

Smart Lamp

Nama Kelompok:

Dhuta Pamungkas I

Hafid Ali Rahman W

Latar Belakang

Dalam kehidupan sehari-hari terkadang banyak orang yang membiarkan lampu di rumah tetap hidup dan terang meski dalam keadaan kosong.

Sebagai Diketahui bahwa lampu adalah alat penerangan yang sangat penting untuk suatu kegiatan, namun seringkali ada kesulitan dalam mengontrol lampu karena masih dilakukan secara manual sehingga sering terjadi kelalaian dalam penggunaannya

Pendahuluan

Dengan menggunakan file Sistem kendali lampu berbasis rumah seluler dan Nodered, bertujuan untuk menghemat penggunaan listrik dan membuatnya lebih mudah untuk mengontrol lampu dari jarak tertentu.

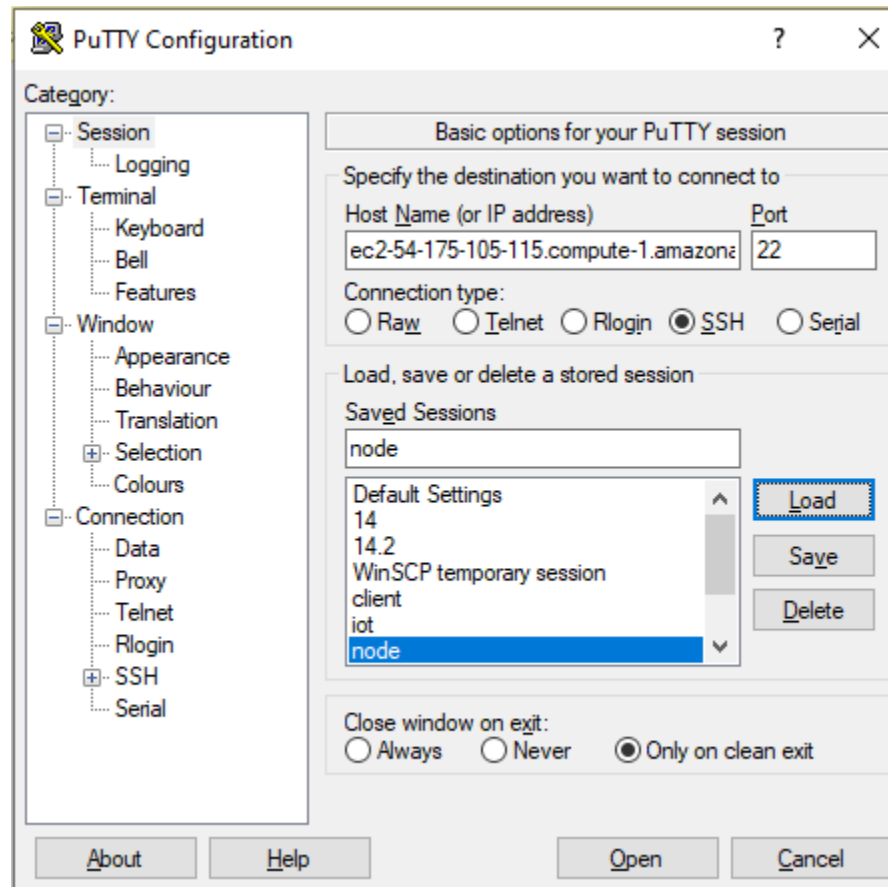
Sistem ini dibuat dengan menggunakan teknologi Bluetooth itu menerima pesan dari klien yang akan diproses dengan Nodered yang memungkinkan pengguna untuk mengontrol lampu rumah menggunakan Website Node red

NodeMCU ESP8266 sebagai mikrokontroler, dan keluarannya berupa relay untuk mengontrol sistem agar berada pada posisi on / off dan dimmer light mengatur pencahayaannya. Dengan mengontrol menggunakan Node red, alat ini dapat dioperasikan dengan sebuah website

