

ASSIGNMENT 04

WOKWI STIMULATOR

Date	24 October 2022
Student Name	R Thamizharasan
Student Roll Number	422519104046
Team ID	PNT2022TMID29259
Project Name	Project - Industry Specific Intelligent Fire Management System

QUESTION:

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>
```

```
#include <ArduinoJson.h>
```

```
WiFiClient wifiClient;
```

```
#define ORG "wt19pm"
```

```
#define DEVICE_TYPE "NodeMCU"
```

```
#define DEVICE_ID "12345"
```

```
#define TOKEN "12345678"
```

```
#define speed 0.034
```

```
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
```

```
char publishTopic[] = "iot-2/evt/status1/fmt/json";
```

```
char topic[] = "iot-2/cmd/home/fmt/String";
```

```
char authMethod[] = "use-token-auth";
```

```
char token[] = TOKEN;
```

```
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
```

```
PubSubClient client(server, 1883, wifiClient);
```

```
void publishData();
```

```
const int trigpin=5;
```

```
const int echopin=18;
```

```
String command;
```

```
String data="";
```

```
String name="Alert";
```

```
String icon="";
```

```
long duration;
```

```
int dist;
```

```
void setup()
```

```
{
```

```
  Serial.begin(115200);
```

```
  pinMode(trigpin, OUTPUT);
```

```
  pinMode(echopin, INPUT);
```

```
  wifiConnect();
```

```
  mqttConnect();
```

```
}
```

```
void loop() {
```

```
  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(".");  
    Serial.print("*");  
    delay(1000);  
}  
initManagedDevice();  
Serial.println();  
}  
}
```

```
void initManagedDevice()  
{ if (client.subscribe(topic))  
{  
    Serial.println(client.subscribe(topic));  
    Serial.println("subscribe to cmd OK");  
} else {  
    Serial.println("subscribe to cmd FAILED");  
}  
}  
void publishData()  
{
```

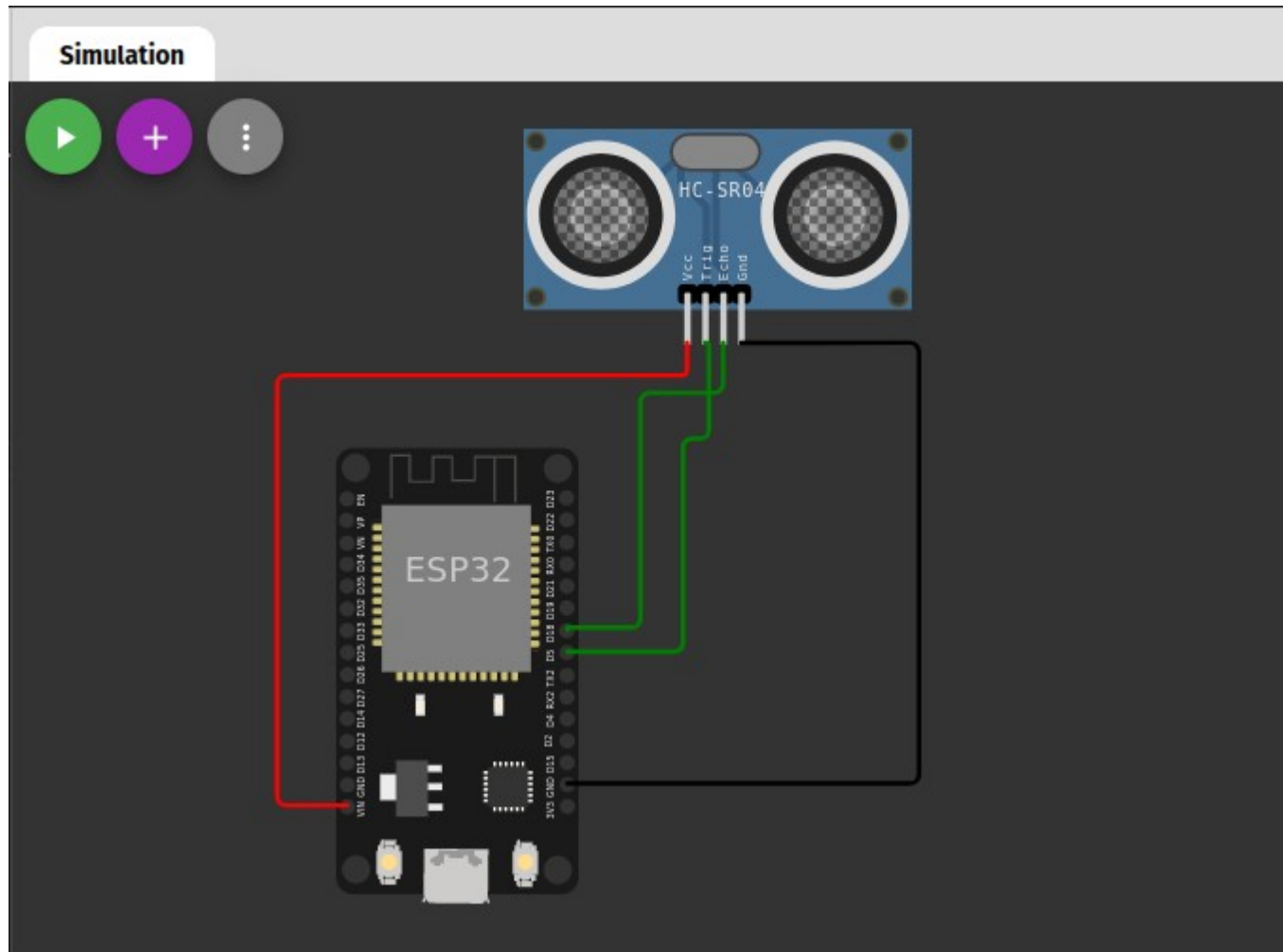
```
digitalWrite(trigpin,LOW);  
digitalWrite(trigpin,HIGH);  
delayMicroseconds(10);  
digitalWrite(trigpin,LOW);  
duration=pulseIn(echopin,HIGH);  
dist=duration*speed/2;
```

