

SMART HEALTH MONITORING SYSTEM FOR REAL-TIME HEART RATE AND BODY TEMPERATURE TRACKING



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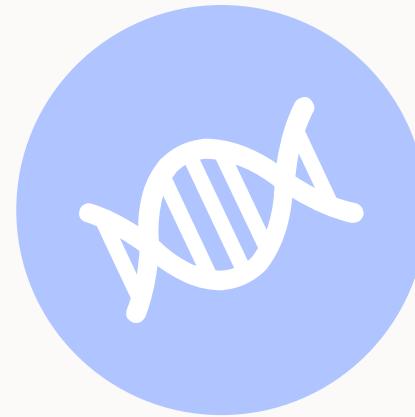
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HEALTH PROBLEM

Di era modern ini, kehidupan berjalan cepat, menyebabkan kurangnya perhatian pada pemantauan kesehatan. Deteksi awal seperti denyut jantung dan suhu tubuh kunci untuk pencegahan penyakit. Pengembangan Smart Health Monitoring System jadi proyek vital bagi masyarakat.



SOLUTION

Smart Health Monitoring System menggunakan mikrokontroler ESP32 untuk memantau detak jantung dan suhu tubuh secara real-time. Sensor MAX30100 berfokus pada pengukuran detak jantung, sedangkan sensor suhu analog LM35 memberikan presisi tinggi. Integrasi dengan platform Thingsboard memungkinkan pemantauan yang interaktif melalui smartphone. Proyek ini bertujuan menciptakan sistem pemantauan kesehatan efektif, mendeteksi dini potensi masalah, dan meningkatkan pemahaman individu tentang kesehatan. Diharapkan proyek ini dapat menjadi landasan untuk kolaborasi inovatif antara kesehatan dan teknologi ramah lingkungan.

TOOLS (SOFTWARE)

01



02



ThingsBoard



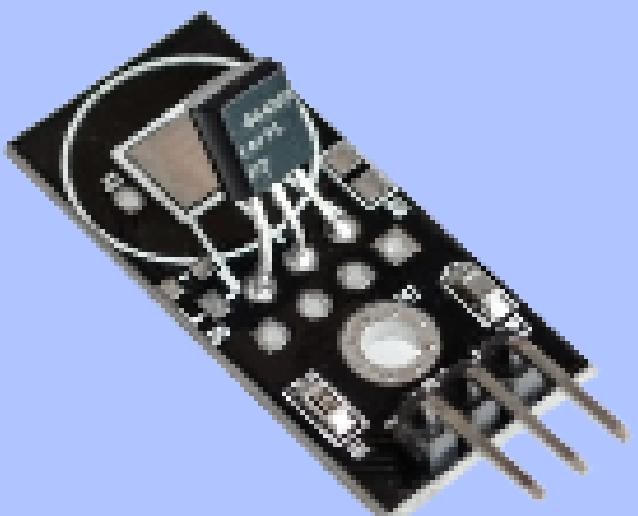
TOOLS (HARDWARE)