Modul yang dibutuhkan

- 1. NodeMCU esp8266
- 2. Arduino UNO
- 3. Modul Dimmer Light
- 4. 3 Bohlam Lampu
- 5. Colokan
- 6. Kabel AC dan Kabel Jumper
- 7. Pitingan dll

Putty



Perintah putty



```
ec2-54-175-105-115.compute-1.amazonaws.com - PuTTY
login as: ubuntu
Authenticating with public key "imported-openssh-key"

ubuntu@ip-172-31-22-135: ~
* Documentation:  https://help.ubuntu.com
* Management:    https://landscape.canonical.com
* Support:        https://ubuntu.com/advantage

System information as of Mon Jun 14 07:12:22 UTC 2021

System load: 0.0          Processes:            110
Usage of /:   39.9% of 7.69GB   Users logged in:      0
Memory usage: 37%          IPv4 address for eth0: 172.31.22.135
Swap usage:   0%

* Super-optimized for small spaces - read how we shrank the memory
  footprint of MicroK8s to make it the smallest full K8s around.

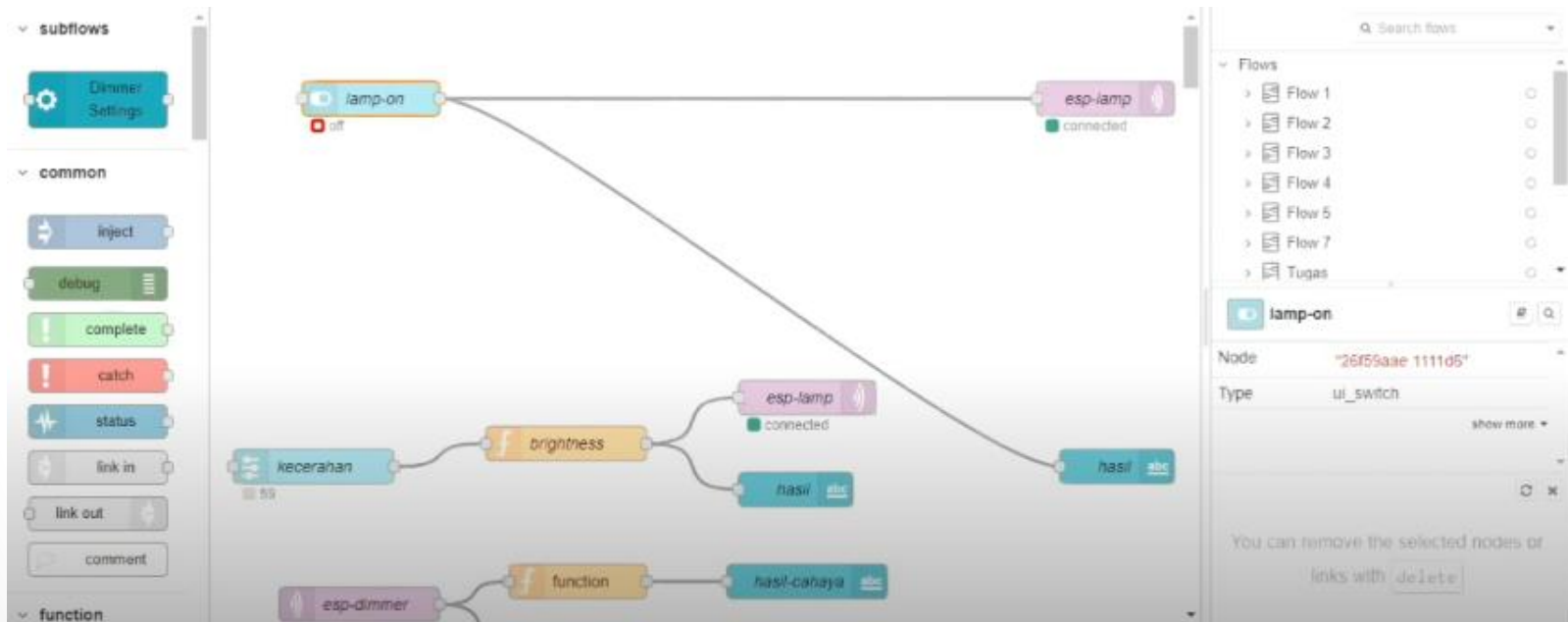
  https://ubuntu.com/blog/microk8s-memory-optimisation

4 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

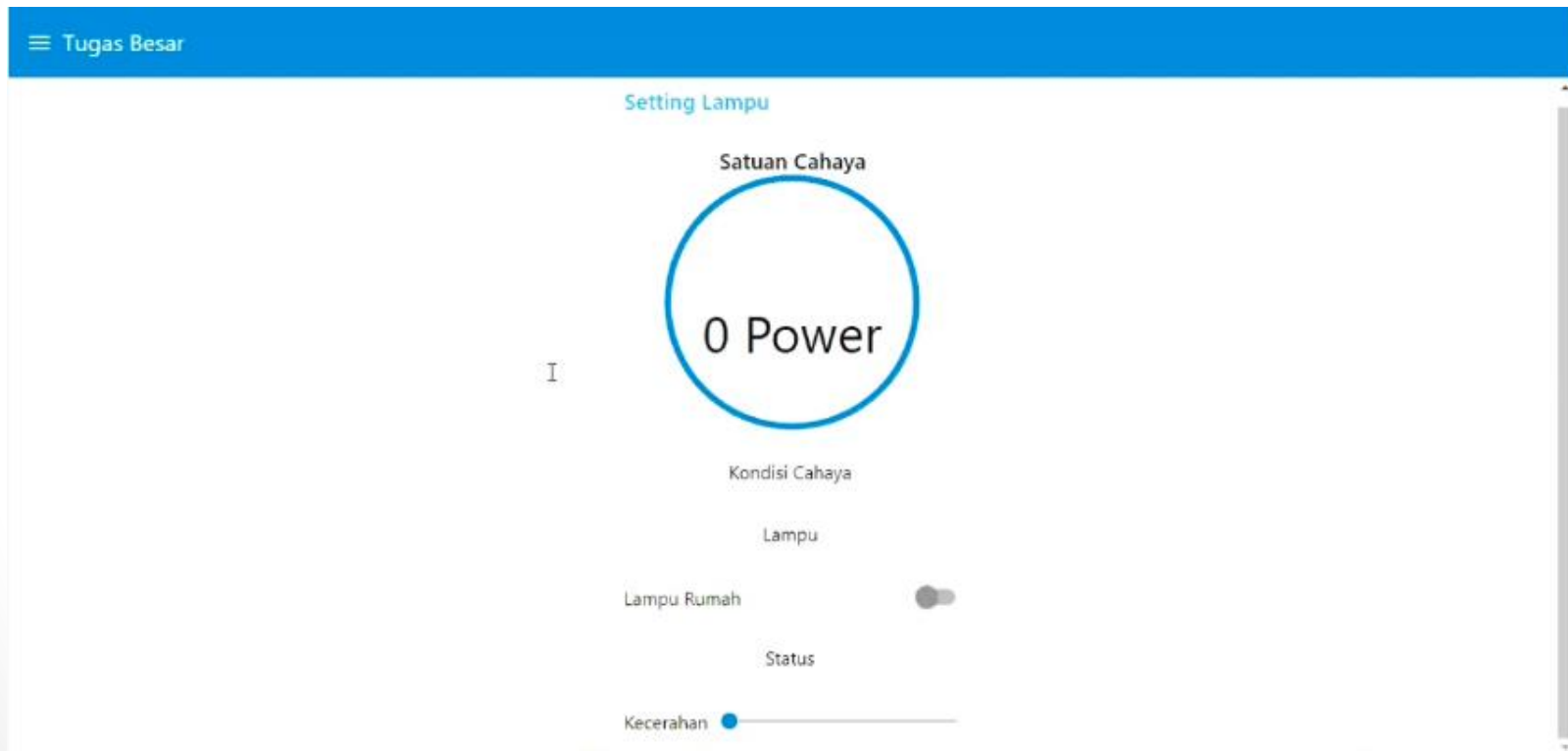
*** System restart required ***
Last login: Mon Jun 14 07:06:19 2021 from 182.1.99.3
ubuntu@ip-172-31-22-135:~$ node-red
```

