Bio Project Report

Project Name: Healthcare Kit

Prepared by:

   Mahmoud Ahmed Serag Eid

Project Components:
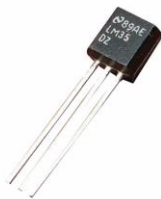
1) Bluetooth Module (HC-05)

2) Monitor (16*2)

3) Temperature Sensor (LM35)

4) Potentiometer

5) Pulse Oximeter Sensor

6) 3 Resistances (4.7 k ohm)

Project features:

I have designed a special wireless-controlled device that helps healthy or people with chronic diseases as it helps in measuring temperature, pulse rate and oxygen percentage which considered as the common risk factors for any disease, so I try to make their measurement as simple and easy as possible in order to help you to keep your satisfaction about your health.

The project is more helpful for:

    1) reducing the deteriorated-coronavirus-cases:

where any decrease in orogen or noticeable increase in temperature consider a sign for being infected with that virus and pushes you to see the doctor and take an early treatment step.

    2) athletes:

doing a long period exercises need a regular monitoring for pulse rate and oxygen which is applicable with our wireless easy-navigation device

   3) we are mainly targeting the developing countries:

in that countries providing a budget for supporting the medical field with new modern devices is a bit difficult so our healthcare kit will be suitable due to its simple and low-cost hardware that reduce a great gap and decrease many risks as it can be found in every limited income home.

    4) readable in more than one way:

the point of using the mobile app through the Bluetooth module is to help in reading the measures either from your mobile screen or from the lcd screen.

our target is to support the medical field with some new devices that the patient can treated with as do as the doctor and make health monitoring as easy as possible

Circuit Diagram:
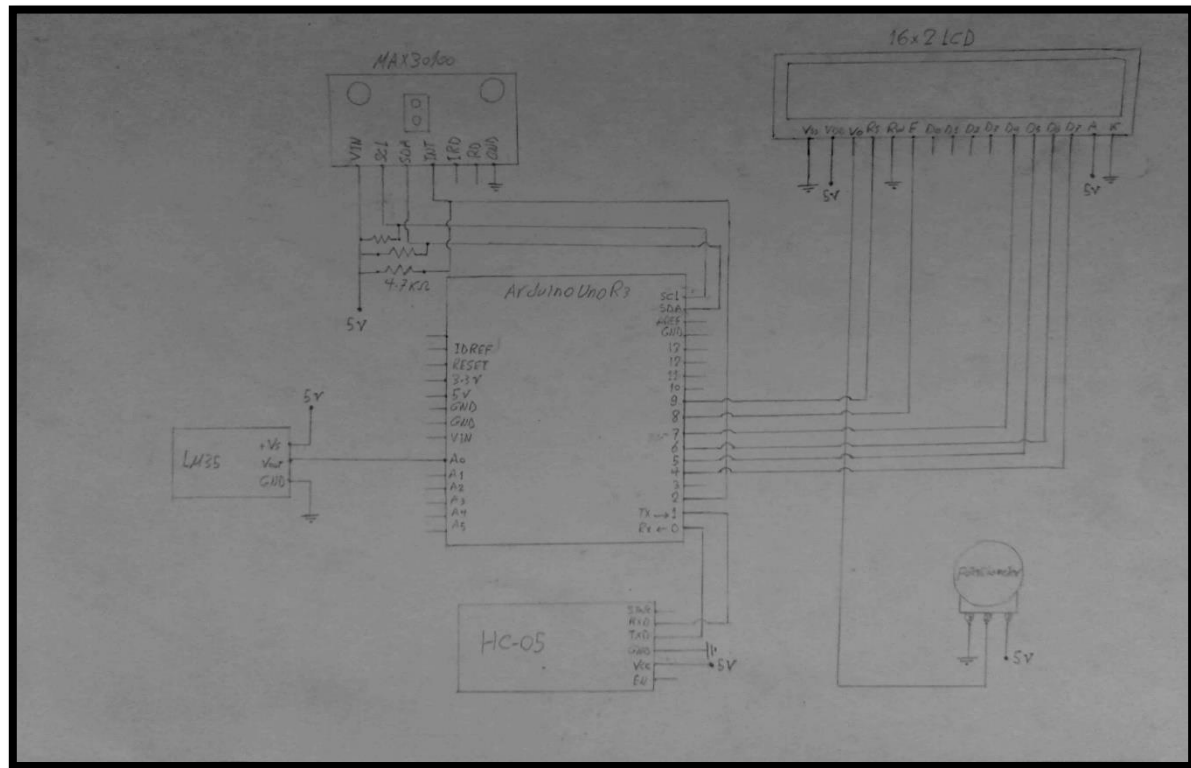
wiring instruction:

