```
#include <WiFi.h>
#include <WiFiClient.h>
#include <BlynkSimpleEsp32.h>
BlynkTimer timer;

#define DEBUG_SW 1
// Pins of Fan Regulator Knob
#define F1  13
#define F2  12
#define F3  14
#define F4  27
// Pins of Switches ( S - Switches )
#define S1 35
#define S2 34
#define S3 39
#define S4 36
#define S5 32
#define S6 33
#define S7 25
#define S8 26
// Pins of Relay (A - Appliances Control)
#define A1 15
#define A2 2
#define A3 4
#define A4 5
#define A5 18
#define A6 19
#define A7 21
#define A8 3
// Pins of Relay (Fan Speed Control)
#define Speed1 1
#define Speed2 22
#define Speed4 23

// 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;

void setup()
{
  // put your setup code here, to run once:
  pinMode(F1, INPUT);
  pinMode(F2, INPUT);
  pinMode(F3, INPUT_PULLUP);
  pinMode(F4, INPUT);
  pinMode(S1, INPUT);
  pinMode(S2, INPUT);
  pinMode(S3, INPUT);
  pinMode(S4, INPUT);
  pinMode(S5, INPUT);
  pinMode(S6, INPUT);
  pinMode(S7, INPUT);
  pinMode(S8, INPUT);
  pinMode(A1, OUTPUT);
  pinMode(A2, OUTPUT);
  pinMode(A3, OUTPUT);
  pinMode(A4, OUTPUT);
  pinMode(A5, OUTPUT);
  pinMode(A6, OUTPUT);
  pinMode(A7, OUTPUT);
  pinMode(A8, OUTPUT);
  pinMode(Speed1, OUTPUT);
  pinMode(Speed2, OUTPUT);
  pinMode(Speed4, OUTPUT);

  Serial.begin(9600);
  WiFi.begin(ssid, pass);
  timer.setInterval(2000L, checkBlynk);
// check if connected to Blynk server every 2 seconds
  Blynk.config(auth);//, ssid, pass);
}

BLYNK_WRITE(V0)
{
  int fan_speed = param.asInt();
// assigning incoming value from pin V0 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)
{ // assigning incoming value from pin V1 to a variable
  int pinValue = param.asInt();
  digitalWrite(A1, pinValue);  // process received value
}
BLYNK_WRITE(V2)
{  // assigning incoming value from pin V2 to a variable
  int pinValue = param.asInt();
  digitalWrite(A2, pinValue);  // process received value
}
BLYNK_WRITE(V3)
{  // assigning incoming value from pin V3 to a variable
  int pinValue = param.asInt();
  digitalWrite(A3, pinValue);  // process received value
}
BLYNK_WRITE(V4)
{  // assigning incoming value from pin V4 to a variable
  int pinValue = param.asInt();
  digitalWrite(A4, pinValue);  // process received value
}
```

```
BLYNK_WRITE(V5)
{  // assigning incoming value from pin V5  to a variable
  int pinValue = param.asInt();
  digitalWrite(A5, pinValue);  // process received value
}
BLYNK_WRITE(V6)
{   // assigning incoming value from pin V6  to a variable
  int pinValue = param.asInt();
  digitalWrite(A6, pinValue);  // process received value
}
BLYNK_WRITE(V7)
{ // assigning incoming value from pin V7  to a variable
  int pinValue = param.asInt();
  digitalWrite(A7, pinValue);   // process received value
}
BLYNK_WRITE(V8)
{  // assigning incoming value from pin V8 to a variable
  int pinValue = param.asInt();
  digitalWrite(A8, pinValue);    // process received value
 }
```

```
void loop()
{
 if (WiFi.status() != WL_CONNECTED)
 {
  if (DEBUG_SW) Serial.println("Not Connected");
 }
 else
 {
  if (DEBUG_SW) Serial.println(" Connected");
  Blynk.run();
 }

//Check Blynk Connectivity every 3 seconds
void checkBlynk()
{
 bool isconnected = Blynk.connected();
 if (isconnected == false)
 {
  MODE = 1;
 }
 if (isconnected == true)
 {
  MODE = 0;
 }
}

 timer.run(); // Initiates SimpleTimer
if (MODE == 0)
  with_internet();
 else
  without_internet();
}
```

```
void with_internet()
{
 // FOR FAN
 if (digitalRead(F1) == HIGH && digitalRead(F2) == HIGH && digitalRead(F3) == HIGH && digitalRead(F4) == HIGH  &&
speed0_flag == 1)
 {
  speed0();
  Blynk.virtualWrite(V0, 0);
  speed1_flag = 1;
  speed2_flag = 1;
  speed3_flag = 1;
  speed4_flag = 1;
  speed0_flag = 0;
 }
 if (digitalRead(F1) == 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(F2) == LOW && digitalRead(F3) == 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(F2) == LOW && digitalRead(F3) == 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(F4) == LOW  && speed4_flag == 1)
 {
  speed4();
  Blynk.virtualWrite(V0, 4);
  speed1_flag = 1;
  speed2_flag = 1;
  speed3_flag = 1;
  speed4_flag = 0;
  speed0_flag = 1;
 }
```

// FOR SWITCH

```
if (digitalRead(S1) == LOW)
 {
  if (switch_ON_Flag1_previous_l == 0 )
  {
