#include <WiFi.h>

#include <WiFiClient.h>

#include <BlynkSimpleEsp32.h>

BlynkTimer timer;

#define DEBUG\_SW 1

**// Pins of Fan Regulator Knob**

#define s1 27

#define s2 14

#define s3 12

#define s4 13

**// Pins of Switches**

#define S5 32

#define S6 35

#define S7 34

#define S8 39

**// Pins of Relay (Appliances Control)**

#define R5 15

#define R6 2

#define R7 4

#define R8 22

**// Pins of Relay (Fan Speed Control)**

#define Speed1 21

#define Speed2 19

#define Speed4 18

**// By default the mode is with\_internet**

int MODE = 0;

// You should get Auth Token in the Blynk App.

// Go to the Project Settings (nut icon).

char auth[] = "AUTH\_TOKEN";

**// Your WiFi credentials.**

**// Set password to "" for open networks.**

char ssid[] = "SSID";

char pass[] = "PASS";

bool speed1\_flag = 1;

bool speed2\_flag = 1;

bool speed3\_flag = 1;

bool speed4\_flag = 1;

bool speed0\_flag = 1;

int switch\_ON\_Flag1\_previous\_I = 0;

int switch\_ON\_Flag2\_previous\_I = 0;

int switch\_ON\_Flag3\_previous\_I = 0;

int switch\_ON\_Flag4\_previous\_I = 0;

BLYNK\_WRITE(V0)

{

int fan\_speed = param.asInt(); // assigning incoming value from pin V1 to a variable

if (fan\_speed == 0)

{

speed0();

}

if (fan\_speed == 1)

{

speed1();

}

if (fan\_speed == 2)

{

speed2();

}

if (fan\_speed == 3)

{

speed3();

}

if (fan\_speed == 4)

{

speed4();

}

}

BLYNK\_WRITE(V1)

{

int pinValue = param.asInt(); **// assigning incoming value from pin V1 to a variable**

digitalWrite(R5, pinValue); // process received value

}

BLYNK\_WRITE(V2)

{

int pinValue = param.asInt(); **// assigning incoming value from pin V2 to a variable**

digitalWrite(R6, pinValue); // process received value

}

BLYNK\_WRITE(V3)

{

int pinValue = param.asInt(); // assigning incoming value from pin V3 to a variable

digitalWrite(R7, pinValue); // process received value

}

BLYNK\_WRITE(V4)

{

int pinValue = param.asInt(); // assigning incoming value from pin V4 to a variable

digitalWrite(R8, pinValue); // process received value

}

void setup()

{

// put your setup code here, to run once:

pinMode(s1, INPUT);

pinMode(s2, INPUT);

pinMode(s3, INPUT\_PULLUP);

pinMode(s4, INPUT);

pinMode(S5, INPUT);

pinMode(S6, INPUT);

pinMode(S7, INPUT);

pinMode(S8, INPUT);

pinMode(R5, OUTPUT);

pinMode(R6, OUTPUT);

pinMode(R7, OUTPUT);

pinMode(R8, OUTPUT);

pinMode(Speed1, OUTPUT);

pinMode(Speed2, OUTPUT);

pinMode(Speed4, OUTPUT);

Serial.begin(9600);

WiFi.begin(ssid, pass);

timer.setInterval(3000L, checkBlynk);

// check if connected to Blynk server every 3 seconds

Blynk.config(auth);//, ssid, pass);

}

void loop()

{

if (WiFi.status() != WL\_CONNECTED)

{

if (DEBUG\_SW) Serial.println("Not Connected");

}

else

{

if (DEBUG\_SW) Serial.println(" Connected");

Blynk.run();

}

timer.run(); // Initiates SimpleTimer

if (MODE == 0)

with\_internet();

else

without\_internet();

// put your main code here, to run repeatedly:

}

void with\_internet()

{

**// FOR FAN**

if (digitalRead(s1) == LOW && speed1\_flag == 1)

{

speed1();

Blynk.virtualWrite(V0, 1);

speed1\_flag = 0;

speed2\_flag = 1;

speed3\_flag = 1;

speed4\_flag = 1;

speed0\_flag = 1;

