

DAFTAR LAMPIRAN

LAMPIRAN A

Listing Program

1. Listing program Arduino Uno

```
#include <SoftwareSerial.h>           //komunikasi serial
SoftwareSerial serial_slave(10, 11); //RX,TX);
#include <Wire.h>
#include "MAX30100_PulseOximeter.h"
#include <PulseSensorPlayground.h>
#include <OneWire.h>
#include <DallasTemperature.h>
#include <NonBlockingDallas.h>

//dallas temp
#define ONE_WIRE_BUS 6           //PIN dallas temp
#define TIME_INTERVAL 1500      //Time interval dallas temp
OneWire oneWire(ONE_WIRE_BUS);
DallasTemperature dallasTemp(&oneWire);
NonBlockingDallas sensorDs18b20(&dallasTemp); //Create a new
instance of the NonBlockingDallas class

float temp;

//max30100
#define REPORTING_PERIOD_MS 1000 //Time interval Max30100
```

```

uint32_t tsLastReport = 0;

float heart;

float spo;

//Pulse sensor

const int PulseWire = 0;

int Threshold = 550;

int myBPM;

PulseSensorPlayground pulseSensor;

unsigned long previousMillis = 0;

const long interval = 1000;

void setup() {
  Serial.begin(9600);
  serial_slave.begin(115200);
  //max30100
  pox.begin();
  //Pulse sensor
  pulseSensor.analogInput(PulseWire);
  pulseSensor.setThreshold(Threshold);
  pulseSensor.begin();
  //max30100
  pox.setIRLedCurrent(MAX30100_LED_CURR_7_6MA);
  pox.setOnBeatDetectedCallback(onBeatDetected);
}

```

```

//dallas temp

sensorDs18b20.begin(NonBlockingDallas::resolution_12,
NonBlockingDallas::unit_C, TIME_INTERVAL);

sensorDs18b20.onIntervalElapsed(handleIntervalElapsed);

sensorDs18b20.requestTemperature();
}

void loop() {

sensorDs18b20.update();

pox.update();

myBPM = pulseSensor.getBeatsPerMinute();

pulseSensor.sawStartOfBeat();

if (millis() - tsLastReport > REPORTING_PERIOD_MS) {

heart = pox.getHeartRate();

spo = pox.getSpO2();

tsLastReport = millis();

}

// Serial.print("{}");

// Serial.print(myBPM);

// Serial.print(",");

// Serial.print(spo);

// Serial.print(",");

// Serial.print(temp);

// Serial.println("{}");

unsigned long currentMillis = millis();

```

```

if (currentMillis - previousMillis >= interval) {
    previousMillis = currentMillis;
    serial_slave.print("{}");
    serial_slave.print(myBPM);
    serial_slave.print(",");
    serial_slave.print(spo);
    serial_slave.print(",");
    serial_slave.print(temp);
    serial_slave.println("{}");
}
}

//Invoked at every sensor reading (TIME_INTERVAL milliseconds)

void handleIntervalElapsed(float temperature, bool valid, int
deviceIndex) {
    temp = temperature;
    // Serial.print("Sensor ");
    // Serial.print(deviceIndex);
    // Serial.print(" temperature: ");
    // Serial.print(temperature);
    // Serial.println(" °C");
}

void onBeatDetected() {}

```

2. Listing program ESP8266

```

#include <ESP8266WiFi.h>
#include <FirebaseArduino.h>
#include <Wire.h>
#include <SoftwareSerial.h>
SoftwareSerial serial_master(12, 13);//rx tx
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27, 20, 4);
const char*ssid = "Izin Dulu"; //di isi
const char*password = "qwertyuiop";

////////////////////////////////////

#define          FIREBASE_HOST          "database-84132-default-
rtdb.firebaseio.com"

#define          FIREBASE_AUTH
"kYeEv0cLdRMNPQyv0L0htYH1lhLUZXrZusy5NjEj"

////////////////////////////////////

String dataMasok = "";
String bpm_str = "";
String spo_str = "";
String temp_str = "";

int bpm;
float spo;
float temp;

```

```
int bpm_setmax = 100;
int bpm_setmin = 60;
float spo_setmax = 100.00;
float spo_setmin = 90.00;
float temp_setmax = 37.50;
float temp_setmin = 35.00;
unsigned long previousMillis = 0;
const long interval = 1000;

void setup() {
  // put your setup code here, to run once:
  Serial.begin(9600);
  serial_master.begin(115200);
  lcd.begin();
  lcd.backlight();
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED) {
    Serial.print(".");
    delay(200);
  }
  Serial.println("");
  Serial.println("WiFi connected");
  Serial.println("IP address: ");
```

```

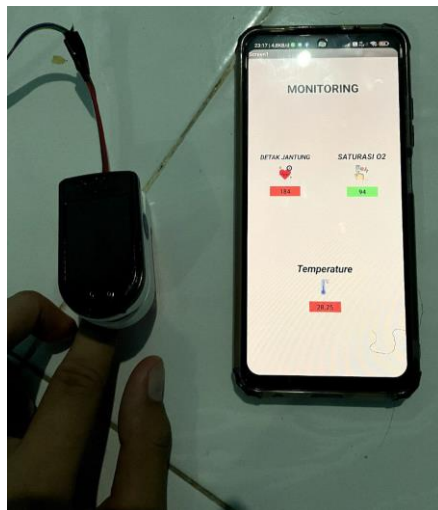
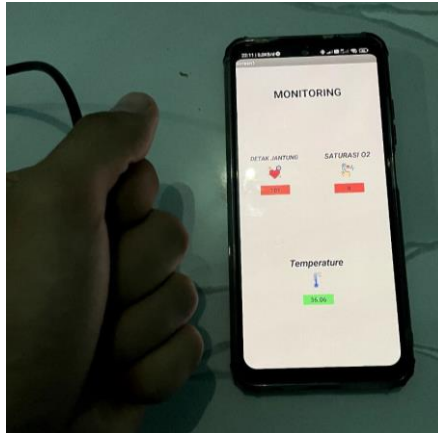
Serial.println(WiFi.localIP());
Firebase.begin(FIREBASE_HOST, FIREBASE_AUTH);
}

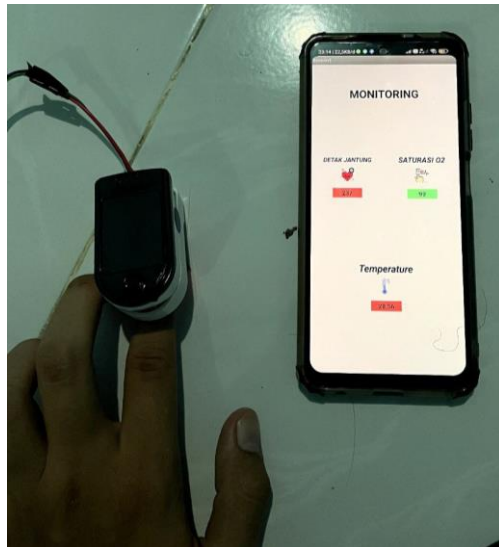
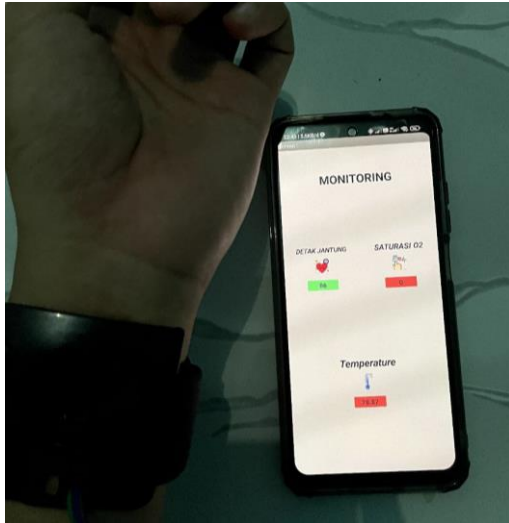
void loop() {
  // put your main code here, to run repeatedly:
  reconnect();
  serial_terima();
  Serial.print(bpm);
  Serial.print(" || ");
  Serial.print(spo);
  Serial.print(" || ");
  Serial.println(temp);
  unsigned long currentMillis = millis();
  if (currentMillis - previousMillis >= interval) {
    previousMillis = currentMillis;
    Firebase.setInt("bpm", bpm);
    Firebase.setFloat("spo", spo);
    Firebase.setFloat("temp", temp);
  }
}

