

**Lampiran 2 Coding**

```

#include <Wire.h>
#include <SoftwareSerial.h>
#include "DHT.h"
#define DHTPIN 2 //Input untuk DHT22
#define DHTTYPE DHT22 // there are multiple kinds of DHT sensors

DHT dht(DHTPIN, DHTTYPE);
SoftwareSerial esp(13, 12);
const int sensorLDR = A1; // Input untuk LDR
const int sensorRD = A0; // Input untuk RD
const int tiktok = 3; // enable reading TikTok
const int dc = 7; // enable reading Motor DC
const int timer = 1000;
int data_tiktok ;
const int motorMaju = 8;
const int motorMundur = 9;
float kering, moderat, lembab;
float gelap, redup, terang;
float tidakHujan, gerimis, hujan;
float masuk, keluar;
float cahaya, kelembapan, raindrop, motor = 0.0;
float d_1, d_2, d_3, data;
float R1, R2, R3, R4, R5, R6, R7, R8, R9, R10;
float R11, R12, R13, R14, R15, R16, R17, R18, R19, R20;
float R21, R22, R23, R24, R25, R26, R27;
float zR1, zR2a, zR2b, zR3, zR4, zR5a, zR5b, zR6, zR7, zR8a, zR8b, zR9, zR10;
float zR11a, zR11b, zR12, zR13, zR14a, zR14b, zR15, zR16, zR17a, zR17b, zR18,
zR19, zR20a, zR20b;
float zR21, zR22, zR23a, zR23b, zR24, zR25, zR26a, zR26b, zR27;
String inputString = ""; // a String to hold incoming data
bool stringComplete = false;

```

```

String kirimData = "kirim";

//-----Setup-----
void setup() {

  // declare the enable and ledPin as an OUTPUT:

  pinMode(sensorLDR, INPUT);
  pinMode(sensorRD, INPUT);
  pinMode(tiktok, INPUT);
  pinMode(dc, OUTPUT);
  pinMode(motorMaju,OUTPUT);
  pinMode(motorMundur,OUTPUT);
  digitalWrite(motorMaju,HIGH);
  digitalWrite(motorMundur,HIGH);
  digitalWrite(dc, HIGH);
  digitalWrite(tiktok, LOW);
  Serial.begin(115200);
  esp.begin(115200);
  dht.begin();
  delay(10);
  Serial.println("Online");
  inputString.reserve(100);
}

void loop() {

  digitalWrite(tiktok, LOW);
  //-----BACA SEMUA SENSOR-----//
  kelembapan = dht.readHumidity();

```

```
raindrop = analogRead(sensorRD);
raindrop = constrain(raindrop, 0, 1023);
raindrop = map(raindrop, 0, 1023, 1120, 0);

cahaya = analogRead(sensorLDR);
cahaya = constrain(cahaya, 0, 1023);
cahaya = map(cahaya, 0, 1023, 30000, 0);

// fuzzifikasi data
fuzzifikasi();

//kontruksi data untuk dikirim
constructData();

// setup rule
rule();
//printData();

//perhitungan data fuzzifikasi
perkalian();
penjumlahan();
gabungan();
// printDHT();
// printLDR();
// printRD();

//tampilkan data
// printPerkalian();
// printPenjumlahan();
// printDifuzzy();
// Serial.println("Menghubungin Server...");
Serial.flush();
```

```

    kirimDataServer();
    cekTiktok();
}
//-----Menghitung (Rn*zRn)-----//
void perkalian() {
    d_1 = ((R1 * zR1) + (R2 * zR2a) + (R2 * zR2b) + (R3 * zR3) + (R4 * zR4) + (R5
    * zR5a) + (R5 * zR5b) + (R6 * zR6) + (R7 * zR7) + (R8 * zR8a) + (R8 * zR8b) +
    (R9 * zR9) + (R10 * zR10) + (R11 * zR11a) + (R11 * zR11b) + (R12 * zR12) +
    (R13 * zR13) + (R14 * zR14a) + (R14 * zR14b) + (R15 * zR15) + (R16 * zR16) +
    (R17 * zR17a) + (R17 * zR17b) + (R18 * zR18) + (R19 * zR19) + (R20 * zR20a)
    + (R20 * zR20b) + (R21 * zR21) + (R22 * zR22) + (R23 * zR23a) + (R23 * zR23b)
    + (R24 * zR24) + (R25 * zR25) + (R26 * zR26a) + (R26 * zR26b) + (R27 * zR27));
}

//-----Menghitung (Ra+...Rz)-----//
void penjumlahan() {
    d_2 = (R1 + R2 + R3 + R4 + R5 + R6 + R10 + R11 + R12 + R13 + R14 + R15 +
    R16 + R17 + R18 + R19 + R20 + R21 + R22 + R23 + R24 + R25 + R26 + R27);
}

//-----Menghitung Defuzzifikasi-----//
