LAMPIRAN

SCRIPT ARDUINO

```
// setting gprs kartu telkomsel
const char apn[]      = "telkomsel";
const char gprsUser[] = "wap";
const char gprsPass[] = "wap123";

// SIM card PIN
const char simPIN[]   = "";

// Konfigurasi Server
const char server[] = "firebase.iot-
labs.xyz";
const char resource[] =
"/irigasi/kontrol.php";
const int  port = 80;

// TTGO T-Call pins
#define MODEM_RST            5
#define MODEM_PWKEY          4
#define MODEM_POWER_ON
23
#define MODEM_TX             27
#define MODEM_RX             26
#define I2C_SDA              21
#define I2C_SCL              22

// Set serial
#define SerialMon Serial
// Set serial  AT commands (to
SIM800 module)
#define SerialAT Serial1

// Configure TinyGSM library
#define
TINY_GSM_MODEM_SIM800
// Modem is SIM800
#define TINY_GSM_RX_BUFFER
1024  // Set RX buffer to 1Kb


#include <Wire.h>
#include <TinyGsmClient.h>
#include <HCSR04.h>
#include <ESP32Servo.h>

//servo. Pin vcc = 3.3 volt
Servo myservo;
Servo myservo1;
Servo myservo2;
int servoSawah1 = 12;
int servoSawah2 = 13;
int servoPembagian = 14;

//ultrasonic. Pin vcc = 3.3 volt
UltraSonicDistanceSensor
sawah1(18,19 );  // 18=triger,
19=echo
```

```
UltraSonicDistanceSensor
sawah2(32, 33);  // 32=triger,
33=echo
UltraSonicDistanceSensor
pembagi(15, 0);  // 15=triger, 0=echo
float sawah_1, sawah_2, pembagian;

#ifdef DUMP_AT_COMMANDS
  #include <StreamDebugger.h>
  StreamDebugger
debugger(SerialAT, SerialMon);
  TinyGsm modem(debugger);
#else
  TinyGsm modem(SerialAT);
#endif

// I2C for SIM800 (to keep it running
when powered from battery)
TwoWire I2CPower = TwoWire(0);


// TinyGSM Client for Internet
connection
TinyGsmClient client(modem);

#define uS_TO_S_FACTOR
1000000     /* Conversion factor for
micro seconds to seconds */
#define TIME_TO_SLEEP  3600
/* Time ESP32 will go to sleep (in
seconds) 3600 seconds = 1 hour */

#define IP5306_ADDR          0x75
#define IP5306_REG_SYS_CTL0
0x00

bool setPowerBoostKeepOn(int en){

I2CPower.beginTransmission(IP530
6_ADDR);

I2CPower.write(IP5306_REG_SYS_
CTL0);
  if (en) {
    I2CPower.write(0x37); // Set bit1:
1 enable 0 disable boost keep on
  } else {
    I2CPower.write(0x35); // 0x37 is
default reg value
  }
  return I2CPower.endTransmission()
== 0;
}

String dataMasuk = "";
void setup() {
  myservo.attach(servoPembagian,
500, 2400);
  myservo1.attach(servoSawah1, 500,
2400);
  myservo2.attach(servoSawah2, 500,
2400);
```

```
  myservo.write(0);
  myservo1.write(0);
  myservo2.write(0);

  // Set serial monitor debugging window baud rate to 115200
  SerialMon.begin(115200);

  dataMasuk.reserve(200);

  // Start I2C communication
  I2CPower.begin(I2C_SDA, I2C_SCL, 400000);

  // Keep power when running from battery
  bool isOk = setPowerBoostKeepOn(1);
  SerialMon.println(String("IP5306 KeepOn ") + (isOk ? "OK" : "FAIL"));

  // Set modem reset, enable, power pins
  pinMode(MODEM_PWKEY, OUTPUT);
  pinMode(MODEM_RST, OUTPUT);
  pinMode(MODEM_POWER_ON, OUTPUT);
  digitalWrite(MODEM_PWKEY, LOW);
  digitalWrite(MODEM_RST, HIGH);

