ASSIGNMENT 4

Date	2 Nov 22
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Team ID	PNT2022TMID38273
Project Name	IOT Based Smart Crop Protection
	System for Agriculture

QUESTION:

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

CODE:

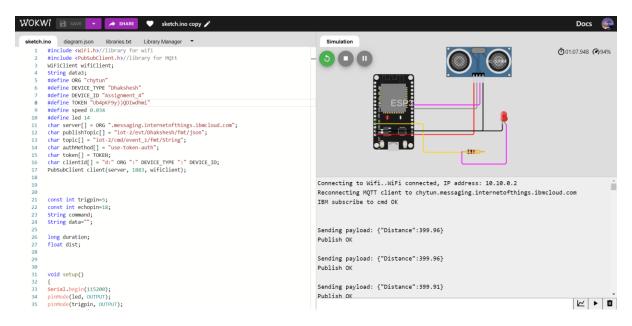
```
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for MQtt
WiFiClient wifiClient;
String data3;
#define ORG "chytun"
#define DEVICE_TYPE "Dhakshesh"
#define DEVICE_ID "Assignment_4"
#define TOKEN " Ub4pKF9y))QDIwdhmi"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Lingaraja/fmt/json";
char topic[] = "iot-2/cmd/event_1/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;</pre>
  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();
```

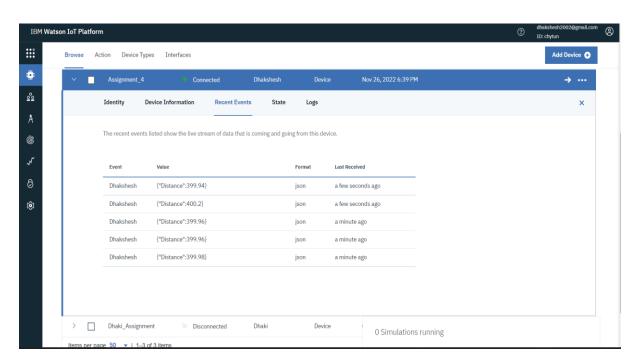
```
}
}
void initManagedDevice() {
  if (client.subscribe(topic)){
    // Serial.println(client.subscribe(topic));
    Serial.println("IBM subscribe to cmd OK");
    }
else{
  Serial.println("subscribe to cmd FAILED");
  }
}
void publishData(){
  digitalWrite(trigpin,LOW);
  digitalWrite(trigpin, HIGH);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

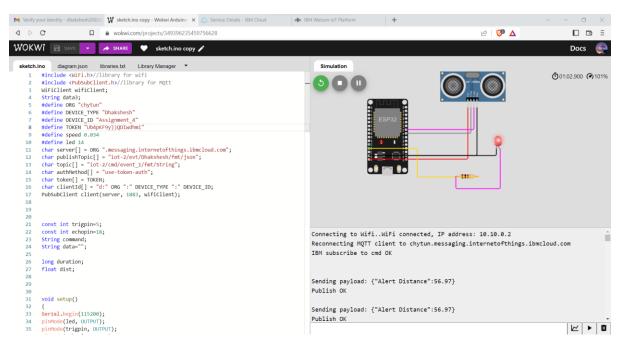
1) When Distance greater than 100 cm



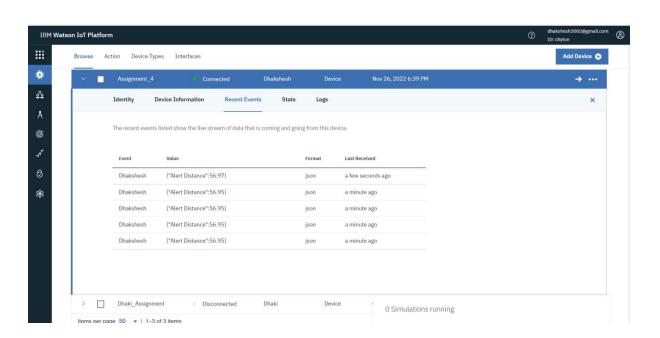
IBM RECENT EVENTS



2) When distance less than 100



IBM RECENT EVENTS



WOVKI LINK- https://wokwi.com/projects/349396235459756628