Lampiran 3 Kode Program

1. File Arduino

```
/* Parameter blynk */
#define BLYNK_TEMPLATE_ID "TMPL6MPKBaxzb"
#define BLYNK_TEMPLATE_NAME "Class Dahsboard"
#define BLYNK_AUTH_TOKEN "RA-wNVafnyyJyh9t9nsc-PN2m_QN8eeN"

/*----- Setup WIFI -----*/
char ssid[] = "farhan";
char pass[] = "farhan31";
// -------------------------------------------------------

/*----- Variable Lainnya -----*/
String roomName = "Ruang Kelas"; // variabel untuk nama ruang
const float fanOn = 30;              // Suhu kipas menyala
const float fanOff = 29;             // Suhu kipas mati
unsigned long motionTimeout = 10000; // Delay lampu mati ketika tidak ada gerakan
// -------------------------------------------------------




/* Library */
#include <ESP8266WiFi.h>        //WIFI (Blynk)
#include <BlynkSimpleEsp8266.h> //Blynk
#include <LiquidCrystal_I2C.h>  //LCD IC2 16x2
#include <SPI.h>
#include <DHT.h>              //DHT11
#include <Wire.h>             //PN532 (RFID)
#include <PN532_I2C.h>        //PN532 (RFID)
#include <PN532.h>            //PN532 (RFID)


/*----- RFID PN532 -----*/
String rfCard1 = "2af2130b";
String rfCard2 = "77aa2634";
String rfCard3 = "aa39f70b";
int flagRfCard1 = 0; // Variable on off rf card 1 dari blynk
int flagRfCard2 = 0; // Variable on off rf card 2 dari blynk
int flagRfCard3 = 0; // Variable on off rf card 3 dari blynk
```

```
PN532_I2C pn532_i2c(Wire);
PN532 nfc(pn532_i2c);
// ------------------------------------------------------


/*----- DHT11 -----*/
#define DHT_PIN D4          // Pins DHT11
#define DHT_TYPE DHT11      // Tipe DHT, untuk setup
DHT dht(DHT_PIN, DHT_TYPE); // Insialisasi DHT11
// ------------------------------------------------------


/*----- LCD -----*/
LiquidCrystal_I2C lcd(0x27, 16, 2); //0x27 atau 0x3F
// ------------------------------------------------------


/*----- PIR -----*/
#define PIR_PIN D5
unsigned long lastMotionTime = 0;
bool motionFlag = false; // Status gerakan. true: ada gerakan| false: tidak ada gerakan
// ------------------------------------------------------


/*----- Pintu -----*/
#define BUTTON_DOOR_PIN D0            // Pin tombol buka pintu
bool isDoorOpen = false;              // Status pintu, false:tutup | true:buka
unsigned long timerStartTime = 0;       // Variable penyimpan waktu awal ketika
pintu terbuka
const unsigned long doorDuration = 3000; // Durasi pintu terbuka
// ------------------------------------------------------


/*----- Relay -----*/
#define DOOR_PIN D8 // Pin untuk selenoid pintu
#define LAMP_PIN D7 // Pin untuk lampu
#define FAN_PIN D6  // Pin untuk kipas
// ------------------------------------------------------


void setup() {
  Serial.begin(9600);

  lcd.init();       // Inisialisasi LCD
  lcd.backlight();    // Nyalakan lampu backgruod LCD
```

```
  dht.begin();        // Inisialisasi sensor DHT11

  pinMode(DOOR_PIN, OUTPUT);
  pinMode(LAMP_PIN, OUTPUT);
  pinMode(FAN_PIN, OUTPUT);

  pinMode(PIR_PIN, INPUT);
  pinMode(BUTTON_DOOR_PIN, INPUT_PULLUP);

  lcdPrint("Connecting Blynk",0,0);
  Serial.println("Connecting Blynk");
  WiFi.begin(ssid, pass);
  Blynk.begin(BLYNK_AUTH_TOKEN, ssid, pass); // Mulai koneksi Blynk

  Serial.println("RFID Reader");
  nfc.begin();

  uint32_t versiondata = nfc.getFirmwareVersion();
  if (!versiondata) {
     Serial.println("Didn't find PN53x board");
     while (1); // halt
  }

  Serial.print("Found chip PN5"); Serial.println((versiondata >> 24) & 0xFF, HEX);
  Serial.print("Firmware ver. "); Serial.print((versiondata >> 16) & 0xFF, DEC);
  Serial.print('.'); Serial.println((versiondata >> 8) & 0xFF, DEC);

  nfc.SAMConfig();

  Serial.println("Waiting for an RFID card ...");

  // Singkronisasi virtual pin blynk ketika restart
  Blynk.syncAll();
  Blynk.syncVirtual(V1);
  Blynk.syncVirtual(V2);
  Blynk.syncVirtual(V3);

}

void loop() {
  Blynk.run(); // Jalankan Blynk

