Lampiran 1. Program Kontroller Keseluruhan

```
#include <FS.h>
#include <LittleFS.h>
#include <ArduinoJson.h>
#include <ESP8266WiFi.h>
#include <ESP8266WebServer.h>
#include <ESP8266HTTPUpdateServer.h>
#include <PrayerTimes.h>
#include "WebPage.h"
#include "LedControl.h"
int cnt=0;
LedControl lc = LedControl(D7,D5,D8,9);
unsigned long delaytime=500;
void printNumber(int posisi, int angka);
struct ConfigJws {
  int RAK1;
  int RAK2;
  int RAK3;
  int RAK4;
  int RAK5;
  intRAK6
  intRAK7
  int RAK8;
  int RAK9;
  //char namamasjid[512];
};
const char *fileconfigjws = "/configjws.json";
ConfigJws configjws;
String message, XML;
```

```
// ------------------------------------------
// Membuat file config JWS JSON di File Sistem
void membuatDataAwal() {
  String                          dataawal                          =
"{\"RAK1\":\"1\",\"RAK2\":\"2\",\"RAK3\":\"3\",\"RAK4\":\"4\",\"RAK5\":
\"5\",\"RAK6\":\"6\",\"RAK7\":\"7\",\"RAK8\":\"8\",\"RAK9\":\"9\",}";

  DynamicJsonDocument doc(1024);
  DeserializationError error = deserializeJson(doc, dataawal);
  File configFileJws = LittleFS.open(fileconfigjws, "w");
  if (!configFileJws) {
    Serial.println("Gagal membuat file configjws.json untuk ditulis mungkin
partisi belum dibuat");
    return;
  }
  serializeJson(doc, configFileJws);
  if (error) { Serial.print(F("deserializeJson() gagal kode sebagai berikut: "));
    Serial.println(error.c_str());
    return;
  } else {
    configFileJws.close();
    Serial.println("Berhasil membuat file configjws.json");
  } }
// ------------------------------------------
// Membaca file config JWS JSON di File Sistem
void loadJwsConfig(const char *fileconfigjws, ConfigJws &configjws) {
  File configFileJws = LittleFS.open(fileconfigjws, "r");
  if (!configFileJws) {
    Serial.println("Gagal membuka file configjws.json untuk dibaca");
    membuatDataAwal();
    Serial.println("Sistem restart...");
```

```cpp
   ESP.restart();     }
 size_t size = configFileJws.size();
 std::unique_ptr<char[]> buf(new char[size]);
 configFileJws.readBytes(buf.get(), size);
 DynamicJsonDocument doc(1024);
 DeserializationError error = deserializeJson(doc, buf.get());
 if (error) {
  Serial.println("Gagal parse fileconfigjws");
  return;  }
 configjws.RAK1 = doc["RAK1"];
 configjws.RAK2 = doc["RAK2"];
 configjws.RAK3 = doc["RAK3"];
 configjws.RAK4 = doc["RAK4"];
 configjws.RAK5 = doc["RAK5"];
 configjws.RAK6 = doc["RAK6"];
 configjws.RAK7 = doc["RAK7"];
 configjws.RAK8 = doc["RAK8"];
 configjws.RAK9 = doc["RAK9"];
 //strlcpy(configjws.namamasjid,      doc["namamasjid"]      |      "",
sizeof(configjws.namamasjid));
 configFileJws.close();
}
// ---------------------------------------------
// MEMBACA PARAMETER YANG TERSIMPAN
void bacaParameter() {
 Serial.println(" ");
 Serial.println("PARAMETER TERSIMPAN");
 Serial.print("RAK 1   : "); Serial.println(configjws.RAK1);