03



MAX30100 - HEART
RATE SENSOR

04



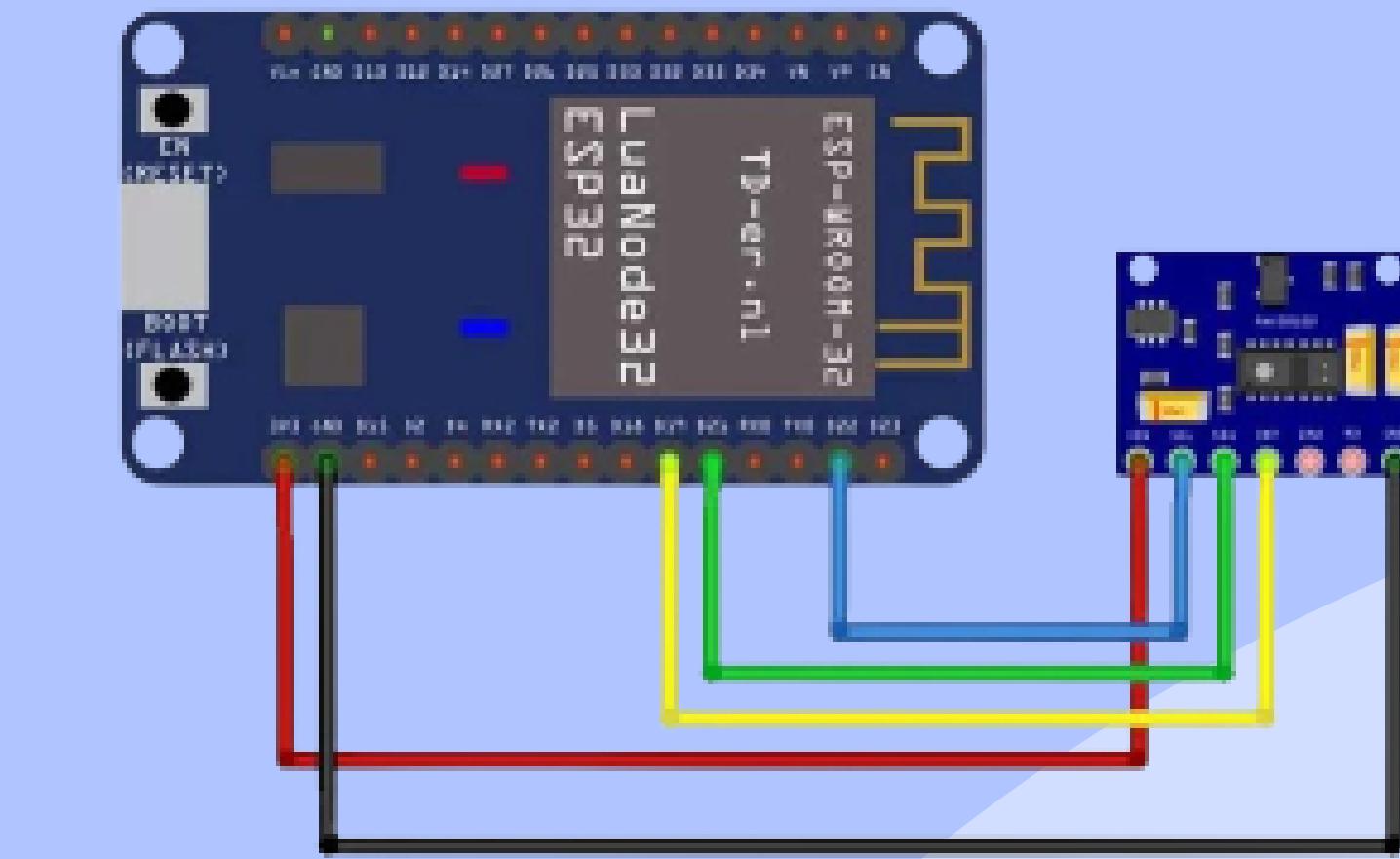
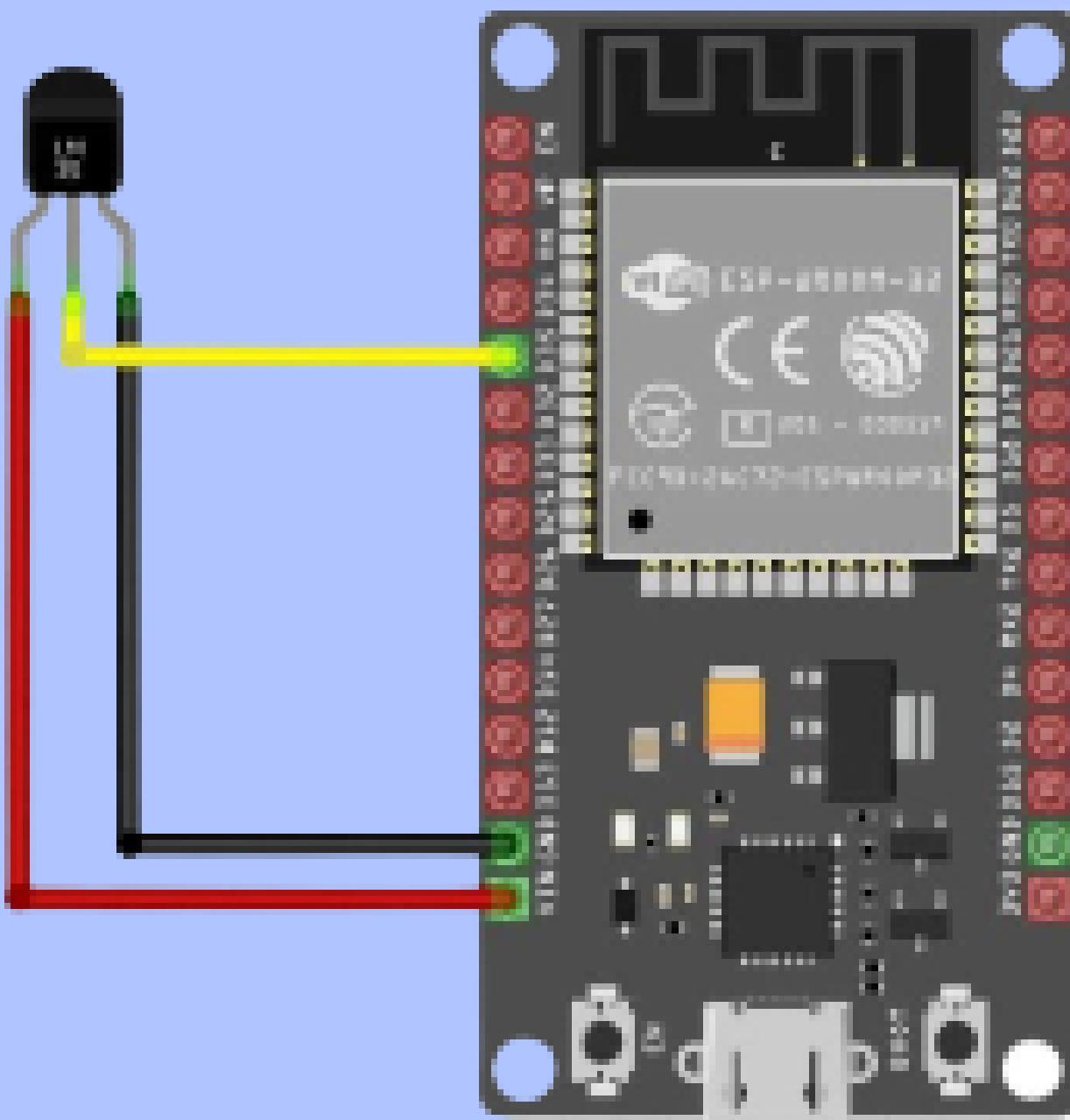
LM35 - BODY
TEMPERATURE
SENSOR



