Daftar Riwayat Hidup

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TTL	: Surabaya, 09 Oktober 1993
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Kewarganegaraan	: WNI
E-Mail	: derizrizal001@gmail.com
Riwayat Pendidikan	:

1. SD Darul Ulum, Tahun 2000-2006
2. SMP Negeri 36 Surabaya, Tahun 2006-2009
3. SMK Negeri 3 Surabaya, Tahun 2009-2012
4. S1 Teknik Elektro Universitas Muhammadiyah Surabaya, Tahun 2013-2018

Lampiran 1

```
#include<Wire.h>
#include<LCD.h>
#include<LiquidCrystal_I2C.h>
//#include<OneWire.h>
#include<DallasTemperature.h>

// sensor diletakkan di pin 2
#define ONE_WIRE_BUS_1 2
#define ONE_WIRE_BUS_2 12

//kaki2 i2c
#define I2C_ADDR 0x20 // Define I2C Address for controller
#define BACKLIGHT_PIN 7
#define En_pin 4
#define Rw_pin 5
#define Rs_pin 6
#define D4_pin 0
#define D5_pin 1
#define D6_pin 2
#define D7_pin 3

#define LED_OFF 0
#define LED_ON 1
```

```
//setup lcd
LiquidCrystal_I2C lcd(I2C_ADDR, En_pin, Rw_pin, Rs_pin,
D4_pin, D5_pin, D6_pin, D7_pin);

// setup sensor
OneWire oneWire_peltier(ONE_WIRE_BUS_1);
OneWire oneWire_ruangan(ONE_WIRE_BUS_2);

// berikan nama variabel,masukkan ke pustaka Dallas
DallasTemperature sensorSuhu_peltier(&oneWire_peltier);
DallasTemperature sensorSuhu_ruangan(&oneWire_ruangan);

//Variable
float suhuPeltier;
float suhuRuangan;
String modeSuhu;
char buff[10];

// ubah kecepatan kipas luar di sini
const int lvlA = 0;
const int lvlB = 39;
const int lvlC = 77;
```

```
void setup() {
  // put your setup code here, to run once:

  Serial.begin(115200);
  sensorSuhu_peltier.begin();
  sensorSuhu_ruangan.begin();

  lcd.begin(16, 4);
  lcd.setBacklightPin(BACKLIGHT_PIN, POSITIVE);
  lcd.setBacklight(LED_ON);

  pinMode(8, INPUT_PULLUP);
  pinMode(9, INPUT_PULLUP);
  pinMode(10, INPUT_PULLUP);

  pinMode(7, OUTPUT);
  pinMode(6, OUTPUT);
  pinMode(5, OUTPUT);

  analogWrite(5,255); //kipas dalam off
  digitalWrite(7,LOW); //lED KIPAS MATI

  modeSuhu = String("A");
}
```

```
void loop() {


  // setup suhu
  suhuPeltier = ambilSuhuPeltier();
  suhuRuangan = ambilSuhuRuangan();
  snprintf (buff, sizeof(buff), "%f", suhuPeltier);
  snprintf (buff, sizeof(buff), "%f", suhuRuangan);
  Serial.println(suhuPeltier);
  Serial.println(suhuRuangan);



  // setup button
  int suhuA = digitalRead(8);
  int suhuB = digitalRead(9);
  int suhuC = digitalRead(10);

  Serial.println(suhuA);
  Serial.println(suhuB);
  Serial.println(suhuC);

  if (suhuA == LOW) {
    modeSuhu = String ("A");
  } else if (suhuB == LOW) {
    modeSuhu = String ("B");
```

