Assignment 4: Ultra sonic sensor

Wokwi Link :

https://wokwi.com/projects/346229697892319828

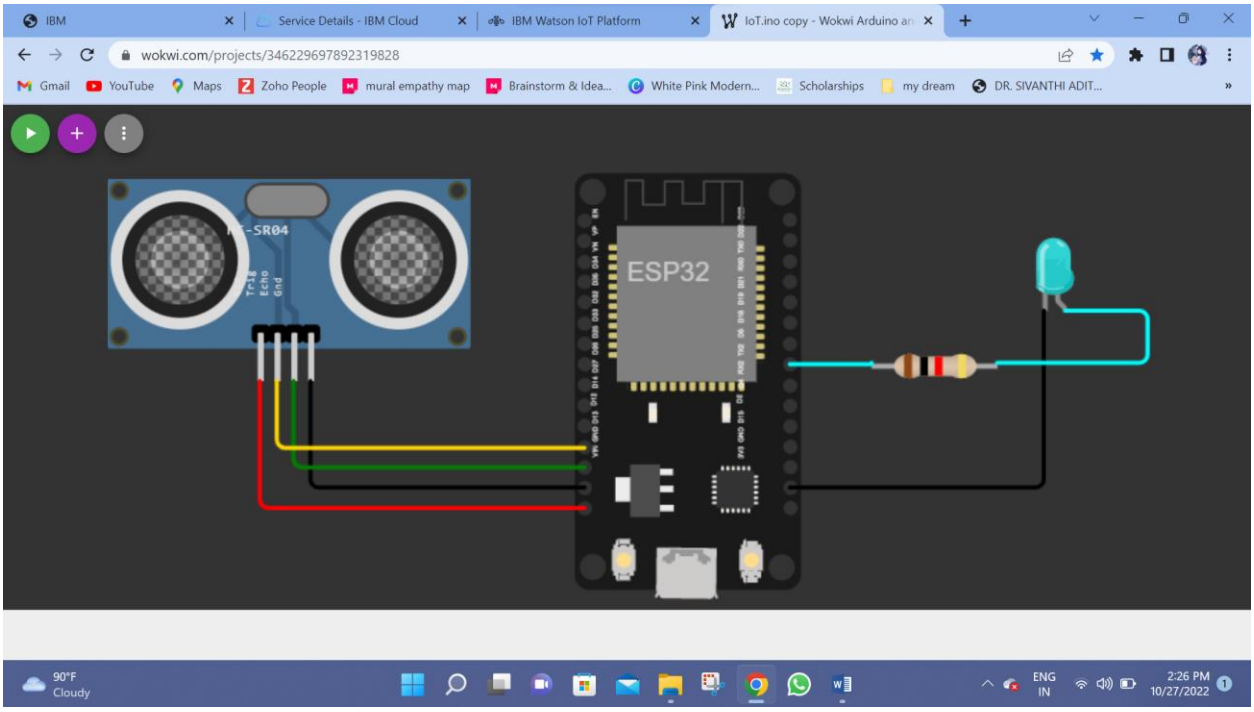
Program:

```
#include <WiFi.h>
#include <WiFiClient.h>
#include <PubSubClient.h>

const char* ssid = "Wokwi-GUEST";
const char* password = "";

#define ORG "4fvguz"
#define DEVICE_TYPE "ESP32"
#define DEVICE_ID "ultrasonic_sensor"
#define TOKEN "12345678"

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char pubTopic[] = "iot-2/evt/status1/fmt/json";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;

WiFiClient wifiClient;
PubSubClient client(server, 1883, NULL, wifiClient);


#define ECHO_PIN 13
#define TRIG_PIN 12
#define LED_BUILTIN 5
#define DHT_PIN 15

void setup()
{
  Serial.begin(115200);
  pinMode(LED_BUILTIN, OUTPUT);
```