- ➢ LCD monitor pin Vss – Arduino pin GND
- ➢ LCD monitor pin VDD – Arduino pin VCC (5v)
- ➢ LCD monitor pin VO – Potentiometer pin 2
- ➢ LCD monitor pin RS – Arduino pin 9
- ➢ LCD monitor pin RW – Arduino pin GND
- ➢ LCD monitor pin E – Arduino pin 8
- ➢ LCD monitor pin D4 – Arduino pin 7
- ➢ LCD monitor pin D5 – Arduino pin 5
- ➢ LCD monitor pin D6 – Arduino pin 6
- ➢ LCD monitor pin D7 – Arduino pin 4
- ➢ LCD monitor pin A – Arduino pin VCC (5v)
- ➢ LCD monitor pin K – Arduino pin GND
- ➢ Potentiometer pin VCC – Arduino pin VCC (5v)
- ➢ Potentiometer pin GND – Arduino pin GND

- ➢ Bluetooth Module (HC-05) pin RXD – Arduino pin 1
- ➢ Bluetooth Module (HC-05) pin TXD – Arduino pin 0
- ➢ Bluetooth Module (HC-05) pin GND – Arduino pin GND
- ➢ Bluetooth Module (HC-05) pin VCC – Arduino pin VCC (5v)
- ➢ Pulse Oximeter pin VIN – Arduino pin VCC (5v)
- ➢ Pulse Oximeter pin SCL – Arduino pin SCL
- ➢ Pulse Oximeter pin SDA – Arduino pin SDA
- ➢ Pulse Oximeter pin INT – Arduino pin 2
- ➢ Pulse Oximeter pin GND – Arduino pin GND
- ➢ Temperature Sensor (LM35) pin VCC – Arduino pin VCC (5v)
- ➢ Temperature Sensor (LM35) pin Vout – Arduino pin A0 -
- ➢ Temperature Sensor (LM35) pin GND– Arduino pin GND

Code:

```
#include <SoftwareSerial.h>

#include <LiquidCrystal.h>

#include <Wire.h>

#include "MAX30100_PulseOximeter.h"

LiquidCrystal lcd(9, 8, 7, 5, 6, 4);

int Body_Temp = 0 ;

int Body_Temp1 ;

int Body_Temp_Value;

char junk;

String inputString = "";

#define REPORTING_PERIOD_MS    1000

PulseOximeter pox;

uint32_t tsLastReport = 0;

void onBeatDetected()

{

 Serial.println("Beat!");

}
```

```
void setup()
{
 Serial.begin(115200);
 //Merial.begin(9600);
 lcd.begin(16, 2);
}
void loop()
{
 if (Serial.available() > 0) {
  int a = Serial.read();
  if (a == '1') {
   Body_Temp1 = analogRead(Body_Temp);
   Body_Temp_Value = (float) Body_Temp1 * (5 / 10.24);
   lcd.setCursor(0, 0);
   lcd.print("Body Temp : ");
   lcd.print(Body_Temp_Value);
   delay(3000);
   lcd.clear();
  }
  else if (a == '2') {
   pox.setIRLedCurrent(MAX30100_LED_CURR_7_6MA);
   pox.setOnBeatDetectedCallback(onBeatDetected);
   pox.update();
   if (millis() - tsLastReport > REPORTING_PERIOD_MS) {
    Serial.print("Heart rate:");
    Serial.print(pox.getHeartRate());
    Serial.print("bpm / SpO2:");
    Serial.print(pox.getSpO2());
```

```
      Serial.println("%");
      lcd.clear();
      lcd.setCursor(0, 0);
      lcd.print("BPM : ");
      lcd.print(pox.getHeartRate());
      lcd.setCursor(0, 1);
      lcd.print("SpO2: ");
      lcd.print(pox.getSpO2());
      lcd.print("%");
      tsLastReport = millis();
     }
    }
    else {
     lcd.setCursor (0, 1);
     for (int i = 0; i < 16; ++i)
      {
       lcd.write(' ');
      }
     lcd.setCursor (0, 0);
     lcd.print("Wrong Attemp ");
     delay(3000);
     lcd.clear();
    }
   }
  }
```