

Daftar Riwayat Hidup



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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 SSpeed 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);

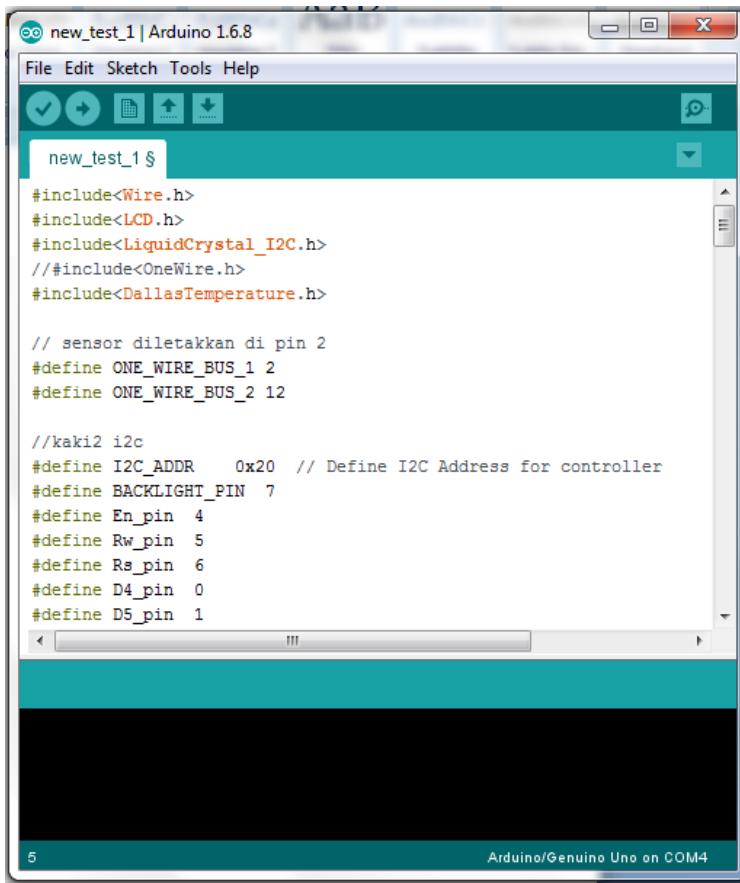
}
```

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

```
float ambilSuhuRuang()
{
    sensorSuhu_ruang.requestTemperatures();
    float suhu = sensorSuhu_ruang.getTempCByIndex(0);
    return suhu;
}
```

Lampiran 2

Program Arduino



The screenshot shows the Arduino IDE interface with the following details:

- Title Bar:** new_test_1 | Arduino 1.6.8
- Menu Bar:** File Edit Sketch Tools Help
- Toolbar:** Includes icons for Save, Open, Upload, and Refresh.
- Code Editor:** Displays the following C++ code:

```
#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
```

The code defines various pins and includes libraries for I2C communication, LCD, and Dallas Temperature sensors.

The screenshot shows the Arduino IDE interface with the following details:

- Title Bar:** new_test_1 | Arduino 1.6.8
- Menu Bar:** File Edit Sketch Tools Help
- Toolbar:** Includes icons for Save, Run, Upload, and Download.
- Code Area:** The main area contains the following C++ code for an Arduino sketch:

```
#define D6_pin 2
#define D7_pin 3

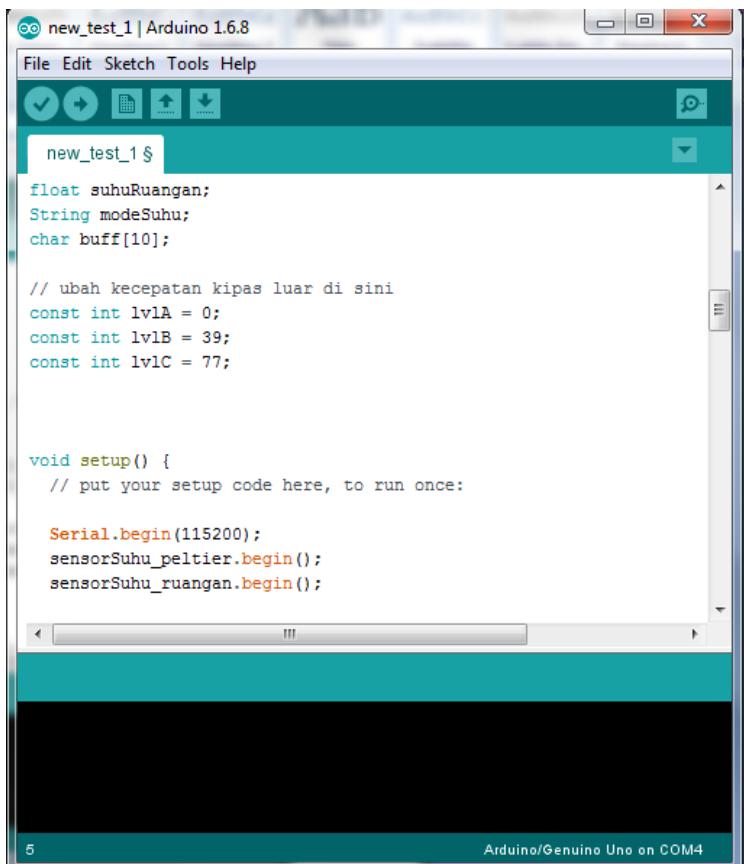
#define LED_OFF 0
#define LED_ON 1
//setup lcd
LiquidCrystal_I2C lcd(I2C_ADDR, En_pin, Rw_pin, Rs_pin, D4_pin, D5_)

// 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;
```

The code defines pins for LCD and sensors, initializes them, and declares a variable for temperature reading.



The screenshot shows the Arduino IDE interface with the following details:

- Title Bar:** new_test_1 | Arduino 1.6.8
- Menu Bar:** File Edit Sketch Tools Help
- Toolbar:** Includes icons for Save, Run, Upload, Download, and a magnifying glass.
- Code Editor:** The code is written in C++ for an Arduino. It includes setup and loop sections. Key parts of the code are:

```
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");
}
```
- Serial Monitor:** A large black area where serial output would be displayed.
- Status Bar:** Shows the number 5 on the left and "Arduino/Genuine Uno on COM4" on the right.

The screenshot shows the Arduino IDE interface with the following details:

- Title Bar:** new_test_1 | Arduino 1.6.8
- Menu Bar:** File Edit Sketch Tools Help
- Toolbar:** Includes icons for Save, Load, Upload, Download, and a magnifying glass.
- Code Editor:** Displays the following C++ code:

```
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);
    int suhuB = digitalRead(9);
    int suhuC = digitalRead(10);
```
- Serial Monitor:** A large black rectangular area where the serial output would be displayed.
- Status Bar:** Shows the number 5 on the left and Arduino/Genuino Uno on COM4 on the right.

new_test_1 | Arduino 1.6.8

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);
}
```

5 !!!

Arduino/Genuino Uno on COM4

The screenshot shows the Arduino IDE interface with the following details:

- Title Bar:** new_test_1 | Arduino 1.6.8
- Menu Bar:** File Edit Sketch Tools Help
- Toolbar:** Includes icons for Open, Save, Print, and Upload.
- Code Editor:** The main area contains C++ code for controlling a fan based on temperature input from a Peltier module. The code uses analogRead for the Peltier module and digitalWrite for the fan and LED pins.

```
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)
```

- Bottom Status Bar:** Shows the text "!!!".
- Bottom Footer:** Arduino/Genuino Uno on COM4

The screenshot shows the Arduino IDE interface with the following details:

- Title Bar:** new_test_1 | Arduino 1.6.8
- Menu Bar:** File Edit Sketch Tools Help
- Toolbar:** Includes icons for Save, Open, Print, and Upload.
- Text Editor:** The code area contains the following sketch:

```
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(suhuRuang);
lcd.print(" C");
//baris 4
lcd.setCursor(0, 3);
```

The code uses the `lcd` object to print text to a Liquid Crystal Display (LCD). It first clears the screen and turns on the backlight. It then prints "COOLING BOX" on the first line, "Peltier: " and the variable `suhuPeltier` on the second line, and "Room : " and the variable `suhuRuang` on the third line. All text is printed in Celsius (" C"). The fourth line is a blank cursor position.

Status Bar: At the bottom left is the number 5, and at the bottom right is the text "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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ENDORSEMENT LETTER 281/PB-UMS/EL/VIII/2018

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

Title : 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



Lampiran 4

