

APPENDIX

LIBRARIES

```
#include <SPI.h>
#include <Ethernet.h>
#include <PubSubClient.h>
#include <Servo.h>
```

SETTING IP ADDRESS

```
byte mac[] = { 0xDE, 0xED, 0xBA, 0xFE, 0xFE, 0xED };
IPAddress ip(192, 168, 1, 177);
IPAddress server(192, 168, 1, 10);
```

DECLARE VARIABLE AND PIN

```
Servo myservo;
//Pin Water Level
const int pinAir1 = A1;
const int pinAir2 = A2;
//Pin Waterpump
const int pinPump = 3;
//Deklarasi variable data sensor air water level
int dataAir1 = 0;
int dataAir2 = 0;
//Pin Cek Waterpump
int sensorPin = A0;
int sensorValue = 0;
//Pin Infrared Pintu
int obstaclePin1 = 6;
int obstacle1 = HIGH;
//Pin Infrared Kunci
int obstaclePin2 = 5;
int obstacle2 = HIGH;
//Pin dan Variable Water Flow
byte indikator = 13;
byte sensorInt = 0;
byte flowsensor = 2;
float konstanta = 4.5; //konstanta flow meter
volatile byte pulseCount;
float debit;
unsigned int flowmlt;
unsigned long totalmlt;
unsigned long oldTime;
```

FUNCTION SERVO COMMAND

```
void callback(char* topic, byte* payload, unsigned int length) {
  //Serial.print("Message arrived [");
  Serial.print(topic);
  Serial.print(" ");
  for (int i=0;i<length;i++) {
    Serial.print((char)payload[i]);
  }
  Serial.println();
  if (payload[0] == '1' && payload[1] == '1') {
    myservo.write(0);
  }
  if (payload[0] == '1' && payload[1] == '0') {
    myservo.write(90);
  }
}
```

```
EthernetClient ethClient;
PubSubClient client(ethClient);
```

FUNCTION CONNECT TO MQTT

```
void reconnect() {
  // looping hingga terhubung
  while (!client.connected()) {
    Serial.print("Mengoneksikan ke MQTT...");
    if (client.connect("arduinoClient")) {
      Serial.println("connected");
      client.publish("domoticz/out", "hello world");
      client.subscribe("pintu");
    } else {
      Serial.print("failed, rc=");
      Serial.print(client.state());
      Serial.println("Mencoba Kembali....");
      delay(5000);
    }
  }
}
```

FUNCTION SETUP SERVER

```
void setup()
{
  Serial.begin(9600);
  client.setServer(server, 1883);
```

DECLARE PIN SERVO IN FUCTION SETUP

```
myservo.attach(7);
```

SETTING OUTPUT AND INPUT DEVICE

```
pinMode(indikator, OUTPUT);
digitalWrite(indikator, HIGH);
pinMode(flowsensor, INPUT);
digitalWrite(flowsensor, HIGH);
```

SETTING THE DEFAULT NUMBER FOR THE WATERFLOW SENSOR

```
pulseCount = 0;
debit = 0.0;
flowmlt = 0;
totalmlt = 0;
oldTime = 0;
attachInterrupt(sensorInt, pulseCounter, FALLING);
```

CALLING FUNCTION CALLBACK

```
client.setCallback(callback);
Ethernet.begin(mac, ip);
delay(1500);
```

INISIALISASI OUTPUT AND INPUT WATERFLOW

```
pinMode(pinAir1, INPUT);
pinMode(pinAir2, INPUT);
pinMode(pinPump, OUTPUT);
```

INISIALISASI OUTPUT AND INPUT SENSOR OBSTACLE

```
pinMode(obstaclePin1, INPUT);
pinMode(obstaclePin2, INPUT);
}
```

FUNCTION LOOPING

```
void loop()
{
  if (!client.connected()) {
    reconnect();
  }
  client.loop();
}
```

READ ANALOG WATER LEVEL SENSOR

```
dataAir1 = analogRead(pinAir1);  
dataAir2 = analogRead(pinAir2);
```

CEK WATER LEVEL SENSOR VALUE

```
Serial.print("data 1 : ");  
Serial.println(dataAir1);  
Serial.print("data 2 : ");  
Serial.println(dataAir2);
```

IF VALUE >=250 WATERPUMP OFF AND IF VALUE < 250 WATERPUMP ON

```
if (dataAir1 >= 250)  
{  
  digitalWrite(pinPump, LOW);  
}  
if (dataAir2 < 250)  
{  
  digitalWrite(pinPump, HIGH);  
}
```

READ ANALOG RAIN SENSOR

```
sensorValue = analogRead(sensorPin);  
Serial.println(sensorValue);
```

IF VALUE <=500 PUBLISH MESIN PUMP HIDUP AND IF NOT <=500

PUBLISH MESIN PUMP MATI

```
if (sensorValue<=500) {  
  client.publish("domoticz/in", "{\"idx\":4,\"nvalue\":0,\"svalue\":\"Mesin Pump Hidup\" }");  
}  
else {  
  client.publish("domoticz/in", "{\"idx\":4,\"nvalue\":0,\"svalue\":\"Mesin Pump Mati\" }");  
}
```

READ DIGITAL OBSTACLE DOOR SENSOR

```
obstacle1 = digitalRead(obstaclePin1);
```

IF OBSTACLE ==LOW PUBLISH PINTU TERBUKA AND IF NOT ==LOW PUBLISH PINTU TERTUTUP

```
if (obstacle1 == LOW){  
  client.publish("domoticz/in", "{\"idx\":5,\"nvalue\":0,\"svalue  
\": \"Pintu Terbuka\" }");  
}  
else{  
  client.publish("domoticz/in", "{\"idx\":5,\"nvalue\":0,\"svalue  
\": \"Pintu Tertutup\" }");  
}  
delay(1000);
```

READ DIGITAL OBSTACLE LOCK SENSOR

```
obstacle2 = digitalRead(obstaclePin2);
```

IF OBSTACLE ==LOW PUBLISH LOCKED AND IF NOT ==LOW PUBLISH UNLOCKED

```
if (obstacle2 == LOW){  
  client.publish("domoticz/in", "{\"idx\":6,\"nvalue\":0,\"svalue  
\": \"Locked\" }");  
}  
else{  
  client.publish("domoticz/in", "{\"idx\":6,\"nvalue\":0,\"svalue  
\": \"Unlocked\" }");  
}  
delay(1000);
```

READ PULSE SIGNAL EVERY 1 SECOND

```
if((millis() - oldTime) > 1000)
{
```

COUNT DEBIT AND VOLUME WATER

```
detachInterrupt(sensorInt);
debit = ((1000.0 / (millis() - oldTime)) * pulseCount) /
konstanta;
oldTime = millis();
flowmlt = ((debit / 60) * 1000)*2;
totalmlt += flowmlt;

unsigned int frac;

char data[200];
float temp_coop = totalmlt;
Serial.println(temp_coop);
```

PUBLISH DATA VOLUME WATER

```
Stringpayload="{\"idx\":9,\"nvalue\":0,\"svalue\":\""+String(temp_
coop)+"\"} ";
payload.toCharArray(data, (payload.length() + 1));
client.publish("domoticz/in", data);

pulseCount = 0;

attachInterrupt(sensorInt, pulseCounter, FALLING);
}
delay(1000);
}
```

INCREMENT THE PULSE COUNTER

```
void pulseCounter()
{
pulseCount++;
}
```

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