**Assignment -4**

Python Programming

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| Assignment Date | 19 September 2022 |
| Student Name | Mr. Ragul Gandhi |
| Student Roll Number | 312819106031 |
| Maximum Marks | 2 Marks |

**Question-1:**

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cms send "alert" to IBM cloud and display in device recent events.

**Solution:**

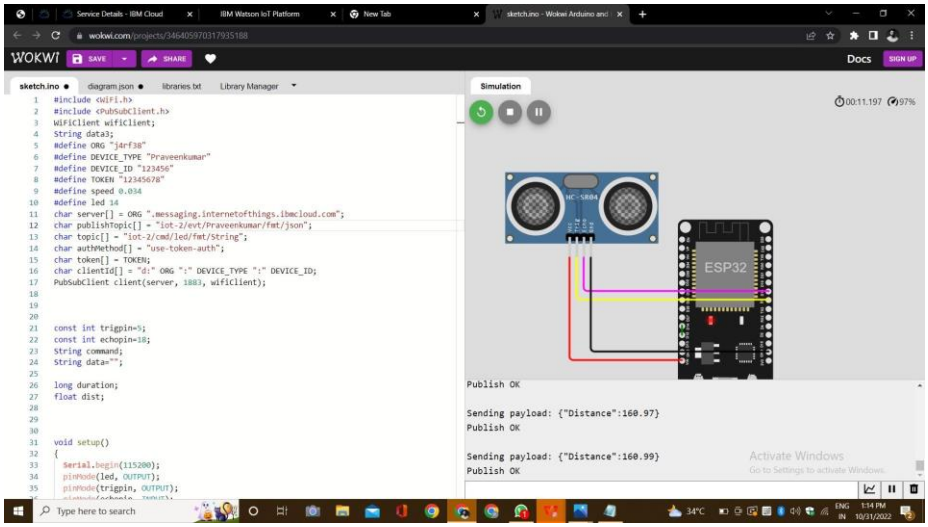
```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "j4rf38"
#define DEVICE_TYPE "Praveenkumar"
#define DEVICE_ID "123456"
#define TOKEN "12345678"
#define speed 0.034
#define led 14 char
server[] = ORG
".messaging.internetofthings.ibmcloud.com";
char publishTopic[] =
"iot2/evt/Praveenkumar/fmt/json"; char
topic[] = "iot2/cmd/led/fmt/String"; char
authMethod[] = "use-token-auth"; char
token[] = TOKEN; char clientId[] = "d:" ORG
":" DEVICE_TYPE
":" DEVICE_ID;
PubSubClient client(server, 1883,
wifiClient);



const int trigpin=5;
const int echopin=18;
String command;
String data="";

long duration;
float dist;



void setup()
{
  Serial.begin(115200);
  pinMode(led, OUTPUT);
  pinMode(trigpin, OUTPUT);
  pinMode(echopin, INPUT);
  wifiConnect(); mqttConnect(); }

void loop() {
```

```
  bool isNearby = dist < 100;
  digitalWrite(led, isNearby);

  publishData();
  delay(500);

  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); }
    initManagedDevice();
    Serial.println();
  }
}

void initManagedDevice() {
  if (client.subscribe(topic)) {
    //
Serial.println(client.subscribe(topic));
    Serial.println("IBM subscribe to cmd
OK");
  } else {
    Serial.println("subscribe to cmd
FAILED"); } } void
publishData()
{ digitalWrite(trigpin,LOW);
  digitalWrite(trigpin,HIGH);
  delayMicroseconds(10);
  digitalWrite(trigpin,LOW);
  duration=pulseIn(echopin,HIGH);
  dist=duration*speed/2;
  if(dist<100){
    String payload = "{\"Alert
Distance\":";
    payload += dist;
    payload += "}";

    Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload); if
    (client.publish(publishTopic,
```

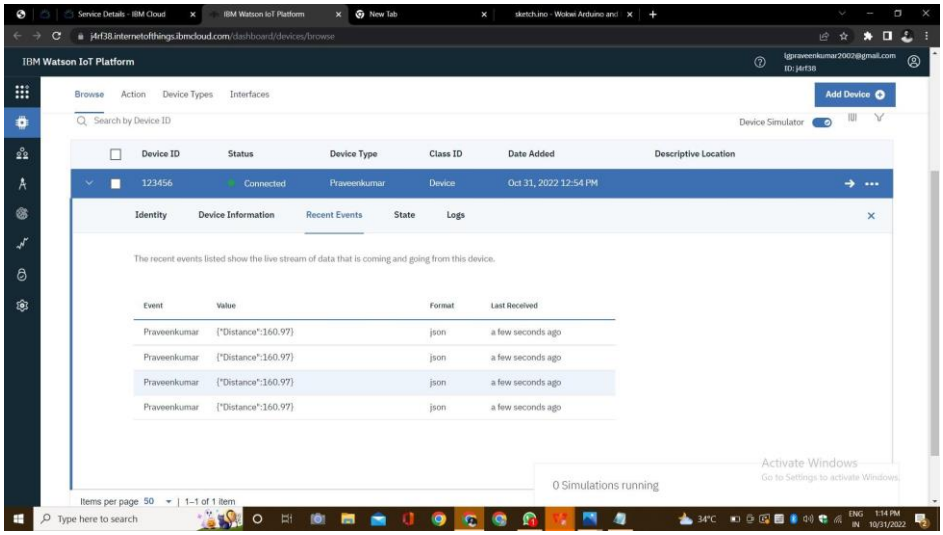
```
(char*) payload.c_str())) {
      Serial.println("Publish OK");
    }

  } if(dist>100){ String payload =
    "{\"Distance\":"; payload += dist;
    payload += "}";

    Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload);
     if(client.publish(publishTopic,
(char*) payload.c_str())) {
      Serial.println("Publish OK");
    }else {
      Serial.println("Publish FAILED");
    }

  }


  }
```

