#include<EEPROM.h>

#include<LiquidCrystal.h>

LiquidCrystal lcd(13,12,11,10,9,8);

#include <Adafruit\_Fingerprint.h>

uint8\_t id;

Adafruit\_Fingerprint finger = Adafruit\_Fingerprint(&Serial);

#define enroll 14

#define del 15

#define up 16

#define down 17

#define match 18

#define indVote 6

#define sw1 5

#define sw2 4

#define sw3 3

#define resultsw 2

#define indFinger 7

#define buzzer 19

#define records 25

int vote1,vote2,vote3;

int flag;

void setup()

{

delay(1000);

pinMode(enroll, INPUT\_PULLUP);

pinMode(up, INPUT\_PULLUP);

pinMode(down, INPUT\_PULLUP);

pinMode(del, INPUT\_PULLUP);

pinMode(match, INPUT\_PULLUP);

pinMode(sw1, INPUT\_PULLUP);

pinMode(sw2, INPUT\_PULLUP);

pinMode(sw3, INPUT\_PULLUP);

pinMode(resultsw, INPUT\_PULLUP);

pinMode(buzzer, OUTPUT);

pinMode(indVote, OUTPUT);

pinMode(indFinger, OUTPUT);

lcd.begin(16,2);

if(digitalRead(resultsw) ==0)

{

for(int i=0;i<records;i++)

EEPROM.write(i+10,0xff);

EEPROM.write(0,0);

EEPROM.write(1,0);

EEPROM.write(2,0);

lcd.clear();

lcd.print("System Reset");

delay(1000);

}

lcd.clear();

lcd.print("FINGERPRINT BASED");

lcd.setCursor(0,1);

lcd.print("VOTING MACHINE");

delay(2000);

lcd.clear();

lcd.print(" BATCH 58");

lcd.setCursor(4,4);

lcd.print("ECE BMSCE");

delay(2000);

if(EEPROM.read(0) == 0xff)

EEPROM.write(0,0);

if(EEPROM.read(1) == 0xff)

EEPROM.write(1,0);

if(EEPROM.read(1) == 0xff)

EEPROM.write(1,0);

//finger.begin(57600);

Serial.begin(57600);

lcd.clear();

lcd.print("Finding Module");

lcd.setCursor(0,1);

delay(1000);

if (finger.verifyPassword())

{

//Serial.println("Found fingerprint sensor!");

lcd.clear();

lcd.print("Found Module ");

delay(1000);

}

else

{

//Serial.println("Did not find fingerprint sensor :(");

lcd.clear();

lcd.print("module not Found");

lcd.setCursor(0,1);

lcd.print("Check Connections");

while (1);

}

lcd.clear();

delay(100);

}

void loop()

{

lcd.setCursor(0,0);

lcd.print("Press Match Key ");

lcd.setCursor(0,1);

lcd.print("to start voting");

digitalWrite(indVote, LOW);

digitalWrite(indFinger, LOW);

if(digitalRead(match)==0)

{

digitalWrite(buzzer, HIGH);

delay(200);

digitalWrite(buzzer, LOW);

digitalWrite(indFinger, HIGH);

for(int i=0;i<3;i++)

{

lcd.clear();

lcd.print("Place Finger");

delay(2000);

int result=getFingerprintIDez();

if(result>=0)

{

flag=0;

for(int i=0;i<records;i++)

{

if(result == EEPROM.read(i+10))

{

lcd.clear();

lcd.print("Authorised Voter");

lcd.setCursor(0,1);

lcd.print("Please Wait....");

delay(1000);

Vote();

EEPROM.write(i+10, 0xff);

flag=1;

return;

}

}

if(flag == 0)

{

lcd.clear();

lcd.print("Already Voted");

//lcd.setCursor(0,1);

//lcd.print("")

digitalWrite(buzzer, HIGH);

delay(10000);

digitalWrite(buzzer, LOW);

return;

}

}

}

lcd.clear();

}

checkKeys();

delay(1000);

}

void checkKeys()

{

if(digitalRead(enroll) == 0)

{

lcd.clear();

lcd.print("Please Wait");

delay(1000);

while(digitalRead(enroll) == 0);

Enroll();

}

else if(digitalRead(del) == 0)

{

lcd.clear();

lcd.print("Please Wait");

delay(1000);

delet();

}

}

void Enroll()

{

int count=0;

lcd.clear();

lcd.print("Enter Finger ID:");

while(1)

{

lcd.setCursor(0,1);

lcd.print(count);

if(digitalRead(up) == 0)

{

count++;

if(count>25)

count=0;

delay(500);

}

else if(digitalRead(down) == 0)

