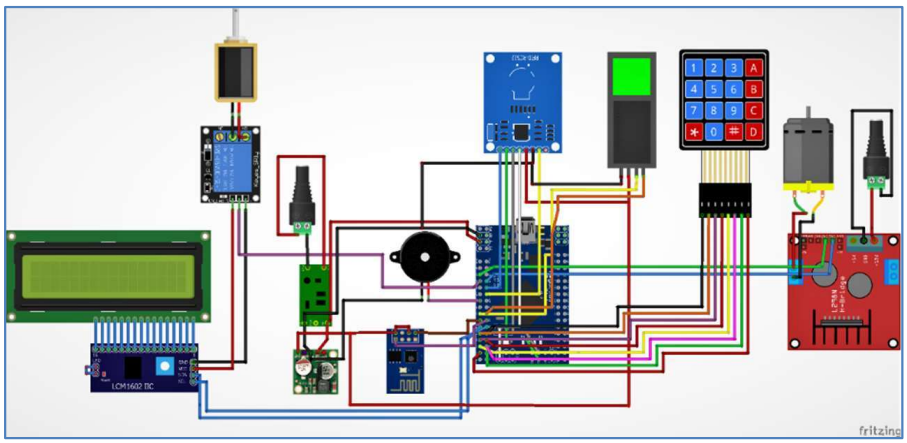
# LAMPIRAN

## 1. Rangkaian Secara Keseluruhan




2. Alat Pengaman Kunci Pintu Otomatis


3. Program secara keseluruhan

```
#include <SPI.h>

#include <RFID.h>

#include <Wire.h>

#include <LiquidCrystal_I2C.h>

#include <Adafruit_Fingerprint.h>

#include <Keypad.h>


const byte ROWS = 4; //4 baris

const byte COLS = 4; //4 kolom

char keys[ROWS][COLS] = {

  {'1', '2', '3', 'A'},

  {'4', '5', '6', 'B'},

  {'7', '8', '9', 'C'},

  {'*', '0', '#', 'D'}

};


byte colPins[COLS] = {26, 27, 28, 29}; // pin 2,3,4,5 untuk pin kolom
keypad (lihat gambar)

byte rowPins[ROWS] = {22, 23, 24, 25}; // pin 6,7,8,9 untuk pin baris
keypad (lihat gambar)


Keypad keypad = Keypad( makeKeymap(keys), rowPins, colPins, ROWS,
COLS );
```

```
String masterKey = "11546";    // ini master key
String dataKeypad = "";
byte indexKeypad = 0;

#define SS_PIN 10
#define RST_PIN 8
#define wifi Serial1
#define relay 7
#define buzzer 13
#define pwm1 5
#define pwm2 6

Adafruit_Fingerprint finger = Adafruit_Fingerprint(&Serial2);

LiquidCrystal_I2C lcd(0x27, 20, 4);
RFID rfid(SS_PIN, RST_PIN);

//String ServerIP = "128.199.207.144";                    // Ip server
String ServerIP = "192.168.1.118";                    // Ip server
String iddev = "16";

//String host = "Host: abraham.com";                    // host
String host = "Host: abraham";                    // host
```

```
String mode = "GET /abraham/api/getmode?key=123xyz&iddev=" +
iddev;

String hostADDRFID = "GET
/abraham/api/addcard?key=123xyz&iddev=" + iddev;

String hostRFIDreader = "GET
/abraham/api/rfidreader?key=123xyz&iddev=" + iddev;

String hostFP = "GET
/abraham/api/fingerprintreader?key=123xyz&iddev=" + iddev;


String mySSID = "GSJKHALL6";                    // ssid

String myPass = "wonocoloA";                            // pass


String ModeAlat;

String data2server;


bool stat_conn = false;


byte serNum0;

byte serNum1;

byte serNum2;

byte serNum3;

byte serNum4;

byte serNum5;


int delayBukaTutup = 3000;      //3 detik
```

```
uint8_t id;

void setup() {
  Serial.begin(115200);
  wifi.begin(115200);
  finger.begin(57600);
  SPI.begin();
  rfid.init();
  lcd.begin();
  delay(100);

  pinMode(relay, OUTPUT);
  digitalWrite(relay, HIGH);
  pinMode(buzzer, OUTPUT);
  digitalWrite(buzzer, LOW);
  pinMode(pwm1, OUTPUT);
  pinMode(pwm2, OUTPUT);

  lcd.backlight();
  lcd.print("Starting");

  if (finger.verifyPassword()) {
    Serial.println("Found fingerprint sensor!");
  } else {
```

```
    Serial.println("Did not find fingerprint sensor :(");
    lcd.setCursor(0, 1);
    lcd.print("FPM & RFID OKE ");
    delay(3000);
  }

  RESET();                        //fungsi untuk reset wifi jika pertama kali d
nyalakan
  delay(1000);
  lcd.clear();

  Serial.print("Connect AP : ");
  Serial.println(mySSID);
  lcd.print("Connect AP");
  lcd.setCursor(0, 1);
  lcd.print(mySSID);
  connectAP(mySSID, myPass);

  PINGS(5000);          // test koneksi

  lcd.clear();
  lcd.print("GET Mode Dev");
  CheckModeDevice();
  lcd.clear();
}
```

```
void loop() {
  char key = keypad.getKey();
