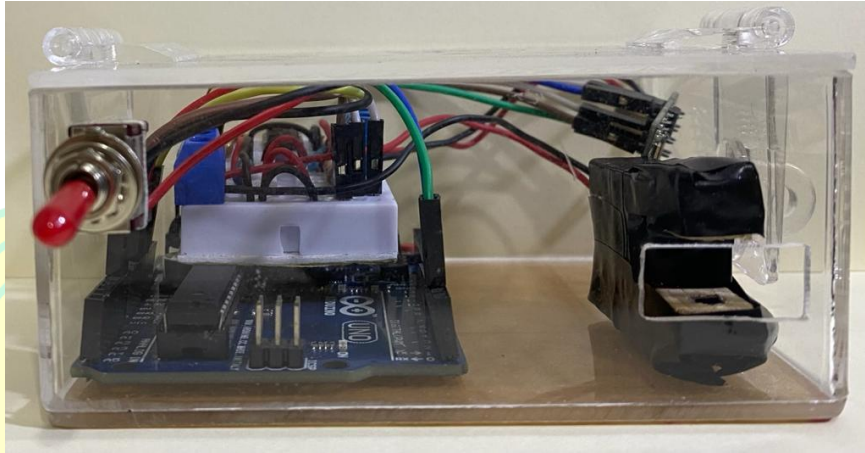# LAMPIRAN

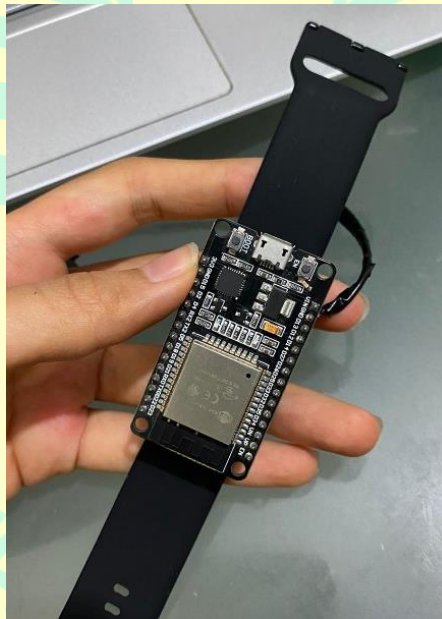**Lampiran 1.** Dokumentasi Penelitian

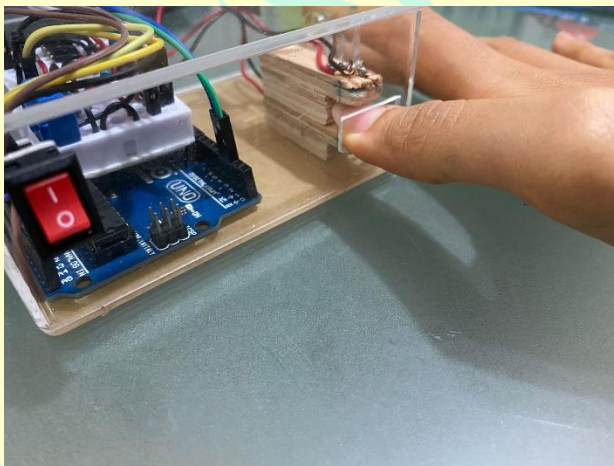Alat Ukur Glukosa Darah

Step Counter

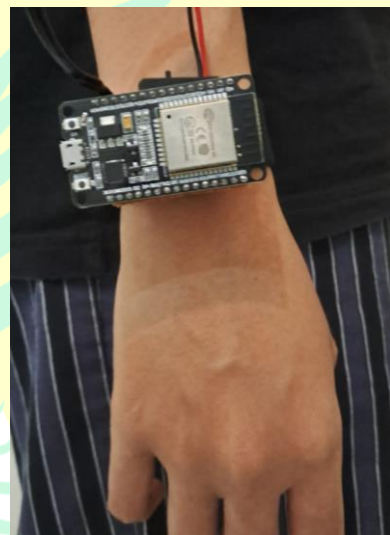*Glucometer* Sinocare Safe-Accu

Kertas uji dan lancet

Pengujian Purwarupa Alat Ukur Glukosa Darah

Pengujian *Step Counter*

Lampiran 2. Profil Probandus

		P1	P2	P3
Usia (tahun)	:	21	53	22
Berat badan (kg)	:	45	60	80
Tinggi badan (cm)	:	160	154	169
Gender	:	Perempuan	Perempuan	Perempuan

