Assignment - 4

Ultrasonic Sensor

Assignment Date	01 November 2022
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Student Roll Number	910819104002
Maximum Marks	2 Marks

Question-1:

Write code and connections in wokwi for the ultrasonic sensor.

Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.

Upload document with wokwi share link and images of IBM cloud

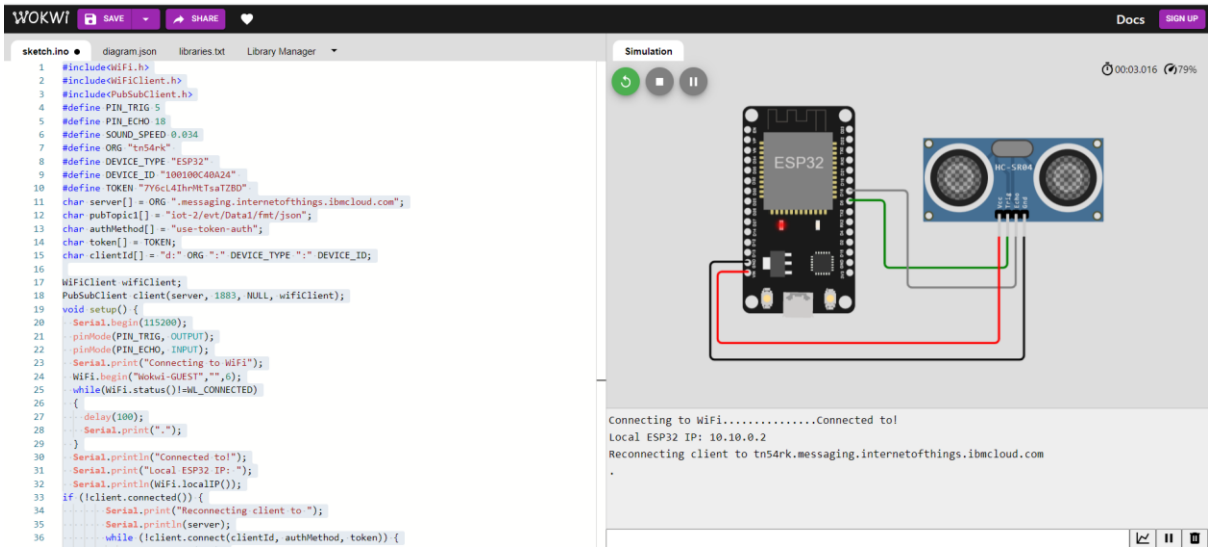
Solution:

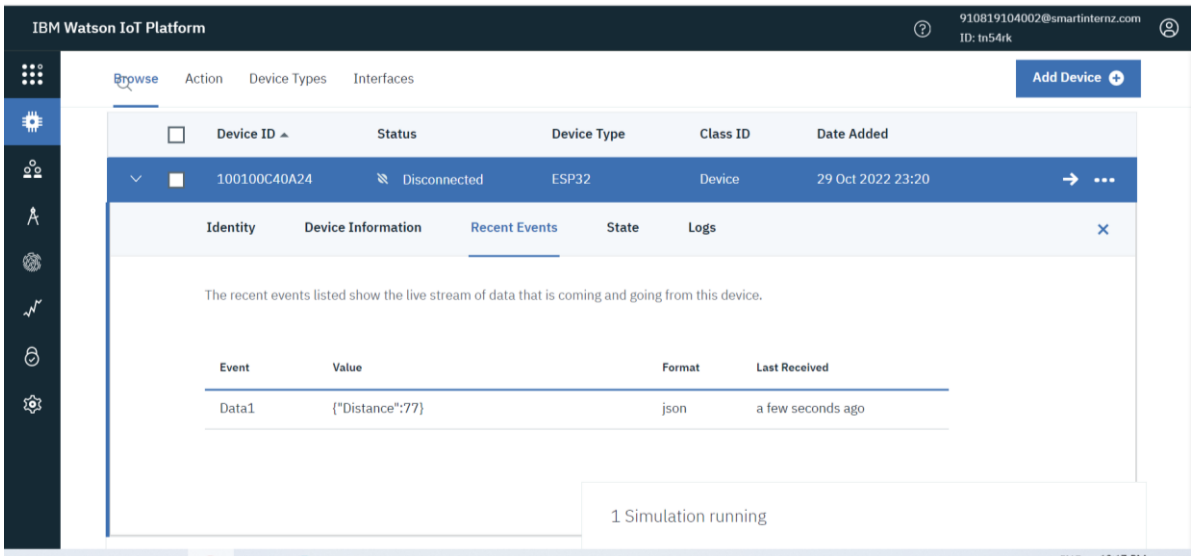
Code:

```
#include<WiFi.h>
#include<WiFiClient.h>
#include<PubSubClient.h>
#define PIN_TRIG 5
#define PIN_ECHO 18
#define SOUND_SPEED 0.034
#define ORG "tn54rk"
#define DEVICE_TYPE "ESP32"
#define DEVICE_ID "100100C40A24"
#define TOKEN "7Y6cL4IhrMtTsaTZBD"
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char pubTopic1[] = "iot-2/evt/Data1/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);
void setup() {
  Serial.begin(115200);
  pinMode(PIN_TRIG, OUTPUT);
  pinMode(PIN_ECHO, INPUT);
  Serial.print("Connecting to WiFi");
  WiFi.begin("Wokwi-GUEST","",6);
  while(WiFi.status()!=WL_CONNECTED)
  {
    delay(100);
    Serial.print(".");
  }
```

```
  Serial.println("Connected to!");
  Serial.print("Local ESP32 IP: ");
  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");
    }
}
int value=0;
void loop() {
  digitalWrite(PIN_TRIG, HIGH);
  delayMicroseconds(10);
  digitalWrite(PIN_TRIG, LOW);
  int duration = pulseIn(PIN_ECHO, HIGH);
  int distance = duration * SOUND_SPEED/2;
  Serial.print("Distance in CM: ");
  Serial.println(distance);
  delay(1000);
  ++value;
  if(distance<100)
  {
     String payload = "{\"d\":{\"Name\":\"" DEVICE_ID "\"";
              payload += ",\"Distance\":";
              payload += distance;
              payload += "}}";

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

        if (client.publish(pubTopic1, (char*) payload.c_str())) {
            Serial.println("Publish ok");
        } else {
            Serial.println("Publish failed");
        }
  }
}
```

Output:





Kwoki link: https://wokwi.com/projects/347144098012987988