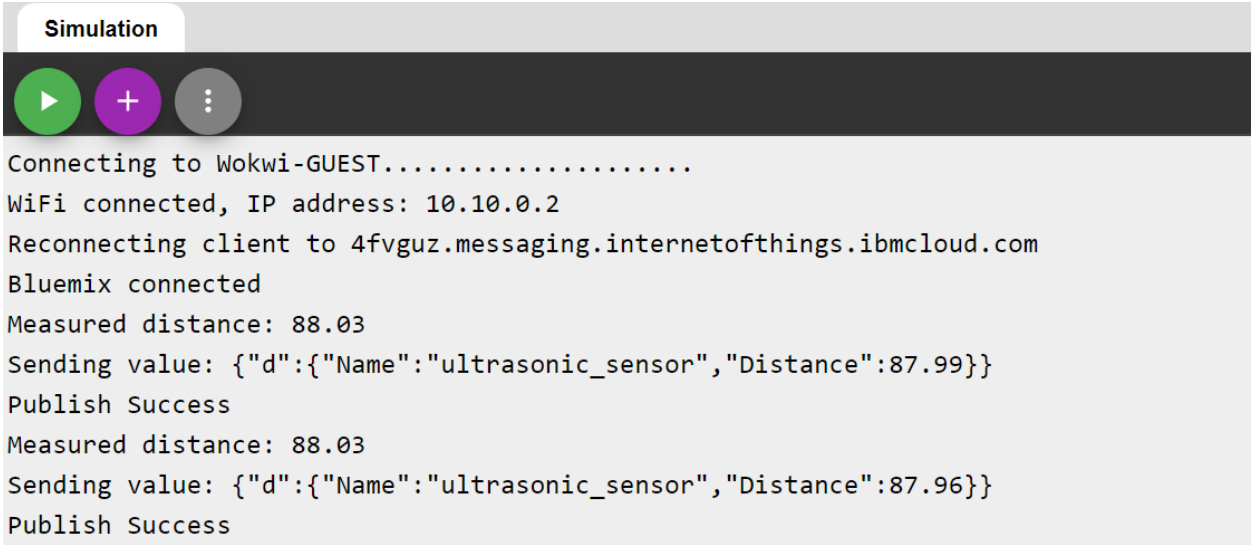
```
  pinMode(TRIG_PIN, OUTPUT);
  pinMode(ECHO_PIN, INPUT);

  Serial.print("Connecting to ");
  Serial.print(ssid);
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED)
  {
    delay(500);
    Serial.print(".");
  }
  Serial.println("");

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

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

float readDistanceCM() {
  digitalWrite(TRIG_PIN, LOW);
  delayMicroseconds(2);
  digitalWrite(TRIG_PIN, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIG_PIN, LOW);
  int duration = pulseIn(ECHO_PIN, HIGH);
  return duration * 0.034 / 2;
}

void loop() {
  float distance = readDistanceCM();

  bool isNearby = distance < 100;
  digitalWrite(LED_BUILTIN, isNearby);
```

```
  Serial.print("Measured distance: ");
  Serial.println(readDistanceCM());

  if(distance<100)
  {
    String payload = "{\"d\":{\"Name\":\"" DEVICE_ID "\"";
    payload += ",\"Distance\":";
    payload += distance;
    payload += "}}";

    Serial.print("Sending value: ");
    Serial.println(payload);

    if (client.publish(pubTopic, (char*) payload.c_str()))
    {
      Serial.println("Publish Success");
    }
    else
    {
      Serial.println("Publish Failed");
    }

  }

  delay(100);
}
```

