

SPRINT - 3

Date	7 November 2022
Team ID	PNT2022TMID17661
Project Name	Smart waste management system for metropolitan cities
Points	20

Created a IOT device to sense the level of bins and do code for device and send to Node Red using the API keys from Watson platform

CODE :

```
#include "DHTesp.h"

#include <cstdlib>

#include <time.h>

#include <WiFi.h>

#include <PubSubClient.h>

#define ORG "9xyd4z"

#define DEVICE_TYPE "Rasp"

#define DEVICE_ID "12345"

#define TOKEN "12345678"

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";

char publishTopic[] = "iot-2/evt/data/fmt/json";

char authMethod[] = "use-token-auth";

char token[] = TOKEN;

char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;

WiFiClient wifiClient;

PubSubClient client(server, 1883, wifiClient);

float temperature = 0;

int pH = 0;
```

```
String quality_status = "";
String temperture_status = "";


void setup() {
    Serial.begin(99900);

    wifiConnect();
    mqttConnect();
}

void loop() {

    srand(time(0));

    //initial variable
    int p;

    temperature = random(-20,40);
    pH = random(0,14);
    if(pH > 6.5 && pH < 8.5){
        p = 0;
    }
    else{
        p = 1;
    }
}
```

```

}

//set a quality status

switch (p) {
case 0:
    quality_status = "Drinkable";
    break;
case 1:
    quality_status = "Not Drinkable";
    break;
}

//Obviously the output.It is like json format 'cause it will help us for
future sprints

String payload = "{";
payload+="\"pH level is \":\"";
payload+=pH;
payload+=",\"";
payload+="\"Temperature of Water\":\"";
payload+=(int)temperature;
payload+=",\"";
payload+="\"Alert\":\""+quality_status+"\"}";
Serial.println(payload);

if(client.publish(publishTopic, (char*) payload.c_str()))
{
    Serial.println("Publish OK");
}

```

```
}

else{

    Serial.println("Publish failed");

}

delay(1000);


if (!client.loop())
{
    mqttConnect();
}

}

void wifiConnect()
{

    Serial.print("Connecting to ");

    Serial.print("Wifi");

    WiFi.begin("Wokwi-GUEST", "", 6);

    while (WiFi.status() != WL_CONNECTED)

    {

        delay(500);

        Serial.print(".");

    }

    Serial.print("WiFi connected, IP address: ");
```

