#ifdef ARDUINO\_ARCH\_ESP32

#include <WiFi.h>

#else

#include <ESP8266WiFi.h>

#endif

#include <Espalexa.h>

// define the GPIO connected with Relays and switches

#define RelayPin1 5 //D1

#define RelayPin2 4 //D2

#define RelayPin3 14 //D5

#define RelayPin4 12 //D6

#define SwitchPin1 10 //SD3

#define SwitchPin2 0 //D3

#define SwitchPin3 13 //D7

#define SwitchPin4 3 //RX

#define wifiLed 16 //D0

int toggleState\_1 = 0; //Define integer to remember the toggle state for relay 1

int toggleState\_2 = 0; //Define integer to remember the toggle state for relay 2

int toggleState\_3 = 0; //Define integer to remember the toggle state for relay 3

int toggleState\_4 = 0; //Define integer to remember the toggle state for relay 4

// prototypes

boolean connectWifi();

//callback functions

void firstLightChanged(uint8\_t brightness);

void secondLightChanged(uint8\_t brightness);

void thirdLightChanged(uint8\_t brightness);

void fourthLightChanged(uint8\_t brightness);

// WiFi Credentials

const char\* ssid = "WiFi Name";

const char\* password = "WiFi Password";

// device names

String Device\_1\_Name = "Study Lamp";

String Device\_2\_Name = "CFL";

String Device\_3\_Name = "Yellow light";

String Device\_4\_Name = "Red light";

boolean wifiConnected = false;

Espalexa espalexa;

//our callback functions

void firstLightChanged(uint8\_t brightness)

{

//Control the device

if (brightness == 255)

{

digitalWrite(RelayPin1, LOW);

Serial.println("Device1 ON");

toggleState\_1 = 1;

}

else

{

digitalWrite(RelayPin1, HIGH);

Serial.println("Device1 OFF");

toggleState\_1 = 0;

}

}

void secondLightChanged(uint8\_t brightness)

{

//Control the device

if (brightness == 255)

{

digitalWrite(RelayPin2, LOW);

Serial.println("Device2 ON");

toggleState\_2 = 1;

}

else

{

digitalWrite(RelayPin2, HIGH);

Serial.println("Device2 OFF");

toggleState\_2 = 0;

}

}

void thirdLightChanged(uint8\_t brightness)

{

//Control the device

if (brightness == 255)

{

digitalWrite(RelayPin3, LOW);

Serial.println("Device3 ON");

toggleState\_3 = 1;

}

else

{

digitalWrite(RelayPin3, HIGH);

Serial.println("Device3 OFF");

toggleState\_3 = 0;

}

}

void fourthLightChanged(uint8\_t brightness)

{

//Control the device

if (brightness == 255)

{

digitalWrite(RelayPin4, LOW);

Serial.println("Device4 ON");

toggleState\_4 = 1;

}

else

{

digitalWrite(RelayPin4, HIGH);

Serial.println("Device4 OFF");

toggleState\_4 = 0;

}

}

void relayOnOff(int relay){

switch(relay){

case 1:

if(toggleState\_1 == 0){

digitalWrite(RelayPin1, LOW); // turn on relay 1

toggleState\_1 = 1;

Serial.println("Device1 ON");

}

else{

digitalWrite(RelayPin1, HIGH); // turn off relay 1

toggleState\_1 = 0;

Serial.println("Device1 OFF");

}

delay(100);

break;

case 2:

if(toggleState\_2 == 0){

digitalWrite(RelayPin2, LOW); // turn on relay 2

toggleState\_2 = 1;

Serial.println("Device2 ON");

}

else{

digitalWrite(RelayPin2, HIGH); // turn off relay 2

toggleState\_2 = 0;

Serial.println("Device2 OFF");

}

delay(100);

break;

case 3:

if(toggleState\_3 == 0){

digitalWrite(RelayPin3, LOW); // turn on relay 3

toggleState\_3 = 1;

Serial.println("Device3 ON");

}else{

digitalWrite(RelayPin3, HIGH); // turn off relay 3

toggleState\_3 = 0;

