#include <SoftwareSerial.h>

#include<LiquidCrystal.h>

#include <OneWire.h>

#include <DallasTemperature.h>

#include "HX710B.h"

const int DOUT = PC0;   //sensor data pin

const int SCLK  = PC1;   //sensor clock pin

HX710B pressure\_sensor;

LiquidCrystal lcd(PB11,PB10,PB9, PB1, PB0, PA3, PA2);

SoftwareSerial ss(PA0, PA1);

#define ONE\_WIRE\_BUS PA0

OneWire oneWire(ONE\_WIRE\_BUS);

DallasTemperature sensors(&oneWire);

const int sw = PA6;

const int pulse = PA7;

int hb = 0,s=0,bpupper,bplower;

float t = 0.0;

void setup() {

  pressure\_sensor.begin(DOUT, SCLK);

  Serial.begin(9600);

  ss.begin(9600);

  Serial.println("WELCOME TO HEALTH MONITORING");

  pinMode(sw, INPUT\_PULLUP);

  pinMode(pulse,INPUT);

  lcd.begin(16, 2);

  lcd.clear();

  lcd.setCursor(0,0);

  lcd.print("HEALTH CHECK");

  lcd.setCursor(0,1);

  lcd.print("USING STM32..");

  delay(2000);

  ss.println("AT");

  delay(500);

  ss.println("AT+CNMI=2,2,0,0,0");

  delay(500);

  ss.println("AT+CMGF=1");

  delay(1000);

  ss.println("AT+CMGF=1");

  lcd.clear();

  lcd.setCursor(0,0);

  lcd.print("T:      ");

  lcd.setCursor(0,1);

  lcd.print("P:     BP:");

  send\_sms("I AM HERE ");

  sensors.begin();

}

void loop() {

  s = digitalRead(sw);

  if(s == LOW)

  {

    lcd.clear();

    lcd.setCursor(0,1);

    lcd.print("sms sent ");

    String cmd = "BODY TEMPERATURE = ";

    cmd += t;

    cmd += " C , heart Rate = ";

    cmd += hb;

    cmd += "BPM , Blood Pressure = ";

    cmd += bpupper;

    cmd +="/";

    cmd +=bplower;

    send\_sms(cmd);

  }

  sensors.requestTemperatures();

  Serial.print("Celsius temperature: ");

   t = sensors.getTempCByIndex(0);

  float f = sensors.getTempFByIndex(0);

  hb = analogRead(pulse);

  if(hb<520)

  {

  hb = 0;

  }

  else if(hb > 640)

  {

    hb = 98 ;

  }

  else

  {

    hb = hb - 490;

  }

  lcd.setCursor(0,0);

  lcd.print("T:");

  lcd.print(t);

  lcd.print("C/");

  lcd.print(f);

  lcd.print("Fh ");

  lcd.setCursor(0,1);

  lcd.print("P:");

  lcd.print(hb);

  lcd.print(" ");

  /\*Serial.print(sensors.getTempCByIndex(0));

  Serial.print(" - Fahrenheit temperature: ");

  Serial.println(sensors.getTempFByIndex(0));\*/

  if (pressure\_sensor.is\_ready()) {

     bpupper = pressure\_sensor.pascal();

    if(bpupper < 480)

    {

      bpupper = 0;

    }

    else

    {

      bpupper = bpupper - 510;

    }

    bpupper = map(bpupper,0,500,0,200);

    bplower = pressure\_sensor.mmHg();

    if(bpupper < 120)

    bplower = 0;

    bplower = bplower \* 14;

    Serial.print("BP:");

    Serial.print(bpupper);

    Serial.print("/");

    Serial.println(bplower);

    lcd.setCursor(6,1);

    lcd.print("BP:");

    lcd.print(bpupper);

    lcd.print("/");

    lcd.print(bplower);

    /\*Serial.print("Pascal: ");

    Serial.println(pressure\_sensor.pascal());

    Serial.print("ATM: ");

    Serial.println(pressure\_sensor.atm());

    Serial.print("mmHg: ");

    Serial.println(pressure\_sensor.mmHg());

    Serial.print("PSI: ");

    Serial.println(pressure\_sensor.psi());\*/

  } else {

    Serial.println("Pressure sensor not found.");

  }

  delay(3000);

}

//void send\_sms(char\* str)

void send\_sms(String str)

{

    delay(500);

    ss.println("AT+CMGF=1");

    delay(500);

    ss.println("AT+CMGS=\"+919381544640\"\r"); // 9381544640

    delay(1000);

    ss.print(str);

    Serial.print(str);

    delay(1000);

    delay(1000);

    ss.println("");

    delay(1000);

    ss.println((char)26); // ASCII code of CTRL+Z

    delay(1000);

    lcd.clear();

}