

# LAMPIRAN

**RFID SCAN**

```

#include <SPI.h>

#include <MFRC522.h>

#define RST_PIN    9      // Configurable, see typical pin layout above
#define SS_PIN     10     // Configurable, see typical pin layout above

MFRC522 mfrc522(SS_PIN, RST_PIN); // Create MFRC522 instance

void setup() {
  Serial.begin(115200); // Initialize serial communications with the PC
  while (!Serial); // Do nothing if no serial port is opened (added for Arduinos
based on ATMEGA32U4)
  SPI.begin(); // Init SPI bus
  mfrc522.PCD_Init(); // Init MFRC522
  mfrc522.PCD_DumpVersionToSerial(); // Show details of PCD - MFRC522
Card Reader details
  Serial.println(F("Scan PICC to see UID, SAK, type, and data blocks..."));
}

void loop() {
  // Reset the loop if no new card present on the sensor/reader. This saves the
entire process when idle.
  if ( ! mfrc522.PICC_IsNewCardPresent()) {
    return;
  }

  // Select one of the cards
  if ( ! mfrc522.PICC_ReadCardSerial()) {
    return;
  }

  // Dump debug info about the card; PICC_HaltA() is automatically called
  mfrc522.PICC_DumpToSerial(&(mfrc522.uid));
}

```

## RFID SCAN ( ARDUINO UNO )

```
// Include library

#include <SoftwareSerial.h>

#include <LiquidCrystal.h>

#include <SPI.h>

#include <MFRC522.h>


// Set pin komunikasi serial dengan NodeMCU rx = A5, tx = A4
SoftwareSerial arduino(A5, A4);


// set pin RFID MFRC222 Reader
#define SS_PIN 10
#define RST_PIN 9
MFRC522 mfrc522(SS_PIN, RST_PIN); // Set PIN MFRC522.


// set pin lcd
const int rs = 2;
const int en = 3;
const int d4 = 4;
const int d5 = 5;
const int d6 = 6;
const int d7 = 7;
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);


// set pin buzzer dan led
int pinBuzzer = A0;
int pinLedRed = A1;
int pinLedGreen = A2;
int pinLedBlue = A3;
```

```

String content;
String namaMahasiswa;

void setup()
{
  Serial.begin(115200); // Setup Komunikasi Serial
  arduino.begin(115200);
  SPI.begin();          // Setup bus SPI (Serial Peripheral Interface)
  mfrc522.PCD_Init();    // Setup MFRC522 (Card Reader)

  pinMode(pinBuzzer, OUTPUT);
  pinMode(pinLedRed, OUTPUT);
  pinMode(pinLedGreen, OUTPUT);
  pinMode(pinLedBlue, OUTPUT);
  digitalWrite(pinBuzzer, LOW);
  digitalWrite(pinLedRed, LOW);
  digitalWrite(pinLedGreen, LOW);
  digitalWrite(pinLedBlue, HIGH);
  lcd.begin(16, 2);

  Serial.println("Masukkan Tanda Pengenal Anda...");
  Serial.println();

  lcd.setCursor(0, 0);
  lcd.print("***Absensi-RFID***");
  lcd.setCursor(0, 1);
  lcd.print("Siap--Beroperasi");
  delay(2000);

```

```

}

void loop()
{
    // Look for new cards
    if ( ! mfrc522.PICC_IsNewCardPresent())
    {
        //lcd.clear();
        lcd.setCursor(0, 0);
        lcd.print("*Masukkan-Kartu*");
        lcd.setCursor(0, 1);
        lcd.print("*Pengenal--Anda*");
        digitalWrite(pinBuzzer, LOW);
        digitalWrite(pinLedRed, LOW);
        digitalWrite(pinLedGreen, LOW);
        digitalWrite(pinLedBlue, HIGH);
        return;
    }

    // Select one of the cards
    if ( ! mfrc522.PICC_ReadCardSerial())
    {
        return;
    }

    //Show UID on serial monitor
    Serial.print("UID tag :");
    content= "";
    byte letter;
    for (byte i = 0; i < mfrc522.uid.size; i++)

```

```

{
    Serial.print(mfrc522.uid.uidByte[i] < 0x10 ? " 0" : " ");
    Serial.print(mfrc522.uid.uidByte[i], HEX);
    content.concat(String(mfrc522.uid.uidByte[i] < 0x10 ? " 0" : " "));
    content.concat(String(mfrc522.uid.uidByte[i], HEX));
}
Serial.println();
Serial.print("Message : ");
content.toUpperCase();

if (content.substring(1) == "56 A1 93 F1") //Sesuaikan UID card yang telah
dipilih
{
    arduino.write("1");
    namaMahasiswa = "ALHU WALADAN NS";
    aksesValid();
}

else if (content.substring(1) == "C2 19 F2 1A") //Sesuaikan UID card yang telah
dipilih
{
    arduino.write("2");
    namaMahasiswa = "ILHAM MUHAMMAD";
    aksesValid();
}

else if (content.substring(1) == "B2 BB A4 1A") //Sesuaikan UID card yang
telah dipilih
{
    arduino.write("3");