  welcomeDisplay();
```

```
  checkRFID();

  checkDoorButton();

  checkTemp();

  checkMotion();

  delay(3000); // Tunggu sebentar sebelum membaca kartu berikutnya

}

void lcdPrint(String text, int row, int column) {
  // Tampilkan text
  lcd.setCursor(column, row);
  lcd.print(text+"               ");
}

void welcomeDisplay() {
  lcdPrint(roomName,0,0);
}

String readRFID() {
  // Periksa apakah ada tag RFID yang terdeteksi
  String cardID;
  uint8_t success;
  uint8_t uid[] = { 0, 0, 0, 0, 0, 0, 0 }; // Buffer to store the returned UID
  uint8_t uidLength; // Length of the UID (4 or 7 bytes depending on ISO14443A card
type)
  success = nfc.readPassiveTargetID(PN532_MIFARE_ISO14443A, uid,
&uidLength, 10);

  if (success) {
    for (uint8_t i = 0; i < uidLength; i++) {
        if (String(uid[i], HEX).length() == 1) {
          cardID += "0"+String(uid[i], HEX);
        }
        else{
          cardID += String(uid[i], HEX);
        }
    }

    Serial.println("Card ID:" + cardID);
  }
```

```
  return cardID;
}

void checkRFID(){
  String cardID = readRFID();
  String status;

  if (cardID != NULL) {
    bool isActiveCard = false;
    bool isValidCard = false;

    // Bandingkan ID kartu dengan ID yang diperbolehkan
    if (cardID == rfCard1) {
      isValidCard = true;
      if (flagRfCard1 == 1) {
        isActiveCard = true;
      }
    }
    else if (cardID == rfCard2) {
      isValidCard = true;
      if (flagRfCard2 == 1) {
        isActiveCard = true;
      }
    }
    else if (cardID == rfCard3) {
      isValidCard = true;
      if (flagRfCard3 == 1) {
        isActiveCard = true;
      }
    }

    if (isValidCard) {
      if (isActiveCard) {
        status = "ALLOWED";
        digitalWrite(DOOR_PIN, HIGH);
        lcdPrint("Welcome",1,0);

        Serial.println("Valid Card");
        delay(doorDuration);
        digitalWrite(DOOR_PIN, LOW);
      }
      else {
        status = "INACTIVE";
        lcdPrint("Inactive Card!",1,0);
        Serial.println("Inactive Card!");
```

```
      delay(doorDuration);
     }
    }
    else {
     status = "UNREGISTERED";
     lcdPrint("Unregistered!",1,0);
     Serial.println("Unregistered!");
     delay(doorDuration);
    }

    // Kirim ID kartu ke variabel V0 di Blynk
    Blynk.virtualWrite(V4, cardID);
    Blynk.virtualWrite(V0, cardID+"|"+status);

  }
}

float readDHT11() {
  float temp = dht.readTemperature();
  float suhu = 0;

  // Pastikan nilai suhu valid sebelum ditampilkan
  if (!isnan(temp)) {
    suhu = temp;
  }

  Serial.println("Suhu: " + String(suhu));
  return suhu;
}

void checkDoorButton() {
  int buttonValue = digitalRead(BUTTON_DOOR_PIN); // Baca nilai tombol

  if (buttonValue == HIGH) {
    Serial.println("Buka Pintu Manual");
    // Buka pintu
    digitalWrite(DOOR_PIN, HIGH);
    delay(doorDuration);
    digitalWrite(DOOR_PIN, LOW);
  }
}

void checkMotion() {
  int pirState = digitalRead(PIR_PIN);  // Read PIR sensor state
```

```
  if (pirState == HIGH) {  // If motion is detected
    lastMotionTime = millis();
    motionFlag = true;
    Serial.println("Motion detected!");
  }

  // If no motion detected for the last 10 minutes
  if (millis() - lastMotionTime >= motionTimeout) {
    motionFlag = false;
  }

  controlLamp();
}

void controlLamp() {
  if (motionFlag) {
    digitalWrite(LAMP_PIN, HIGH);  // Turn on LED
  } else {
    digitalWrite(LAMP_PIN, LOW);   // Turn off LED
  }
}

void checkTemp() {
  float suhu = readDHT11();
  lcdPrint("Suhu : " + String(suhu),1,0);

  if (suhu >= fanOn){
    digitalWrite(FAN_PIN, HIGH);
  }

  if (suhu <= fanOff) {
    digitalWrite(FAN_PIN, LOW);
  }
}

// Baca nilai flag rfcard 1 dari blynk
BLYNK_WRITE(V1) {
  flagRfCard1 = param.asInt();
}

// Baca nilai flag rfcard 2 dari blynk
BLYNK_WRITE(V2) {
  flagRfCard2 = param.asInt();
}
```

```
// Baca nilai flag rfcard 3 dari blynk