}

if (digitalRead(s2) == LOW && digitalRead(s3) == HIGH && speed2\_flag == 1)

{

speed2();

Blynk.virtualWrite(V0, 2);

speed1\_flag = 1;

speed2\_flag = 0;

speed3\_flag = 1;

speed4\_flag = 1;

speed0\_flag = 1;

}

if (digitalRead(s2) == LOW && digitalRead(s3) == LOW && speed3\_flag == 1)

{

speed3();

Blynk.virtualWrite(V0, 3);

speed1\_flag = 1;

speed2\_flag = 1;

speed3\_flag = 0;

speed4\_flag = 1;

speed0\_flag = 1;

}

if (digitalRead(s4) == LOW && speed4\_flag == 1)

{

speed4();

Blynk.virtualWrite(V0, 4);

speed1\_flag = 1;

speed2\_flag = 1;

speed3\_flag = 1;

speed4\_flag = 0;

speed0\_flag = 1;

}

if (digitalRead(s1) == HIGH && digitalRead(s2) == HIGH && digitalRead(s3) == HIGH && digitalRead(s4) == HIGH && speed0\_flag == 1)

{

speed0();

Blynk.virtualWrite(V0, 0);

speed1\_flag = 1;

speed2\_flag = 1;

speed3\_flag = 1;

speed4\_flag = 1;

speed0\_flag = 0;

}

**// FOR SWITCH**

if (digitalRead(S5) == LOW)

{

if (switch\_ON\_Flag1\_previous\_I == 0 )

{

digitalWrite(R5, HIGH);

if (DEBUG\_SW) Serial.println("Relay1- ON");

Blynk.virtualWrite(V1, 1);

switch\_ON\_Flag1\_previous\_I = 1;

}

if (DEBUG\_SW) Serial.println("Switch1 -ON");

}

if (digitalRead(S5) == HIGH )

{

if (switch\_ON\_Flag1\_previous\_I == 1)

{

digitalWrite(R5, LOW);

if (DEBUG\_SW) Serial.println("Relay1 OFF");

Blynk.virtualWrite(V1, 0);

switch\_ON\_Flag1\_previous\_I = 0;

}

if (DEBUG\_SW)Serial.println("Switch1 OFF");

}

if (digitalRead(S6) == LOW)

{

if (switch\_ON\_Flag2\_previous\_I == 0 )

{

digitalWrite(R6, HIGH);

if (DEBUG\_SW) Serial.println("Relay2- ON");

Blynk.virtualWrite(V2, 1);

switch\_ON\_Flag2\_previous\_I = 1;

}

if (DEBUG\_SW) Serial.println("Switch2 -ON");

}

if (digitalRead(S6) == HIGH )

{

if (switch\_ON\_Flag2\_previous\_I == 1)

{

digitalWrite(R6, LOW);

if (DEBUG\_SW) Serial.println("Relay2 OFF");

Blynk.virtualWrite(V2, 0);

switch\_ON\_Flag2\_previous\_I = 0;

}

if (DEBUG\_SW)Serial.println("Switch2 OFF");

//delay(200);

}

if (digitalRead(S7) == LOW)

{

if (switch\_ON\_Flag3\_previous\_I == 0 )

{

digitalWrite(R7, HIGH);

if (DEBUG\_SW) Serial.println("Relay3- ON");

Blynk.virtualWrite(V3, 1);

switch\_ON\_Flag3\_previous\_I = 1;

}

if (DEBUG\_SW) Serial.println("Switch3 -ON");

}

if (digitalRead(S7) == HIGH )

{

if (switch\_ON\_Flag3\_previous\_I == 1)

{

digitalWrite(R7, LOW);

if (DEBUG\_SW) Serial.println("Relay3 OFF");

Blynk.virtualWrite(V3, 0);

switch\_ON\_Flag3\_previous\_I = 0;

}

if (DEBUG\_SW)Serial.println("Switch3 OFF");

//delay(200);

}

if (digitalRead(S8) == LOW)

{

if (switch\_ON\_Flag4\_previous\_I == 0 )

{

digitalWrite(R8, HIGH);

if (DEBUG\_SW) Serial.println("Relay4- ON");

Blynk.virtualWrite(V4, 1);

switch\_ON\_Flag4\_previous\_I = 1;