# *OUTPUT:-*

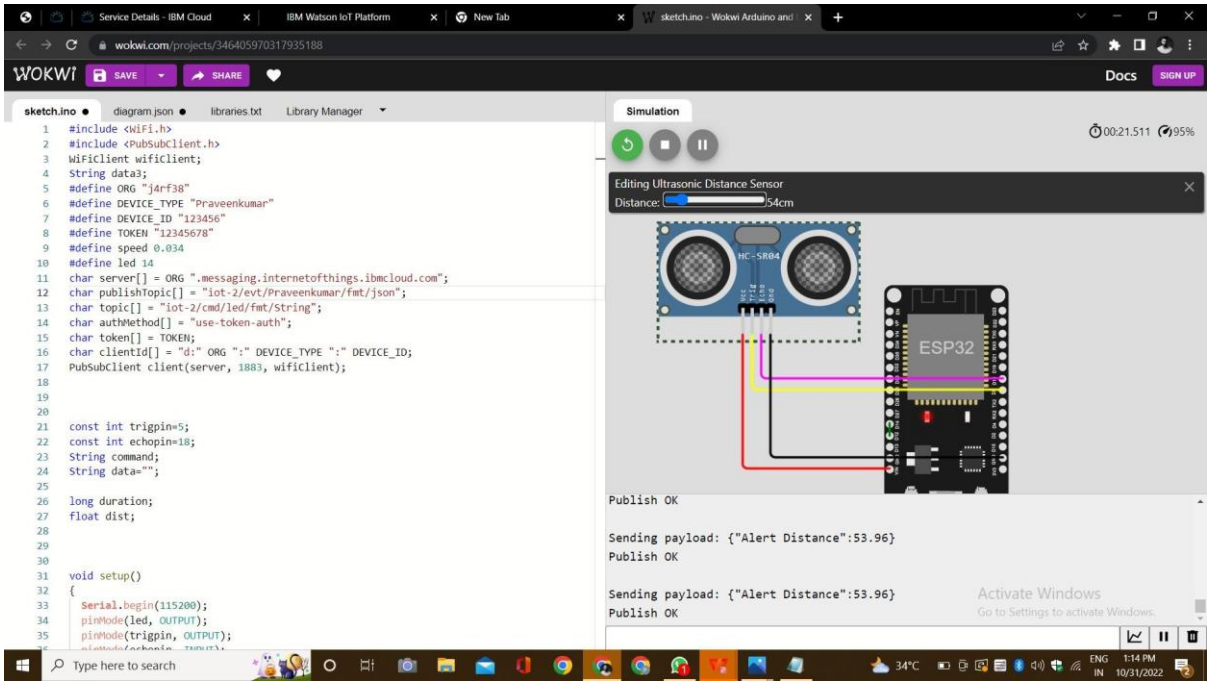
i) When distance greater than 100 cm



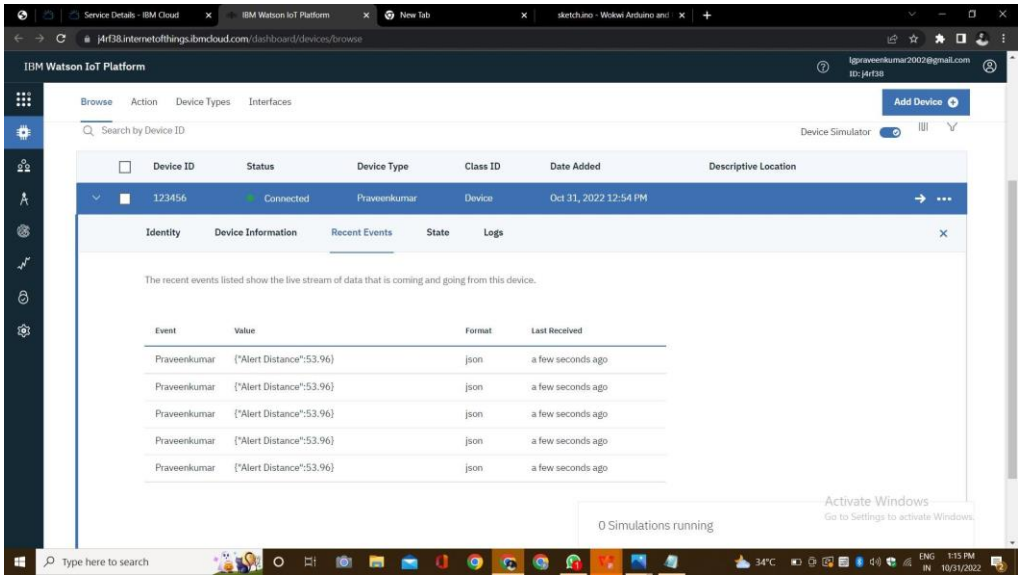
# IBM RECENT EVENTS




ii) When distance less than 100



# IBM RECENT EVENTS




# WOKWI LINK -

https://wokwi.com/projects/346405970317935188