  digitalWrite(MODEM_POWER_ON, HIGH);

  // Set GSM module baud rate and UART pins
  SerialAT.begin(115200, SERIAL_8N1, MODEM_RX, MODEM_TX);
  delay(3000);

  // Restart SIM800 module, it takes quite some time
  // To skip it, call init() instead of restart()
  SerialMon.println("Initializing modem...");
  modem.restart();

  // Unlock your SIM card with a PIN if needed
  if (strlen(simPIN) && modem.getSimStatus() != 3 ) {
    modem.simUnlock(simPIN);
  }
```

```
  SerialMon.print("Connecting to
APN: ");
  SerialMon.print(apn);
  if (!modem.gprsConnect(apn,
gprsUser, gprsPass)) {
    SerialMon.println(" fail");
  }
  else {
    SerialMon.println(" OK");

    SerialMon.print("Connecting to ");
    SerialMon.print(server);
     if (!client.connect(server, port)) {
     SerialMon.println(" fail");
         }
    else {
    SerialMon.println(" OK");
    }
}}

void loop() {
  delay(500);
  request();
  send();
}

void request() {

    SerialMon.print("Request Data
dari Web Server ");

SerialAT.println("AT+SAPBR=3,1,\
"CONTYPE\",\"GPRS\"");
    delay(800);

SerialAT.println("AT+SAPBR=3,1,\
"APN\",\"telkomsel\"");
    delay(800);

SerialAT.println("AT+SAPBR=3,1,\
"PWD\",\"wap123\"");
    delay(800);

SerialAT.println("AT+SAPBR=1,1")
;
    SerialMon.print(" .");
    delay(1000);

SerialAT.println("AT+HTTPINIT");
    SerialMon.print(" .");
    delay(1000);

SerialAT.println("AT+HTTPPARA=
\"URL\",\"irigasi.iot-
labs.xyz/kontrol.php?Request=OK\""
);
```

```
    SerialMon.println(" .");
    delay(1000);


SerialAT.println("AT+HTTPACTIO
N=0");
    delay(10000);


SerialAT.println("AT+HTTPREAD"
);
    GetResponse(5000);


SerialAT.println("AT+HTTPTERM"
);
    delay(800);


SerialAT.println("AT+SAPBR=0,1")
;
    delay(800);

}

void GetResponse(int wait){
  String dataMasuk = "";
  SerialMon.print("response : ");
  long timeNOW2 = millis();
  while(millis()-timeNOW2 < wait){
    while(SerialAT.available()>0){
      dataMasuk +=
(char)SerialAT.read();
    }
    delay(1);
  }
    SerialMon.print("Full data :");
    SerialMon.println(dataMasuk);
    String data0 = parse(dataMasuk,
'#', 0);
    String data1 = parse(dataMasuk,
'#', 1);
    String data2 = parse(dataMasuk,
'#', 2);

    if (data1=="0"){
      myservo1.write(180);
      }


    if (data2=="0"){
      myservo2.write(180);
      }

    SerialMon.println("----------------
--------------------------------------------
-----");

    SerialMon.print("data 0 :");
    SerialMon.println(data0);

    SerialMon.print("data 1 :");
```

```
    SerialMon.println(data1);

    SerialMon.print("data 2 :");
    SerialMon.println(data2);

    SerialMon.println("----------
----------
-----");

    SerialMon.println();
}

String parse(String data, char
separator, int index)
{
  int found = 0;
  int strIndex[] = {0, -1};
  int maxIndex = data.length()-1;

  for(int i=0; i<=maxIndex &&
found<=index; i++){
    if(data.charAt(i)==separator ||
i==maxIndex){
        found++;
        strIndex[0] = strIndex[1]+1;
        strIndex[1] = (i == maxIndex) ?
i+1 : i;
    }
  }
  return found>index ?
