



FACULDADE DE INFORMÁTICA E ADMINISTRAÇÃO PAULISTA

GLOBAL SOLUTION

GRUPO BLUEGATHER

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São Paulo - SP

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1. Link do WokWi

<https://wokwi.com/projects/399861462641548289>

2. Código do WokWi

/*****

2TDSR - Global Solutions - Grupo BlueGather
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*****/

```
// Importando Bibliotecas
#include <ThingerESP32.h>
#include <DHT.h>
```

```
// Credenciais do Dispositivo Configurado na Plataforma Thinger.io
#define USERNAME "KaueCaponero"
#define DEVICE_ID "BlueGather"
#define DEVICE_CREDENTIAL "BlueGather"
```

```
// Credenciais da Rede WiFi
#define SSID "Wokwi-GUEST"
#define SSID_PASSWORD ""
ThingerESP32 thing(USERNAME, DEVICE_ID, DEVICE_CREDENTIAL);
```

```
// Configurando DHT
#define DHTPIN 25
#define DHTTYPE DHT22
DHT dht(DHTPIN, DHTTYPE);
```

```
// Configurando pinos dos potenciômetros
#define PH_PIN 32
#define TURBIDITY_PIN 34
```

```
// Declarando Variáveis Iniciais
float temperature, humidity, pHValue, turbidityValue;
```

```

void setup() {
  Serial.begin(115200);
  dht.begin();
  thing.add_wifi(SSID, SSID_PASSWORD);
  configurarThinger();
}

void loop() {
  thing.handle();
  readerDHT();
  readerPH();
  readerTurbidity();
  sendDataToDataBucket();
  delay(1000);
}

// Função para Configuração dos Recursos no Thinger.io
void configurarThinger() {
  thing["Identificador"] >> outputValue("Global Solution – 2TDSPR – BlueGather");

  thing["Temperatura"] >> [](pson &out) {
    out = temperature;
  };

  thing["Umidade"] >> [](pson &out) {
    out = humidity;
  };

  thing["pH"] >> [](pson &out) {
    out = pHValue;
  };

  thing["Turbidez"] >> [](pson &out) {
    out = turbidityValue;
  };
}

// Função para Leitura do Sensor DHT
void readerDHT() {
  temperature = dht.readTemperature();
  humidity = dht.readHumidity();
}

// Função para Leitura do Sensor de pH

```

```

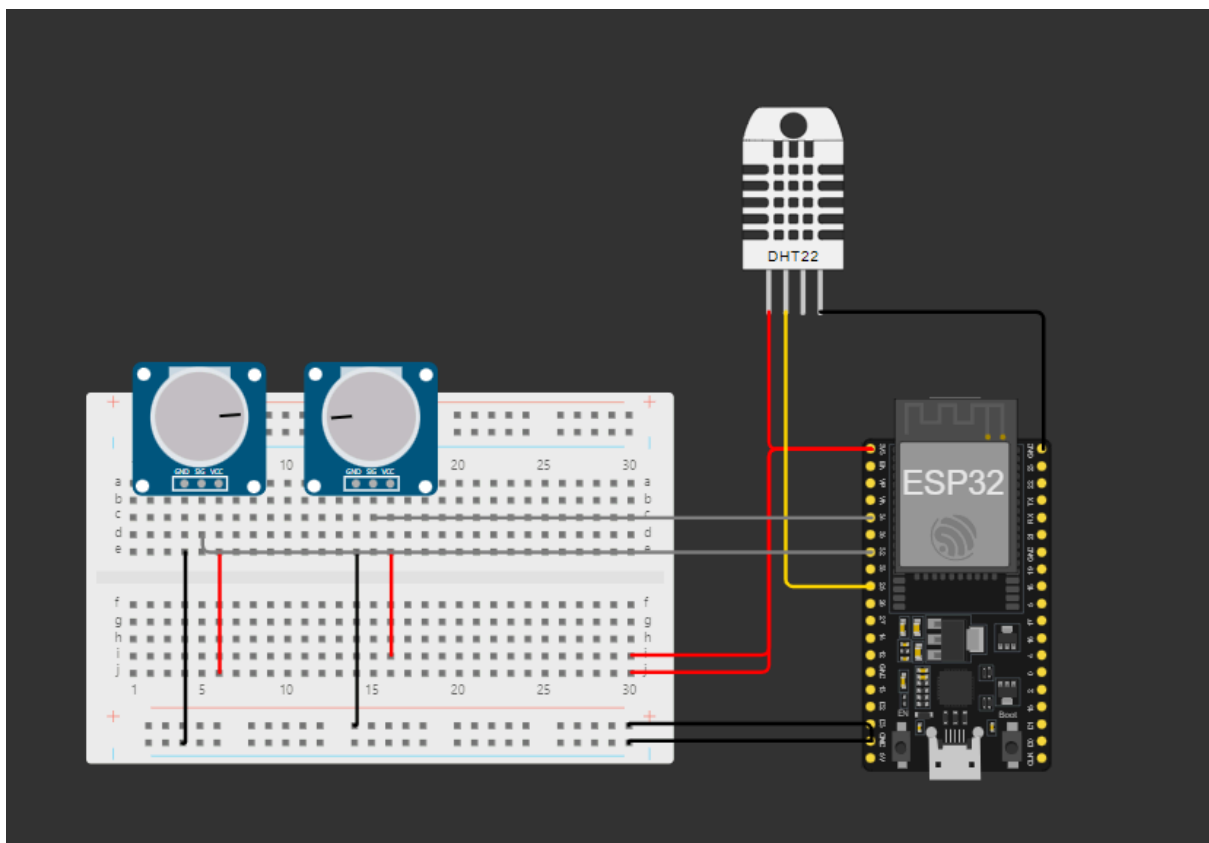
void readerPH() {
  pHValue = analogRead(PH_PIN) * (14.0 / 4095.0); // Convertendo valor do
potenciômetro para escala de pH 0-14
}

// Função para Leitura do Sensor de Turbidez
void readerTurbidity() {
  turbidityValue = analogRead(TURBIDITY_PIN) * (100.0 / 4095.0); // Convertendo
valor do potenciômetro para escala de turbidez 0-100 NTU
}

// Função para Enviar Dados para Data Bucket
void sendDataBucket() {
  thing.call_endpoint("bluegather_data", [](pson &out) {
    out["temperatura"] = temperature;
    out["umidade"] = humidity;
    out["ph"] = pHValue;
    out["turbidez"] = turbidityValue;
  });
}