Masukkan teks ubuntu dan node-red

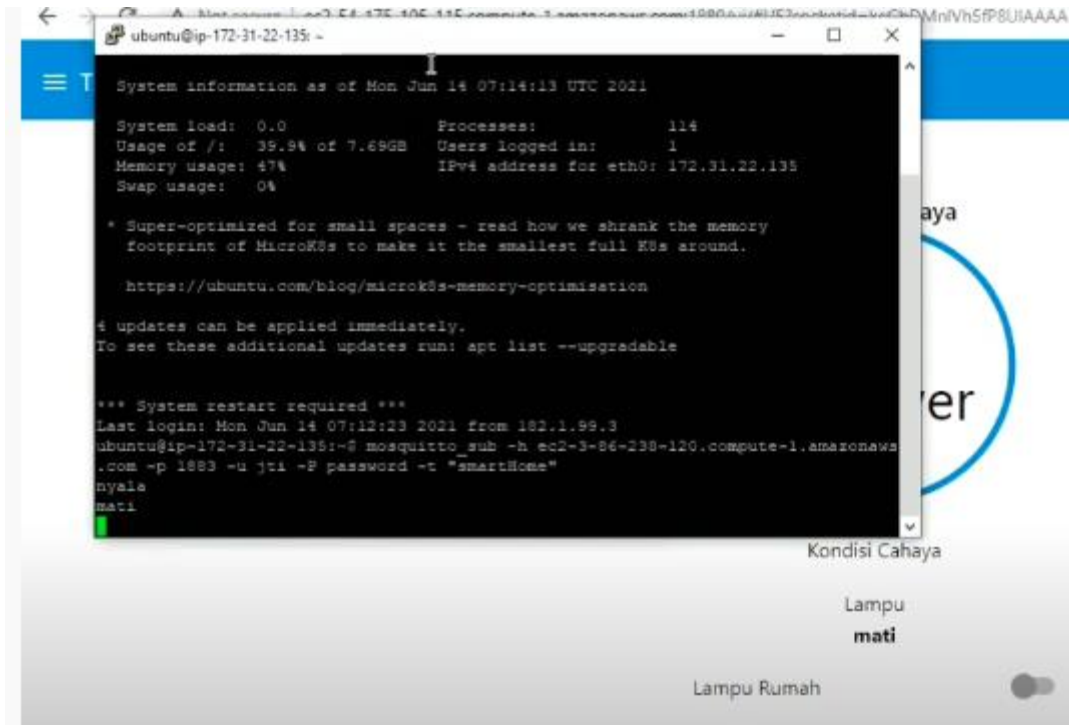
Tampilan desain node-red



Tampilan UI node-red



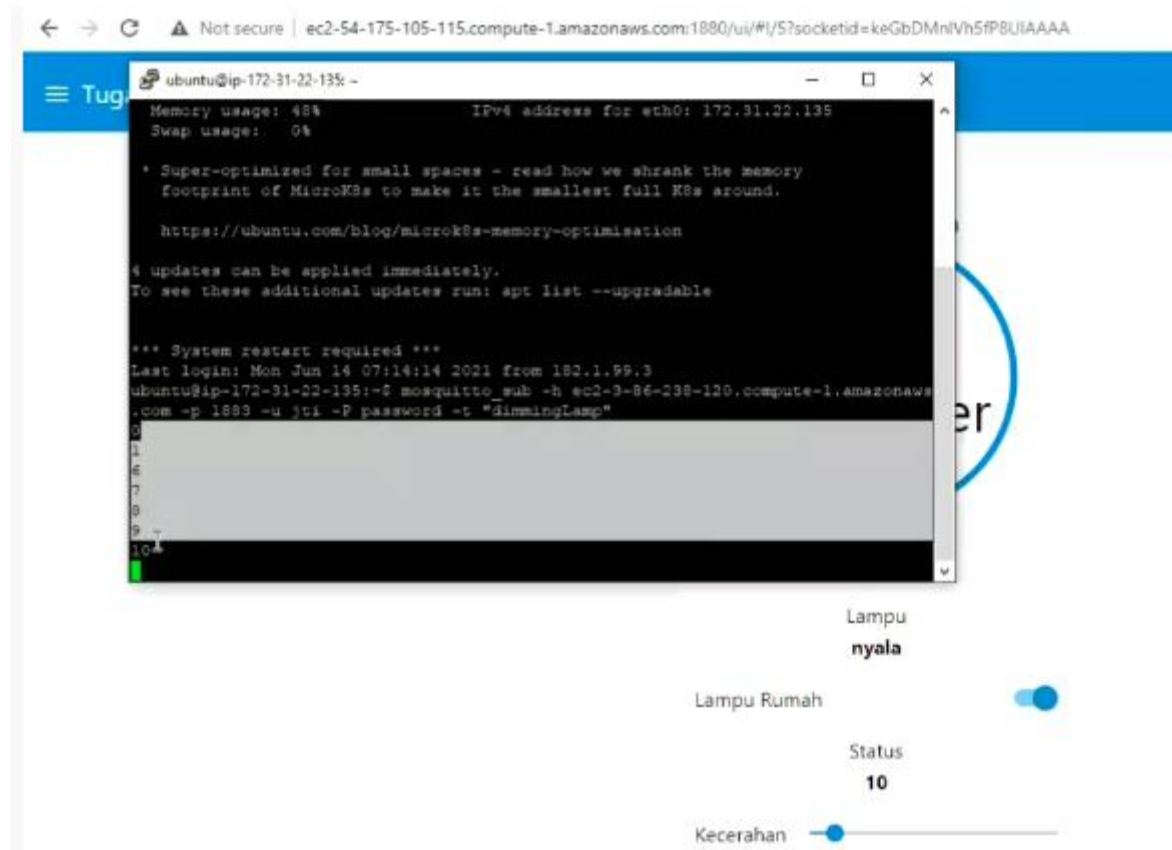
Pesan saklar yang masuk dalam server



The image shows a terminal window titled 'ubuntu@ip-172-31-22-135: ~'. The terminal output displays system information as of Monday, June 14, 07:14:13 UTC 2021. The system load is 0.0, with 114 processes and 1 user logged in. The usage of the root filesystem (/) is 39.9% of 7.69GB. Memory usage is 47%, and swap usage is 0%. The terminal also shows a message about MicroK8s being super-optimized for small spaces, a link to the Ubuntu blog, and a notification that 4 updates can be applied immediately. A system restart is required. The last login was on Monday, June 14, 07:12:23 2021 from 182.1.99.3. The terminal shows the execution of the command 'mosquitto_sub -h ec2-3-86-238-120.compute-1.amazonaws.com -p 1883 -u jti -P password -t "smartHome"'. The output of the command is 'nyala' and 'mati'. The terminal window is overlaid on a web interface with a blue header and a sidebar. The web interface has a search bar with the text 'Kondisi Cahaya' and a button labeled 'Lampu mati'. The page also has a footer with the text 'Lampu Rumah' and a toggle switch.

```
ubuntu@ip-172-31-22-135: ~  
System information as of Mon Jun 14 07:14:13 UTC 2021  
  
System load: 0.0          Processes:              114  
Usage of /:  39.9% of 7.69GB Users logged in:       1  
Memory usage: 47%        IPv4 address for eth0: 172.31.22.135  
Swap usage:  0%  
  
* Super-optimized for small spaces - read how we shrank the memory  
  footprint of MicroK8s to make it the smallest full K8s around.  
  
  https://ubuntu.com/blog/microk8s-memory-optimisation  
  
4 updates can be applied immediately.  
To see these additional updates run: apt list --upgradable  
  
*** System restart required ***  
Last login: Mon Jun 14 07:12:23 2021 from 182.1.99.3  
ubuntu@ip-172-31-22-135:~$ mosquitto_sub -h ec2-3-86-238-120.compute-1.amazonaws  
.com -p 1883 -u jti -P password -t "smartHome"  
nyala  
mati
```