HARDWARE DESIGN & SCHEMATIC



LM35 - BODY TEMPERATURE SENSOR SCHEMATIC



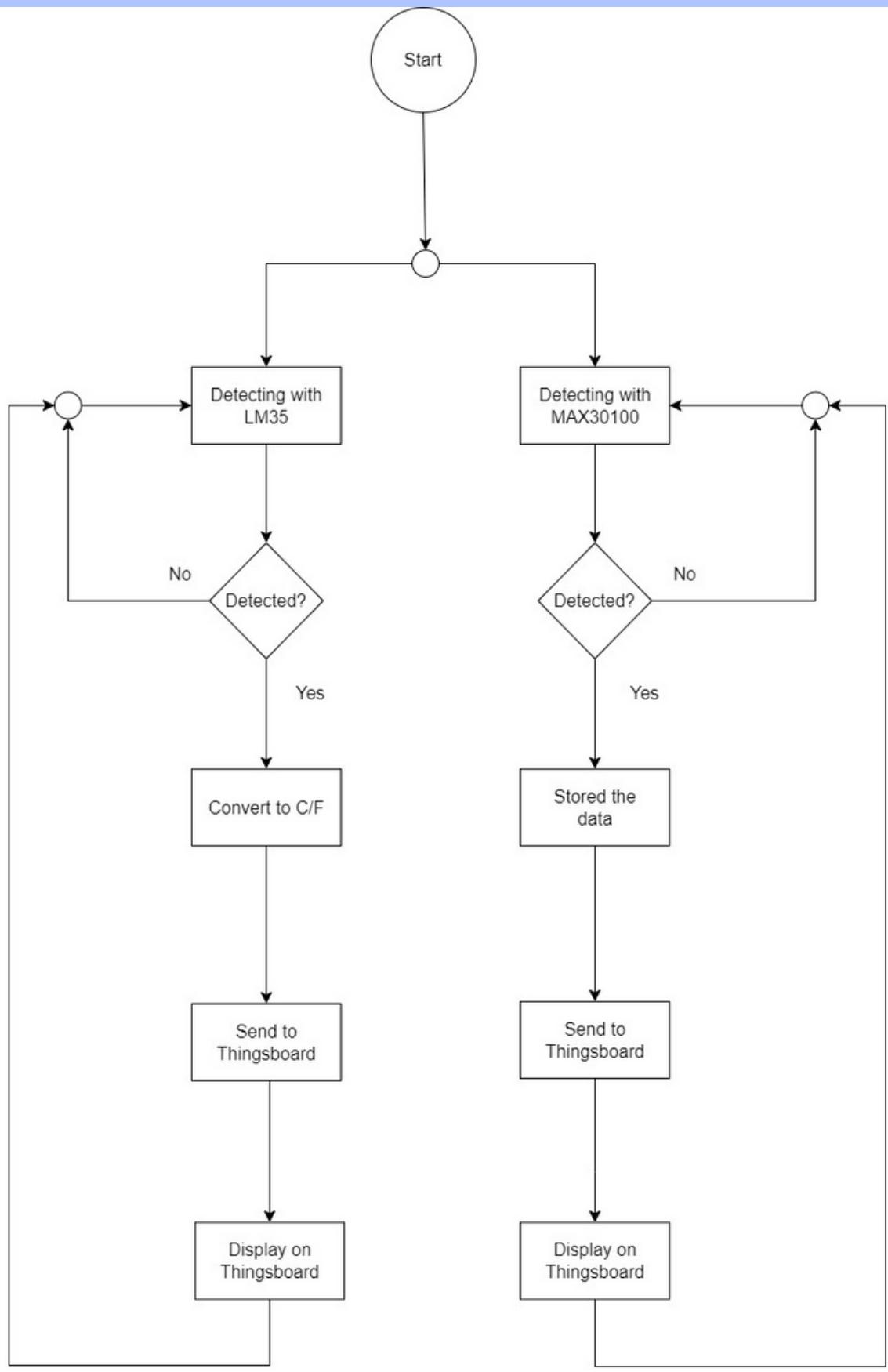
MAX30100 - HEART RATE SENSOR SCHEMATIC



SOFTWARE DESIGN



FLOWCHART



CODE

```
QueueHandle_t tempQueue;
SemaphoreHandle_t oximeterMutex;
```

```
TaskHandle_t TaskMAX;
TaskHandle_t TaskLM;
TaskHandle_t TaskWifi;
TaskHandle_t ThingsBoardTask;
```

```
#include <Wire.h>
#include <WiFi.h>
#include <ThingsBoard.h>
#include "Arduino_MQTT_Client.h"
#include "MAX30100_PulseOximeter.h"
```

```
// Initialize the Ethernet client object
WiFiClient wifiClient;
Arduino_MQTT_Client mqttClient(wifiClient);
```

```
// Create task for reading data from MAX30100 sensor
xTaskCreatePinnedToCore(
    MAX30100SensorReading, /* Task function. */
    "MAX30100SensorReading", /* Name of task. */
    10000, /* Stack size of task */
    NULL, /* Parameter of the task */
    1, /* Priority of the task */
    &TaskMAX, /* Task handle to keep track of created task */
    0 /* Pin task to core 0 */
);

// Create task for reading data from LM35 sensor
xTaskCreatePinnedToCore(