```

3. Diagrama do WokWi



4. Código do Diagrama do WokWi

```
{
  "version": 1,
  "author": "BlueGather Team",
  "editor": "wokwi",
  "parts": [
    { "type": "wokwi-breadboard-half", "id": "bb1", "top": 64.2, "left": -275.6, "attrs": {} },
    { "type": "wokwi-dht22", "id": "dht22", "top": -95.7, "left": 90.6, "attrs": {} },
    { "type": "wokwi-potentiometer", "id": "pot1", "top": 46.7, "left": -153.8, "attrs": {} },
    { "type": "wokwi-potentiometer", "id": "pot2", "top": 46.7, "left": -249.8, "attrs": {} },
    { "type": "board-esp32-devkit-c-v4", "id": "esp1", "top": 67.2, "left": 158.44, "attrs": {} }
  ],
  "connections": [
    [ "bb1:4t.e", "bb1:bn.3", "black", [ "v0" ] ],
    [ "bb1:bn.25", "esp1:CMD", "black", [ "v0" ] ],
    [ "bb1:16t.e", "bb1:16b.i", "red", [ "v0" ] ],
    [ "bb1:30b.i", "esp1:3V3", "red", [ "h76.8", "v-115.2" ] ],
    [ "bb1:14t.e", "bb1:bp.11", "black", [ "v0" ] ],
    [ "bb1:bp.25", "esp1:CMD", "black", [ "v-0.9", "h193.45" ] ],
    [ "bb1:6b.j", "bb1:6t.e", "red", [ "v0" ] ],
    [ "bb1:30b.j", "esp1:3V3", "red", [ "h76.8", "v-124.8" ] ],
    [ "esp1:3V3", "dht22:VCC", "red", [ "h0" ] ],
    [ "dht22:SDA", "esp1:25", "gold", [ "v0" ] ],
    [ "dht22:GND", "esp1:GND.2", "black", [ "h124.8", "v76.8" ] ],
    [ "pot1:GND", "bb1:14t.a", "", [ "$bb" ] ],
    [ "pot1:SIG", "bb1:15t.a", "", [ "$bb" ] ],
    [ "pot1:VCC", "bb1:16t.a", "", [ "$bb" ] ],
    [ "pot2:GND", "bb1:4t.a", "", [ "$bb" ] ],
    [ "pot2:SIG", "bb1:5t.a", "", [ "$bb" ] ],
    [ "pot2:VCC", "bb1:6t.a", "", [ "$bb" ] ],
    [ "bb1:15t.c", "esp1:34", "gray", [ "v0" ] ],
    [ "bb1:5t.d", "esp1:32", "gray", [ "v9.6", "h307.2" ] ]
  ],
  "dependencies": {}
}
```

