Assignment -4

Wowki & IBM Cloud

Ques on-1:

Write code and connections in wowki for ultrasonic sensor. Whenever the distance is less than 100 cms sent "alert" to ibm cloud and display in device recent events.

Solu on:

Code:

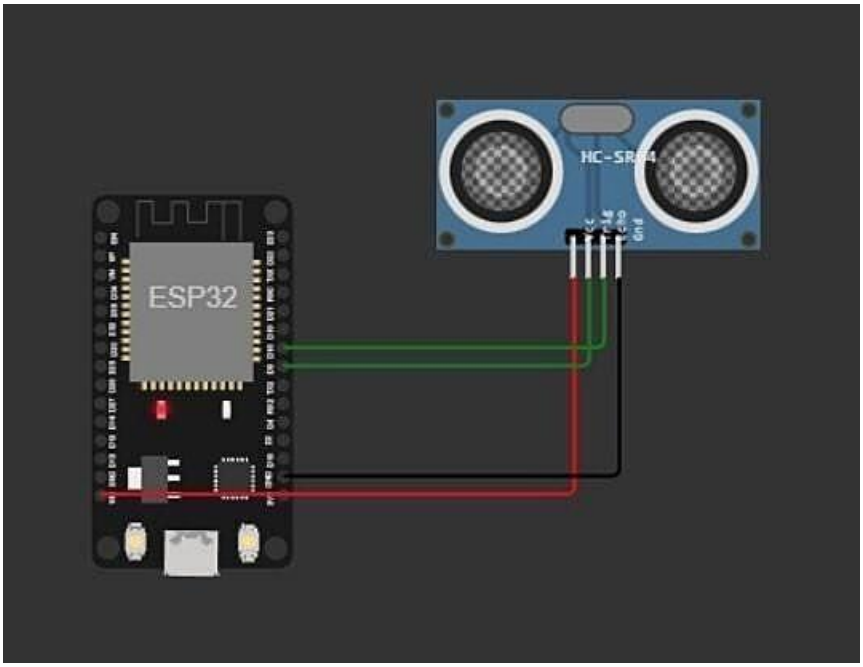
```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "3yngbh"
#define DEVICE_TYPE "Assignment"
#define DEVICE_ID "1234"
#define TOKEN "234567890"
#define speed 0.034  #define led 14 char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char publishTopic[] = "iot-
2/evt/shreedharen/fmt/json"; char topic[] = "iot-2/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)) {
```

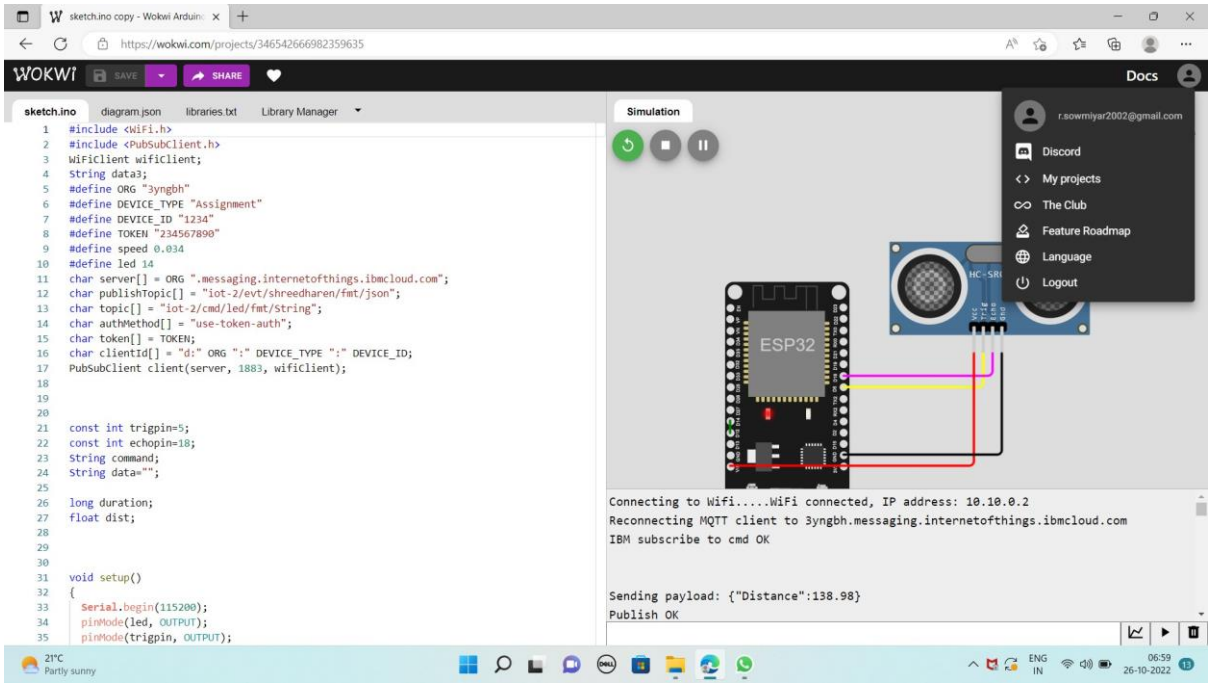
```
    Serial.print(".");
    delay(500);
   }
   initManagedDevice();
   Serial.println();
  }
}

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");
 }

}
}
```