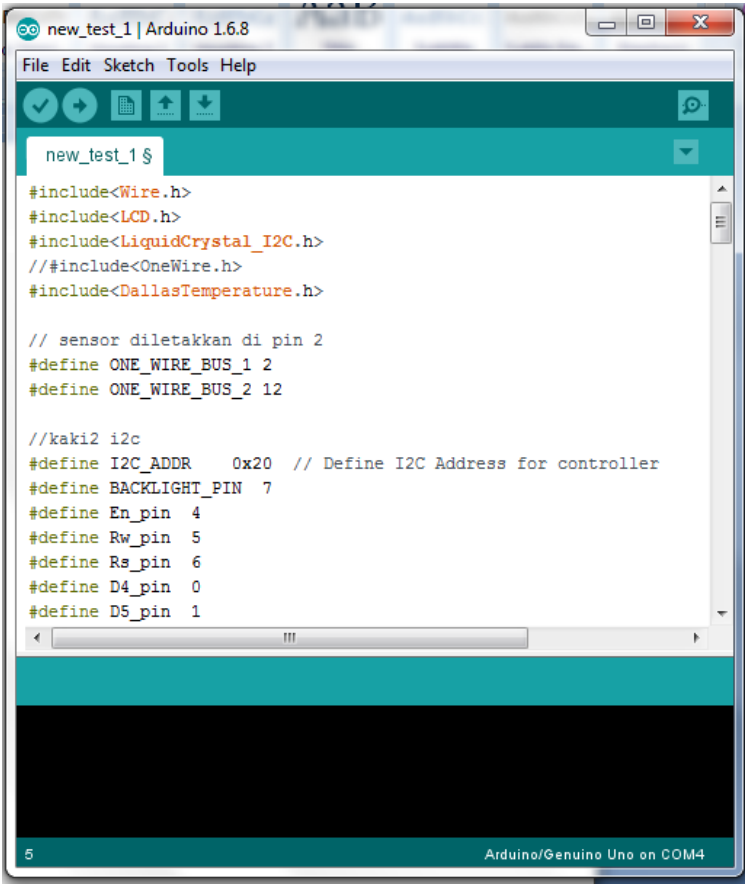
```
  } else if (suhuC == LOW) {
    modeSuhu = String ("C");
  }

  if (suhuA == LOW && suhuB == LOW && suhuC == LOW){
    lcd.begin(16, 4);
    lcd.setBacklightPin(BACKLIGHT_PIN, POSITIVE);
    lcd.setBacklight(LED_ON);
  }

  if (modeSuhu == "A"){
    analogWrite(6, lvlA); // KIPAS LUAR Speed 100%
  }else if (modeSuhu == "B"){
    analogWrite(6, lvlB); //Kipas LUAR Speed 85%
  }else if (modeSuhu == "C"){
    analogWrite(6, lvlC); //Kipas Luar SPeed 70%
  }

  if (suhuPeltier <= 0){
    analogWrite(5, 0); // Kipas Dalam Speed 100%
    digitalWrite(7,HIGH); //lED KIPAS ON
  }else if (suhuPeltier > 1){
    analogWrite(5, 255); // Kipas Dalam Speed 0%
    digitalWrite(7,LOW); //lED KIPAS OFF
```

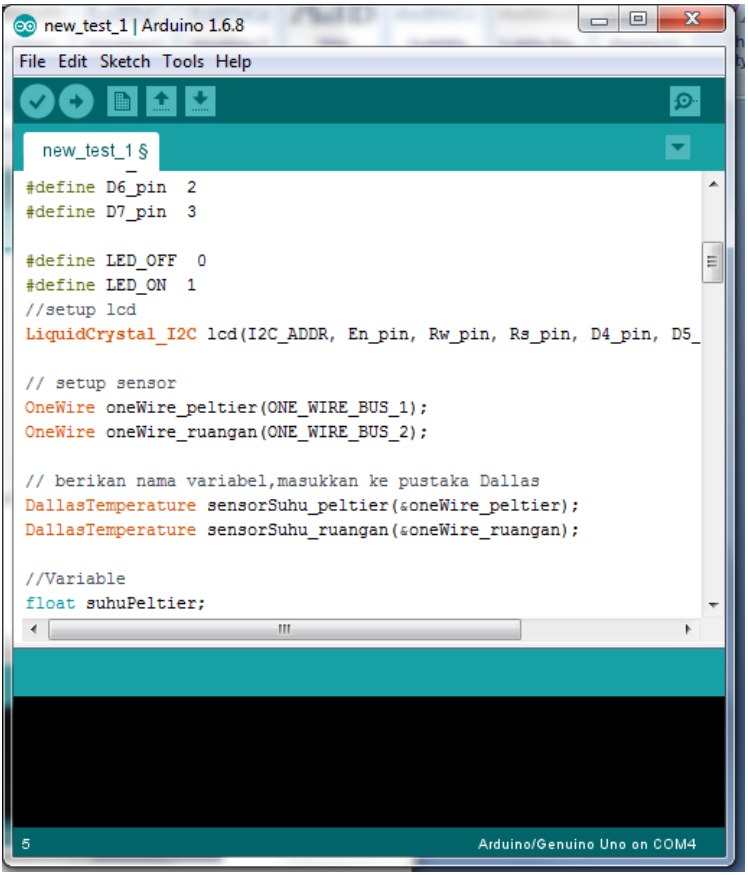
```
  }
// rumus 255 - 255 x (persentase)


  lcd.clear();
  lcd.backlight();
  // baris 1
  lcd.home();//set cursor to 0,0
  lcd.print("  COOLING  BOX  ");
  // baris 2
  lcd.setCursor(0, 1);
  lcd.print("Peltier: ");
  lcd.print(suhuPeltier);
  lcd.print(" C");
  //baris 3
  lcd.setCursor(0, 2);
  lcd.print("Room   : ");
  lcd.print(suhuRuangan);
  lcd.print(" C");
  //baris 4
  lcd.setCursor(0, 3);
  lcd.print("       Level ");
  lcd.print(modeSuhu);
  delay(1000);
}
```

