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LAMPIRAN A

DAFTAR PROGRAM ARDUINO

```
const double target = 200;

const double mixer = 50;

const float kP = 2.3;

const float kI = 15;

const float kD = 8;


//dimmer

#include <RBDdimmer.h>

dimmerLamp dim(7);


//lcd

#include <LiquidCrystal_I2C.h>

LiquidCrystal_I2C lcd(0x27, 20, 4);


//sensor

#include "MAX6675.h"

MAX6675 thermoCouple;
```

```
//pid
#include <PID_v1.h>
double pidInput, pidOutput;
PID myPID(&pidInput, &pidOutput, &target, kP, kI, kD, DIRECT);

void setup() {
  Serial.begin(9600);
  //dimmer
  dim.begin(TOGGLE_MODE, OFF);
  dim.toggleSettings(0, 100);
  //lcd
  lcd.begin();
  lcd.backlight();
  lcd.clear();
  //sensor
  thermoCouple.begin(47, 49, 51);
  //tombol
  pinMode(53, INPUT_PULLUP);
  //pid
  myPID.SetOutputLimits(0, 100);
```

```
  myPID.SetMode(AUTOMATIC);
  //motor
  pinMode(4, OUTPUT);
  pinMode(5, OUTPUT);
}

bool statusPower = false;
bool statusMotor = false;
float lastPowerValue = 0;
float powerValue = 0;

void loop() {
  double sensorVal = 0;
  for (int i = 0; i < 10; i++) {
    thermoCouple.read();
    sensorVal += thermoCouple.getTemperature();
    delay(100);
  }
  sensorVal = sensorVal / 10;
  if (statusPower) {
```

```
  pidInput = sensorVal;
  myPID.Compute();
  powerValue = pidOutput;
  if (sensorVal > mixer) {
    statusMotor = true;
  }
  else if (sensorVal < mixer - 10) {
    statusMotor = false;
  }
}
else {
  powerValue = 0;
  statusMotor = false;
}
if (statusMotor) {
  analogWrite(4, 150);
  analogWrite(5, 0);
}
else {
  digitalWrite(4, 0);
```

```
  digitalWrite(5, 0);
}
if (powerValue != lastPowerValue) {
  lastPowerValue = powerValue;
  dim.setPower(powerValue);
}
if (digitalRead(53) == LOW) {
  statusPower = !statusPower;
  if (statusPower) {
    dim.setState(ON);
  }
  else {
    dim.setState(OFF);
  }
  while (digitalRead(53) == LOW) {
    delay(100);
  }
}
lcd.setCursor(0, 0);
lcd.print("               ");
```

```
lcd.setCursor(0, 0);
lcd.print("Status:");
if (statusPower) {
  lcd.print("Aktif");
}
else {
  lcd.print("Nonaktif");
}
lcd.setCursor(0, 1);
lcd.print("Suhu Target:");
lcd.print(target);
lcd.setCursor(0, 2);
lcd.print("                ");
lcd.setCursor(0, 2);
lcd.print("Suhu Aktual:");
lcd.print(sensorVal);
lcd.setCursor(0, 3);
lcd.print("         ");
lcd.setCursor(0, 3);
lcd.print("Power:");
```

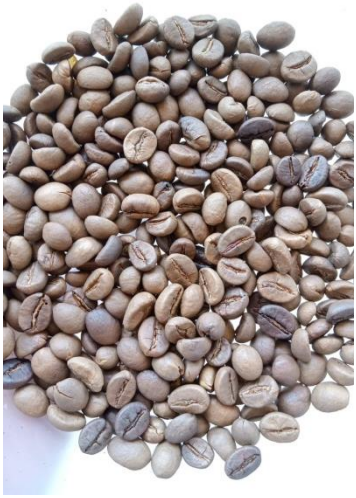
```
  lcd.print(powerValue);
  Serial.print(target);
  Serial.print('\t');
  Serial.print(sensorVal);
  Serial.print('\t');
  Serial.print(powerValue);
  Serial.print('\n');
}
```

LAMPIRAN B

Alat Sangrai dan Hasil *Roasting* Biji Kopi

Alat Sangrai Biji Kopi

Hasil Biji Kopi *Light Roast*



Hasil Biji Kopi *Medium Roast*

Hasil Biji Kopi *Dark Roast*

BIODATA PENULIS

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Alamat	: Jl. Singkep gang Musholah Al-Ikhlas no.33, Rt/Rw 03/09, Gunung Simping, Cilacap Tengah
No. Hp	: +6282334724603
Motto	: Try to learn to settle it yourself

Riwayat Pendidikan

TK Kencana	Tahun 2006-2007
SD Negeri Gunung Simping 01 Cilacap	Tahun 2007-2013
SMP Negeri 08 Cilacap	Tahun 2013-2016
SMK Migas Muhammadiyah Cilacap	Tahun 2016-2019
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