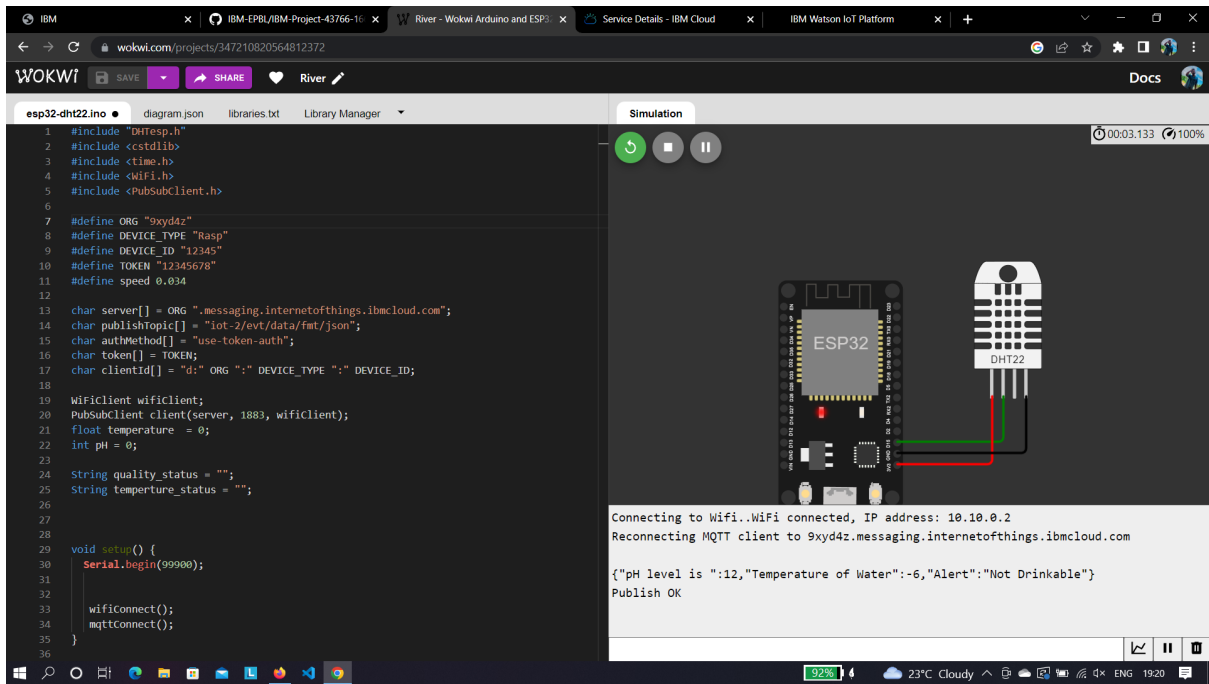
```
Serial.println(WiFi.localIP());

}

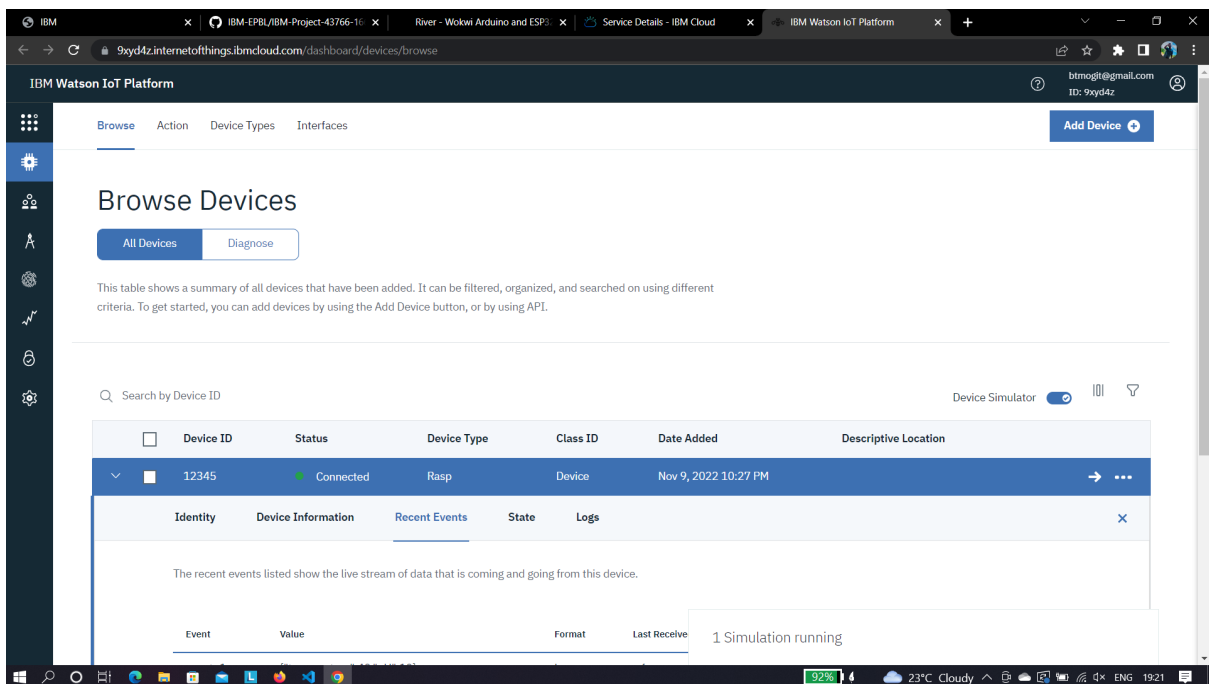
void mqttConnect()
{
  if (!client.connected())
  {
    Serial.print("Reconnecting MQTT client to ");
