

## ASSIGNMENT-4



Assignment Date	09 NOVEMBER 2022
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### ASSIGNMENT QUESTION:

Write code and connections in Wokwi for ultrasonic sensor. Whenever distance is less than 100 cm send "alert" to IBM cloud and display in device recent events Upload document with Wokwi share link and images of IBM cloud.

### CODING:

```
#include <WiFi.h>
#include
<PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "lclqXu"
#define DEVICE_TYPE "1234"
#define DEVICE_ID "Nhidhees-Device"
#define TOKEN "QFgbWeRmmxLBAIq2De"
#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 += "}";

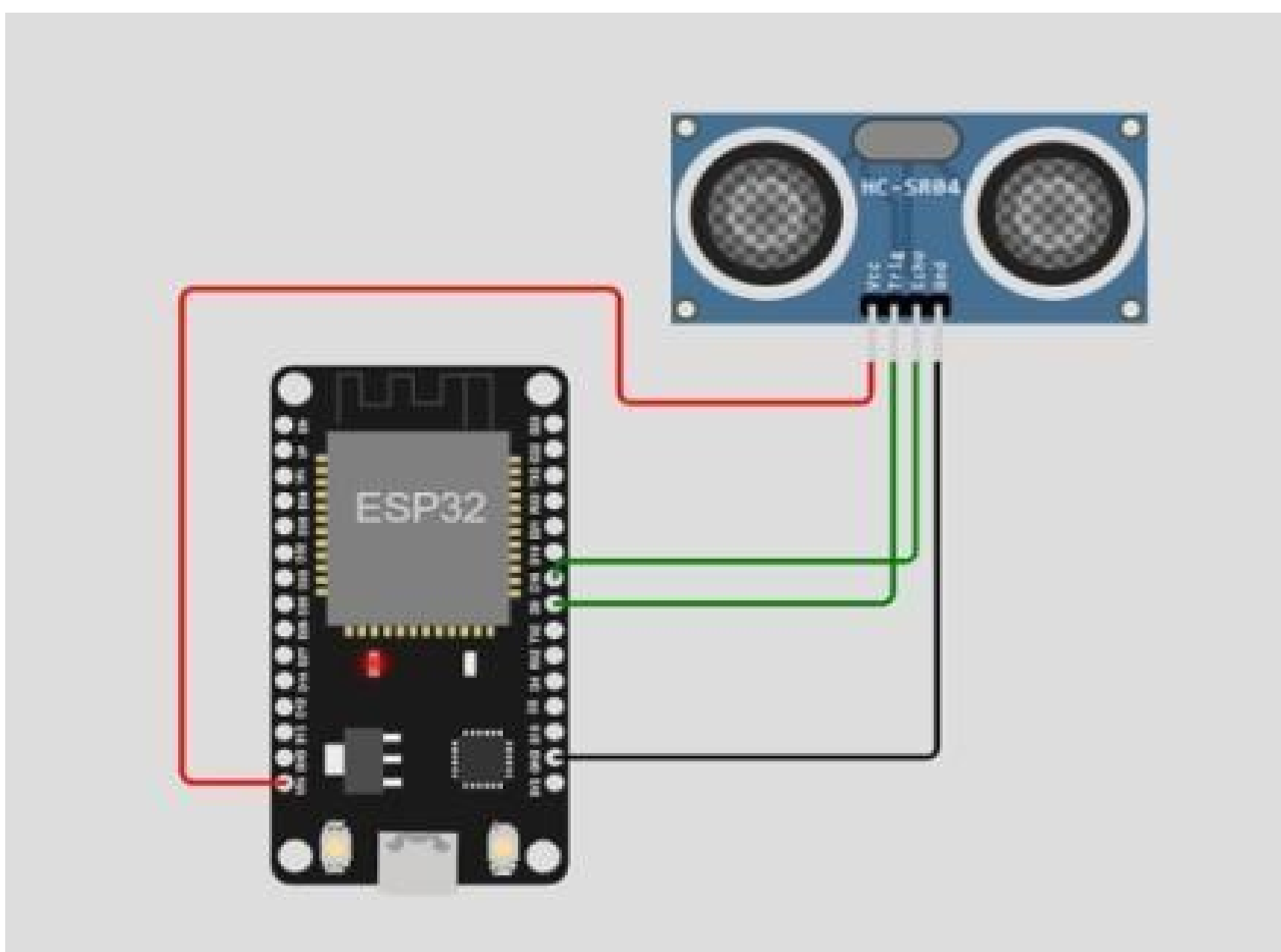
    Serial.print("\n");
    Serial.print("Sending payload:
    ");Serial.println(payload);
    if(client.publish(publishTopic, (char*) payload.c_str())) {
        Serial.println("Publish OK");
    }else {
        Serial.println("Publish FAILED");
    }

}

}

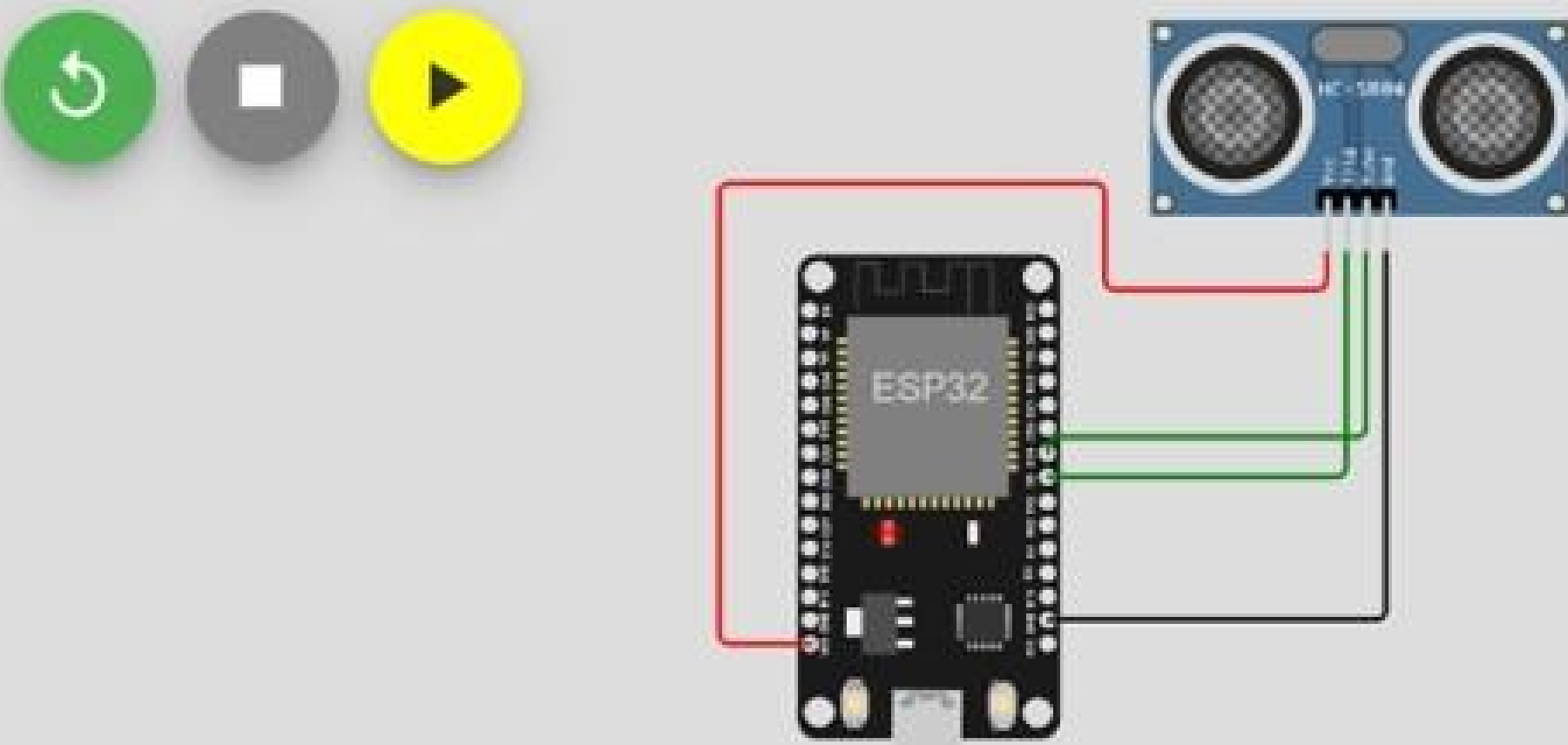
```

## CONNECTION:



## OUTPUT:

Simulation



Sending payload: {"Distance":399.76}  
Publish OK

Sending payload: {"Distance":399.96}  
Publish OK

Sending payload: {"Distance":399.94}

**Link:**<https://wokwi.com/projects/347144488251032147>