

Project development phase - sprint 2

Date:	8 th november 2022
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Project name:	Signs with smart connectivity for bettr road safety

Configure open weather map services.

Code:

```
#include <WiFi.h>

const char* host = "api.openweathermap.org";

//http://api.openweathermap.org/data/2.5/weather?q=Porto,PT&APPID=bb3bbf44669b2a4d7a0d02794894ebda
void setup() {
  Serial.begin(9600);
  Serial.print("Connecting to WiFi");
  WiFi.begin("Wokwi-GUEST", "", 6);
  while (WiFi.status() != WL_CONNECTED) {
    delay(100);
    Serial.print(".");
  }
  Serial.println(" Connected!");
}

int value = 0;

void loop()
{
  delay(5000);
  ++value;

  Serial.print("connecting to ");
  Serial.println(host);

  // Use WiFiClient class to create TCP connections
  WiFiClient client;
  const int httpPort = 80;
  if (!client.connect(host, httpPort)) {
    Serial.println("connection failed");
    return;
  }

  // We now create a URI for the request
  String url = "/data/2.5/weather?q=Porto,PT&APPID=27c3fd2d668ceb8332f42e3b4f943524";

  Serial.print("Requesting URL: ");
  Serial.println(url);
```

```
// This will send the request to the server
client.print(String("GET ") + url + " HTTP/1.1\r\n" +
    "Host: " + host + "\r\n" +
    "Connection: close\r\n\r\n");

unsigned long timeout = millis();
while (client.available() == 0) {
    if (millis() - timeout > 5000) {
        Serial.println(">>> Client Timeout !");
        client.stop();
        return;
    }
}

// Read all the lines of the reply from server and print them to Serial
while(client.available()) {
    String line = client.readStringUntil('\r');
    Serial.print(line);
}

Serial.println();
Serial.println("closing connection");
}
```

The screenshot shows the Wokwi web IDE interface. On the left, the 'sketch.ino' file is open, displaying the following code:

```
1 #include <WiFi.h>
2
3 const char* host = "api.openweathermap.org";
4
5 //http://api.openweathermap.org/data/2.5/weather?q=Porto,PT&appid=bb3bbf44669b2a4d7a0d027
6 void setup() {
7     Serial.begin(9600);
8     Serial.print("Connecting to WiFi");
9     WiFi.begin("Wokwi-GUEST", "", 0);
10    while (WiFi.status() != WL_CONNECTED) {
11        delay(100);
12        Serial.print(".");
13    }
14    Serial.println(" Connected!");
15 }
16
17 int value = 0;
18
19 void loop()
20 {
21     delay(5000);
22     ++value;
23
24     Serial.print("connecting to ");
25     Serial.println(host);
26
27     // Use WiFiClient class to create TCP connections
28     WiFiClient client;
29     const int httpPort = 80;
30     if (!client.connect(host, httpPort)) {
31         Serial.println("connection failed");
32         return;
33     }
34
35     // We now create a URI for the request
```

On the right, the 'Simulation' tab is active, showing a 3D model of an ESP32 microcontroller. Below the model, the JSON response from the OpenWeatherMap API is displayed:

```
{
  "city": "Porto",
  "country": "PT",
  "temp": 286.83,
  "feels_like": 286.53,
  "temp_min": 285.48,
  "temp_max": 289.98,
  "pressure": 1018,
  "humidity": 87,
  "visibility": 10000,
  "wind": {
    "speed": 4.12,
    "deg": 130
  },
  "clouds": {
    "all": 0
  },
  "dt": 1668330277,
  "sys": {
    "type": 2,
    "id": 2009460,
    "country": "PT",
    "sunrise": 1668323986,
    "sunset": 1668359870,
    "timezone": 0,
    "id": 2735943,
    "name": "Porto",
    "cod": 200
  }
}
```

The status bar at the bottom indicates a temperature of 26°C, a cloudy sky, and the time 14:34 on 13-11-2022.

OpenWeatherMap API instructioWeather API - OpenWeatherMapMembersW sketchino - Wokwi Arduino and+

openweathermap.org/api

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pross license, which is included all forecast products and current state, along with alerts, maps, and

26°C Cloudy

ENG IN 14:39 13-11-2022

Not secure | api.openweathermap.org/data/2.5/weather?q=London,uk&APPID=a3a199fa27e488aed784aa329d5ed11c

```
{
  "coord": {
    "lon": -0.1257,
    "lat": 51.5085
  },
  "weather": [
    {
      "id": 741,
      "main": "Fog",
      "description": "fog",
      "icon": "50d"
    }
  ],
  "base": "stations",
  "main": {
    "temp": 284,
    "feels_like": 283.65,
    "temp_min": 282.9,
    "temp_max": 285.37,
    "pressure": 1020,
    "humidity": 96,
    "visibility": 600,
    "wind": {
      "speed": 4.63,
      "deg": 100
    },
    "clouds": {
      "all": 100
    },
    "dt": 1668330927,
    "sys": {
      "type": 2,
      "id": 2075535,
      "country": "GB",
      "sunrise": 1668323693,
      "sunset": 1668356089,
      "timezone": 0,
      "id": 2643743,
      "name": "London",
      "cod": 200
    }
  }
}
```