    digitalWrite(A1, HIGH);
    if (DEBUG_SW) Serial.println("Relay1- ON");
    Blynk.virtualWrite(V1, 1);
    switch_ON_Flag1_previous_l = 1;
  }
  if (DEBUG_SW) Serial.println("Switch1 -ON");
 }
```

```
 if (digitalRead(S1) == HIGH )
 {
  if (switch_ON_Flag1_previous_l == 1)
  {
    digitalWrite(A1, LOW);
    if (DEBUG_SW) Serial.println("Relay1 OFF");
    Blynk.virtualWrite(V1, 0);
    switch_ON_Flag1_previous_l = 0;
  }
  if (DEBUG_SW)Serial.println("Switch1 OFF");
 }
```

```
 if (digitalRead(S2) == LOW)
 {
  if (switch_ON_Flag2_previous_l == 0 )
  {
    digitalWrite(A2, HIGH);
    if (DEBUG_SW)  Serial.println("Relay2- ON");
    Blynk.virtualWrite(V2, 1);
    switch_ON_Flag2_previous_l = 1;
  }
  if (DEBUG_SW) Serial.println("Switch2 -ON");

 }
 if (digitalRead(S2) == HIGH )
 {
  if (switch_ON_Flag2_previous_l == 1)
  {
```

```
   digitalWrite(A2, 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(S3) == LOW)
{
  if (switch_ON_Flag3_previous_I == 0 )
  {
    digitalWrite(A3, 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(S3) == HIGH )
{
  if (switch_ON_Flag3_previous_I == 1)
  {
    digitalWrite(A3, 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(S4) == LOW)
{
  if (switch_ON_Flag4_previous_I == 0 )
  {
    digitalWrite(A4, 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(S4) == HIGH )
{
  if (switch_ON_Flag4_previous_I == 1)
  {
    digitalWrite(A4, 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);
 }
```

```
if (digitalRead(S5) == LOW)
{
  if (switch_ON_Flag1_previous_I == 0 )
  {
    digitalWrite(A5, 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(A5, 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(A6, 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(A6, 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_l == 0 )
  {
    digitalWrite(A7, HIGH);
    if (DEBUG_SW) Serial.println("Relay3- ON");
    Blynk.virtualWrite(V3, 1);
    switch_ON_Flag3_previous_l = 1;
  }
  if (DEBUG_SW) Serial.println("Switch3 -ON");

 }
```

```
 if (digitalRead(S7) == HIGH )
 {
  if (switch_ON_Flag3_previous_l == 1)
  {
    digitalWrite(A7, LOW);
    if (DEBUG_SW) Serial.println("Relay3 OFF");
    Blynk.virtualWrite(V3, 0);
    switch_ON_Flag3_previous_l = 0;
  }
  if (DEBUG_SW)Serial.println("Switch3 OFF");
  //delay(200);
 }
```

```
 if (digitalRead(S8) == LOW)
 {
  if (switch_ON_Flag4_previous_l == 0 )
  {
    digitalWrite(A8, HIGH);
    if (DEBUG_SW) Serial.println("Relay4- ON");
    Blynk.virtualWrite(V4, 1);
    switch_ON_Flag4_previous_l = 1;
  }
  if (DEBUG_SW) Serial.println("Switch4 -ON");

 }
```

```
 if (digitalRead(S8) == HIGH )
 {
  if (switch_ON_Flag4_previous_l == 1)
  {
    digitalWrite(A8, LOW);
    if (DEBUG_SW) Serial.println("Relay4 OFF");
    Blynk.virtualWrite(V4, 0);
    switch_ON_Flag4_previous_l = 0;
  }
  if (DEBUG_SW) Serial.println("Switch4 OFF");
  //delay(200);
 }
}
```

void without_internet()

```
{
 // FOR FAN
   if (digitalRead(F1) == HIGH && digitalRead(F2) == HIGH && digitalRead(F3) == HIGH && digitalRead(F4) == HIGH  &&
speed0_flag == 1)
 {
  speed0();
  speed1_flag = 1;
  speed2_flag = 1;
  speed3_flag = 1;
  speed4_flag = 1;
  speed0_flag = 0;
 }
 if (digitalRead(F1) == LOW && speed1_flag == 1)
 {
  speed1();
  speed1_flag = 0;
  speed2_flag = 1;
  speed3_flag = 1;
  speed4_flag = 1;
  speed0_flag = 1;
 }
 if (digitalRead(F2) == LOW && digitalRead(F3) == HIGH && speed2_flag == 1)
 {
  speed2();
  speed1_flag = 1;
  speed2_flag = 0;
  speed3_flag = 1;
  speed4_flag = 1;
  speed0_flag = 1;
 }
```

```
 if (digitalRead(F2) == LOW && digitalRead(F3) == LOW && speed3_flag == 1)
 {
  speed3();
  speed1_flag = 1;
  speed2_flag = 1;
  speed3_flag = 0;
  speed4_flag = 1;
  speed0_flag = 1;
 }
 if (digitalRead(F4) == LOW  && speed4_flag == 1)
 {
  speed4();
  speed1_flag = 1;
  speed2_flag = 1;
  speed3_flag = 1;
  speed4_flag = 0;
  speed0_flag = 1;
 }

 // FOR SWITCH
 digitalWrite(A1, !digitalRead(S1));
 digitalWrite(A2, !digitalRead(S2));
 digitalWrite(A3, !digitalRead(S3));
 digitalWrite(A4, !digitalRead(S4));
 digitalWrite(A5, !digitalRead(S5));
 digitalWrite(A6, !digitalRead(S6));
 digitalWrite(A7, !digitalRead(S7));
 digitalWrite(A8, !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);
}
```