```
if(dist<100){ dist  
    =100-dist;  
    icon="no-trash";  
}else{ di  
    st=0;  
    icon="trash";  
}
```

```
DynamicJsonDocument doc(1024);  
String payload;  
doc["Name"]=name;  
doc["Icon"]=icon;  
doc["FillPercent"]=dist;
```

```
serializeJson(doc, payload);  
delay(3000);  
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:



WOKWI LINK:

<https://wokwi.com/projects/348951274331308627>

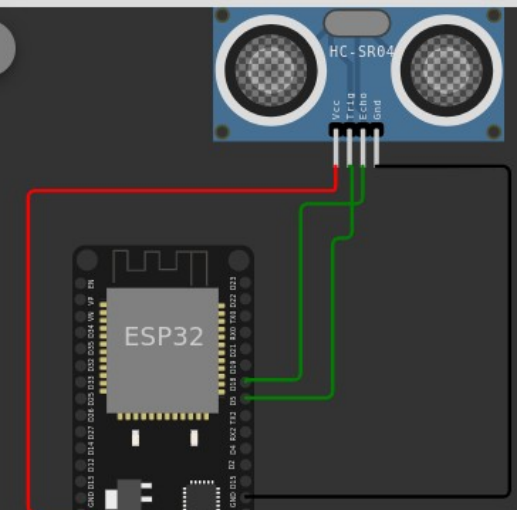
OUTPUT :

WOKWI SAVE SHARE Docs

esp32-blink.ino • diagram.json • libraries.txt • Library Manager

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 #include <ArduinoJson.h>
4
5 WiFiClient wifiClient;
6
7 #define ORG "wt19pm"
8 #define DEVICE_TYPE "NodeMCU"
9 #define DEVICE_ID "12345"
10 #define TOKEN "12345678"
11 #define speed 0.034
12
13 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
14 char publishTopic[] = "iot-2/evt/status1/fmt/json";
15 char topic[] = "iot-2/cmd/home/fmt/String";
16 char authMethod[] = "use-token-auth";
17 char token[] = TOKEN;
18 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
19 PubSubClient client(server, 1883, wifiClient);
20 void publishData();
21
22 const int trigpin=5;
23 const int echopin=18;
24 String command;
25 String data="";
26 String name="Alert";
27 String icon="";
28
29 long duration;
30 int dist;
```

Simulation



Publish OK

Sending payload: {"Name":"Alert","Icon":"trash","FillPercent":0}
Publish OK

Sending payload: {"Name":"Alert","Icon":"trash","FillPercent":0}
Publish OK