{

count--;

if(count<0)

count=25;

delay(500);

}

else if(digitalRead(del) == 0)

{

id=count;

getFingerprintEnroll();

for(int i=0;i<records;i++)

{

if(EEPROM.read(i+10) == 0xff)

{

EEPROM.write(i+10, id);

break;

}

}

return;

}

else if(digitalRead(enroll) == 0)

{

return;

}

}

}

void delet()

{

int count=0;

lcd.clear();

lcd.print("Enter Finger ID");

while(1)

{

lcd.setCursor(0,1);

lcd.print(count);

if(digitalRead(up) == 0)

{

count++;

if(count>25)

count=0;

delay(500);

}

else if(digitalRead(down) == 0)

{

count--;

if(count<0)

count=25;

delay(500);

}

else if(digitalRead(del) == 0)

{

id=count;

deleteFingerprint(id);

for(int i=0;i<records;i++)

{

if(EEPROM.read(i+10) == id)

{

EEPROM.write(i+10, 0xff);

break;

}

}

return;

}

else if(digitalRead(enroll) == 0)

{

return;

}

}

}

uint8\_t getFingerprintEnroll()

{

int p = -1;

lcd.clear();

lcd.print("finger ID:");

lcd.print(id);

lcd.setCursor(0,1);

lcd.print("Place Finger");

delay(2000);

while (p != FINGERPRINT\_OK)

{

p = finger.getImage();

switch (p)

{

case FINGERPRINT\_OK:

//Serial.println("Image taken");

lcd.clear();

lcd.print("Image taken");

break;

case FINGERPRINT\_NOFINGER:

//Serial.println("No Finger");

lcd.clear();

lcd.print("No Finger");

break;

case FINGERPRINT\_PACKETRECIEVEERR:

//Serial.println("Communication error");

lcd.clear();

lcd.print("Comm Error");

break;

case FINGERPRINT\_IMAGEFAIL:

//Serial.println("Imaging error");

lcd.clear();

lcd.print("Imaging Error");

break;

default:

//Serial.println("Unknown error");

lcd.clear();

lcd.print("Unknown Error");

break;

}

}

// OK success!

p = finger.image2Tz(1);

switch (p) {

case FINGERPRINT\_OK:

//Serial.println("Image converted");

lcd.clear();

lcd.print("Image converted");

break;

case FINGERPRINT\_IMAGEMESS:

//Serial.println("Image too messy");

lcd.clear();

lcd.print("Image too messy");

return p;

case FINGERPRINT\_PACKETRECIEVEERR:

//Serial.println("Communication error");

lcd.clear();

lcd.print("Comm Error");

return p;

case FINGERPRINT\_FEATUREFAIL:

//Serial.println("Could not find fingerprint features");

lcd.clear();

lcd.print("Feature Not Found");

return p;

case FINGERPRINT\_INVALIDIMAGE:

//Serial.println("Could not find fingerprint features");

lcd.clear();

lcd.print("Feature Not Found");

return p;

default:

//Serial.println("Unknown error");

lcd.clear();

lcd.print("Unknown Error");

return p;

}

//Serial.println("Remove finger");

lcd.clear();

lcd.print("Remove Finger");

delay(2000);

p = 0;

while (p != FINGERPRINT\_NOFINGER) {

p = finger.getImage();

}

//Serial.print("ID "); //Serial.println(id);

p = -1;

//Serial.println("Place same finger again");

lcd.clear();

lcd.print("Place Finger");

lcd.setCursor(0,1);

lcd.print(" Again");

while (p != FINGERPRINT\_OK) {

p = finger.getImage();

switch (p) {

case FINGERPRINT\_OK:

//Serial.println("Image taken");

break;

case FINGERPRINT\_NOFINGER:

//Serial.print(".");

break;

case FINGERPRINT\_PACKETRECIEVEERR:

//Serial.println("Communication error");

break;

case FINGERPRINT\_IMAGEFAIL:

//Serial.println("Imaging error");

break;

default:

//Serial.println("Unknown error");

return p;

}

}

// OK success!

p = finger.image2Tz(2);

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 features");

return p;

default:

//Serial.println("Unknown error");

return p;

}

// OK converted!