```

```

    namaMahasiswa = "ELBA RIZKY A. ";
    aksesValid();
}

// kelas 5cf
else if (content.substring(1) == "00 11 50 1B") //Sesuaikan UID card yang telah
dipilih
{
    arduino.write("11");
    namaMahasiswa = "Adjie Fajar R. ";
    aksesValid();
}
else if (content.substring(1) == "72 9E 14 20") //Sesuaikan UID card yang telah
dipilih
{
    arduino.write("12");
    namaMahasiswa = "Amarullah A. ";
    aksesValid();
}
else if (content.substring(1) == "02 CF 6D 1A") //Sesuaikan UID card yang telah
dipilih
{
    arduino.write("13");
    namaMahasiswa = "Anggi Sandra C. ";
    aksesValid();
}
else if (content.substring(1) == "12 41 BB 1A") //Sesuaikan UID card yang telah
dipilih
{
    arduino.write("14");
    namaMahasiswa = "Bayu Hanggara. ";

```

```

    aksesValid();
}

else if (content.substring(1) == "12 34 3C 1A") //Sesuaikan UID card yang telah
dipilih
{
    arduino.write("15");
    namaMahasiswa = "Elsa Salsabila B ";
    aksesValid();
}

else if (content.substring(1) == "72 BE C4 20") //Sesuaikan UID card yang telah
dipilih
{
    arduino.write("16");
    namaMahasiswa = "Erwin Aditya P. ";
    aksesValid();
}

else if (content.substring(1) == "12 04 F3 1A") //Sesuaikan UID card yang telah
dipilih
{
    arduino.write("17");
    namaMahasiswa = "Freri Dekasari ";
    aksesValid();
}

else if (content.substring(1) == "62 7F AD 20") //Sesuaikan UID card yang telah
dipilih
{
    arduino.write("18");
    namaMahasiswa = "Hezron H. ";
    aksesValid();
}

```

else if (content.substring(1) == "12 2A BD 1A") //Sesuaikan UID card yang telah dipilih

```
{
    arduino.write("19");
    namaMahasiswa = "Indah Widya S. N";
    aksesValid();
}
```

else if (content.substring(1) == "12 2D BF 1A") //Sesuaikan UID card yang telah dipilih

```
{
    arduino.write("20");
    namaMahasiswa = "M. Argo Sulistyo";
    aksesValid();
}
```

else if (content.substring(1) == "12 70 0E 1A") //Sesuaikan UID card yang telah dipilih

```
{
    arduino.write("21");
    namaMahasiswa = "M. Devo P. ";
    aksesValid();
}
```

else if (content.substring(1) == "62 16 D5 1A") //Sesuaikan UID card yang telah dipilih

```
{
    arduino.write("22");
    namaMahasiswa = "M. Huzaifah ";
    aksesValid();
}
```

else if (content.substring(1) == "62 4F 56 1A") //Sesuaikan UID card yang telah dipilih

```
{
```

```

    arduino.write("23");
    namaMahasiswa = "M. Kevin ";
    aksesValid();
}

else if (content.substring(1) == "52 D5 5B 1A") //Sesuaikan UID card yang telah
dipilih
{
    arduino.write("24");
    namaMahasiswa = "M. Zakaria ";
    aksesValid();
}

else if (content.substring(1) == "52 CD 15 1A") //Sesuaikan UID card yang telah
dipilih
{
    arduino.write("25");
    namaMahasiswa = "Prengki ";
    aksesValid();
}

else if (content.substring(1) == "B2 B7 1A 1A") //Sesuaikan UID card yang
telah dipilih
{
    arduino.write("26");
    namaMahasiswa = "Putri Ayu R. ";
    aksesValid();
}

else if (content.substring(1) == "62 8C F7 1A") //Sesuaikan UID card yang telah
dipilih
{
    arduino.write("27");
    namaMahasiswa = "Putri Shefia A. ";
    aksesValid();
}