void gabungan() {
    d_3 = d_1 / d_2;
}
void cekTiktok(){
    int dataTiktok= digitalRead(tiktok);
    delay(500);
    if(d_3 > 600 && dataTiktok == 0){
// Serial.println("Motor Mundur");
        digitalWrite(motorMundur,LOW);
        digitalWrite(motorMaju,HIGH);
    }
}

```

```

}
if(d_3 > 600 && dataTiktok == 1){
// Serial.println("Stand by Hujan");
digitalWrite(motorMundur,HIGH);
digitalWrite(motorMaju,HIGH);

}
if(d_3 < 600 && dataTiktok == 1 ){
// Serial.println("Motor Maju");
digitalWrite(motorMaju,LOW);//standby
digitalWrite(motorMundur,HIGH);//berhenti
}
if(d_3 < 600 && dataTiktok == 0 ){
// Serial.println("Stand by Jemur");
digitalWrite(motorMaju,HIGH);//standby
digitalWrite(motorMundur,HIGH);//berhenti
}
}
}

void printData() {

Serial.print("ALPRED 1 : ");
Serial.print("\t");
Serial.println(R1);
Serial.print("RULE BASE 1 : ");
Serial.print("\t");
Serial.println(zR1);
Serial.println();

Serial.print("ALPRED 2 : ");
Serial.print("\t");
Serial.println(R1);

```

```
Serial.print("RULE BASE 2A : ");  
Serial.print("\t");  
Serial.println(zR2a);  
Serial.print("RULE BASE 2B : ");  
Serial.print("\t");  
Serial.println(zR2b);  
Serial.println();
```

```
Serial.print(" ALPRED 3 : ");  
Serial.print("\t");  
Serial.println(R3);  
Serial.print("RULE BASE 3 : ");  
Serial.print("\t");  
Serial.println(zR3);  
Serial.println();
```

```
Serial.print(" ALPRED 4 : ");  
Serial.print("\t");  
Serial.println(R4);  
Serial.print("RULE BASE 4 : ");  
Serial.print("\t");  
Serial.println(zR4);  
Serial.println();
```

```
Serial.print(" ALPRED 5 : ");  
Serial.print("\t");  
Serial.println(R5);  
Serial.print("RULE BASE 5A : ");  
Serial.print("\t");  
Serial.println(zR5a);  
Serial.print("RULE BASE 5B : ");  
Serial.print("\t");
```



```
Serial.println(zR5b);  
Serial.println();
```

```
Serial.print("ALPRED 6 : ");  
Serial.print("\t");  
Serial.println(R6);  
Serial.print("RULE BASE 6 : ");  
Serial.print("\t");  
Serial.println(zR6);  
Serial.println();
```

```
Serial.print("ALPRED 7 : ");  
Serial.print("\t");  
Serial.println(R7);  
Serial.print("RULE BASE 7 : ");  
Serial.print("\t");  
Serial.println(zR7);  
Serial.println();
```

```
Serial.print("ALPRED 8 : ");  
Serial.print("\t");  
Serial.println(R8);  
Serial.print("RULE BASE 8A : ");  
Serial.print("\t");  
Serial.println(zR8a);  
Serial.print("RULE BASE 8B : ");  
Serial.print("\t");  
Serial.println(zR8b);  
Serial.println();
```

```
Serial.print("ALPRED 9 : ");  
Serial.print("\t");
```

```
Serial.println(R9);  
Serial.print("RULE BASE 9 : ");  
Serial.print("\t");  
Serial.println(zR9);  
Serial.println();
```

```
Serial.print("ALPRED 10 : ");  
Serial.print("\t");  
Serial.println(R10);  
Serial.print("RULE BASE 10 : ");  
Serial.print("\t");  
Serial.println(zR10);  
Serial.println();
```

```
Serial.print("ALPRED 11 : ");  
Serial.print("\t");  
Serial.println(R11);  
Serial.print("RULE BASE 11A : ");  
Serial.print("\t");  
Serial.println(zR11a);  
Serial.print("RULE BASE 11B : ");  
Serial.print("\t");  
Serial.println(zR11b);  
Serial.println();
```

```
Serial.print("ALPRED 12 : ");  
Serial.print("\t");  
Serial.println(R12);  
Serial.print("RULE BASE 12 : ");  
Serial.print("\t");  
Serial.println(zR12);  
Serial.println();
```



```
Serial.print("ALPRED 13 : ");  
Serial.print("\t");  
Serial.println(R13);  