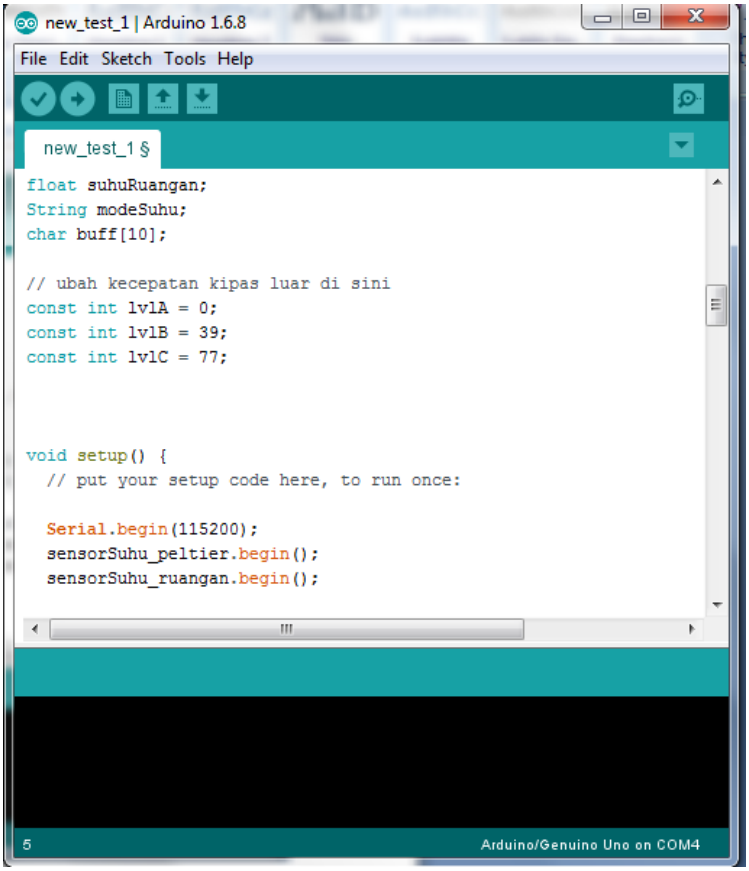
```
float ambilSuhuPeltier()
{
  sensorSuhu_peltier.requestTemperatures();
  float suhu = sensorSuhu_peltier.getTempCByIndex(0);
  return suhu;
}

float ambilSuhuRuangan()
{
  sensorSuhu_ruangan.requestTemperatures();
  float suhu = sensorSuhu_ruangan.getTempCByIndex(0);
  return suhu;
}
```