```

```

    }

    else if (content.substring(1) == "C2 8D 29 1A") //Sesuaikan UID card yang telah
    dipilih
    {
        arduino.write("28");
        namaMahasiswa = "Rico Alfari ";
        aksesValid();
    }

    else if (content.substring(1) == "B2 E4 6D 1A") //Sesuaikan UID card yang telah
    dipilih
    {
        arduino.write("29");
        namaMahasiswa = "Taufiq Salman A. ";
        aksesValid();
    }

    else if (content.substring(1) == "C2 8B EC 1A") //Sesuaikan UID card yang
    telah dipilih
    {
        arduino.write("30");
        namaMahasiswa = "Yudhi Anggara ";
        aksesValid();
    }

    else if (content.substring(1) == "B1 61 E8 1A") //Sesuaikan UID card yang telah
    dipilih
    {
        arduino.write("31");
        namaMahasiswa = "Mustaziri ";
        aksesValid();
    }

    else {

```

```

    aksesNonValid();
}
}

void beepBuzzer(){
    digitalWrite(pinBuzzer, HIGH);
    delay(100);
    digitalWrite(pinBuzzer, LOW);
}

void blinkLed(){
    digitalWrite(pinLedGreen, HIGH);
    delay(100);
    digitalWrite(pinLedGreen, LOW);
}

void aksesValid(){
    Serial.println("Akses Diterima");
    Serial.println("Absen Tersimpan");
    lcd.setCursor(0, 0);
    lcd.print("*Kartu Pengenal*");
    lcd.setCursor(0, 1);
    lcd.print("Anda--Ditemukkan");
    beepBuzzer();
    digitalWrite(pinLedGreen, HIGH);
    delay(1000);
    digitalWrite(pinLedGreen, LOW);
    delay(2000);
}

```

```

lcd.clear();
lcd.setCursor(0, 0);
lcd.print("Absensi Berhasil");
lcd.setCursor(0, 1);
lcd.print(namaMahasiswa);
delay(3000);
Serial.println(content.substring(1));
Serial.println();
for (int a = 0; a < 3; a++)
{
    beepBuzzer();
    //digitalWrite(pinLedGreen, HIGH);
    blinkLed();
    //delay(2000);
}
}

void aksesNonValid(){
    Serial.println(" Akses Ditolak");
    lcd.setCursor(0, 0);
    lcd.print("*Kartu-Tag-Anda*");
    lcd.setCursor(0, 1);
    lcd.print("Tidak-Ditemukkan");
    digitalWrite(pinBuzzer, HIGH);
    digitalWrite(pinLedRed, HIGH);
    delay(4000);
    Serial.println();
}

```

**ESP8266 ( WIFI MODUL )**

```

// Include library yang diperlukan

#include <Arduino.h>

#include <ESP8266WiFi.h>

#include <ESP8266WiFiMulti.h>

#include <ESP8266HTTPClient.h>

#include <NTPClient.h>

#include <WiFiClient.h>

#include <WiFiUdp.h>

#include <SoftwareSerial.h>


// Gunakan serial sebagai monitor

#define USE_SERIAL Serial


// set pin komunikasi serial dengan Arduino

SoftwareSerial nodeMCU(D2, D3);


// Buat object Wifi

ESP8266WiFiMulti WiFiMulti;


// Buat object http dan wifi client

WiFiClient client;

HTTPClient http;


// Deklarasikan variable

int days,hrs,mns,scs;

int hrsNow,mnsNow,scsNow,jamNow,menitNow,detikNow;

int hrDif,mnDif,scDif,hrDif2,mnDif2,scDif2;

float jmlhKomp,hrKomp,mnKomp,scKomp;

```

```

char baca;

String id;

String nim;

String nama;

String kelas;

String hari;

String mata_kuliah;

String jam_absen;

String jam_masuk;

String ket_telat;

String jmlh_kompen;

String dayNow,hr,mn,sc;

String dan = "&";

String payload;


// Ini adalah alamat script (URL) yang kita pasang di web server

// Silahkan sesuaikan alamat IP dengan ip komputer anda atau alamat domain (bila
di web hosting)

// '?nama=' adalah adalah nama parameter yang akan dikirimkan ke script PHP


//String url_v2 =
"http://192.168.43.245/contoh_kompen/simpan_mahasiswa2.php?nama=";

String url_v2 =
"http://192.168.100.9/contoh_kompen/simpan_mahasiswa2.php?nama=";

String url2 = "nim=";

String url3 = "kelas=";

String url4 = "hari=";

String url5 = "mata_kuliah=";

String url6 = "jam_absen=";

String url7 = "jam_masuk=";