Serial.print("RULE BASE 13 : ");  
Serial.print("\t");  
Serial.println(zR13);  
Serial.println();
```

```
Serial.print(" ALPRED 14 : ");  
Serial.print("\t");  
Serial.println(R14);  
Serial.print("RULE BASE 14A : ");  
Serial.print("\t");  
Serial.println(zR14a);  
Serial.print("RULE BASE 14B : ");  
Serial.print("\t");  
Serial.println(zR14b);  
Serial.println();
```

```
Serial.print(" ALPRED 15 : ");  
Serial.print("\t");  
Serial.println(R15);  
Serial.print("RULE BASE 15 : ");  
Serial.print("\t");  
Serial.println(zR15);  
Serial.println();
```

```
Serial.print(" ALPRED 16 : ");  
Serial.print("\t");  
Serial.println(R16);  
Serial.print("RULE BASE 16 : ");  
Serial.print("\t");
```

```
Serial.println(zR16);
```

```
Serial.println();
```

```
Serial.print("ALPRED 17 : ");
```

```
Serial.print("\t");
```

```
Serial.println(R17);
```

```
Serial.print("RULE BASE 17A : ");
```

```
Serial.print("\t");
```

```
Serial.println(zR17a);
```

```
Serial.print("RULE BASE 17B : ");
```

```
Serial.print("\t");
```

```
Serial.println(zR17b);
```

```
Serial.println();
```

```
Serial.print("ALPRED 18 : ");
```

```
Serial.print("\t");
```

```
Serial.println(R18);
```

```
Serial.print("RULE BASE 18 : ");
```

```
Serial.print("\t");
```

```
Serial.println(zR18);
```

```
Serial.println();
```

```
Serial.print("ALPRED 19 : ");
```

```
Serial.print("\t");
```

```
Serial.println(R19);
```

```
Serial.print("RULE BASE 19 : ");
```

```
Serial.print("\t");
```

```
Serial.println(zR19);
```

```
Serial.println();
```

```
Serial.print("ALPRED 20 : ");
```

```
Serial.print("\t");
```

```
Serial.println(R20);  
Serial.print("RULE BASE 20A : ");  
Serial.print("\t");  
Serial.println(zR20a);  
Serial.print("RULE BASE 20B : ");  
Serial.print("\t");  
Serial.println(zR20b);  
Serial.println();
```

```
Serial.print("ALPRED 21 : ");  
Serial.print("\t");  
Serial.println(R21);  
Serial.print("RULE BASE 21 : ");  
Serial.print("\t");  
Serial.println(zR21);  
Serial.println();
```

```
Serial.print("ALPRED 22 : ");  
Serial.print("\t");  
Serial.println(R22);  
Serial.print("RULE BASE 22 : ");  
Serial.print("\t");  
Serial.println(zR22);  
Serial.println();
```

```
Serial.print("ALPRED 23 : ");  
Serial.print("\t");  
Serial.println(R23);  
Serial.print("RULE BASE 23A : ");  
Serial.print("\t");  
Serial.println(zR23a);  
Serial.print("RULE BASE 23B : ");
```

```
Serial.print("\t");  
Serial.println(zR23b);  
Serial.println();
```

```
Serial.print("ALPRED 24 : ");  
Serial.print("\t");  
Serial.println(R24);  
Serial.print("RULE BASE 24 : ");  
Serial.print("\t");  
Serial.println(zR24);  
Serial.println();
```

```
Serial.print("ALPRED 25 : ");  
Serial.print("\t");  
Serial.println(R25);  
Serial.print("RULE BASE 25 : ");  
Serial.print("\t");  
Serial.println(zR25);  
Serial.println();
```

```
Serial.print("ALPRED 26 : ");  
Serial.print("\t");  
Serial.println(R26);  
Serial.print("RULE BASE 26A : ");  
Serial.print("\t");  
Serial.println(zR26a);  
Serial.print("RULE BASE 26B : ");  
Serial.print("\t");  
Serial.println(zR26b);  
Serial.println();
```

```
Serial.print("ALPRED 27 : ");  
Serial.print("\t");  
Serial.println(R27);  
Serial.print("RULE BASE 27 : ");  
Serial.print("\t");  
Serial.println(zR27);  
Serial.println();  
}
```

```
void rule() {
```

```
  R_1();  
  R_2();  
  R_3();  
  R_4();  
  R_5();  
  R_6();  