Connec ons:

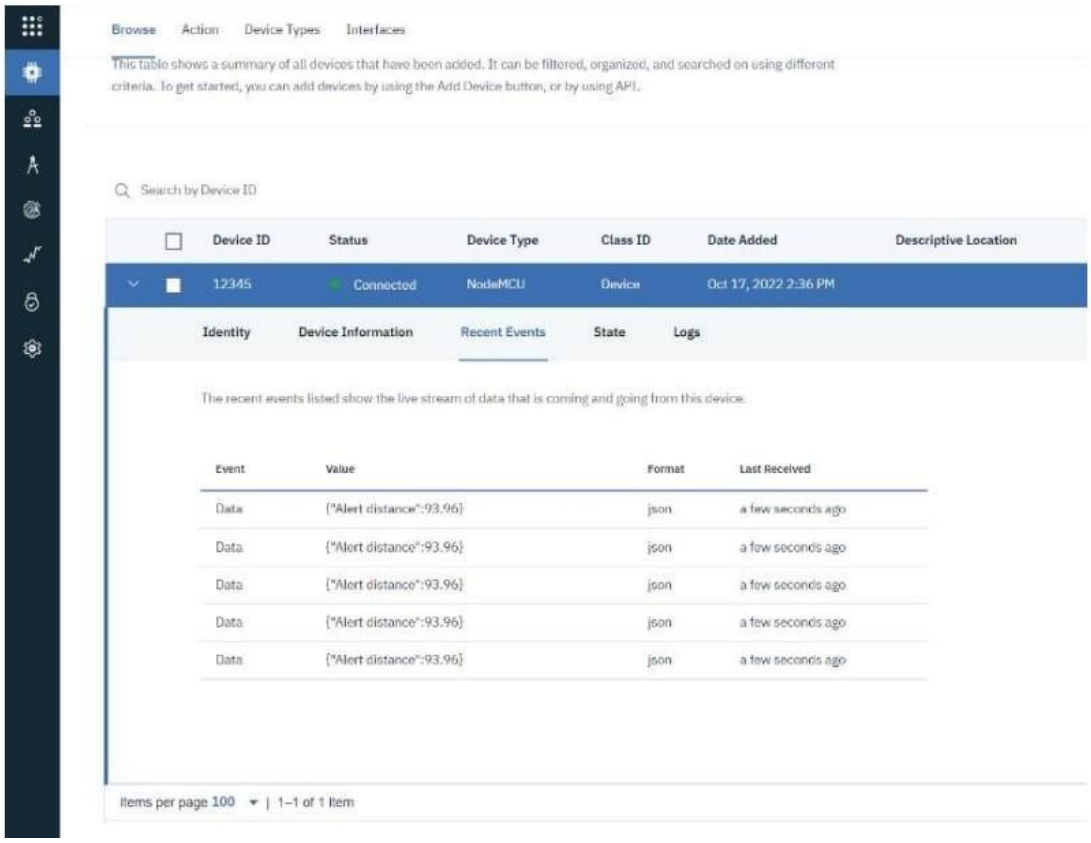


Output:(wowki)



Link: https://wokwi.com/projects/346405970317935188

Output:(IBM Cloud)


Browse
Action
Device Types
Interfaces
This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.
Search by Device ID
Device ID
Status
Device Type
Class ID
Date Added
Descriptive Location
12345
Connected
NodeMCU
Device
Oct 17, 2022 2:36 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
Data
{"Alert distance":93.96}
json
a few seconds ago
Data
{"Alert distance":93.96}
json
a few seconds ago
Data
{"Alert distance":93.96}
json
a few seconds ago
Data
{"Alert distance":93.96}
json
a few seconds ago
Data
{"Alert distance":93.96}
json
a few seconds ago
Items per page 100
1–1 of 1 item