BLYNK_WRITE(V3) {
  flagRfCard3 = param.asInt();
}
```

2. File Halaman Dashboard

```
<?php
include 'session_check.php';

?>


<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <title>Access History Dashboard</title>
   <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css">
   <link rel="stylesheet"
href="https://cdn.datatables.net/1.10.21/css/jquery.dataTables.min.css">
</head>
<body>
   <div class="container mt-5">
      <form action="logout.php" method="post">
         <h3>
            Welcome <?php echo htmlspecialchars($_SESSION['username']);?>
            <button type="submit" class="btn btn-danger btn-sm">Logout</button>
         </h3>
      </form>
      <br>
      <h2>Access History Dashboard</h2>
      <table id="access-log" class="table table-striped">
         <thead>
            <tr>
               <th>RFID Card</th>
               <th>Card Name</th>
               <th>Status</th>
               <th>Access Date</th>
            </tr>
         </thead>
         <tbody id="access-log-table">
```

```
        </tbody>
      </table>

      <br>
      <h1>Blynk Data</h1>
      <hr>

      <h3>Device Status : <span id="device-status"></span></h3>
      <br>

      <div class="row">
        <div class="col-md-4">
          <h3>Card 1</h3>
          <button class="btn btn-success update-blynk" data-stream-id="1" data-
virtual-pin="V1" data-value="1">Turn On</button>
          <button class="btn btn-danger update-blynk" data-stream-id="1" data-
virtual-pin="V1" data-value="0">Turn Off</button>
          <p class="button-status-1" data-param="1">Status: </p>
        </div>
        <div class="col-md-4">
          <h3>Card 2</h3>
          <button class="btn btn-success update-blynk" data-stream-id="2" data-
virtual-pin="V2" data-value="1">Turn On</button>
          <button class="btn btn-danger update-blynk" data-stream-id="2" data-
virtual-pin="V2" data-value="0">Turn Off</button>
          <p class="button-status-2" data-param="2">Status: </p>
        </div>
        <div class="col-md-4">
          <h3>Card 3</h3>
          <button class="btn btn-success update-blynk" data-stream-id="3" data-
virtual-pin="V3" data-value="1">Turn On</button>
          <button class="btn btn-danger update-blynk" data-stream-id="3" data-
virtual-pin="V3" data-value="0">Turn Off</button>
          <p class="button-status-3" data-param="3">Status: </p>
        </div>
      </div>

    </div>

    <script src="https://code.jquery.com/jquery-3.3.1.min.js"></script>
    <script
src="https://cdn.datatables.net/1.10.21/js/jquery.dataTables.min.js"></script>
    <script src="myscript.js"></script>
    <script>
      $(document).ready(function() {
```

```
        updateToken("RA-wNVafnyyJyh9t9nsc-PN2m_QN8eeN");
        updateTmpStreamId(4);
        updateTmpVirtualPin("V0");
        var interval = 3000;

        getDeviceStatus();
        //getLogData();
        getCardStatus();
        insertLogData();

        setInterval(getDeviceStatus, interval);
        //setInterval(getLogData, interval);
        setInterval(getCardStatus, interval);
        setInterval(insertLogData, interval);

        // Initialize DataTable
        var table = $('#access-log').DataTable({
            "pageLength": 10,
            "order": [[3, 'desc']],
            "ajax": {
                "url": 'get_log_data.php',
                "dataSrc": ""
            },
            "columns": [
                { "data": "rfid_card" },
                { "data": "card_name" },
                { "data": "status" },
                { "data": "access_date" }
            ]
        });

        // Set an interval to reload the data every 3 seconds
        setInterval(function() {
            table.ajax.reload(null, false); // false to keep the current page
        }, interval);
    });
  </script>
</body>
</html>
```