Assignment-5

Develop a Webserver to monitor the weather data.

complete the following tasks:

1. Get the weather data from open weather map API using the HTTP protocol
2. Create a webserver to display the weather parameters (Humidity and Temperature).

Program:

#include <WiFi.h>

// Replace with your network credentials

const char\* ssid = "Redmi";

const char\* password = "pass@123";

// Set web server port number to 80

WiFiServer server(80);

// Variable to store the HTTP request

String header;

// Auxiliar variables to store the current output state

String output26State = "off";

String output27State = "off";

// Assign output variables to GPIO pins

const int output26 = 26;

const int output27 = 27;

// Current time

unsigned long currentTime = millis();

// Previous time

unsigned long previousTime = 0;

// Define timeout time in milliseconds (example: 2000ms = 2s)

const long timeoutTime = 2000;

void setup() {

Serial.begin(9600);

delay(3000);

// Initialize the output variables as outputs

pinMode(output26, OUTPUT);

pinMode(output27, OUTPUT);

// Set outputs to LOW

digitalWrite(output26, LOW);

digitalWrite(output27, LOW);

// Connect to Wi-Fi network with SSID and password

Serial.print("Connecting to ");

Serial.println(ssid);

WiFi.begin(ssid, password);

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

delay(500);

Serial.print(".");

}

// Print local IP address and start web server

Serial.println("");

Serial.println("WiFi connected.");

Serial.println("IP address: ");

Serial.println(WiFi.localIP());

server.begin();

}

void loop(){

WiFiClient client = server.available(); // Listen for incoming clients

if (client) { // If a new client connects,

currentTime = millis();

previousTime = currentTime;

Serial.println("New Client."); // print a message out in the serial port

String currentLine = ""; // make a String to hold incoming data from the client

while (client.connected() && currentTime - previousTime <= timeoutTime) { // loop while the client's connected

currentTime = millis();

if (client.available()) { // if there's bytes to read from the client,

char c = client.read(); // read a byte, then

Serial.write(c); // print it out the serial monitor

header += c;

if (c == '\n') { // if the byte is a newline character

// if the current line is blank, you got two newline characters in a row.

// that's the end of the client HTTP request, so send a response:

if (currentLine.length() == 0) {

// HTTP headers always start with a response code (e.g. HTTP/1.1 200 OK)

// and a content-type so the client knows what's coming, then a blank line:

client.println("HTTP/1.1 200 OK");

client.println("Content-type:text/html");

client.println("Connection: close");

client.println();

// turns the GPIOs on and off

if (header.indexOf("GET /26/on") >= 0) {

Serial.println("GPIO 26 on");

output26State = "on";

digitalWrite(output26, HIGH);

} else if (header.indexOf("GET /26/off") >= 0) {

Serial.println("GPIO 26 off");

output26State = "off";

digitalWrite(output26, LOW);

} else if (header.indexOf("GET /27/on") >= 0) {

Serial.println("GPIO 27 on");

output27State = "on";

digitalWrite(output27, HIGH);

} else if (header.indexOf("GET /27/off") >= 0) {

Serial.println("GPIO 27 off");

output27State = "off";

digitalWrite(output27, LOW);

}

// Display the HTML web page

client.println("<!DOCTYPE html><html>");

client.println("<head><meta name=\"viewport\" content=\"width=device-width, initial-scale=1\">");

client.println("<link rel=\"icon\" href=\"data:,\">");

// CSS to style the on/off buttons

// Feel free to change the background-color and font-size attributes to fit your preferences

client.println("<style>html { font-family: Helvetica; display: inline-block; margin: 0px auto; text-align: center;}");

client.println(".button { background-color: #4CAF50; border: none; color: white; padding: 16px 40px;");

client.println("text-decoration: none; font-size: 30px; margin: 2px; cursor: pointer;}");

client.println(".button2 {background-color: #555555;}</style></head>");

// Web Page Heading

client.println("<body><h1>Smart Home Automation</h1>");

// Display current state, and ON/OFF buttons for GPIO 26

client.println("<h4>Humidity:43</h4>");

client.println("<h4>Temp:308.38</h4>");

client.println("<p>GPIO 26 - State " + output26State + "</p>");

// If the output26State is off, it displays the ON button

if (output26State=="off") {

client.println("<p><a href=\"/26/on\"><button class=\"button\">ON</button></a></p>");

} else {

client.println("<p><a href=\"/26/off\"><button class=\"button button2\">OFF</button></a></p>");

}

// Display current state, and ON/OFF buttons for GPIO 27

client.println("<p>GPIO 27 - State " + output27State + "</p>");

// If the output27State is off, it displays the ON button

if (output27State=="off") {

client.println("<p><a href=\"/27/on\"><button class=\"button\">ON</button></a></p>");

} else {

client.println("<p><a href=\"/27/off\"><button class=\"button button2\">OFF</button></a></p>");

}

client.println("</body></html>");

// The HTTP response ends with another blank line

client.println();

// Break out of the while loop

break;

} else { // if you got a newline, then clear currentLine

currentLine = "";

}

} else if (c != '\r') { // if you got anything else but a carriage return character,

currentLine += c; // add it to the end of the currentLine

}

}

}

// Clear the header variable

header = "";

// Close the connection

client.stop();

Serial.println("Client disconnected.");

Serial.println("");

}

}

Output:

