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

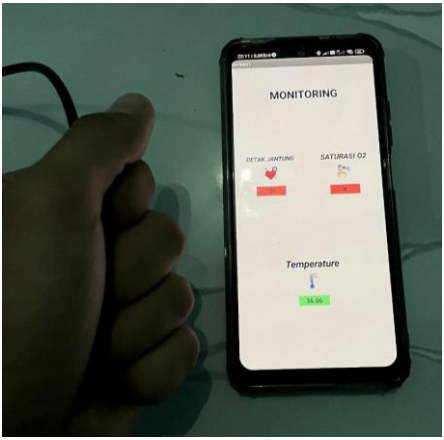
```
#include <ESP8266WiFi.h>
#include <FirebaseArduino.h>
#include <Wire.h>
#include <SoftwareSerial.h>
SoftwareSerial serial_master(12, 13);//rx tx
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27, 20, 4);
const char*ssid = "Izin Dulu"; //di isi
const char*password = "qwertyuiop";

//////////////////////////////////////////////////////////////////////////////////
#define FIREBASE_HOST "database-84132-default-rtdb.firebaseio.com"
#define FIREBASE_AUTH "kYeEv0cLdRMNPQyvoL0htYH1lhLUZXrZusy5NjEj"
//////////////////////////////////////////////////////////////////////////////////

String dataMasok = "";
String bpm_str = "";
String spo_str = "";
String temp_str = "";
int bpm;
float spo;
float temp;
```

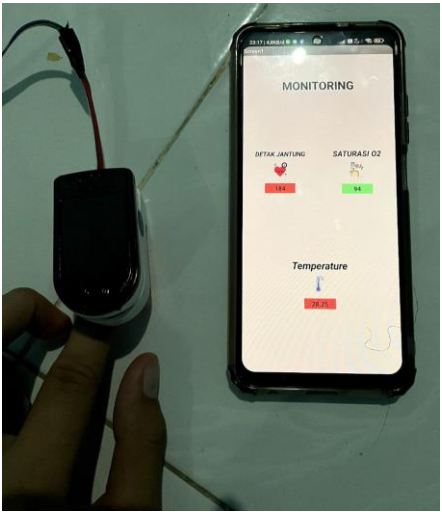
```
int bpm_setmax = 100;
int bpm_setmin = 60;
float spo_setmax = 100.00;
float spo_setmin = 90.00;
float temp_setmax = 37.50;
float temp_setmin = 35.00;
unsigned long previousMillis = 0;
const long interval = 1000;

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: ");
```

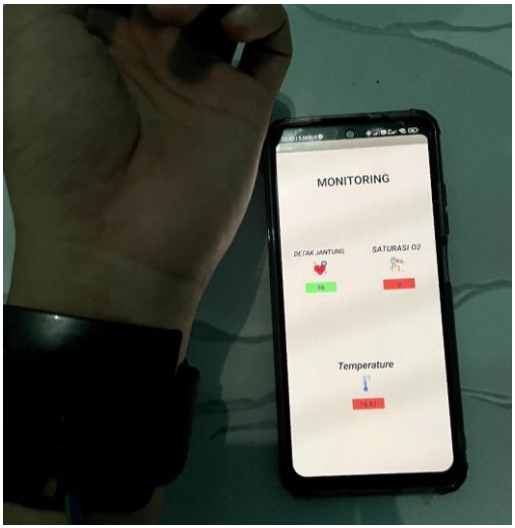
```
  Serial.println(WiFi.localIP());
  Firebase.begin(FIREBASE_HOST, FIREBASE_AUTH);
}

void loop() {
  // put your main code here, to run repeatedly:
  reconect();
  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);
  }
}
```

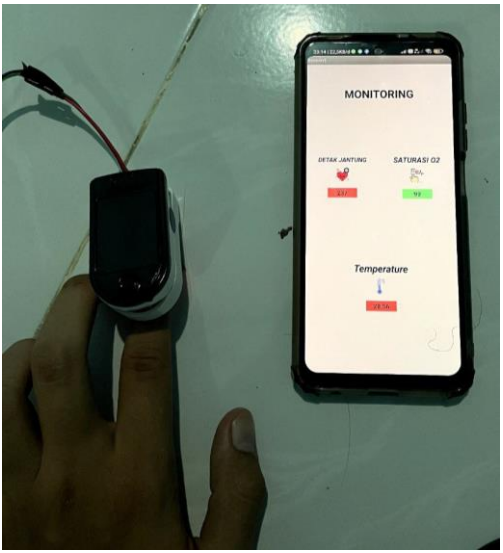
LAMPIRAN B

Gambar Pendeteksian






MONITORING
DETAK JANTUNG
SATURASI O2
Temperature

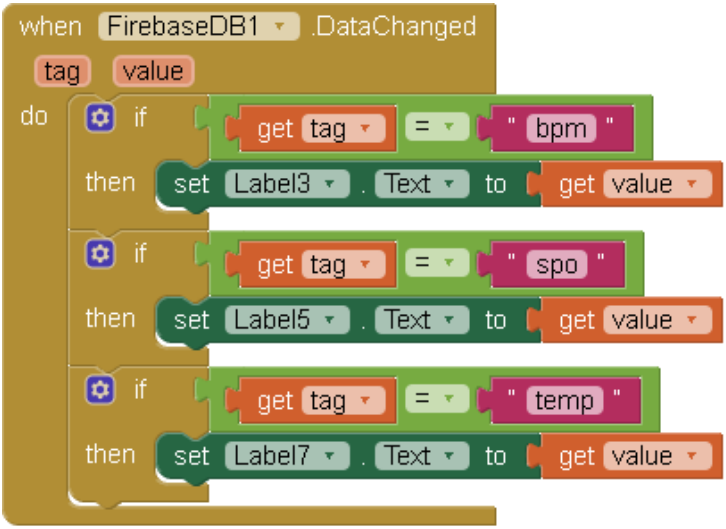

MONITORING
DETAK JANTUNG
SATURASI O2
Temperature

LAMPIRAN C

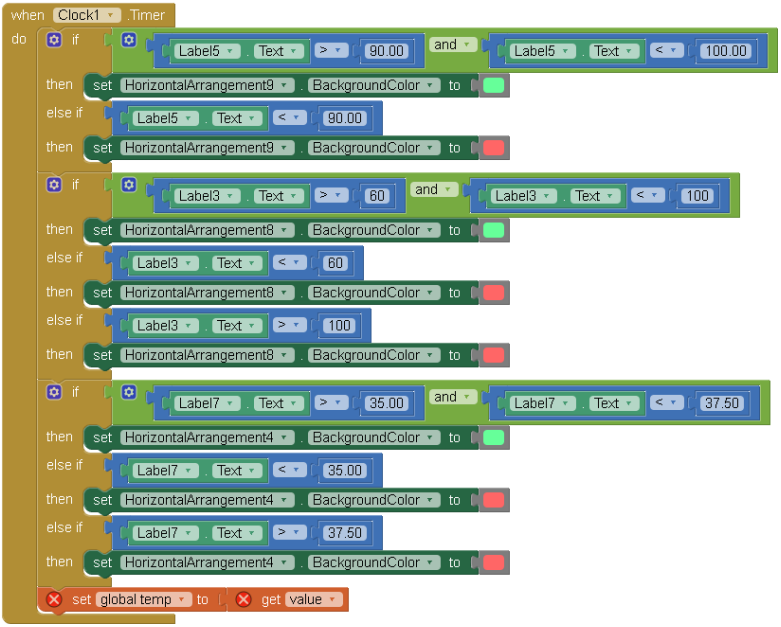
Blok Puzzle dan Tampilan Aplikasi Android

1.Blok Puzzle Aplikasi Android

Inisialisasi Aplikasi



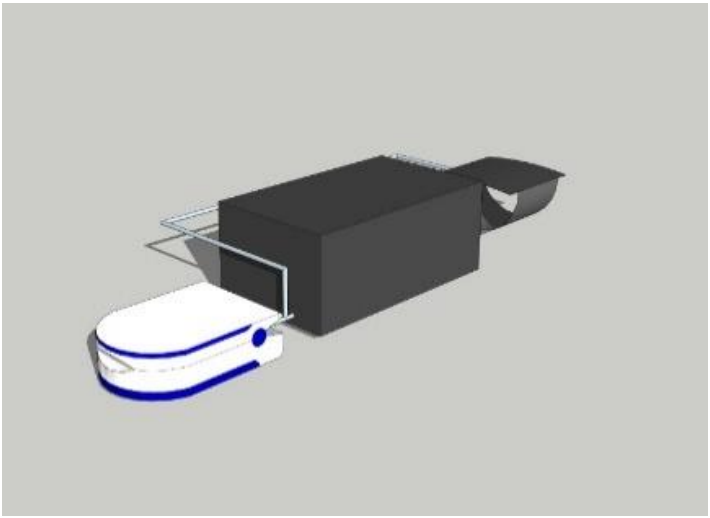
Screen 1 Sistem Monitoring

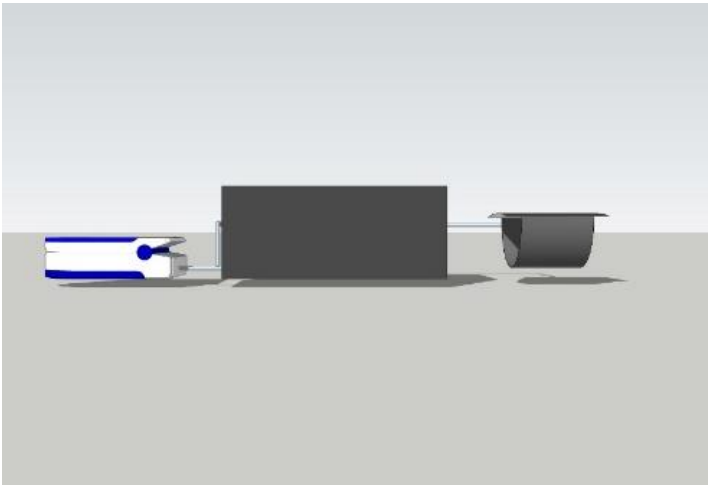


2. Tampilan Aplikasi Android

LAMPIRAN D

Desain Mekanik





Hasil Mekanik