```

```

String url8 = "ket_telat=";
String url9 = "jmlh_kompen=";

WiFiUDP ntpUDP;

// You can specify the time server pool and the offset (in seconds, can be
// changed later with setTimeOffset() ). Additionally you can specify the
// update interval (in milliseconds, can be changed using setUpdateInterval() ).
// Set offset time in seconds to adjust for your timezone, for example:
// GMT +1 = 3600
// GMT +7 = 25200
// GMT +8 = 28800
// GMT -1 = -3600
// GMT 0 = 0
// timeClient.setTimeOffset(25200);
NTPClient timeClient(ntpUDP, "id.pool.ntp.org", 25200, 60000);

// Deklarasi SSID dan Password WiFi
const char* ssid    = "Bang ilham";
const char* password = "youwhatsupguys15";

//const char* ssid    = "OPPO A1603";
//const char* password = "ForzaMilan123";

void setup() {

    USE_SERIAL.begin(115200);
    nodeMCU.begin(115200);
    Serial.begin(115200);

```

```

timeClient.begin();
USE_SERIAL.setDebugOutput(false);

for(uint8_t t = 4; t > 0; t--) {
    USE_SERIAL.printf("[SETUP] Tunggu %d...\n", t);
    USE_SERIAL.flush();
    delay(1000);
}

//WiFi.mode(WIFI_STA);
//WiFiMulti.addAP("alhuwaladanns", "Bengkulu1997"); // Sesuaikan SSID dan
password ini

Serial.print("Connecting to ");
Serial.println(ssid);
WiFi.begin(ssid, password);
while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
}

// Print local IP address and start web server
Serial.println("");
Serial.println("WiFi connected.");
Serial.println("IP address: ");
Serial.println(WiFi.localIP());

}

void loop() {

```

```

// Cek waktu secara berkala
timeClient.update();
while(!timeClient.update()) {
    timeClient.forceUpdate();
}

jam_absen = timeClient.getFormattedTime();
jamNow = timeClient.getHours(); // mendapatkan jam dari NTP client
menitNow = timeClient.getMinutes(); // mendapatkan menit dari NTP client
detikNow = timeClient.getSeconds(); // mendapatkan detik dari NTP client
//jamNow = 17;
//menitNow = 32;

//Serial.println(timeClient.getFormattedTime());
//delay(1000);

// Cek apakah statusnya sudah terhubung
if((WiFiMulti.run() == WL_CONNECTED)) {

    //while (Serial.available() > 0) {
    while (nodeMCU.available() > 0) {
        //baca = Serial.read();
        baca = nodeMCU.read();
        Serial.print(baca);
        String flag = "";

        id += baca;
        Serial.print(" ");
        Serial.print(" ");