data.substring(strIndex[0],
strIndex[1]) : "";
}

void send(){
   //pembacaan sensor ultrasonic
    sawah_1= 2.47-
sawah1.measureDistanceCm();
    sawah_2 = 2.47-
sawah2.measureDistanceCm();
    pembagian = 10.00-
pembagi.measureDistanceCm();

    SerialMon.print("Tinggi Air
Sawah 1 : ");
    SerialMon.print(sawah_1);
    SerialMon.println(" cm");
    SerialMon.print("Tinggi Air
Sawah 2 : ");
    SerialMon.print(sawah_2);
    SerialMon.println(" cm");
    SerialMon.print("Tinggi Air
Pembagian : ");
    SerialMon.print(pembagian);
    SerialMon.println(" cm");


  //kontrol servo sawah
    String status1, status2;
   if( sawah_1>=1.00 )
```

```
  {
    myservo1.write(0);
     status1="1";
  }

  if(sawah_2>=1.00)
  {
   myservo2.write(0);
   status2="1";
  }

  //kontrol servo pembagian
  if(pembagian>=4.00)
  {
   myservo.write(180);
  }else if(pembagian<4.00 ||
pembagian>3.00 )
  {
   myservo.write(100);
  }else if(pembagian<=3.00 ||
pembagian>1.00)
  {
   myservo.write(45);
  }else if(pembagian<=1.00){
   myservo.write(15);
  }

  SerialMon.print("Send Data
Sensor to Server");
```

```
SerialAT.println("AT+SAPBR=3,1,\
"CONTYPE\",\"GPRS\"");
   delay(800);

SerialAT.println("AT+SAPBR=3,1,\
"APN\",\"telkomsel\"");
   delay(800);

SerialAT.println("AT+SAPBR=3,1,\
"PWD\",\"wap123\"");
   delay(800);

SerialAT.println("AT+SAPBR=1,1")
;
   SerialMon.print(" .");
   delay(1000);

SerialAT.println("AT+SAPBR=2,1")
;
   SerialMon.print(".");
   delay(1000);

SerialAT.println("AT+HTTPINIT");
   SerialMon.print(".");
   delay(1000);
```

```
  //masukan url website

SerialAT.print("AT+HTTPPARA=\"
URL\",\"http://firebase.iot-
labs.xyz/irigasi/simpan.php?swh1="
+ String(sawah_1) + "&swh2=" +
String(sawah_2) + "&bagi=" +
String(pembagian) + "&sts1=" +
String(status1)  + "&sts2=" +
String(status2));
    SerialAT.println("\"");
    SerialMon.print(".");
    delay(1000);

    // 0 = GET, 1 = POST, 2 = HEAD

SerialAT.println("AT+HTTPACTIO
N=0");
    SerialMon.print(".");
    delay(3000);

    SerialAT.println("");
    SerialMon.print(".");
    delay(100);


SerialAT.println("AT+HTTPTERM"
);
    SerialMon.print(".");
    delay(800);

    SerialMon.println(" Data Send
:)");

  }
```

SCRIPT TAMPILAN WEB

```
<!doctype html>
<html lang="en">

<head>
    <meta charset="utf-8" />
        <link rel="stylesheet"
href="css/style.css" />
    <link rel="apple-touch-icon"
sizes="76x76"
href="../assets/img/apple-icon.png"
/>
    <link rel="icon"
type="image/png"
href="../assets/img/favicon.png" />
    <meta http-equiv="X-UA-
Compatible"
content="IE=edge,chrome=1" />
    <title>Irigasi Sawah</title>
    <meta content='width=device-
width, initial-scale=1.0, maximum-
scale=1.0, user-scalable=0'
name='viewport' />
    <meta name="viewport"
content="width=device-width" />
    <!-- Bootstrap core CSS     -->
    <link
href="assets/css/bootstrap.min.css"
rel="stylesheet" />
    <!--  Material Dashboard CSS    --
>
    <link href="assets/css/material-
dashboard.css?v=1.2.0"
rel="stylesheet" />
    <!--  CSS for Demo Purpose, don't
include it in your project     -->
    <link href="assets/css/demo.css"
rel="stylesheet" />
    <!--     Fonts and icons     -->
    <link
href="https://maxcdn.bootstrapcdn.c
om/font-awesome/latest/css/font-
awesome.min.css" rel="stylesheet">
    <link
href="https://fonts.googleapis.com/cs
```

```
s?family=Roboto:400,700,300|Mater
ial+Icons" rel='stylesheet'>
    <script
src="https://www.gstatic.com/firebas
ejs/5.0.4/firebase.js"></script>


<!-- Bootstrap 3.3.7 -->
  <link rel="stylesheet"
href="assets/plugins/bower_compon
ents/bootstrap/dist/css/bootstrap.min.