*P adalah akronim Probandus

Lampiran 3. Data Pengujian Glukosa Darah Invasif terhadap Tegangan

P1		P2		P3		P1		P2		P3	
GDI	**Tegangan**	**GDI**	**Tegangan**	**GDI**	**Tegangan**	**GDI**	**Tegangan**	**GDI**	**Tegangan**	**GDI**	**Tegangan**
82	3,515777	87	3,510811	99	3,262522	122	2,949677	105	3,133411	128	2,661662
	3,515777		3,495914		3,237693		2,944712		3,128446		2,756012
	3,510811		3,540606		3,197967		2,890088		3,133411		2,656696
	3,550538		3,495914		3,227761		2,979472		3,133411		2,641798
	3,520743		3,530674		3,242659		2,979472		3,143343		2,756012
	3,590264		3,490948		3,197967		2,895054		3,193001		2,751046
	3,570401		3,495914		3,188035		2,835464		3,133411		2,676559
	3,610127		3,50088		3,197967		2,944712		3,148309		2,666627
	3,585298		3,525709		3,222796		2,919882		3,193001		2,736149
	3,570401		3,50088		3,193001		2,860293		3,173138		2,706354
Ave	3,5540137		3,508825		3,2168368		2,9198826		3,1512882		2,7008915

*GDI adalah akronim dari Glukosa Darah Invasif dengan satuan mg/dL.

*Tegangan dalam satuan volt.

Lampiran 4. *Source Code* Program

1. Alat Ukur Kadar Glukosa Darah
1.1 Serial Arduino

```
//YNMS
#include<SoftwareSerial.h>
SoftwareSerial mySerial(2, 3);

int data;

const int pdPin = A0;
float pd[10] = {0};
float pdavg;
float pdValue = 0;
float glu;

void setup() {
 Serial.begin(9600);
 mySerial.begin(9600);
 delay(10);
}

void loop() {
 while (mySerial.available() > 0) {
  delay(10);
  data = mySerial.read();
 }
 if (data > 0) {
  Serial.println("test");
  Serial.println(data);
  if (data == 114) {
   glucose ();
   pdavg = pdValue / 10.0;
   glu = (-55.214 * (pdavg)) + 279.15;
   mySerial.print(glu);
   Serial.println("Vave:");
   Serial.println(pdavg, 6);
   Serial.print("Kadar Glukosa Darah:");
   Serial.println(glu, 3);
  }
  data = 0;
  glu = 0;
  pdavg = 0;
  pdValue = 0;
 }
}
void glucose () {
 for (int b = 0; b < 10; b++) {
  pd[b] = (analogRead(pdPin)) * (5.08 / 1023.0);
  delay (2000);
```

```
  pdValue = pd[b] + pdValue;
 }
}
//YNMS
```

1.2 Serial Modul WiFi ESP-8266

```
//YNMS
#define BLYNK_PRINT Serial
#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>
BlynkTimer timer;

float sensorValue; //collect glucose value

//token Blynk
char auth[] = "sJ9PrBCbd1OZ75GKJUn_-LX0oRVIlW35";

//WiFi Connection
char ssid[] = "CN";
char pass[] = "tujuhpuluhx7";

void sendSensor() {
 Serial.print("r"); //ask Arduino
 delay(100);

 while (Serial.available() > 0) {
  delay(10);
  sensorValue = Serial.parseFloat();
  if (sensorValue > 0) {
   Blynk.virtualWrite((V5), sensorValue);
   delay(10);
  }
  sensorValue = 0;
 }
}
void setup() {
 Serial.begin(9600);
 Blynk.begin(auth, ssid, pass, "blynk-cloud.com", 8080);
 timer.setInterval(1000L, sendSensor);
}

void loop() {
 Blynk.run();
 timer.run();
}
//YNMS
```