```

```
Serial.print(id);  
Serial.println("");  
delay(10);  
}  
  
//id = 1;  
  
if(id.length() > 0){  
  if ( id == "1" ){  
    nama = "ALHU_WALADAN_NS";  
    nim = "061530701235";  
    kelas = "6CE";  
    jam_absen;  
  
    //mataKuliah();  
    mataKuliahFix();  
  }  
  
  else if ( id == "2" ){  
    nama = "ILHAM_MUHAMMAD";  
    nim = "061630701246";  
    kelas = "6CA";  
    jam_absen;  
  
    //mataKuliah();  
    mataKuliahFix();  
  }  
  
  else if ( id == "3" ){
```

```
nama = "ELBA_RIZKY_ANGGRAENY";
nim = "061530701256";
kelas = "6CB";
jam_absen;

//mataKuliah();
mataKuliahFix();
}

// kelas 4cf
else if ( id == "11" ){
    nama = "ADJIE_FAJAR_RAMADHAN";
    nim = "61730701207";
    kelas = "4CF";
    jam_absen;

    //mataKuliah();
    mataKuliahFix();
}

else if ( id == "12" ){
    nama = "AMARULLAH_ALFAIDZIN";
    nim = "61730701208";
    kelas = "4CF";
    jam_absen;

    //mataKuliah();
    mataKuliahFix();
}

else if ( id == "13" ){
```

```
nama = "ANGGI_SANDRA_CITRAWATI";
nim = "61730701209";
kelas = "4CF";
jam_absen;

//mataKuliah();
mataKuliahFix();
}
else if ( id == "14" ){
    nama = "BAYU_HANGGARA";
    nim = "61730701210";
    kelas = "4CF";
    jam_absen;

    //mataKuliah();
    mataKuliahFix();
}
else if ( id == "15" ){
    nama = "ELSA_SALSABILA_RAHMA";
    nim = "61730701211";
    kelas = "4CF";
    jam_absen;

    //mataKuliah();
    mataKuliahFix();
}
else if ( id == "16" ){
    nama = "ERWIN_ADITYA_PRATAMA";
    nim = "61730701212";
```

```
kelas = "4CF";  
jam_absen;  
  
//mataKuliah();  
mataKuliahFix();  
}  
else if ( id == "17" ){  
    nama = "FRERI_DEKASARI";  
    nim = "61730701213";  
    kelas = "4CF";  
    jam_absen;  
  
    //mataKuliah();  
    mataKuliahFix();  
}  
else if ( id == "18" ){  
    nama = "HEZRON_HUTAGALUNG";  
    nim = "61730701214";  
    kelas = "4CF";  
    jam_absen;  
  
    //mataKuliah();  
    mataKuliahFix();  
}  
else if ( id == "19" ){  
    nama = "INDAH_WIDYA_SURYA_NIGRAT";  
    nim = "61730701215";  
    kelas = "4CF";  
    jam_absen;
```

```
//mataKuliah();  
mataKuliahFix();  
}  
else if ( id == "20" ){  
    nama = "MUHAMMAD_ARGO_SULISTYO";  
    nim = "61730701217";  
    kelas = "4CF";  
    jam_absen;  
  
    //mataKuliah();  
    mataKuliahFix();  
}  
else if ( id == "21" ){  
    nama = "MUHAMMAD_DEV0_PRAMUDA";  
    nim = "61730701218";  
    kelas = "4CF";  
    jam_absen;  
  
    //mataKuliah();  
    mataKuliahFix();  
}  
else if ( id == "22" ){  
    nama = "MUHAMMAD_HUZAIFAH";  
    nim = "61730701219";  
    kelas = "4CF";  
    jam_absen;  
  
    //mataKuliah();
```

```
        mataKuliahFix();
    }
    else if ( id == "23" ){
        nama = "MUHAMMAD_KEVIN";
        nim = "61730701220";
        kelas = "4CF";
        jam_absen;

        //mataKuliah();
        mataKuliahFix();
    }
    else if ( id == "24" ){
        nama = "MUHAMMAD_ZAKARIA";
        nim = "61730701221";
        kelas = "4CF";
        jam_absen;

        //mataKuliah();
        mataKuliahFix();
    }
    else if ( id == "25" ){
        nama = "PRENGKI";
        nim = "61730701222";
        kelas = "4CF";
        jam_absen;

        //mataKuliah();
        mataKuliahFix();
    }
}
```

```
else if ( id == "26" ){
    nama = "PUTRI_AYU_RIEFZIE";
    nim = "61730701223";
    kelas = "4CF";
    jam_absen;

    //mataKuliah();
    mataKuliahFix();
}
else if ( id == "27" ){
    nama = "PUTRI_SHEFIA_ANDINI";
    nim = "61730701224";
    kelas = "4CF";
    jam_absen;

    //mataKuliah();
    mataKuliahFix();
}
else if ( id == "28" ){
    nama = "RICO_ALFARIS";
    nim = "61730701225";
    kelas = "4CF";
    jam_absen;

    //mataKuliah();
    mataKuliahFix();
}
else if ( id == "29" ){
    nama = "TAUFIQ_SALMAN_AL_FALAH";
```

```

        nim = "61730701226";
        kelas = "4CF";
        jam_absen;

        //mataKuliah();
        mataKuliahFix();
    }
    else if ( id == "30" ){
        nama = "YUDHI_ANGGARA";
        nim = "61730701227";
        kelas = "4CF";
        jam_absen;

        //mataKuliah();
        mataKuliahFix();
    }
}

id = "";
delay(10000);
}
}

/*void kirimData(){
//
    USE_SERIAL.print("[HTTP] Memulai...\n");

    //String urlFix = ( url + nama + dan + url2 + nim + dan + url3 + kelas + dan +
    url4 + hari + dan + url5 + jam_absen + dan + url6 + jam_masuk + dan + url7 +
    ket_telat );

    String urlFix = ( url + nama + dan + url2 + nim + dan + url3 + kelas + dan +
    url4 + hari + dan + url5 + jam_absen + dan + url6 + jam_masuk + dan + url7 +
    ket_telat + dan + url8 + jmlh_kompen );

```

```

http.begin( client, urlFix );
Serial.println(urlFix);

// Mulai koneksi dengan metode GET
USE_SERIAL.print("[HTTP] Melakukan GET ke server...\n");
int httpCode = http.GET();
Serial.println(httpCode);

// Periksa httpCode, akan bernilai negatif kalau error
if(httpCode > 0) {

    // Tampilkan response http
    USE_SERIAL.printf("[HTTP] kode response GET: %d\n", httpCode);

    // Bila koneksi berhasil, baca data response dari server
    if(httpCode == HTTP_CODE_OK) {
        payload = http.getString();
        USE_SERIAL.println(payload);
    }
    else {
        USE_SERIAL.printf("[HTTP] GET gagal, error: %s\n",
http.errorToString(httpCode).c_str());
    }
    http.end();
}*/

void kirimData2(){
//
    USE_SERIAL.print("[HTTP] Memulai...\n");