```

LAMPIRAN B

Gambar Pendeteksian



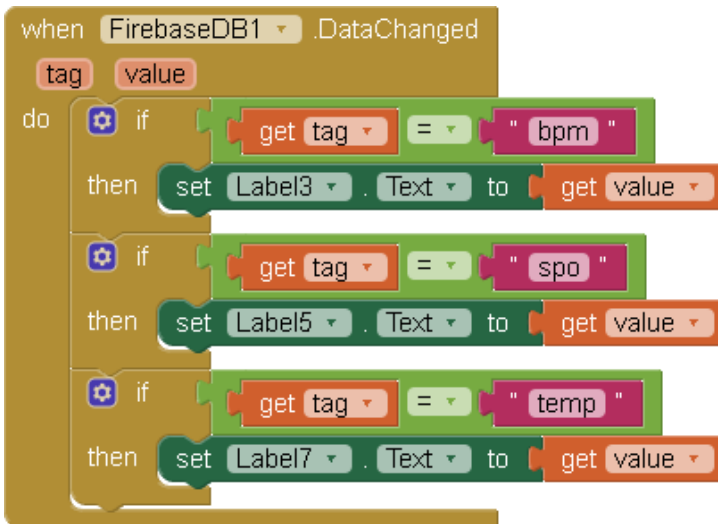


LAMPIRAN C

Blok Puzzle dan Tampilan Aplikasi Android

1. Blok Puzzle Aplikasi Android

Inisialisasi Aplikasi



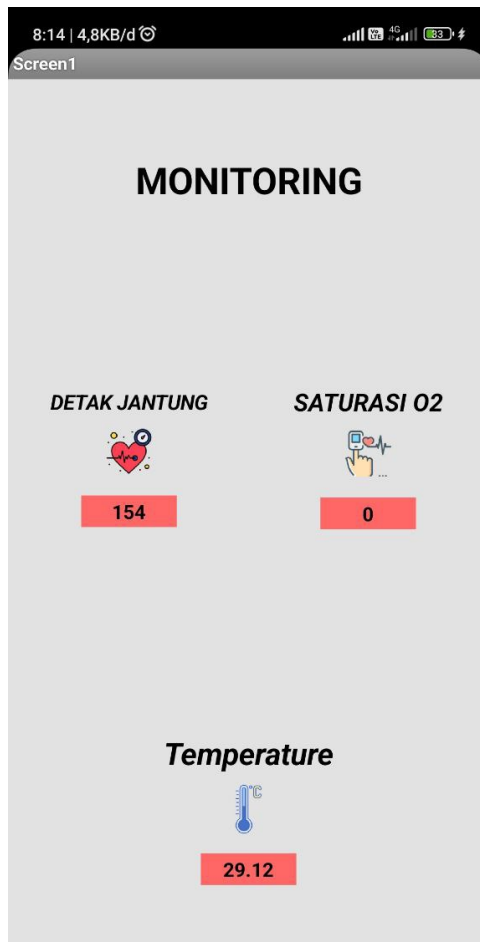
Screen 1 System Monitoring



The image shows a Scratch script for a system monitoring application. The script is triggered by a 'when Clock1 .Timer' event. It contains three main conditional blocks, each with an 'if' statement and a corresponding 'then' or 'else if' block. The first block checks if 'Label5 .Text' is greater than 90.00 and less than 100.00. The second block checks if 'Label3 .Text' is greater than 60 and less than 100. The third block checks if 'Label7 .Text' is greater than 35.00 and less than 37.50. Each block sets the background color of a specific horizontal arrangement to green, red, or yellow based on the conditions. The script ends with a 'set global temp to' block and a 'get value' block.

