

ASSIGNMENT 4

Date	03 Nov 2022
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Project Name	SmartFarmer – IoT Enabled Smart Farming Application

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.

Upload document with wokwi share link and images of ibm cloud

CODE:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "6d21ek"
#define DEVICE_TYPE "janisha"
#define DEVICE_ID "janishaid"
#define TOKEN "OMrl2P+(iMC8rU!WXr"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/janisha/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 += "}";

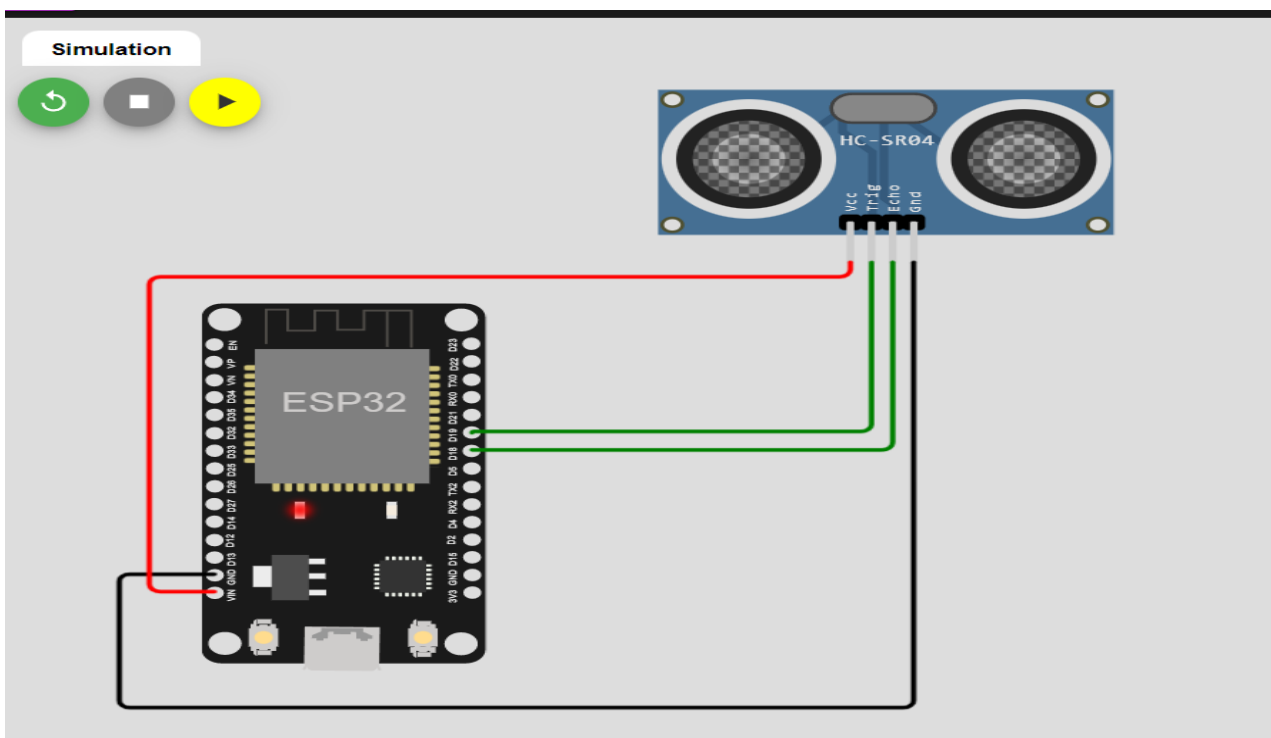
Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
if(client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish OK");
}else {
Serial.println("Publish FAILED");
}