//Serial.print("Creating model for #"); //Serial.println(id);

p = finger.createModel();

if (p == FINGERPRINT\_OK) {

//Serial.println("Prints matched!");

} else if (p == FINGERPRINT\_PACKETRECIEVEERR) {

//Serial.println("Communication error");

return p;

} else if (p == FINGERPRINT\_ENROLLMISMATCH) {

//Serial.println("Fingerprints did not match");

return p;

} else {

//Serial.println("Unknown error");

return p;

}

//Serial.print("ID "); //Serial.println(id);

p = finger.storeModel(id);

if (p == FINGERPRINT\_OK) {

//Serial.println("Stored!");

lcd.clear();

lcd.print("Stored!");

delay(2000);

} else if (p == FINGERPRINT\_PACKETRECIEVEERR) {

//Serial.println("Communication error");

return p;

} else if (p == FINGERPRINT\_BADLOCATION) {

//Serial.println("Could not store in that location");

return p;

} else if (p == FINGERPRINT\_FLASHERR) {

//Serial.println("Error writing to flash");

return p;

}

else {

//Serial.println("Unknown error");

return p;

}

}

int getFingerprintIDez()

{

uint8\_t p = finger.getImage();

if (p != FINGERPRINT\_OK)

return -1;

p = finger.image2Tz();

if (p != FINGERPRINT\_OK)

return -1;

p = finger.fingerFastSearch();

if (p != FINGERPRINT\_OK)

{

lcd.clear();

lcd.print("Finger Not Found");

lcd.setCursor(0,1);

lcd.print("Try Later");

delay(2000);

return -1;

}

// found a match!

//Serial.print("Found ID #");

//Serial.print(finger.fingerID);

return finger.fingerID;

}

uint8\_t deleteFingerprint(uint8\_t id)

{

uint8\_t p = -1;

lcd.clear();

lcd.print("Please wait");

p = finger.deleteModel(id);

if (p == FINGERPRINT\_OK)

{

//Serial.println("Deleted!");

lcd.clear();

lcd.print("Finger Deleted");

lcd.setCursor(0,1);

lcd.print("Successfully");

delay(1000);

}

else

{

//Serial.print("Something Wrong");

lcd.clear();

lcd.print("Something Wrong");

lcd.setCursor(0,1);

lcd.print("Try Again Later");

delay(2000);

return p;

}

}

void Vote()

{

lcd.clear();

lcd.print("Please Place");

lcd.setCursor(0,1);

lcd.print("Your Vote");

digitalWrite(indVote, HIGH);

digitalWrite(indFinger, LOW);

digitalWrite(buzzer, HIGH);

delay(500);

digitalWrite(buzzer, LOW);

delay(1000);

while(1)

{

if(digitalRead(sw1)==0)

{

vote1++;

voteSubmit(1);

EEPROM.write(0, vote1);

while(digitalRead(sw1)==0);

return;

}

if(digitalRead(sw2)==0)

{

vote2++;

voteSubmit(2);

EEPROM.write(1, vote2);

while(digitalRead(sw2)==0);

return;

}

if(digitalRead(sw3)==0)

{

vote3++;

voteSubmit(3);

EEPROM.write(2, vote3);

while(digitalRead(sw3)==0);

return;

}

if(digitalRead(resultsw)==0)

{

lcd.clear();

lcd.setCursor(0,0);

lcd.print("Can1");

lcd.setCursor(6,0);

lcd.print("Can2");

lcd.setCursor(12,0);

lcd.print("Can3");

for(int i=0;i<3;i++)

{

lcd.setCursor(i\*6,1);

lcd.print(EEPROM.read(i));

}

delay(2000);

int vote=vote1+vote2+vote3;

if(vote)

{

if((vote1 > vote2 && vote1 > vote3))

{

lcd.clear();

lcd.print("Can1 Wins");

delay(2000);

lcd.clear();

}

else if(vote2 > vote1 && vote2 > vote3)

{

lcd.clear();

lcd.print("Can2 Wins");

delay(2000);

lcd.clear();

}

else if((vote3 > vote1 && vote3 > vote2))

{

lcd.clear();

lcd.print("Can3 Wins");

delay(2000);

lcd.clear();

}

else

{

lcd.clear();

lcd.print(" Tie Up Or ");

lcd.setCursor(0,1);

lcd.print(" No Result ");

delay(1000);

lcd.clear();

}

}

else

{

lcd.clear();

lcd.print("No Voting....");

delay(1000);

lcd.clear();

}

vote1=0;vote2=0;vote3=0;vote=0;

lcd.clear();

return;

}

}

digitalWrite(indVote, LOW);

}

void voteSubmit(int cn)

{

lcd.clear();

if(cn == 1)

lcd.print("Can1");

else if(cn == 2)

lcd.print("Can2");

else if(cn == 3)

lcd.print("Can3");

lcd.setCursor(0,1);

lcd.print("Vote Submitted");

digitalWrite(buzzer , HIGH);

delay(1000);

digitalWrite(buzzer, LOW);

digitalWrite(indVote, LOW);

return;

}