

## Lampiran

### 1.1 6.1 coding arduino

```
int
relay4 =
8; int
sensorV
<LiquidCrystal_I
2C.h> #include
#include
<dht.h> dht
LiquidCrystal_I2C lcd(0x27, 2, 1,
DHT;
0,
#define DHT22_PIN 2 4, 5, 6, 7, 3,
#define POSITIVE); // Set
the LCD I2C
relayon address float hum;
LOW //Stores humidity
#define value float temp;
relayoff
HIGH
const
int
//Stores
relay1 = temperature value
11; byte termometru[8] = //icon const for termometer
int {
relay2 = B00100, 10; B01010, const
B01010, int B01110, relay3 =
B01110,
```

```

9; const                                B11111,
                                           B11111,
    B01110                                B00010,
};                                         B00010,
                                           B10001,
byte picatura[8] = //icon for water      B10001,
droplet {                                  B10001,
    B00100,                                }; unsigned long Millis1; unsigned long
    B00100,                                Millis2; unsigned long Millis3; unsigned
    B01010,                                long Millis4; unsigned long Millis5;
    B01010,                                unsigned long Millis6; unsigned long
    B10001,                                Millis7; unsigned long Millis8; void
    B10001,                                setup () { Serial.begin(115200);
    B10001,                                lcd.begin(16,2); lcd.backlight();
    B01110, }; byte relay[8]              lcd.createChar(1,termometru);
= //relay {                                lcd.createChar(2,picatura);
    B00000,                                lcd.createChar(3,relay);
    B11100,                                lcd.createChar(4,kontak);
    B00100,                                Millis1=millis();
    B01110,                                Millis2=millis();
    B01110,                                Millis3=millis();
    B00100,                                Millis4=millis();
    B11100,                                Millis5=millis();
    B00000,                                Millis6=millis(); Millis7=millis();
                                           Millis8=millis();
}; byte kontak[8] = //relay
{                                           //-----
    B00100,                                pinMode(relay1,OUTPUT);
    B00100,                                pinMode(relay2,OUTPUT);
    B00100,                                pinMode(relay3,OUTPUT);
    B00100,                                pinMode(relay4,OUTPUT);

```

```

}

void loop () { float
dingin, sedang, panas; float
kering, normal, lembab; float
a1, a2, a3, a4, a5, a6, a7, a8, a9; float
b1, b2, b3, b4, b5, b6, b7; float
z1, z2, z3, z4, z5, z6, z7, z8, z9; float

output, output1, output2; //Baca
Sensor Kelembaba //kelembaban dan
Suhu if((millis()- Millis1)>=1000){
int chk =
DHT.read22(DHT22_PIN); hum =
(DHT.humidity)-12.40; temp=
DHT.temperature;
//Print temp and humidity values to LCD
lcd.setCursor(0,0);
lcd.print("Suhu:"+String(temp));
lcd.write(0b11011111); lcd.print("C");
lcd.setCursor(0,1);

```

```

lcd.print("Kelembaban:"+String(hum
));
lcd.print("%");
Millis1=millis();
}
//-----
//fuzifikasi Suhu
//-----
-----
if(temp<=20.00){
dingin=1;
panas=0;
}
else
if(temp>=35.00)
{   panas=1;
dingin=0;
}
else if(temp>=20.00 &&
temp<=35.00){
dingin=(35.00-temp)/15;
panas=(temp-20.0)/15;}
//-----
//fuzifikasi kelembaban
//-----
----- if
(hum<=70.00){
kering=1;
else if (hum>=70.00 &&
hum<=80.00){
kering=(80.00-hum)/10;
lembab=(hum-70.00)/10;
}
//-----
//aturan fuzzy
//-----
a1=min(dingin,lembab); z1=3-
(a1*3);
a2=min(dingin,kering); z2=3-
(a2*3);
a3=min(panas,lembab);
z3=0+(a3*3);
a4=min(panas,kering);
z4=0+(a4*3);
//-----
//defuzifikasi
//-----
output1=((a1*z1)+(a2*z2)+(a3*z
3)+
(a4*z4));
output2=(a1+a2+a3+a4);
output=(output1)/(output2);
if((millis() - Millis2)>=2000){

```

```
lembab=0;} else
if(hum>=80.00){
lembab=1;

kering=0;
}
```

```
if (output>=0 &&
output<=0.49){ relay_off();
nol();
Serial.println("relay Status Off");
```



```
Serial.println("rela  
y Status Off")}  
else if  
(output>=0.50 && output<=1.49){
```

```
Serial.println("Output2=  
"+String(output2));  
  
Serial.println("Output=  
"+String(output));  
  
Millis2=millis();  
  
}
```

```
relay_on1();  
satu();  
Serial.println("-Relay Status On  
1\n");  
}  
else if (output>=1.50 &&  
output<=2.49){  
  
relay_on2();  
dua();  
Serial.println("-Relay Status On  
2\n");  
}  
else if (output>=2.50 &&  
output<=3.49){  
  
relay_on3();  
tiga();  
  
Serial.println("-Relay Status  
On 3\n");  
  
} if  
(hum>=80||((temp>=1&&temp<=20))  
{  
  
digitalWrite(relay4, relayon);
```

```
}  
void relay_off(){  
digitalWrite(relay1,  
relayoff);  
digitalWrite(relay2, relayoff);  
digitalWrite(relay3, relayoff);  
}  
void relay_on1(){  
digitalWrite(relay1, relayon);  
digitalWrite(relay2, relayoff);  
digitalWrite(relay3, relayoff);  
}  
void relay_on2(){  
digitalWrite(relay1, relayon);  
digitalWrite(relay2, relayon);  
digitalWrite(relay3, relayoff);  
}  
void relay_on3(){  
digitalWrite(relay1, relayon);  
digitalWrite(relay2, relayon);  
digitalWrite(relay3, relayon);  
}
```

```

Serial.println("Pemanas nyala");    void nol(){
                                     lcd.setCursor(13, 0);
                                     lcd.write(3);
}   lcd.write(4);

e
l
s
e
{
    digitalWrite(relay4,relayoff);
    Serial.println("Pemanas mati");
}

    Serial.println("Output1=
"+String(output1));
    lcd.setCursor(15,0);           lcd.write(3);   lcd.write(4);
    lcd.write("0");               lcd.setCursor(15,0);
}                                  lcd.write("2");
void satu(){                      }
    lcd.setCursor(13, 0);         void tiga(){
    lcd.write(3);   lcd.write(4);     lcd.setCursor(13, 0);
    lcd.setCursor(15,0);           lcd.write(3);   lcd.write(4);
    lcd.write("1");               lcd.setCursor(15,0);
} void dua(){                     lcd.write("3");
    lcd.setCursor(13, 0);         }
}

```