  if (key) {
    Serial.println(key);
    if (key == '#') {     //enter
      if (dataKeypad == masterKey) {
        Serial.println("Buka doorlock");
        analogWrite(pwm1, 58);
        analogWrite(pwm2, 0);
        digitalWrite(relay, LOW);
        digitalWrite(buzzer, HIGH);
        delay(6000);

        analogWrite(pwm1, 0);
        analogWrite(pwm2, 0);
        digitalWrite(buzzer, LOW);
        delay(4000);

        analogWrite(pwm1, 0);
        analogWrite(pwm2, 58);
        digitalWrite(buzzer, HIGH);
        delay(6000);
```

```
    analogWrite(pwm1, 0);
    analogWrite(pwm2, 0);

    digitalWrite(relay, HIGH);
    digitalWrite(buzzer, LOW);
    delay(6000);
  } else {
    Serial.println("Salah Pass");
    lcd.setCursor(6, 1);
    lcd.print("SALAH PASS");

  }
  indexKeypad = 0;
  dataKeypad = "";
} else if (key == '*') {   //back space
  if (indexKeypad > 0) {
    indexKeypad--;
    dataKeypad.remove(indexKeypad);
  }
} else {
  indexKeypad++;
  dataKeypad += key;
}
Serial.println(dataKeypad);
```

```
  lcd.setCursor(11, 1);      // sesuaikan mau di kolom dan baris no berapa
  lcd.print(dataKeypad);
  delay(100);
  lcd.clear();
}



if (ModeAlat.substring(0, 7) == "ADDRFID") {
  lcd.setCursor(0, 0);
  lcd.print("ADD RFID");
  //Serial.println("Tambah Kartu RFID");
  RFIDread(hostADDRFID);
} else if (ModeAlat.substring(0, 6) == "READER") {
  lcd.setCursor(0, 0);
  lcd.print("READER DOORLOCK");
  lcd.setCursor(0, 1);
  lcd.print("PASSWORD");
  //Serial.println("READER RFID & FINGERPRINT");
  RFIDread(hostRFIDreader);
  FingerprintReader();
  //FingerprintReader();
  RFIDread(hostRFIDreader);
} else {
  //Serial.println("GAGAL Mendapatkan Mode Device");
```

```
    lcd.setCursor(0, 1);
    lcd.print("Try Connection");
    delay(1000);
    CheckModeDevice();
    lcd.clear();
  }
}

void CheckModeDevice() {
  Serial.println("Check Mode Device From Server = ");

  data2server = mode;
  data2server += " HTTP/1.1";

  send_data();
  ModeAlat = Parsing(ShowResponseServer(10000), '*', 1);
  Serial.print("Respon From Server = ");
  Serial.println(ModeAlat);
  wifi.println("AT+CIPCLOSE=4");
}

void RFIDread(String HOST) {
  if (rfid.isCard()) {
    if (rfid.readCardSerial()) {
```

```
    //Serial.println(rfid.serNum.length());

    Serial.println("");

    Serial.println("Card found");

    String RFID = String(rfid.serNum[0], HEX) + "-" +
String(rfid.serNum[1], HEX) + "-" + String(rfid.serNum[2], HEX) + "-" +
String(rfid.serNum[3], HEX) + "-" + String(rfid.serNum[4], HEX);


    lcd.setCursor(0, 1);

    lcd.print(RFID);

    Serial.println(RFID);

    Serial.println("");


    String host = HOST;

    host += "&rfid=";

    host += RFID;


    data2server = host;

    data2server += " HTTP/1.1";


    send_data();

    String Respon = Parsing(ShowResponseServer(5000), '*', 1);

    Serial.print("Respon From Server = ");

    Serial.println(Respon);

    lcd.setCursor(0, 1);

    lcd.print(Respon);
```

```
if (Respon.substring(0, 8) == "berhasil") {
  lcd.setCursor(8, 1);
  lcd.print("        ");
  // motor DC on off
  analogWrite(pwm1, 58);