    Serial.println(server);
    while (!client.connect(clientId, authMethod, token))
    {
      Serial.print(".");
      delay(500);
    }

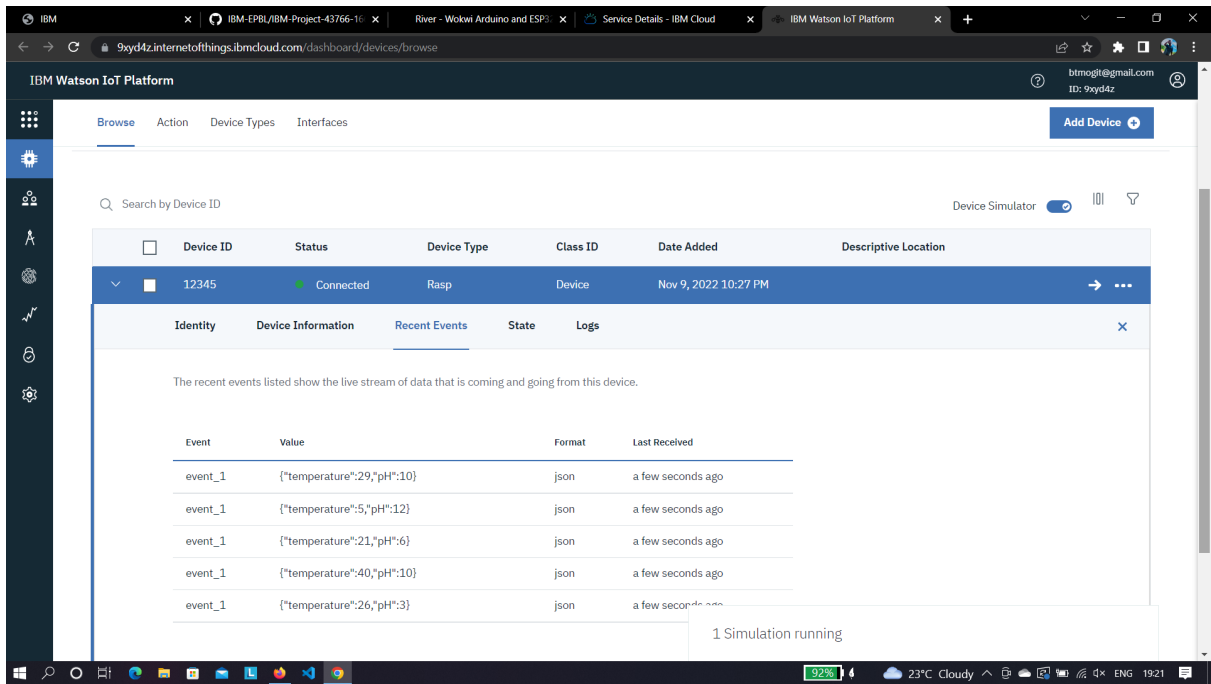
    Serial.println();
  }
}
```

