#include <UTFT.h>

#include <URTouch.h>

#include "FPS\_GT511C3.h"

#include "SoftwareSerial.h"

#include <Servo.h>

Servo myservo;

int blue1 = 72;

int blue2 = 12;

int blue3 = 11;

int blue4 = 81;

int green = 78;

int redPin = 73;

extern uint8\_t BigFont[];

extern uint8\_t SmallFont[];

UTFT myGLCD(ITDB32S, 82, 83, 84, 85);

URTouch myTouch(48, 49, 50, 51, 52);

FPS\_GT511C3 fps(8, 7);

int x, y;

char stCurrent[20] = "";

int stCurrentLen = 0;

char stLast[20] = "";

String str = "";

String pwd = "";

void waitForIt(int x1, int y1, int x2, int y2) {

myGLCD.setColor(255, 0, 0);

myGLCD.drawRoundRect (x1 - 1, y1 - 1, x2 + 1, y2 + 1);

while (myTouch.dataAvailable())

myTouch.read();

myGLCD.setColor(0, 0, 0);

myGLCD.drawRoundRect (x1 - 1, y1 - 1, x2 + 1, y2 + 1);

}

//void enroll()

//{

// // Enroll test

//

// // find open enroll id

// int enrollid = 0;

// bool usedid = true;

// while (usedid == true)

// {

// usedid = fps.CheckEnrolled(enrollid);

// if (usedid == true) enrollid++;

// }

// fps.EnrollStart(enrollid);

//

// // enroll

// String b = "Press finger to Enroll #" + enrollid;

// myGLCD.print(b, 24, 120);

// while (fps.IsPressFinger() == false) delay(100);

// bool bret = fps.CaptureFinger(true);

// int iret = 0;

// if (bret != false)

// {

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

// fps.Enroll1();

// while (fps.IsPressFinger() == true) delay(100);

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

// while (fps.IsPressFinger() == false) delay(100);

// bret = fps.CaptureFinger(true);

// if (bret != false)

// {

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

// fps.Enroll2();

// while (fps.IsPressFinger() == true) delay(100);

// Serial.println("Press same finger yet again");

// while (fps.IsPressFinger() == false) delay(100);

// bret = fps.CaptureFinger(true);

// if (bret != false)

// {

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

// iret = fps.Enroll3();

// if (iret == 0)

// {

// Serial.println("Enrolling Successfull");

// }

// else

// {

// Serial.print("Enrolling Failed with error code:");

// Serial.println(iret);

// }

// }

// else Serial.println("Failed to capture third finger");

// }

// else Serial.println("Failed to capture second finger");

// }

// else Serial.println("Failed to capture first finger");

//}

void lightUp(String pin)

{

if (pin.length() == 0)

{

digitalWrite(blue1, LOW);

digitalWrite(blue2, LOW);

digitalWrite(blue3, LOW);

digitalWrite(blue4, LOW);

}

if (pin.length() == 1)

{

digitalWrite(blue1, HIGH);

digitalWrite(blue2, LOW);

digitalWrite(blue3, LOW);

digitalWrite(blue4, LOW);

}

if (pin.length() == 2)

{

digitalWrite(blue1, HIGH);

digitalWrite(blue2, HIGH);

digitalWrite(blue3, LOW);

digitalWrite(blue4, LOW);

}

if (pin.length() == 3)

{

digitalWrite(blue1, HIGH);

digitalWrite(blue2, HIGH);

digitalWrite(blue3, HIGH);

digitalWrite(blue4, LOW);

}

if (pin.length() == 4)

{

digitalWrite(blue1, HIGH);

digitalWrite(blue2, HIGH);

digitalWrite(blue3, HIGH);

digitalWrite(blue4, HIGH);

}

delay(100);

}

void touchFunc(String pin)

{

if (str.length() < 4)

{

str += pin;

lightUp(str);

}

}

void flappyBird()

{

myGLCD.clrScr();

myGLCD.setFont(BigFont);

}

void lockLCD()

{

myGLCD.clrScr();

myGLCD.setFont(BigFont);

start();

}

void changepwd(String pin)

{

if (pwd.length() < 4)

{

pwd += pin;

lightUp(pwd);

}

else

newpwd();

}

void newpwd()

{

pwd = "";

myGLCD.clrScr();

myGLCD.setFont(BigFont);

int n = 0;

String nums[] = {"1", "4", "7", "2", "5", "8", "3", "6", "9", "GO", "0", "BK"};

for (int x = 0; x < 4; x++)

{

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

{

myGLCD.setBackColor(0, 0, 0);

myGLCD.setColor(255, 255, 255);

myGLCD.fillRect(12 + x \* 77, 12 + y \* 76, 77 + 77 \* x, 76 + y \* 76);

myGLCD.setBackColor(255, 255, 255);

myGLCD.setColor(0, 0, 0);

if (n != 9 || n != 11)