  analogWrite(pwm2, 0);
  digitalWrite(relay, LOW);
  digitalWrite(buzzer, HIGH);
  delay(6000);

  analogWrite(pwm1, 0);
  analogWrite(pwm2, 0);
  digitalWrite(buzzer, LOW);
  delay(4000);

  analogWrite(pwm1, 0);
  analogWrite(pwm2, 58);
  digitalWrite(buzzer, HIGH);
  delay(6000);

  analogWrite(pwm1, 0);
  analogWrite(pwm2, 0);

  digitalWrite(relay, HIGH);
```

```
        digitalWrite(buzzer, LOW);
        delay(6000);
      }
      delay(2000);
      wifi.println("AT+CIPCLOSE=4");
      delay(1000);
    } else {
      lcd.setCursor(0, 1);
      lcd.print("ERR READ RFID   ");
      Serial.println("ERROR READ RFID");
    }
  } else {
    //lcd.setCursor(0, 1);
    //lcd.print("WAIT RFID CARD  ");
    Serial.println("WAITING RFID CARD");
  }
  rfid.halt();
  delay(1);
}

void FingerprintReader() {
  getFingerprintIDez();
  delay(50);            //don't ned to run this at full speed.
}
```

```
// returns -1 if failed, otherwise returns ID #
int getFingerprintIDez() {
  uint8_t p = finger.getImage();
  if (p != FINGERPRINT_OK)  return -1;

  p = finger.image2Tz();
  if (p != FINGERPRINT_OK)  return -1;

  p = finger.fingerFastSearch();
  if (p != FINGERPRINT_OK)  return -1;

  // found a match!
  lcd.setCursor(0, 1);
  lcd.print("                ");
  lcd.setCursor(0, 1);
  lcd.print("Found ID #");
  lcd.print(finger.fingerID);
  Serial.print("Found ID #");
  Serial.print(finger.fingerID);
  Serial.print(" with confidence of ");
  Serial.println(finger.confidence);

  String host = hostFP;
```

```
host += "&fingerprint=";
host += String(finger.fingerID);

data2server = host;
data2server += " HTTP/1.1";

send_data();
String Respon = Parsing(ShowResponseServer(5000), '*', 1);
Serial.print("Respon From Server = ");
Serial.println(Respon);
lcd.setCursor(0, 1);
lcd.print(Respon);
if (Respon.substring(0, 8) == "berhasil") {
  lcd.setCursor(8, 1);
  lcd.print("        ");
  // motor DC on off
  analogWrite(pwm1, 58);
  analogWrite(pwm2, 0);
  digitalWrite(relay, LOW);
  digitalWrite(buzzer, HIGH);
  delay(6000);

  analogWrite(pwm1, 0);
  analogWrite(pwm2, 0);
```

```
    digitalWrite(buzzer, LOW);
    delay(4000);

    analogWrite(pwm1, 0);
    analogWrite(pwm2, 58);
    digitalWrite(buzzer, HIGH);
    delay(6000);

    analogWrite(pwm1, 0);
    analogWrite(pwm2, 0);

    digitalWrite(relay, HIGH);
    digitalWrite(buzzer, LOW);
    delay(6000);
  }
  delay(2000);
  wifi.println("AT+CIPCLOSE=4");
  delay(1000);

  return finger.fingerID;
}

void testRFID() {
  while (1) {
```

```
    if (rfid.isCard()) {

      if (rfid.readCardSerial()) {

        //Serial.println(rfid.serNum.length());

        Serial.println("");

        Serial.println("Card found");

        String RFID = String(rfid.serNum[0], HEX) + "-" +
String(rfid.serNum[1], HEX) + "-" + String(rfid.serNum[2], HEX) + "-" +
String(rfid.serNum[3], HEX) + "-" + String(rfid.serNum[4], HEX);


        Serial.println(RFID);

        Serial.println("");

      } else {

        Serial.println("error read RFID");

      }

    } else {

      Serial.println("WAITING RFID CARD");

    }

  }

}
```