Lampiran 2

Progam Arduino




new_test_1 | Arduino 1.6.8
File Edit Sketch Tools Help
new_test_1 §
#define D6_pin 2
#define D7_pin 3
#define LED_OFF 0
#define LED_ON 1
//setup lcd
LiquidCrystal_I2C lcd(I2C_ADDR, En_pin, Rw_pin, Rs_pin, D4_pin, D5_
// setup sensor
OneWire oneWire_peltier(ONE_WIRE_BUS_1);
OneWire oneWire_ruangan(ONE_WIRE_BUS_2);
// berikan nama variabel,masukkan ke pustaka Dallas
DallasTemperature sensorSuhu_peltier(&oneWire_peltier);
DallasTemperature sensorSuhu_ruangan(&oneWire_ruangan);
//Variable
float suhuPeltier;
5
Arduino/Genuino Uno on COM4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float suhuRuangan;
String modeSuhu;
char buff[10];
// ubah kecepatan kipas luar di sini
const int lvlA = 0;
const int lvlB = 39;
const int lvlC = 77;
void setup() {
// put your setup code here, to run once:
Serial.begin(115200);
sensorSuhu_peltier.begin();
sensorSuhu_ruangan.begin();
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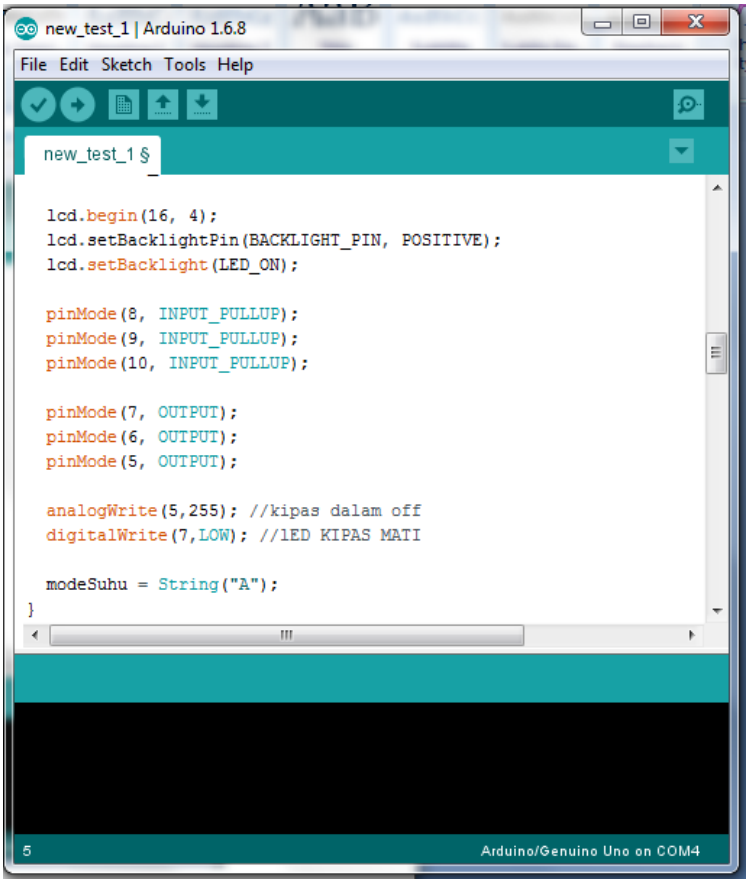
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lcd.begin(16, 4);
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lcd.setBacklight(LED_ON);