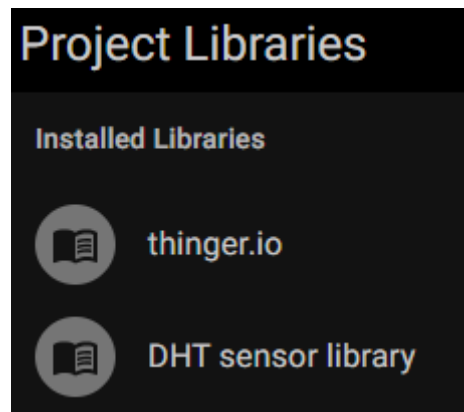
5. Bibliotecas Utilizadas

Wokwi Library List

See <https://docs.wokwi.com/guides/libraries>

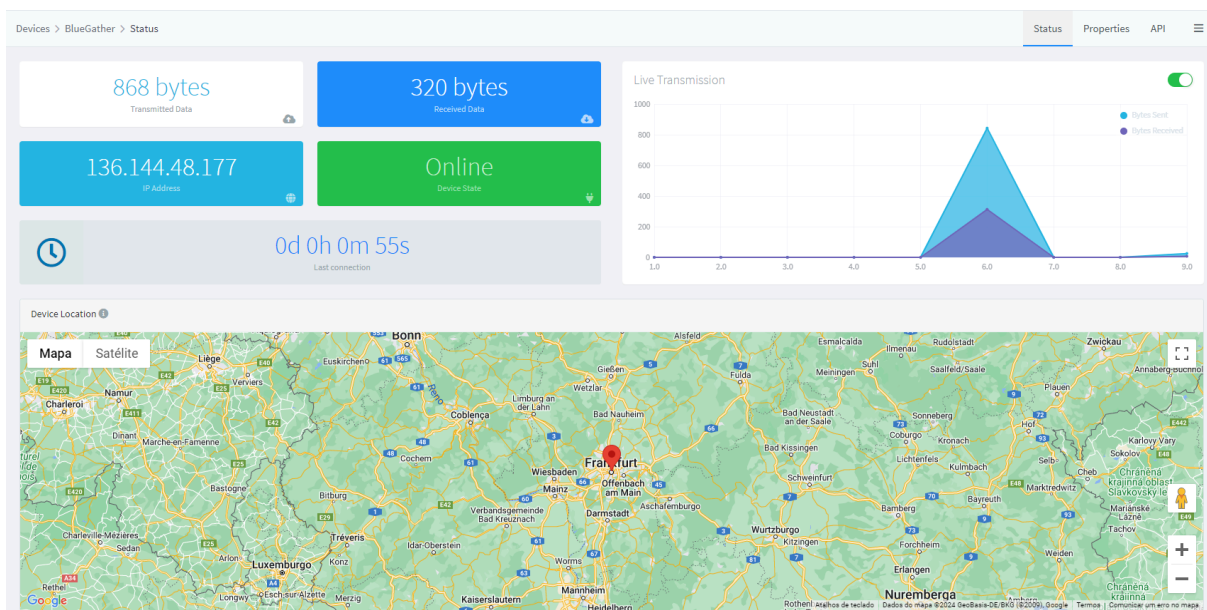
thinger.io

DHT sensor library



6. Device no WokWi

| + Add Device Refresh | | Search Device | | | | |
|-------------------------------------|---|---------------|-----------------|------|-------|---------|
| Device | Description | Protocol | Last Connection | Type | Group | Project |
| <input type="checkbox"/> BlueGather | Dispositivo ESP32 simulado em WokWi para leitura de dados do oceano para análise de condição das águas. | IOTMP | 18s | | | |
| Showing 1 device | | | | | | |



7. Dashboard no WokWi

| + Add Dashboard ⌂ Refresh | | 🔍 Search Dashboard | | |
|---|---------------------------------|--------------------|----------|---------|
| <input type="checkbox"/> Dashboard | Description | Created | Modified | Project |
| <input type="checkbox"/> BlueGather BlueGather | Dashboard do Projeto BlueGather | 55m | 42m | |

Showing 1 dashboard




8. DataBuckets no WokWi


| + Add Bucket ⌂ Refresh | | 🔍 Search Bucket | | | |
|--|---|---|------|-------|---------|
| <input type="checkbox"/> Bucket | Description | State | Type | Group | Project |
| <input type="checkbox"/>  Turbidez BLUEGATHER_BUCKET_TURBIDEZ | Bucket para armazenar os dados de Turbidez da água gerados pelo Potenciômetro |  Importing | | | |
| <input type="checkbox"/>  PH BLUEGATHER_BUCKET_PH | Bucket para armazenar os dados de PH da água gerados pelo Potenciômetro |  Importing | | | |
| <input type="checkbox"/>  Temperatura BLUEGATHER_BUCKET_TEMPERATURA | Bucket para armazenar os dados de temperatura da água lidos pelo sensor DHT |  Normal | | | |
| <input type="checkbox"/>  Umidade BLUEGATHER_BUCKET_UMIDADE | Bucket para armazenar os dados de umidade do ar lidos pelo sensor DHT |  Importing | | | |