    LM35SensorReading, /* Task function. */
    "LM35SensorReading", /* Name of task. */
    10000, /* Stack size of task */
    NULL, /* Parameter of the task */
    1, /* Priority of the task */
    &TaskLM, /* Task handle to keep track of created task */
    1 /* Pin task to core 1 */
);

// Create task for WiFi
xTaskCreatePinnedToCore(
    WiFiTaskCode, /* Task function. */
    "WiFiTask", /* Name of task. */
    10000, /* Stack size of task */
    NULL, /* Parameter of the task */
    1, /* Priority of the task */
    &TaskWifi, /* Task handle to keep track of created task */
    0 /* Pin task to core 0 */
);

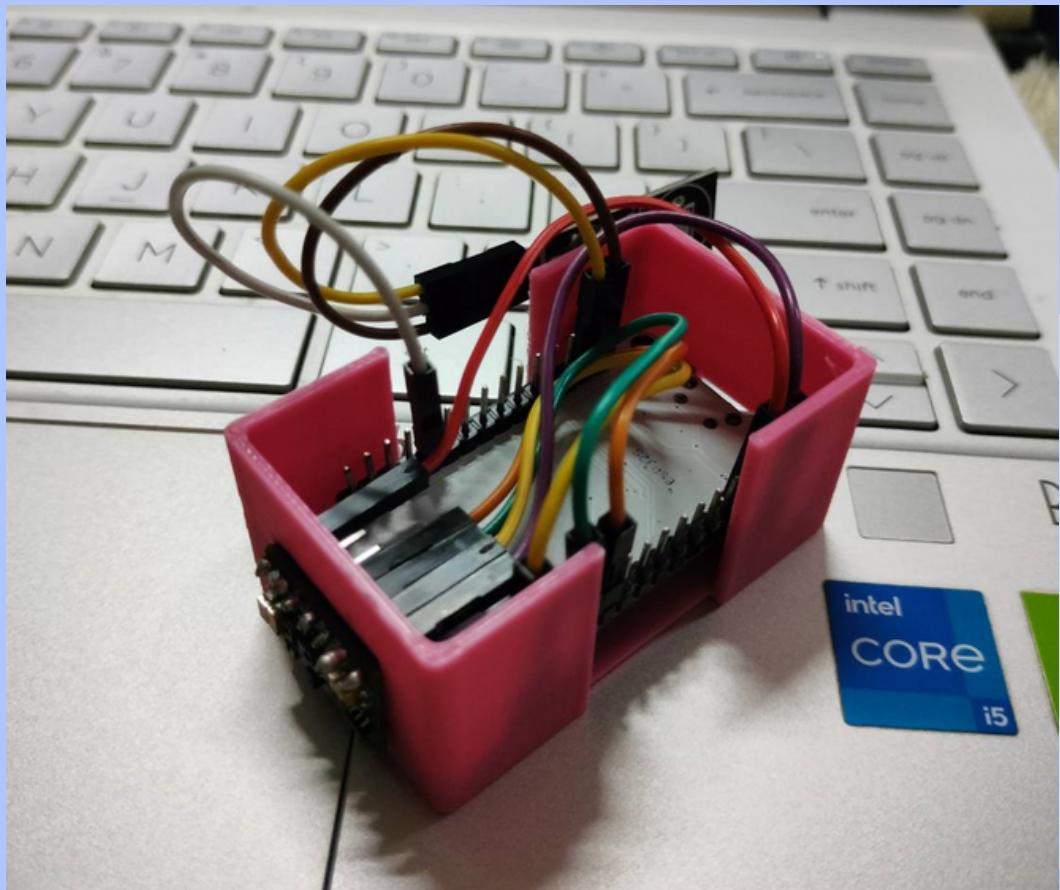
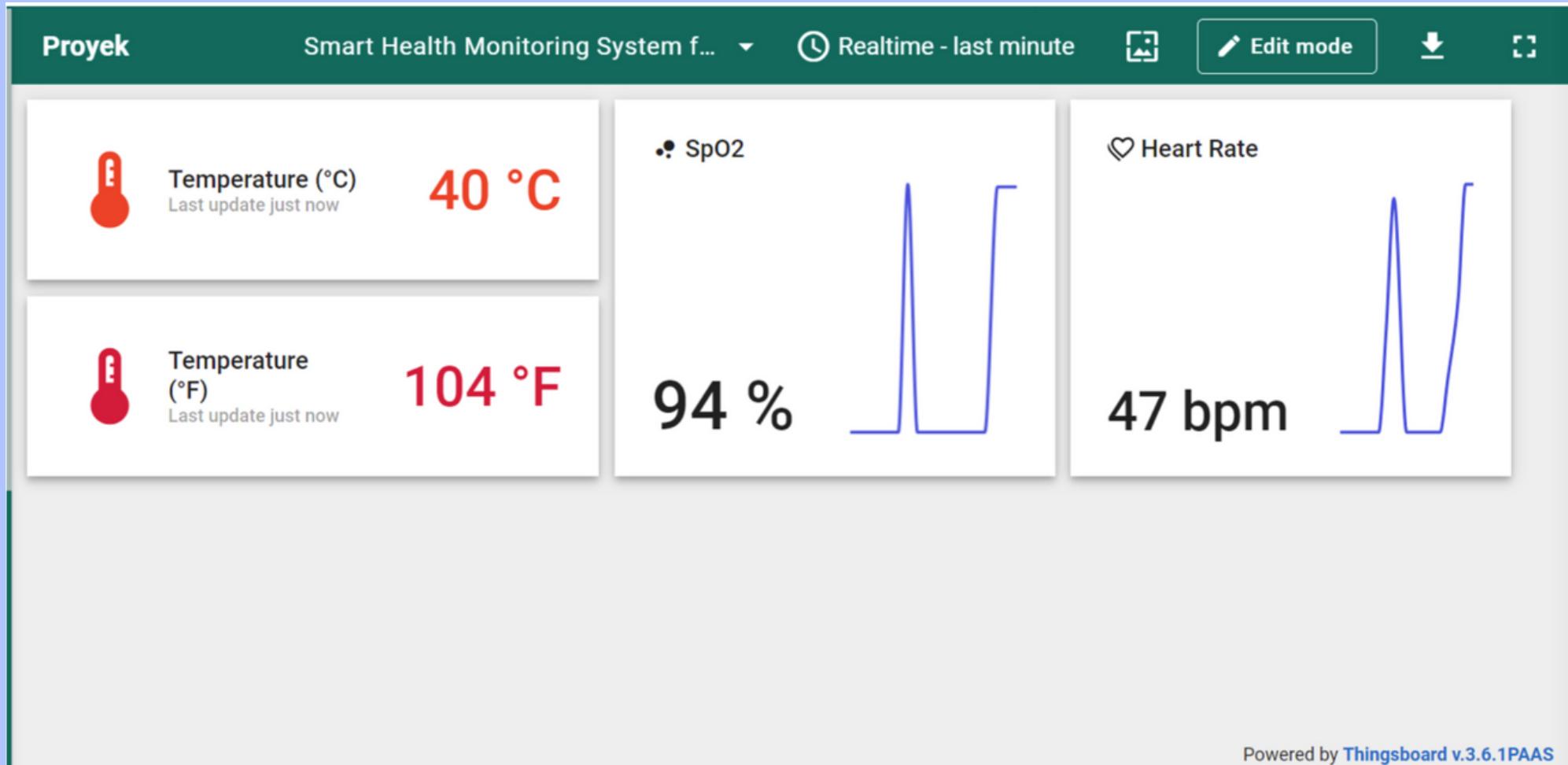
// Create task for ThingsBoard
xTaskCreatePinnedToCore(
    ThingsBoardTaskCode, /* Task function. */
    "ThingsBoardTask", /* Name of task. */
    10000, /* Stack size of task */
    NULL, /* Parameter of the task */
    1, /* Priority of the task */
    &ThingsBoardTask, /* Task handle to keep track of created task */
    1 /* Pin task to core 1 */
);
```