  R_7();  
  R_8();  
  R_9();  
  R_10();  
  R_11();  
  R_12();  
  R_13();  
  R_14();  
  R_15();  
  R_16();  
  R_17();  
  R_18();  
  R_19();  
  R_20();  
  R_21();
```

```
R_22();
R_23();
R_24();
R_25();
R_26();
R_27();
}

void serialEvent() {
  while (esp.available()) {

    char inChar = (char)esp.read();

    inputString += inChar;

    if (inChar == '\n') {
      stringComplete = true;
    }
  }
}

void constructData(){
  kirimData += "<lux>";
  kirimData += cahaya;
  kirimData += "<rd>";
  kirimData += raindrop;
  kirimData += "<hd>";
  kirimData += kelembapan;
  kirimData += "<pos>";
  kirimData += "Masuk ";
}
```



```
void printDHT(){
  Serial.print("Nilai Kelembapan \t: ");
  Serial.println(kelembapan);
  Serial.print("kering : ");
  Serial.print("\t");
  Serial.println(kering);
  Serial.print("moderat : ");
  Serial.print("\t");
  Serial.println(moderat);
  Serial.print("lembab : ");
  Serial.print("\t");
  Serial.println(lembab);
  Serial.println(); /*
  delay(timer);
}
```

```
void printRD(){
  Serial.print("Nilai Raindrop \t: ");
  Serial.println(raindrop);
/* Serial.println(" rd");
  Serial.print("tidakHujan : ");
  Serial.print("\t");
  Serial.println(tidakHujan);
  Serial.print("gerimis : ");
  Serial.print("\t");
  Serial.println(gerimis);
  Serial.print("hujan : ");
  Serial.print("\t");
  Serial.println(hujan);
  Serial.println(); /*
  delay(timer);
}
```

```
void printLDR(){
    Serial.print("Nilai LDR \t : ");
    Serial.println(cahaya);
    /* Serial.println(" lux");
    Serial.print("gelap : ");
    Serial.print("\t");
    Serial.println(gelap);
    Serial.print("redup : ");
    Serial.print("\t");
    Serial.println(redup);
    Serial.print("terang : ");
    Serial.print("\t");
    Serial.println(terang);
    Serial.println(); */
    delay(timer);
}

void kirimDataServer(){
    if (stringComplete) {
        Serial.println(inputString);
        esp.println(kirimData);
    }
    inputString = "";
    stringComplete = false;
    kirimData = "kirim";
}

void printDifuzzy(){
    Serial.print("Hasil Defuzzifikasi : ");
    Serial.println(d_3);
    Serial.println();
```

```

data_tiktok = digitalRead(tiktok);
delay(timer);
if(d_3 >= 500){
    digitalWrite(dc,LOW);
}
if(data_tiktok == 1){
    digitalWrite(dc,HIGH);
}
else{
    digitalWrite(dc,LOW);
}
}

void printPenjumlahan(){
    Serial.print("Ra+...Rz \t\t: ");
    Serial.println(d_2);
}

void printPerkalian(){
    Serial.print("Rn * zRn \t\t: ");
    Serial.println(d_1);
}

//-----Fuzzyfikasi Hd-----
unsigned char K_Lembab() {
    if (kelembapan <= 50) {
        lembab = 1;
    } else if (kelembapan >= 50 && kelembapan <= 75) {
        lembab = (75 - kelembapan) / 25;
    } else if (kelembapan >= 75) {
        lembab = 0;
    }
}

```

```

return lembab;
}

unsigned char K_Moderat() {
    if (kelembapan <= 50) {
        moderat = 0;
    } else if (kelembapan >= 50 && kelembapan <= 75) {
        moderat = (kelembapan - 50) / 25;
    } else if (kelembapan >= 75 && kelembapan <= 100) {
        moderat = (100 - kelembapan) / 25;
    } else if (kelembapan >= 100) {
        moderat = 0;
    }
    return moderat;
}

unsigned char K_Kering() {
    if (kelembapan <= 75) {
        kering = 0;
    } else if (kelembapan >= 75 && kelembapan <= 100) {
        kering = (kelembapan - 75) / 25;
    } else if (kelembapan >= 100) {
        kering = 1;