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pinMode(9, INPUT_PULLUP);
pinMode(10, INPUT_PULLUP);
pinMode(7, OUTPUT);
pinMode(6, OUTPUT);
pinMode(5, OUTPUT);
analogWrite(5,255); //kipas dalam off
digitalWrite(7,LOW); //lED KIPAS MATI
modeSuhu = String("A");
}
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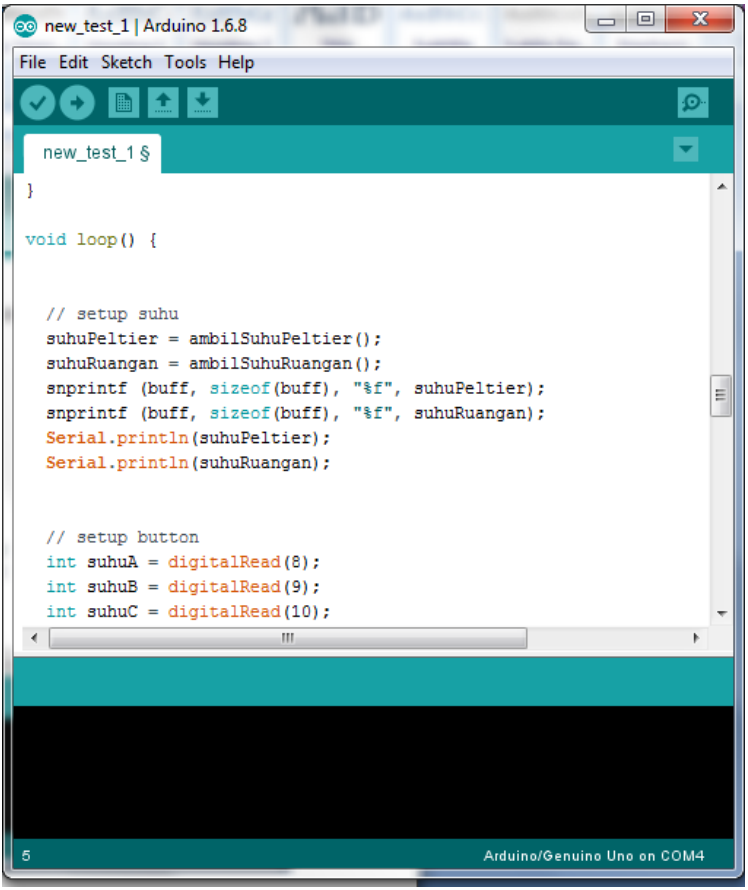
Arduino/Genuino Uno on COM4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new_test_1 §
}
void loop() {
// setup suhu
suhuPeltier = ambilSuhuPeltier();
suhuRuangan = ambilSuhuRuangan();
snprintf (buff, sizeof(buff), "%f", suhuPeltier);
snprintf (buff, sizeof(buff), "%f", suhuRuangan);
Serial.println(suhuPeltier);
Serial.println(suhuRuangan);
// setup button
int suhuA = digitalRead(8);
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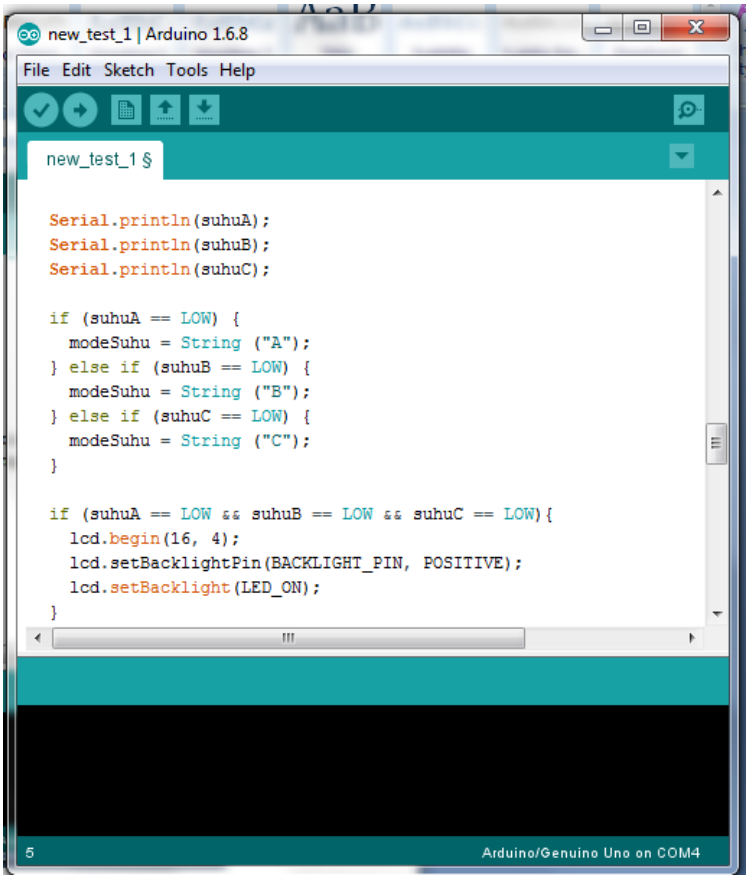
Arduino/Genuino Uno on COM4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File Edit Sketch Tools Help
new_test_1 §
Serial.println(suhuA);
Serial.println(suhuB);
Serial.println(suhuC);
if (suhuA == LOW) {
modeSuhu = String ("A");
} else if (suhuB == LOW) {
modeSuhu = String ("B");
} else if (suhuC == LOW) {
modeSuhu = String ("C");
}
if (suhuA == LOW && suhuB == LOW && suhuC == LOW){
lcd.begin(16, 4);
lcd.setBacklightPin(BACKLIGHT_PIN, POSITIVE);
lcd.setBacklight(LED_ON);
}
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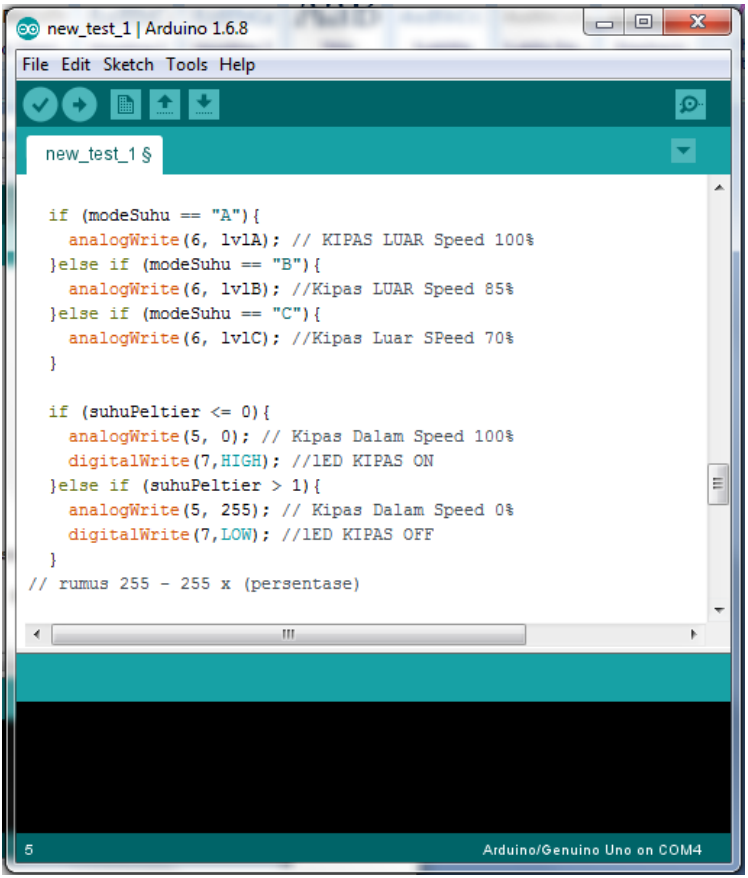
Arduino/Genuino Uno on COM4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}else if (modeSuhu == "B"){
analogWrite(6, lvlB); //Kipas LUAR Speed 85%
}else if (modeSuhu == "C"){
analogWrite(6, lvlC); //Kipas Luar SPeed 70%
}
if (suhuPeltier <= 0){
analogWrite(5, 0); // Kipas Dalam Speed 100%
digitalWrite(7,HIGH); //lED KIPAS ON
}else if (suhuPeltier > 1){
analogWrite(5, 255); // Kipas Dalam Speed 0%
digitalWrite(7,LOW); //lED KIPAS OFF
}
// rumus 255 - 255 x (persentase)
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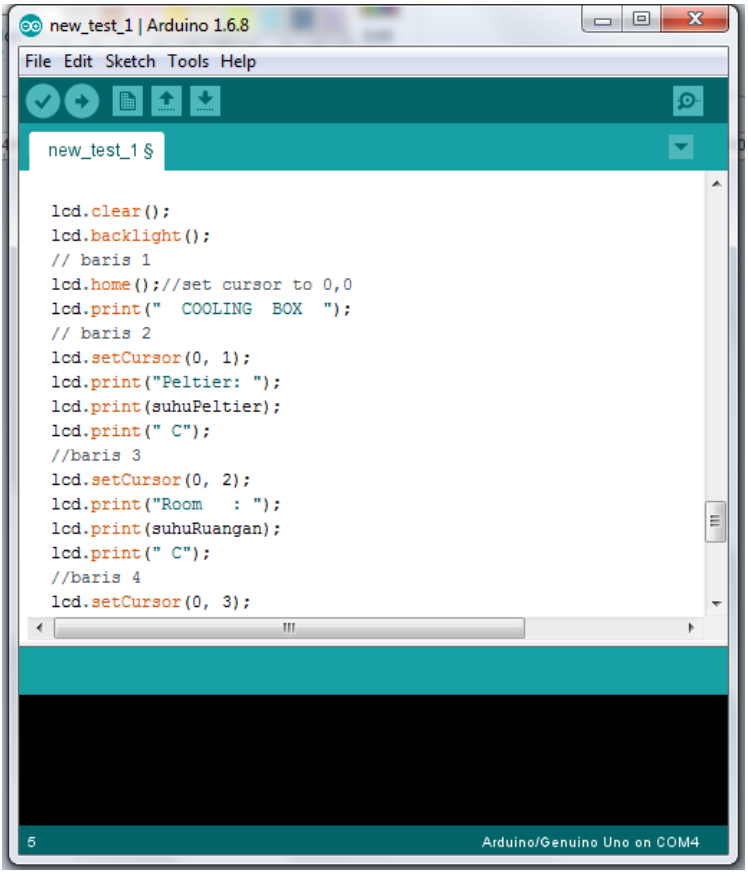
new_test_1 | Arduino 1.6.8
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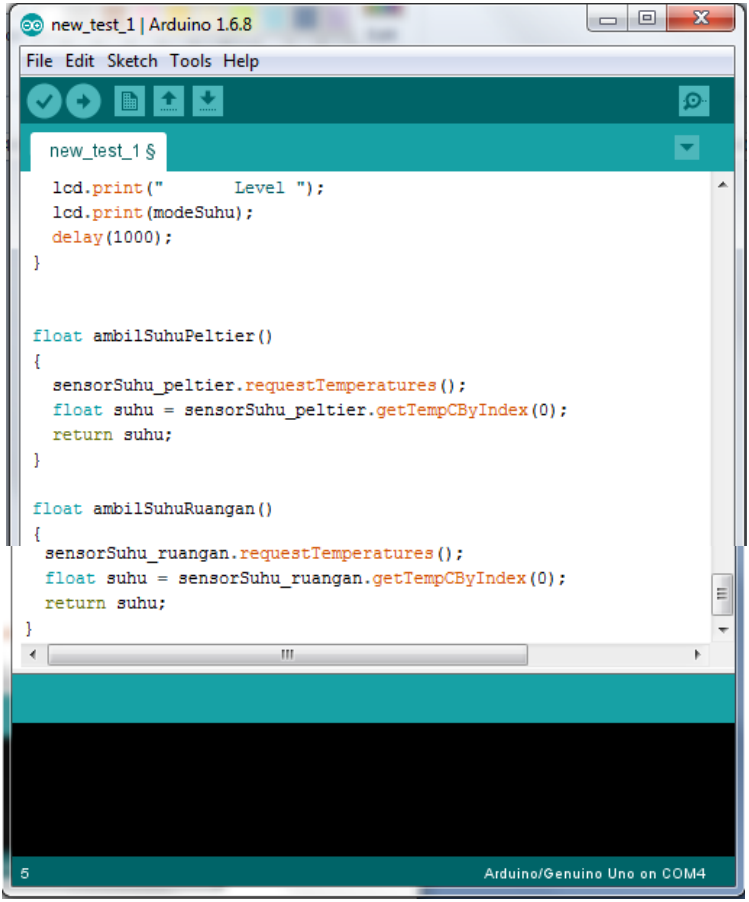
new_test_1 §
lcd.clear();
lcd.backlight();
// baris 1
lcd.home();//set cursor to 0,0
lcd.print(" COOLING BOX ");
// baris 2
lcd.setCursor(0, 1);
lcd.print("Peltier: ");
lcd.print(suhuPeltier);