}

if (DEBUG\_SW) Serial.println("Switch4 -ON");

}

if (digitalRead(S8) == HIGH )

{

if (switch\_ON\_Flag4\_previous\_I == 1)

{

digitalWrite(R8, LOW);

if (DEBUG\_SW) Serial.println("Relay4 OFF");

Blynk.virtualWrite(V4, 0);

switch\_ON\_Flag4\_previous\_I = 0;

}

if (DEBUG\_SW) Serial.println("Switch4 OFF");

//delay(200);

}

}

void **without\_internet()**

**{**

**// FOR FAN**

if (digitalRead(s1) == LOW && speed1\_flag == 1)

{

speed1();

speed1\_flag = 0;

speed2\_flag = 1;

speed3\_flag = 1;

speed4\_flag = 1;

speed0\_flag = 1;

}

if (digitalRead(s2) == LOW && digitalRead(s3) == HIGH && speed2\_flag == 1)

{

speed2();

speed1\_flag = 1;

speed2\_flag = 0;

speed3\_flag = 1;

speed4\_flag = 1;

speed0\_flag = 1;

}

if (digitalRead(s2) == LOW && digitalRead(s3) == LOW && speed3\_flag == 1)

{

speed3();

speed1\_flag = 1;

speed2\_flag = 1;

speed3\_flag = 0;

speed4\_flag = 1;

speed0\_flag = 1;

}

if (digitalRead(s4) == LOW && speed4\_flag == 1)

{

speed4();

speed1\_flag = 1;

speed2\_flag = 1;

speed3\_flag = 1;

speed4\_flag = 0;

speed0\_flag = 1;

}

if (digitalRead(s1) == HIGH && digitalRead(s2) == HIGH && digitalRead(s3) == HIGH && digitalRead(s4) == HIGH && speed0\_flag == 1)

{

speed0();

speed1\_flag = 1;

speed2\_flag = 1;

speed3\_flag = 1;

speed4\_flag = 1;

speed0\_flag = 0;

}

**// FOR SWITCH**

digitalWrite(R5, !digitalRead(S5));

digitalWrite(R6, !digitalRead(S6));

digitalWrite(R7, !digitalRead(S7));

digitalWrite(R8, !digitalRead(S8));

}

**// Fan Speed Control**

void speed0()

{

//All Relays Off - Fan at speed 0

if (DEBUG\_SW)Serial.println("SPEED 0");

digitalWrite(Speed1, LOW);

digitalWrite(Speed2, LOW);

digitalWrite(Speed4, LOW);

}

void speed1()

{

//Speed1 Relay On - Fan at speed 1

if (DEBUG\_SW)Serial.println("SPEED 1");

digitalWrite(Speed1, LOW);

digitalWrite(Speed2, LOW);

digitalWrite(Speed4, LOW);

delay(1000);

digitalWrite(Speed1, HIGH);

}

void speed2()

{

//Speed2 Relay On - Fan at speed 2

if (DEBUG\_SW)Serial.println("SPEED 2");

digitalWrite(Speed1, LOW);

digitalWrite(Speed2, LOW);

digitalWrite(Speed4, LOW);

delay(1000);

digitalWrite(Speed2, HIGH);

}

void speed3()

{

//Speed1 & Speed2 Relays On - Fan at speed 3

if (DEBUG\_SW)Serial.println("SPEED 3");

digitalWrite(Speed1, LOW);

digitalWrite(Speed2, LOW);

digitalWrite(Speed4, LOW);

delay(1000);

digitalWrite(Speed1, HIGH);

digitalWrite(Speed2, HIGH);

}

void speed4()

{

//Speed4 Relay On - Fan at speed 4

if (DEBUG\_SW)Serial.println("SPEED 4");

digitalWrite(Speed1, LOW);

digitalWrite(Speed2, LOW);

digitalWrite(Speed4, LOW);

delay(1000);

digitalWrite(Speed4, HIGH);

}

//Check Blynk Connectivity every 3 seconds

void checkBlynk()

{

bool isconnected = Blynk.connected();

if (isconnected == false)

{

MODE = 1;

}

if (isconnected == true)

{

MODE = 0;

}

}