2. *Step Counter*

```
//YNMS
#define BLYNK_PRINT Serial //Blynk serial definition

#include <WiFi.h>
#include <WiFiClient.h>
#include <BlynkSimpleEsp32.h>

//define pin x-y-z sensor
int ypin = 32;
int zpin = 35;

//global variabel
float threshold = 45;      //will be compared with the acceleration vector to calculate steps
float yval[100] = {0};
float zval[100] = {0};
float yavg, zavg;
int steps, flag = 0;

//authentication for Blynk
char auth[] = "JahVo4U3u77MOKZYh7R7R2-Nw-I2P7HR";

//WiFi connection
char ssid[] = "CN";
char pass[] = "tujuhpuluhx7";

void setup()
{
  Serial.begin(9600);
  calibrate();

  //Blynk connection
  Blynk.begin(auth, ssid, pass);
}
void loop()
{
 int acc = 0;
 float totvect[100] = {0};
 float totave[100] = {0};
 float yaccl[100] = {0};
 float zaccl[100] = {0};

 //read the y,z-axis value for 100 samples
 for (int a = 0; a < 100; a++)
 {
  yaccl[a] = float(analogRead(ypin) - 346);
  delay (1);
  zaccl[a] = float(analogRead(zpin) - 416);
  delay (1);
```

```
    //calculate the total acceleration vector
    totvect[a] = sqrt(((yaccl[a] - yavg) * (yaccl[a] - yavg)) + ((zaccl[a] - zavg) * (zaccl[a] -
zavg)));

    //average of the max and min acc vec values
    totave[a] = (totvect[a] + totvect[a - 1]) / 2 ;
    Serial.print("totave[a]:"); Serial.println(totave[a]);
    delay(100);

    //compare the ave acc with the threshold
    if (totave[a] > threshold && flag == 0)
    {
     steps = steps + 1;
      flag = 1;
    }
    if (totave[a] < threshold && flag == 1) {
      flag = 0;
    }
    if (steps < 0) {
      steps = 0;
    }
    Serial.print("steps: ");
    Serial.println(steps);
    Blynk.virtualWrite(V0, steps);
    Blynk.virtualWrite(V1 , steps);
    delay(100);
  }
  Blynk.run();
  delay (100);
}
void calibrate()
{
  float sum = 0;
  float sum1 = 0;
  for (int i = 0; i < 100; i++) {
   yval[i] = float(analogRead(ypin) - 346);
   sum = yval[i] + sum;
   zval[i] = float(analogRead(zpin) - 416);
   sum1 = zval[i] + sum1;
  }
  yavg = sum / 100.0;
  zavg = sum1 / 100.0;
}
```

DAFTAR RIWAYAT HIDUP

Yolanda Natasya Mega Stella putri kedua dari Bapak Edyardus Situmorang dan Ibu Yosephine Sirait yang lahir di Jakarta, 15 Agustus 2000. Pendidikan formal yang telah ditempuh dimulai dari SD Katolik Maria (2006 – 2012), SMPN 7 Depok (2012 – 2015), SMA Mardi Yuana Depok (2015 – 2018), dan Program Studi Fisika FMIPA Universitas Negeri Jakarta (2018 – 2022). Semasa kuliah pernah menjadi asisten laboratorium Elektronika dan asisten laboratorium Elektronika Digital. Penulis melaksanakan Praktik Kerja Lapangan di Pusat Teknologi Material Badan Pengkajian dan Penerapan Teknologi (PTM BPPT) pada tahun 2021 yang saat ini berubah nama menjadi PTM Badan Riset dan Inovasi Nasional (PTM BRIN), serta di tahun yang sama mengikuti Kuliah Kerja Nyata "Revitalisasi Posyandu melalui Program Nimbang Balita untuk Tekan Stunting". Di luar bidang akademik, penulis pernah aktif dalam organisasi Badan Eksekutif Mahasiswa (BEM) Prodi Fisika Departemen Pendidikan dan Pengembangan Teknologi tahun 2019 – 2020, BEM Fakultas Matematika dan Ilmu Pengetahuan Alam Departemen Pendidikan dan Penelitian tahun 2020 – 2021.