

Arduino Projects: Fingerprint Door Unlock System

This simple fingerprint sensor project using Arduino can be very useful for door security, forensics, crime investigation, personal identification, attendance system and much more. -- DINU D. AND CINLA K. PAPPACHAN

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Software

Programs named enroll and fingerprint use different functions like `getFingerprintEnroll(int,id)`, `Adafruit_Fingerprint(&mySerial)` and `getFingerprintEnroll(id)`. These functions are defined inside the library and pass arguments when called.

After uploading enroll in the Arduino, open serial monitor from Arduino IDE from Tools→Serial monitor options. Change baud rate below the serial monitor window to 38400. Choose Newline option from the same place. Then, follow the instructions on the serial monitor. Place the finger on the fingerprint module. Type any whole number as the ID number. Press Send tab to send the ID number from the serial monitor to Arduino. This fingerprint gets converted into digital data and gets store inside R305 module database.

More than 200 fingerprints can be stored on this system. Make sure that each fingerprint has a unique ID number. This ID number will be used in the next program to identify the authenticated person's name. The serial monitor will guide the user as to when he or she should place the finger and when to remove it.

For debugging without an LCD display, make the same settings for the serial monitor after uploading Fingerprint program. This is used to compare the fingerprint in the sensor with stored prints. The serial monitor guides here also. The fingerprint program should be edited to change the name and ID numbers according to how users want.

Download source code: [click here](#)

Construction and testing

An actual-size, single-side PCB for the fingerprint door unlock system is shown in Fig. 5 and its component layout in Fig. 6. For convenience, we have designed the PCB as an Arduino shield. The users can modify the design as per requirement. Also, they can test PCB with Arduino board using a cable connector.

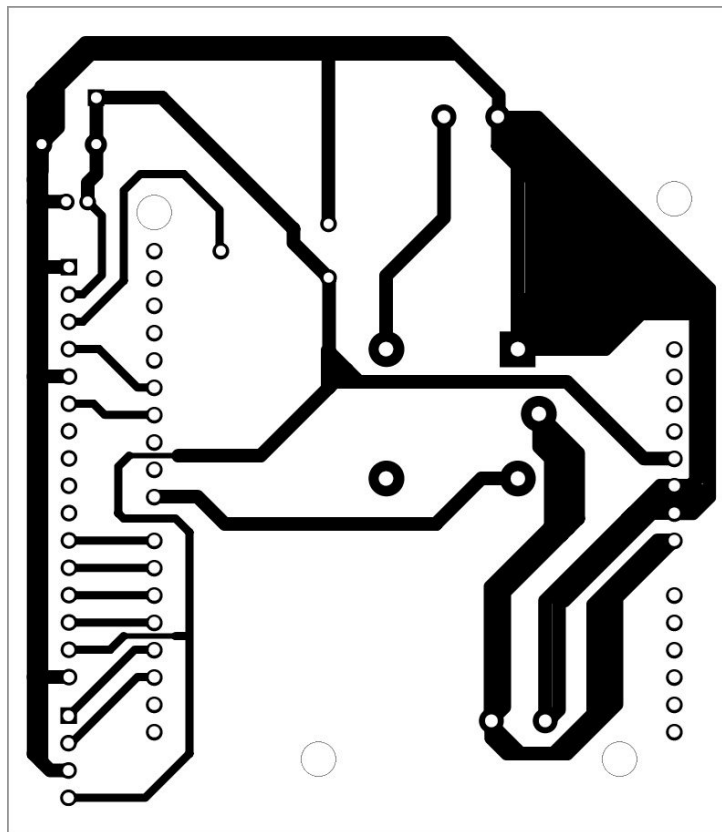


Fig. 5: Actual-size PCB pattern of the fingerprint door unlock system

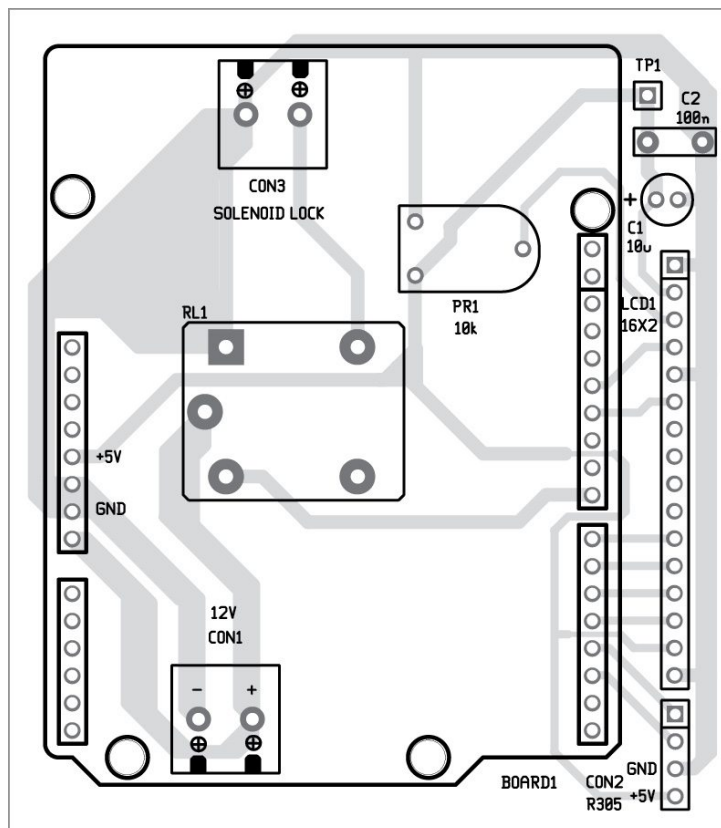


Fig. 6: Component layout of the PCB

Download PCB and component layout PDFs: [click here](#)

Make sure the baud rate given in the program is correct. Baud rate for the serial monitor can be anything but the baud rate for R305 sensor should match that given in its datasheet. Baud rate may vary with different versions of the sensor. It is given in the program like `Serial.begin(38400)` [baud rate for serial monitor]; `finger.begin(57600)` [baud rate for sensor]. Reset Arduino board before validation of the fingerprint.