 Serial.print("RAK 2   : "); Serial.println(configjws.RAK2);
 Serial.print("RAK 3   : "); Serial.println(configjws.RAK3);
 Serial.print("RAK 4   : "); Serial.println(configjws.RAK4);
```

```
  Serial.print("RAK 5   : "); Serial.println(configjws.RAK5);
  Serial.print("RAK 6   : "); Serial.println(configjws.RAK6);
  Serial.print("RAK 7   : "); Serial.println(configjws.RAK7);
  Serial.print("RAK 8   : "); Serial.println(configjws.RAK8);
  Serial.print("RAK 9   : "); Serial.println(configjws.RAK9);
//Serial.print("Nama Masjid   : "); Serial.println(configjws.namamasjid);
  Serial.println(" ");
}
//-----------------------------------------------------------------------
// XML UNTUK JEMBATAN DATA MESIN DENGAN WEB
void XMLDataJWS(){
  XML="<?xml version='1.0'?>";
  XML+="<t>";
  XML+="<RAKNO1>";
  XML+=configjws.RAK1;
  XML+="</RAKNO1>";
  XML+="<RAKNO2>";
  XML+=configjws.RAK2;
  XML+="</RAKNO2>";
  XML+="<RAKNO3>";
  XML+=configjws.RAK3;
  XML+="</RAKNO3>";
  XML+="<RAKNO4>";
  XML+=configjws.RAK4;
  XML+="</RAKNO4>";
  XML+="<RAKNO5>";
  XML+=configjws.RAK5;
  XML+="</RAKNO5>";
  XML+="<RAKNO6>";
  XML+=configjws.RAK6;
  XML+="</RAKNO6>";
```

```
    XML+="<RAKNO7>";
    XML+=configjws.RAK7;
    XML+="</RAKNO7>";
    XML+="<RAKNO8>";
    XML+=configjws.RAK8;
    XML+="</RAKNO8>";
    XML+="<RAKNO9>";
    XML+=configjws.RAK9;
    XML+="</RAKNO9>";
    XML+="</t>";
}
uint8_t pin_led = 2;
//WEB Server
ESP8266WebServer server(80);
ESP8266HTTPUpdateServer httpUpdater
// Sebagai Station
const char* wifissid = "Dwielektro"; //kalau gagal konek
const char* wifipassword = "";
// Sebagai AccessPoint
const char* ssid = "KONTROL DISPLAY"; //kalau gagal konek
const char* password = "123456789";
IPAddress local_ip(192, 168, 4, 1);
IPAddress gateway(192, 168, 4, 1);
IPAddress netmask(255, 255, 255, 0);
void wifiConnect() {
  WiFi.softAPdisconnect(true);
  WiFi.disconnect();
  delay(1000);
  Serial.println("Mencoba sambungan ke Hotspot atau Router");
  WiFi.mode(WIFI_STA);
  WiFi.begin(wifissid, wifipassword);
```

```cpp
  unsigned long startTime = millis();
  while (WiFi.status() != WL_CONNECTED) {
   delay(500);
   Serial.print(".");
   digitalWrite(pin_led, !digitalRead(pin_led));

   if (millis() - startTime > 3000) {
    Serial.println(" ");
    break;
   }
  }
  if (WiFi.status() == WL_CONNECTED) {
   digitalWrite(pin_led, HIGH);
   Serial.print("MAC: ");
   Serial.println(WiFi.macAddress());
   Serial.print("IP: ");
   Serial.println(WiFi.localIP());
  } else {
   Serial.println("Gagal tersambung ke Hotspot, mode Hotspot aktif.");
   WiFi.mode(WIFI_AP);
   WiFi.softAPConfig(local_ip, gateway, netmask);
   WiFi.softAP(ssid, password);
   digitalWrite(pin_led, LOW);
   Serial.print("MAC: ");
   Serial.println(WiFi.macAddress());
   Serial.print("IP: ");
   Serial.println(local_ip);
  }}
/*
void handleXMLWaktu(){
