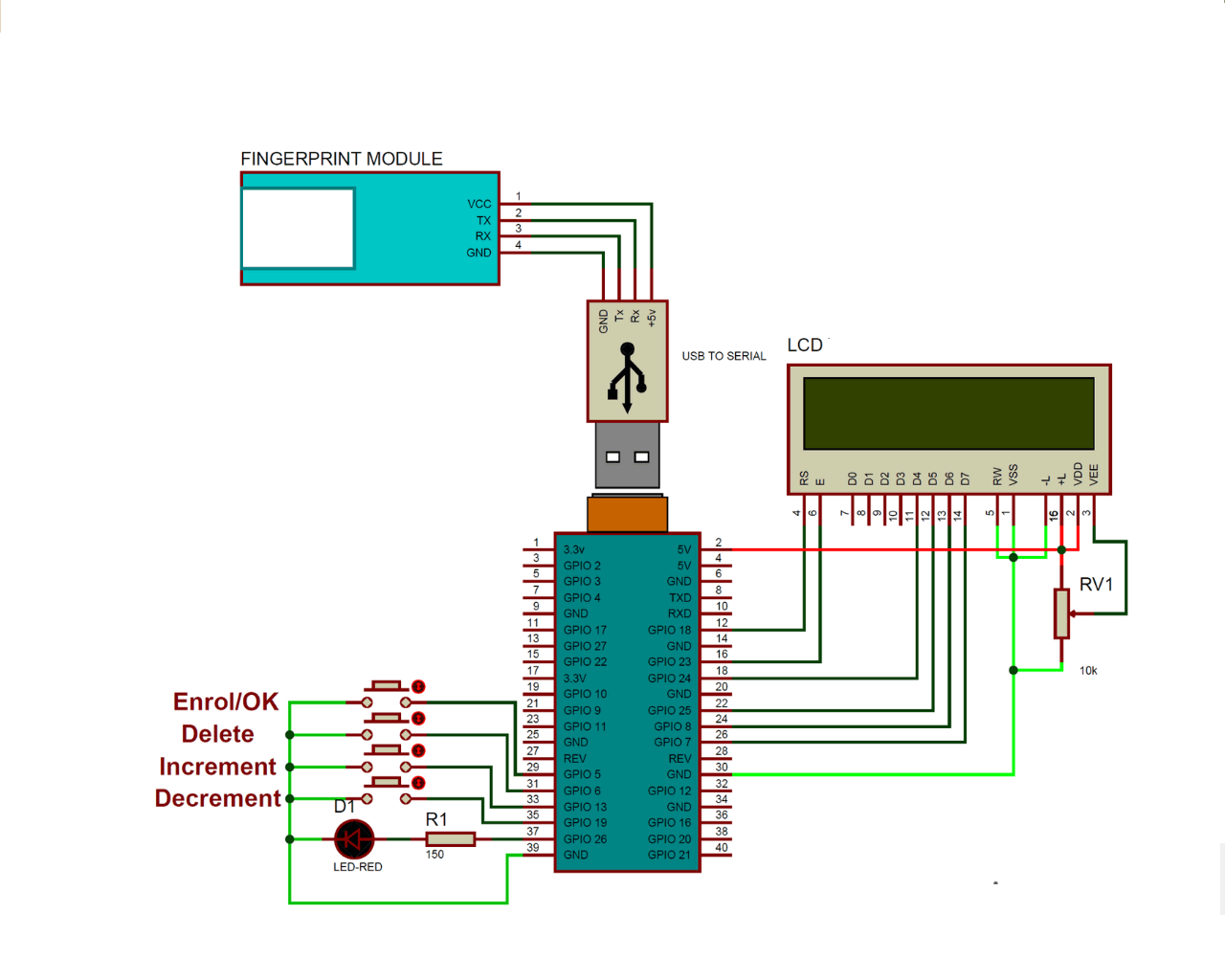
Sensor

**3.Hardware overview**

We have used a **4 push buttons**: one for enrolling the new finger pring, one for deleting the already fed finger prints and rest two for increment/decrement the position of already fed Finger prints. Also we need 1 **USB to serial component** to connect **Fingerprint sensor** to our **raspberry pi board.** Also we have used one **LCD** to show messages to the users.

### **Required Components:**

* Raspberry Pi
* USB to Serial converter
* Resistor 150 ohm -1 k ohm (optional)
* Push buttons
* LCD
* Bread Board or PCB
* Jumper wires
* LED (optional)
* Fingerprint sensor
* Potentiometer



**4. Software overview**

We need to **install fingerprint library for Raspberry Pi** in python:

* Enter sudo: sudo bash
* **download some required packages:**
* wget – [http://apt.pm-codeworks.de/pm-codeworks.list –P /etc/apt/sources.list.d/](http://apt.pm-codeworks.de/pm-codeworks.list%20–P%20/etc/apt/sources.list.d/%20)
* wget –O – http://apt.pm-codeworks.de/pm-codeworks.de.gpsg | apt-key add-
* **update the Raspberry pi and install the downloaded finger print sensor library:**
* sudo apt-get update
* sudo apt-get install python-fingerprint -yes
* **check USB port**to see if USB port is connected:
* ls /dev/ttyUSB\*

We also need to install firebase for python.

**1.Define pins for LCD, LED and push buttons**

**2.** **Initialize and give direction to the selected pins**

**3.** **Initialized fingerprint Sensor**

**4.Set a firebase database where you will save fingerprints with admins rights or not.**

**5.** **initialize system** by in “while 1” loop by asking to “Place Finger” on finger print sensor and then system will check whether this finger print it valid or not and display the results accordingly. Then depeding on your button press you can choose to enroll/delete.