    }
    return kering;
}

//-----Fuzzyfikasi LDR-----
unsigned char C_Gelap() {
    if (cahaya <= 12000) {
        gelap = 1;
    } else if (cahaya >= 12000 && cahaya <= 16000) {

```

```
    gelap = (16000 - cahaya) / 4000;
} else if (cahaya >= 16000) {
    gelap = 0;
}
return gelap;
}
```

```
unsigned char C_Redup() {
    if (cahaya <= 12000) {
        redup = 0;
    } else if (cahaya >= 12000 && cahaya <= 16000) {
        redup = (cahaya - 12000) / 4000;
    } else if (cahaya >= 16000 && cahaya <= 20000) {
        redup = (20000 - cahaya) / 4000;
    } else if (cahaya >= 20000) {
        redup = 0;
    }
    return redup;
}
```

```
unsigned char C_Terang() {
    if (cahaya <= 16000) {
        terang = 0;
    } else if (cahaya >= 16000 && cahaya <= 20000) {
        terang = (cahaya - 16000) / 4000;
    } else if (cahaya >= 20000) {
        terang = 1;
    }
    return terang;
}
```

```
//-----Fuzzyfikasi RD-----
unsigned char R_TidakHujan() {
    if (raindrop <= 350) {
        tidakHujan = 1;
    } else if (raindrop >= 350 && raindrop <= 550) {
        tidakHujan = (550 - raindrop) / 200;
    } else if (raindrop >= 550) {
        tidakHujan = 0;
    }
    return tidakHujan;
}

unsigned char R_Gerimis() {
    if (raindrop <= 350) {
        gerimis = 0;
    } else if (raindrop >= 350 && raindrop <= 550) {
        gerimis = (raindrop - 350) / 200;
    } else if (raindrop >= 550 && raindrop <= 750) {
        gerimis = (750 - raindrop) / 200;
    } else if (raindrop >= 750) {
        gerimis = 0;
    }
    return gerimis;
}

unsigned char R_Hujan() {
    if (raindrop <= 550) {
        hujan = 0;
    } else if (raindrop >= 550 && raindrop <= 750) {
        hujan = (raindrop - 550) / 200;
    } else if (raindrop >= 750) {
        hujan = 1;
    }
}
```



```

    }
    return hujan;
}

void fuzzifikasi() {
    K_Lembab();
    K_Moderat();
    K_Kering();
    C_Gelap();
    C_Redup();
    C_Terang();
    R_TidakHujan();
    R_Gerimis();
    R_Hujan();
}

//-----Rule Base-----//
void R_1() {
    if (lembab < gelap) {
        if (lembab < tidakHujan) {
            R1 = lembab;
        } else {
            R1 = tidakHujan;
        }
    } else if (gelap < tidakHujan) {
        R1 = gelap;
    } else {
        R1 = tidakHujan; }
    zR1 = 550 - (R1 * 200);
}

```

```
void R_2() {  
    if (lembab < gelap) {  
        if (lembab < gerimis) {  
            R2 = lembab;  
        } else {  
            R2 = gerimis;  
        }  
    } else if (gelap < gerimis) {  
        R2 = gelap;  
    } else {  
        R2 = gerimis;  
    }  
    zR2a = (R2 * 200) + 350;  
    zR2b = 750 - (R2 * 200);  
}
```

```
void R_3() {  
    if (lembab < gelap) {  
        if (lembab < hujan) {  
            R3 = lembab;  
        } else {  
            R3 = hujan;  
        }  
    } else if (gelap < hujan) {  
        R3 = gelap;  
    } else {  
        R3 = hujan;  
    }  
    zR3 = (R3 * 200) + 550; }
```

```
void R_4() {  
    if (lembab < redup) {  
        if (lembab < tidakHujan) {
```

```
    R4 = lembab;
  } else {
    R4 = tidakHujan;
  }
} else if (redup < tidakHujan) {
  R4 = redup;
} else {
  R4 = tidakHujan;
}
zR4 = 550 - (R4 * 200);
}
```

```
void R_5() {
  if (lembab < redup) {
    if (lembab < gerimis) {
      R5 = lembab;
    } else {
      R5 = gerimis;
    }
  } else if (redup < gerimis) {
    R5 = redup;