 XMLWaktu();
```

```
  server.send(200,"text/xml",XML);
}
*/
void handleXMLDataJWS(){
 XMLDataJWS();
 server.send(200,"text/xml",XML);
}
void handleSettingJwsUpdate() {
 String datajws = server.arg("plain");
 DynamicJsonDocument doc(1024);
 DeserializationError error = deserializeJson(doc, datajws);
 File configFileJws = LittleFS.open(fileconfigjws, "w");
 if (!configFileJws) {
  Serial.println("Gagal membuka Info configFileJws untuk ditulis");
  return;
 }
 serializeJson(doc, configFileJws);
 if (error) {
  Serial.print(F("deserializeJson() gagal kode sebagai berikut: "));
  Serial.println(error.c_str());
  return;

 } else {
  configFileJws.close();
  Serial.println("Berhasil mengubah configFileJws");
  loadJwsConfig(fileconfigjws, configjws);
  hapus();
 bacaParameter();
 // jalan();
 }
}
```

```
void setup() {
 Serial.begin(115200);
  //FILE SYSTEM
  LittleFS.begin();
  loadJwsConfig(fileconfigjws, configjws);
  //WIFI
  pinMode(pin_led, OUTPUT);
  wifiConnect();
  server.on("/", []() {
    server.send_P(200, "text/html", setwaktu);
  });
  server.on("/simpandatajws", HTTP_POST, handleSettingJwsUpdate);

  //server.on("/xmlwaktu",            handleXMLWaktu);          //
http://192.168.4.1/xmlwaktu
  server.on("/xmldatajws",          handleXMLDataJWS);         //
http://192.168.4.1/xmldatajws
  httpUpdater.setup(&server);
  server.begin();
  Serial.println("HTTP server started");
  // Tampilkan Parameter yang tersimpan
 // bacaParameter();
   int devices=lc.getDeviceCount();
  for(int address=0;address<devices;address++) {
   lc.shutdown(address,false);
   lc.setIntensity(address,2);
   lc.clearDisplay(address);
  }  }
void loop() {
 // put your main code here, to run repeatedly:
 server.handleClient();
```

```
printNumber(0,configjws.RAK7);
printNumber(1,configjws.RAK8);
printNumber(2,configjws.RAK9);
printNumber(3,configjws.RAK6);
printNumber(4,configjws.RAK5);
printNumber(5,configjws.RAK4);
printNumber(6,configjws.RAK1);
printNumber(7,configjws.RAK2);
printNumber(8,configjws.RAK3);
server.handleClient();
delay(10000);
 /*
//   int devices=lc.getDeviceCount();
//   for(int address=0;address<devices;address++) {
//     server.handleClient();
   // cnt++;
printNumber(0,configjws.RAK7);
printNumber(1,configjws.RAK8);
printNumber(2,configjws.RAK9);
printNumber(3,configjws.RAK6);
printNumber(4,configjws.RAK5);
printNumber(5,configjws.RAK4);
printNumber(6,configjws.RAK1);
printNumber(7,configjws.RAK2);
printNumber(8,configjws.RAK3);
delay(10000);
 //Serial.println(cnt);
//if(cnt==300){hapus(); cnt=0;}
//server.handleClient();
 //lc.setDigit(0,1,configjws.RAK1,false);
 //lc.setDigit(0,2,configjws.RAK2,false);
```

```
/*
  int devices=lc.getDeviceCount();
 for(int row=0;row<9;row++) {
   for(int col=0;col<9;col++) {
     for(int address=0;address<=devices;address++) {
//server.handleClient();
     delay(delaytime);