lcd.print(" C");
//baris 3
lcd.setCursor(0, 2);
lcd.print("Room   : ");
lcd.print(suhuRuangan);
lcd.print(" C");
//baris 4
lcd.setCursor(0, 3);
5
Arduino/Genuino Uno on COM4


new_test_1 | Arduino 1.6.8
File Edit Sketch Tools Help
new_test_1 §
lcd.print(" Level ");
lcd.print(modeSuhu);
delay(1000);
}
float ambilSuhuPeltier()
{
sensorSuhu_peltier.requestTemperatures();
float suhu = sensorSuhu_peltier.getTempCByIndex(0);
return suhu;
}
float ambilSuhuRuangan()
{
sensorSuhu_ruangan.requestTemperatures();
float suhu = sensorSuhu_ruangan.getTempCByIndex(0);
return suhu;
}
5
Arduino/Genuino Uno on COM4

Lampiran 3

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Email: pusba.umsby@gmail.com

ENDORSEMENT LETTER

281/PB-UMS/EL/VIII/2018

This letter is to certify that the abstract of the thesis below

Tittle	:	Cooling Box Design by Using Peltier and Arduino Uno to Delivery
Student's name	:	Mochammad Rizki Rizal
Reg. Number	:	20131330005
Department	:	S1 Teknik Elektro

has been endorsed by Pusat Bahasa *UMSurabaya* for further approval by the examining committee of the faculty.

Surabaya, 03 August 2018

Chair,

Wahde Hamsia, M.Pd

Lampiran 4