```

```

//String urlFix = ( url + nama + dan + url2 + nim + dan + url3 + kelas + dan +
url4 + hari + dan + url5 + jam_absen + dan + url6 + jam_masuk + dan + url7 +
ket_telat );

//String urlFix = ( url_v2 + nama + dan + url2 + nim + dan + url3 + kelas + dan
+ url4 + hari + dan + url5 + jam_absen + dan + url6 + jam_masuk + dan + url7 +
ket_telat + dan + url8 + jmlh_kompen );

String urlFix = ( url_v2 + nama + dan + url2 + nim + dan + url3 + kelas + dan +
url4 + hari + dan + url5 + mata_kuliah + dan + url6 + jam_absen + dan + url7 +
jam_masuk + dan + url8 + ket_telat + dan + url9 + jmlh_kompen );

http.begin( client, urlFix );

Serial.println(urlFix);

// Mulai koneksi dengan metode GET

USE_SERIAL.print("[HTTP] Melakukan GET ke server...\n");

int httpCode = http.GET();

Serial.println(httpCode);

// Periksa httpCode, akan bernilai negatif kalau error
if(httpCode > 0) {

// Tampilkan response http
USE_SERIAL.printf("[HTTP] kode response GET: %d\n", httpCode);

// Bila koneksi berhasil, baca data response dari server
if(httpCode == HTTP_CODE_OK) {
    payload = http.getString();
    USE_SERIAL.println(payload);
}
} else {
    USE_SERIAL.printf("[HTTP] GET gagal, error: %s\n",
http.errorToString(httpCode).c_str());
}

```

```

    http.end();
}

void perhitunganWaktu(){
    //ket_telat = jam_absen - jam_masuk;
    timeClient.update();
    while(!timeClient.update()) {
        timeClient.forceUpdate();
    }

    // Mendapatkan waktu melalui NTP Client
    Serial.println(timeClient.getFormattedTime());

    // Mendapatkan hari melalui NTP Client
    days = timeClient.getDay();
    if (days == 1){
        dayNow = "Senin";
    }
    else if (days == 2){
        dayNow = "Selasa";
    }
    else if (days == 3){
        dayNow = "Rabu";
    }
    else if (days == 4){
        dayNow = "Kamis";
    }
    else if (days == 5){
        dayNow = "Jumat";
    }

```

```

}
else if (days == 6){
    dayNow = "Sabtu";
}
else if (days == 0){
    dayNow = "Minggu";
}

// variabel hari untuk database
hari = dayNow;

hrsNow = timeClient.getHours(); // mendapatkan jam dari NTP client
mnsNow = timeClient.getMinutes(); // mendapatkan menit dari NTP client
scsNow = timeClient.getSeconds(); // mendapatkan detik dari NTP client
//hrsNow = 17;
//mnsNow = 32;

hr = jam_masuk.substring(0, 2); hrs = hr.toInt(); // merubah format string
menjadi int
mn = jam_masuk.substring(3, 5); mns = mn.toInt(); // merubah format string
menjadi int
sc = jam_masuk.substring(6, jam_masuk.length()); // batas akhir sesuai panjang
data
scs = sc.toInt(); // merubah format string menjadi int

hrDif = hrsNow - hrs; // keterangan jam telat
mnDif = mnsNow - mns; // keterangan menit telat
scDif = scsNow - scs; // keterangan detik telat

if ((hrDif >= 0) && (mnDif >= 0) && (scDif >= 0))

```

```

{
    //Serial.print("Diff: ");
    hitungWaktu();
}

else if ((hrDif < 0) && (mnDif < 0) && (scDif < 0))
{
    hrDif2 = hrDif + 24 - 1; // jika jam telat kurang dari 0 atau minus
    mnDif2 = mnDif + 60 - 1; // jika menit telat
    scDif2 = 60 + scDif; //

    //Serial.print("Dif2: ");
    hitungWaktu2();
}

else if ((hrDif < 0) && (mnDif < 0))
{
    hrDif2 = hrDif + 24 - 1;
    mnDif2 = mnDif + 60;
    scDif2 = scDif;

    //Serial.print("Dif3: ");
    hitungWaktu2();
}

else if ((mnDif < 0) && (scDif < 0))
{
    hrDif2 = hrDif - 1;
    mnDif2 = mnDif + 60 - 1;