{

myGLCD.print(nums[n], 37 + x \* 77, 35 + y \* 76);

}

else {

myGLCD.print(nums[n], 32 + x \* 77, 32 + y \* 76);

}

n++;

}

}

while (true)

{

x = 0;

y = 0;

if (myTouch.dataAvailable())

{

myTouch.read();

x = myTouch.getX();

y = myTouch.getY();

if ((y >= 12) && (y <= 76)) // Upper row

{

if ((x >= 12) && (x <= 77)) // Button: 1

{

waitForIt(12, 12, 77, 76);

changepwd("1");

}

if ((x >= 89) && (x <= 154)) // Button: 1

{

waitForIt(89, 12, 154, 76);

changepwd("2");

}

if ((x >= 166) && (x <= 231)) // Button: 1

{

waitForIt(166, 12, 231, 76);

changepwd("3");

}

if ((x >= 243) && (x <= 308)) // Button: 1

{

waitForIt(243, 12, 308, 76);

myGLCD.setFont(BigFont);

myGLCD.clrScr();

myGLCD.setBackColor(0, 0, 0);

myGLCD.setColor(255, 255, 255);

if(pwd.length() == 4)

{

myGLCD.print("YOUR NEW PASSWORD IS", 20, 50);

myGLCD.print(pwd, 120, 140);

delay(2000);

mainMenu();

}

}

}

if ((y >= 88) && (y <= 152)) // Center row

{

if ((x >= 12) && (x <= 77)) // Button: 1

{

waitForIt(12, 88, 77, 152);

changepwd("4");

}

if ((x >= 89) && (x <= 154)) // Button: 1

{

waitForIt(89, 88, 154, 152);

changepwd("5");

}

if ((x >= 166) && (x <= 231)) // Button: 1

{

waitForIt(166, 88, 231, 152);

changepwd("6");

}

if ((x >= 243) && (x <= 308)) // Button: 1

{

waitForIt(243, 88, 308, 152);

changepwd("0");

}

}

if ((y >= 164) && (y <= 228)) // Center row

{

if ((x >= 12) && (x <= 77)) // Button: 1

{

waitForIt(12, 164, 77, 228);

changepwd("7");

}

if ((x >= 89) && (x <= 154)) // Button: 1

{

waitForIt(89, 164, 154, 228);

changepwd("8");

}

if ((x >= 166) && (x <= 231)) // Button: 1

{

waitForIt(166, 164, 231, 228);

changepwd("9");

}

if ((x >= 243) && (x <= 308)) // Button: 1

{

waitForIt(243, 164, 308, 228);

if (pwd.length() > 0)

{

pwd = pwd.substring(0, pwd.length() - 1);

lightUp(pwd);

delay(100);

}

else

{

pwd = "";

lightUp(pwd);

delay(100);

}

}

}

}

}

}

void addFing()

{

myGLCD.clrScr();

myGLCD.setFont(SmallFont);

myGLCD.setBackColor(0, 0, 0);

myGLCD.setColor(255, 255, 255);

//enroll();

}

void mainMenu()

{

int n = 0;

String nums[] = {"LOCK", "SET PWD", "ADD FING"};

myGLCD.clrScr();

myGLCD.setFont(SmallFont);

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

{

myGLCD.setBackColor(0, 0, 0);

myGLCD.setColor(255, 255, 255);

myGLCD.fillRect(4 + x \* 104, 70, 104 + x \* 104, 170);

myGLCD.setBackColor(255, 255, 255);

myGLCD.setColor(0, 0, 0);

myGLCD.print(nums[x], 24 + x \* 104, 120);

}

while (true)

{

x = 0;

y = 0;

if (myTouch.dataAvailable())

{

myTouch.read();

x = myTouch.getX();

y = myTouch.getY();

if ((x > 4 && x < 104 ) || (x > 108 && x < 208) || (x > 212 && x < 312)) {

break;

}

}

}

if (x > 4 && x < 104)

{

waitForIt(4, 70, 104, 170);

myservo.write(1);

delay(2000);

lockLCD();

}

if (x > 108 && x < 208)

{

waitForIt(108, 70, 208, 170);

newpwd();

}

if (x > 212 && x < 312)

{

waitForIt(212, 70, 312, 170);

addFing();

}

}

boolean pwdConfirm(String a)

{

if (a.equals(pwd))

{

digitalWrite(blue1, LOW);

digitalWrite(blue2, LOW);

digitalWrite(blue3, LOW);

digitalWrite(blue4, LOW);

myservo.write(179);

mainMenu();

return true;

}

else

{

return false;

}

}

void screenFunc()

{

int n = 0;

String nums[] = {"1", "4", "7", "2", "5", "8", "3", "6", "9", "GO", "0", "BK"};

for (int x = 0; x < 4; x++)

