Assignment -4

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Project Name	Smart Waste Management System for Metropolitan Cities.

Question:

Write a 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.

Code :

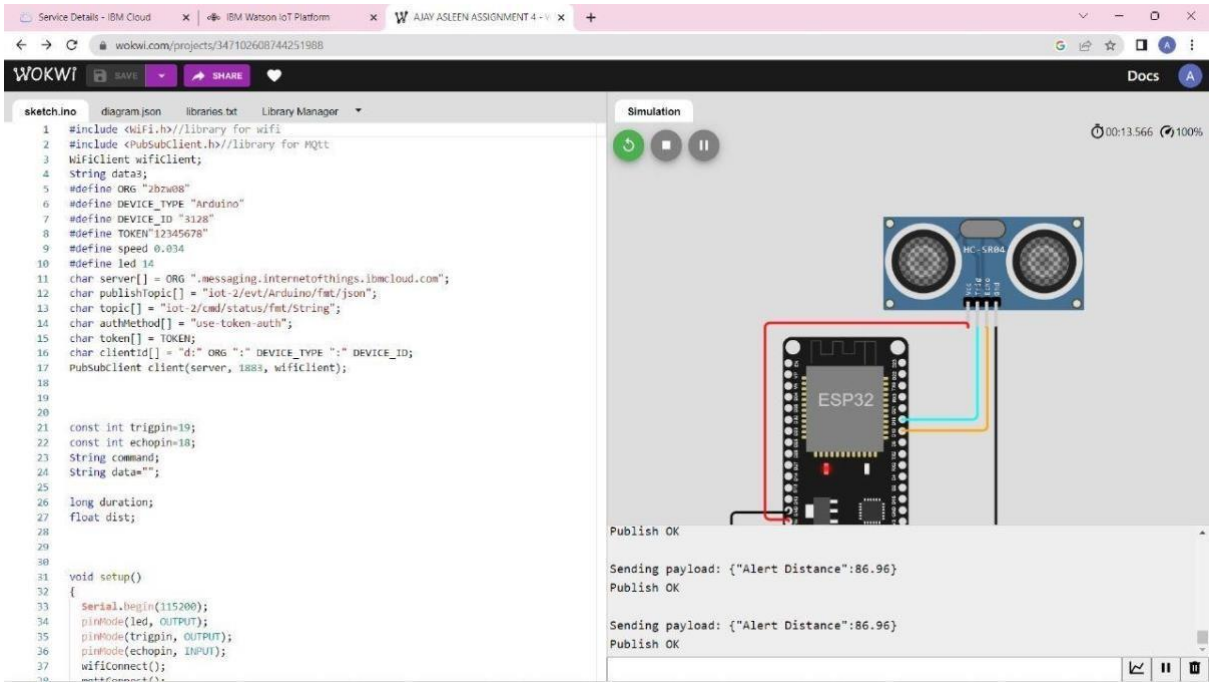
```
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for MQtt
WiFiClient wifiClient;
String data3;
#define ORG "0x5bsz"
#define DEVICE_TYPE "Arduino"
#define DEVICE_ID "234566"
#define TOKEN "87654321"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; char publishTopic[] = "iot-2/evt/Arduino/fmt/json"; char topic[] = "iot-2/cmd/status/fmt/String"; char authMethod[] = "usetoken-auth"; char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);


const int trigpin=19;
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");
```