```

```
scDif2 = scDif + 60;
```

```
if (hrDif2 < 0)
```

```
{
```

```
    hrDif2 = hrDif + 24 - 1;
```

```
    //Serial.print("Dif4: ");
```

```
    hitungWaktu2();
```

```
}
```

```
else
```

```
{
```

```
    //Serial.print("Dif4: ");
```

```
    hitungWaktu2();
```

```
}
```

```
}
```

```
else if ((hrDif < 0) && (scDif < 0))
```

```
{
```

```
    hrDif2 = hrDif + 24;
```

```
    mnDif2 = mnDif - 1;
```

```
    scDif2 = scDif + 60;
```

```
if (mnDif2 < 0)
```

```
{
```

```
    hrDif2 = hrDif + 24 - 1;
```

```
    mnDif2 = mnDif + 60 - 1;
```

```
    //Serial.print("Dif5: ");
```

```
        hitungWaktu2();
    }
    else
    {
        //Serial.print("Dif5: ");
        hitungWaktu2();
    }

}

else if (hrDif < 0)
{
    hrDif2 = hrDif + 24;
    mnDif2 = mnDif;
    scDif2 = scDif;

    //Serial.print("Dif6: ");
    hitungWaktu2();
}

else if (mnDif < 0)
{
    hrDif2 = hrDif - 1;
    mnDif2 = mnDif + 60;
    scDif2 = scDif;

    if (hrDif2 < 0)
    {
        hrDif2 = hrDif + 24 - 1;
```

```

        //Serial.print("Dif7: ");
        hitungWaktu2();
    }
else
{
    //Serial.print("Dif7: ");
    hitungWaktu2();
}

}

else if (scDif < 0)
{
    hrDif2 = hrDif;
    mnDif2 = mnDif - 1;
    scDif2 = scDif + 60;

    if (mnDif2 < 0)
    {
        hrDif2 = hrDif + 24 - 1;
        mnDif2 = mnDif + 60 - 1;

        //Serial.print("Dif8: ");
        hitungWaktu2();
    }
else
{
    //Serial.print("Dif8: ");

```

```

        hitungWaktu2();
    }

}

waktuSenggang();

//ket_telat = ( String(hrDif) + ":" + String(mnDif) + ":" + String(scDif) );
}

void hitungWaktu() {
    /*if ((hrDif == 0) && (mnDif < 5)){
        hrDif = 0;
        mnDif = 0;
        scDif = 0;
    }*/

    if ((hrDif == 0) && (mnDif < 10)){
        hrDif = 0;
        mnDif = 0;
        scDif = 0;
    }

    waktuSenggang();

    //Serial.print(hrDif); Serial.print("::");
    //Serial.print(mnDif); Serial.print("::");
    //Serial.println(scDif);

```

```
ket_telat = ( String(hrDif) + ":" + String(mnDif) + ":" + String(scDif) );
```

```
scKomp = (float)scDif * 4 / 60;
```

```
mnKomp = (float)mnDif * 4;
```

```
hrKomp = (float)hrDif * 4 * 60;
```

```
jmlhKomp = scKomp + mnKomp + hrKomp;
```

```
//jmlh_kompen = (String(jmlhKomp) + "_Menit");
```

```
jmlh_kompen = jmlhKomp;
```

```
//Serial.print("Komp: ");
```

```
//Serial.print(hrKomp); Serial.print("::");
```

```
//Serial.print(mnKomp); Serial.print("::");
```

```
//Serial.print(scKomp); Serial.print(" - ");
```

```
//Serial.println(jmlhKomp); Serial.println("");
```

```
}
```

```
void hitungWaktu2() {
```

```
  /*if ((hrDif2 >= 23) && (mnDif2 <= 40)){
```

```
    hrDif2 = 0;
```

```
    mnDif2 = 0;
```

```
    scDif2 = 0;
```

```
  }*/
```

```
  /*// absensi 2 jam matkul
```

```
  if (hrDif2 >= 23){
```

```
    if (mnDif2 >= 20){
```

```
      hrDif2 = 0;
```

```
      mnDif2 = 0;
```

```
      scDif2 = 0;
```

```

    }
    else
    {
        hrDif2;
        mnDif2;
        scDif2;
    }
}

else if ((hrDif2 == 0) && (mnDif2 < 5) && (scDif < 0)){
    hrDif2 = 0;
    mnDif2 = 0;
    scDif2 = 0;
}*/

// absensi 3 jam matkul
if (hrDif2 >= 23){
    if (mnDif2 >= 40){
        hrDif2 = 0;
        mnDif2 = 0;
        scDif2 = 0;
    }
    else
    {
        hrDif2;
        mnDif2;
        scDif2;
    }
}

else if ((hrDif2 == 0) && (mnDif2 < 10) && (scDif < 0)){