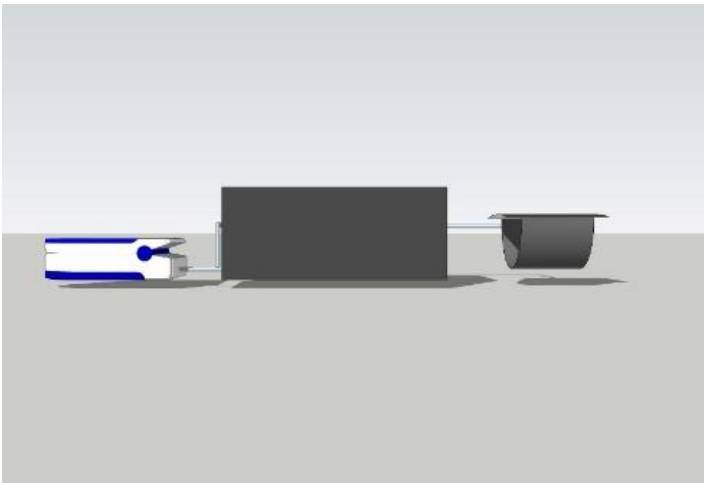
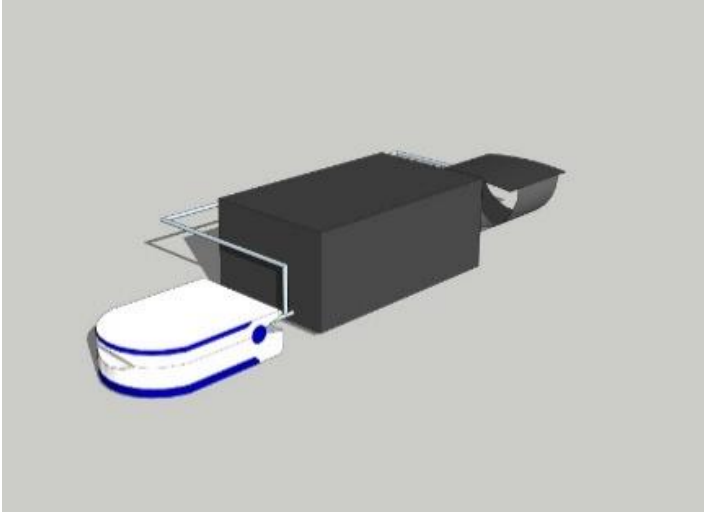
```
when Clock1 .Timer
do
  if
    Label5 .Text > 90.00 and Label5 .Text < 100.00
  then
    set HorizontalArrangement9 .BackgroundColor to green
  else if
    Label5 .Text < 90.00
  then
    set HorizontalArrangement9 .BackgroundColor to red
  if
    Label3 .Text > 60 and Label3 .Text < 100
  then
    set HorizontalArrangement8 .BackgroundColor to green
  else if
    Label3 .Text < 60
  then
    set HorizontalArrangement8 .BackgroundColor to red
  else if
    Label3 .Text > 100
  then
    set HorizontalArrangement8 .BackgroundColor to red
  if
    Label7 .Text > 35.00 and Label7 .Text < 37.50
  then
    set HorizontalArrangement4 .BackgroundColor to green
  else if
    Label7 .Text < 35.00
  then
    set HorizontalArrangement4 .BackgroundColor to red
  else if
    Label7 .Text > 37.50
  then
    set HorizontalArrangement4 .BackgroundColor to red
  set global temp to
  get value
```

2. Tampilan Aplikasi Android



LAMPIRAN D

Desain Mekanik



Hasil Mekanik