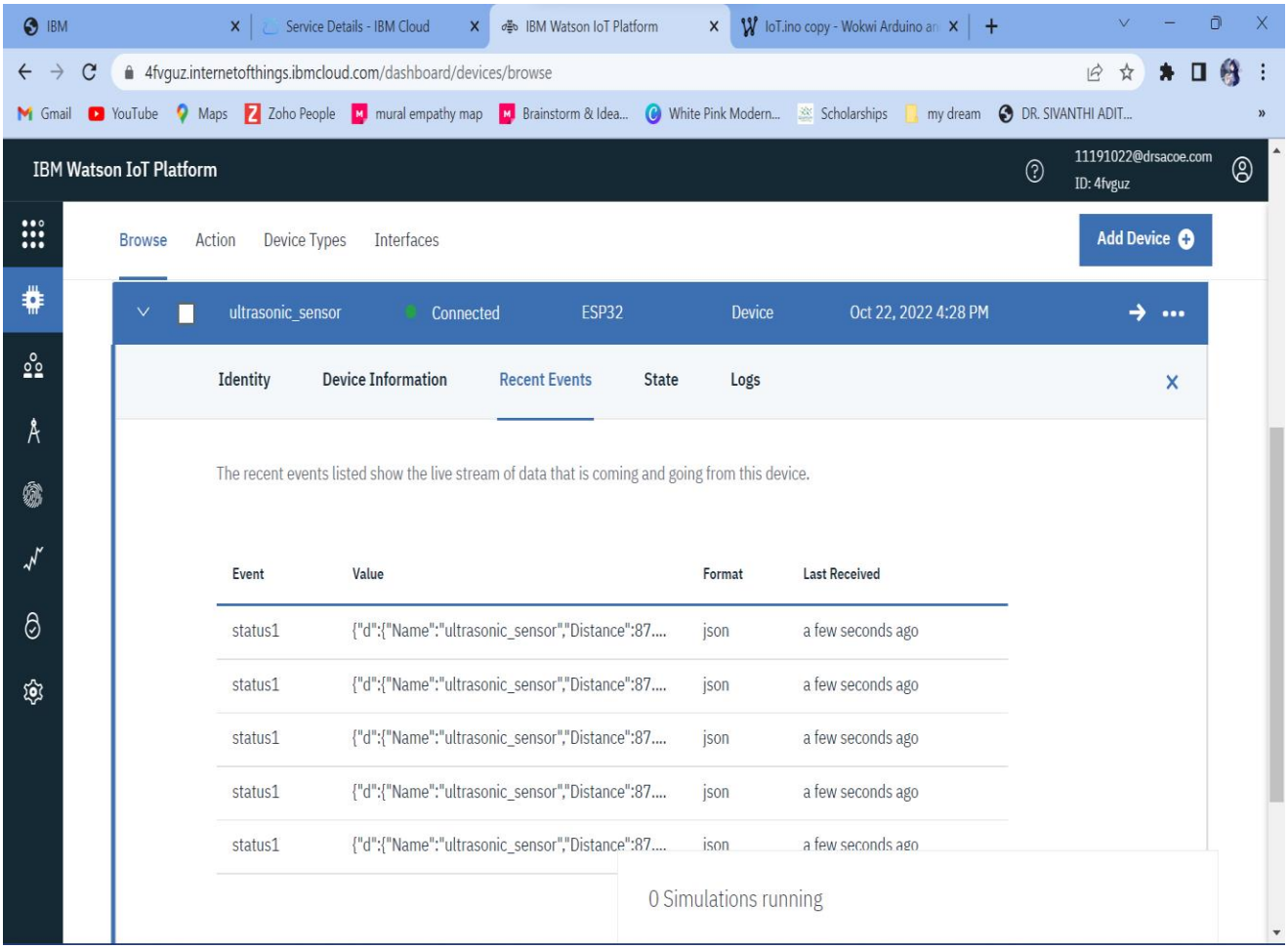
Connections:



Output:



IBM Cloud:


IBM
Service Details - IBM Cloud
IBM Watson IoT Platform
IoT.ino copy - Wokwi Arduino
4fvguz.internetofthings.ibmcloud.com/dashboard/devices/browse
Gmail
YouTube
Maps
Zoho People
mural empathy map
Brainstorm & Idea...
White Pink Modern...
Scholarships
my dream
DR. SIVANTHI ADIT...
IBM Watson IoT Platform
11191022@drsacoe.com
ID: 4fvguz
Browse
Action
Device Types
Interfaces
Add Device
ultrasonic_sensor
Connected
ESP32
Device
Oct 22, 2022 4:28 PM
Identity
Device Information
Recent Events
State
Logs
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
Format
Last Received
status1
{"d":{"Name":"ultrasonic_sensor","Distance":87....
json
a few seconds ago
status1
{"d":{"Name":"ultrasonic_sensor","Distance":87....
json
a few seconds ago
status1
{"d":{"Name":"ultrasonic_sensor","Distance":87....
json
a few seconds ago
status1
{"d":{"Name":"ultrasonic_sensor","Distance":87....
json
a few seconds ago
status1
{"d":{"Name":"ultrasonic_sensor","Distance":87....
json
a few seconds ago
0 Simulations running