INTEGRATION & IMPLEMENTATIONS



HARDWARE INTEGRATIONS

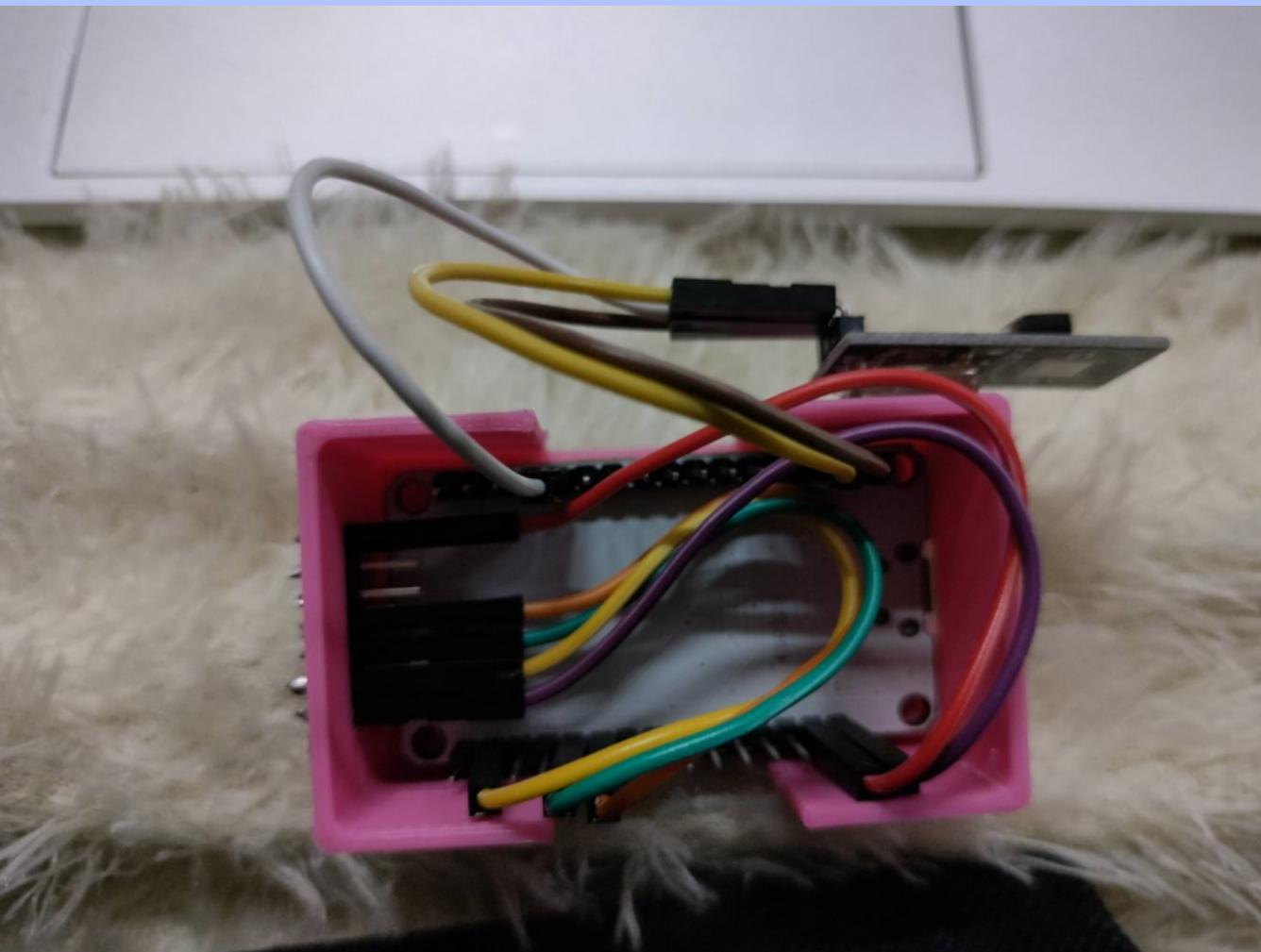
SOFTWARE INTEGRATION



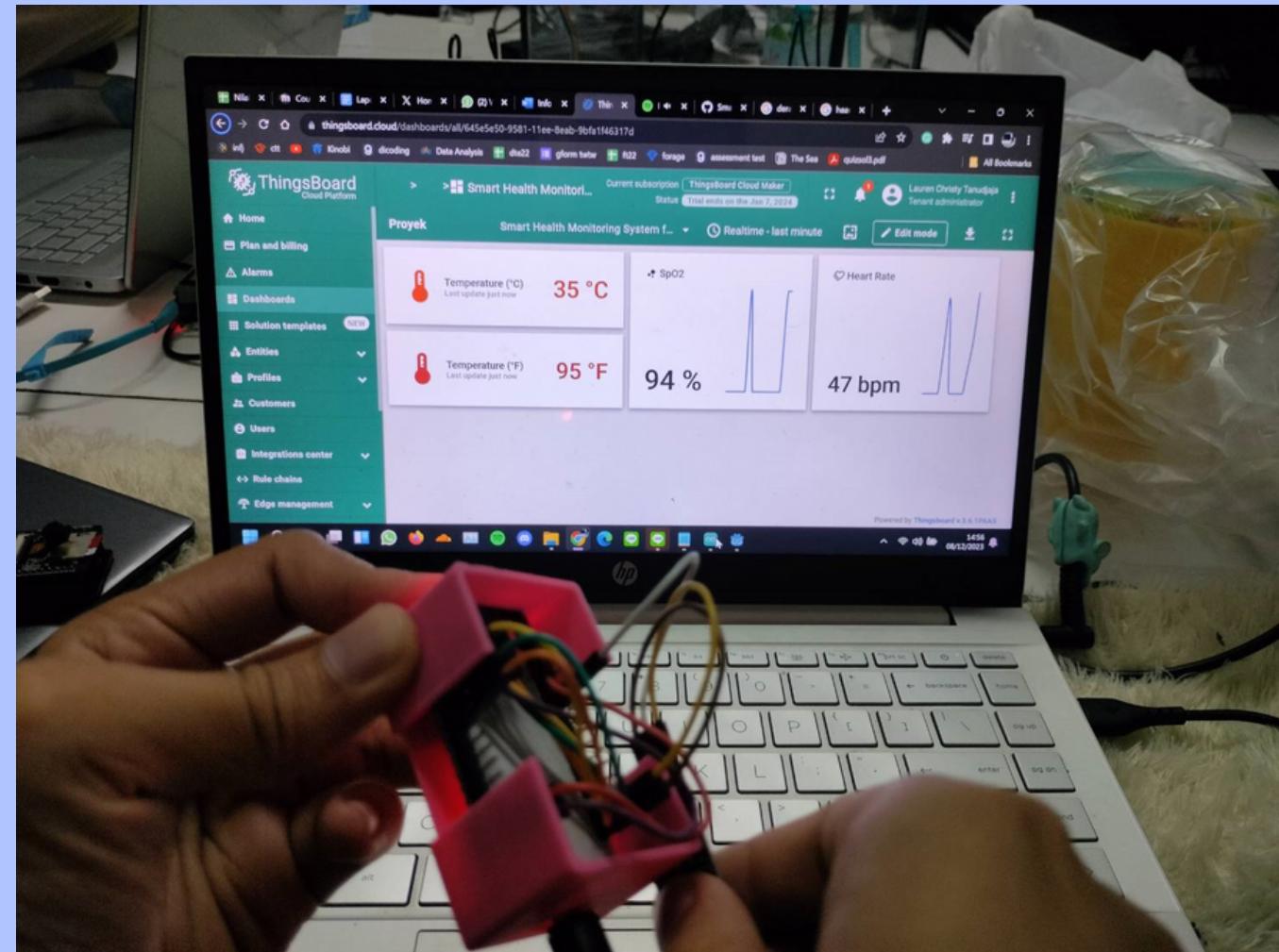
TESTING & RESULT



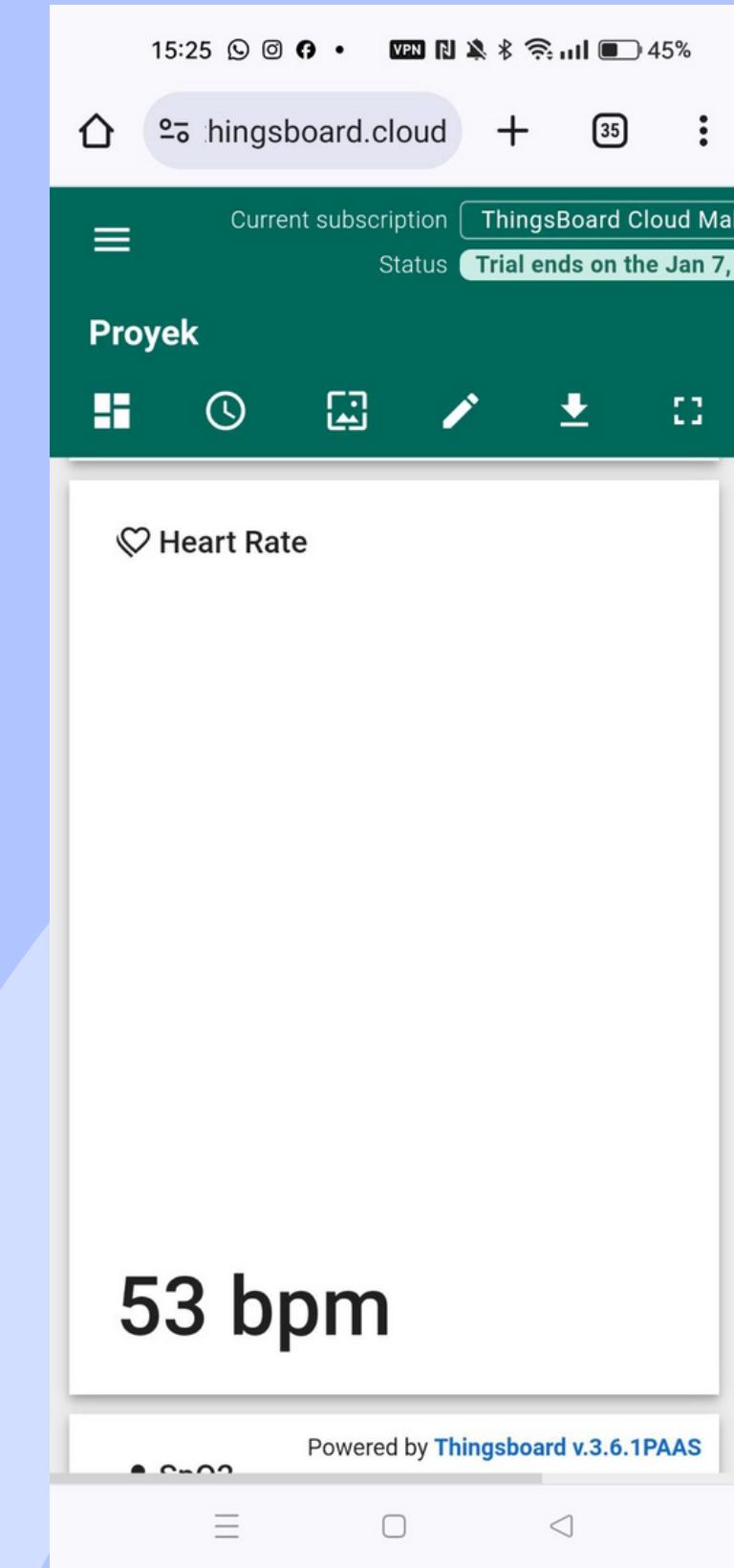