```

```

    hrDif2 = 0;
    mnDif2 = 0;
    scDif2 = 0;
}

waktuSenggang();

//Serial.print(hrDif2); Serial.print("::");
//Serial.print(mnDif2); Serial.print("::");
//Serial.println(scDif2);

ket_telat = ( String(hrDif2) + ":" + String(mnDif2) + ":" + String(scDif2) );

scKomp = (float)scDif2 * 4 / 60;
mnKomp = (float)mnDif2 * 4;
hrKomp = (float)hrDif2 * 4 * 60;
jmlhKomp = scKomp + mnKomp + hrKomp;

//jmlh_kopen = (String(jmlhKomp) + "_Menit");
jmlh_kopen = jmlhKomp;

//Serial.print("Komp: ");
//Serial.print(hrKomp); Serial.print("::");
//Serial.print(mnKomp); Serial.print("::");
//Serial.print(scKomp); Serial.print(" - ");
//Serial.println(jmlhKomp); Serial.println("");
}

void waktuSenggang(){

```

```
if (hrsNow <= 11){  
    hrDif = 0;  
    mnDif = 0;  
    scDif = 0;  
  
    hrDif2 = 0;  
    mnDif2 = 0;  
    scDif2 = 0;  
}  
else if (hrsNow == 12){  
    if (mnsNow >= 40){  
        hrDif = 0;  
        mnDif = 0;  
        scDif = 0;  
  
        hrDif2 = 0;  
        mnDif2 = 0;  
        scDif2 = 0;  
    }  
    else {  
        hrDif;  
        mnDif;  
        scDif;  
  
        hrDif2;  
        mnDif2;  
        scDif2;  
    }  
}
```

```
}
```

```
/*// 2 jam matkul
```

```
void mataKuliah(){
```

```
    // jam mata kuliah pertama
```

```
    if ((jamNow < 15)){
```

```
        mata_kuliah = "Mata_Kuliah_1";
```

```
        jam_masuk = "12:40:00";
```

```
        perhitunganWaktu();
```

```
        kirimData2();
```

```
    }
```

```
    else if ((jamNow <= 15)){
```

```
        // jam mata kuliah pertama
```

```
        if ((jamNow <= 15) && (menitNow < 20)){
```

```
            mata_kuliah = "Mata_Kuliah_1";
```

```
            jam_masuk = "12:40:00";
```

```
            perhitunganWaktu();
```

```
            kirimData2();
```

```
        }
```

```
        // jam mata kuliah kedua
```

```
        else if ((jamNow >= 15) && (menitNow >= 20) && (detikNow >= 0)){
```

```
            mata_kuliah = "Mata_Kuliah_2";
```

```
            jam_masuk = "16:00:00";
```

```
            perhitunganWaktu();
```

```
            kirimData2();
```

```
        }
```

```
    }
```

```

// jam mata kuliah kedua
else if ((jamNow > 15)){
    mata_kuliah = "Mata_Kuliah_2";
    jam_masuk = "16:00:00";
    perhitunganWaktu();
    kirimData2();
}
}*/

// 3 jam matkul
void mataKuliahFix(){
    // jam mata kuliah pertama
    if ((jamNow < 14)){
        mata_kuliah = "Mata_Kuliah_1";
        jam_masuk = "12:40:00";
        perhitunganWaktu();
        kirimData2();
    }

    else if ((jamNow <= 14)){
        // jam mata kuliah pertama
        if ((jamNow <= 14) && (menitNow < 20)){
            mata_kuliah = "Mata_Kuliah_1";
            jam_masuk = "12:40:00";
            perhitunganWaktu();
            kirimData2();
        }

        // jam mata kuliah kedua
        else if ((jamNow >= 14) && (menitNow >= 20) && (detikNow >= 0)){

```

```
        mata_kuliah = "Mata_Kuliah_2";
        jam_masuk = "14:20:00";
        perhitunganWaktu();
        kirimData2();
    }
}

// jam mata kuliah ketiga
else if ((jamNow >= 15) && (jamNow < 16)){
    mata_kuliah = "Mata_Kuliah_2";
    jam_masuk = "14:20:00";
    perhitunganWaktu();
    kirimData2();
}

else if ((jamNow >= 16)){
    mata_kuliah = "Mata_Kuliah_3";
    jam_masuk = "16:00:00";
    perhitunganWaktu();
    kirimData2();
}
}
```