css">
  <!-- Font Awesome -->
  <link rel="stylesheet"
href="assets/plugins/bower_compon
ents/font-awesome/css/font-
awesome.min.css">
  <!-- Ionicons -->
  <link rel="stylesheet"
href="assets/plugins/bower_compon
ents/Ionicons/css/ionicons.min.css">
  <!-- Theme style -->
  <link rel="stylesheet"
href="assets/css/AdminLTE.min.css"
>
  <!-- AdminLTE Skins. Choose a
skin from the css/skins
    folder instead of downloading all
of them to reduce the load. -->
    <link rel="stylesheet"
href="assets/css/skins/_all-
skins.min.css">
    <!-- DataTables -->
    <link rel="stylesheet"
href="assets/plugins/DataTables/data
tables.css">
    <link rel="stylesheet"
href="assets/plugins/DataTables/Fixe
dColumns-
3.2.3/css/fixedColumns.bootstrap.css
">
    <!-- Date Picker -->
    <link rel="stylesheet"
href="assets/plugins/bower_compon
ents/bootstrap-
```

```
datepicker/dist/css/bootstrap-
datepicker.min.css">
    <link rel="stylesheet"
href="assets/css/main.css">
    <link rel="stylesheet"
href="assets/css/dbtable.css">

<!-- Google Font -->
<link rel="stylesheet"
href="https://fonts.googleapis.com/cs
s?family=Source+Sans+Pro:300,400,
600,700,300italic,400italic,600italic"
>
 <script>
   // Initialize Firebase
   var config = {
     apiKey: "AIzaSyBNIV-
PegoRzlmfg7h0Vmt5IZbGUQcdgtc"
,
     authDomain: "irigasi-7852b-
default-rtdb.firebaseio.com/",
     databaseURL: "https://irigasi-
7852b-default-rtdb.firebaseio.com",
     projectId: "irigasi-7852b",
     storageBucket: "irigasi-
7852b.appspot.com",
     messagingSenderId:
"102556013400"
   };

   firebase.initializeApp(config);
 </script>
 <style type="text/css">
   th, td {
    text-align: center;
   }
 </style>
</head>

<body><br>
 <div class="content">
                                <div
class="container-fluid">
                    <div class="row">
                        <div class="col-md-
13">
```

```
                    <div class="card">
                        <div
class="card-header" data-
background-color="green">

<style="background-color:
#6272A4; color: #fff;><h3
class="title"><center>KONTROL
JARAK JAUH SISTEM IRIGASI
SAWAH BERBASIS INTERNET
OF THINGS (IOT)</center></h3>
                            <p
class="category"></p>
                        </div>

                            <div
class="row"><br>

        <div class="content">
            <div class="container-
fluid">
                <div class="row">

                    <div class="col-lg-4
col-md-4 col-sm-4">
                        <div class="card
card-stats">
                            <div
class="card-header" data-
background-color="red">
                                <i
class="material-
icons">invert_colors</i>
                            </div>
                            <div
class="card-content">
                                <p
class="category"><h4>Tinggi Air
Pembagian</h4></p>
                                <h5
class="title"> <span
id="pembagian">Mohon
tunggu...</span></h5>
                            </div>
                            <div
class="card-footer">
```

```
                        <div
class="stats">

                        </div>
                    </div>
                </div>
            </div>


        <div class="col-lg-4 col-
md-4 col-sm-4">
                <div class="card
card-stats">
                    <div
class="card-header" data-
background-color="blue">
                    <i
class="material-
icons">invert_colors</i>
                    </div>
                    <div
class="card-content">
                        <p
class="category"><h4>Tinggi Air
Sawah 1</h4></p>
                        <h5
class="title"> <span
id="sawah1">Mohon
tunggu...</span></h5>
                    </div>
                    <div
class="card-footer">
                        <div
class="stats">
                        </div>
                    </div>
                </div>
            </div>

        <div class="col-lg-4
col-md-4 col-sm-4">
                <div class="card
card-stats">
```

```
                    <div
class="card-header" data-
background-color="blue">
                        <i
class="material-
icons">invert_colors</i>
                    </div>
                    <div
class="card-content">
                        <p
class="category"><h4>Tinggi Air
Sawah 2</h4></p>
                        <h5
class="title"> <span
id="sawah2">Mohon
tunggu...</span></h5>
                    </div>
                    <div
class="card-footer">
                        <div
class="stats">
                        </div>
                    </div>
                </div>
            </div>
        </div>

