IOT PROJECT

#include <Wire.h>

#include <Adafruit\_GFX.h>

#include <Adafruit\_SSD1306.h>

#include "MAX30100\_PulseOximeter.h"

#define SCREEN\_WIDTH 128

#define SCREEN\_HEIGHT 64

#define OLED\_RESET    -1

#define SCREEN\_ADDRESS 0x3C

Adafruit\_SSD1306 display(SCREEN\_WIDTH, SCREEN\_HEIGHT, &**Wire**, OLED\_RESET);

PulseOximeter pox;

unsigned long lastUpdate = 0;

void onBeatDetected() {

**Serial**.println("♥ Beat Detected!");

}

void setup() {

**Serial**.begin(115200);

**Wire**.begin();

    // Initialize OLED

    if (!display.begin(SSD1306\_SWITCHCAPVCC, SCREEN\_ADDRESS)) {

**Serial**.println("SSD1306 OLED initialization failed");

        for (;;);

    }

    display.clearDisplay();

    display.setTextSize(1);

    display.setTextColor(WHITE);

    // Initialize MAX30100 Sensor

    if (!pox.begin()) {

**Serial**.println("MAX30100 initialization failed!");

        for (;;);

    } else {

**Serial**.println("MAX30100 Initialized.");

    }

    pox.setOnBeatDetectedCallback(onBeatDetected);

}

void loop() {

    pox.update();

    if (millis() - lastUpdate > 1000) {

        lastUpdate = millis();

        float heartRate = pox.getHeartRate();

        float spo2 = pox.getSpO2();

        // ✅ Fix Serial Monitor Output

**Serial**.print("Heart Rate: ");  // Label for Heart Rate

**Serial**.print(heartRate);

**Serial**.print(" bpm | SpO2: ");  // Label for SpO2

**Serial**.print(spo2);

**Serial**.println(" %");

        // ✅ Fix OLED Display Output

        display.clearDisplay();

        display.setCursor(10, 20);

        display.print("Heart Rate: ");

        display.print(heartRate);

        display.print(" bpm");

        display.setCursor(10, 40);

        display.print("SpO2: ");

        display.print(spo2);

        display.print(" %");

        display. display ();

    }

}

Json file

{

  "version": 1,

  "author": "Your Name",

  "editor": "wokwi",

  "parts": [

    {

      "type": "esp32-devkit-v1",

      "id": "esp32",

      "connections": {}

    },

    {

      "type": "ssd1306",

      "id": "oled",

      "width": 128,

      "height": 64,

      "i2c": "i2c0",

      "connections": {

        "GND": "esp32: GND",

        "VCC": "esp32:3.3V",

        "SCL": "esp32:22",

        "SDA": "esp32:21"

      }

    },

    {

      "type": "max30100",

      "id": "sensor",

      "i2c": "i2c0",

      "connections": {

        "GND": "esp32: GND",

        "VCC": "esp32:3.3V",

        "SCL": "esp32:22",

        "SDA": "esp32:21"

      }

    }

  ]

}