  } else {
    R5 = gerimis;
  }
  zR5a = (R5 * 200) + 350;
  zR5b = 750 - (R5 * 200);
}
```

```
void R_6() {
  if (lembab < redup) {
    if (lembab < hujan) {
      R6 = lembab;
```

```
} else {
    R6 = hujan;
}
} else if (redup < hujan) {
    R6 = redup;
} else {
    R6 = hujan;
}
zR6 = (R6 * 200) + 550;
}

void R_7() {
    if (lembab < terang) {
        if (lembab < tidakHujan) {
            R7 = lembab;
        } else {
            R7 = tidakHujan;
        }
    } else if (terang < tidakHujan) {
        R7 = terang;
    } else {
        R7 = tidakHujan;
    }
    zR7 = 550 - (R7 * 200);
}

void R_8() {
    if (lembab < terang) {
        if (lembab < gerimis) {
            R8 = lembab;
        } else {
            R8 = gerimis;
        }
    }
}
```

```
    }  
  } else if (terang < gerimis) {  
    R8 = terang;  
  } else {  
    R8 = gerimis;  
  }  
  zR8a = (R8 * 200) + 350;  
  zR8b = 750 - (R8 * 200);  
}
```

```
void R_9() {  
  if (lembab < terang) {  
    if (lembab < hujan) {  
      R9 = lembab;  
    } else {  
      R9 = hujan;  
    }  
  } else if (terang < hujan) {  
    R9 = terang;  
  } else {  
    R9 = hujan;  
  }  
  zR9 = (R9 * 200) + 550;  
}
```

```
void R_10() {  
  if (moderat < gelap) {  
    if (moderat < tidakHujan) {  
      R10 = moderat;  
    } else {  
      R10 = tidakHujan;  
    }  
  }  
}
```

```
} else if (gelap < tidakHujan) {  
    R10 = gelap;  
} else {  
    R10 = tidakHujan;  
}  
zR10 = 550 - (R10 * 200);  
}
```

```
void R_11() {  
    if (moderat < gelap) {  
        if (moderat < gerimis) {  
            R11 = moderat;  
        } else {  
            R11 = gerimis;  
        }  
    } else if (gelap < gerimis) {  
        R11 = gelap;  
    } else {  
        R11 = gerimis;  
    }  
    zR11a = (R11 * 200) + 350;  
    zR11b = 750 - (R11 * 200);  
}
```

```
void R_12() {  
    if (moderat < gelap) {  
        if (moderat < hujan) {  
            R12 = moderat;  
        } else {  
            R12 = hujan;  
        }  
    } else if (gelap < hujan) {
```



```
R12 = gelap;
} else {
  R12 = hujan;
}
zR12 = (R12 * 200) + 550;
}
```

```
void R_13() {
  if (moderat < redup) {
    if (moderat < tidakHujan) {
      R13 = moderat;
    } else {
      R13 = tidakHujan;
    }
  } else if (redup < tidakHujan) {
    R13 = redup;
  } else {
    R13 = tidakHujan;
  }
  zR13 = 550 - (R13 * 200); //MOTOR LAMBAT
}
```

```
void R_14() {
  if (moderat < redup) {
    if (moderat < gerimis) {
      R14 = moderat;
    } else {
      R14 = gerimis;
    }
  } else if (redup < gerimis) {
    R14 = redup;
  } else {
```

```
R14 = gerimis;
}
zR14a = (R14 * 200) + 350;
zR14b = 750 - (R14 * 200);
}

void R_15() {
    if (moderat < redup) {
        if (moderat < hujan) {
            R15 = moderat;
        } else {
            R15 = hujan;
        }
    } else if (redup < hujan) {
        R15 = redup;
    } else {
        R15 = hujan;
    }
    zR15 = (R15 * 200) + 550;
}

void R_16() {
    if (moderat < terang) {
        if (moderat < tidakHujan) {
            R16 = moderat;
        } else {
            R16 = tidakHujan;
        }
    } else if (terang < tidakHujan) {
        R16 = terang;
    } else {
        R16 = tidakHujan;
    }
}
```

```
}  
zR16 = 550 - (R16 * 200);  
}  
  
void R_17() {  
  if (moderat < terang) {  
    if (moderat < gerimis) {  
      R17 = moderat;  