}

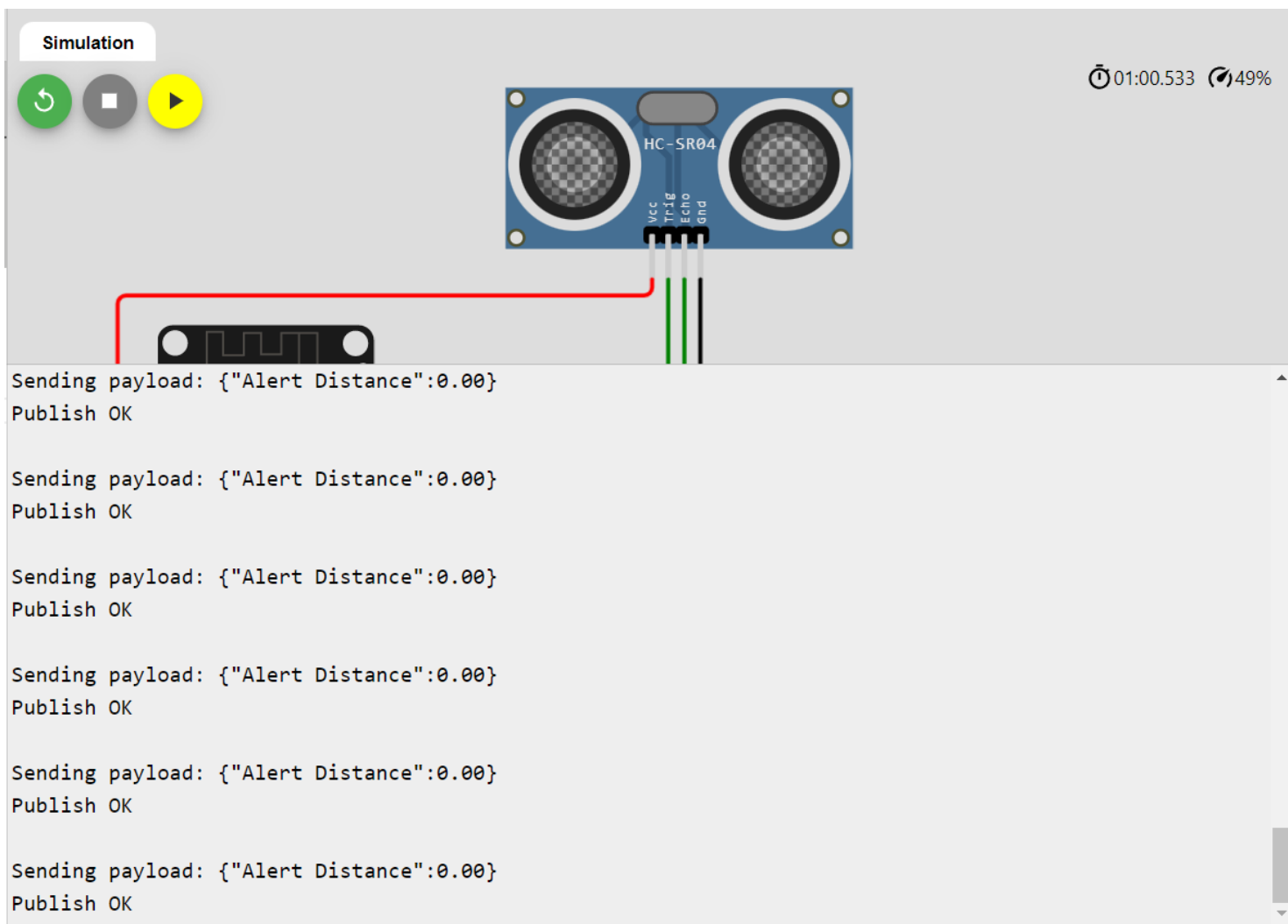
}

```

CONNECTIONS:



OUTPUT:



Browse Action Device Types Interfaces
Add Device +

Search by Device ID

Device Simulator ☐

<input type="checkbox"/>	Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location																				
▼ <input type="checkbox"/>	janishaid	● Connected	janisha	Device	Oct 31, 2022 10:28 AM	→ ...																				
	Identity	Device Information	Recent Events	State	Logs	X																				
<p>The recent events listed show the live stream of data that is coming and going from this device.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Event</th> <th>Value</th> <th>Format</th> <th>Last Received</th> </tr> </thead> <tbody> <tr> <td>janisha</td> <td>{"Alert Distance":0}</td> <td>json</td> <td>a few seconds ago</td> </tr> <tr> <td>janisha</td> <td>{"Alert Distance":0}</td> <td>json</td> <td>a few seconds ago</td> </tr> <tr> <td>janisha</td> <td>{"Alert Distance":0}</td> <td>json</td> <td>a few seconds ago</td> </tr> <tr> <td>janisha</td> <td>{"Alert Distance":0}</td> <td>json</td> <td>a few seconds ago</td> </tr> </tbody> </table>							Event	Value	Format	Last Received	janisha	{"Alert Distance":0}	json	a few seconds ago	janisha	{"Alert Distance":0}	json	a few seconds ago	janisha	{"Alert Distance":0}	json	a few seconds ago	janisha	{"Alert Distance":0}	json	a few seconds ago
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WOKWI LINK –

<https://wokwi.com/projects/347399644333998674>