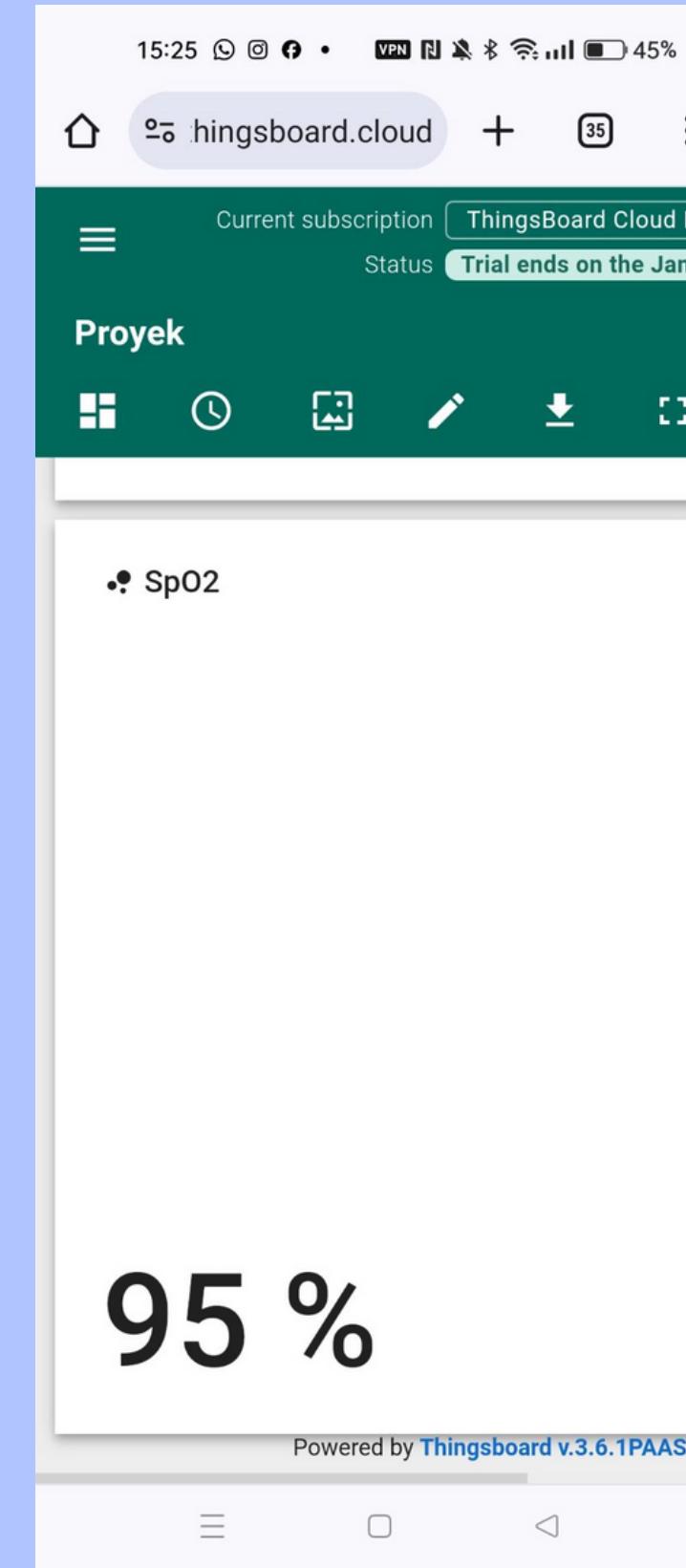
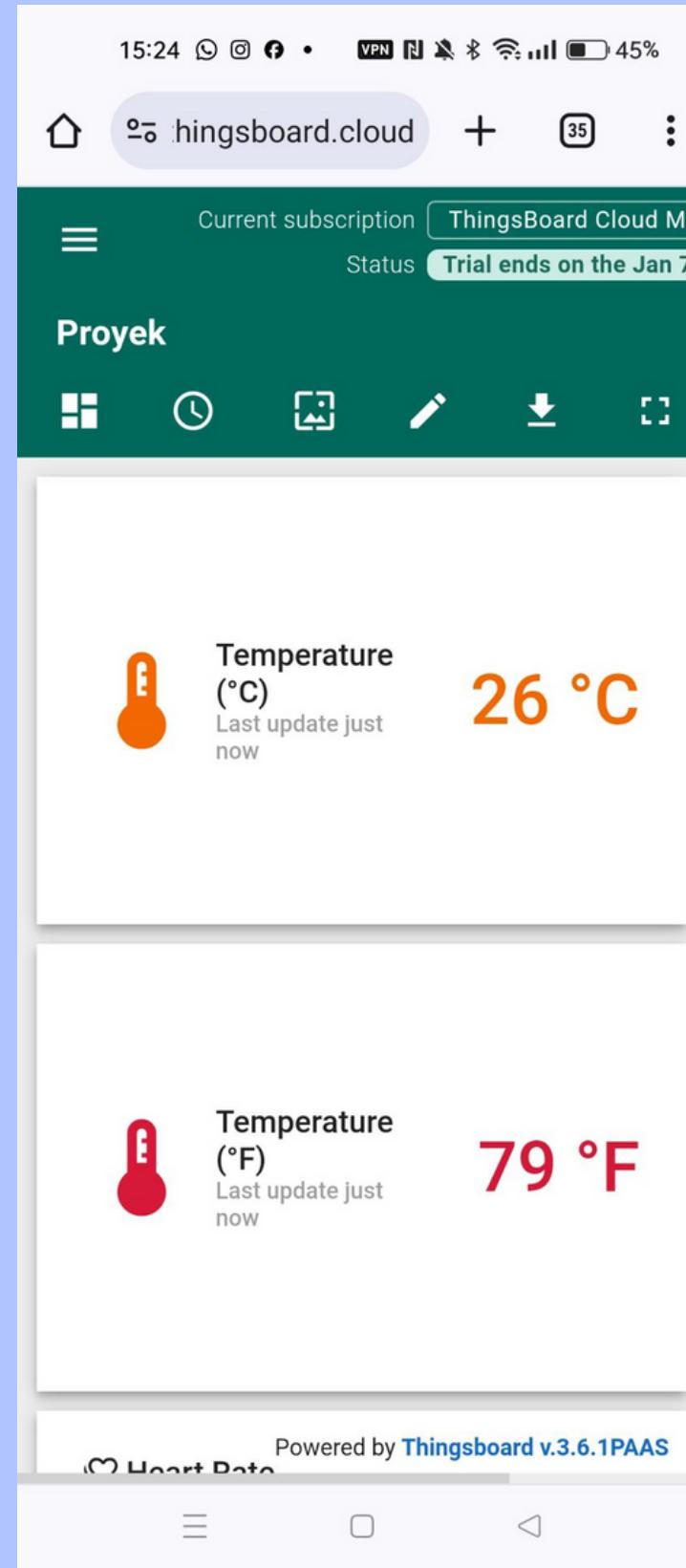
THE PRODUCT



THE RESULT (PC VERSION)



MOBILE VERSION



CONCLUSION

Proyek Smart Health Monitoring System ini berhasil dikembangkan dengan memadukan teknologi IoT, sensor, dan interface untuk memantau detak jantung dan suhu tubuh secara real-time. Dengan user interface yang interaktif, termasuk aplikasi smartphone, user dapat dengan mudah mengakses data kesehatan mereka dan mengambil langkah-langkah pencegahan yang dibutuhkan. Kontribusinya pada pengembangan teknologi kesehatan dan lingkungan menjadikannya inspirasi bagi masa depan yang lebih sehat dan berkelanjutan.





THANK YOU