    } else {  
      R17 = gerimis;  
    }  
  } else if (terang < gerimis) {  
    R17 = terang;  
  } else {  
    R17 = gerimis;  
  }  
  zR17a = (R17 * 200) + 350;  
  zR17b = 750 - (R17 * 200);  
}  
  
void R_18() {  
  if (moderat < terang) {  
    if (moderat < hujan) {  
      R18 = moderat;  
    } else {  
      R18 = hujan;  
    }  
  } else if (terang < hujan) {  
    R18 = terang;  
  } else {  
    R18 = hujan;  
  }  
}
```

```
zR18 = (R18 * 200) + 550;
}

void R_19() {
    if (kering < gelap) {
        if (kering < tidakHujan) {
            R19 = kering;
        } else {
            R19 = tidakHujan;
        }
    } else if (gelap < tidakHujan) {
        R19 = gelap;
    } else {
        R19 = tidakHujan;
    }
    zR19 = 550 - (R19 * 200);
}

void R_20() {
    if (kering < gelap) {
        if (kering < gerimis) {
            R20 = kering;
        } else {
            R20 = gerimis;
        }
    } else if (gelap < gerimis) {
        R20 = gelap;
    } else {
        R20 = gerimis;
    }
    zR20a = (R20 * 200) + 350;
    zR20b = 750 - (R20 * 200);
}
```

```
}  
  
void R_21() {  
    if (kering < gelap) {  
        if (kering < hujan) {  
            R21 = kering;  
        } else {  
            R21 = hujan;  
        }  
    } else if (gelap < hujan) {  
        R21 = gelap;  
    } else {  
        R21 = hujan;  
    }  
    zR21 = (R21 * 200) + 550;  
}  
  
void R_22() {  
    if (kering < redup) {  
        if (kering < tidakHujan) {  
            R22 = kering;  
        } else {  
            R22 = tidakHujan;  
        }  
    } else if (redup < tidakHujan) {  
        R22 = redup;  
    } else {  
        R22 = tidakHujan;  
    }  
    zR22 = 550 - (R22 * 200);  
}
```

```
void R_23() {  
    if (kering < redup) {  
        if (kering < gerimis) {  
            R23 = kering;  
        } else {  
            R23 = gerimis;  
        }  
    } else if (redup < gerimis) {  
        R23 = redup;  
    } else {  
        R23 = gerimis;  
    }  
    zR23a = (R23 * 200) + 350;  
    zR23b = 750 - (R23 * 200);  
}
```

```
void R_24() {  
    if (kering < redup) {  
        if (kering < hujan) {  
            R24 = kering;  
        } else {  
            R24 = hujan;  
        }  
    } else if (redup < hujan) {  
        R24 = redup;  
    } else {  
        R24 = hujan;  
    }  
    zR24 = (R24 * 200) + 550;  
}
```



```
void R_25() {  
    if (kering < terang) {  
        if (kering < tidakHujan) {  
            R25 = kering;  
        } else {  
            R25 = tidakHujan;  
        }  
    } else if (terang < tidakHujan) {  
        R25 = terang;  
    } else {  
        R25 = tidakHujan;  
    }  
    zR25 = 550 - (R25 * 200);  
}
```

```
void R_26() {  
    if (kering < terang) {  
        if (kering < gerimis) {  
            R26 = kering;  
        } else {  
            R26 = gerimis;  
        }  
    } else if (terang < gerimis) {  
        R26 = terang;  
    } else {  
        R26 = gerimis;  
    }  
    zR26a = (R26 * 200) + 350;  
    zR26b = 750 - (R26 * 200);  
}
```

```
void R_27() {  
    if (kering < terang) {  
        if (kering < hujan) {  
            R27 = kering;  
        } else {  
            R27 = hujan;  
        }  
    } else if (terang < hujan) {  
        R27 = terang;  
    } else {  
        R27 = hujan;  
    }  
    zR27 = (R27 * 200) + 550;  
}
```