Serial.println("Device3 OFF");

}

delay(100);

break;

case 4:

if(toggleState\_4 == 0){

digitalWrite(RelayPin4, LOW); // turn on relay 4

toggleState\_4 = 1;

Serial.println("Device4 ON");

}

else{

digitalWrite(RelayPin4, HIGH); // turn off relay 4

toggleState\_4 = 0;

Serial.println("Device4 OFF");

}

delay(100);

break;

default : break;

}

}

// connect to wifi – returns true if successful or false if not

boolean connectWifi()

{

boolean state = true;

int i = 0;

WiFi.mode(WIFI\_STA);

WiFi.begin(ssid, password);

Serial.println("");

Serial.println("Connecting to WiFi");

// Wait for connection

Serial.print("Connecting...");

while (WiFi.status() != WL\_CONNECTED) {

delay(500);

Serial.print(".");

if (i > 20) {

state = false; break;

}

i++;

}

Serial.println("");

if (state) {

Serial.print("Connected to ");

Serial.println(ssid);

Serial.print("IP address: ");

Serial.println(WiFi.localIP());

}

else {

Serial.println("Connection failed.");

}

return state;

}

void addDevices(){

// Define your devices here.

espalexa.addDevice(Device\_1\_Name, firstLightChanged); //simplest definition, default state off

espalexa.addDevice(Device\_2\_Name, secondLightChanged);

espalexa.addDevice(Device\_3\_Name, thirdLightChanged);

espalexa.addDevice(Device\_4\_Name, fourthLightChanged);

espalexa.begin();

}

void setup()

{

Serial.begin(115200);

pinMode(RelayPin1, OUTPUT);

pinMode(RelayPin2, OUTPUT);

pinMode(RelayPin3, OUTPUT);

pinMode(RelayPin4, OUTPUT);

pinMode(wifiLed, OUTPUT);

pinMode(SwitchPin1, INPUT\_PULLUP);

pinMode(SwitchPin2, INPUT\_PULLUP);

pinMode(SwitchPin3, INPUT\_PULLUP);

pinMode(SwitchPin4, INPUT\_PULLUP);

//During Starting all Relays should TURN OFF

digitalWrite(RelayPin1, HIGH);

digitalWrite(RelayPin2, HIGH);

digitalWrite(RelayPin3, HIGH);

digitalWrite(RelayPin4, HIGH);

// Initialise wifi connection

wifiConnected = connectWifi();

if (wifiConnected)

{

addDevices();

}

else

{

Serial.println("Cannot connect to WiFi. So in Manual Mode");

delay(1000);

}

}

void loop()

{

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

{

//Serial.print("WiFi Not Connected ");

//Serial.println(wifiConnected);

digitalWrite(wifiLed, HIGH); //Turn off WiFi LED

//Manual Switch Control

if (digitalRead(SwitchPin1) == LOW){

delay(200);

relayOnOff(1);

}

else if (digitalRead(SwitchPin2) == LOW){

delay(200);

relayOnOff(2);

}

else if (digitalRead(SwitchPin3) == LOW){

delay(200);

relayOnOff(3);

}

else if (digitalRead(SwitchPin4) == LOW){

delay(200);

relayOnOff(4);

}

}

else

{

//Serial.print("WiFi Connected ");

//Serial.println(wifiConnected);

digitalWrite(wifiLed, LOW);

//Manual Switch Control

if (digitalRead(SwitchPin1) == LOW){

delay(200);

relayOnOff(1);

}

else if (digitalRead(SwitchPin2) == LOW){

delay(200);

relayOnOff(2);

}

else if (digitalRead(SwitchPin3) == LOW){

delay(200);

relayOnOff(3);

}

else if (digitalRead(SwitchPin4) == LOW){

delay(200);

relayOnOff(4);

}

//WiFi Control

if (wifiConnected){

espalexa.loop();

delay(1);

}

else {

wifiConnected = connectWifi(); // Initialise wifi connection

if(wifiConnected){

addDevices();

}

}

}

}