                    <div
class="content">
                        <div
class="container-fluid">
                    <div class="row">
                        <div class="col-md-
12">
                            <div class="card">
                                <div
class="card-header" data-
background-color="green">

<style="background-color:
#6272A4; color: #fff;><h4
class="title"><center>TOMBOL
KONTROL PINTU</center></h4>
                                    <p
class="category"></p>
```

```
                    </div>

                        <div
class="row"><br>

                        <div
class="row">
                <center>
                  <div class="col-lg-6
col-md-6 col-sm-6">
                   <form
action="save.php" method="post">
                <input  type="hidden"
name="sawah1" value="0">
                <label>
                <input type="submit"
value ="Buka Pintu Sawah 1"
class='btn btn-danger btn-block'>
                </label>
                </form>
                </div>

                    <div class="col-lg-6
col-md-6 col-sm-6">
                    <form
action="save1.php" method="post">
                    <input type="hidden"
name="sawah2" value="0">
                    <label>
                    <input type="submit"
value ="Buka Pintu Sawah 2"
class='btn btn-danger btn-block'>
                    </label>
                    </form>
                     </div>
</body>
<!--   Core JS Files   -->
<script src="assets/js/jquery-
3.2.1.min.js"
type="text/javascript"></script>
<script
src="assets/js/bootstrap.min.js"
type="text/javascript"></script>
```

```
<script
src="assets/js/material.min.js"
type="text/javascript"></script>

<script type="text/javascript">
   var f_database    =
firebase.database();

   //value biasa
   f_database.ref().on("value",
function(snapshot) {
     var sawah1   =
snapshot.child("sawah1").val();
     var sawah2   =
snapshot.child("sawah2").val();
     var pembagian =
snapshot.child("pembagian").val();

            var ini_teks =
document.getElementById("status1")
;
                  var sini_teksnya =
$("#sini_teksnya");
document.getElementById("sawah1"
) .innerHTML  = sawah1+" cm";

document.getElementById("sawah2"
) .innerHTML  = sawah2+" cm";

document.getElementById("pembagi
an") .innerHTML  = pembagian+"
cm";
function kedip(e,j,k){
                  setInterval(function ()
{
                        //var ele =
document.getElementById('myBlink
ingDiv');

         document.getElementById(e)
.style.visibility =
(document.getElementById(e).style.
visibility == j ? k : j);
                  }, 3000);
         }
```

```
    function reloadpage(){
      window.location.reload();
    }
  </script>

<!--  Charts Plugin -->
<script
src="assets/js/chartist.min.js"></scri
pt>
<!--  Dynamic Elements plugin -->
<script
src="assets/js/arrive.min.js"></script
>
<!--  PerfectScrollbar Library -->
<script src="assets/js/perfect-
scrollbar.jquery.min.js"></script>
<!--  Notifications Plugin    -->
<script src="assets/js/bootstrap-
notify.js"></script>
<!-- Material Dashboard javascript
methods -->
<script src="assets/js/material-
dashboard.js?v=1.2.0"></script>
<!-- Material Dashboard DEMO
methods, don't include it in your
project! -->
<script
src="assets/js/demo.js"></script>
<script type="text/javascript">
    $(document).ready(function() {

        // Javascript method's body can
be found in assets/js/demos.js

demo.initDashboardPageCharts();

    });
</script>
<!-- jQuery 3 -->
<script
src="assets/plugins/bower_compone
nts/jquery/dist/jquery.min.js"></scri
pt>
<!-- jQuery UI 1.11.4 -->
<script
src="assets/plugins/bower_compone
```

```
nts/jquery-ui/jquery-
ui.min.js"></script>
<!-- Resolve conflict in jQuery UI
tooltip with Bootstrap tooltip -->
<script>
  $.widget.bridge('uibutton',
$.ui.button);
</script>
<!-- Bootstrap 3.3.7 -->
<script
src="assets/plugins/bower_compone
nts/bootstrap/dist/js/bootstrap.min.js"
></script>
<!-- DataTables -->
<script
src="assets/plugins/DataTables/datat
ables.js"></script>
<!-- datepicker -->
<script
src="assets/plugins/bower_compone
nts/bootstrap-
datepicker/dist/js/bootstrap-
datepicker.min.js"></script>
<!-- AdminLTE App -->
<script
src="assets/js/adminlte.min.js"></scr
ipt>
<!-- AdminLTE for demo purposes --
>
<script
src="assets/js/demo.js"></script>
<script
src="assets/js/main.js"></script>
<!-- <script
src="https://www.gstatic.com/firebas
ejs/4.1.1/firebase-
database.js"></script> -->
<script
src="https://www.gstatic.com/firebas
ejs/4.3.1/firebase.js"></script>
<script type="text/javascript"
src="assets/js/app_firebase.js"></scri
pt>

</html>
```