Showing 4 buckets


 Refresh

|  Date | Value | |
|--|--------------------|--|
| 05/06/2024, 17:03:18 | 45.29999923706055 | |
| 05/06/2024, 17:02:10 | 45.29999923706055 | |
| 05/06/2024, 17:01:02 | 9.199999809265137 | |
| 05/06/2024, 16:59:53 | 9.199999809265137 | |
| 05/06/2024, 16:58:45 | 50.599998474121094 | |
| 05/06/2024, 16:57:37 | 50.599998474121094 | |
| 05/06/2024, 16:56:29 | 50.599998474121094 | |
| 05/06/2024, 16:55:21 | 50.599998474121094 | |
| 05/06/2024, 16:54:13 | 50.599998474121094 | |
| 05/06/2024, 16:51:25 | 24 | |
| 05/06/2024, 16:50:10 | 24 | |
| 05/06/2024, 16:48:44 | 24 | |
| 05/06/2024, 16:47:44 | 24 | |
| 05/06/2024, 16:46:32 | 24 | |
| 05/06/2024, 16:45:31 | 24 | |
| 05/06/2024, 16:44:31 | 24 | |
| 05/06/2024, 16:40:44 | 24 | |


 Refresh

|  Date | Value |
|--|--------------------|
| 05/06/2024, 17:13:34 | 0 |
| 05/06/2024, 17:03:18 | 45.29999923706055 |
| 05/06/2024, 17:02:10 | 45.29999923706055 |
| 05/06/2024, 17:01:02 | 9.199999809265137 |
| 05/06/2024, 16:59:53 | 9.199999809265137 |
| 05/06/2024, 16:58:45 | 50.599998474121094 |
| 05/06/2024, 16:57:37 | 50.599998474121094 |
| 05/06/2024, 16:56:29 | 50.599998474121094 |
| 05/06/2024, 16:55:21 | 50.599998474121094 |
| 05/06/2024, 16:54:13 | 50.599998474121094 |
| 05/06/2024, 16:51:25 | 24 |
| 05/06/2024, 16:50:10 | 24 |
| 05/06/2024, 16:48:44 | 24 |
| 05/06/2024, 16:47:44 | 24 |
| 05/06/2024, 16:46:32 | 24 |
| 05/06/2024, 16:45:31 | 24 |
| 05/06/2024, 16:44:31 | 24 |

 Refresh

|  Date | Value |
|--|--------------------|
| 05/06/2024, 17:15:40 | 37.728939056396484 |
| 05/06/2024, 17:13:36 | 24.83516502380371 |
| 05/06/2024, 17:03:18 | 14.84737491607666 |
| 05/06/2024, 17:02:10 | 14.84737491607666 |
| 05/06/2024, 17:01:02 | 42.61294174194336 |
| 05/06/2024, 16:59:53 | 42.61294174194336 |
| 05/06/2024, 16:58:45 | 81.12332153320312 |
| 05/06/2024, 16:57:37 | 81.12332153320312 |
| 05/06/2024, 16:56:29 | 81.12332153320312 |
| 05/06/2024, 16:55:21 | 81.12332153320312 |
| 05/06/2024, 16:54:13 | 81.12332153320312 |
| 05/06/2024, 16:51:25 | 2.2466423511505127 |
| 05/06/2024, 16:49:15 | 64.4200210571289 |

 Refresh

|  Date | Value |
|--|--------------------|
| 05/06/2024, 17:15:40 | 5.1316237449646 |
| 05/06/2024, 17:13:35 | 6.786324977874756 |
| 05/06/2024, 17:03:18 | 11.452991485595703 |
| 05/06/2024, 17:02:10 | 11.452991485595703 |
| 05/06/2024, 17:01:02 | 6.526495933532715 |
| 05/06/2024, 16:59:53 | 6.526495933532715 |
| 05/06/2024, 16:58:45 | 2.229059934616089 |
| 05/06/2024, 16:57:37 | 2.229059934616089 |
| 05/06/2024, 16:56:29 | 2.229059934616089 |
| 05/06/2024, 16:55:21 | 2.229059934616089 |
| 05/06/2024, 16:54:13 | 2.229059934616089 |
| 05/06/2024, 16:51:25 | 3.941880226135254 |
| 05/06/2024, 16:49:15 | 11.617094039916992 |