printNumber(0,configjws.RAK1);
server.handleClient();
     delay(delaytime);
     lc.setLed(0,row,col,false);
     delay(delaytime);
printNumber(1,configjws.RAK2);
server.handleClient();
     delay(delaytime);
     lc.setLed(1,row,col,false);
     delay(delaytime);
      server.handleClient();
    }
   }
 }
*/
}
void jalan()
{
printNumber(0,configjws.RAK7);
printNumber(1,configjws.RAK8);
printNumber(2,configjws.RAK9);
printNumber(3,configjws.RAK6);
printNumber(4,configjws.RAK5);
printNumber(5,configjws.RAK4);
```

```
printNumber(6,configjws.RAK1);
printNumber(7,configjws.RAK2);
printNumber(8,configjws.RAK3);
}
void hapus()
{
 lc.clearDisplay(0);
 lc.clearDisplay(1);
 lc.clearDisplay(2);
 lc.clearDisplay(3);
 lc.clearDisplay(4);
 lc.clearDisplay(5);
 lc.clearDisplay(6);
 lc.clearDisplay(7);
 lc.clearDisplay(8);
}
void printNumber(int posisi, int angka) {
 int satuan;
 int puluhan;
 int ratusan;
 int seribuan;
 int sepuluhribuan;
 int seratusribuan;
if(angka>=0 && angka<10){
   satuan=angka;
   lc.setDigit(posisi,1,(byte)satuan,false);
  }
 if(angka>=10 && angka<100){
   satuan=angka%10;
   angka=angka/10;
   puluhan=angka;
```
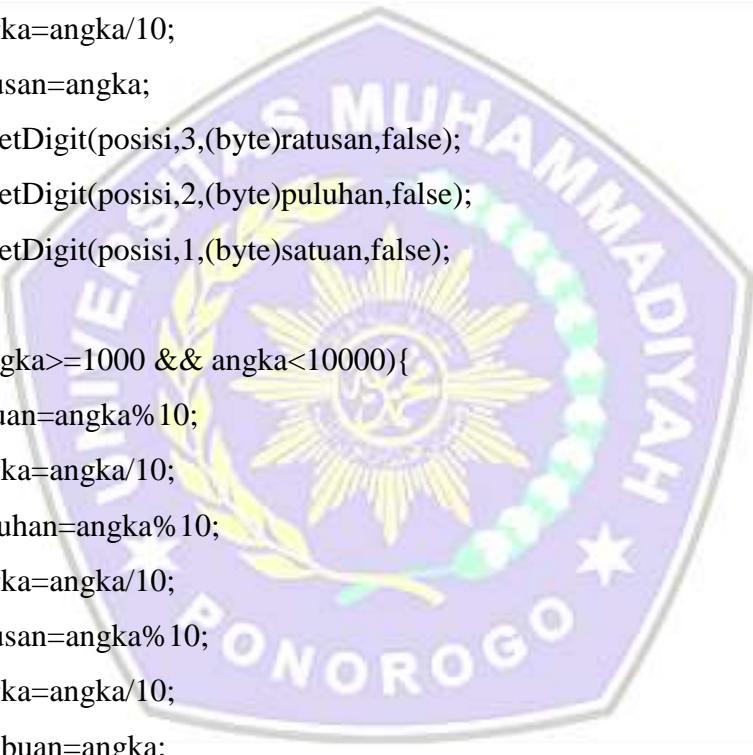
```java
 lc.setDigit(posisi,2,(byte)puluhan,false);
 lc.setDigit(posisi,1,(byte)satuan,false);
}



if(angka>=100 && angka<1000){
 satuan=angka%10;
 angka=angka/10;
 puluhan=angka%10;
 angka=angka/10;
 ratusan=angka;
 lc.setDigit(posisi,3,(byte)ratusan,false);
 lc.setDigit(posisi,2,(byte)puluhan,false);
 lc.setDigit(posisi,1,(byte)satuan,false);
}
if(angka>=1000 && angka<10000){
 satuan=angka%10;
 angka=angka/10;
 puluhan=angka%10;
 angka=angka/10;
 ratusan=angka%10;
 angka=angka/10;
 seribuan=angka;
 lc.setDigit(posisi,4,(byte)seribuan,false);
 lc.setDigit(posisi,3,(byte)ratusan,false);
 lc.setDigit(posisi,2,(byte)puluhan,false);
 lc.setDigit(posisi,1,(byte)satuan,false);
}
if(angka>=10000 && angka<100000){
 satuan=angka%10;
 angka=angka/10;
```

```
  puluhan=angka%10;
  angka=angka/10;
  ratusan=angka%10;
  angka=angka/10;
  seribuan=angka%10;
  angka=angka/10;
  sepuluhribuan=angka;
  lc.setDigit(posisi,5,(byte)sepuluhribuan,false);
  lc.setDigit(posisi,4,(byte)seribuan,false);
  lc.setDigit(posisi,3,(byte)ratusan,false);
  lc.setDigit(posisi,2,(byte)puluhan,false);
  lc.setDigit(posisi,1,(byte)satuan,false);
}
if(angka>=100000 && angka<1000000){
  satuan=angka%10;
  angka=angka/10;
  puluhan=angka%10;
  angka=angka/10;
  ratusan=angka%10;
  angka=angka/10;
  seribuan=angka%10;
  angka=angka/10;
  sepuluhribuan=angka%10;
  angka=angka/10;
  seratusribuan=angka;
  lc.setDigit(posisi,6,(byte)seratusribuan,false);
  lc.setDigit(posisi,5,(byte)sepuluhribuan,false);
  lc.setDigit(posisi,4,(byte)seribuan,false);
  lc.setDigit(posisi,3,(byte)ratusan,false);
  lc.setDigit(posisi,2,(byte)puluhan,false);
  lc.setDigit(posisi,1,(byte)satuan,false);
```

}

}