Sensor circuit:

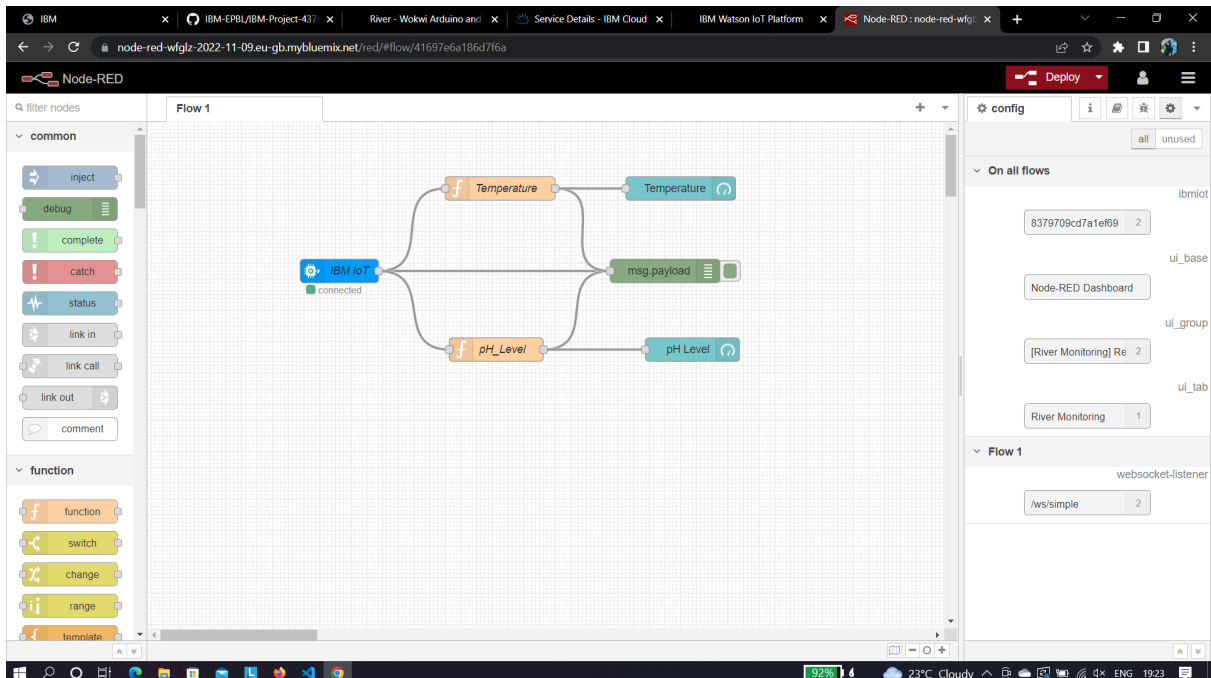


Watson IOT Platform:

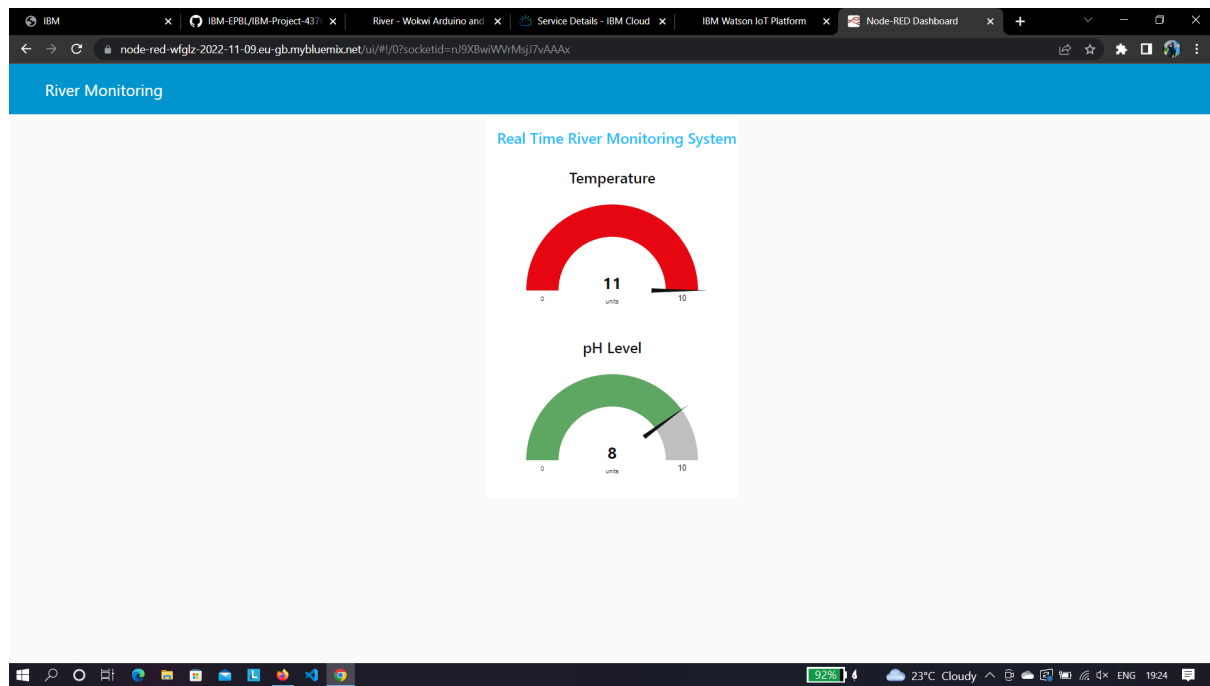




Node-RED Connections :



Web UI :



Run the code here : <https://wokwi.com/projects/347210820564812372>