{

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

{

myGLCD.setBackColor(0, 0, 0);

myGLCD.setColor(255, 255, 255);

myGLCD.fillRect(12 + x \* 77, 12 + y \* 76, 77 + 77 \* x, 76 + y \* 76);

myGLCD.setBackColor(255, 255, 255);

myGLCD.setColor(0, 0, 0);

if (n != 9 || n != 11)

{

myGLCD.print(nums[n], 37 + x \* 77, 35 + y \* 76);

}

else {

myGLCD.print(nums[n], 32 + x \* 77, 32 + y \* 76);

}

n++;

}

}

while (true)

{

x = 0;

y = 0;

if (myTouch.dataAvailable())

{

myTouch.read();

x = myTouch.getX();

y = myTouch.getY();

if ((y >= 12) && (y <= 76)) // Upper row

{

if ((x >= 12) && (x <= 77)) // Button: 1

{

waitForIt(12, 12, 77, 76);

touchFunc("1");

}

if ((x >= 89) && (x <= 154)) // Button: 1

{

waitForIt(89, 12, 154, 76);

touchFunc("2");

}

if ((x >= 166) && (x <= 231)) // Button: 1

{

waitForIt(166, 12, 231, 76);

touchFunc("3");

}

if ((x >= 243) && (x <= 308)) // Button: 1

{

waitForIt(243, 12, 308, 76);

if (pwdConfirm(str))

{

digitalWrite(green, HIGH);

delay(1000);

digitalWrite(green, LOW);

//Serial.println("ACCESS GRANTED");

str = "";

delay(100);

break;

}

else

{

digitalWrite(redPin, HIGH);

delay(1000);

digitalWrite(redPin, LOW);

str = "";

digitalWrite(blue1, LOW);

digitalWrite(blue2, LOW);

digitalWrite(blue3, LOW);

digitalWrite(blue4, LOW);

//Serial.println("ACCESS DENIED");

delay(100);

}

}

}

if ((y >= 88) && (y <= 152)) // Center row

{

if ((x >= 12) && (x <= 77)) // Button: 1

{

waitForIt(12, 88, 77, 152);

touchFunc("4");

}

if ((x >= 89) && (x <= 154)) // Button: 1

{

waitForIt(89, 88, 154, 152);

touchFunc("5");

}

if ((x >= 166) && (x <= 231)) // Button: 1

{

waitForIt(166, 88, 231, 152);

touchFunc("6");

}

if ((x >= 243) && (x <= 308)) // Button: 1

{

waitForIt(243, 88, 308, 152);

touchFunc("0");

}

}

if ((y >= 164) && (y <= 228)) // Center row

{

if ((x >= 12) && (x <= 77)) // Button: 1

{

waitForIt(12, 164, 77, 228);

touchFunc("7");

}

if ((x >= 89) && (x <= 154)) // Button: 1

{

waitForIt(89, 164, 154, 228);

touchFunc("8");

}

if ((x >= 166) && (x <= 231)) // Button: 1

{

waitForIt(166, 164, 231, 228);

touchFunc("9");

}

if ((x >= 243) && (x <= 308)) // Button: 1

{

waitForIt(243, 164, 308, 228);

if (str.length() > 0)

{

str = str.substring(0, str.length() - 1);

lightUp(str);

delay(100);

}

else

{

str = "";

lightUp(str);

delay(100);

}

}

}

}

}

}

void setup()

{

Serial.begin(9600);

myservo.attach(44);

pinMode(blue1, OUTPUT);

pinMode(blue2, OUTPUT);

pinMode(blue3, OUTPUT);

pinMode(blue4, OUTPUT);

pinMode(green, OUTPUT);

pinMode(redPin, OUTPUT);

pinMode(45, OUTPUT);

start();

}

void start() {

// put your setup code here, to run once:

delay(100);

fps.Open();

fps.SetLED(true);

digitalWrite(redPin, LOW);

digitalWrite(green, LOW);

digitalWrite(blue1, LOW);

digitalWrite(blue2, LOW);

digitalWrite(blue3, LOW);

digitalWrite(blue4, LOW);

digitalWrite(45, HIGH);

myservo.write(1);

checkFinger();

}

void checkFinger() {

// put your main code here, to run repeatedly:

// Identify fingerprint test

while(true)

{

if (fps.IsPressFinger())

{

fps.CaptureFinger(false);

int id = fps.Identify1\_N();

if (id < 200)

{

fps.SetLED(false);

digitalWrite(45, LOW);

myGLCD.InitLCD();

myGLCD.setFont(BigFont);

myGLCD.clrScr();

myTouch.InitTouch();

myTouch.setPrecision(PREC\_HI);

screenFunc();

// digitalWrite(blue1, HIGH);

// digitalWrite(blue2, HIGH);

// digitalWrite(blue3, HIGH);

// digitalWrite(blue4, HIGH);

}

}

else

{

digitalWrite(blue1, LOW);

digitalWrite(blue2, LOW);

digitalWrite(blue3, LOW);

digitalWrite(blue4, LOW);

}

delay(100);

}

}

void loop()

{

delay(100);

}