[22] Afolabi A, Alice O. On Securing a door with finger print biometric technique. Transactions on Machine Learning and Artificial Intelligence. 2014 Apr 11; 2:8696.

[23] Website link : https://docs.arduino.cc/hardware/uno-rev3
Retrieval Date: 20 May, 2022

[24] Website link : https://www.explainthatstuff.com/fingerprintscanners.html
Retrieval Date: 15 May, 2022

[25] Website link : https://www.electronics.com.bd/12v-solenoid-lock
Retrieval Date: 22 May, 2022

[26] Website link : https://www.elprocus.com/lcd-16x2-pin-configuration-and-its-working/
Retrieval Date: 23 May, 2022

[27] Website link : https://components101.com/transistors/tip122-pinout-equivalent-datasheet
Retrieval Date: 25 May, 2022

[28] Website link : https://www.indiamart.com/proddetail/12v-1a-adaptor-12721243248.html
Retrieval Date: 21 May, 2022

[29] Website link : https://components101.com/mosfets/irfz44n-datasheet-pinout-features
Retrieval Date: 24 May, 2022

[30] Website link : https://www.amazon.com/Degraw-DIY-Speaker-Kit-Amplifier/dp/B07CRVRG83
Retrieval Date: 26 May, 2022

[31] Website link : https://www.ledgreenlightint.com/
Retrieval Date: 20 May, 2022

Appendix A

Arduino Part (Coding Summary)

```
**************************************************
  This is an example sketch for our optical Fingerprint sensor

  Designed specifically to work with the Adafruit BMP085 Breakout
  ----> http://www.adafruit.com/products/751

  These displays use TTL Serial to communicate, 2 pins are required to
  interface
  Adafruit invests time and resources providing this open source code,
  please support Adafruit and open-source hardware by purchasing
  products from Adafruit!

  Written by Limor Fried/Ladyada for Adafruit Industries.
  BSD license, all text above must be included in any redistribution
 **************************************************/



#include <Adafruit_Fingerprint.h>

#include <Arduino.h>

#include "Talkie.h"
#include "Vocab_US_Large.h"

Talkie voice;
```

```
#if (defined(__AVR__) || defined(ESP8266)) && !defined(__AVR_ATmega2560__)
// For UNO and others without hardware serial, we must use software serial...
// pin #2 is IN from sensor (GREEN wire)
// pin #3 is OUT from arduino  (WHITE wire)
// Set up the serial port to use softwareserial..
SoftwareSerial mySerial(2, 3);

#else
// On Leonardo/M0/etc, others with hardware serial, use hardware serial!
// #0 is green wire, #1 is white
#define mySerial Serial1

#endif



Adafruit_Fingerprint finger = Adafruit_Fingerprint(&mySerial);

int sound1=0;

void setup()
{
  Serial.begin(9600);
  while (!Serial);  // For Yun/Leo/Micro/Zero/...
  delay(100);
  Serial.println("\n\nAdafruit finger detect test");

  // set the data rate for the sensor serial port
  finger.begin(57600);
  delay(5);
  if (finger.verifyPassword()) {
```

```
  Serial.println("Found fingerprint sensor!");
 } else {
  Serial.println("Did not find fingerprint sensor :(");
  while (1) { delay(1); }
 }

 Serial.println(F("Reading sensor parameters"));
 finger.getParameters();
 Serial.print(F("Status: 0x")); Serial.println(finger.status_reg, HEX);
 Serial.print(F("Sys ID: 0x")); Serial.println(finger.system_id, HEX);
 Serial.print(F("Capacity: ")); Serial.println(finger.capacity);
 Serial.print(F("Security level: ")); Serial.println(finger.security_level);
 Serial.print(F("Device address: ")); Serial.println(finger.device_addr, HEX);
 Serial.print(F("Packet len: ")); Serial.println(finger.packet_len);
 Serial.print(F("Baud rate: ")); Serial.println(finger.baud_rate);

 finger.getTemplateCount();

 if (finger.templateCount == 0) {
  Serial.print("Sensor doesn't contain any fingerprint data. Please run the 'enroll' example.");
 }
 else {
  Serial.println("Waiting for valid finger...");
    Serial.print("Sensor contains "); Serial.print(finger.templateCount); Serial.println("
templates");
 }
 pinMode(13,OUTPUT);
 pinMode(7,OUTPUT);
 pinMode(6,OUTPUT);

 pinMode(8,OUTPUT);
```

```
}

void loop()                     // run over and over again
{
  getFingerprintID();
  delay(50);            //don't ned to run this at full speed.

 // if(sound1)
  {
    //digitalWrite(8,HIGH);
    //voice.say(sp2_IS);
    //voice.say(sp2_ON);

    sound1=0;

   // getFingerprintID();
    //delay(50);
  }
}

uint8_t getFingerprintID() {
  uint8_t p = finger.getImage();
  switch (p) {
    case FINGERPRINT_OK:
      Serial.println("Image taken");
      break;
    case FINGERPRINT_NOFINGER:
      Serial.println("No finger detected");
      return p;
    case FINGERPRINT_PACKETRECIEVEERR:
      Serial.println("Communication error");
```

```
    return p;
  case FINGERPRINT_IMAGEFAIL:
    Serial.println("Imaging error");
    return p;
  default:
    Serial.println("Unknown error");
    return p;
}

// OK success!

p = finger.image2Tz();
switch (p) {
  case FINGERPRINT_OK:
    Serial.println("Image converted");
    break;
  case FINGERPRINT_IMAGEMESS:
    Serial.println("Image too messy");
    return p;
  case FINGERPRINT_PACKETRECIEVEERR:
    Serial.println("Communication error");
    return p;
  case FINGERPRINT_FEATUREFAIL:
    Serial.println("Could not find fingerprint features");
    return p;
  case FINGERPRINT_INVALIDIMAGE:
    Serial.println("Could not find fingerprint
```