Pesan kecerahan yang masuk dalam server



Source code di nodemcu esp8266

```
• #include <Arduino.h>
• #include <ESP8266WiFi.h>
• #include <PubSubClient.h>

• // Wifi Connection Config
• const char* wlanName = "TIKUSAN";
• const char* wlanPassword = "hafid1221";

• // Define Variable for mqtt broker
• const char* brokerAddress = "ec2-3-86-238-120.compute-1.amazonaws.com";
• const char* brokerUsername = "jti";
• const char* brokerPassword = "password";

• // Define instance for wificlient
• WiFiClient espClient;
• PubSubClient client(espClient);

• void callback(char* topic, byte* payload, unsigned int length);

• void reconnect() {
• // Reconnect if connection lost
• Serial.println("In reconnect...");
•
• while (!client.connected()) {
• Serial.print("Attempting MQTT connection...");
• // Attempt to connect
• if (client.connect("smart_lamp", brokerUsername, brokerPassword)) {
• Serial.println("connected");
• client.subscribe("smartHome");
• client.subscribe("dimmingLamp");
• } else {
• Serial.print("failed, ");
• Serial.print(client.state());
• Serial.println(" try again in 5 seconds");
• delay(5000);
• }
• }
• }
```

```

• //Broker callback
• void callback(char* topic, byte* payload, unsigned int length) {
•   for (int i = 0; i < length; i++) {
•     // validate topic name and
•     // Send data to serial
•     if (strcmp(topic,"smartHome") == 0 ) {
•       Serial.write(payload[i]);
•       Serial.write("");
•     }
•
•     if (strcmp(topic,"dimmingLamp") == 0 ) {
•       Serial.write(payload[i]);
•       Serial.write("");
•     }
•
•   }
• }

• void setup() {
•   // Initial Serial
•   Serial.begin(115200);
•
•   // Declare wifi config
•   WiFi.begin(wlanName,wlanPassword);
•   while (WiFi.status() != WL_CONNECTED ) {
•     // Delay for get wifi status
•     delay(500);
•     Serial.print("#");
•   }
•   Serial.println("");
•   Serial.println("Connected");
•
•   //Set Server Broker
•   client.setServer(brokerAddress,1883);
•   client.setCallback(callback);
• }

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

```

Source code di ArduinoUNO

```
• #include <RBDdimmer.h>

• // =====
• // Define your pin here
• #define zcrossPin 2
• #define dimmerOutput 7
• // =====

• String inData;

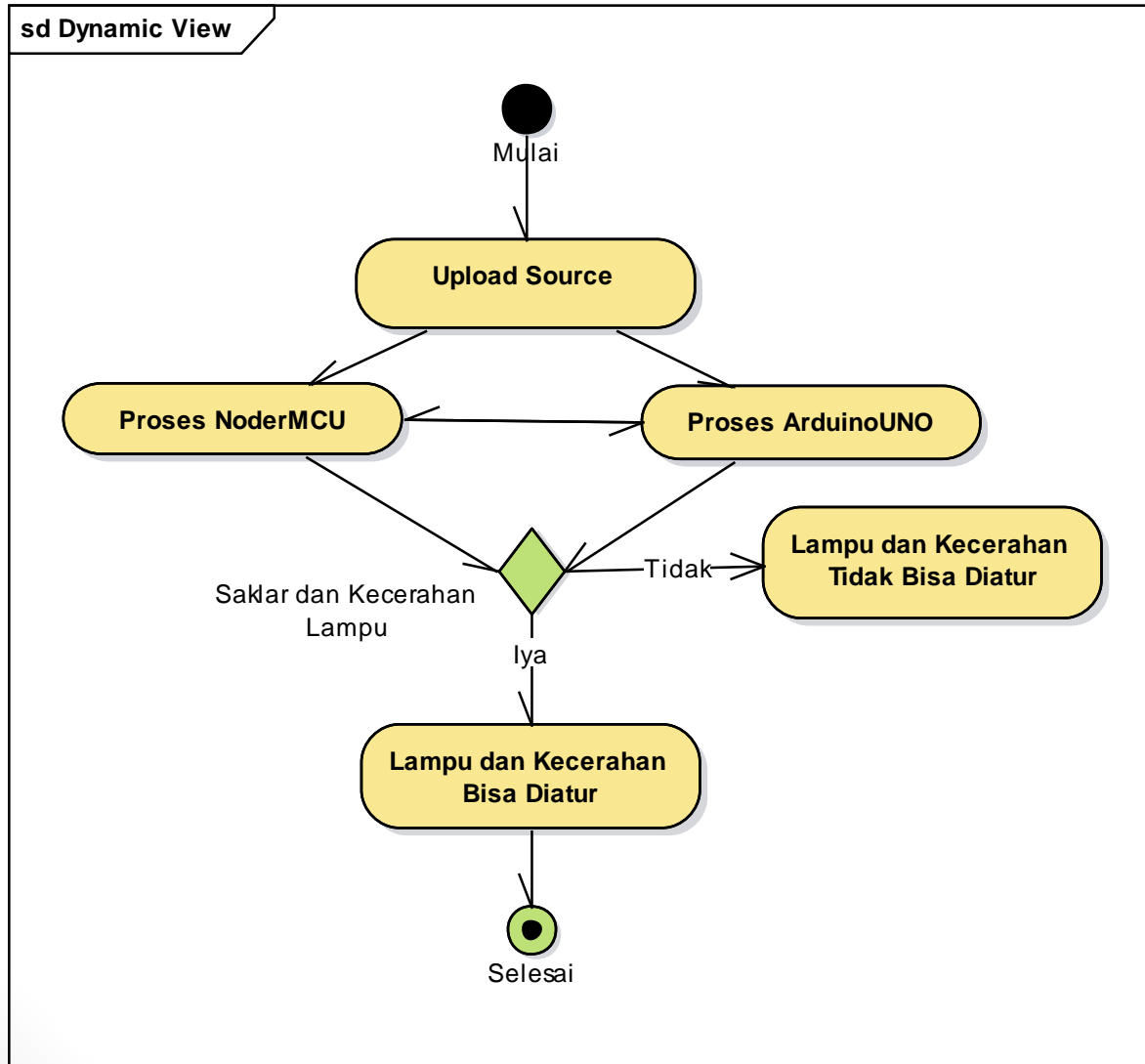
• dimmerLamp dimmer(dimmerOutput);

• void setup() {
•   //Serial Begin at 9600 Baud
•   Serial.begin(115200);
•   dimmer.begin(NORMAL_MODE,ON);
•   dimmer.setState(OFF);
• }

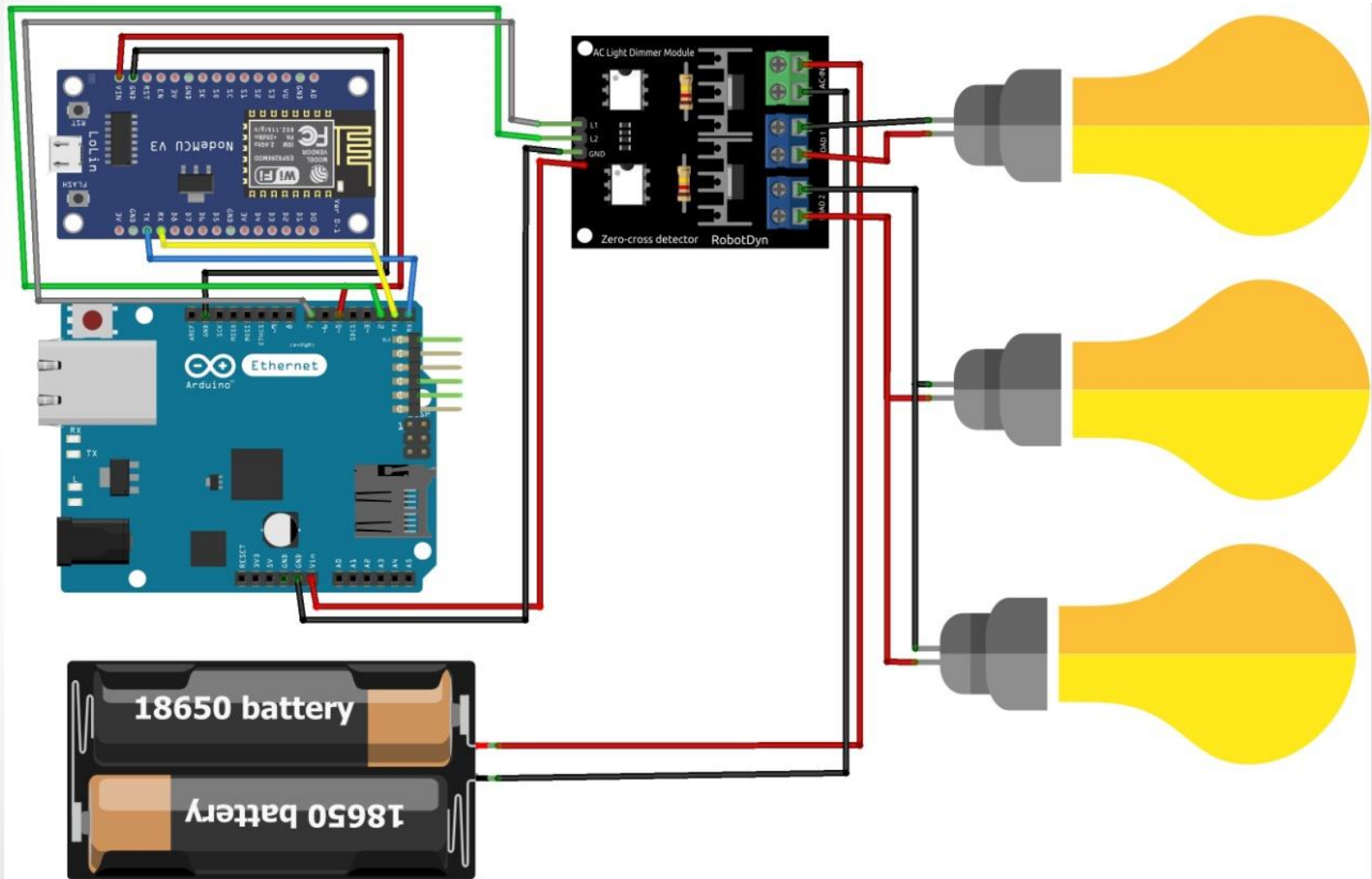
• void loop() {
•   if (Serial.available() > 0) {
•
•     inData = Serial.readStringUntil('\n');
•     Serial.println(inData);
•
•     // Logika relay
•     if (inData == "nyala") {
•       dimmer.setState(ON);
•     }
•     if (inData == "mati") {
•       dimmer.setState(OFF);
•     }
•     dimmingLamp(inData.toInt());
•   }
• }

• void dimmingLamp(int value) {
•   if (dimmer.getState() != OFF) {
•     dimmer.setState(ON);
•     dimmer.setPower(value);
•   }
• }
```

FLOWCHART



Sketsa



LINK PROJECT

- Link presentasi hasil pekerjaan :
<https://youtu.be/LdW0jhJon2g>
- Link demo program :
https://www.youtube.com/watch?v=kzRiOPgSm_4
- Link code program : <https://github.com/hafid29/smart-home>

Sekian dan Terimakasih