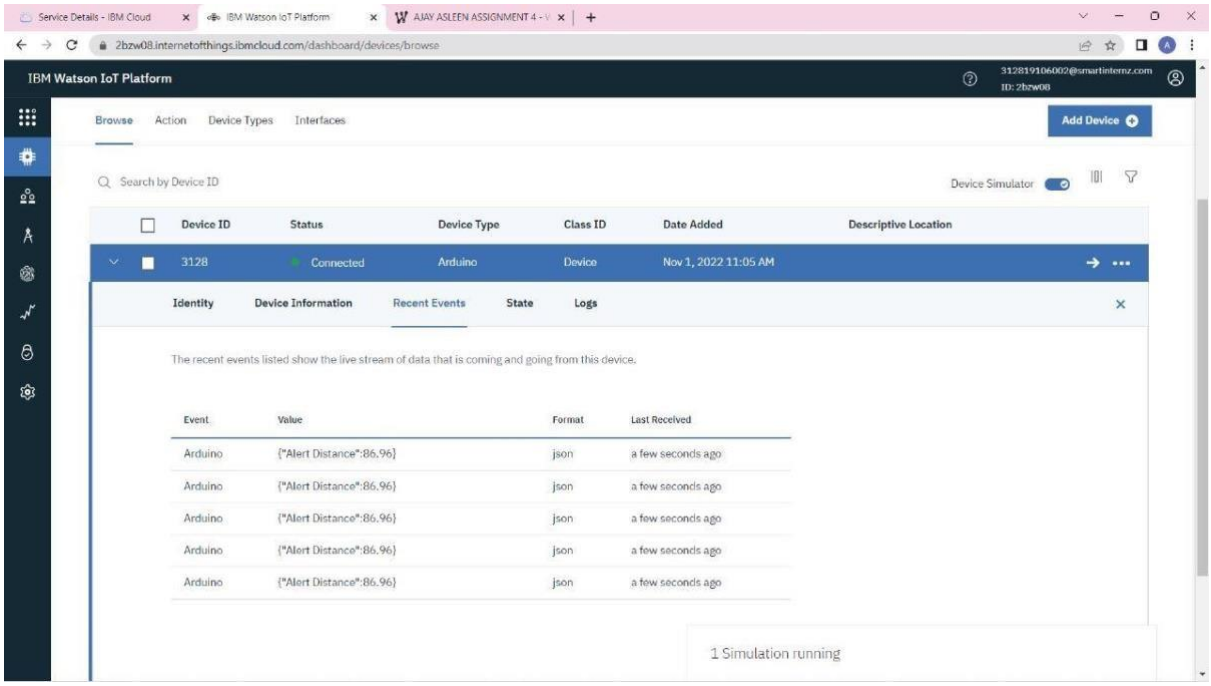
```
  } else {
    Serial.println("subscribe to cmd FAILED");
  } } void publishData()
{
  digitalWrite(trigpin,LOW);
digitalWrite(trigpin,HIGH);
delayMicroseconds(10);
digitalWrite(trigpin,LOW);
duration=pulseIn(echopin,HIGH);
dist=duration*speed/2;   if(dist<100){
    String payload = "{\"Alert
Distance\":";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

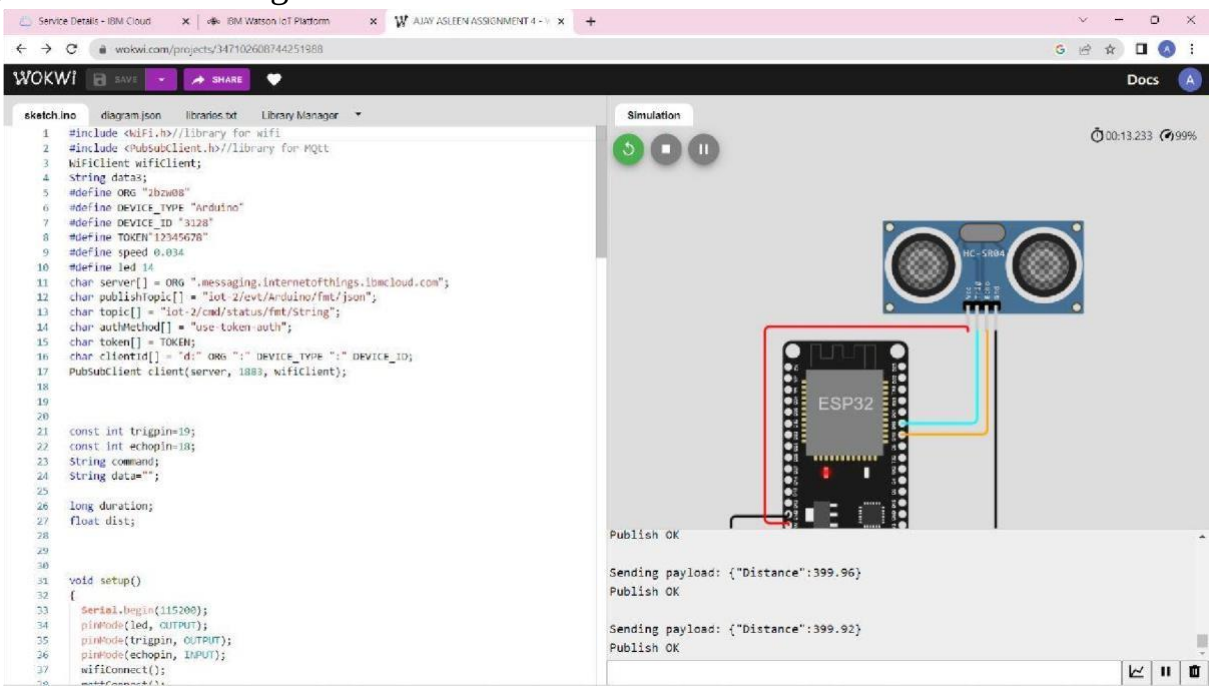
1) When distance is less than 100 cm



IBM RECENT EVENTS:



2)When distance is greater than 100 cm



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